

NEC

ND-71548 (E)
ISSUE 2

NEAX 2400 IPX

Internet Protocol eXchange

Installation Manual

AUGUST 2002

NEC Corporation

LIABILITY DISCLAIMER

NEC Corporation reserves the right to change the specifications, functions, or features, at any time, without notice.

NEC Corporation has prepared this document for use by its employees and customers. The information contained herein is the property of NEC Corporation and shall not be reproduced without prior written approval from NEC Corporation.

All brand names and product names on this document are trademarks or registered trademarks of their respective companies.




Copyright 2002

NEC Corporation

BEFORE THE USE OF THIS MANUAL

1. FOR SAFETY USE

Here explains the safety use for the customer, which prevents danger to the life and damage to the property accidentally. The following are symbols and their meanings. Please read the following carefully before using this manual.







SYMBOLS	DESCRIPTION
DANGER 	<p>This symbol indicates danger. You might be involved in a situation that could cause deadly and bodily injury if you take wrong action.</p>
WARNING 	<p>This symbol indicates warning. You might be involved in a situation that could cause bodily injury and serious system fault if you take wrong action.</p>
ATTENTION 	<p>This symbol indicates attention. The system might not achieve its performance or lead to the system stall if you take wrong action.</p>
<p>This telephone system is designed for use in the country NEC provides and can not be used in any other country.</p> <p>If system-down, malfunction, defects, and external factors (such as electricity failure) cause profit loss indirectly, NEC does not take any responsibilities for the profit loss.</p> <p>We pay careful attention to making this manual, however, when you find mistakes on this manual, notify to NEC.</p> <p>Contact the supplier or the service technician if the system needs repairs and installation.</p> <p>Please read all the manuals related to your system carefully.</p>	


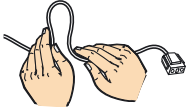

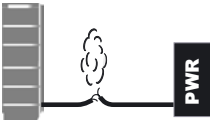


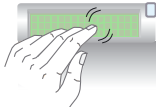
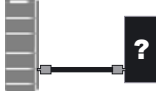
2. NOTICE WHEN USED



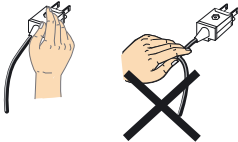

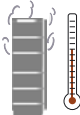
2.1 Consideration of PBX, Power-related Equipment and Peripheral Equipment


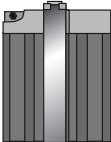

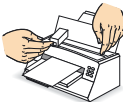

This item describes the consideration before using PBX, the power-related equipment, and the peripheral equipment (such as console, MDF, DAU, telephone, PC, printer, etc).



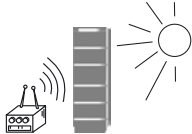
Preserve the following:

<div style="text-align: center;"> DANGER  </div>	
	When the system gives off smoke or burning smell, it might cause a fire, an electric shock, or a failure if the system keeps operating. Turn off the power and confirm the smoke disappears, and then contact supplier.
	If equipment (such as PBX, Main Power, cabinet, and peripheral equipment) fall down and be broken, turn off the power, and then contact the supplier.
	If the inside of PBX or Main Power is wet by liquid such as water, turn off the power. It might cause a fire, an electric shock, or a failure if the system keeps operating.
	Do not touch the internal parts of Main Power for the purpose of disassembly and remodeling. It might cause a fire, an electric shock, or a failure. (NEC does not take any responsibilities if the system or the equipment is disassembled or remodeled.)
	Do not put any container (such as vase, cup, and cosmetics) on Main Power and peripheral equipment. It might cause a fire, an electric shock, or a failure.

<p style="text-align: center;">DANGER</p> 	
	<p>Do not damage, remake, forcefully bend, forcefully extract, nor forcefully twist an electric code and a wiring to/from PBX, Main Power and peripheral equipment. It might cause a fire, an electric shock, or a failure. If the wiring is damaged, ask the supplier to fix it.</p>
	<p>Insert the electric plug into the outlet properly. Confirm no dust is on the blade of plug; it might cause a fire.</p>
	<p>Do not use other than the power designated when installed.</p>
	<p>Do not try to fix or move Main Power by yourselves without the supplier or service technician's help. Please ask them when the repair or the movement is necessary.</p>
	<p>Do not put any metal or combustible object into a vent of PBX, Main Power, and the peripheral equipment. If the object is in those equipment, turn off the power and ask the supplier. It might cause a fire, an electric shock, or a failure if the system keeps operating.</p>
	<p>Be careful of using the display part which the peripheral equipment has. In the case of liquid crystal, the liquid is leaked and causes harm to human body and systems.</p>
	<p>Before connecting customer-provided equipment (such as the other company products) with NEC products such as PBX and peripheral equipment, ask the supplier and make sure your equipment is compatible with NEC product. If it is not confirmed, do not connect them. It might cause a fire or an electric shock.</p>

<p>WARNING</p> 	
	<p>Fix the equipment. Do not put any object on PBX and Main Power; it might be dangerous if the object should fall down.</p>
	<p>When plugging off a plug, be sure to grip the plug and extract it. If you grip the code and extract it, it might cause a fire and an electric shock.</p>
	<p>If a fault is considered as the lightening cause, ask the supplier.</p>
	<p>Other than fulfilling the appropriate humidity and temperature, it is necessary to consider the maintenance operation and the all-time ventilation in non-loading operation during day-off and night. For example, when the height above floor is 1 m (3.281 feet), the temperature should be from 20 to 25 °C (68 to 77 °F) and the humidity should be more or less 50 %.</p>

<p style="text-align: center;">WARNING</p> 	
	<p>Be careful of using a battery as following:</p> <p>Rechargeable lead battery is used as the emergency battery of PBX. Check the back-up for an electricity failure.</p> <p>Battery electrolyte is harmful to human body. If the battery electrolyte is put on the cloth, clean it using enough amount of water.</p> <p>Do not cause the battery short intentionally. Do not put it near fire or put it into fire. Do not damage it, such as disassembly, falling, and impact.</p> <p>The battery life varies depending on the surroundings. The battery life is approximately three years. If the battery is used outside with high temperature, the battery life is shortened to approximately one year.</p> <p>If not replacing terminal or dead battery, the PBX system will not work in case such as power failure. Besides it might cause smoking or fire due to leaking battery electrolyte. Perform the periodic diagnosis surely. Note that the battery is one of periodic replacement parts whose cost are charged to the customer. We recommend you to make a contract with supplier or service technician about the routine maintenance.</p>
	<p>Do not touch the peripheral equipment by wet hand. Do not wet the peripheral equipment.</p>
	<p>Do not touch the ink head and the internal of the printer. When replacing the ink ribbon or the paper, make sure it is cool enough.</p>
	<p>Do not drop nor impact the peripheral equipment. It might cause a failure.</p>


<p style="text-align: center;">ATTENTION</p> 	
 <p style="text-align: center;">Thinner</p>	<p>Do not use benzine, thinner, and alcohol for cleaning. When it is difficult to clean dust and dirt, put weaken neutral detergent onto a cloth, and give the cloth a wiring. Clean dust and dirt with the cloth, and rub them with a dry cloth.</p>
	<p>Do not place equipment in the following:</p> <ul style="list-style-type: none"> Locations which receive direct sunlight Locations where the moisture exceeds the allowed level Locations which might be wet with water, oil, and chemicals Locations which is particularly low in temperature (such as an ice compartment) Locations which receive the electric wave or the magnetism from TV and (two-way) radio Locations which receive the illegal electric wave <p>Note that the life of PBX and Main Power is shorten if placed in the location affected by much of hydrogen sulfide or salt, such as seaside area.</p>

2.2 Installation Environment


These items describe the consideration before the installation.

Preserve the following:


2.2.1 Oscillation

<p>WARNING</p> 	<p>To prevent the system from moving and falling down which might injure the person, it is necessary to make the resistance to earthquake. Besides the system is installed in the always-oscillation environment such as locations near the motor and the automatic door. Install PBX with anchor bolts for resistance to earthquake.</p>
---------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------


2.2.2 Floor, Wall and Ceiling

<p>WARNING</p> 	<p>The materials of wall and ceiling must be non-static electrification and heat insulation. Because the battery life varies depending on the surrounding temperature, the room where the battery is installed must be with good ventilation, using ventilator and blowhole. Besides, it should not be installed near the motor or the power transformer.</p>
	<p>How to resist to static electrification The floor around the PBX must be made up with resistance material to Electric Static Discharge (ESD).</p>


2.2.3 Windows

<p>ATTENTION</p> 	<p>Please close all the windows if the location is affected by dust, salty wind, or corrosive gas. Besides, curtains or blinds are necessary to avoid direct sunlight.</p>
-------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------


2.2.4 Fire Extinguishert

<p>WARNING</p> 	<p>Please place the extinguisher for electric fire (such as carbon-gas extinguisher and halon-gas extinguisher). It is recommend that automatic fire detector be equipped with the room. In case of smoking and firing, turn off the power for Main Power and backup battery. Then, use the extinguisher for electric fire to put out the fire. Do not inhale the smoking while extinguishing the fire.</p>
-----------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------


2.2.5 Safety Environment

WARNING 	Consider countermeasures for disasters (such as firing, flood, and earthquake) and safety for the operator. It is necessary to keep cleaning the machine room. Also, be careful of spraying an insecticide not to affect the machinery.
-----------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------


2.2.6 Temperature and Humidity

WARNING 	Other than fulfilling the appropriate humidity and temperature, it is necessary to consider the maintenance operation and the all-time ventilation in non-loading operation during day-off and night. For example, when the height above floor is 1 m (3.281 feet), the temperature should be from 20 to 25 °C (68 to 77 °F) and the humidity should be more or less 50 %.
-----------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------


2.2.7 Air Conditioning Facilities

WARNING 	The power and installation of air conditioners must be different from those of PBX.
	To keep electromagnetic arc from making noise, attach surge limiting capacitor and resistor on the coil of the electromagnetic switch.
	It might be necessary to adjust the ventilation to be air conditioned equally through the machine room.
	In the case of using duct or ceiling air conditions, do not place PBX in the location where the dew might fall.
	If PBX is installed in the location near the ventilation, the PBX might be damaged due to the air containing humidity and exhaust.

2.3 Notice Regarding Lightning Strikes

WARNING 	<p>It is necessary to take proper procedures to avoid damage to the PBX caused by local lightning strikes and other electrical surges.</p> <p>As for grounding conductors, there needs to be two-type grounding conductors; one is below 10 Ω (Type 1) and the other is below 100 Ω (Type 2). In particular, the Type 1 is used for the electronics circuit installment, therefore, it must be used as isolated system to keep from electricity difference caused by lightning strikes.</p> <p>The Type 1 is used when connecting the FE of PBX, the PE of Main Power, MDF, etc.</p> <p>Extract the ground terminal (grounding electrode of three terminals) from the earth board same with that of the main equipment. The ground terminal attached with AC100V plug outlet is used for MAT, printer, MODEM, and measurement machine for maintenance.</p>
-------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

2.4 Periodic Repair Parts and Disposables

<p>ATTENTION</p> 	<p>Replace the periodic repair parts such as fan, battery, backup battery, HD, fuse, and display. If not change the parts and past the periodic term, sudden traffic fault might lead to the whole system failure and damaging. Replace the disposables such as ink ribbon, FD, recording paper, and headset. We recommend you to make a contract for the maintenance service.</p>
-----------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

This page is for your notes.

NEAX2400 IPX
Internet Protocol eXchange
Installation Manual

TABLE OF CONTENTS

	Page
CHAPTER 1 INTRODUCTION	1
1. GENERAL	1
2. HOW TO FOLLOW THE MANUAL	3
2.1 Outline	3
2.2 How to Follow NAPs	3
2.3 How To Follow Trees	5
2.4 Figure and Table Numbers	7
2.5 Essential/Critical Information	7
CHAPTER 2 INSTALLATION DESIGN	8
1. GENERAL	8
2. ENVIRONMENTAL REQUIREMENTS	8
2.1 Temperature And Humidity	8
2.2 Heat Generation From Switching Equipment	9
3. FLOOR SPACE	10
4. FLOOR LOAD REQUIREMENTS	10
5. EQUIPMENT ROOM REQUIREMENTS	10
5.1 Floor Surface	10
5.2 Wall	11
5.3 Ceiling	11
5.4 Lighting Facilities	11
6. POWER SUPPLY REQUIREMENTS	11
6.1 Main Source Power	11
6.2 Current Consumption	12
6.3 Power Distribution Box Requirements	13
6.4 Grounding	13
7. MDF REQUIREMENTS	13
8. INSTALLATION TOOLS	14
9. SYSTEM ACCOMMODATION	15
9.1 System Accommodation	15
9.2 Circuit Card Locations	22
9.3 Preparation of Trunking Diagram	26
9.4 Preparation of Module Group Face Layout And Port Accommodation Diagram	26
9.5 Preparation of Circuit Card Switch Setting Sheets	26
10. INSTALLATION CABLES	26
10.1 AC Input, DC Power, And Ground Cables	27
10.2 Cables Between The PBX And MDF	33

TABLE OF CONTENTS (CONTINUED)

	Page
CHAPTER 3 INSTALLATION PROCEDURE	35
1. GENERAL	35
2. PRECAUTIONS BEFORE BEGINNING INSTALLATION	36
2.1 Outline	36
3. INSTALLATION PROCEDURE	38
NAP-200-001 Installation Preparation	39
NAP-200-002 Marking, Leveling, and Drilling	41
1. WHEN SECURING THE PBX DIRECTLY ONTO THE FLOOR	42
2. WHEN SECURING THE PBX WITH THE SPECIAL STAND	45
3. WHEN SECURING PBX WITH FLOOR ELEVATIONS	47
4. MARKING, LEVELING AND DRILLING FOR MDF, POWER EQUIPMENT, AND PERIPHERAL EQUIPMENT	48
NAP-200-003 Unpacking and Inspection	49
1. UNPACKING	49
2. INSPECTION	50
NAP-200-004 Installation of the Base Unit	51
1. INSTALLING THE BASE UNIT DIRECTLY ONTO THE FLOOR	51
2. INSTALLING THE BASE UNIT USING A SPECIAL STAND	53
NAP-200-005 Mounting of Units and Modules	54
1. MOUNTING OF UNITS AND MODULES	54
2. INSTALLATION OF FANU	55
3. PROCEDURE FOR FANU ON THE TOPU	56
4. PROCEDURE FOR FANU IN THE FAN BOX	61
5. ATTACHING THE ADDITIONAL NOISE FILTER UNIT (NFILU) TO THE BASEU	67
NAP-200-006 Installation of Power Equipment	70
NAP-200-007 Installation of the MDF	71
NAP-200-008 Connection of Power and Ground Cables from the Power Equipment	72
1. CONNECTION OF THE POWER AND GROUND CABLES	72
2. CONNECTION OF DC-DC CONVERTER FOR TELEPHONE SETS EQUIPPED WITH MESSAGE WAITING LAMPS	76
3. END JOINTING OF POWER AND GROUND CABLES	79
4. BRANCHING OF POWER CABLES	81
NAP-200-009 Setting of Switch Positions and Mounting of Circuit Cards	85
1. PRECAUTIONS	85
2. EXTRACTION OF MOUNTED CIRCUIT CARDS	86
3. MOUNTING OF CIRCUIT CARDS	88
4. SETTING OF SWITCH POSITIONS ON CIRCUIT CARDS	89
5. INSTALLATION OF CPR	91
NAP-200-010 Internal Cable Connections	98
NAP-200-011 Inter-Frame Cable Connections	162
NAP-200-012 Front Cable Connections between Circuit Cards	186
NAP-200-013 Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR	187
1. CABLE RUNNING FROM THE PBX TO THE MDF AND ATTCON	188
2. CABLE RUNNING FROM THE PBX TO THE MAT AND SMDR	192
3. CONNECTIONS AT THE PBX SIDE	193
4. CABLE TYING AT THE PBX	193
5. TERMINATION OF THE CABLES BETWEEN THE PBX AND THE MDF OR ATTCON ONTO THE CABLE SUPPORT ASSEMBLY	195
NAP-200-014 Termination of Cables on MDF (Wire Accommodation of Each Cable)	200

TABLE OF CONTENTS (CONTINUED)

	Page
NAP-200-015 Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines	201
1. CROSS CONNECTION OF STATIONS	202
2. CROSS CONNECTION OF TRUNKS (C.O. LINES AND TIE LINES).....	203
3. CROSS CONNECTIONS FOR PFT	205
4. CROSS CONNECTION OF ALARM INDICATING PANEL AND MUSIC ON HOLD.....	208
5. CROSS CONNECTIONS FOR TAS INDICATOR	213
6. CROSS CONNECTIONS FOR EXTERNAL SWITCHES	216
7. CONNECTION OF ANNOUNCEMENT MACHINE	218
8. CONNECTION OF PAGING EQUIPMENT	220
9. CROSS CONNECTIONS.....	222
10. CROSS CONNECTIONS FOR DIGITAL INTERFACES	226
NAP-200-016 Installation of the DESK CONSOLE and Cable Connection	233
1. CABLE CONNECTION DIAGRAM	237
2. CALCULATION OF THE DISTANCE BETWEEN THE ATI CIRCUIT CARD AND MODULAR ROSETTE	238
3. MOUNTING OF HEADSET (OPTIONAL)	241
4. MOUNTING OF HANDSET (OPTIONAL)	242
5. CONNECTION OF RECORDING EQUIPMENT	248
6. 8-CORE LINE CABLE (INSTALLATION CABLE)	251
7. CONNECTION OF AC-DC ADAPTER (OPTIONAL).....	252
8. MOUNTING OF ADD-ON CONSOLE (FOR HOTEL SYSTEM)	253
9. MOUNTING OF ADD-ON CONSOLE	256
10. CONNECTION OF AC-DC ADAPTER FOR ADD-ON CONSOLE (OPTIONAL).....	260
11. CONFIGURATION MENU	261
12. SELECTION OF CONFIGURATION ITEM	264
13. ASSIGNMENT OF CONFIGURATION DATA	265
14. HEADSET/HANDSET	266
15. HEADSET TYPE	267
16. MUTE.....	268
17. REC CONTROL.....	269
18. SUP CONNECTION.....	270
19. REC VOLUME ADJUSTMENT	271
20. BLF.....	272
21. HOLD/START/RELEASE/SWAP	273
22. 2ND RINGING	274
23. RINGING	275
24. UPDATING CONFIGURATION DATA.....	276
NAP-200-017 Installation of Maintenance Administration Terminal (MAT) and Cable Connections	277
1. INSTALLATION OF MAT AND CABLE CONNECTIONS	277
2. INSTALLATION OF MAT AND CABLE CONNECTION BY USING MODEM	280
3. INSTALLATION OF SYSTEM MESSAGE PRINTER AND CABLE CONNECTIONS.....	282
NAP-200-018 Connections of SMDR	287
CHAPTER 4 SYSTEM STARTUP	291
1. GENERAL	291
2. PRECAUTIONS BEFORE BEGINNING SYSTEM STARTUP	291
3. SYSTEM STARTUP PROCEDURE	294
NAP-200-019 Power ON	295

TABLE OF CONTENTS (CONTINUED)

	Page
NAP-200-020 Program Install and Load	297
NAP-200-021 Assignment of Office Data	303
NAP-200-022 Check of Lamp Indications and System Messages	305
NAP-200-023 Check of Alarm Lamps of the TOPU	310
 CHAPTER 5 INSTALLATION TEST PROCEDURE	 312
1. HOW TO ENTER DATA IN THE TEST CHECK COLUMN	312
2. BASIC CONNECTION TEST	314
2.1 Outline	314
2.2 Basic Connection Test Procedure	314
NAP-200-024 DT (Dial Tone) Connection Test	315
NAP-200-025 Station to Station Connection Test	316
3. SYSTEM INITIALIZED TEST	317
3.1 Outline	317
3.2 System Initialized Test Procedure	317
NAP-200-026 System Changeover Test	318
NAP-200-027 System Initialization Test	326
NAP-200-028 Circuit Card Initialization Test	328
4. PORT CONNECTION TEST	329
4.1 Outline	329
4.2 Port Connection Test Procedure	329
NAP-200-029 ORT (RST Card) Connection Test	330
NAP-200-030 ATTCN (ATI Card) Connection Test	332
NAP-200-031 Line (LC, ELC, DLC, Card) Connection Test	333
NAP-200-032 Outgoing Trunk (COT, TLT, DTI Card) Connection Test	334
NAP-200-033 Incoming Trunk (COT, TLT, DTI Card) Connection Test	337
NAP-200-034 Direct-In Termination Trunk (COT Card) Connection Test	339
NAP-200-035 SND (RST Card) Connection Test	340
NAP-200-036 3-party Conference Trunk Function Test	341
NAP-200-037 Connection Test-Announcement Trunk for Announcement Service	342
NAP-200-038 Connection Test-Digital Announcement Trunk for Announcement Service	343
NAP-200-039 Connection Test-Paging Trunk for Paging Access Service	344
NAP-200-040 Connection Test-Paging Trunk for Paging Transfer Service	345
NAP-200-041 Radio Paging Trunk (COT Card) Connection Test	347
NAP-200-042 Howler & Ringing Signal Test	348
5. OVERALL TEST	350
5.1 Outline	350
5.2 Overall Test Procedure	350
NAP-200-043 Overall Test for C.O. Line Outgoing Call	351
NAP-200-044 Overall Test for C.O. Line Incoming Call	352
NAP-200-045 Overall Test of CCIS Tie Line Outgoing Call	353
NAP-200-046 Overall Test of CCIS Tie Line Incoming Call	355
NAP-200-047 Test of Connection and Alternate Routing to All Tie Lines	356
NAP-200-048 Test of Tandem Connection to Tie Line	358
NAP-200-049 PAD Setting	360
6. IP CONNECTION TEST	362

TABLE OF CONTENTS (CONTINUED)

	Page
6.1 Outline	362
6.2 IP Connection Test Procedure	362
NAP-200-050 IP PAD Connection Test	363
NAP-200-051 IPTRK (IP Trunk Card for FCCS) Connection Test	366
NAP-200-052 IPTRK (IP Trunk Card for CCIS) Connection Test	369
NAP-200-053 IPTRK (IP Trunk Card for H.323) Connection Test	372
NAP-200-054 PHA Connection Test	375
NAP-200-055 PHD Connection Test	377
NAP-200-056 PHC Connection Test	380
CHAPTER 6 FAULT RECOVERY DURING TESTS	383
1. GENERAL	383
2. OUTLINE OF PROCEDURE FOR FAULT RECOVERY	383
NAP-200-057 Abnormal Lamp Indications After System Startup	384
NAP-200-058 DT (Dial Tone) Connection Fault	386
NAP-200-059 Station to Station Connection Fault	387
CHAPTER 7 WORK AFTER INSTALLATION TESTS	389
1. OFFICE DATA MANAGEMENT	389
1.1 Preservation of Office Data	389
2. PREPARATION OF TEST RESULT REPORT	390
3. MOUNTING OF THE FRONT AND REAR COVERS	390
4. ATTACHMENT OF INTER-FRAME BRACKETS	400
5. SITE CLEANING	404

This page is for your notes.

CHAPTER 1 INTRODUCTION

1. GENERAL

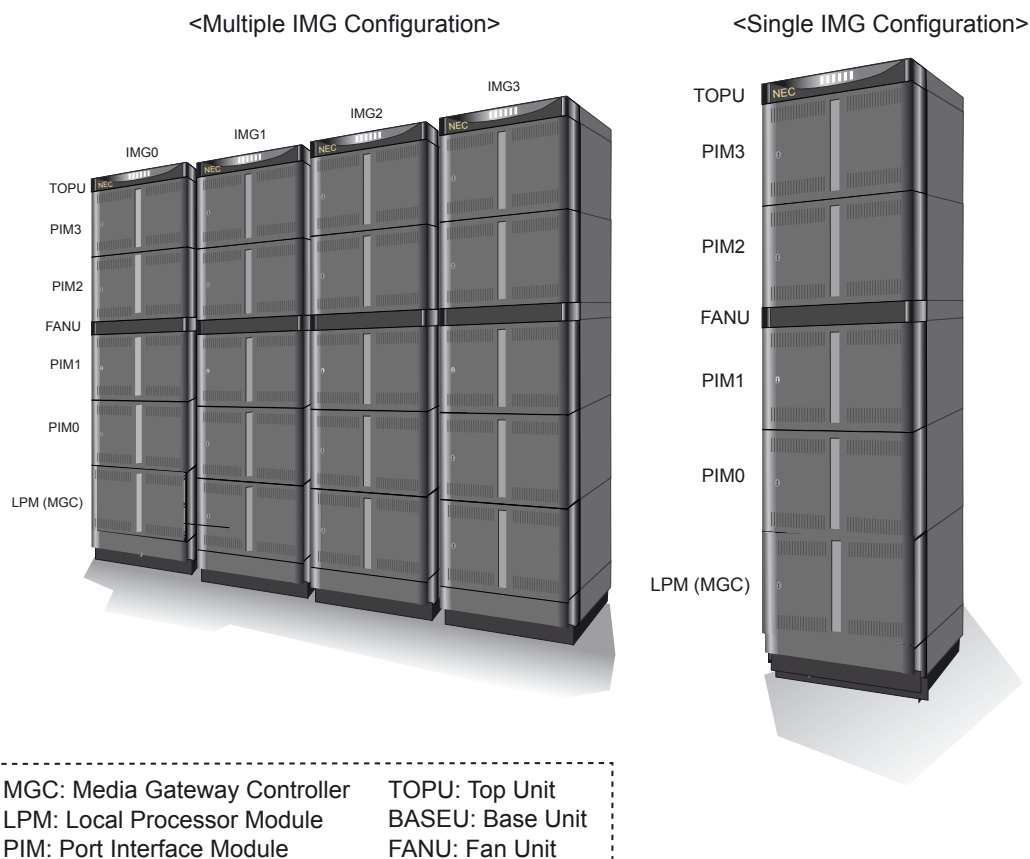
The figure below shows the outer view of the NEAX2400 IPX-referred to in the remainder of this manual as “the system.” During the period from equipment carry-in of the system till it is placed in service, the following must be performed:

- Installation of the system and its peripheral equipment
- System startup
- Installation test
- Miscellaneous jobs

This manual explains how to proceed with these activities and related precaution. It is recommended that the installer thoroughly read Section 2., “HOW TO FOLLOW THE MANUAL” before engaging in any phase of the installation.

Figure 1-1 NEAX2400 IPX Outer View

This figure shows the outer view of the fully expanded system.

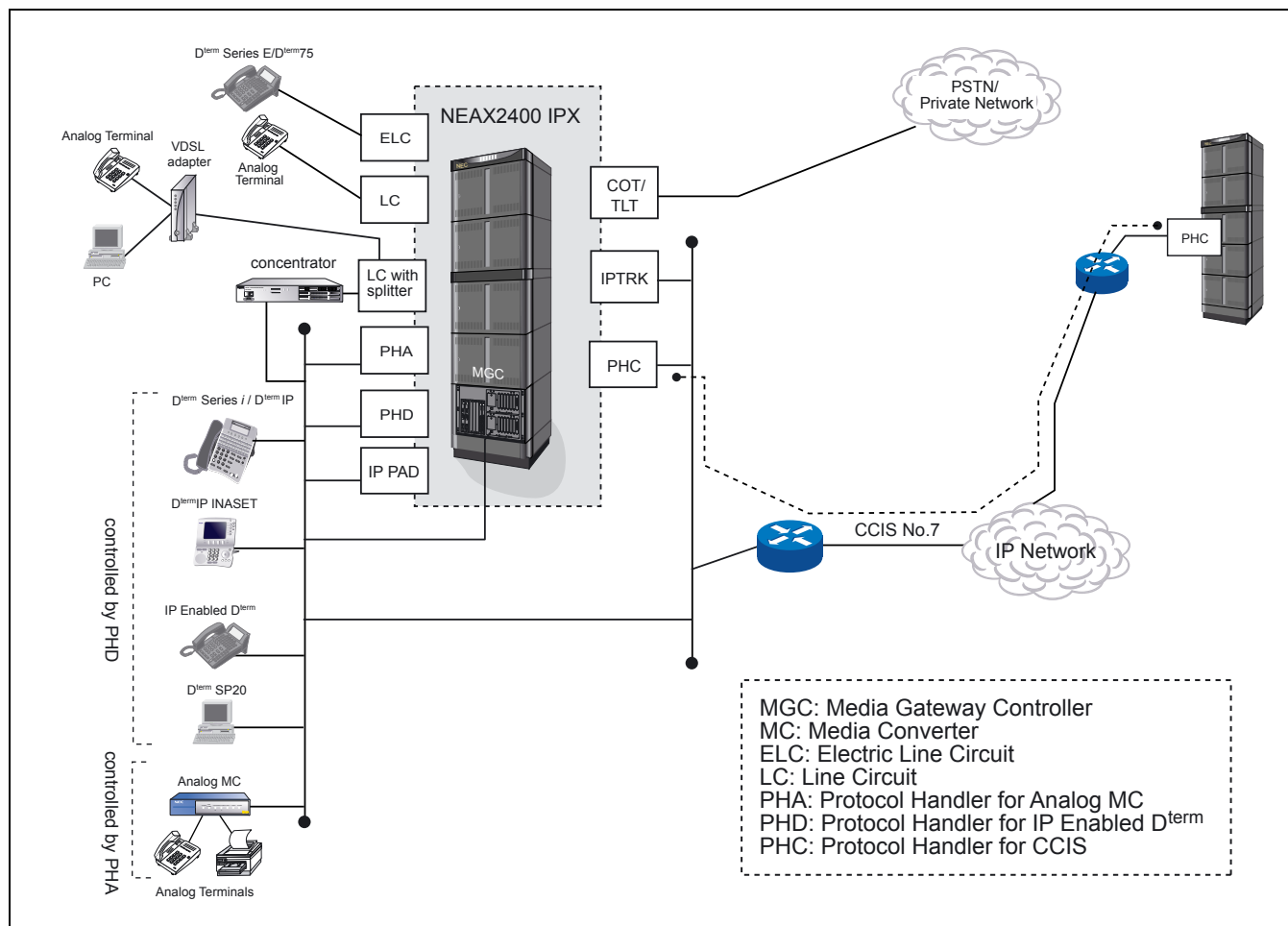


INTRODUCTION

The figure below shows an example of the system configuration of NEAX2400 IPX.

- PHA : Handles control signals sent to/from an analog terminal connected to Analog Media Converter.
- PHD : Handles control signals sent to/from IP terminals such as D^{term}IP INASET and D^{term} SP20.
- PHC : Sends/receives CCIS control signal from/to IP network.
- IP PAD : Provides interface function between terminals/devices on LAN and conventional network such as PSTN, ISDN, and private network.

Figure 1-2 System Configuration (Example)



2. HOW TO FOLLOW THE MANUAL

2.1 Outline

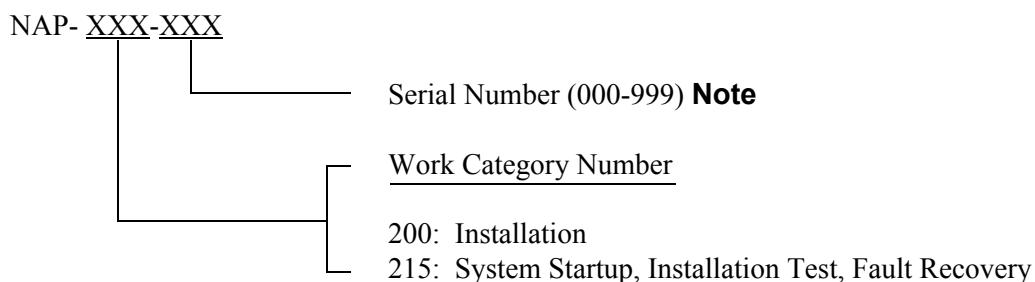
The requiring work is divided into the following chapters. Basically, the work is performed in the order of these chapters:

- Chapter 2, “INSTALLATION DESIGN”
This chapter explains installation design and preparation of the required installation materials.
- Chapter 3, “INSTALLATION PROCEDURE”
This chapter explains the procedures pertaining to equipment carry-in, installation, power supply (cabling, wiring), etc., of the system, and also explains the installation procedures concerning peripheral equipment (MDF, Rectifier, Terminal Equipment.).
- Chapter 4, “SYSTEM STARTUP”
This chapter explains the procedures for initial power-on and office data entry upon completion of the system installation.
- Chapter 5, “INSTALLATION TEST PROCEDURE”
This chapter explains the test procedures to be performed, upon completion of the system startup, to determine:
 - If the system operates as directed by the office data.
 - Whether reinitialization or system changeover can be performed.
 - Whether the interface with the associated distant office is normal.
- Chapter 6, “FAULT RECOVERY DURING TESTS”
This chapter explains the recovery procedure which the installer needs to follow in case of a fault occurrence while engaging in work pertaining to system startup and basic connections.
- Chapter 7, “WORK AFTER INSTALLATION TESTS”
This chapter explains various kinds of work and site cleaning, etc. which must be performed after completion of installation tests so that the system can be cut over normally.

2.2 How to Follow NAPs

This manual categorizes the work contents of installation, system startup and installation tests into detailed work items, and an NEC Action Procedure (NAP) number is assigned to each of such work item.

The following shows how to interpret a NAP number.



Note: *Performing NAPs in sequential order by serial numbers is recommended.*

Figure 1-3 shows an example of an NAP.

Figure 1-3 Example of NAP

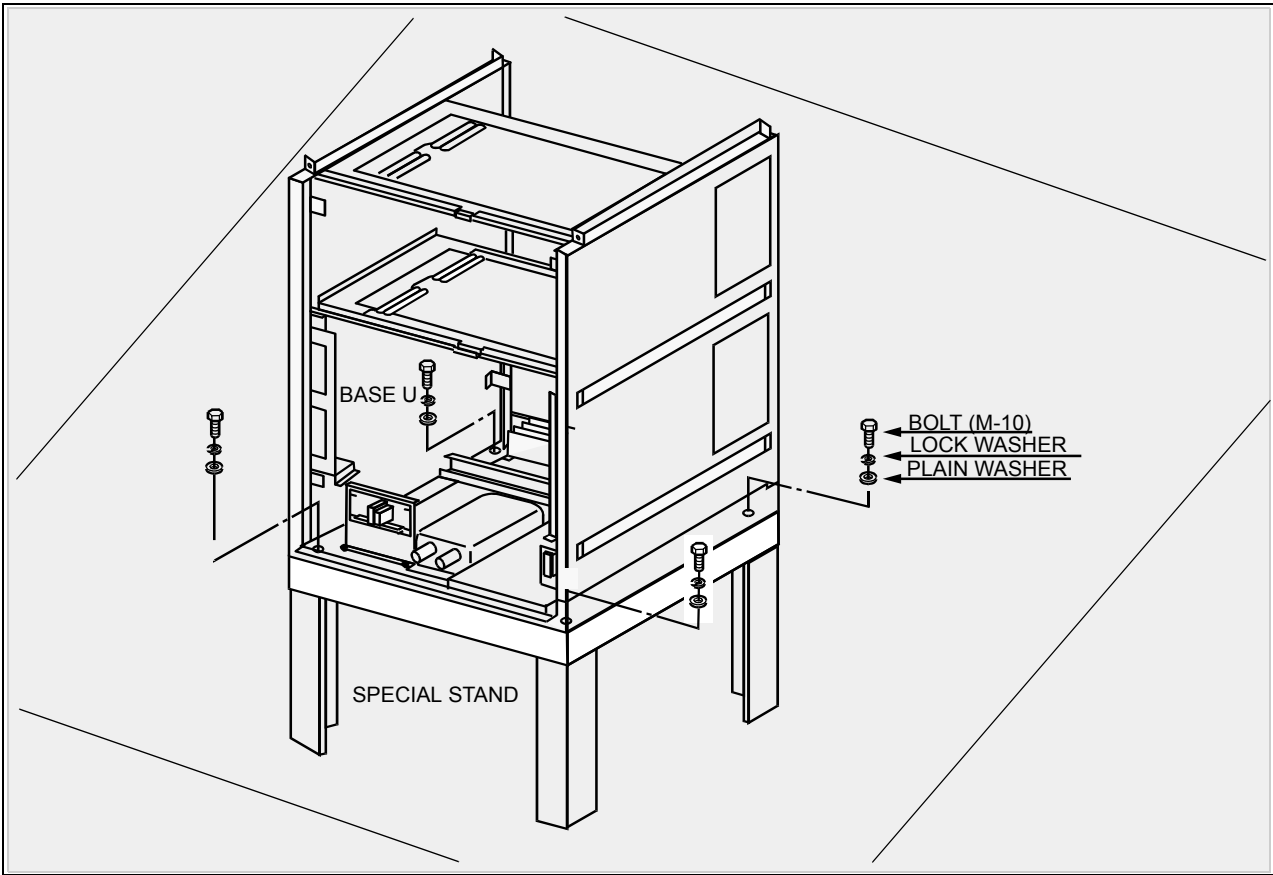
NAP- 200-004	←	NAP Number
Sheet 3/3	←	Sheet Number of NAP
Installation of the Base Unit	←	Title of NAP

1. INSTALLING THE BASE UNIT USING A SPECIAL STAND

START

- Securing the Base Unit ——— Secure the Base Unit onto the special stand as per Figure 004-4.
- Level Check ——— Check the level of the Base Unit. If necessary, adjust the level by inserting spacers beneath the Base Unit.

END



2.3 How To Follow Trees

This manual explains performance of a predetermined procedure (work contents covered in each NAP) in a “Tree” format as shown in Figure 1-4. Before engaging in the intended work, be sure to understand the work contents by tracing the given tree.

Figure 1-4 Example of a Tree

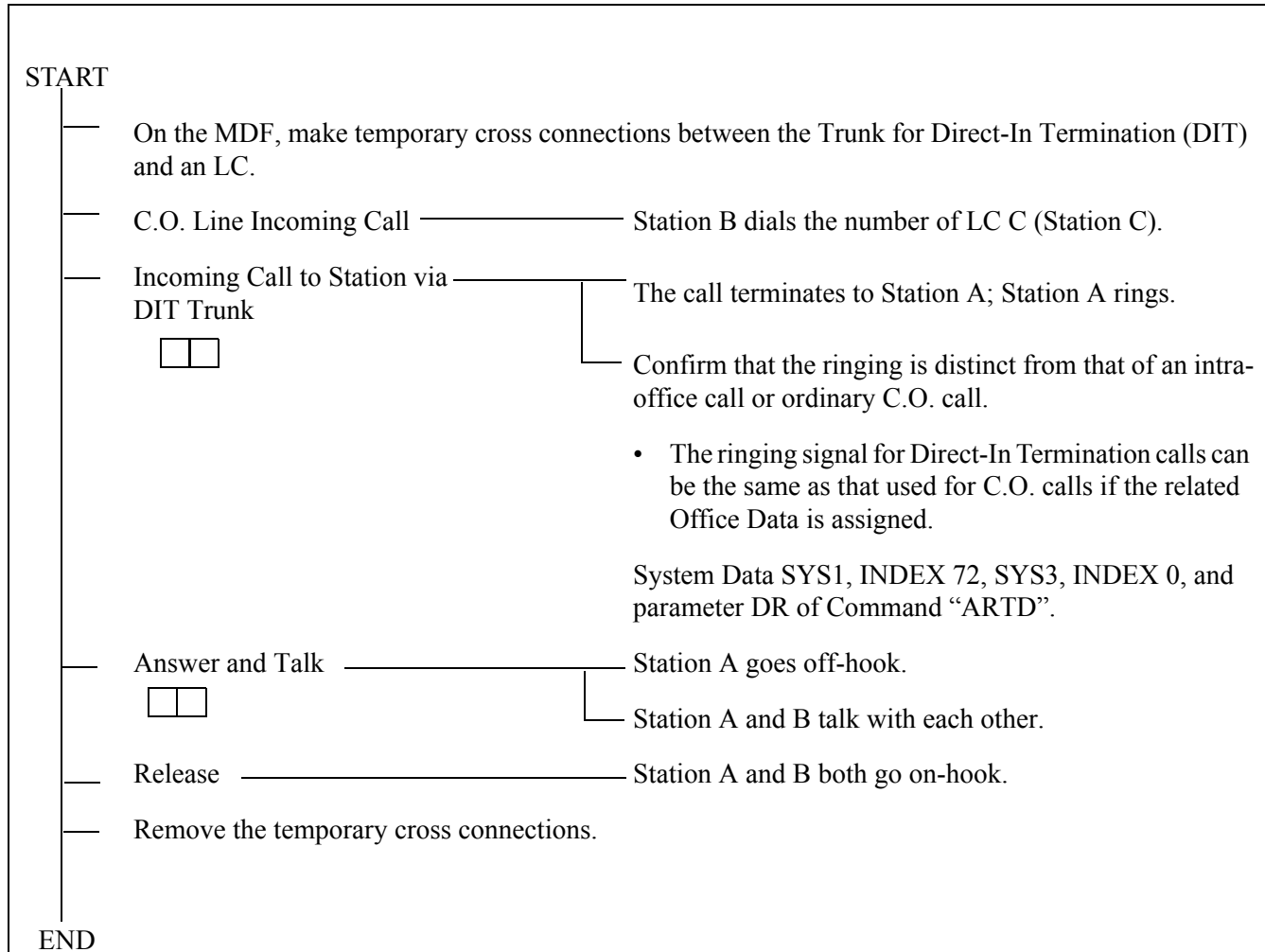


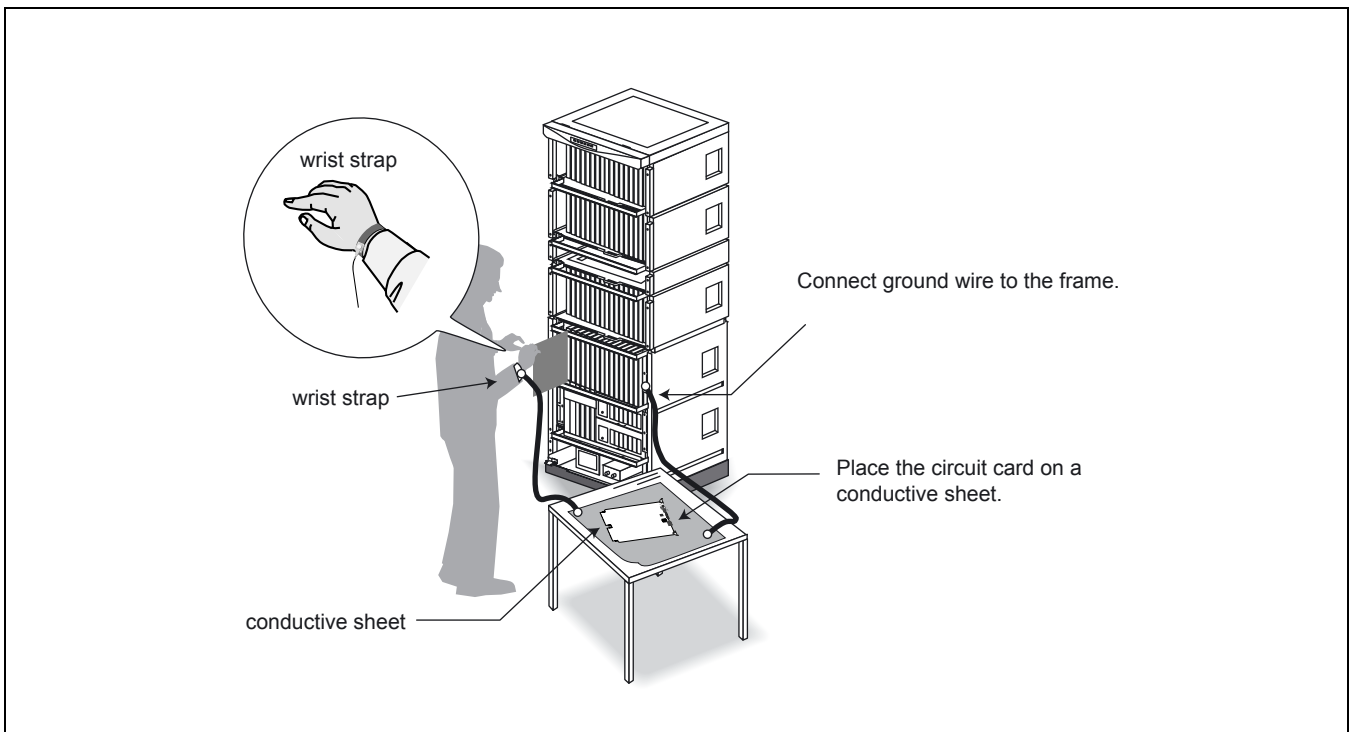
Figure 1-5 Static Caution Indication



This manual provides “Static Caution” indicators (see Figure 1-5) on pages where work involving static-sensitive components is described.

The 3M® Model 8012 Portable Field Service Kit, shown in Figure 1-6, is recommended as an effective countermeasure against static electricity.

Figure 1-6 3M® Model 8012 Portable Field Service Kit



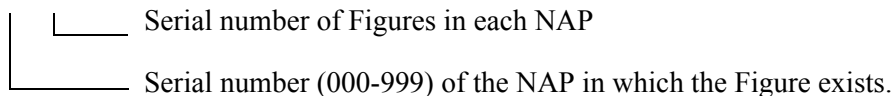
Note: 3M® is a registered trademark of Minnesota Mining and Manufacturing, Inc.

2.4 Figure and Table Numbers

Each Figure and Table within this manual are numbered as shown below.

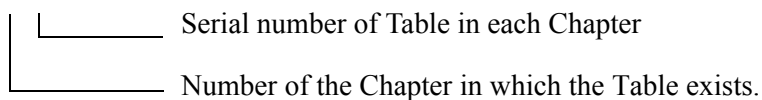
1. Figure and table in NAP

Figure XXX-X



2. Other figure and table

Table X-X



Understanding this numbering rule will help you when looking for the desired Figure or Table.

2.5 Essential/Critical Information

To prevent accidents or equipment damage from occurring while work is being performed, each manual provides **WARNING**, **CAUTION**, and **Note**: indications to draw the technician's attention to specific matters.

1. Meaning

WARNING: Personal injury may result if the warning is not heeded.

CAUTION: Damage to the equipment and/or the system may result if the caution is not heeded.

Note: *Indicates an item which requires special attention.*

2. Locations of Indicators

WARNING and **CAUTION** indications are located at the top of the page. Notes are included as part of the work procedures on the page.

CHAPTER 2 INSTALLATION DESIGN

1. GENERAL

This chapter provides information pertaining to installation design and preparation of the required installation materials. The following topics are discussed:

- Environmental Requirements
- Floor Space
- Floor Load Requirements
- Equipment Room Requirements
- Power Supply Requirements
- MDF Requirements
- Installation Tools
- System Accommodation
- Installation Cables

2. ENVIRONMENTAL REQUIREMENTS

The PBX is sensitive to the same rises in temperature and humidity as a computer. Air conditioning may be required, depending on the installation environment. The following paragraphs address the following environmental conditions.

- Temperature and Humidity
- Heat Generation from Switching Equipment

2.1 Temperature And Humidity

Table 2-1 shows the environmental conditions required in the switching equipment room.

If the switching system is operated in an environment that does not meet these specifications, the reliability of the switching equipment may be impaired. Improper operating conditions can cause circuit boards, etc., to deteriorate. Therefore, to enable the equipment to operate for the extent of its expected lifetime, careful consideration must be given to the location of the equipment, and to proper ventilation and air conditioning.

If no equipment is provided to remove the heat generated by the system, or if the temperature or humidity fluctuates repeatedly, the system's electronic parts can be adversely affected. Such conditions will promote corrosion of metal parts and deterioration of insulation, thereby lowering the overall reliability of the system.

Table 2-1 Temperature and Humidity

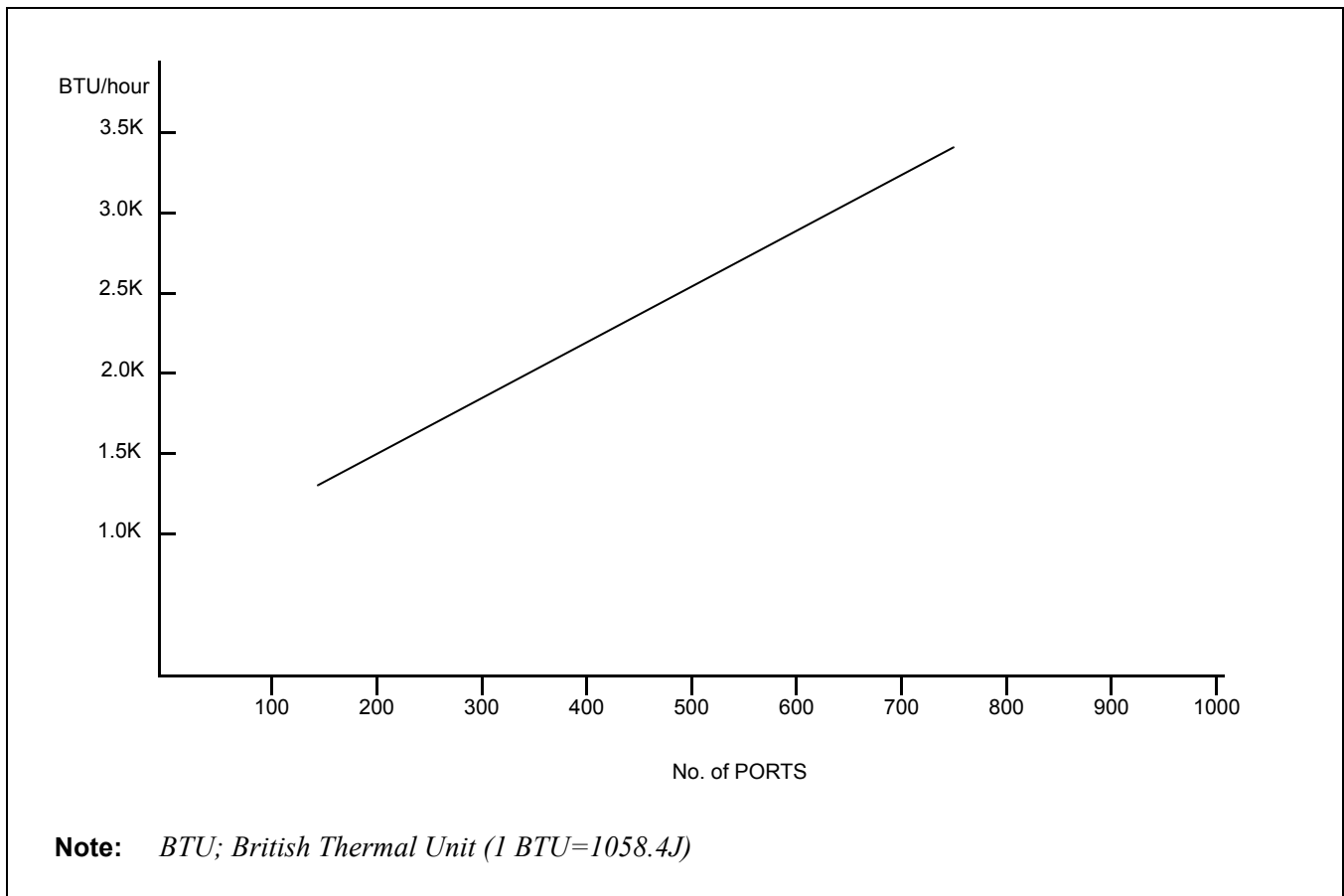
		TEMPERATURE	RELATIVE HUMIDITY	REMARKS
During Operations	Normal Operations	5°C - 30°C (41°F -86°F)	15% - 65%	
	Short Period Note	0°C - 40°C (32°F-104°F)	15% - 90%	
During Storage & In Transit		-18°C - 50°C (0°F -122°F)	8% - 90%	
Temperature Change		Max. 5°C/30 Min. (9°F/30 Min.)	90%	

Note: A short period means a period not exceeding three consecutive days (72 hours) or 15 days (360 hours) in a year.

2.2 Heat Generation From Switching Equipment

Figure 2-1 shows heat generation from the switching equipment with respect to current consumption.

Figure 2-1 Heat Generation from Switching Equipment for the PBX



3. FLOOR SPACE

1. The PBX requires floor space for the following system equipment:
 - Switching Equipment (Module Group)
 - Maintenance Administration Terminal (MAT)
 - MDF
 - Rectifier
 - Batteries
 - Attendant Console
2. The required floor space for the various equipment rooms is as follows.
 - Switching Equipment Room: For installing the Module Group, MAT, MDF and Rectifier
 - Battery Room: For installing Batteries
 - Operator Room: For installing an Attendant Console with desk and chair
3. Equipment Room: Free Access Floor or Computer Floor

4. FLOOR LOAD REQUIREMENTS

Required floor capacities are as follows:

- Switching Equipment Room: More than 3430 Pa (71.6 pounds per square foot)
- Operator Room: More than 2940 Pa (61.4 pounds per square foot)

5. EQUIPMENT ROOM REQUIREMENTS

The following floor conditions should be considered prior to installation:

5.1 Floor Surface

1. Switching Equipment Room
 - The maximum difference in floor level at each point within the room should be less than +5mm (0.2 inch).
 - An elevated-type floor such as Free Access floor or computer room floor should be constructed.
2. Battery Room
 - It is recommended that the floor have a slope (1/1000) and drain at the end of the slope.
 - The floor surface should be made of acid-resistant materials.

5.2 Wall

Switching Equipment Room

- A concrete wall is necessary so that cable racks can be installed (unless a free-access floor is used).
- It is recommended that the walls be painted so that the wall materials do not generate dust, etc.
- The maximum difference in level at the wall surface should be less than +5 mm (0.2 inch).

5.3 Ceiling

Switching Equipment Room

- The required ceiling height is more than 2.3 meters (7.5 feet).

5.4 Lighting Facilities

1. Switching Equipment Room

- Fluorescent lamps are recommended.
- No less than 200 lux at the floor level is necessary.

2. Operator Room

- Fluorescent lamps are recommended.
- No less than 200 lux at the floor level is necessary.

3. Battery Room

- Anti-explosion type lamps must be utilized.
- No less than 150 lux at the floor level is necessary.

6. POWER SUPPLY REQUIREMENTS

6.1 Main Source Power

The PBX requires an operating power of -48 V DC \pm 5V DC. This DC operating power is supplied from the rectifier which receives AC power from the commercial AC power source. For greater system reliability, it is recommended that the PBX be supplied with backup DC operating power for a predetermined duration from the batteries installed as the auxiliary power supply source.

The batteries for the PBX must be connected in parallel with the -48 V DC output of the rectifier. Also, when installing batteries, an EMF panel must be placed in-line (series) with the input -48 V DC supplied to the PBX. This panel is necessary when changing the state of the rectifier from float to equalize and vice versa.

INSTALLATION DESIGN

Note 1: When the rectifier is in the equalize state (charging the batteries), the output DC voltage should be 1.5 to 2 volts higher than the float voltage. Examples of the voltages for floating and equalizing are listed below:

Float: 50.5 V DC

Equalize: 52 V DC (Refer to **Note 2.**)

Note 2: The Equalize voltage is 1.5 to 2 V higher when an EMF panel (Diode Drop) is utilized. When an EMF panel is not provided, the Float and Equalize Voltage must be the same (50.5 V).

Note 3: The main source power is AC input.

Note 4: Noise caused in the -48 V output from the rectifier should be less than 5 mV.

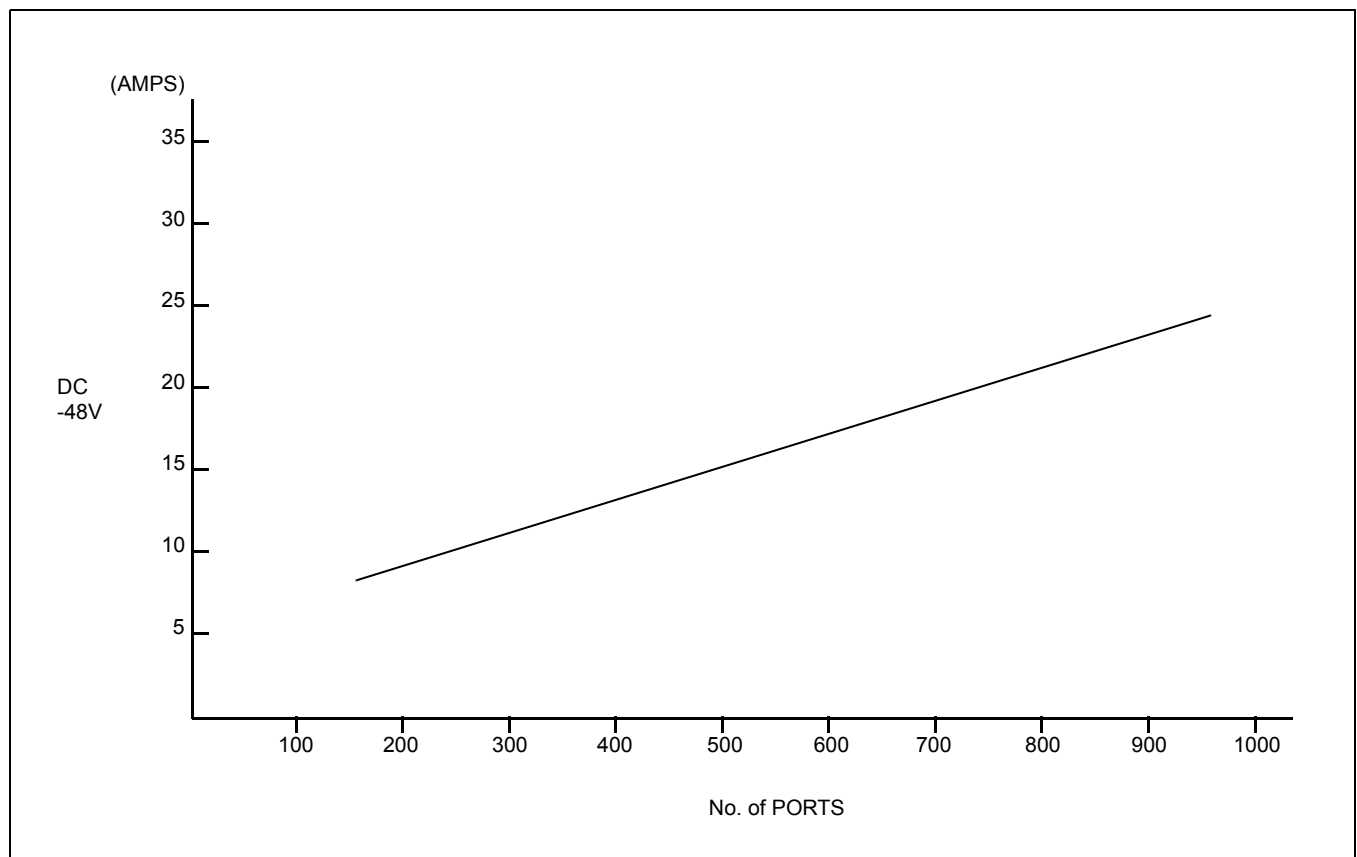
6.2 Current Consumption

The PBX operates on -48 V \pm 5 V DC which is supplied from external power equipment (the rectifier and the battery).

Various DC voltages required within the system are provided by the DC-DC converter in each module. The DC-DC converter, upon receiving the -48 V DC source power, converts it into various DC voltages and supplies them to the associated circuits.

Figure 2-2 shows the current consumption of the PBX.

Figure 2-2 Current Consumption of the PBX



6.3 Power Distribution Box Requirements

The Power Distribution Box (PDB) should be installed with the following considerations:

1. The AC power source service outlet and the fuse for the junction box should be provided independently of any equipment other than the switching equipment.
2. A warning notice should be attached to the PDB circuit breaker so that it will not be turned off accidentally.
3. The Power Distribution Box should be installed at a location that is easy to reach.
4. The Power Distribution Box should be installed at a location where the connecting cables extending to the switching equipment will not be broken accidentally.
5. The PDB cables should be run in such a way that they do not hamper the technician performing the installation.
6. The Personal Computer (MAT) must have a separate AC service outlet.

6.4 Grounding

System grounding must have a specific ground resistance and AC noise level and is to be connected to a predetermined terminal in the PBX.

Standard grounding requirements are shown below.

- Communication grounding: Less than 1 ohm
- Security ground for Module Group: Less than 1 ohm
- Grounding for the line protector of the MDF: Less than 1 ohm

Note: *The AC ripple of various types of grounding should be less than 1/2 V-pp.*

7. MDF REQUIREMENTS

Either a self-standing or wall-mounted type MDF can be used. The MDF must be equipped with the following types of terminal blocks.

- Arrester board for C.O. lines and external lines
- Test spring terminals for localization tests
- Local Block terminals

The number of terminals is to be determined according to the circuit configuration of the PBX and the number of local lines.

8. INSTALLATION TOOLS

Table 2-2 shows the tools used in a typical NEAX2400 IPX installation.

Table 2-2 Typical Installation Tools

FUNCTION	TOOLS		PURPOSE
Marking	<ul style="list-style-type: none"> • Steel Tape Measure • L-Square • Iron Square • Iron Level 	<ul style="list-style-type: none"> • Center Punch • Step Ladder • Scriber 	For Leveling and Marking Plumb Line
Drilling	<ul style="list-style-type: none"> • Electric Drill • Electric Vibration Drill • Hammer • Point Drill • Drill Bit for Concrete 	<ul style="list-style-type: none"> • Concrete Chisel • Drill Bit for Metal • Power Cable Drum • Extension Cable 	Drilling
Module Group and Rack Installation	<ul style="list-style-type: none"> • Plump Bob • Jigsaw • Hacksaw Frame • Hacksaw Blade • Flat File • Half Round File • Set File • Adjustable Angle Wrench 	<ul style="list-style-type: none"> • Frame Cart • Cutter • Set Wrench • Socket Wrench Set • Step Ladder • Phillips Screwdriver • Screwdriver • Plastic Hammer 	Module Group and Rack Installation
Power Cable Installation	<ul style="list-style-type: none"> • Clamping Tool (for End Terminal, Branch Terminal) 	<ul style="list-style-type: none"> • Phillips Screwdriver • Screwdriver • Cutter 	Power Cable Installation See Note .
Miscellaneous	<ul style="list-style-type: none"> • Circuit Tester • Pocket Measure • Scissors • Wire Clipper • Cable Cutter • Nipper • Wire Stripper • Round Nose Pliers • Non-Metallic Stick • Solder-Helper • Solder Sucker • IC Clip • Mini Test Probe 	<ul style="list-style-type: none"> • Telephone Set • Working Lamp • Wrapping Tool • Unwrapping Tool • Soldering Iron • Soldering Iron Stand • Connector Clamping Tool • Logic Checker and Counter • Pen Light • Precision Screwdriver (+)(-) • IC Buzzer • Tweezers • Portable Field Service Kit 	

Note: For selection of Clamping Tool, refer to Tables 2-8 through 2-10.

9. SYSTEM ACCOMMODATION

9.1 System Accommodation

Module Group Configuration and Conditions for Configuration

The module group configuration of the PBX is shown in Figure 2-3, and the conditions for configuration are shown in Table 2-3.

Figure 2-3 System Configuration

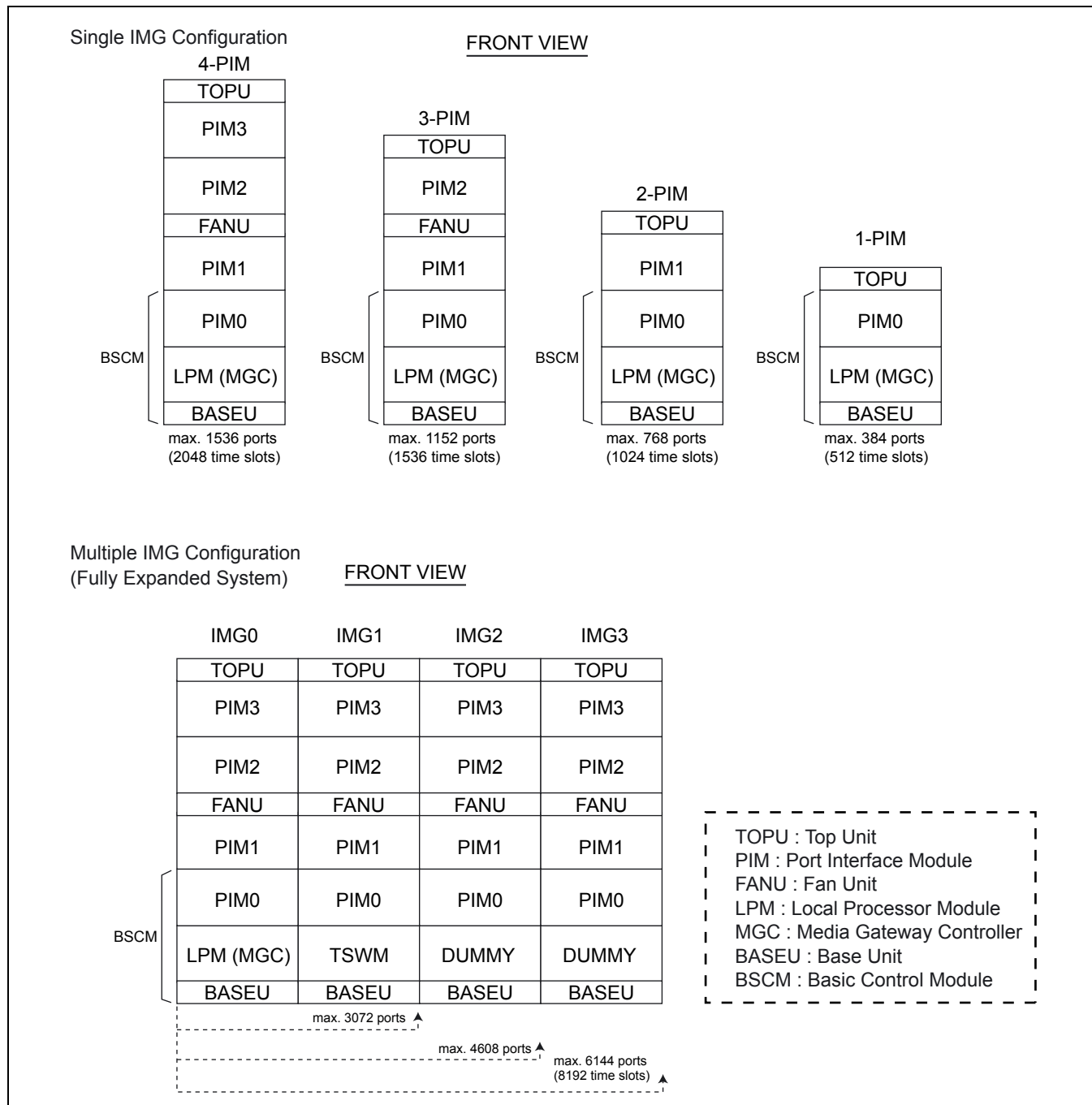


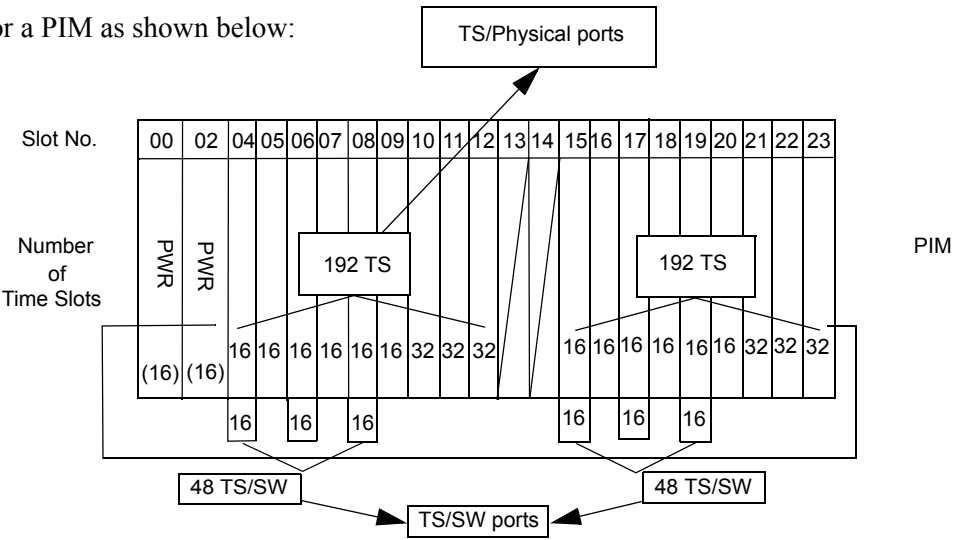
Table 2-3 Conditions for Configuration

UNIT NAME	NUMBER OF MODULES	CONDITIONS	REMARKS
FANU (Fan Unit)	PIM Less than two modules	Mounted in TOPU	
	PIM Three or more modules	Mounted in between the 2nd PIM and the 3rd PIM	
2nd NFILU (Noise Filter)	Less than two modules	Not required	Note
	Three or more modules	Mounted in BASEU	
TOPU (Top Unit)		Equipped with PZ-DK222 (KEY) and PZ-DK223 (DSP) Cards	

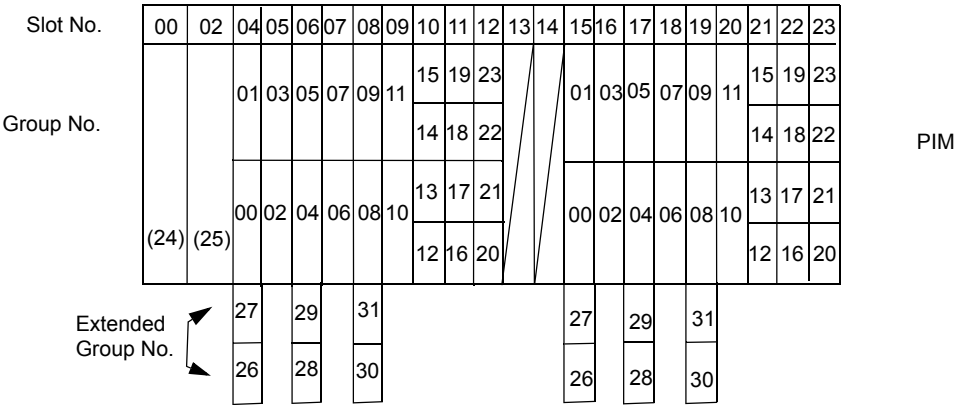
Note: *A NFILU is mounted in BASEU.*

Figure 2-4 Time Slot, Group Number Assignment

Time Slots are allocated for a PIM as shown below:



Group Numbers are allocated for a PIM as follows:



Note 1: Extended Group No. can be used by FCH (PA-FCHA) card.

Note 2: A PIM consists of 384 physical ports (512 total ports).

Figure 2-5 Face Layout (Single IMG Configuration)

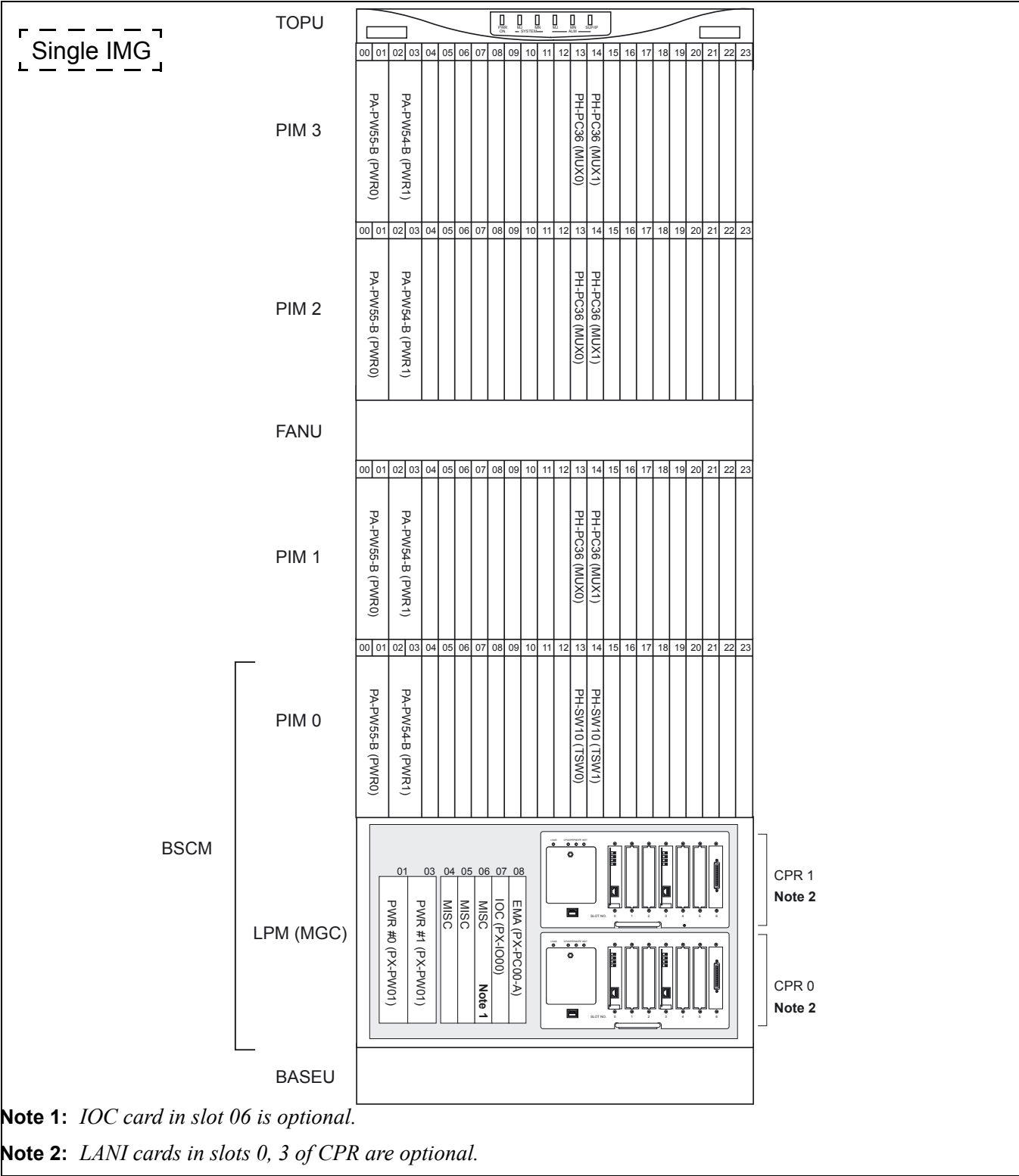


Figure 2-7 Face Layout of Multiple IMG System (IMG1)

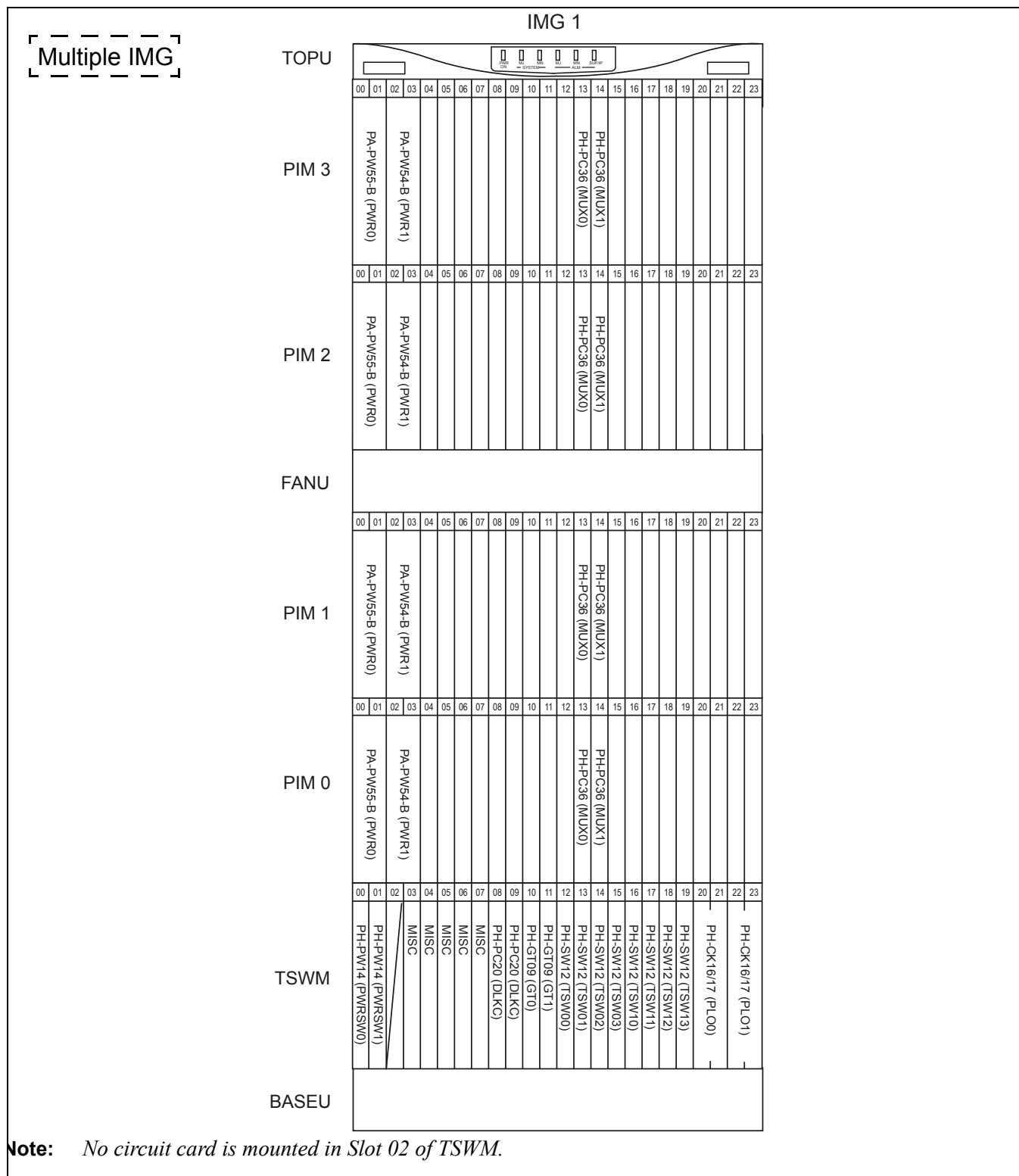
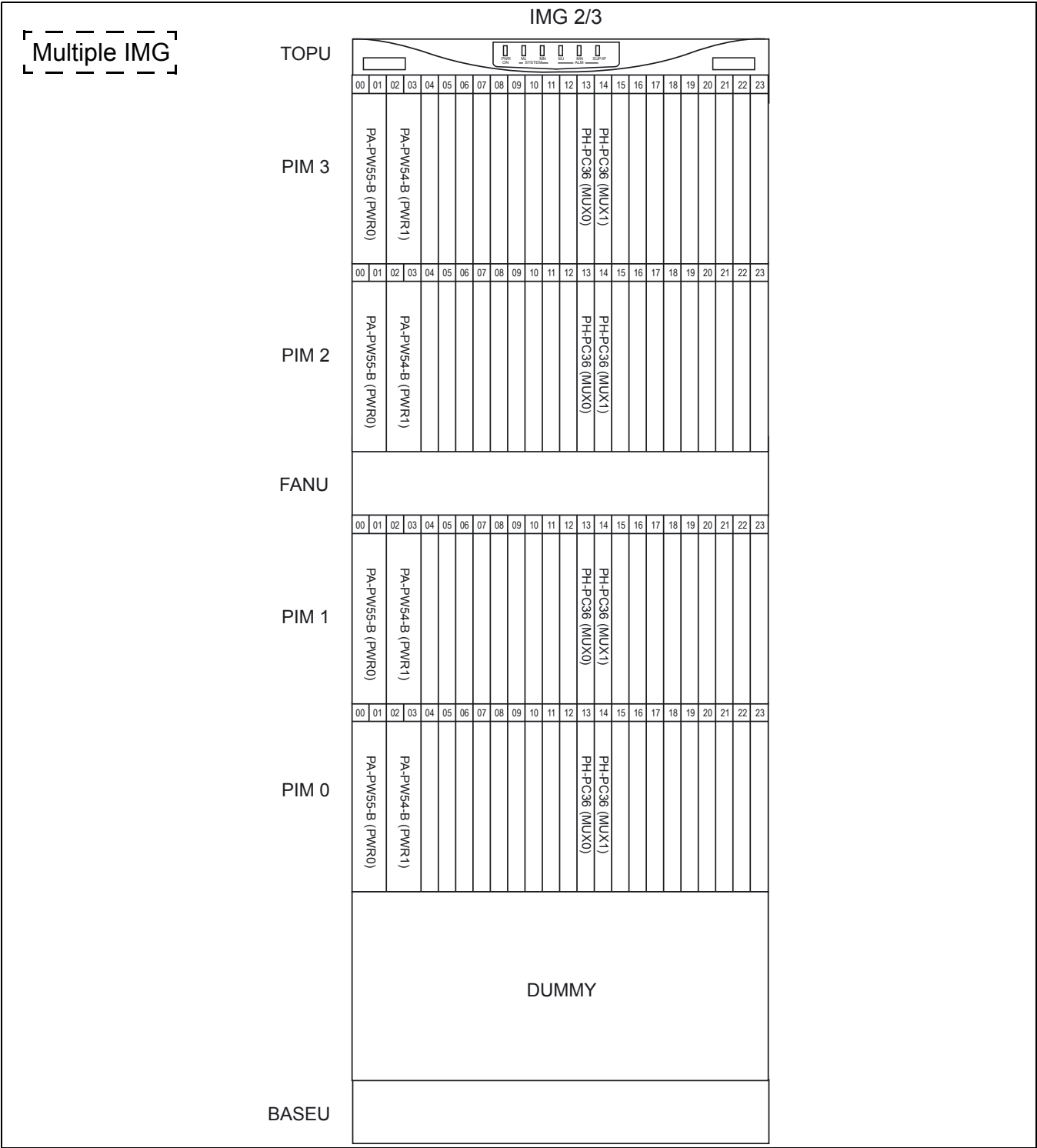


Figure 2-8 Face Layout of Multiple IMG System (IMG2/3)



9.2 Circuit Card Locations

This section explains the main function of controlling circuit cards on a module basis. For more detailed information on each card, please refer to the NEAX2400 IPX Circuit Card Manual.

Figure 2-9 Controlling Circuit Cards in LPM (MGC)

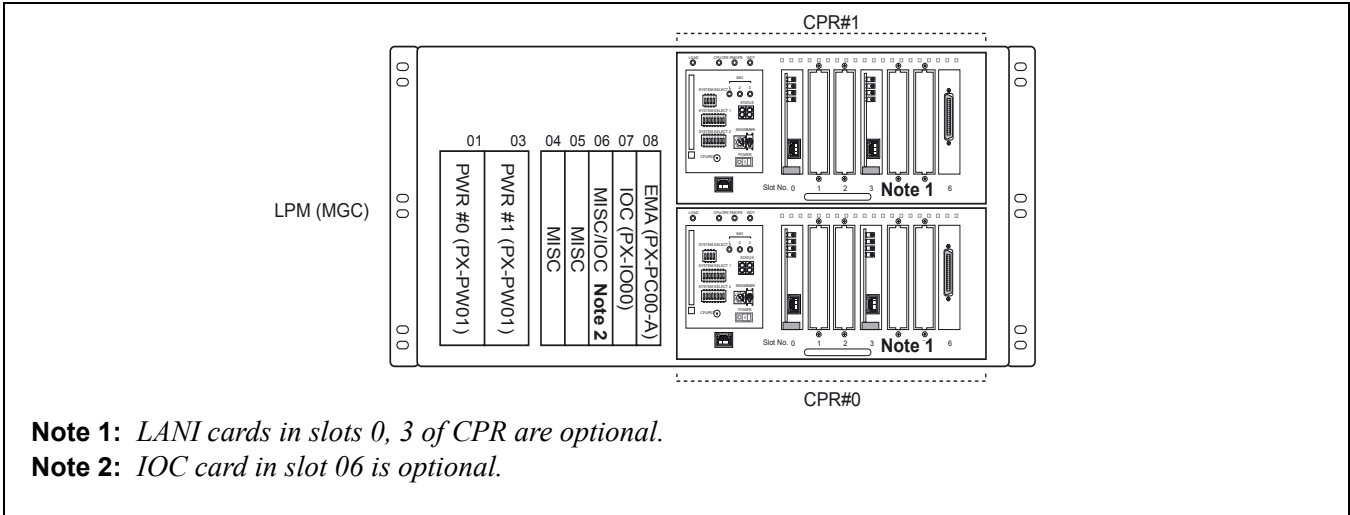


Table 2-4 Controlling Circuit Cards in LPM (MGC)

Slot No.	Circuit Card	Symbol	Functions, Mounting Conditions
06, 07	PX-IO00	IOC (Input/ Output Controller)	This circuit card supplies the system with a serial interface (RS-232C), which connects to external equipment such as the MAT, SMDR, and MCI. One card is equipped with four I/O ports. A maximum port of the system is up to eight ports (two cards).
08	PX-PC00-A	EMA (Emergency Alarm Controller)	This card detects the system event which might occur in the system, and notify the information to the maintenance personnel. In addition, this card has the following functions: <ul style="list-style-type: none">• Music-On-Hold sending function (Single IMG configuration only)• Active/stand-by changeover function
CPR (Central Processor Rack)			CPR consists of the following components. <ul style="list-style-type: none">• CPU Board: Includes the Main Processor Unit (MPU), flash ROM, and 256 MB - Random Access Memory (RAM). (256 MB-RAM is used for a system using <i>FUSION</i> features.) In addition, the board is equipped with GT (Note 3) card, and LANI (PZ-PC19) card.• DSP: Equipped with switches and 7-seg LEDs on the panel.• Flash card• PWR: Supplies the operating power to the LPM.

Note 3: PZ-GT25 is for Single IMG, PZ-GT26 is for Multiple IMG systems respectively.

Figure 2-10 Controlling Circuit Cards in PIM 0 (Single IMG Configuration Only)

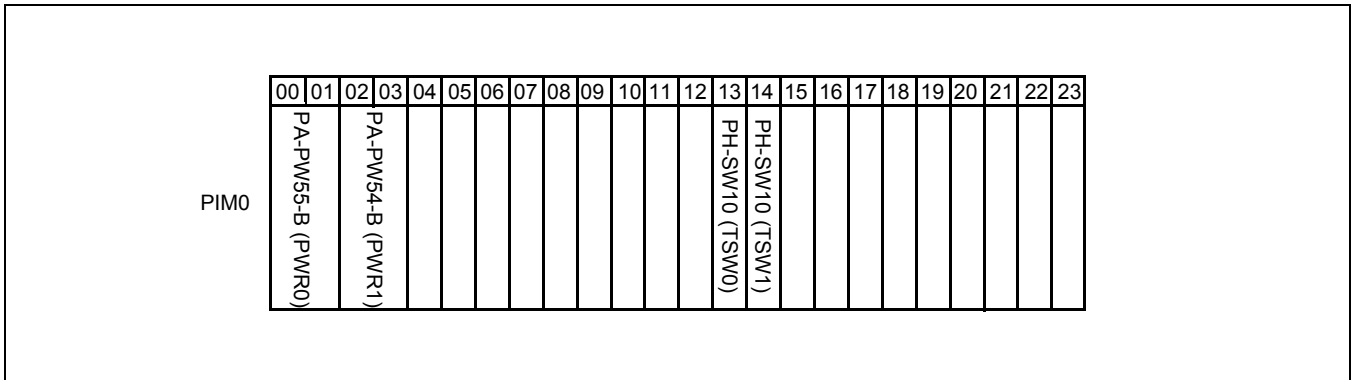


Table 2-5 Controlling Circuit Cards in PIM 0 (Single IMG Configuration Only)

Slot No.	Circuit Card	Symbol	Functions, Mounting Conditions
01	PA-PW55-B	PWR	This circuit card supplies operating power to circuit cards accommodated in the PIM.
03	PA-PW54-B	DPWR	This circuit card supplies operating power to circuit cards accommodated in the PIM.
13, 14	PH-SW 10	TSW	This circuit card combines the Time Division Switch (TSW) INT, PLO, MUX, and CFT. The TSW capacity is 2048 × 2048 time slots, and it allows non-block switching for the maximum configuration. This card is mounted within the PIM0 only.

Figure 2-11 Controlling Circuit Cards in PIM

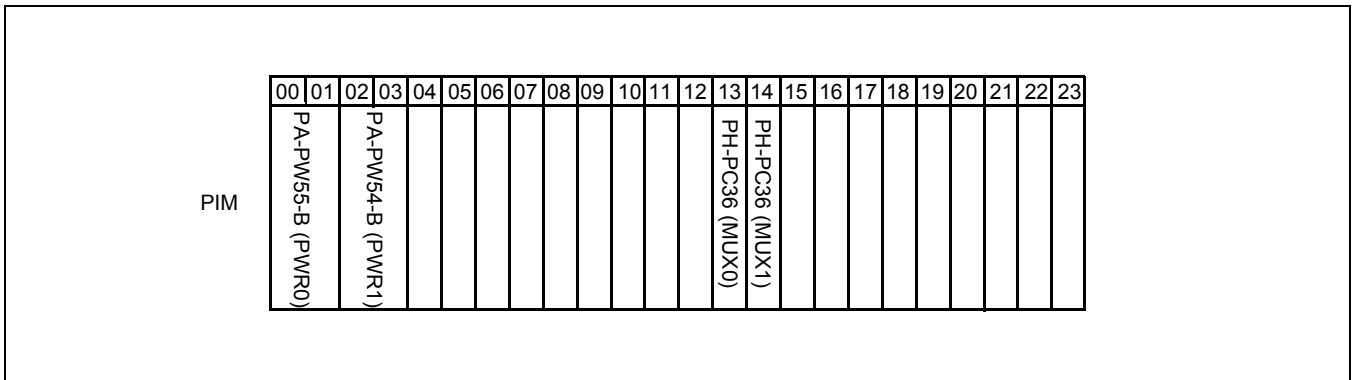


Table 2-6 Controlling Circuit Cards in PIM

Slot No.	Circuit Card	Symbol	Functions, Mounting Conditions
01	PA-PW55-B	PWR	This circuit card supplies operating power to circuit cards accommodated in the PIM.
03	PA-PW54-B	DPWR	This circuit card supplies operating power to circuit cards accommodated in the PIM.
13, 14	PH-PC36	MUX	This circuit card is an interface card for mounting line circuits and/or trunks. Between the CPR and the Port Microprocessor (PM) of the line/trunk circuit, this card provides an interface for multiplexing/de-multiplexing voice PCM (Pulse Code Modulation) information and digital data information.

Figure 2-12 Controlling Circuit Cards in TSWM (Multiple IMG Configuration)

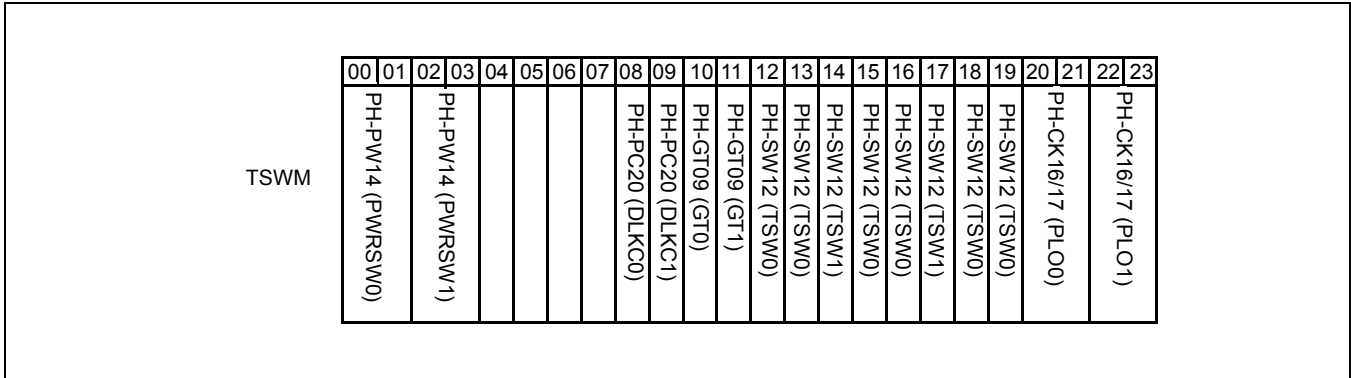


Table 2-7 Controlling Circuit Cards in TSWM (Multiple IMG Configuration)

Slot No.	Circuit Card	Symbol	Functions, Mounting Conditions
00, 01	PH-PW14	PWRSW	This circuit card supplies operating power to circuit cards accommodated in the TSWM.
08, 09	PH-PC20	DLKC	This circuit card provides the Attendant Consoles (ATTs) with information such as ATT call termination/answer/release (abandoned call) via the Data Link which is established in the TSW card. In addition, station idle/busy information is sent to the ATTs via the same Data Link.
10, 11	PH-GT09	GT	This circuit card permits the CPU to directly control the TSW, PLO, DLKC, and MISC circuit cards via TSW I/O Bus and MISC I/O Bus.
12-19	PH-SW12	TSW	This circuit card supplies the Time Division Switch (TSW) and INT function for the system. The TSW capacity is 8192 × 2048 TS (time slots) for an IMG, and 4 cards achieves 8192 × 8192 TS switching for Multiple IMG configuration.
21, 23	PH-CK16	PLO	This circuit card, used with a digital interface circuit card, sets up network synchronization. With this circuit card, the IPX Multiple IMG system can be a clock subordinate office of the digital network.
21, 23	PH-CK17	PLO	This circuit card, used with a digital interface circuit card, sets up network synchronization. Since this circuit card provides high precision base clock oscillator, the IPX Multiple IMG system can be a clock source office of the digital network.

9.3 Preparation of Trunking Diagram

Prepare the trunking diagram for the customer's specification. Since there are different types of switching offices (such as a single office, network offices, etc.) are involved, the trunking diagram must be prepared for each of the customer's specification.

9.4 Preparation of Module Group Face Layout And Port Accommodation Diagram

To mount circuit cards in the PBX, the company, which is supposed to install the IPX, should prepare the face layout of module group and port accommodation diagram.

9.5 Preparation of Circuit Card Switch Setting Sheets

Prepare the switch setting sheets for the circuit cards to be mounted in the PBX. Some of the circuit cards might not be operated properly with the initial settings due to some reason such as not meet the customer's specification. Refer to the Circuit Card Manual describing the switch settings on Switch Setting Sheets and make sure the switch setting entries.

Keep in mind that the card needs settings suitable for the surroundings.

10. INSTALLATION CABLES

The following installation cables are required for the PBX:

- DC Power Cable: For connections between the Rectifier and battery and between the Rectifier and the PBX
- AC Power Cable: For supplying AC source power to the Rectifier
- Ground Cable: Communication, Security and Line Protector grounding
- 25P Shielded Cable with CHAMP
- (Amphenol) connector at one end: For connections between the MDF and the PBX
- 25P Shielded Cable with CHAMP
- (Amphenol) connector at both ends: For connections between the MAT and the PBX, and between peripheral equipment and the PBX
- House Cable: For connections between terminals (telephone sets, etc.) and the MDF
- Cables for C.O. lines and Tie Lines
- Others: For connections between Alarm Indicators and the MDF

10.1 AC Input, DC Power, And Ground Cables

1. For AC input cable, VCT (Polyvinyl Chloride Cabtyre Cable) is to be used. However, if shielding is necessary, as is the case when the AC input cable is to be installed in parallel with a low-voltage power cable, etc., be sure to use VCT-S (Shielded Polyvinyl Chloride Cabtyre Cable).
2. For the power receiving terminals of the PBX, -48 V and G terminals are provided in dual (A side and B side). For two PIMs or less, the DC main power cable connects only to A side terminals. For three PIMs or more, the cable is branched out. A side supplies power to LPM, PIM0 and PIM1, and B side to PIM2 and PIM3.
3. For the main ground cable, an IV or CV cable of more than 14 mm² (6 AWG) is to be used. (See Figures 2-13 through 2-15).

As the security ground cable for the MAT and externally installed equipment, IV cable of 2 mm² (14 AWG) is to be used. For the ground cable for the line protector of the MDF, an IV cable of 14 mm² (6 AWG) is to be used.

Figure 2-13 DC Main Power Cable and Main Ground Cable (1- or 2-PIM System) (Single IMG Configuration)

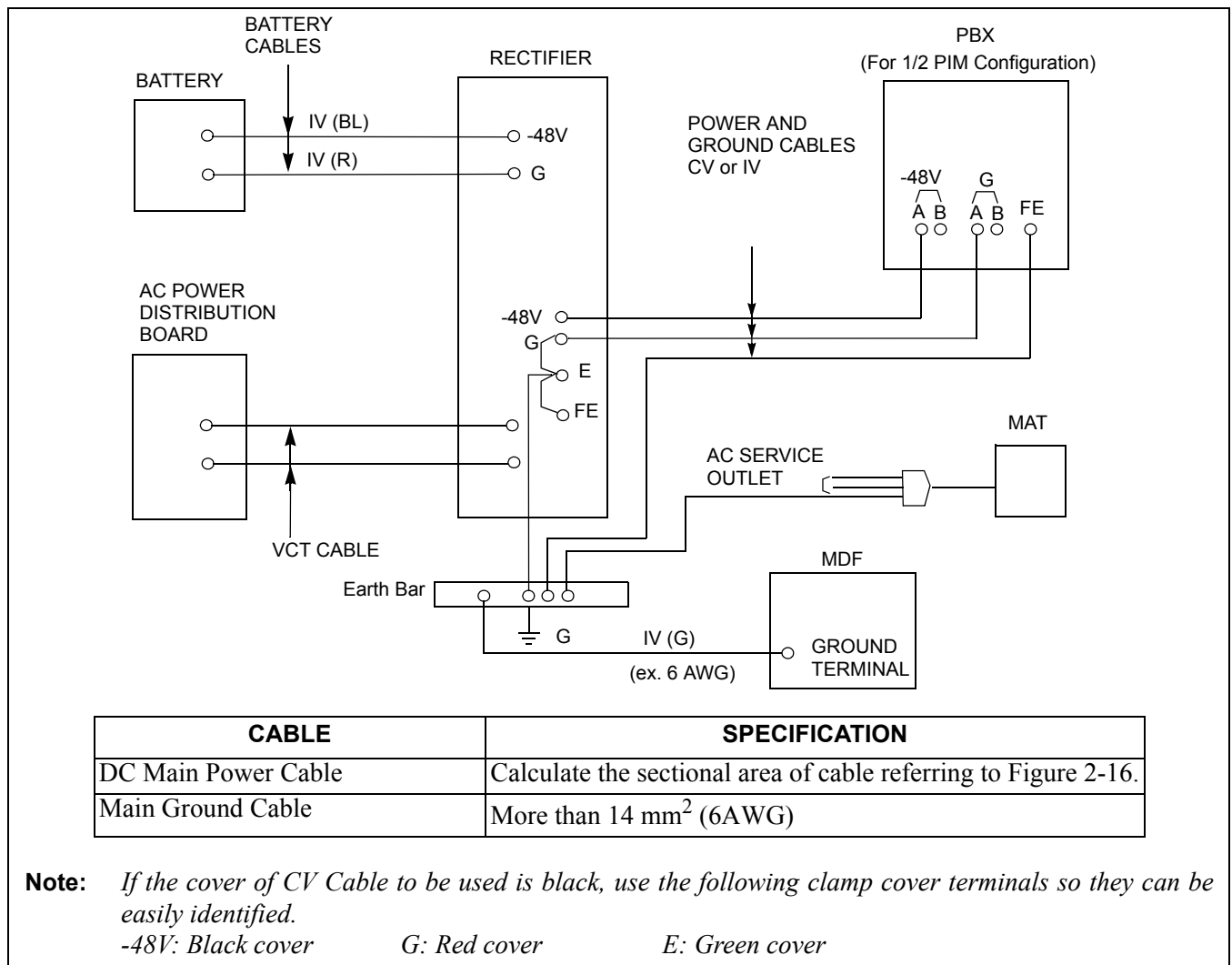


Figure 2-14 DC Main Power Cable and Main Ground Cable (3- or 4-PIM System) (Single IMG Configuration)

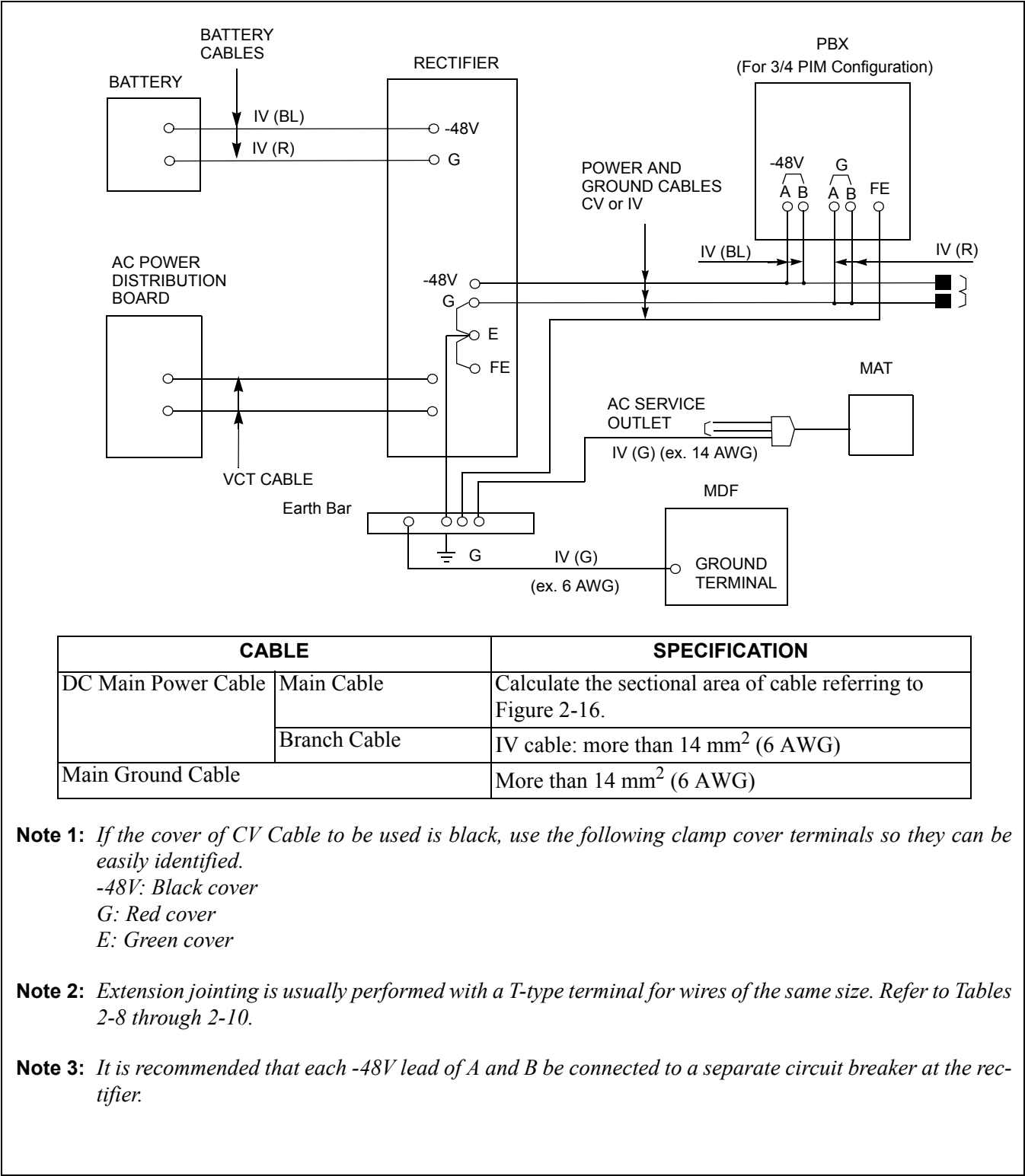


Figure 2-15 DC Main Power Cable and Main Ground Cable (Multiple IMG Configuration)

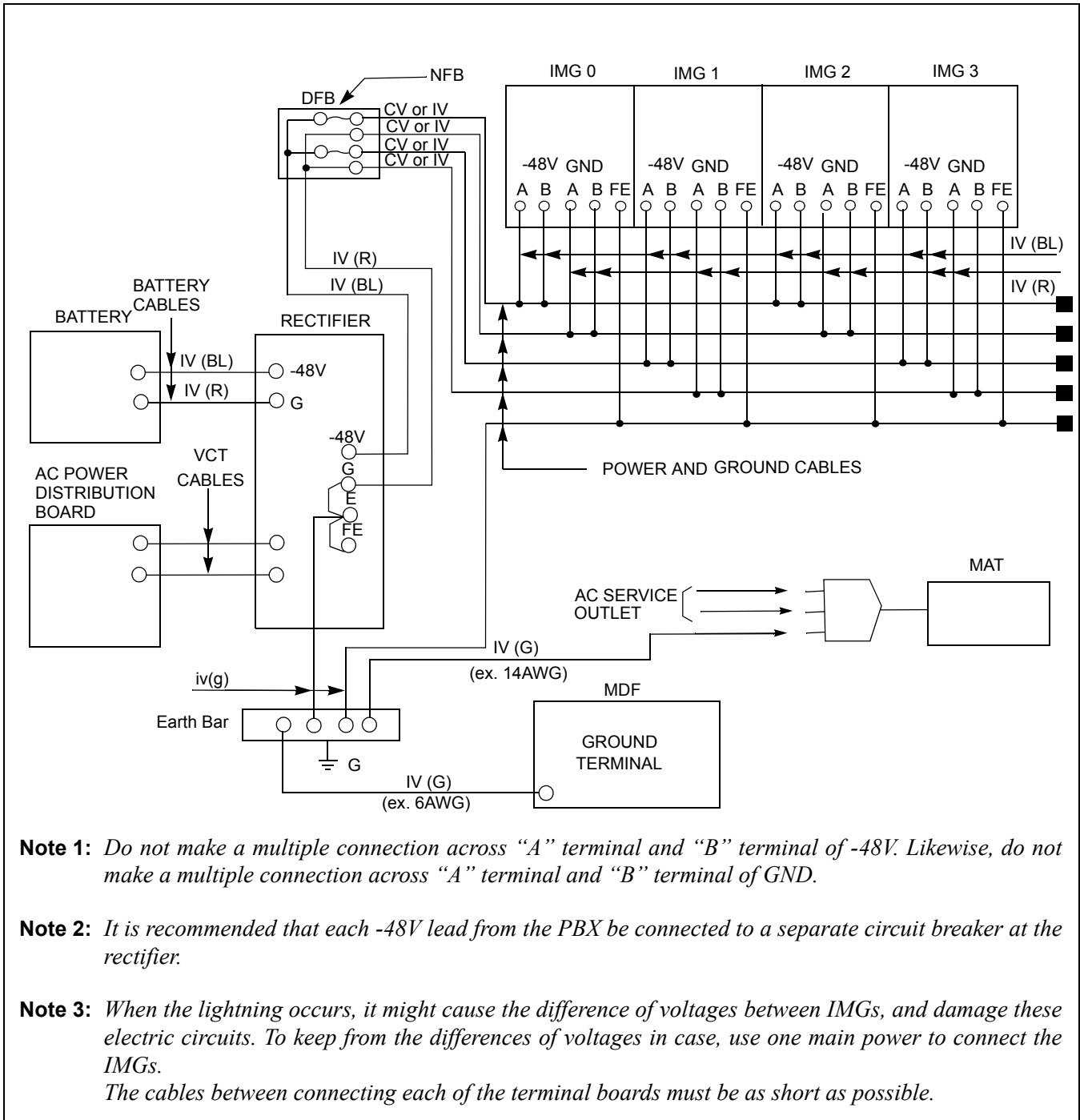


Table 2-8 Clamp Terminal Shape and Purpose

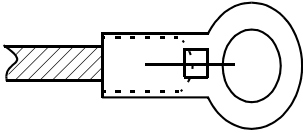
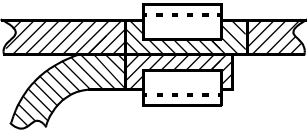
TYPE	SHAPE	PURPOSE	REMARKS
A		End terminal	
T		Branch or extend power cable	

Table 2-9 Selection of T-type Clamp Terminal

BRANCH MAIN	14 AWG/ 2 mm ²	12 AWG/ 3.5 mm ²	10 AWG/ 5.5 mm ²	8 AWG/ 8 mm ²	6 AWG/ 14 mm ²	CURRENT	REMARKS
10 AWG	*T-20	*T-20	*T-20	-	-	51A	
8 AWG	*T-20	*T-20	*T-20	T-20	-	63 A	
6 AWG	T-20	T-20	T-20	T-26	T-44	90 A	
3 AWG	T-26	T-26	T-44	T-44	T-44	115A	
2 AWG	*T-44	T-44	T-44	T-44	T-44	139A	
1 AWG	*T-44	*T-44	T-44	T-66	T-60	162A	
1ø	*T-60	T-60	T-60	T-60	T-76	190A	
2ø	*T-76	T-76	T-76	T-76	T-76	217A	
3ø	*T-98	*T-98	*T-98	T-98	T-98	257A	
4ø	*T-122	*T-122	*T-122	*T-122	T-122	298A	
250 mcm	*T-154	*T-154	*T-154	T-154	T-154	344A	
300 mcm	*T-154	*T-190	*T-190	*T-190	T-190	395A	
400 mcm	*T-240	*T-240	*T-240	*T-240	T-240	439A	

Note: Selection of T-Type Clamp Terminal

The asterisk (*) in Table 2-9 indicates that an auxiliary conductor is necessary when using a main power wire and a branch power wire of a thinner diameter, and the clamp terminal of the type indicated in the selected columns.

Table 2-10 Clamping Tool

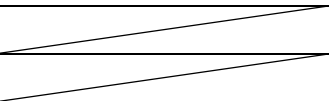

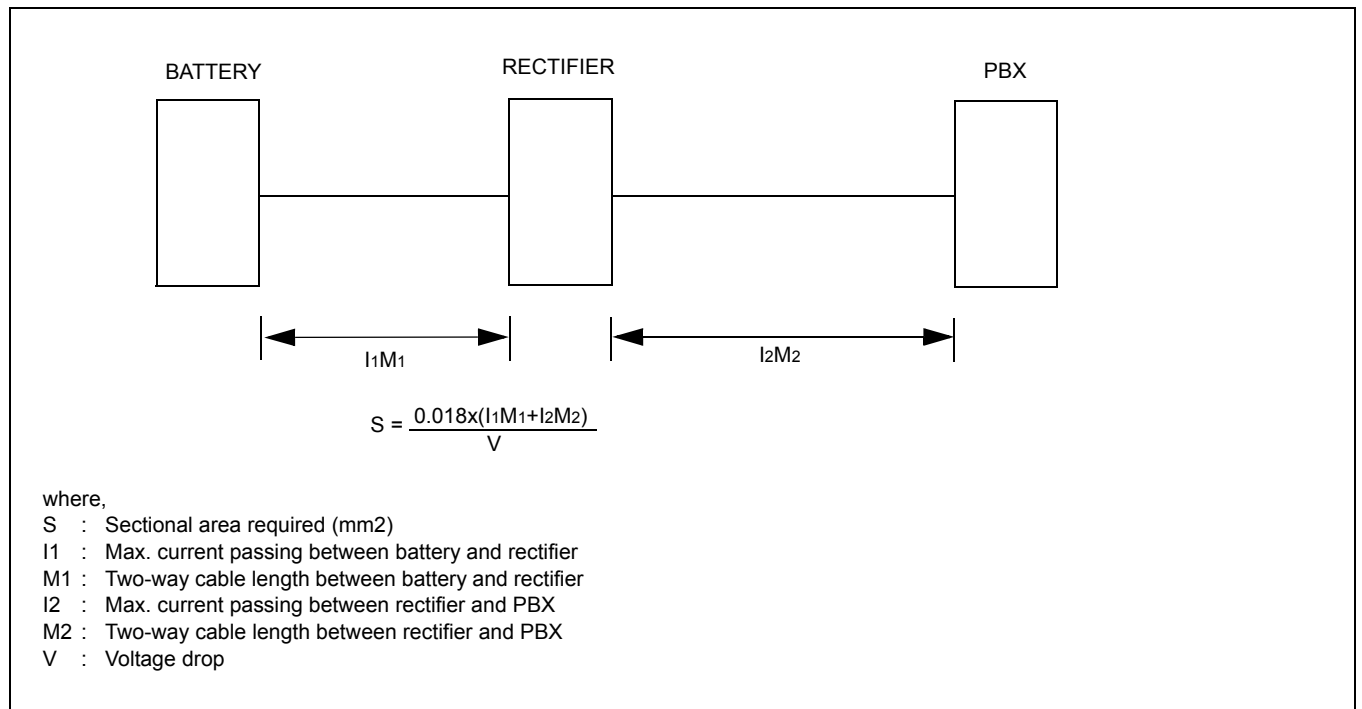
*TOOL TYPE	APPLICABLE CROSS SECTION OF WIRE (mm ²)	ACCESSORIES	REMARKS
No. 1	0.25 ~ 6.64		Manual type for A and C type terminal
No. 2	6.64 ~ 10.25		
No. 9	6.64 ~ 42.42	Convex die 2 pieces	Handling type hydraulic tool for A, C, D, type terminal
No. 10	6.64 ~ 117.02	Convex die 4 Convex die 8	
No. 11	6.64 ~ 117.02	Convex die 4 Convex die 8	Pedal type hydraulic tool for all terminal types No. 11 and No. 12 tools are used with No. 13.
No. 12	117.02 ~ 325	Convex die 4 Convex die 4	
No. 13		Rubber hose	
No. 15	14 ~ 122	Convex die 7 pairs	Handling type hydraulic tool for T type terminal
No. 16	123 ~ 365	Convex die 5 pairs	Use with No. 13 for T type terminal

Figure 2-16 Calculation Method for Sectional Area



10.2 Cables Between The PBX And MDF

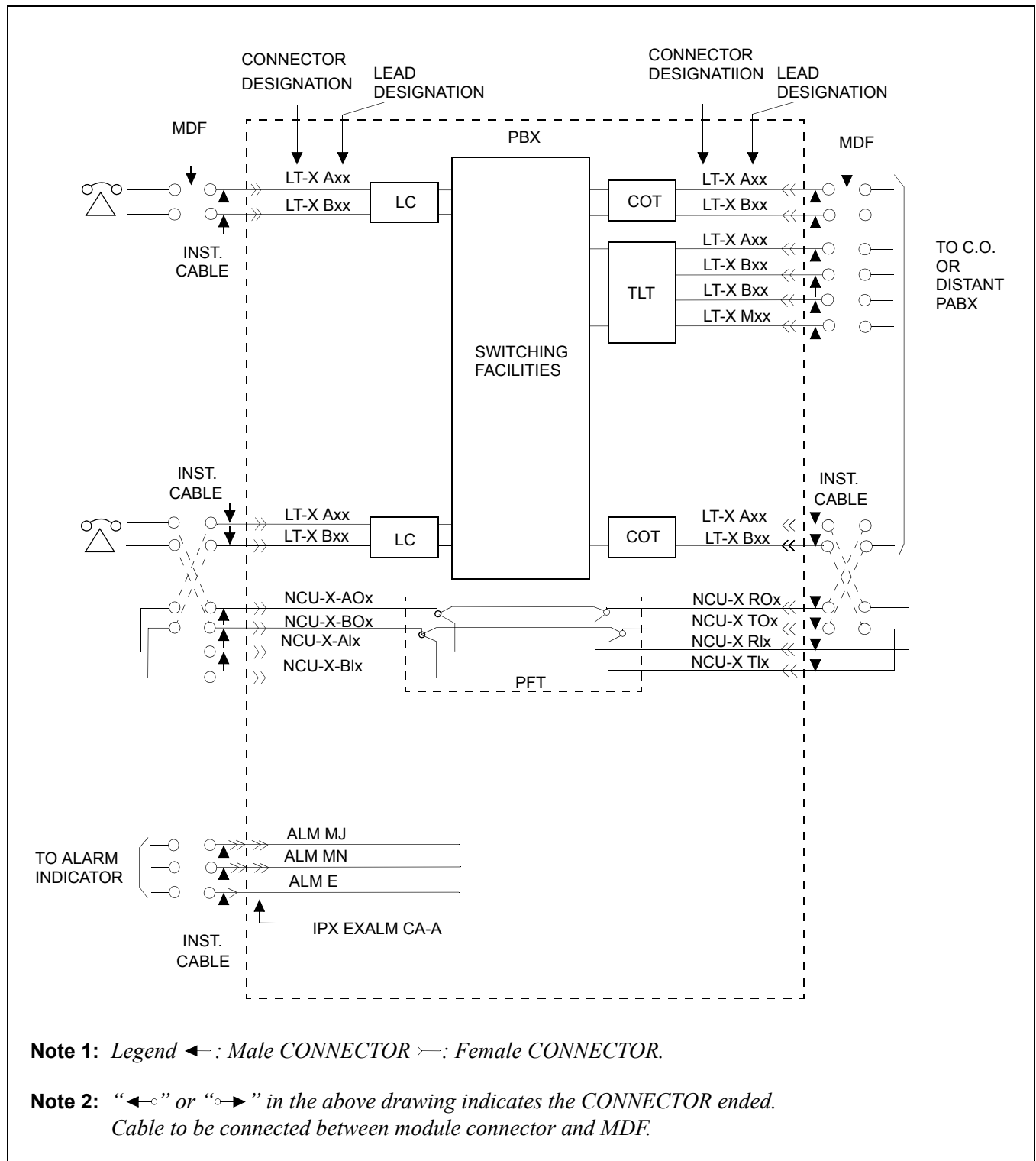
Regarding lines, trunks, and NCU (PFT), 25P shielded the PBX and the MDF are connected by using cables with a CHAMP (Amphenol) connector at one end.

Table 2-11 shows the procedure for calculating the required number of cables. Figure 2-17 also shows an outline of cable connections from the Module Group to the outside.

Table 2-11 Calculation of Number of Cables

CABLE NAME	CALCULATION	SUB TOTAL
LT Cable	Number of PIMs \times 12	
NCU Cable	Number of PFT Circuit Cards \times 2	
IPX EXALM CA-A	One cable	
ODT Cable	Number of TLT circuit cards \times 1	
	TOTAL	

Figure 2-17 Outline of Cables from Module Group to the Outside



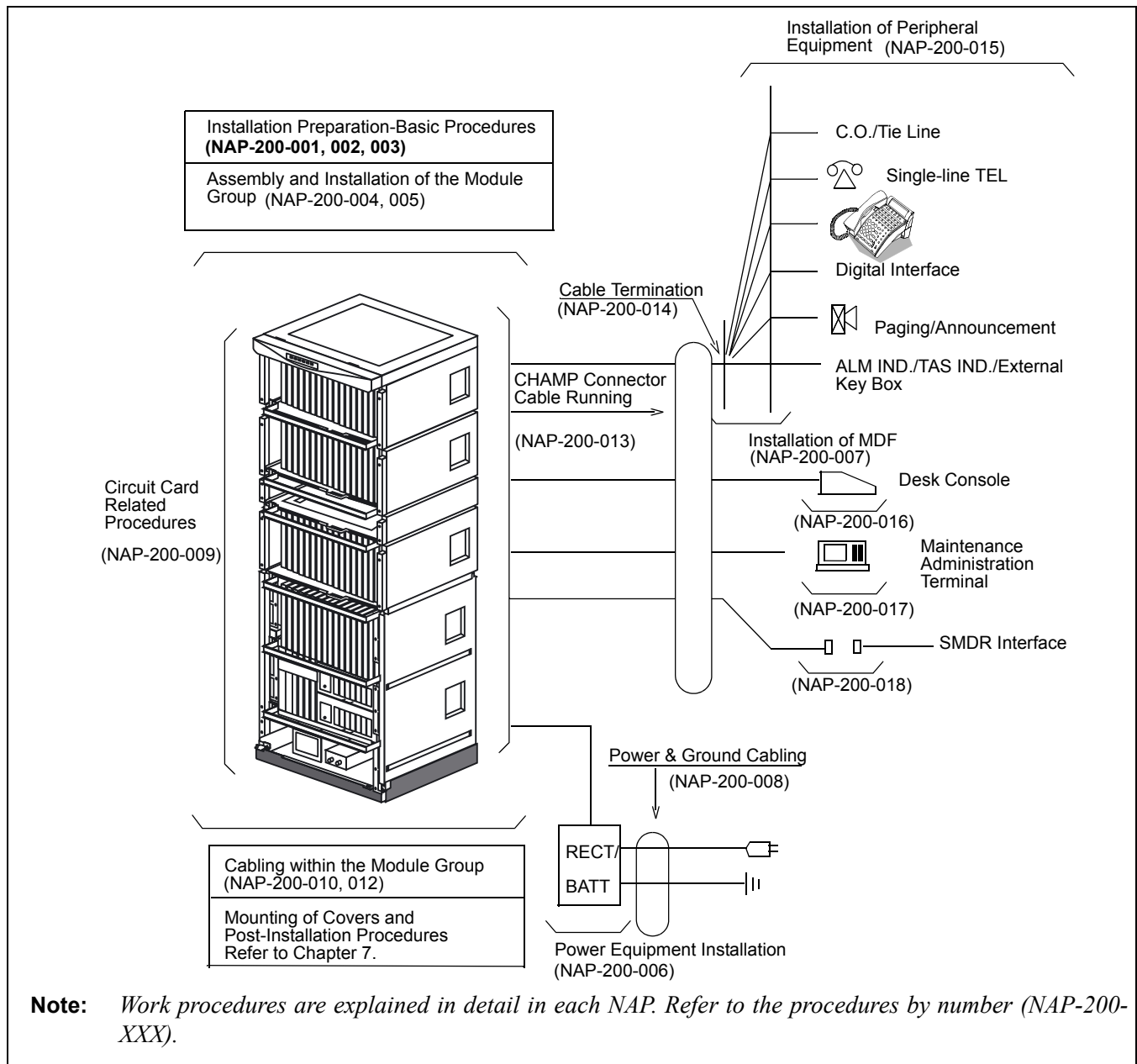
CHAPTER 3 INSTALLATION PROCEDURE

1. GENERAL

This chapter explains the procedures for installing the PBX, the Maintenance Administration Terminal (MAT), Desk Consoles, and various types of terminal equipment (single line telephones, D^{term}s, Data Modules, etc.). The procedures in this chapter are shown in Figure 3-1.

Before installing it, thoroughly read Section 2., “PRECAUTIONS BEFORE BEGINNING INSTALLATION” and observe the precautions while performing the installation.

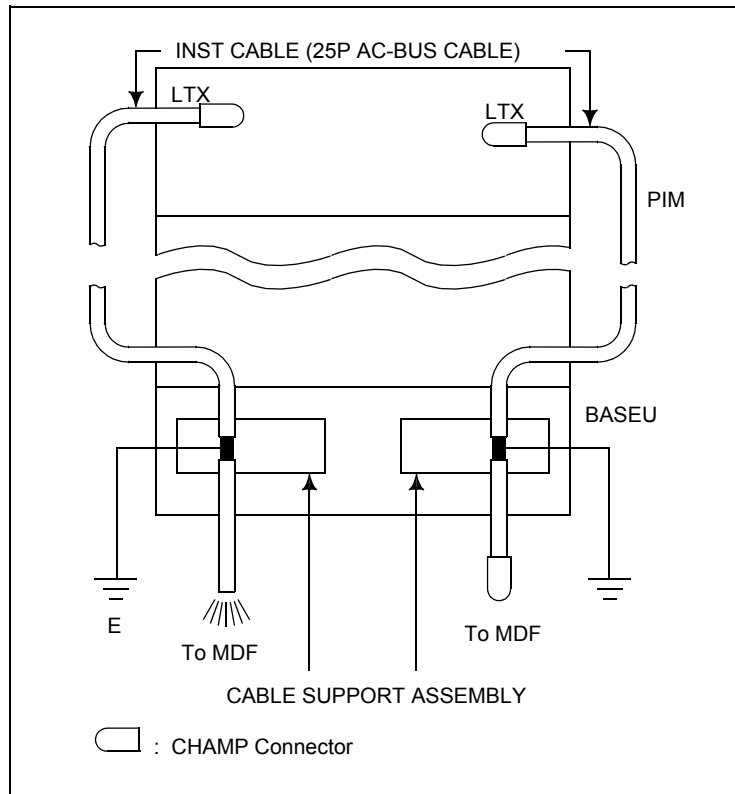
Figure 3-1 Scope of Installation Procedure



2. PRECAUTIONS BEFORE BEGINNING INSTALLATION

2.1 Outline

1. Before beginning the installation, check to see if the installation requirements (grounding, the quantity and kind of installation cables, etc.) are all present by referring to Chapter 2 of this manual.
2. For a standard installation, the system is installed on a free-access floor, so no explanations are provided pertaining to cable racks and cable ducts.
3. The PBX is connected to the MDF by use of 25-pair shielded cables as the installation cables. Each of these installation cables is grounded at the cable support assembly of the BASEU as shown below. By this arrangement, noise radiation from each cable is prevented. For the installation method, refer to NAP-200-013: "Cable Running from the Module Group to MDF, MAT, and SMDR."



4. As the cable to be run between the PBX and the Rectifier, use a CV cable (600 V Crosslinked Polyethylene Insulated PVC Sheathed Cable) as the circumstance permits. Compared with an ordinary IV cable (600 V PVC Insulated Cable), the CV cable is stronger because of its thicker cover. Thus, it is suitable to run along the free-access floor where it is difficult to protect the cable from damage.

Also, for easy identification of different cables, use cables of different colors as follows:

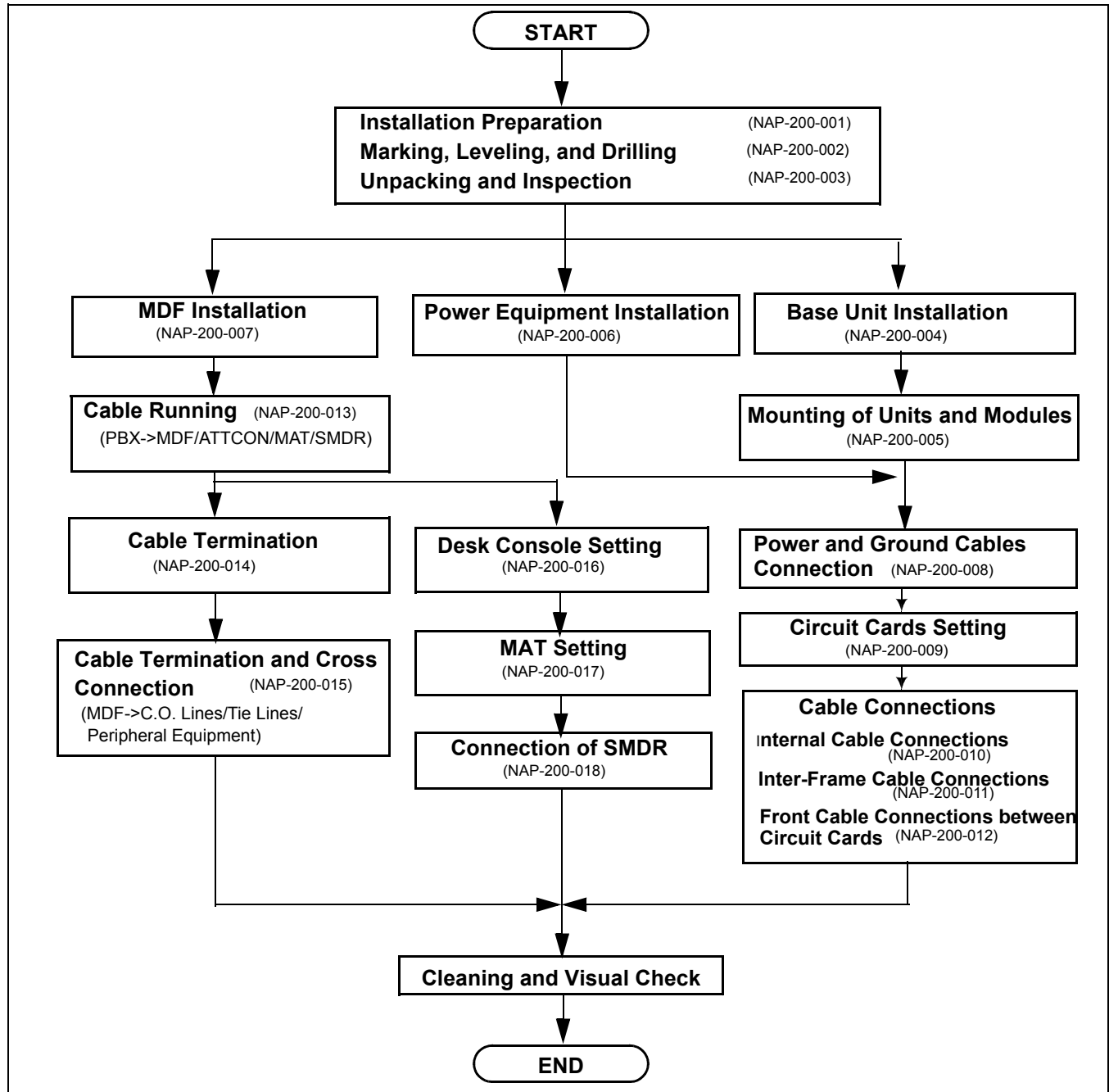
- -48 V: Blue (White)
- GND: Red (Black)
- E: Green

Note: *The color shown in a bracket is applicable to the UL Specification.*

3. INSTALLATION PROCEDURE

The flowchart in Figure 3-2 shows the installation procedure. Each step is assigned a NAP number. NAPs NAP-200-001 through NAP-200-018 follow Figure 3-2. These NAPs should be followed sequentially when performing the installation. Individual steps, such as installation of SMDR, can be performed independently by referring to the corresponding NAP.

Figure 3-2 Installation Procedure



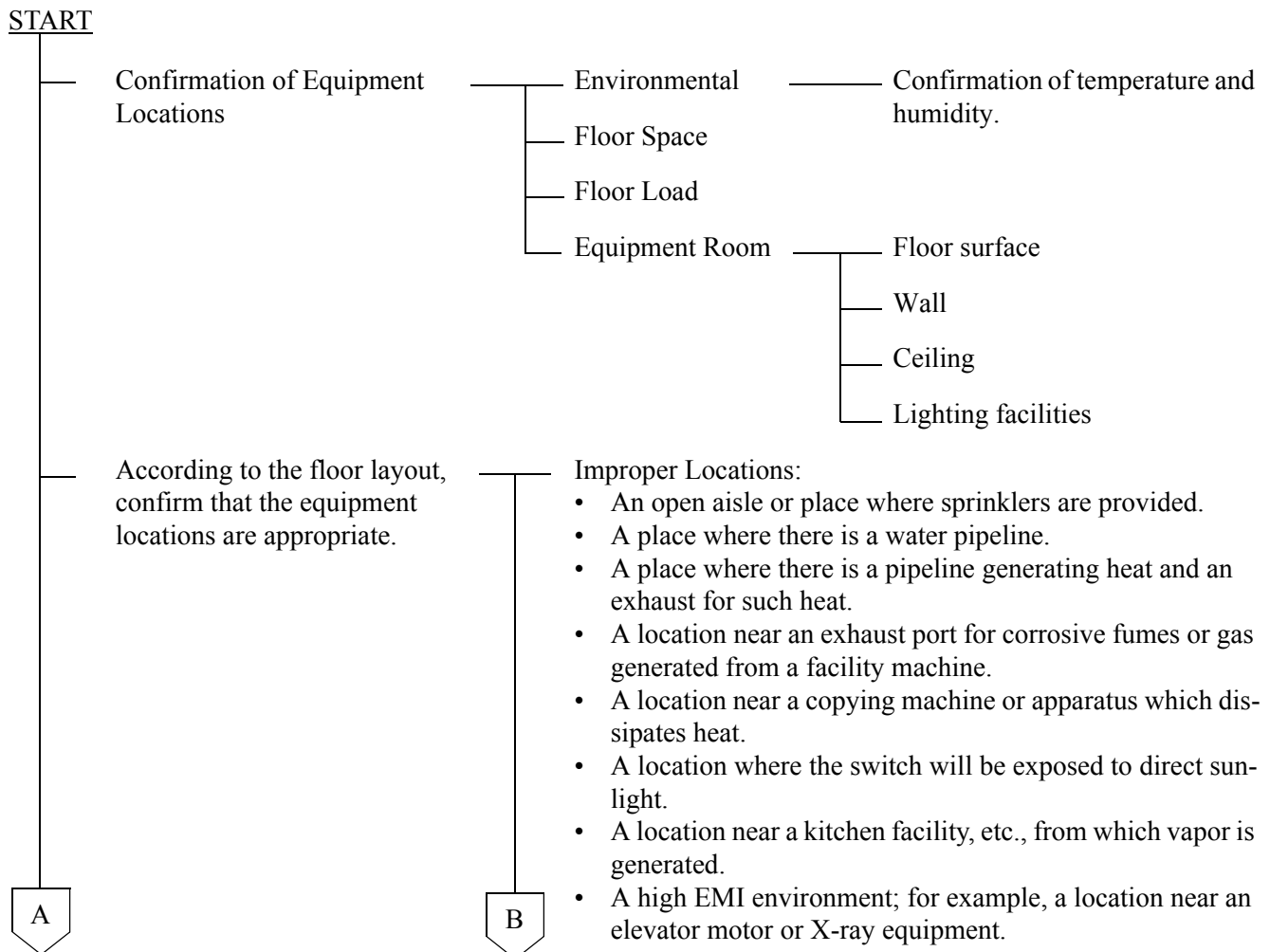
NAP-200-001
Sheet 1/2
Installation Preparation

This NAP explains the following work items:

- Confirmation of Equipment Locations
- Confirmation of Floor Layout
- Confirmation of Power and Ground Supply
- Check of Quantity of Equipment Packages

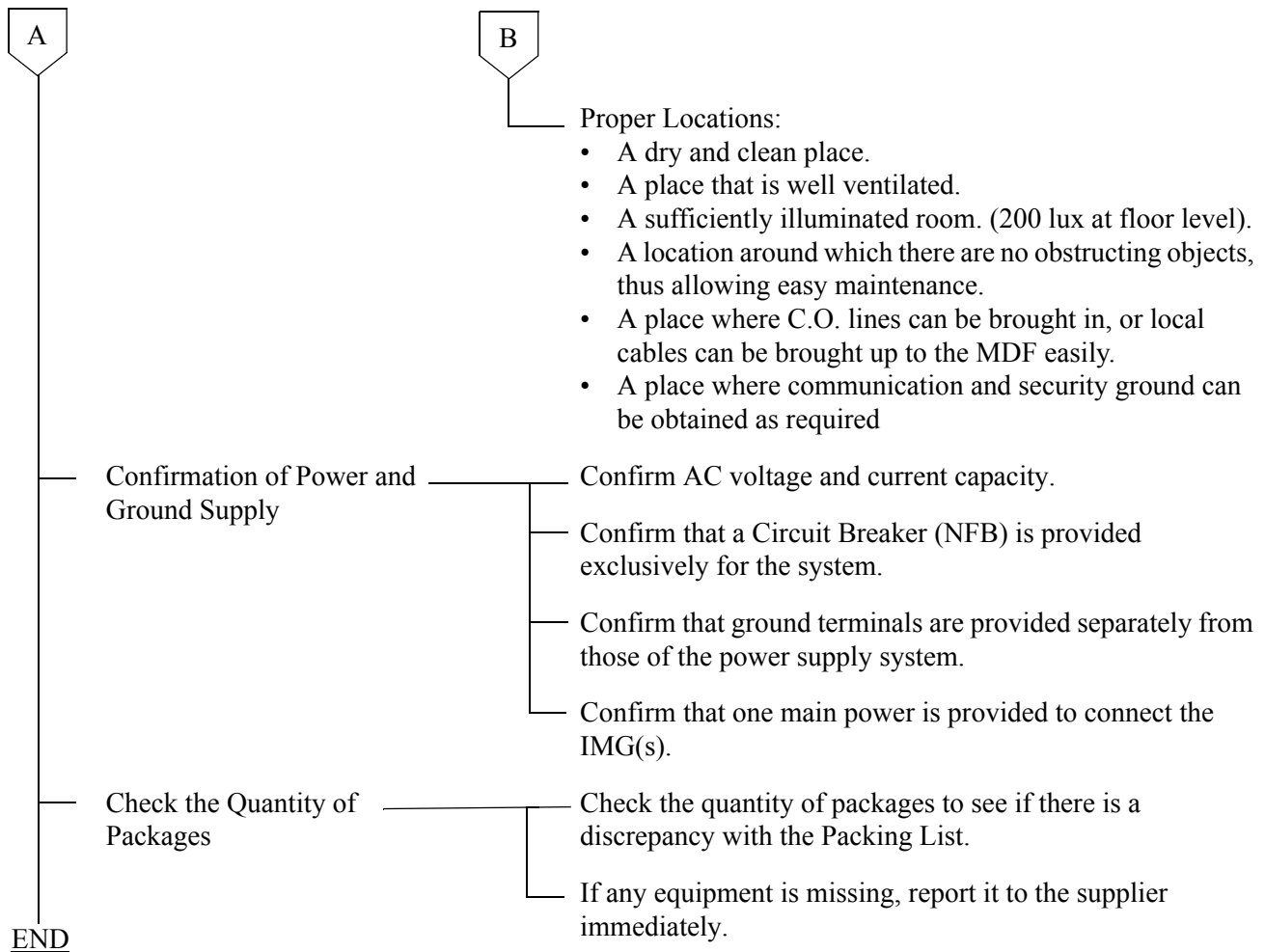
Note 1: *Confirmation procedures are discussed in Chapter 2 of this manual.*

Note 2: *Be sure to correct any abnormal conditions encountered during installation preparation (missing hardware, floor not level, etc.) before proceeding to the next step.*



INSTALLATION PROCEDURE

NAP-200-001
Sheet 2/2
Installation Preparation



NAP-200-002
Sheet 1/8
Marketing, Leveling, and Drilling

This NAP explains the procedures for marking, drilling and other necessary work when the PBX is to be installed on a free-access floor by either one of the following three methods.

- Securing the PBX directly onto the floor
- Securing the PBX with the special stand
- Securing the PBX with the floor elevation

This NAP also explains the procedures for marking, leveling and drilling for MDF, Power Equipment, and Peripheral Equipment (See Section 4.)

Note: *Kinds of Anchor Bolts*

Various types of anchor bolts are available; the type of bolt to be used depends on the application. Sleeve expansion-type anchor bolts are generally preferred for the PBX installation. Table 002-1 shows anchor bolt specification.

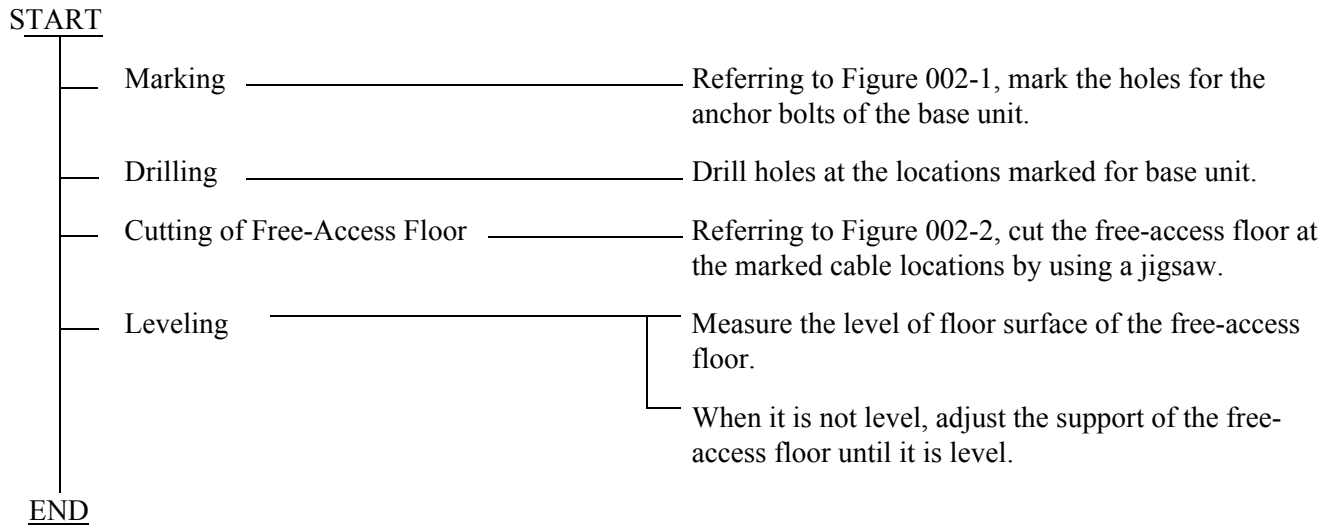
Table 002-1 Specification of Anchor Bolts-Sleeve Expansion Type

SCREW	SLEEVE	BOLT LENGTH		SLEEVE LENGTH		DRILL DIA.	DRILLING DEPTH		MAX. THICKNESS OF ITEM TO BE FIXED	APPLICATION	COMPONENTS
		mm	inch	mm	inch		mm	inch			
M10	Ø17.3	50	2	38	1.5	Ø17.5	50	2	15 mm/0.6 in	For concrete	
		70	2.8	58	2.3		70	2.8		Concrete + Mortar (20 mm/0.8 in thick)	
		80	3.1	68	2.7		80	3.1		Concrete + Mortar (30 mm/1.2 in thick)	

* *Pull out Strength = 1,900 Kg (4185 lb)*
(Concrete Strength = more than 20, 580, 000 Pa (2984.871 PSI))

NAP-200-002
Sheet 2/8
Marking, Leveling, and Drilling

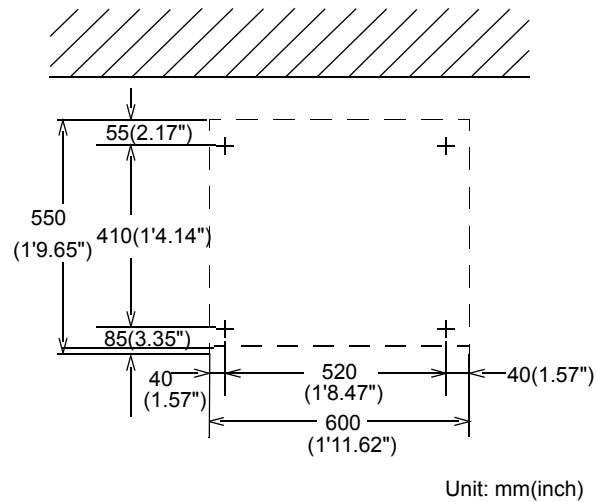
1. WHEN SECURING THE PBX DIRECTLY ONTO THE FLOOR



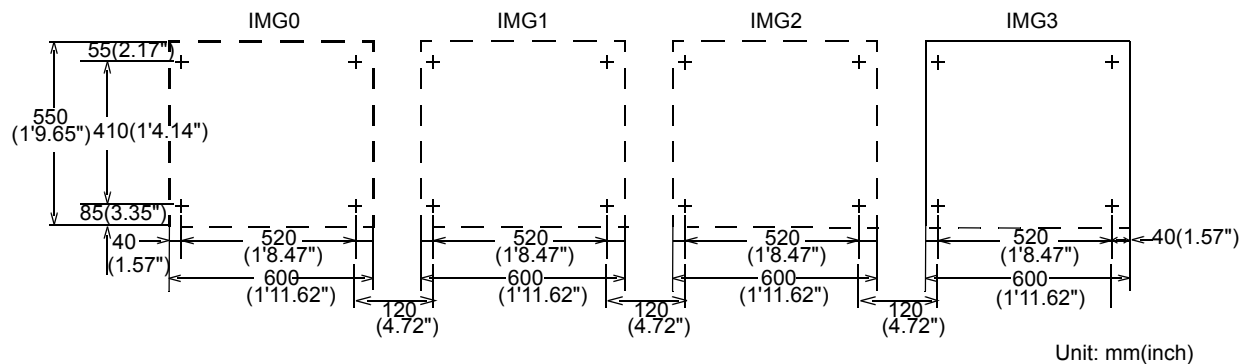
NAP-200-002
Sheet 3/8
Marking, Leveling, and Drilling

Figure 002-1 Locations of Base Unit Securing Holes

Single IMG Configuration



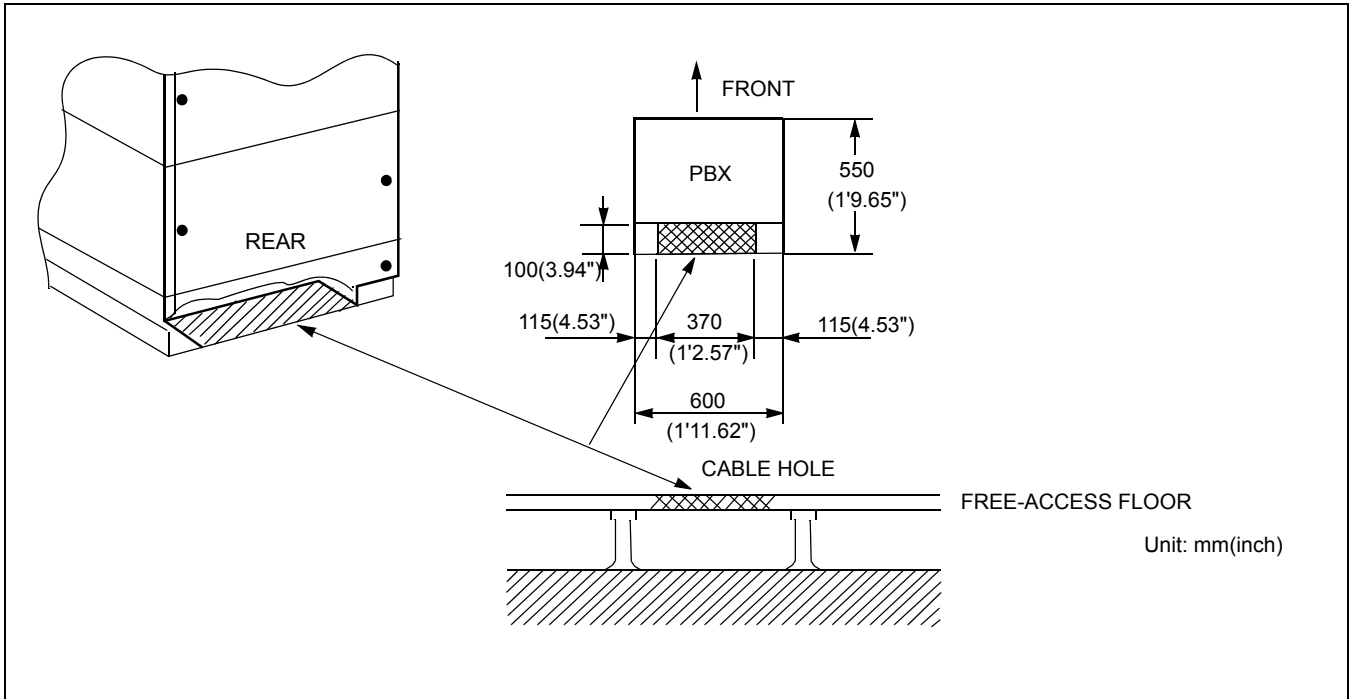
Multiple IMG Configuration



INSTALLATION PROCEDURE

NAP-200-002
Sheet 4/8
Marking, Leveling, and Drilling

Figure 002-2 Cable Hole on a Free-Access or Computer Floor



NAP-200-002
Sheet 5/8
Marking, Leveling, and Drilling

2. WHEN SECURING THE PBX WITH THE SPECIAL STAND

START

- | | | | |
|---|----------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------|
| — | Marking and Drilling of Special Stand | ————— | Drill the Special Stand for securing the PBX.
(See Figure 002-3.) |
| — | Marking, Drilling and Cutting of Free-Access Floor | ————— | Mark, drill, and cut the free-access floor according to the size of the special stand to be used. |
| — | Installing the Special Stand | ————— | Secure the special stand onto the floor.
(See Figure 002-4.) |
| — | Level Check | ————— | Check the level of the special stand. If necessary, adjust the level by inserting spacers beneath the stand. |

END

INSTALLATION PROCEDURE

NAP-200-002
Sheet 6/8
Marking, Leveling, and Drilling

Figure 002-3 Example of Special Stand

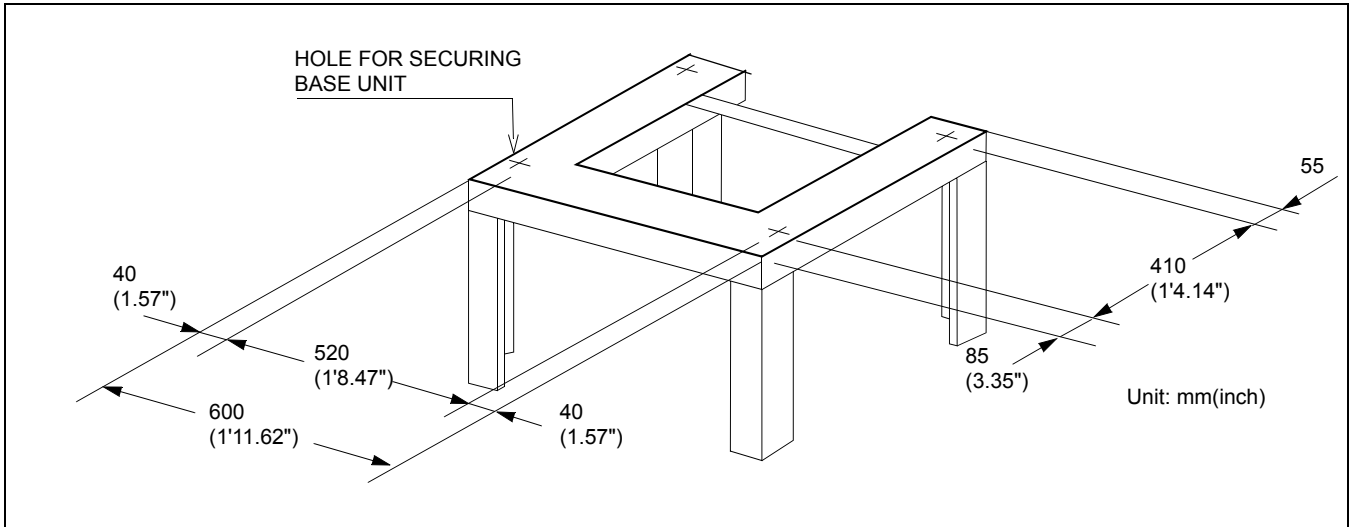
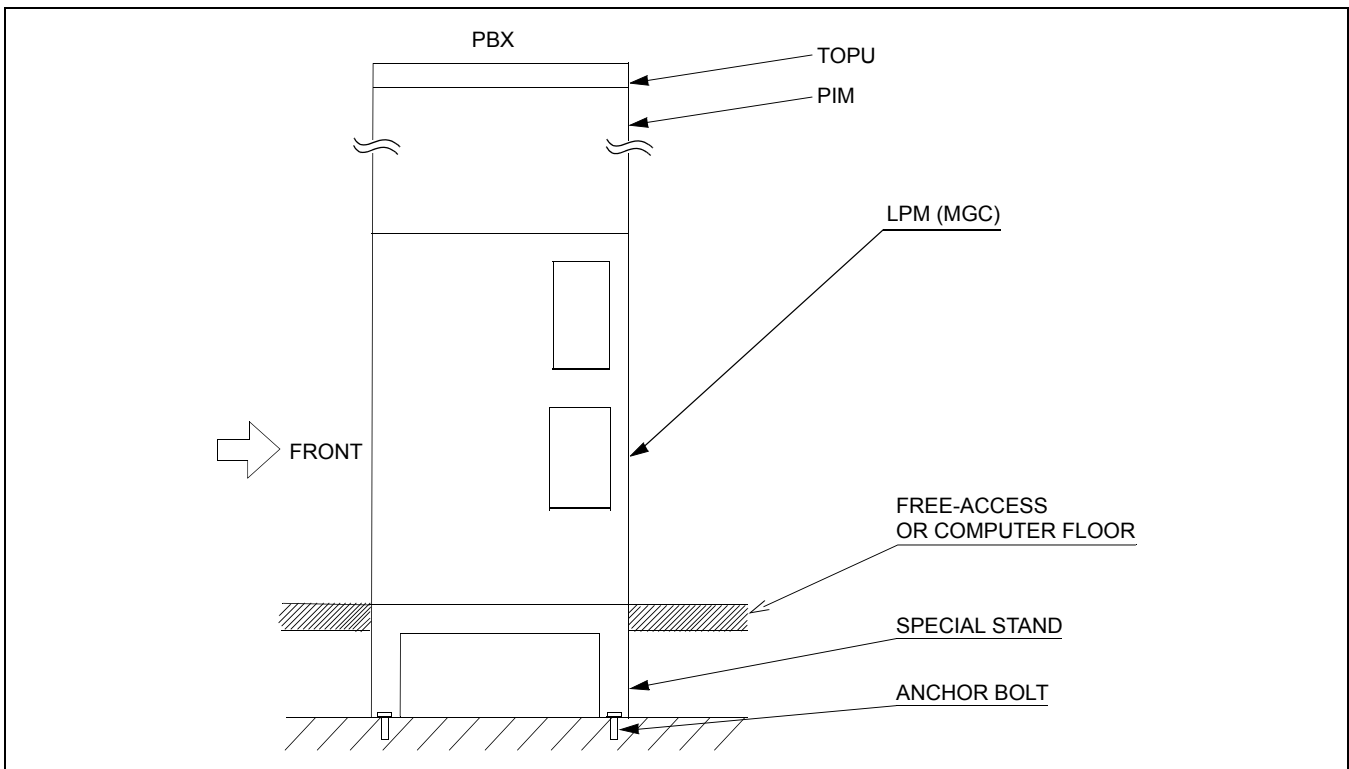


Figure 002-4 Special Stand Installation Method



NAP-200-002
Sheet 7/8
Marking, Leveling, and Drilling

3. WHEN SECURING PBX WITH FLOOR ELEVATIONS

START

Installing the Floor Elevation

Secure the Floor Elevation on the concrete floor.
(See Figure 002-5.)

Marking

Mark the locations of the anchor bolt holes for the Base Unit.
(See Figure 002-1.)

Drilling

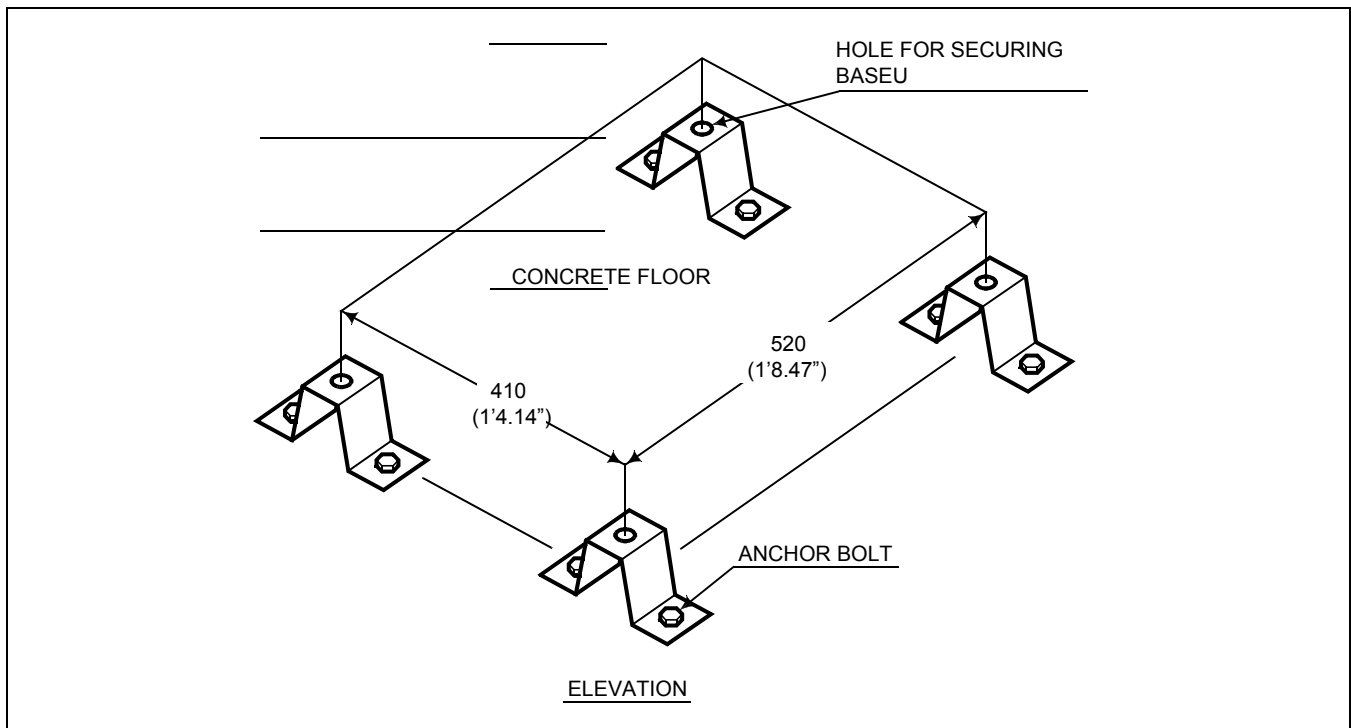
Drill holes in the locations.

Cutting of Free-Access Floor

Cut the Free-Access Floor with a jigsaw. (See Figure 002-2.)

END

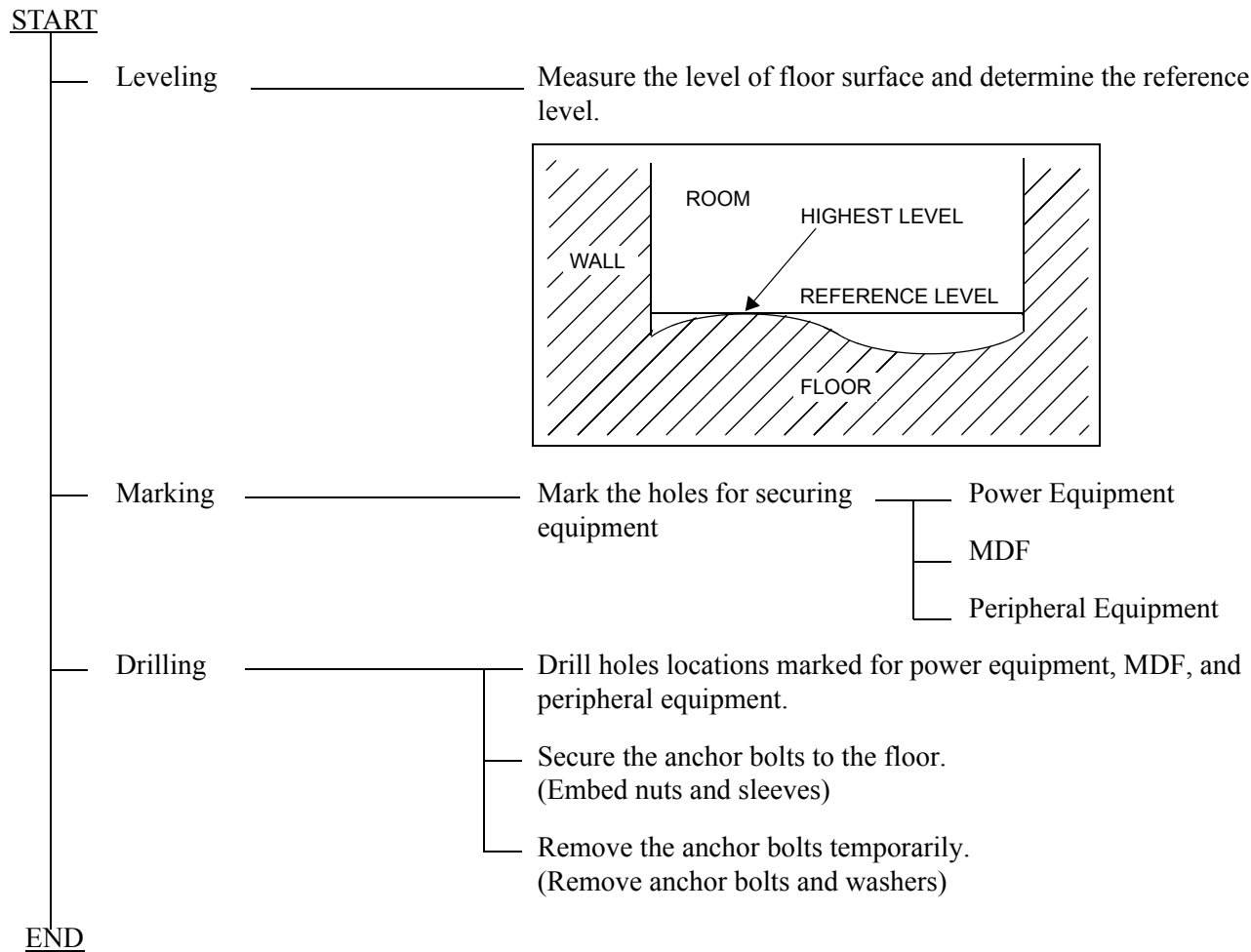
Figure 002-5 Example of Elevation



INSTALLATION PROCEDURE

NAP-200-002
Sheet 8/8
Marking, Leveling, and Drilling

4. MARKING, LEVELING AND DRILLING FOR MDF, POWER EQUIPMENT, AND PERIPHERAL EQUIPMENT



NAP-200-003
Sheet 1/2
Unpacking and Inspection

CAUTION: *Equipment may become damaged if not handled properly during unpacking and inspection.*

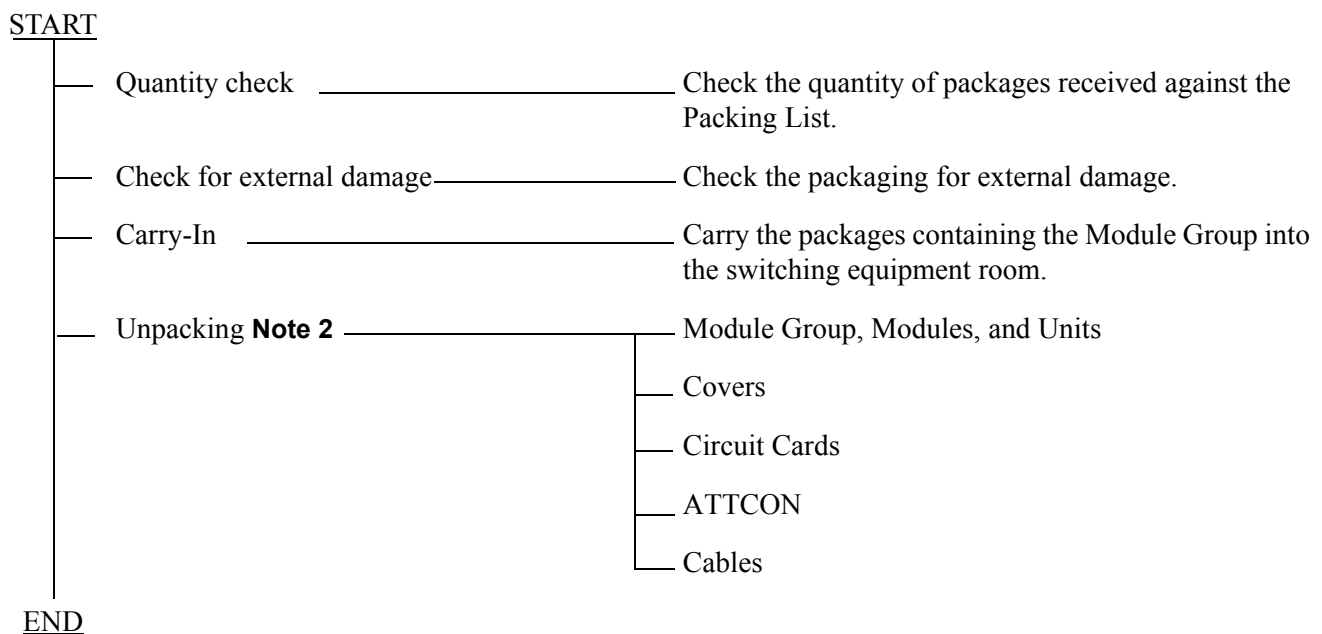


This NAP explains the procedure for unpacking and inspection.

Note 1: *If any equipment is missing or damaged, report it to the supplier immediately.*

Note 2: *Save all packing materials and boxes so that they can be used to return damaged equipment to the supplier.*

1. UNPACKING

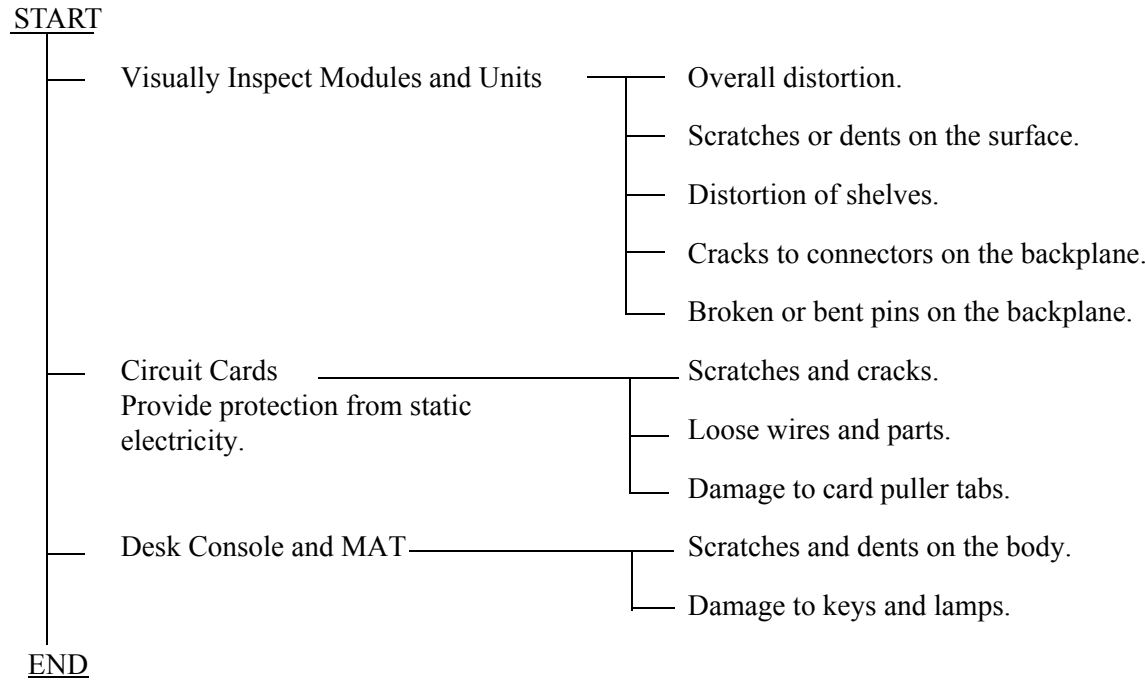


NAP-200-003
Sheet 2/2
Unpacking and Inspection

CAUTION: *Equipment may become damaged if not handled properly during unpacking and inspection.*



2. INSPECTION



NAP-200-004
Sheet 1/3
Installation of the Base Unit

This NAP explains the procedure for securing the Base Unit onto the floor directly or using special stand.

1. INSTALLING THE BASE UNIT DIRECTLY ONTO THE FLOOR

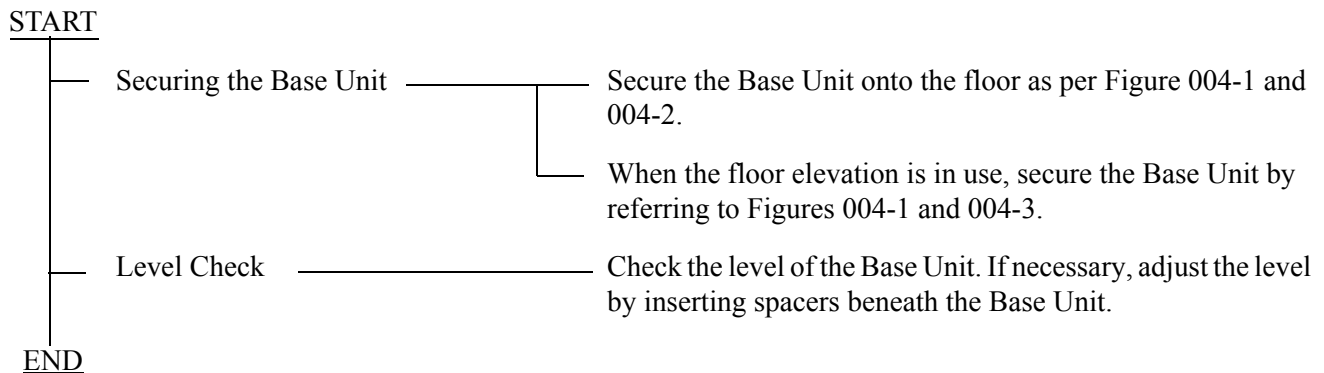
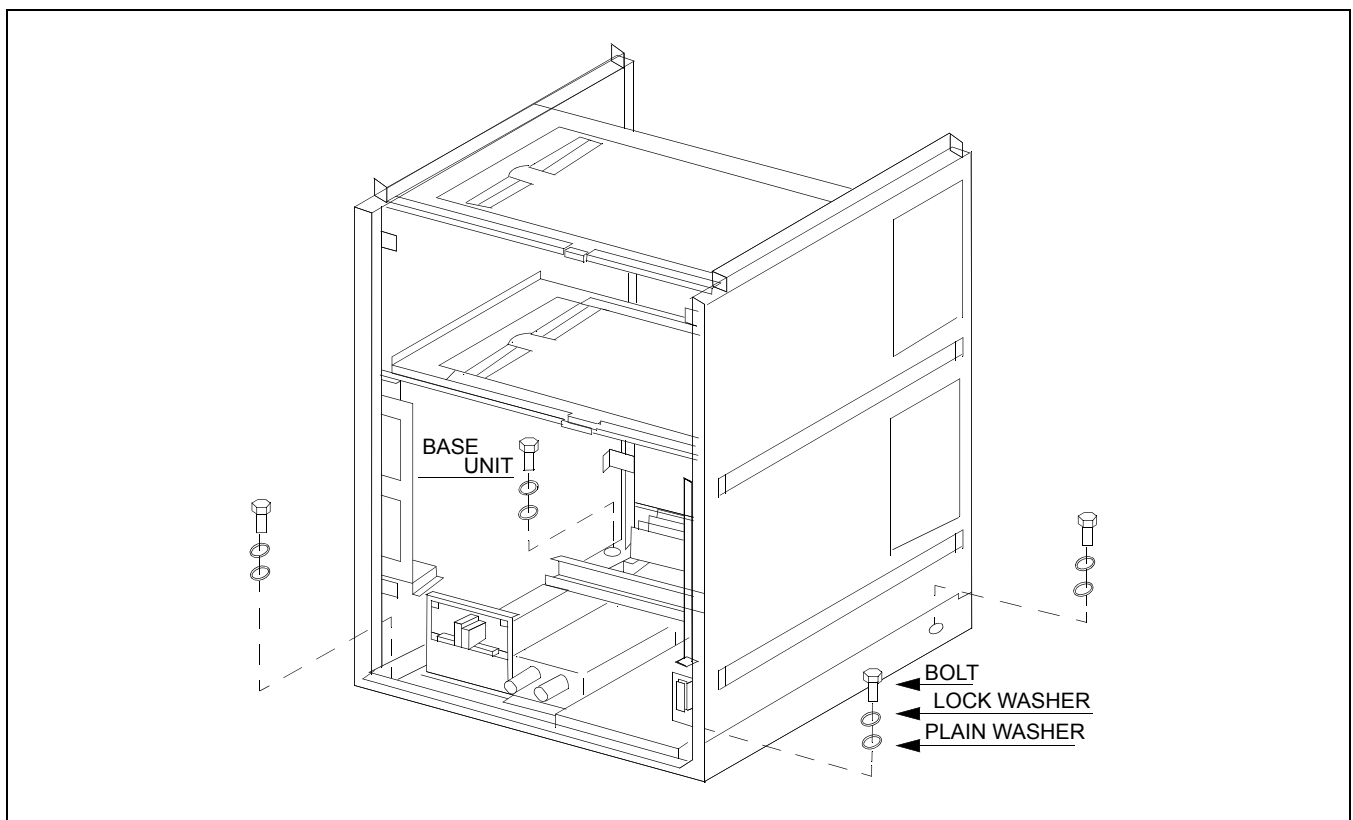


Figure 004-1 Mounting the Base Unit on an Ordinary Floor



INSTALLATION PROCEDURE

NAP-200-004

Sheet 2/3

Installation of the Base Unit

Figure 004-2 Mounting the Base Unit on a Free-Access or Computer Floor

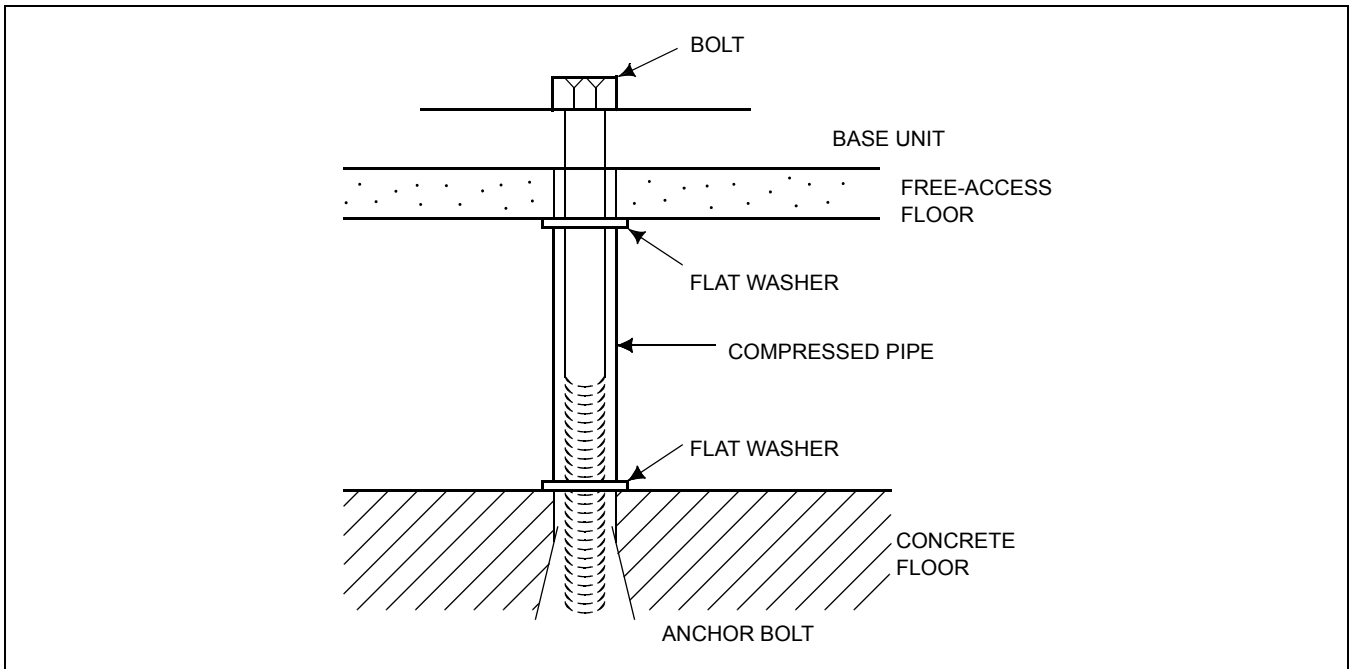
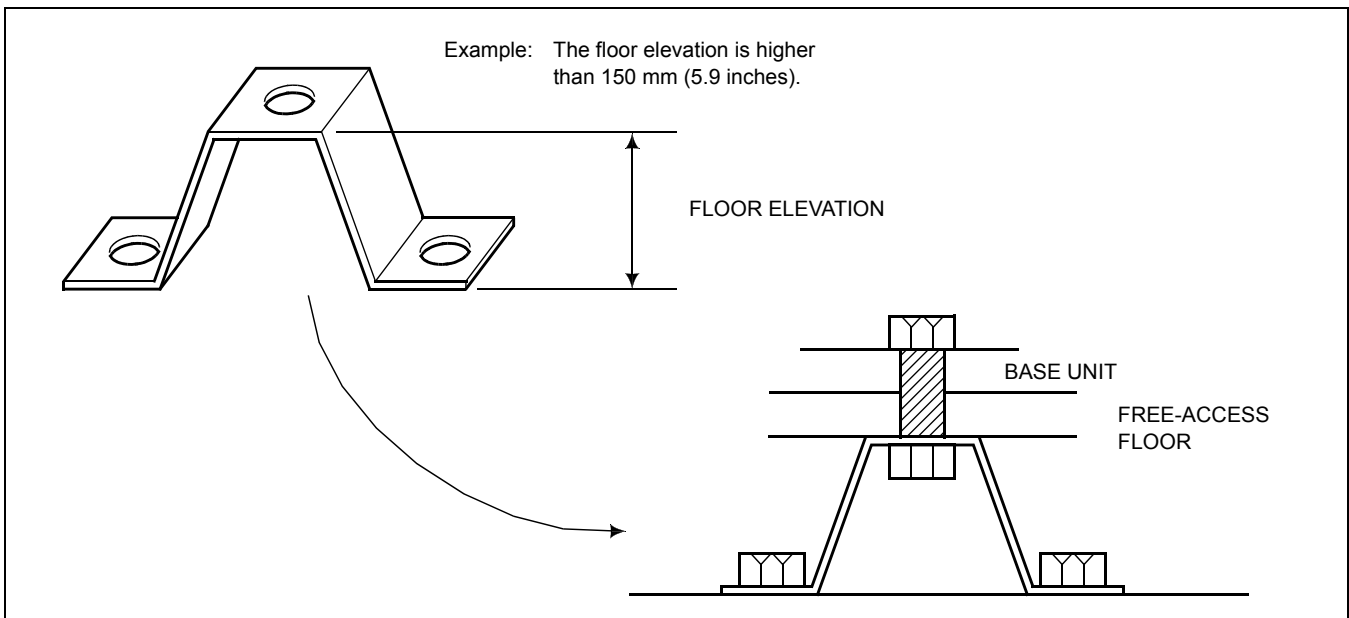


Figure 004-3 Mounting the Base Unit on a Free-Access or Computer Floor via Elevation



NAP-200-004
Sheet 3/3
Installation of the Base Unit

2. INSTALLING THE BASE UNIT USING A SPECIAL STAND

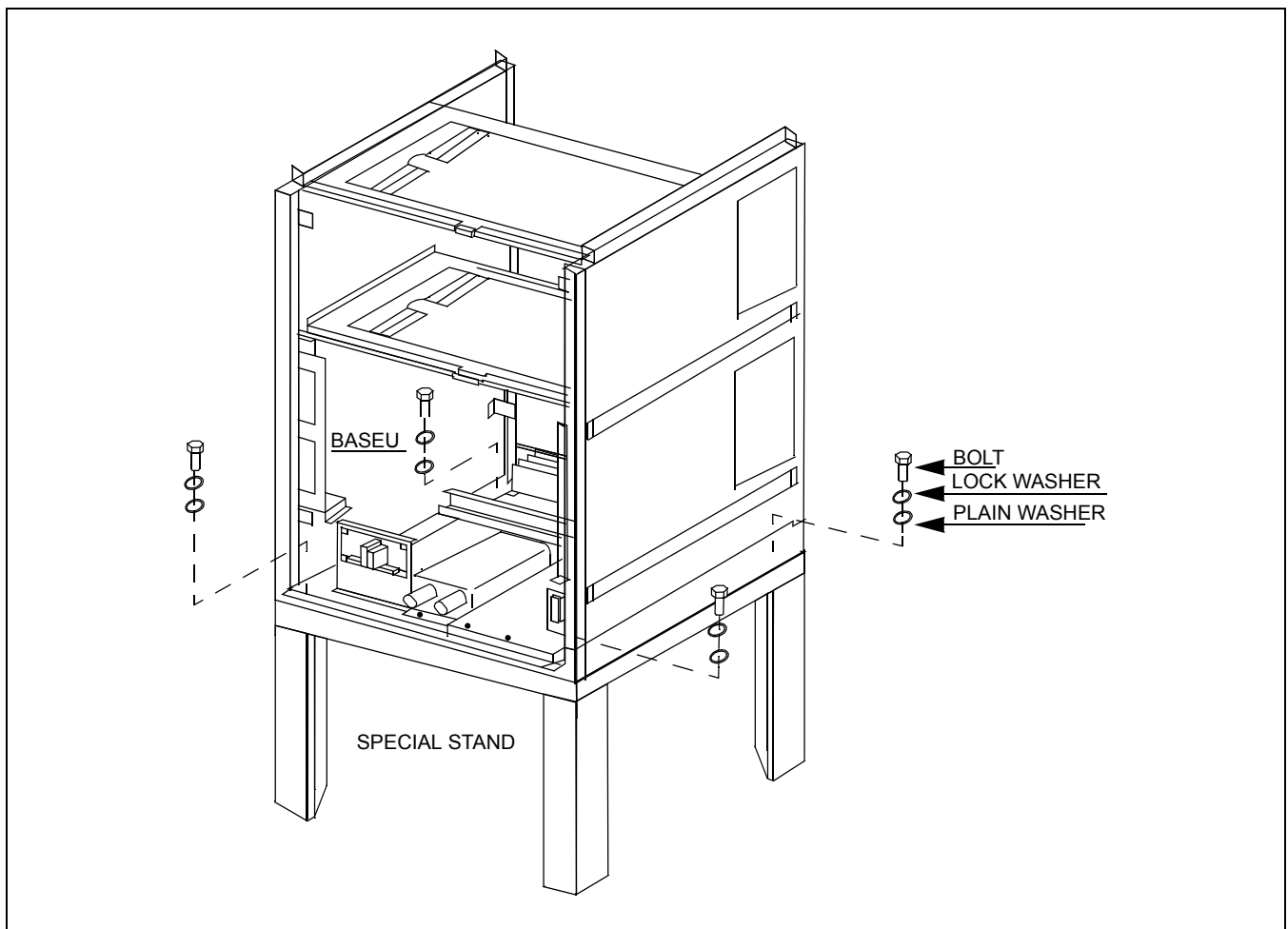
START

Securing the Base Unit ————— Secure the Base Unit onto the special stand as per Figure 004-4.

Level Check ————— Check the level of the Base Unit. If necessary, adjust the level by inserting spacers beneath the Base Unit.

END

Figure 004-4 Setting the BASEU via Special Stand



NAP-200-005
Sheet 1/18
Mounting of Units and Modules

<u>START</u>	
├	Mounting of Modules, FAN BOX and TOPU
<u>END</u>	

———— Mount modules, FAN BOX and TOPU for each cabinet, by referring to the Figure 005-1.

(TOPU) **Note**
Tighten these screws.
Do the same at the rear side, too.

(PIM3)
Tighten these screws.
Do the same at the rear side, too.

(PIM2)
Tighten these screws.
Do the same at the rear side, too.

(FAN BOX) **Note**
Tighten these screws.
Do the same at the rear side, too.

(PIM1)
Tighten these screws.
Do the same at the rear side, too.

(PIM0)
(LPM (MGC))

Note: FAN Unit (FANU) is mounted on the TOPU, or inside the FAN BOX, and LPM (MGC). For detailed procedures, refer to Section 2 of this NAP.

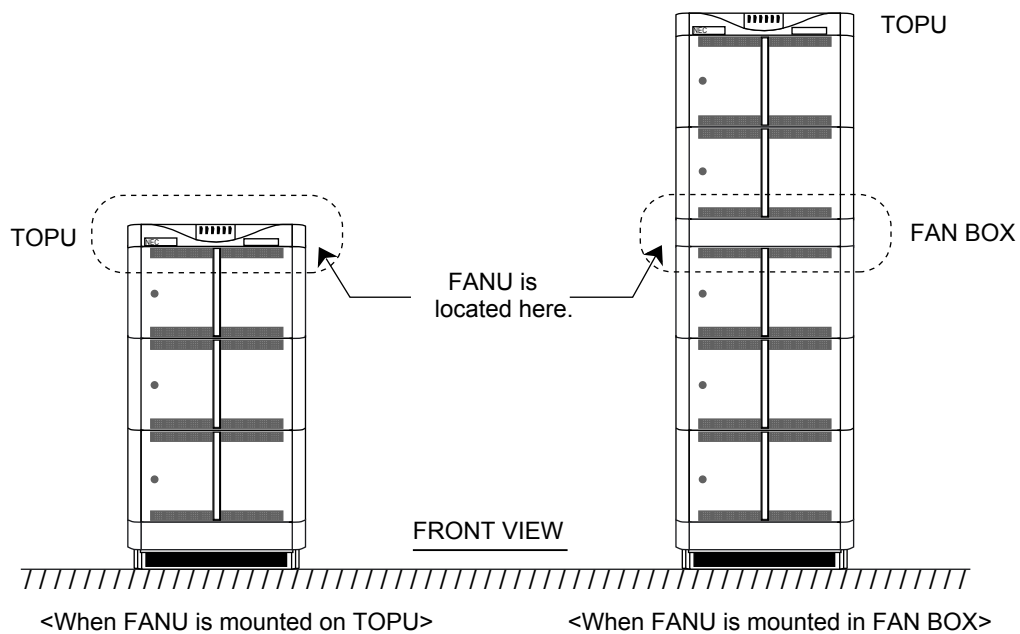
NAP-200-005
Sheet 2/18
Mounting of Units and Modules

2. INSTALLATION OF FANU

Location of FANU (PZ-M369 and three electronic FANs) is shown in Figure 005-2. Depending on your system configuration, mount the FANU in the proper position.

Figure 005-2 Locations of FANU

The mounting location of FANU differs depending on the module configuration of each cabinet. When the cabinet consists of a total of two PIMS or fewer, the FANU is mounted on the TOPU. Otherwise, the FANU is housed in the dedicated FAN BOX in the center of the cabinet.



INSTALLATION PROCEDURE

NAP-200-005

Sheet 3/18

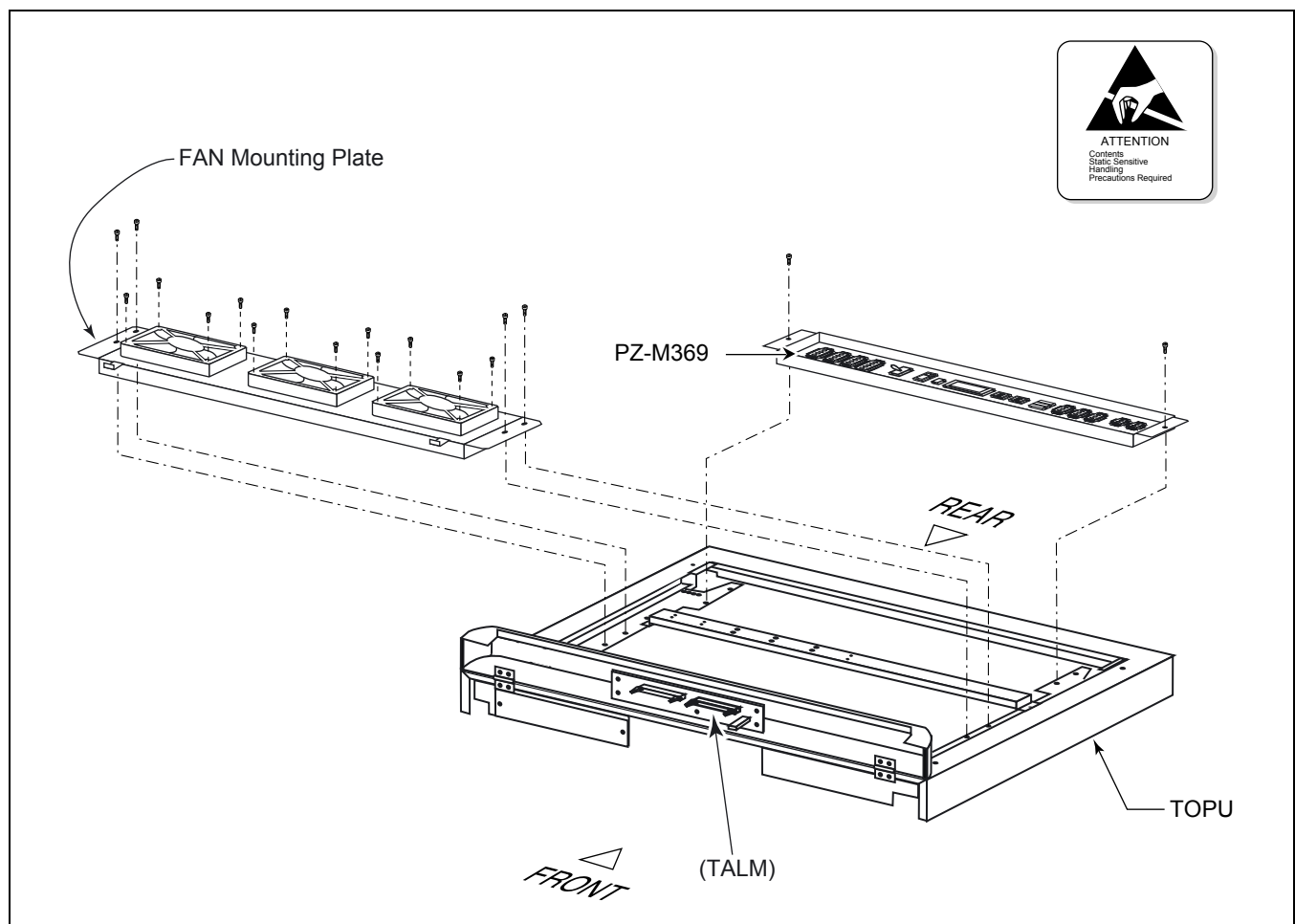
Mounting of Units and Modules

3. PROCEDURE FOR FANU ON THE TOPU

When any IMG is configured by two PIMs or less, the FANU is mounted as shown in Figure 005-3. Because the FANU is already mounted on the TOPU of the cabinet, perform STEP 4 through STEP 7 only, excepting a special case (STEP 1 through STEP 3 are not required in the normal cases).

- STEP 1: Referring to Figure 005-3, mount the three FANs onto the FAN Mounting Plate. Then, fasten every four screws.
- STEP 2: Accommodate the FAN Mounting Plate (tipped with three FANs) onto the TOPU. Then, tighten the four screws (refer to Figure 005-3).
- STEP 3: Mount the PZ-M369 onto the TOPU. Then, fasten the two screws (also refer to Figure 005-3).

Figure 005-3 Mounting of FANU (on TOPU)



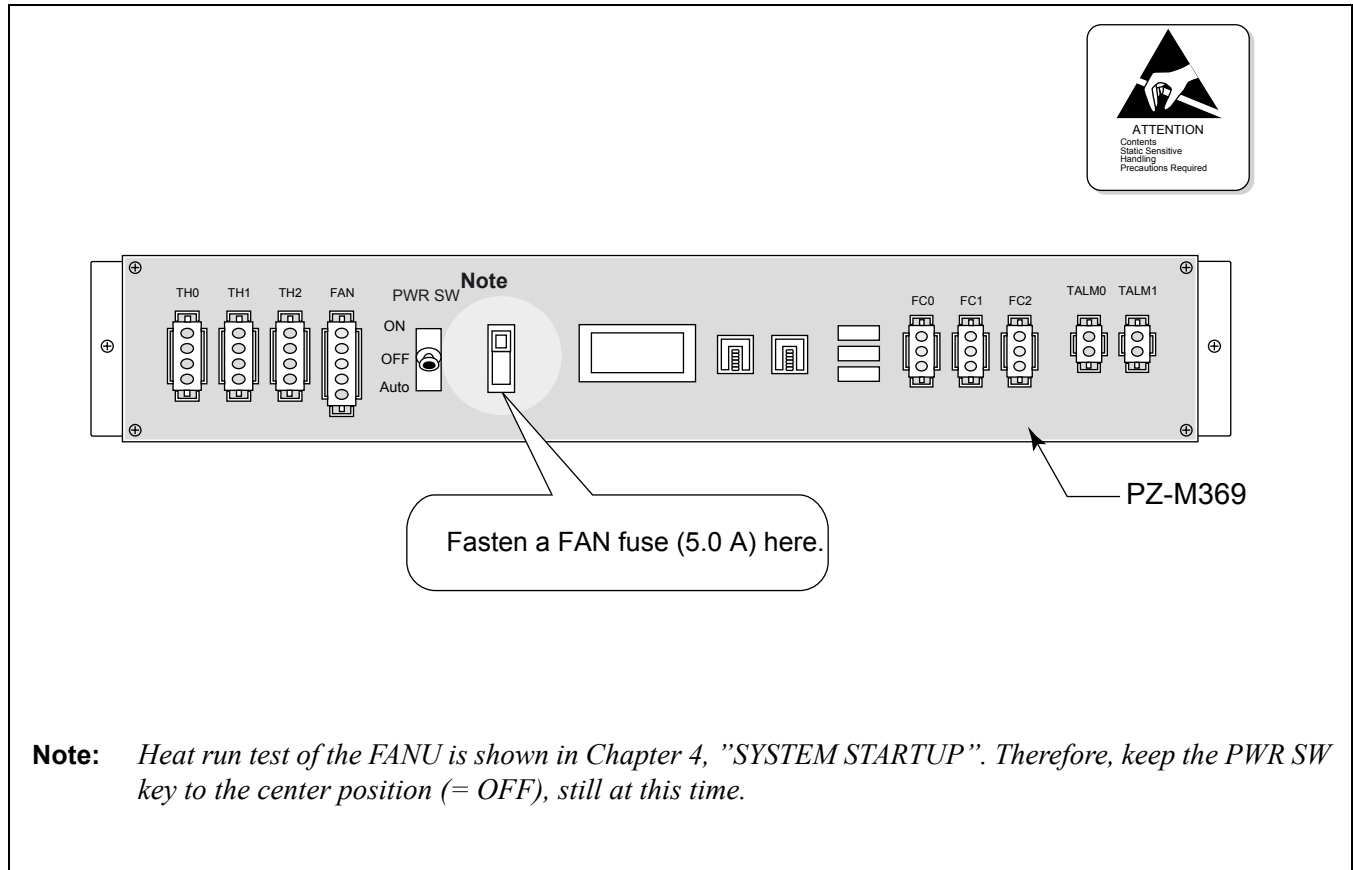
NAP-200-005

Sheet 4/18

Mounting of Units and Modules

STEP 4: Fix a FAN fuse (5.0A) onto the PZ-M369.

Figure 005-4 Attachment of FAN Fuse (PZ-M369)



STEP 5: Connect the FAN cables as shown in Figure 005-5 and Figure 005-6.

STEP 6: Lastly, attach the Top Cover onto the TOPU of the cabinet. Then, fasten the four screws (refer to Figure 005-7).

Note: The procedures, STEP 4 through STEP 6, must be performed at each PBX cabinet adopting 1-PIM or 2-PIM configuration.

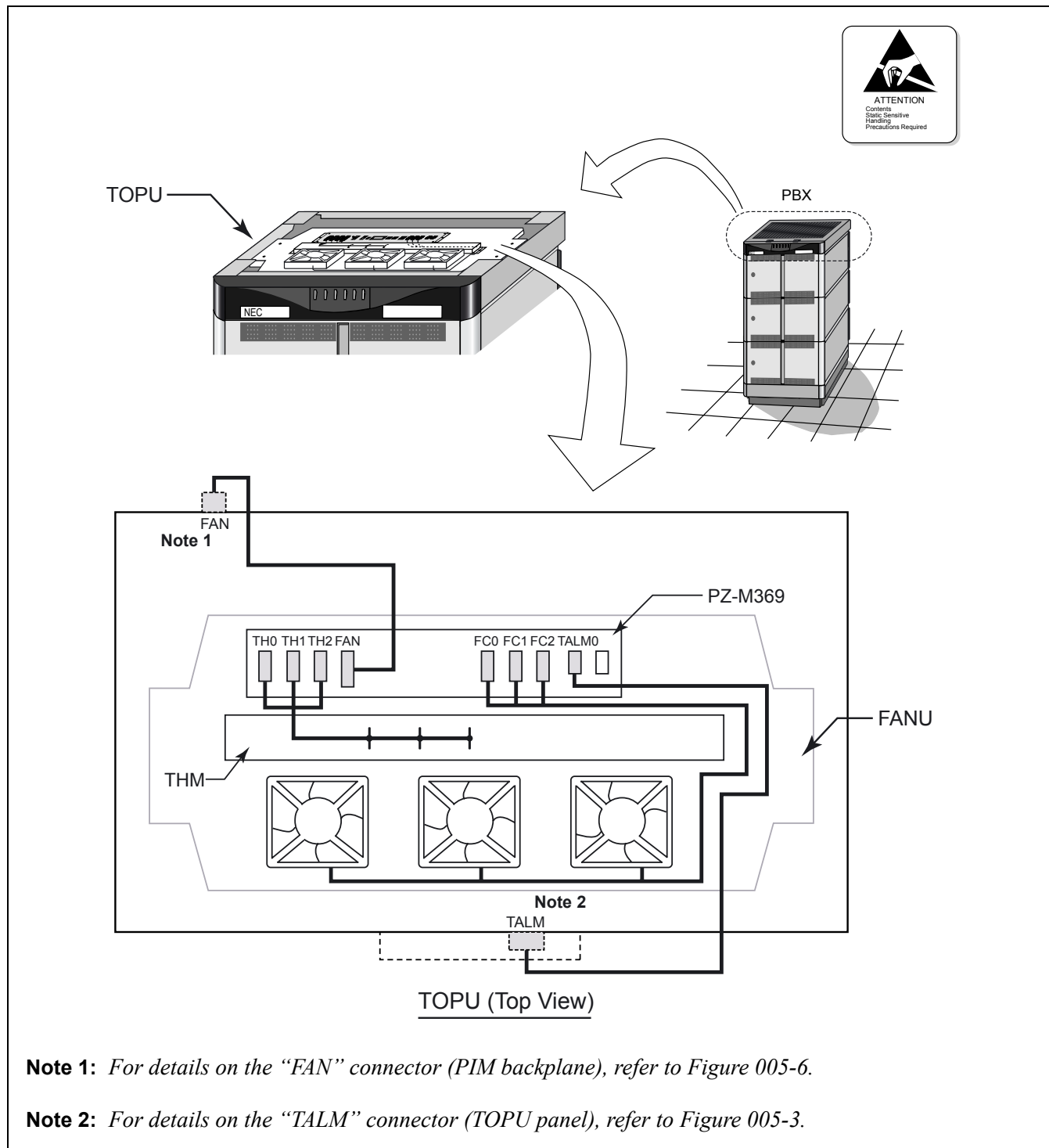
INSTALLATION PROCEDURE

NAP-200-005

Sheet 5/18

Mounting of Units and Modules

Figure 005-5 Cable Connections for FANU on TOPU

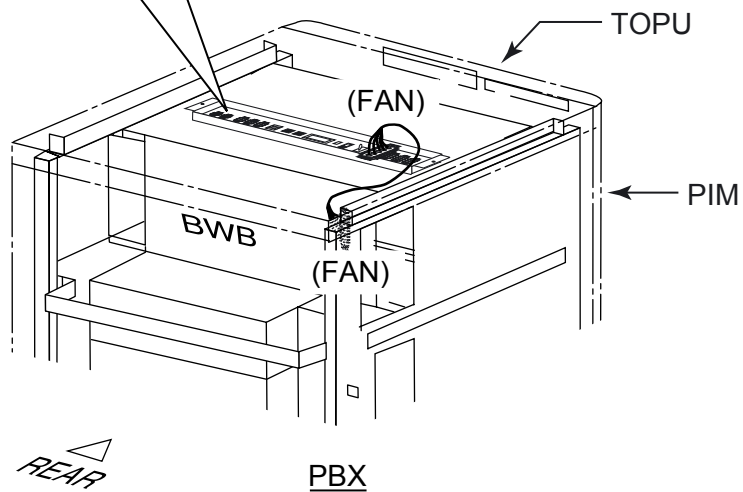
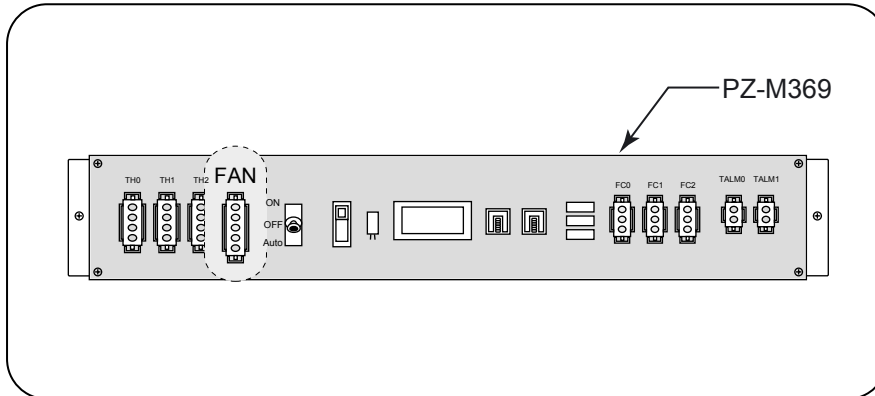


NAP-200-005

Sheet 6/18

Mounting of Units and Modules

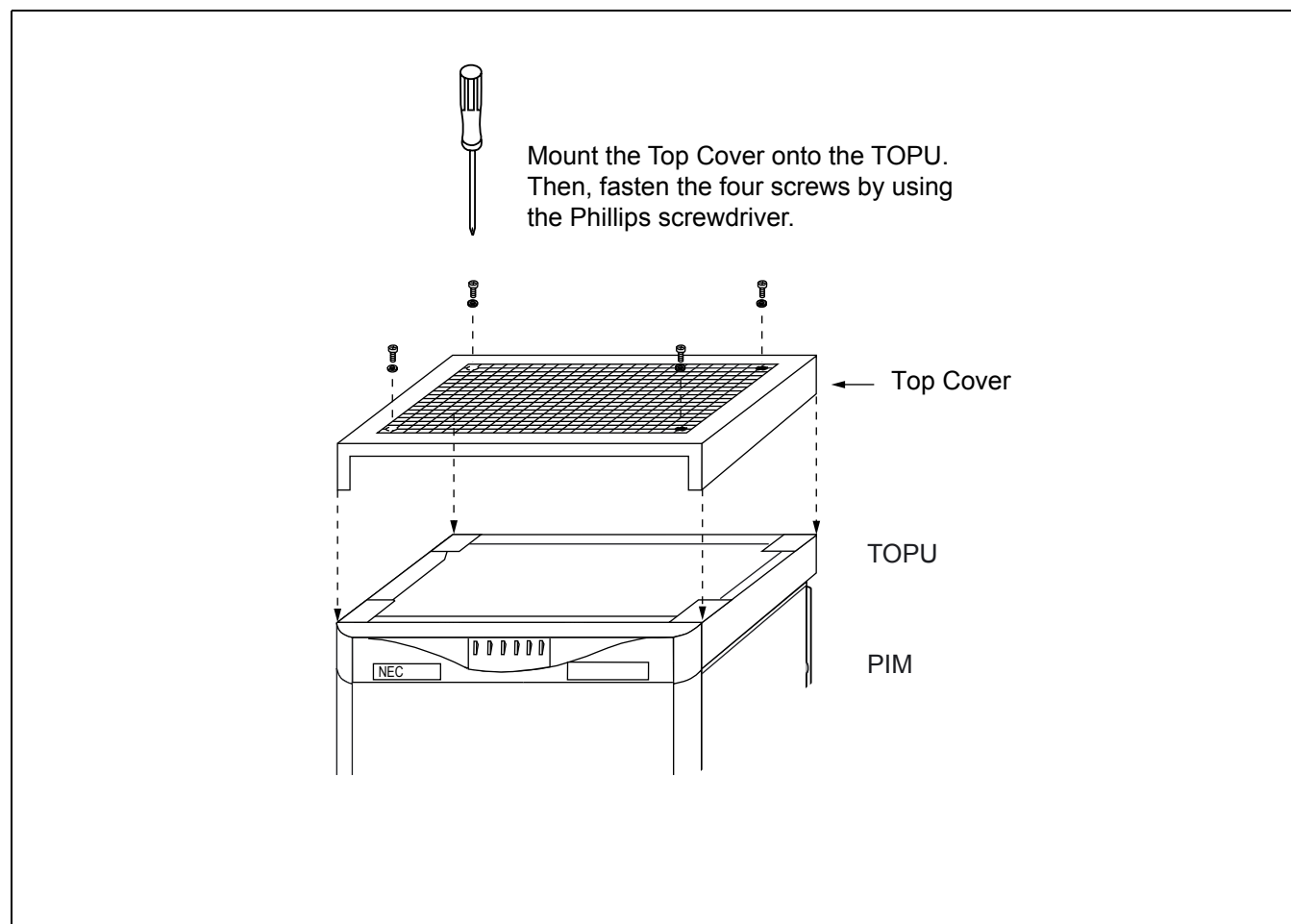
Figure 005-6 Connection of "FAN" Connector Cable (TOPU-PIM)



INSTALLATION PROCEDURE

NAP-200-005
Sheet 7/18
Mounting of Units and Modules

Figure 005-7 Attachment of the Top Cover



NAP-200-005
Sheet 8/18
Mounting of Units and Modules

4. PROCEDURE FOR FANU IN THE FAN BOX

When any IMG is configured by 3 or 4 PIMs, the FANU must be accommodated within the FAN BOX in the center of the cabinet. Because the FANU is originally mounted on the TOPU as shown in Figure 005-3, relocate the FANU into the dedicated FAN BOX as per the STEPs below:

STEP 1: Referring to Figure 005-3, remove the FANU from the TOPU.

- Remove the two screws fastening the PZ-M369. Then, lift away the PZ-M369.
- Remove the four screws fastening the FAN Mounting Plate (tipped with three FANs).
- Then, lift away the FAN Mounting Plate.

Note: *Retain the removed screws.*

STEP 2: Fasten the PZ-M369 and FAN Mounting Plate onto the FAN BOX connection bar (refer to Figure 005-8). Use two screws (for PZ-M369) and four screws (for FAN Mounting Plate) retained in STEP 1.

STEP 3: Connect the FAN cables for “FC0,” “FC1” and “FC2” connectors on the PZ-M369. Refer to Figure 005-9.

STEP 4: Insert the FANU, prepared in STEP 1 through STEP 3, into the FAN BOX. Then, secure the FANU with the two screws (refer to Figure 005-8).

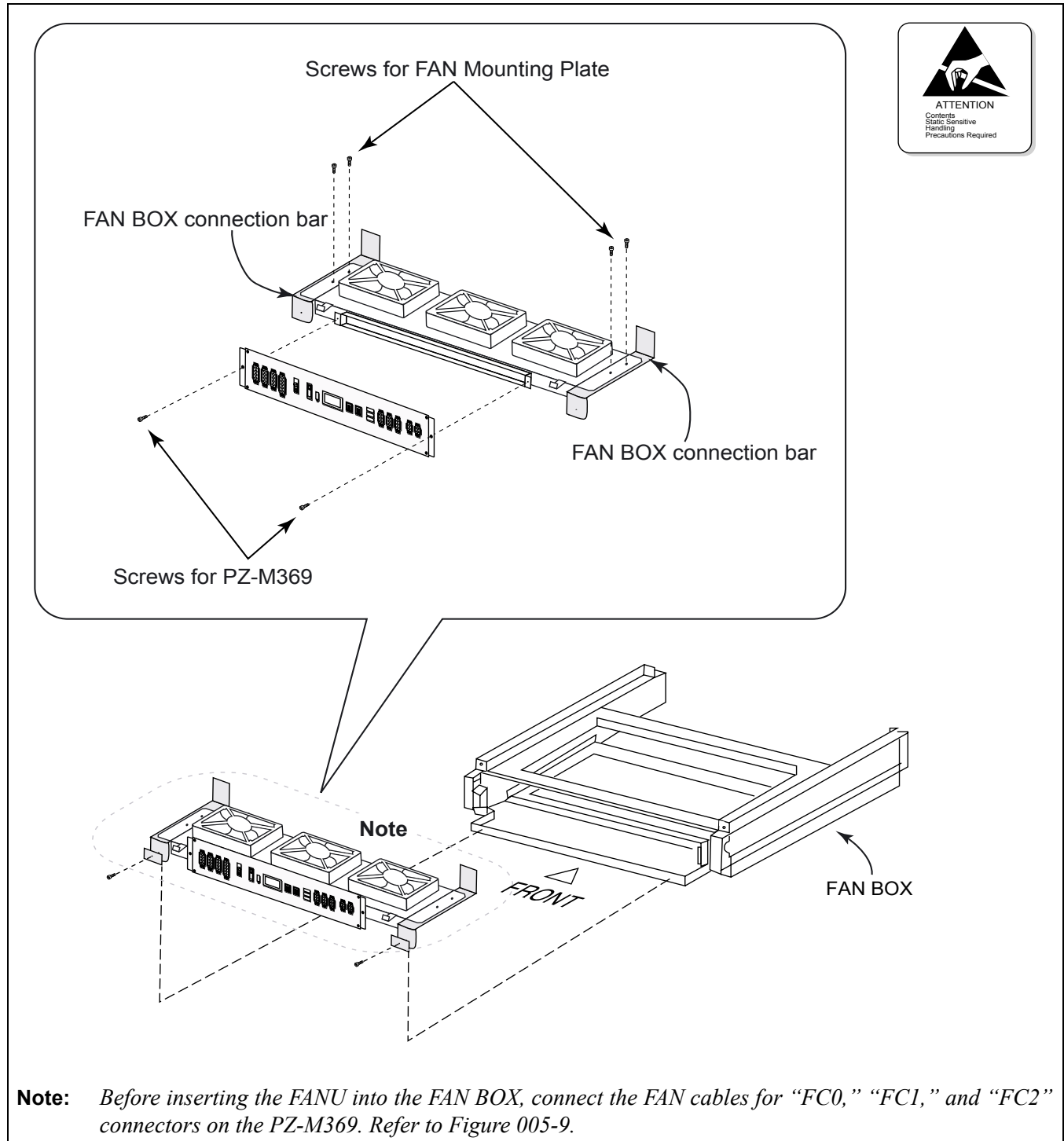
INSTALLATION PROCEDURE

NAP-200-005

Sheet 9/18

Mounting of Units and Modules

Figure 005-8 Relocation of FANU and Insertion into FAN BOX



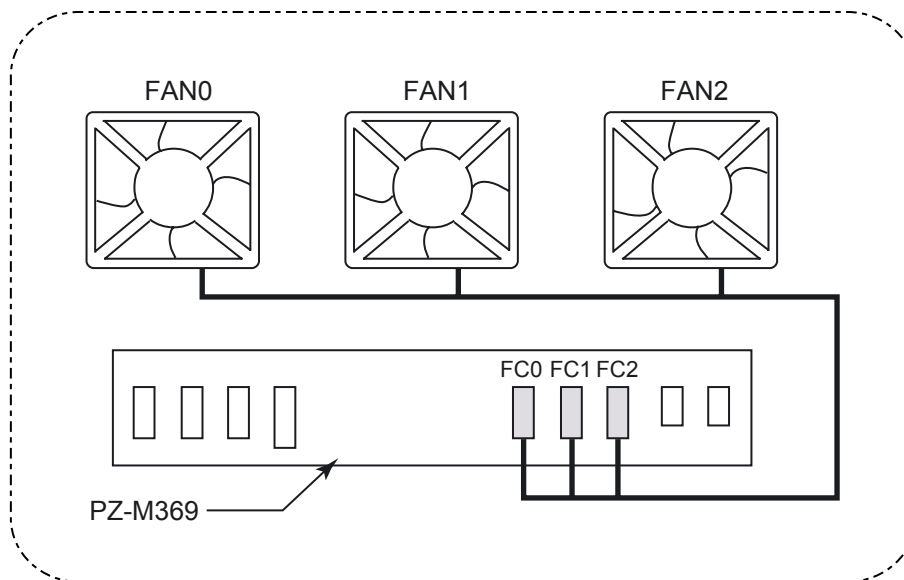
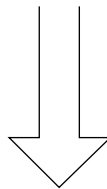
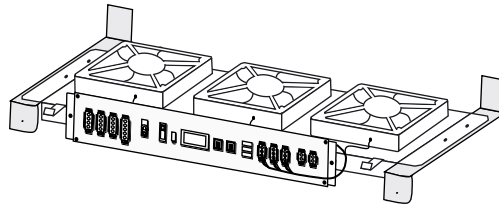
NAP-200-005

Sheet 10/18

Mounting of Units and Modules

Figure 005-9 FAN Cable Connections for FC0/FC1/FC2 Connectors

Before installing the FANU into the FAN BOX, connect FAN cables as shown below.



INSTALLATION PROCEDURE

NAP-200-005
Sheet 11/18
Mounting of Units and Modules

STEP 5: Fix a FAN fuse (5.0A) onto the PZ-M369 by referring to Figure 005-4.

STEP 6: Connect the remaining FAN cables as per Figure 005-10 and Figure 005-11.

STEP 7: Lastly, attach the Top Cover onto the TOPU of the cabinet. Then, fasten the four screws (refer to Figure 005-7).

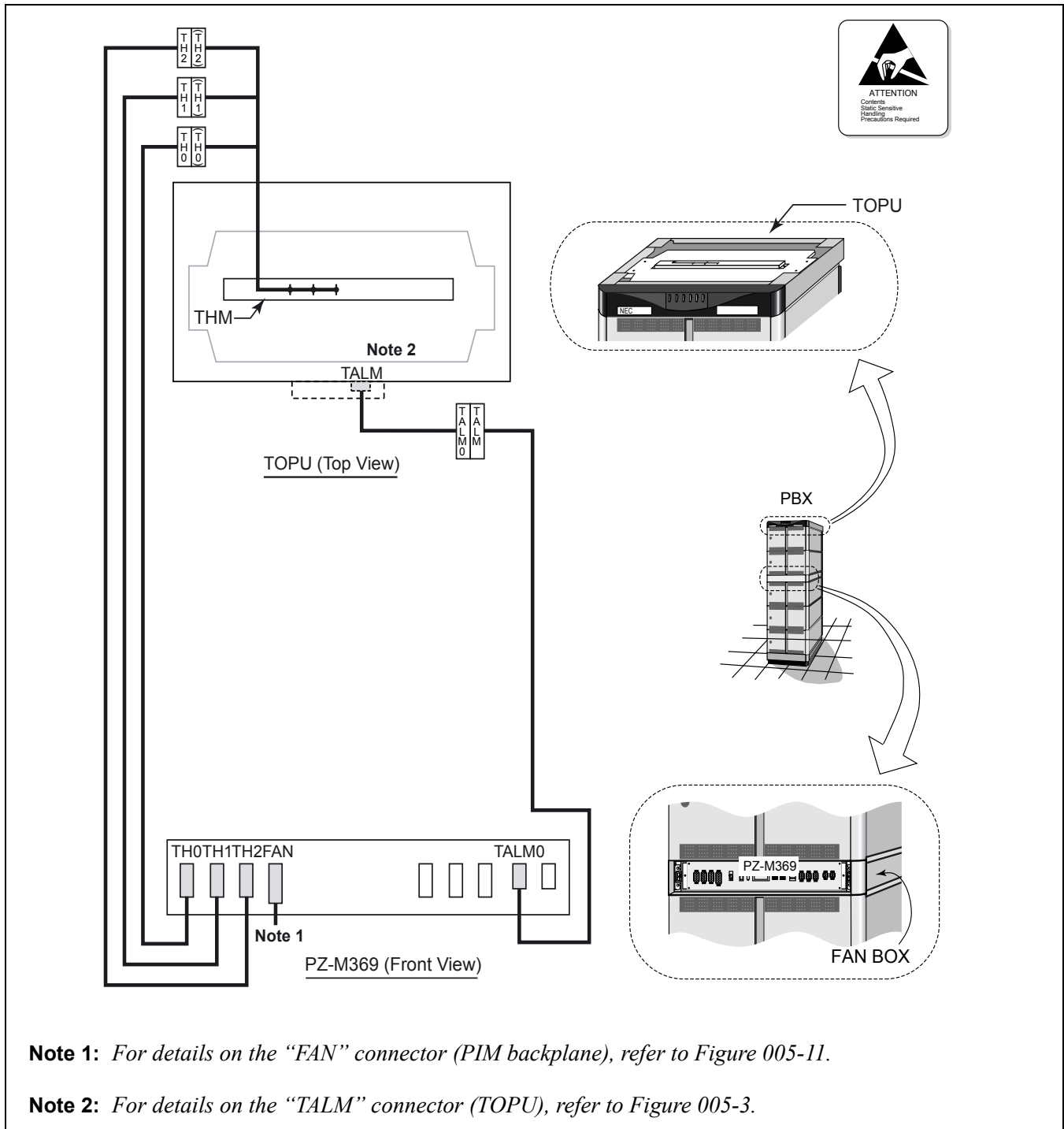
Note: *The procedures, STEP 1 through STEP 7, must be performed at each PBX cabinet adopting 3-PIM or 4-PIM configurations.*

NAP-200-005

Sheet 12/18

Mounting of Units and Modules

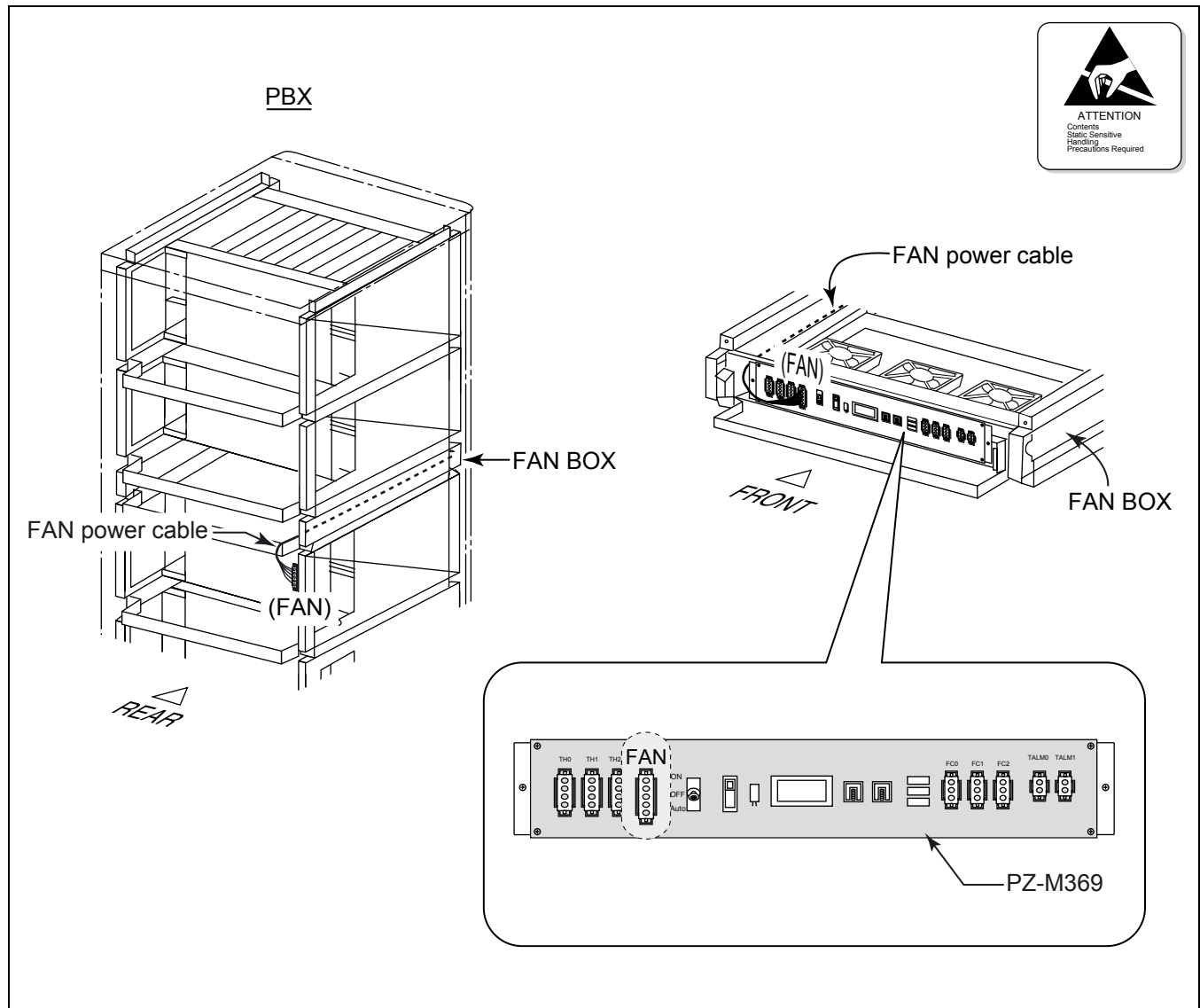
Figure 005-10 Cable Connections for FANU in FAN BOX



INSTALLATION PROCEDURE

NAP-200-005
Sheet 13/18
Mounting of Units and Modules

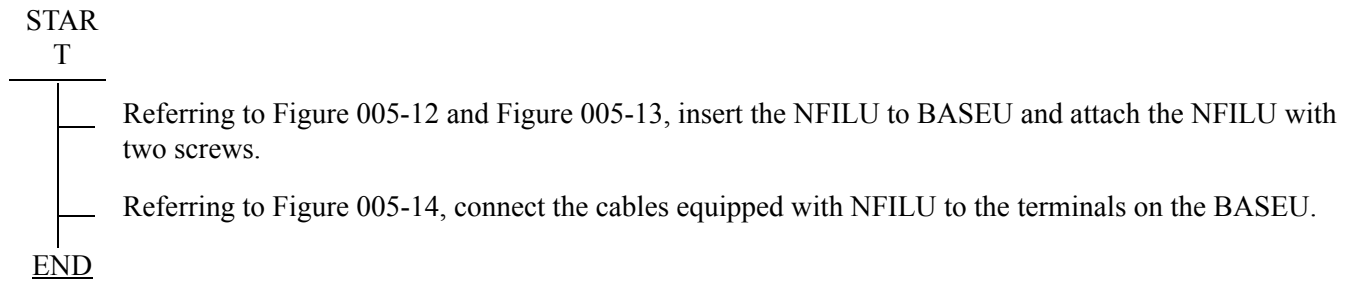
Figure 005-11 Connection of “FAN” Connector Cable (FAN BOX-PIM)



NAP-200-005
Sheet 14/18
Mounting of Units and Modules

5. ATTACHING THE ADDITIONAL NOISE FILTER UNIT (NFILU) TO THE BASEU

The following flowchart shows the procedure for attaching the Additional Noise Filter Unit (NFILU) to the BASEU of the PBX. This work should be performed when the module stack contains 3 or 4 PIMs.



INSTALLATION PROCEDURE

NAP-200-005
Sheet 15/18
Mounting of Units and Modules

Figure 005-12 Insertion of NFILU

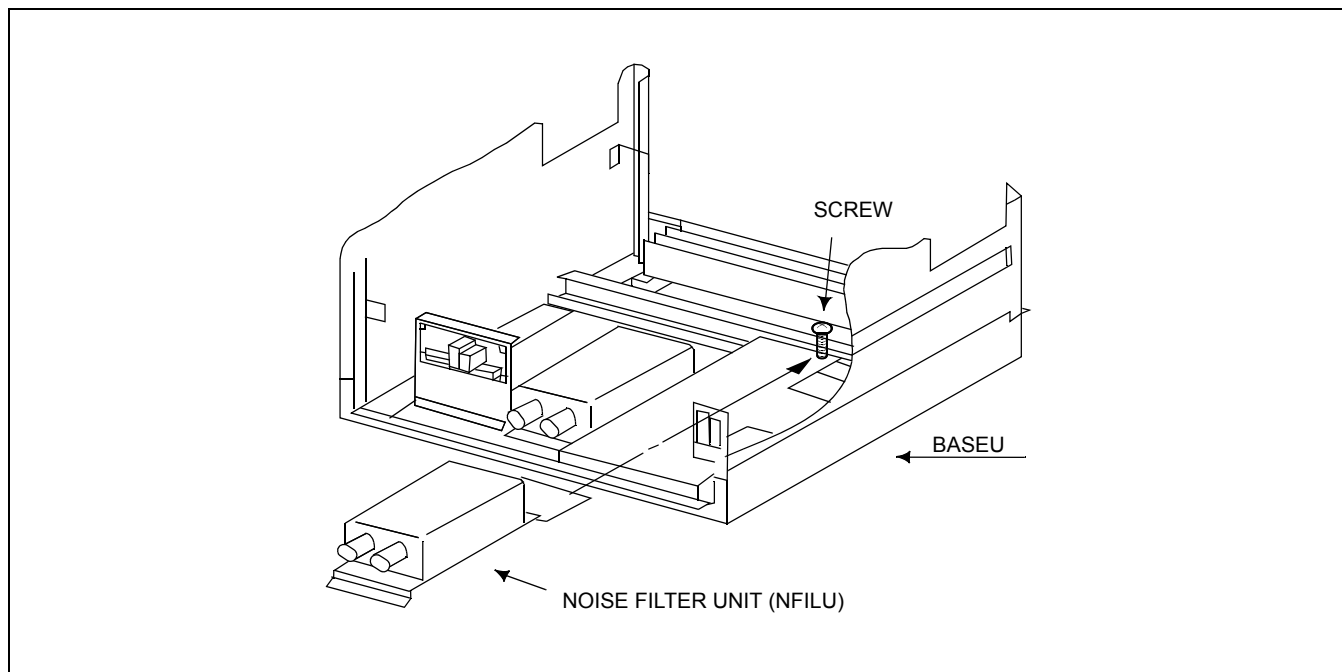
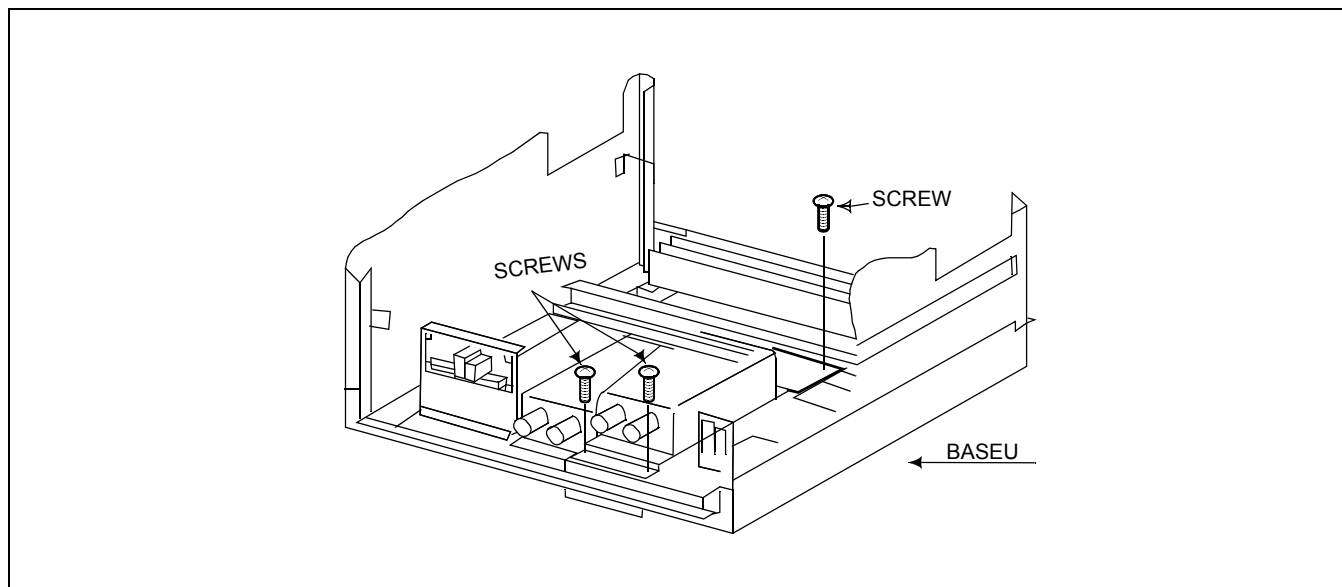


Figure 005-13 Attaching of NFILU

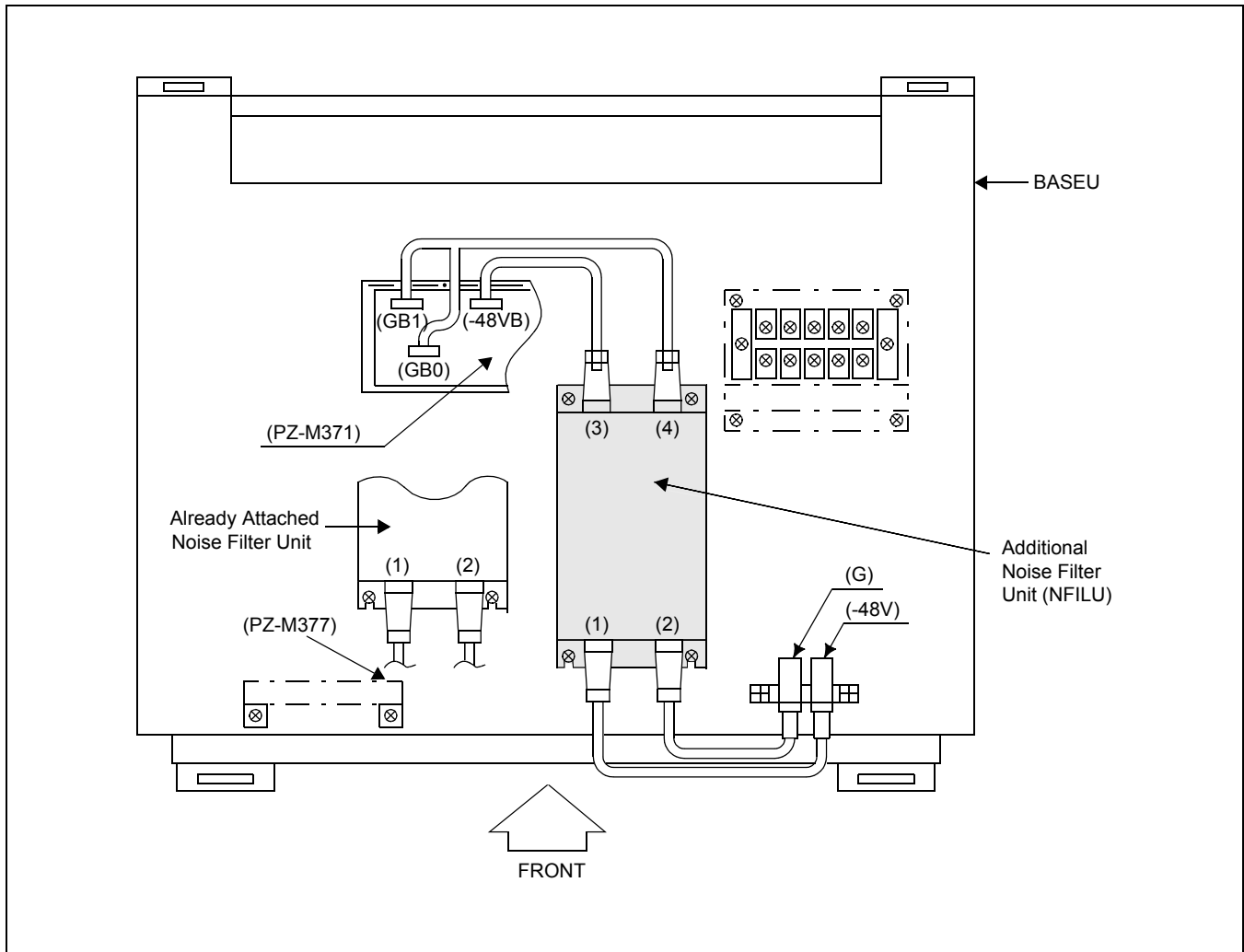


NAP-200-005

Sheet 16/18

Mounting of Units and Modules

Figure 005-14 Cabling Diagram of NFILU



INSTALLATION PROCEDURE

NAP-200-006
Sheet 1/1
Installation of Power Equipment



This NAP explains the procedures for installing the power equipment.

Note: *The Circuit Breaker (NFB) for the Rectifier's DC output must remain OFF.*

START

- Install the power equipment at the predetermined location using anchor bolts, etc. Install the framework for the batteries to be used for backup. Secure the framework using anchor bolts, etc.
- Check the cabling at the primary and secondary sides of the power equipment, and the cabling to the batteries
- Confirm that the specifications of the customer-installed AC PDB (NFB capacity, voltage, phase, etc.) conform to the specifications of the Rectifier.
- Confirm that the proper communication ground is available.
- Connect the input power cable and grounding cable to the rectifier.
- Supply electrolyte to each battery as per the specifications of the battery.
- Charge the batteries after verifying that the rectifier is operating normally.

END

NAP-200-007
Sheet 1/1
Installation of the MDF



This NAP explains the procedures for installing the MDF.

START

- Install the MDF at the predetermined location on the floor or wall. Be sure to check the quantity of accessory items such as arresters, block terminals, etc.
- Install the MDF, taking into consideration the locations of lead-in holes for Local Cable, C.O. lines, Tie Lines, and Cable Running Routes.
- MDF Line Protector Ground must be separated from the Communication Ground connected to the rectifier.

END

INSTALLATION PROCEDURE

NAP-200-008
Sheet 1/13
Connection of Power and Ground Cables from the Power Equipment



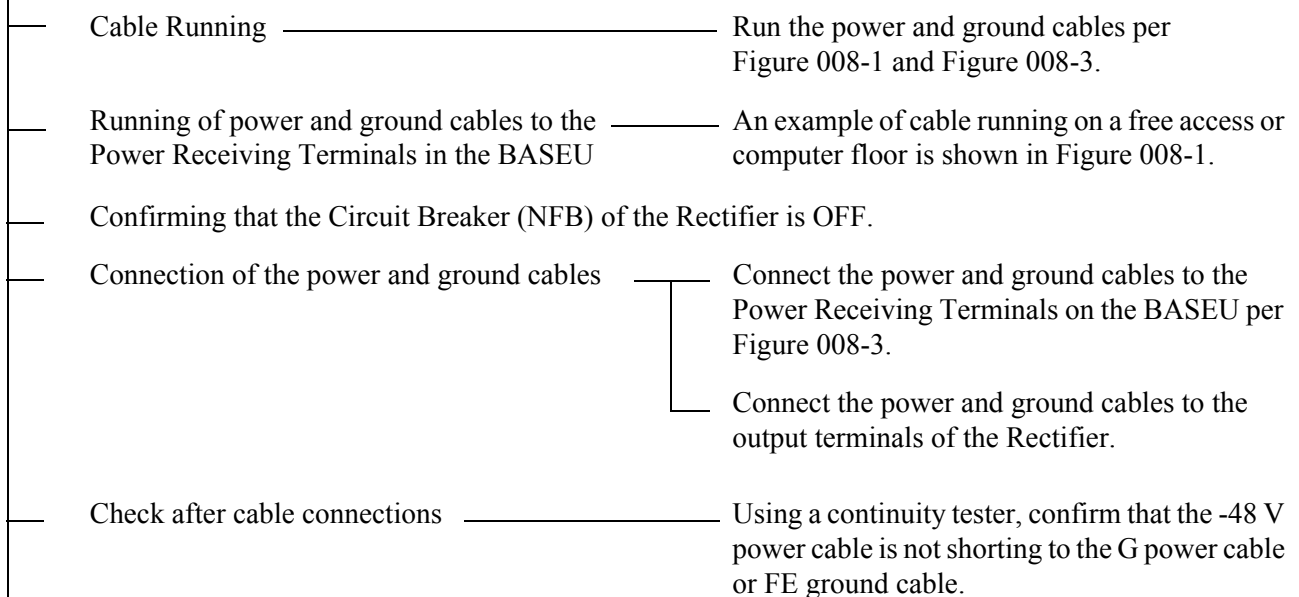
This NAP explains the following work items.

- Connection of Power and Ground Cables
- Connection of DC-DC Converter for Telephone sets equipped with Message Waiting Lamps
- End Jointing of Power and Ground Cables
- Branching of Power Cables

1. CONNECTION OF THE POWER AND GROUND CABLES

CAUTION: *Grounding circuit continuity is vital for safe operation of telecommunication equipment. Never operate telecommunication equipment with grounding conductor disconnected.*

START



END

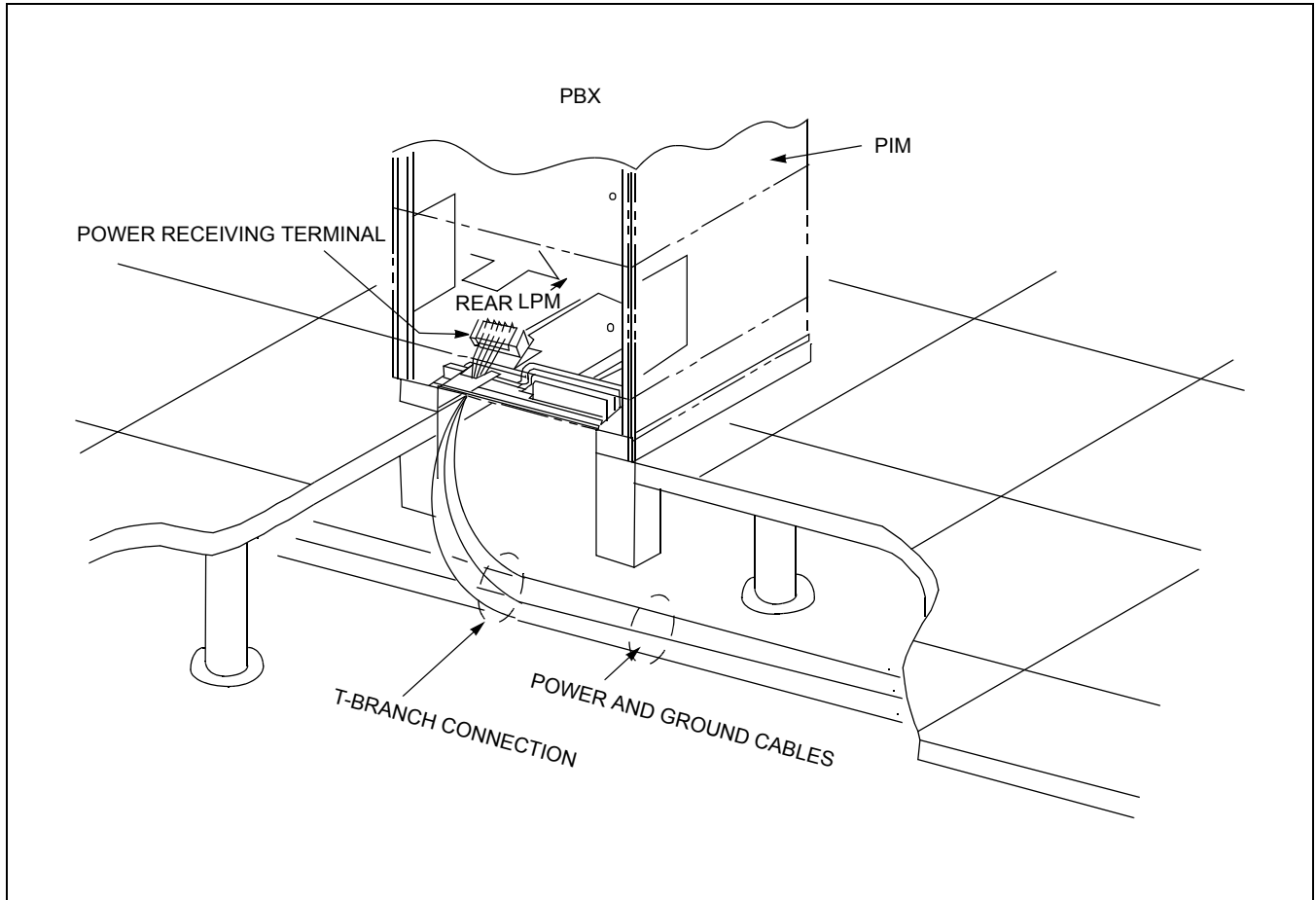
NAP-200-008

Sheet 2/13

Connection of Power and Ground
Cables from the Power Equipment



Figure 008-1 Detail of Cable Running (Single IMG Configuration)



INSTALLATION PROCEDURE

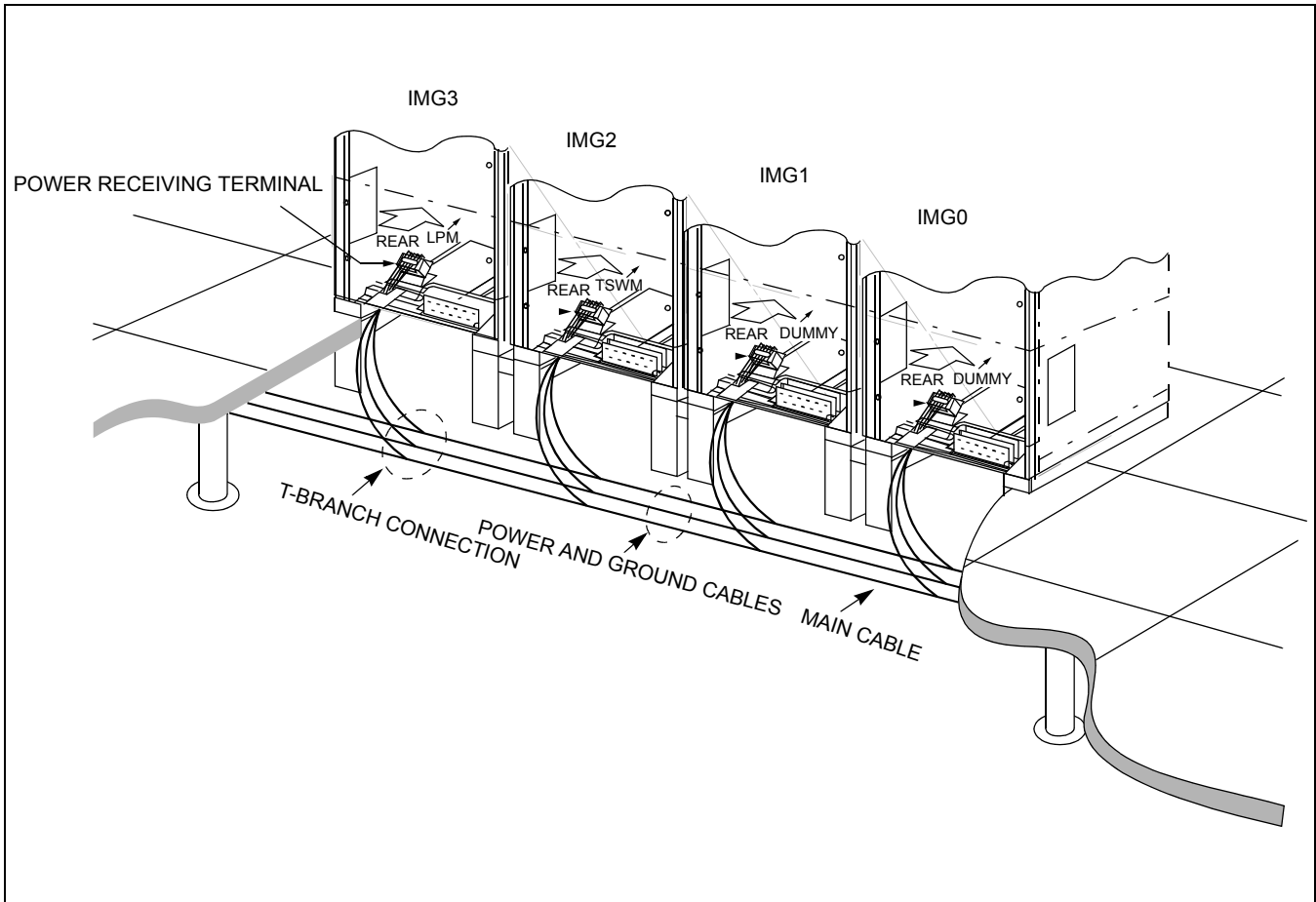
NAP-200-008

Sheet 3/13

Connection of Power and Ground
Cables from the Power Equipment



Figure 008-2 Detail of Cable Running (Multiple IMG Configuration)



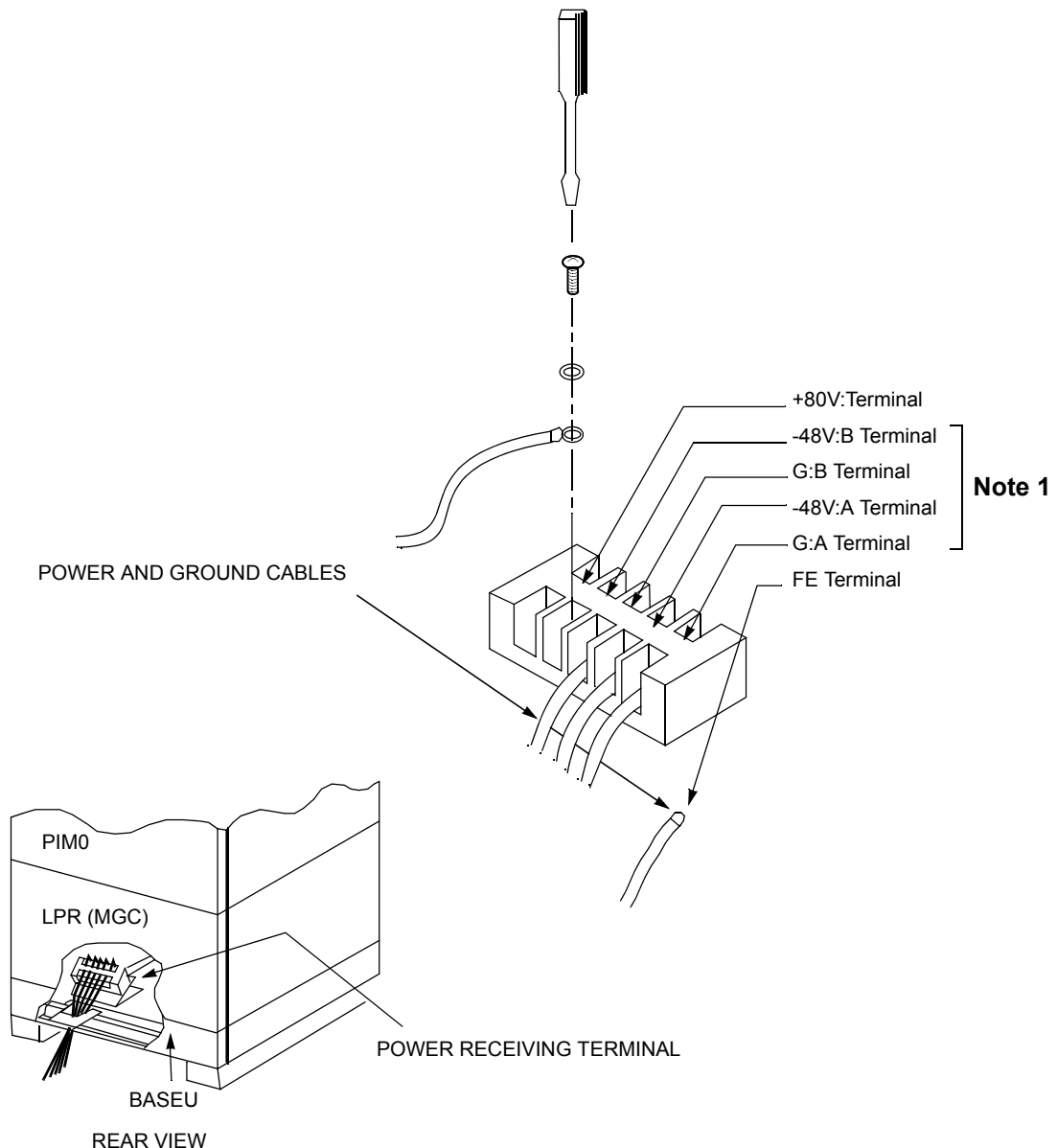
NAP-200-008

Sheet 4/13

Connection of Power and Ground
Cables from the Power Equipment



Figure 008-3 Connection of Power and Ground Cables to Power Receiving Terminal

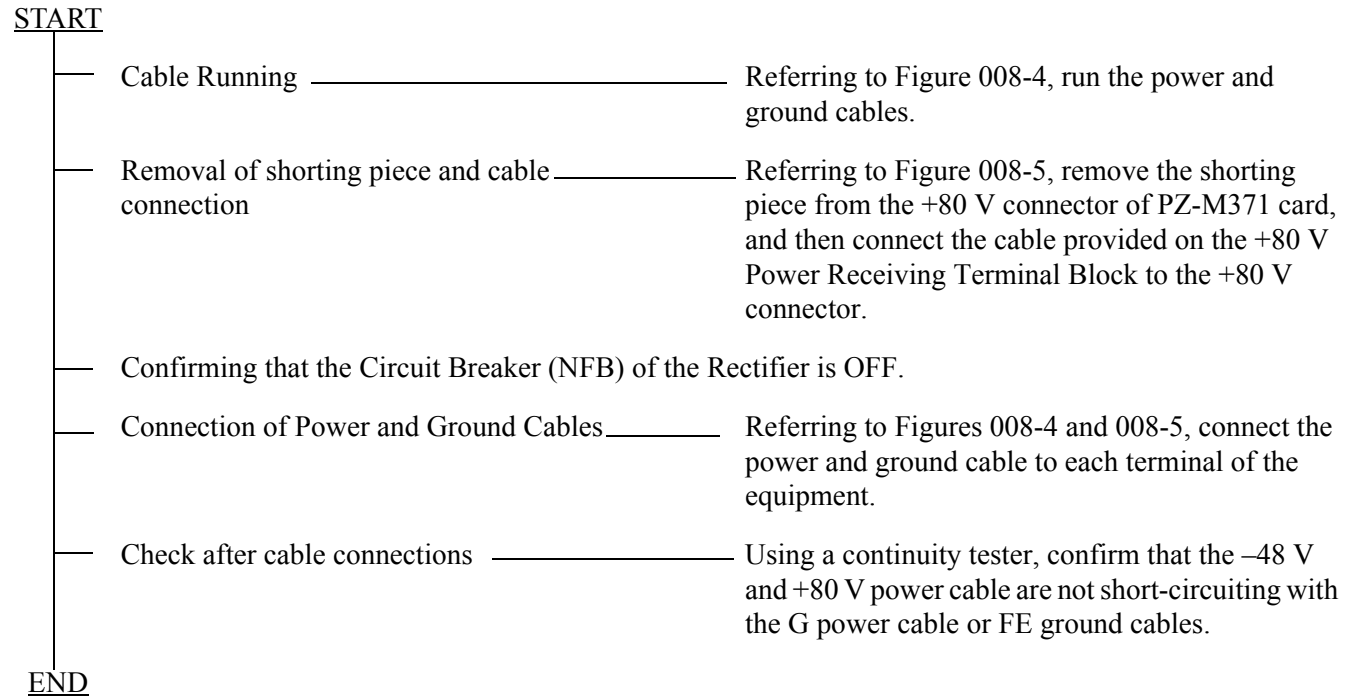


Note 1: For 1/2 PIM configuration, connect the cable only to the A terminal.

Note 2: An example of End Jointing (using A Type-Clamp terminal) is explained in Section 3 of this NAP.

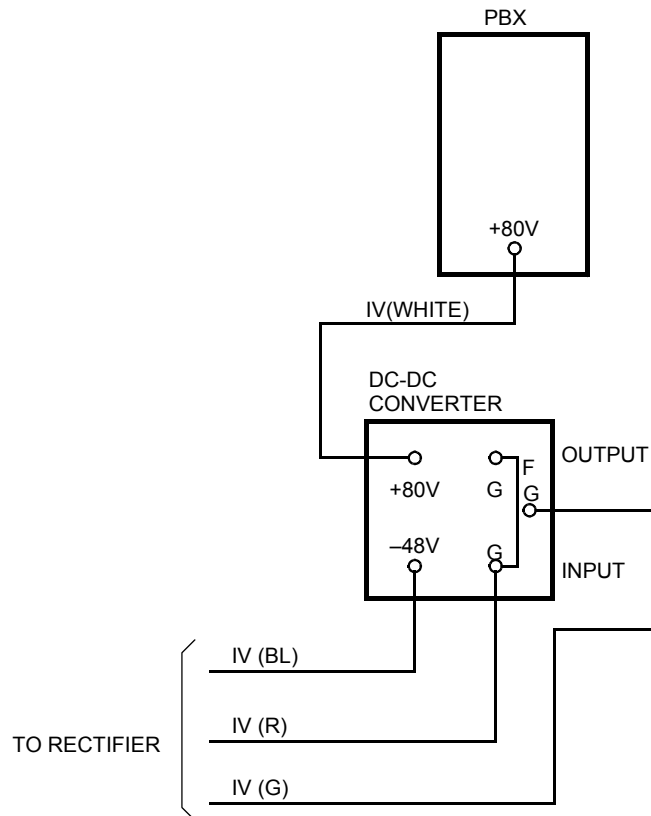
NAP-200-008
Sheet 5/13
Connection of Power and Ground Cables from the Power Equipment

2. CONNECTION OF DC-DC CONVERTER FOR TELEPHONE SETS EQUIPPED WITH MESSAGE WAITING LAMPS



NAP-200-008
Sheet 6/13
Connection of Power and Ground Cables from the Power Equipment

Figure 008-4 Example Connection Diagram-DC-DC Converter for Message Waiting Lamps

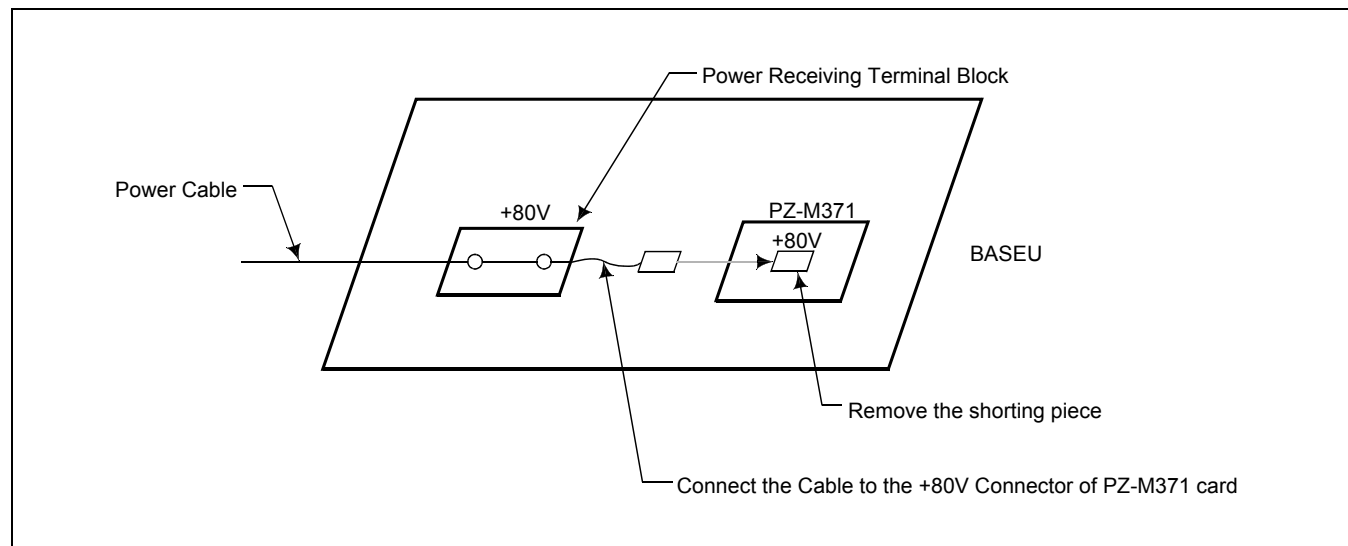


Note: *The current capacity of the DC-DC Converter is calculated by multiplying the (current capacity of the message waiting lamp) by the number of telephone sets.*

INSTALLATION PROCEDURE

NAP-200-008
Sheet 7/13
Connection of Power and Ground Cables from the Power Equipment

Figure 008-5 Removal of Shorting Piece and Cable Connection



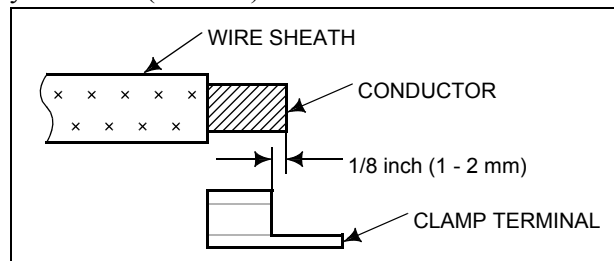
NAP-200-008
Sheet 8/13
Connection of Power and Ground Cables from the Power Equipment

3. END JOINTING OF POWER AND GROUND CABLES

START

Stripping of Insulation Sheath

Strip the wire to exceed the length of the terminal body by 1 - 2 mm (1/8 inch).



Clamping

Referring to Figure 008-6, place the terminal body on the die with the soldered part facing upward.

Referring to Figure 008-7, insert the stripped wire into the terminal body up to the insulation-sheath edge, and clamp the terminal.

Wipe the terminal with a dry cloth.

END

INSTALLATION PROCEDURE

NAP-200-008

Sheet 9/13

Connection of Power and Ground
Cables from the Power Equipment

Figure 008-6 Placing the Clamp Terminal on the Die

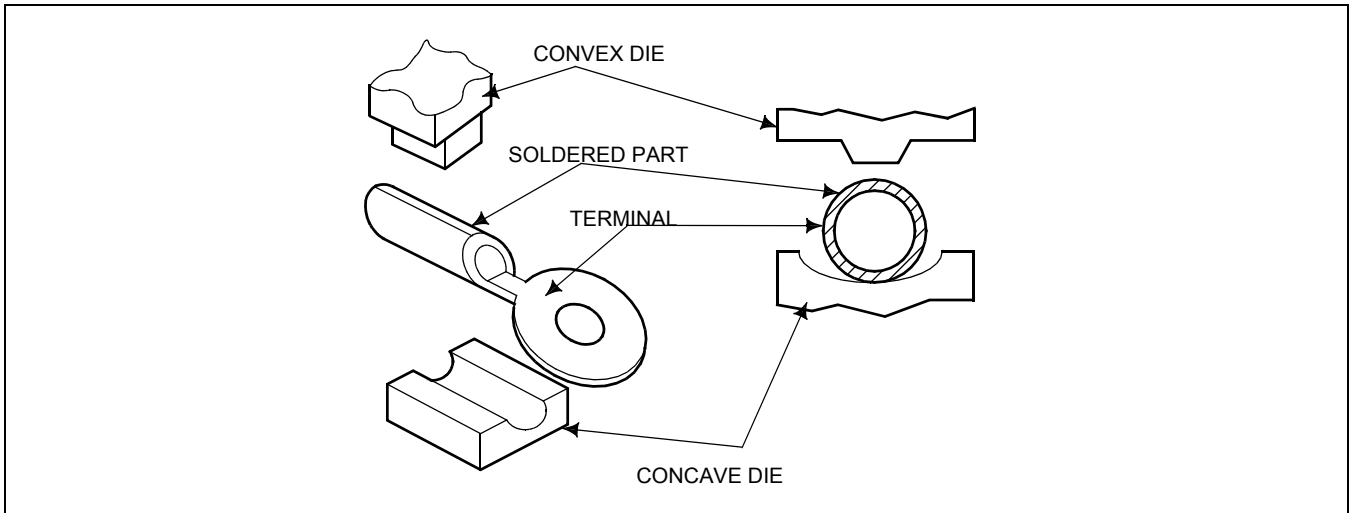
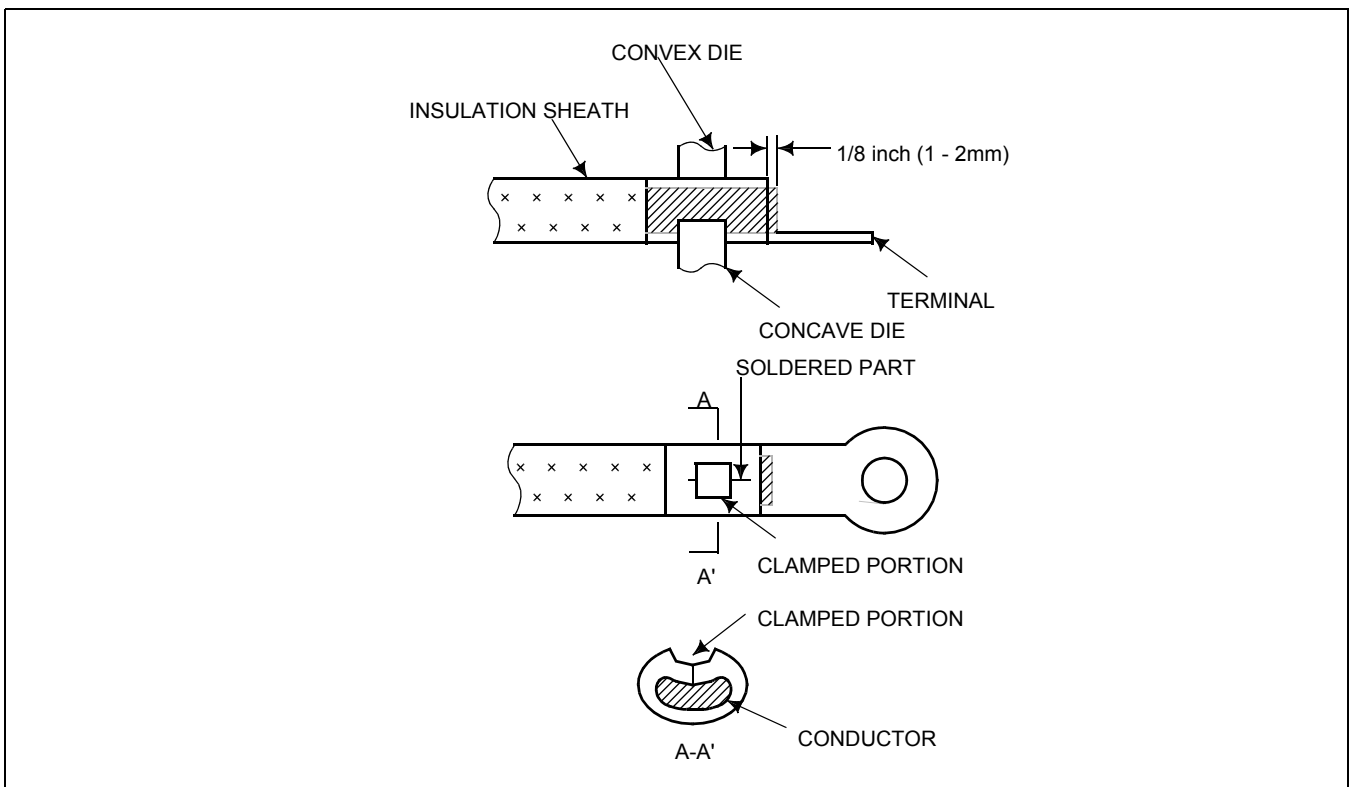


Figure 008-7 Clamping Method



NAP-200-008
Sheet 10/13
Connection of Power and Ground Cables from the Power Equipment

4. BRANCHING OF POWER CABLES

START

- Stripping Main and Branch Cable — Referring to Figure 008-8, strip insulation coating with an electrician's knife. Avoid damage to the conductor during the stripping process.
- Inserting of Cables into Terminal — Insert the stripped main wire and branch wire into the terminal as shown in Figure 008-9.
- Clamping for Branch Jointing — Place T-Type terminal on the die of the clamping tool, T-20 - T-44 terminals should be placed on the center of the die.
T-60 - T-365 terminals should be placed on the die in such a way that the terminal will be pressed on the part marked with the roulette.

The diagram shows three cross-sectional views of T-type terminals. The first is labeled 'NO ROULETTE T-20-T-44' and shows a simple T-shape. The second is labeled '2 ROULETTES T-60-T-122' and shows a T-shape with two small raised areas (roulettes) on the base. The third is labeled '3 ROULETTES T-154-T-365' and shows a T-shape with three small raised areas (roulettes) on the base.
- Proceed with the operation of the clamping tool referring to Figure 008-10.
- Clean the terminal with a dry cloth.
- Taping and Covering — Referring to Figures 008-11 and 008-12, put an installation cover over the clamped portion, after taping with installation tape.

END

INSTALLATION PROCEDURE

NAP-200-008

Sheet 11/13

Connection of Power and Ground
Cables from the Power Equipment

Table 008-1 Stripped Length

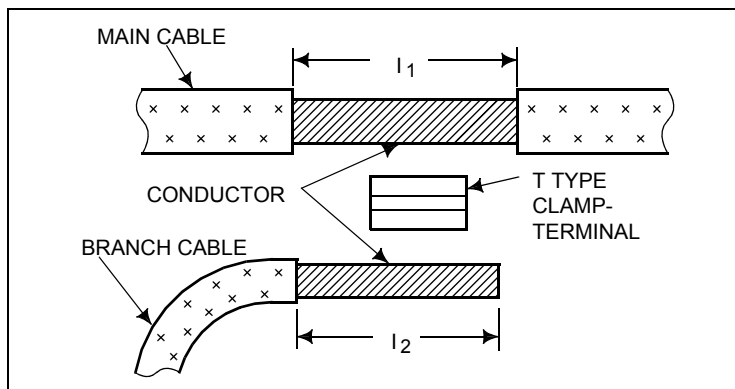
APPLICABLE TERMINAL	STRIPPED MAIN-WIRE LENGTH l^1 [inch (mm)]	STRIPPED MAIN-WIRE LENGTH l^2 [inch (mm)]
T-20	Approx. 1.2 (28)	Approx. 1.0 (24)
T-26	1.3 (32)	1.2 (28)
T-44	1.5 (37)	1.3 (33)
T-60	1.6 (40)	1.5 (36)
T-76	1.7 (42)	1.6 (39)
T-98	1.8 (44)	1.7 (41)
T-122	1.7–1.9 (43–46)	1.6–1.7 (40–43)
T-154	2.0 (49)	1.9 (46)
T-190	2.3 (57)	2.2 (54)
T-240	2.5 (63)	2.4 (60)
T-288	2.8 (69)	2.6 (66)
T-365	3.0 (75)	2.9 (72)

T-98

Sum of the cross sections of the main and branching, or the main and extension cables.

Type of clamp terminal (T type)

Figure 008-8 Stripped Length of Main and Branch Cable



NAP-200-008

Sheet 12/13

Connection of Power and Ground
Cables from the Power Equipment

Figure 008-9 Inserting of Cables into Terminal

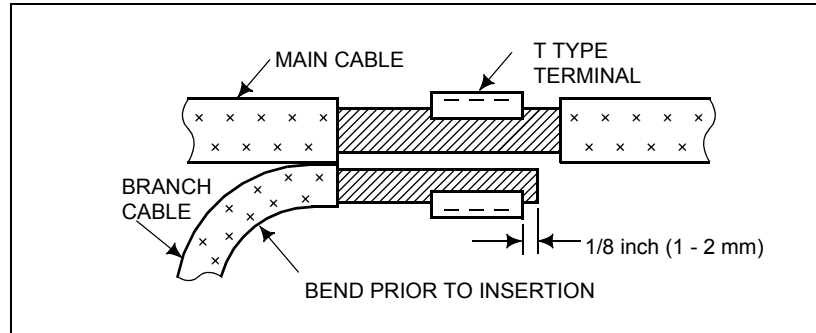
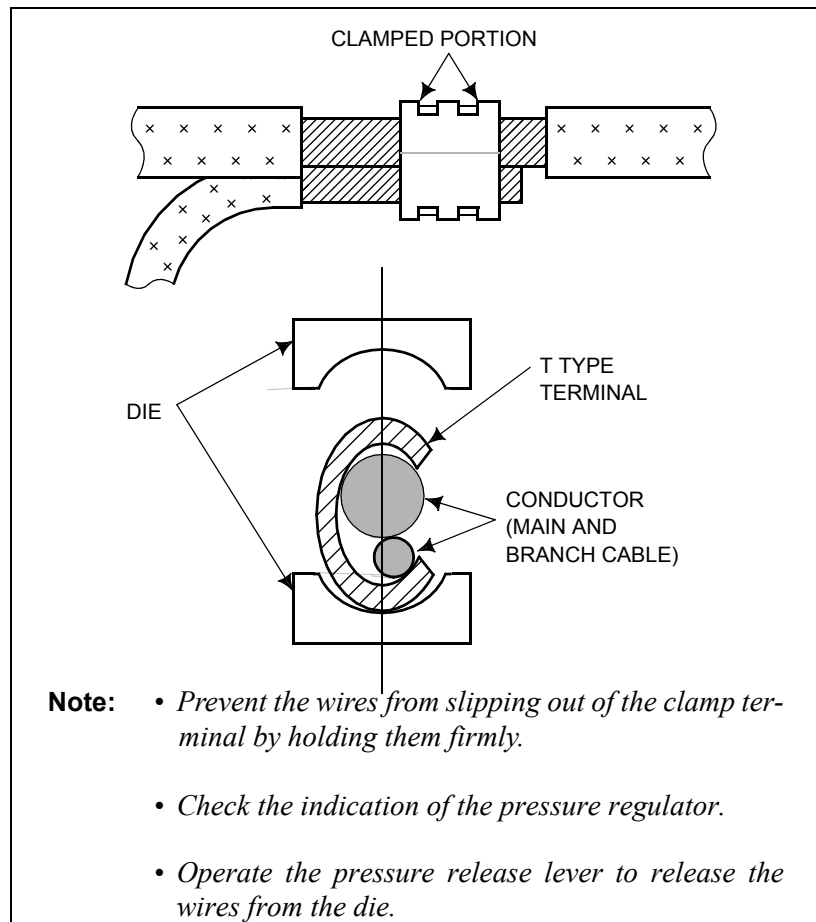


Figure 008-10 Clamping for Branch Jointing



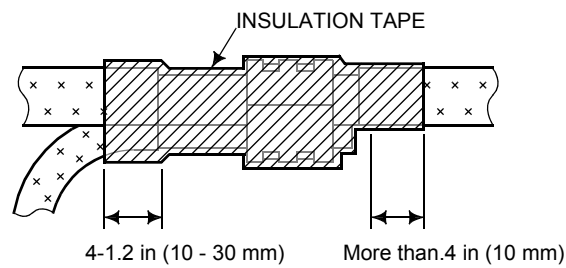
INSTALLATION PROCEDURE

NAP-200-008

Sheet 13/13

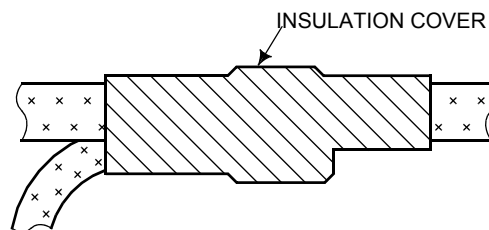
Connection of Power and Ground
Cables from the Power Equipment

Figure 008-11 Taping



Note: *Taping should be done in two rounds with the tape overlapping half the tape width.*

Figure 008-12 Covering



NAP-200-009
Sheet 1/13
Setting of Switch Positions and Mounting of Circuit Cards



This NAP explains the following work items:

- Extraction of Mounted Circuit Cards
- Mounting of Circuit Cards
- Setting of Switch Positions on Circuit Cards
- Installation of CPR

1. PRECAUTIONS

1.1. Protection Against Static Electricity

When setting switches on circuit cards, use a Portable Field Service Grounding Kit in order to prevent damage to static-sensitive components.

Example: 3M Model 8012, consists of:

- 2 × 2 VELOSTAT[®] Work Mat
- 15 ft. (4.5 m) Ground Cord
- CHARGE-GUARD[®] Wrist Strap with alligator clip

Before handling any circuit cards, first spread out the work mat, then connect the ground cord to the frame or other ground source.

If a CHARGE-GUARD wrist strap is to be used, connect the wrist strap to the frame or other ground using the provided cable.

1.2. Handling Circuit Cards

Whenever possible, do not handle circuit cards with bare hands.

The only portion of the card that can be touched is its edge. Do not touch the surface or the mounted components. Doing so may damage the card.

Handle circuit cards carefully. Never bang or drop them.

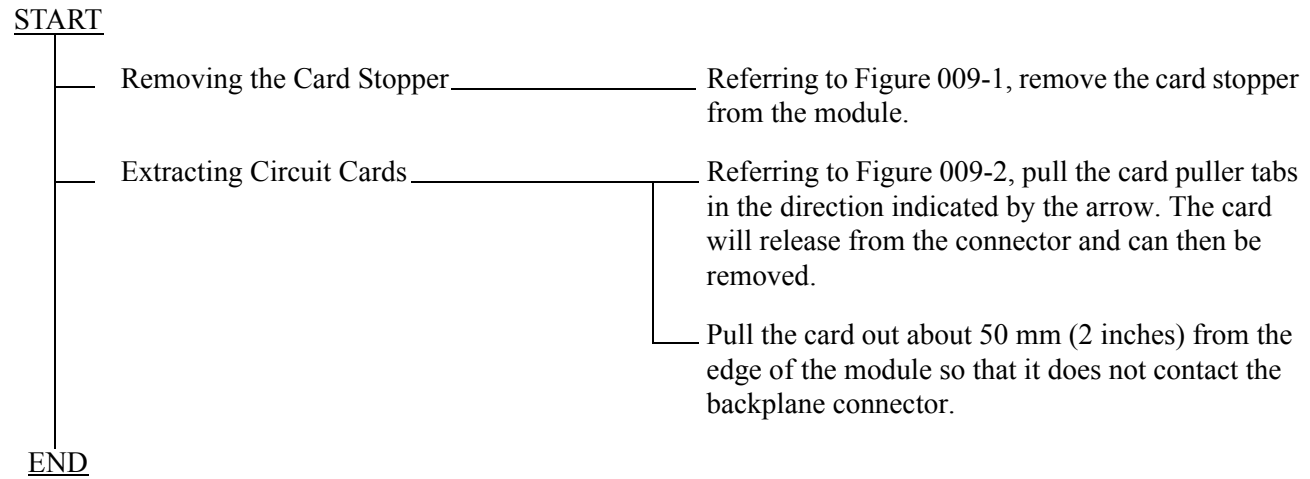
1.3. Mounting or Removing Circuit Cards when the System Is in Operation

Never mount or remove a circuit card without first setting its MBR and/or MB switch to the UP position.

NAP-200-009
Sheet 2/13
Setting of Switch Positions and Mounting of Circuit Cards



2. EXTRACTION OF MOUNTED CIRCUIT CARDS



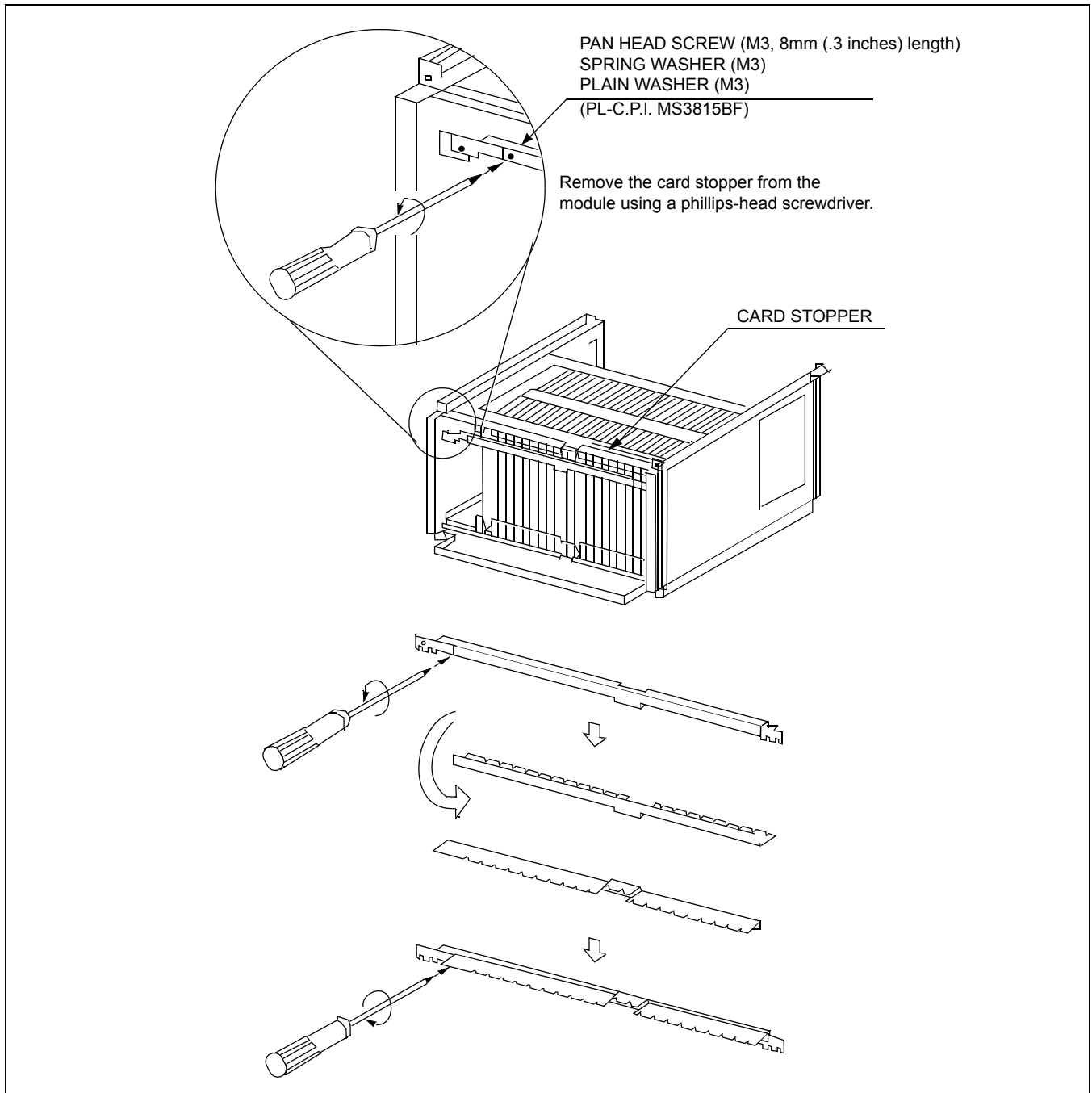
NAP-200-009

Sheet 3/13

Setting of Switch Positions and
Mounting of Circuit Cards



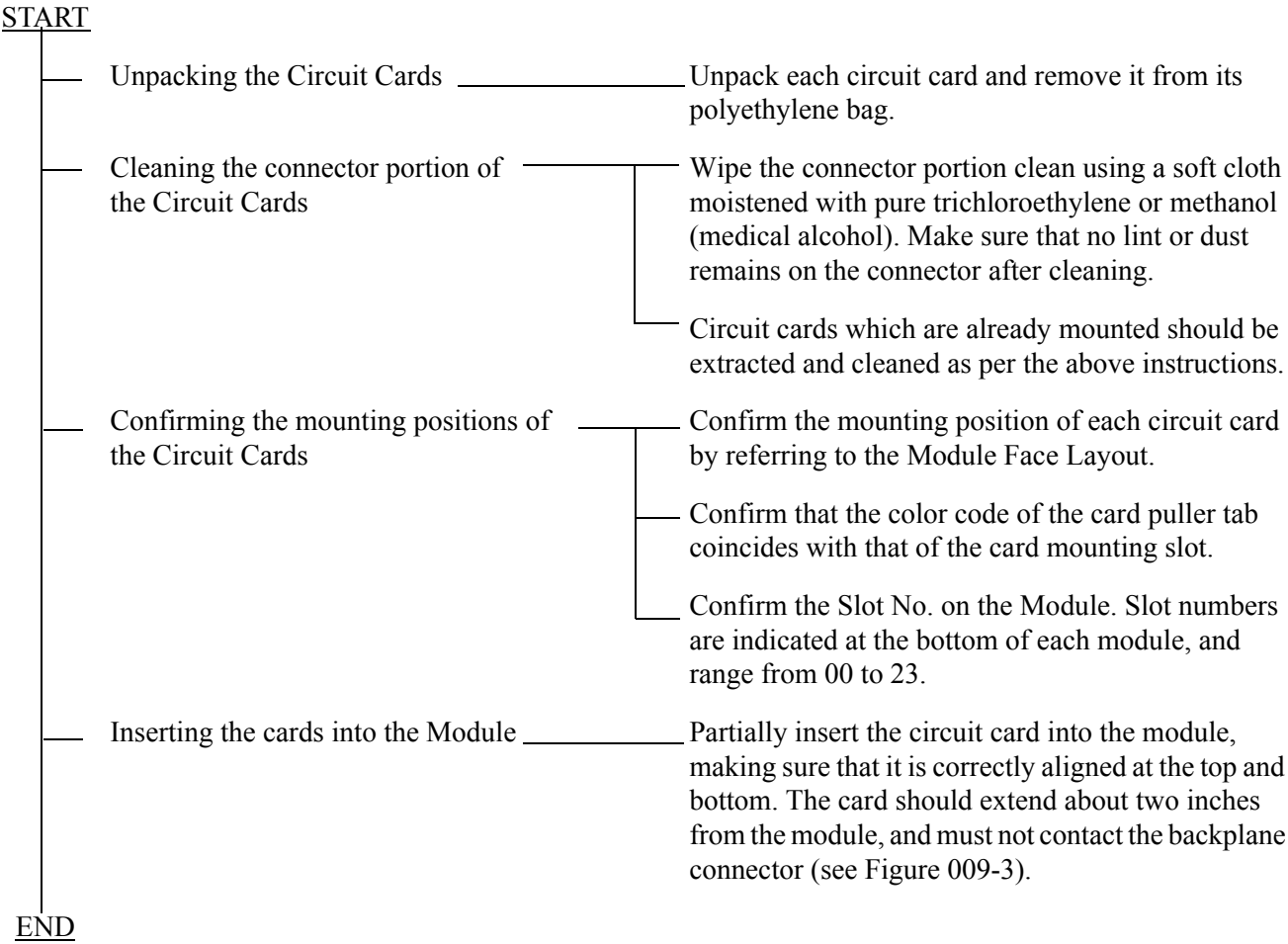
Figure 009-1 Removal of Card Stopper



NAP-200-009
Sheet 4/13
Setting of Switch Positions and Mounting of Circuit Cards



3. MOUNTING OF CIRCUIT CARDS



NAP-200-009
Sheet 5/13
Setting of Switch Positions and Mounting of Circuit Cards



4. SETTING OF SWITCH POSITIONS ON CIRCUIT CARDS

START

Extracting the Circuit Cards from the
Module

Extract one circuit card requiring switch setting from
the module.

Place the extracted card onto the anti-static sheet.

Performing switch setting

Set the required switches according to the Switch
Setting Sheets in the Circuit Card Manual.

Mounting of Circuit Cards

After the switches have been set, partially insert the
card in the module. The card should extend about 50
mm (2 inches) from the module, and must not contact
the backplane connector. Refer to Figure 009-3.

END

INSTALLATION PROCEDURE

NAP-200-009

Sheet 6/13

Setting of Switch Positions and
Mounting of Circuit Cards



Figure 009-2 Extraction of Circuit Cards

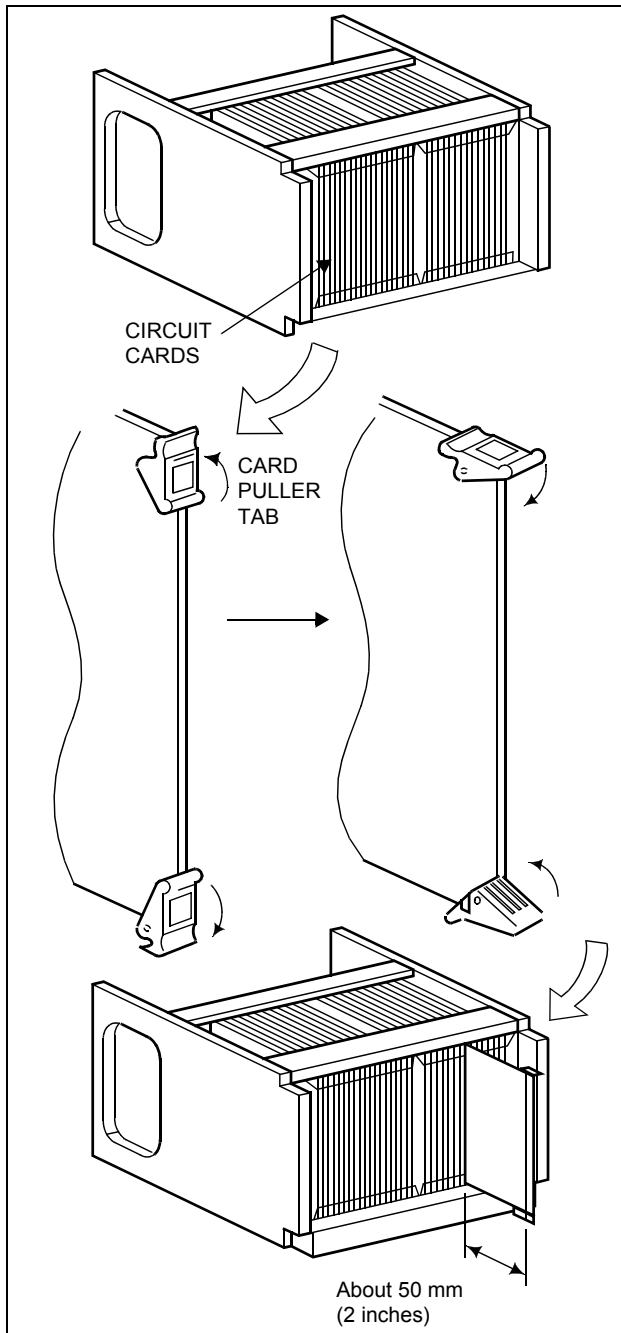
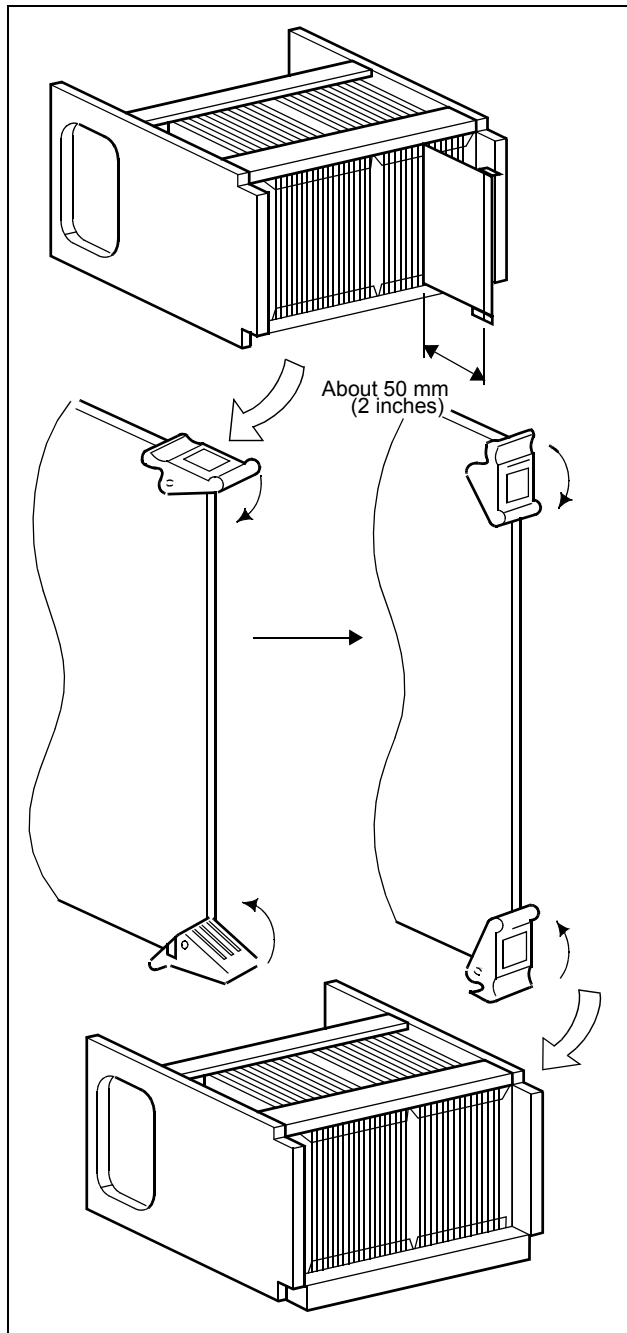


Figure 009-3 Circuit Card Mounting (Partial Insertion)



NAP-200-009

Sheet 7/13

Setting of Switch Positions and
Mounting of Circuit Cards



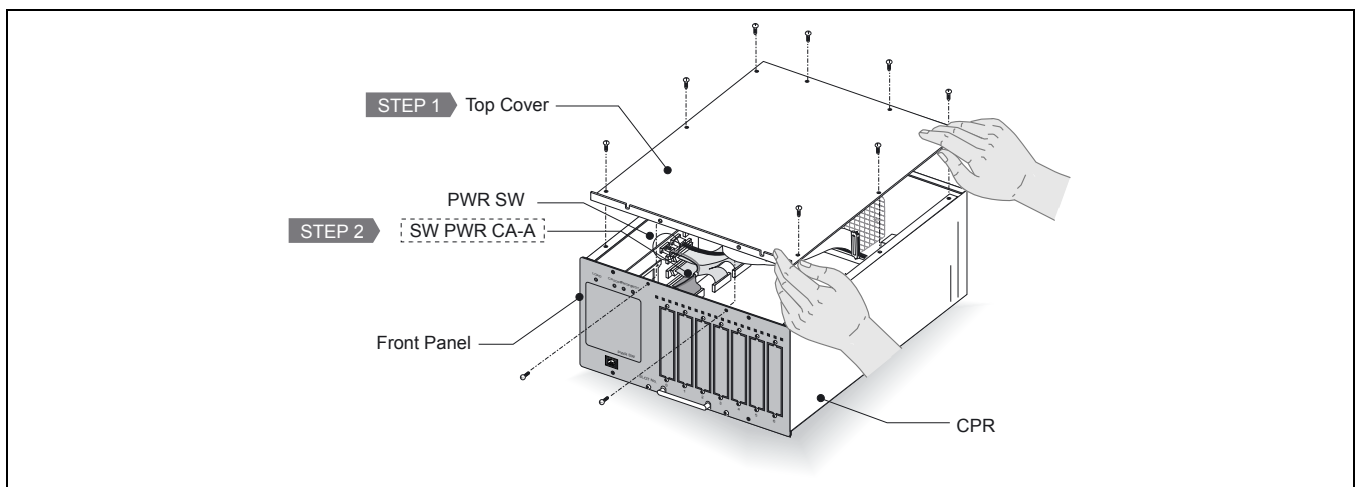
5. INSTALLATION OF CPR

This section explains how to install the CPR into the LPM (MGC). Perform the following procedure for each CPR.

STEP 1: Remove the eight screws from the top cover and the two screws from the front panel, then lift away the top cover.

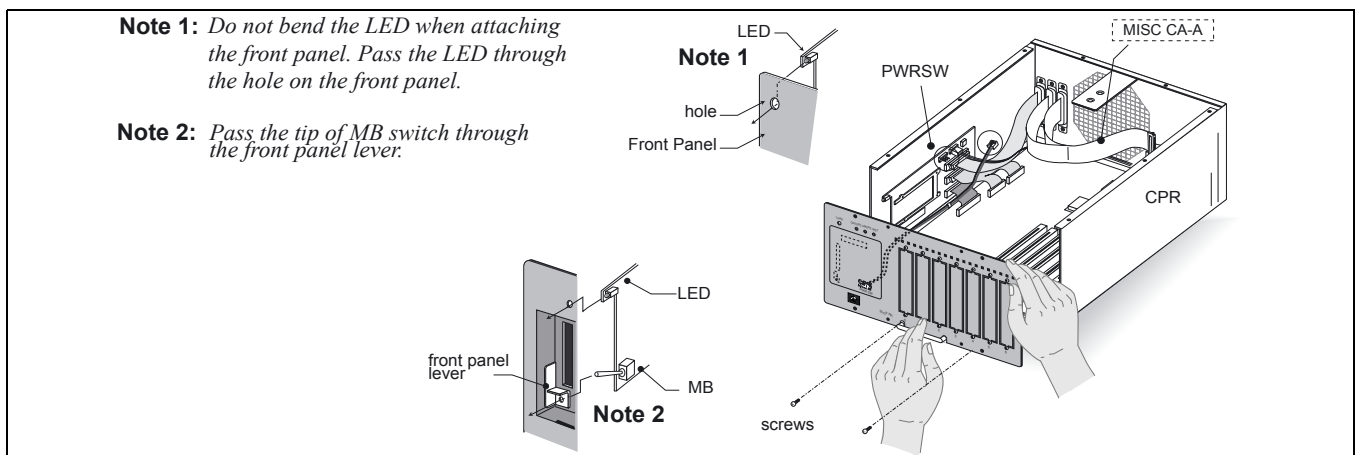
STEP 2: Disconnect the SW PWR CA-A from PWR SW connector.

Figure 009-4 Removal of Top Cover



STEP 3: Remove the two screws from the front panel, then detach the front panel.

Figure 009-5 Removal of Front Panel



INSTALLATION PROCEDURE

NAP-200-009

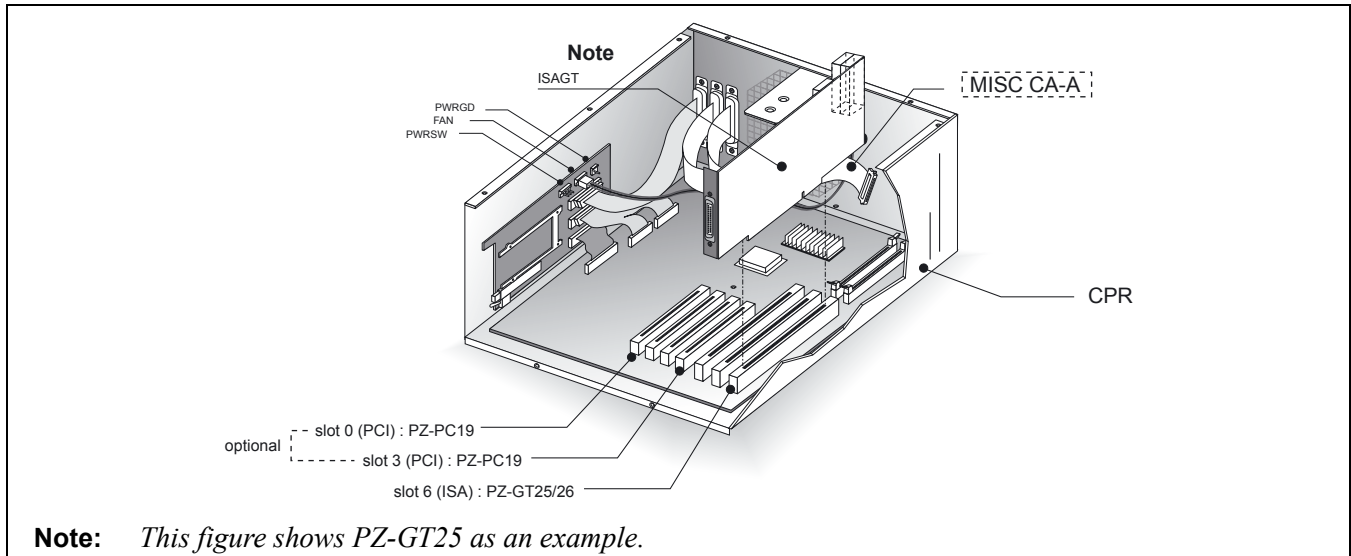
Sheet 8/13

Setting of Switch Positions and
Mounting of Circuit Cards



STEP 4: Insert the ISAGT (PZ-GT25/26) card into slot 6 as shown below.

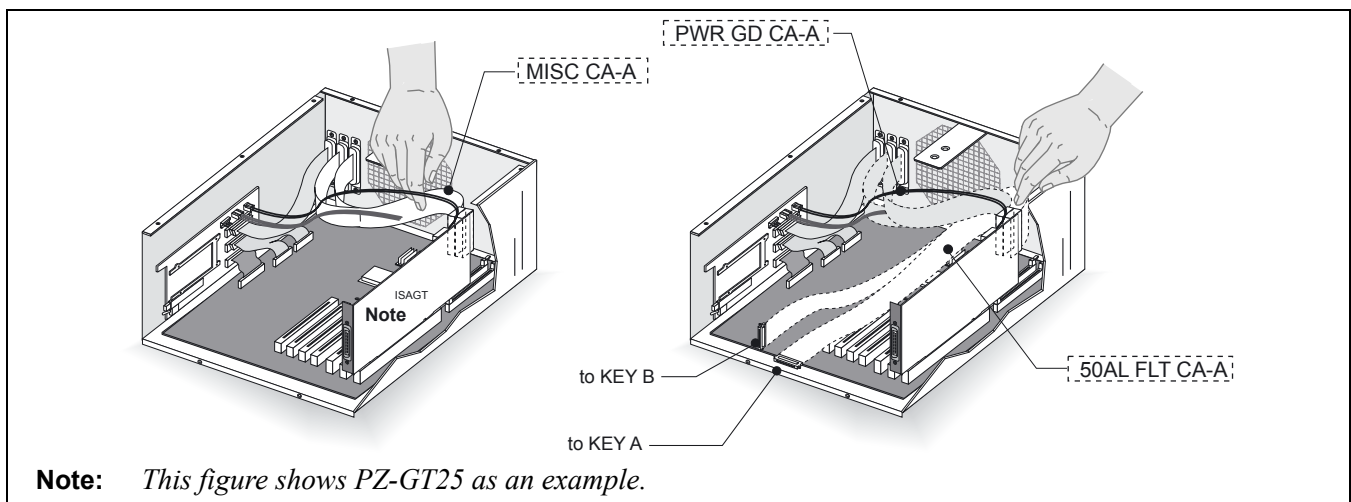
Figure 009-6 Insertion of the ISAGT card (in slot 6)



STEP 5: Connect the following cables to the connectors on the inserted ISAGT card. For more information, refer to Figure 9-15.

- MISC CA-A: CONN (upper connector on the ISAGT)
- 50AL FLT CA-A: CONN (lower connector on the ISAGT)
- PWR GD CA-A: PWRGD (PZ-IO31) <=> PWG (ISAGT)

Figure 009-7 Cable Connections to the ISAGT card



NAP-200-009

Sheet 9/13

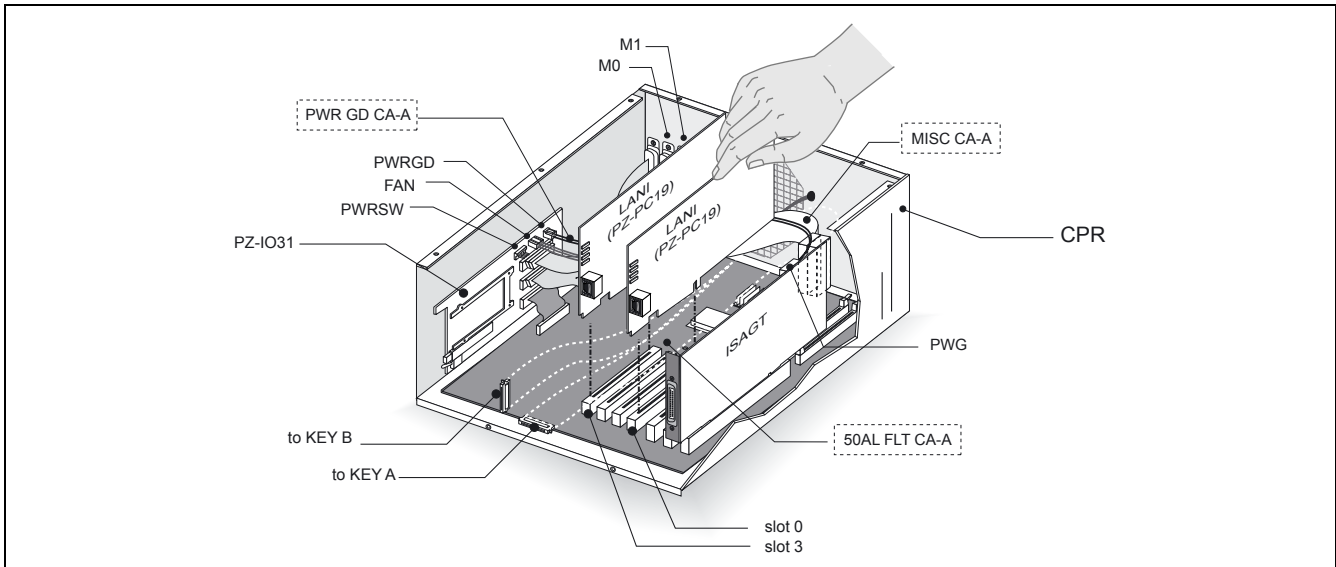
Setting of Switch Positions and
Mounting of Circuit Cards



STEP 6: Insert the optional LANI card(s) when FCCS is used via LAN.

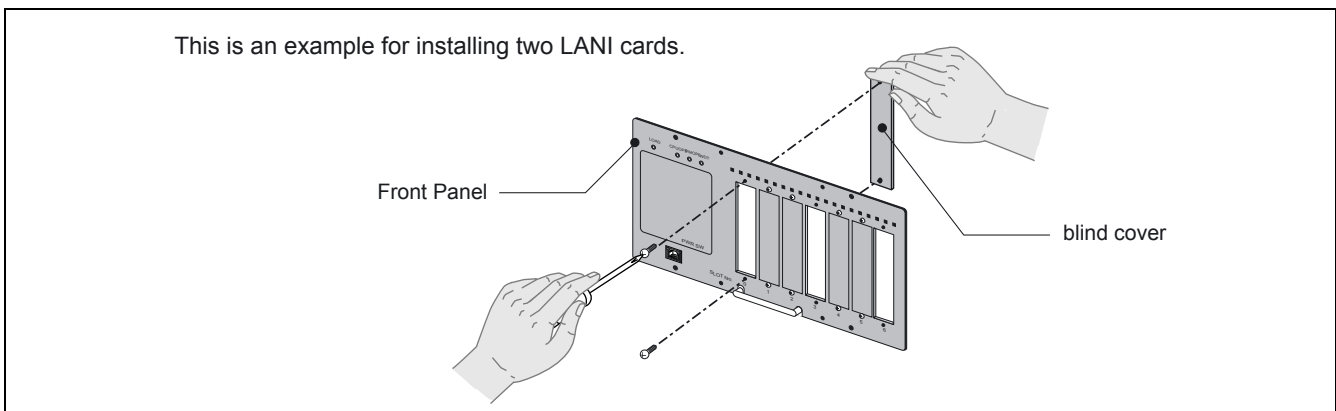
Note: *FCCS stands for Fusion Call Control Signaling.*

Figure 009-8 Insertion of the LANI card (in slot 0/3)



STEP 7: Remove the blind covers of the slots in which ISAGT/LANI card to be used.

Figure 009-9 Removal of Blind Covers



INSTALLATION PROCEDURE

NAP-200-009

Sheet 10/13

Setting of Switch Positions and
Mounting of Circuit Cards

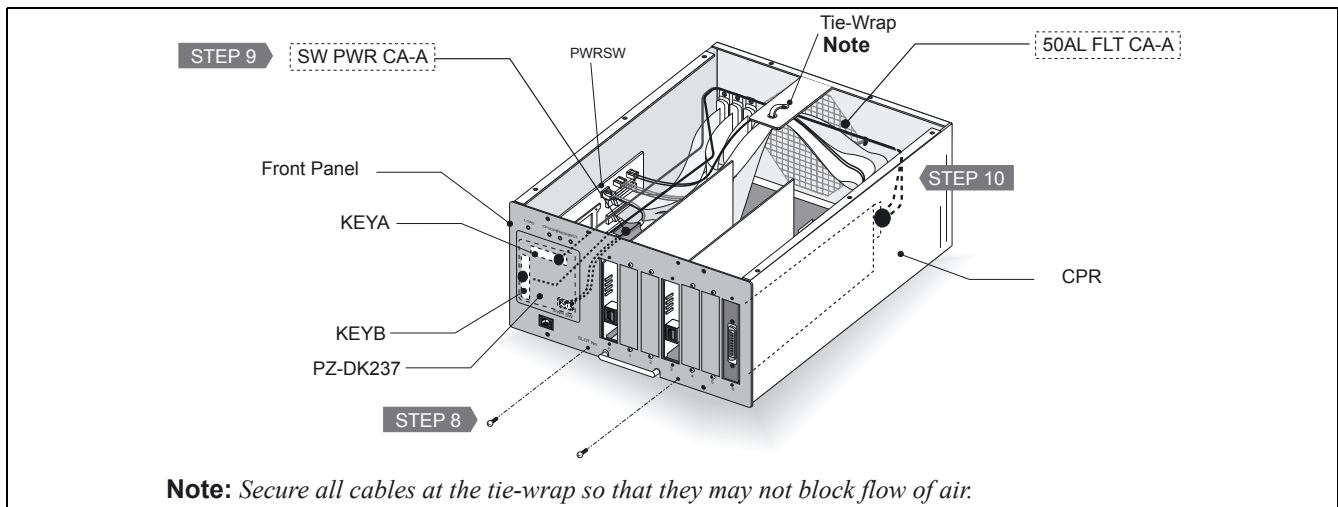


STEP 8: Attach the Front Panel again by fastening the removed two screws at the lower side of the front panel.

STEP 9: Connect SW PWR CA-A cable again.

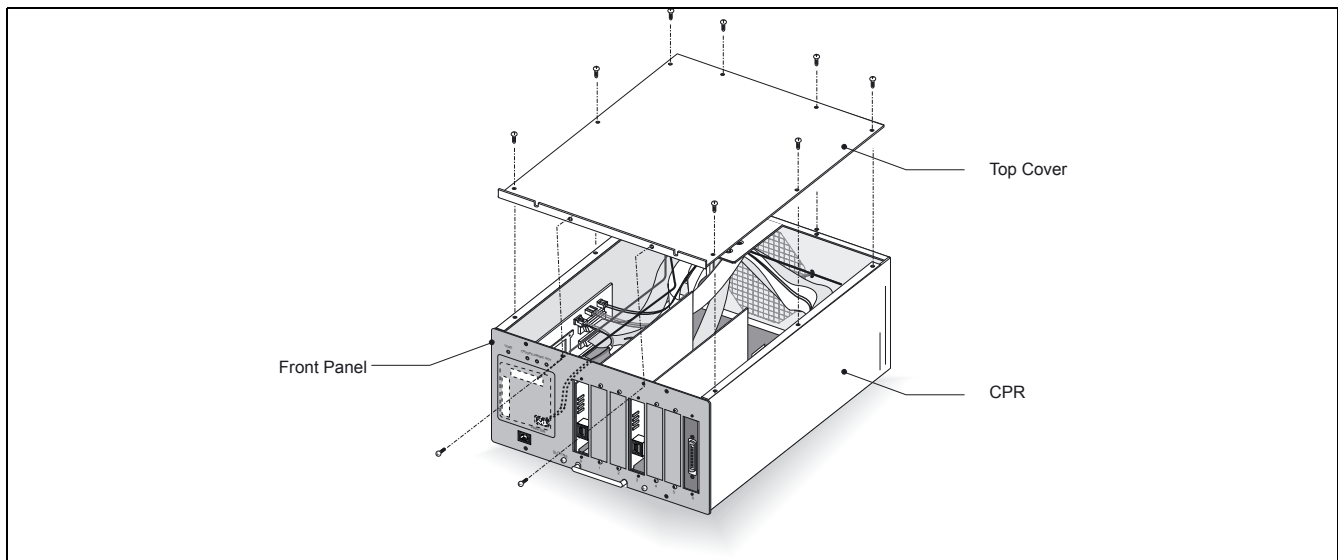
STEP 10: Connect 50AL FLT CA-A to KEYA and KEYB connectors on PZ-DK237.

Figure 009-10 Cable Connections to the ISAGT card



STEP 11: Attach the top cover again by using the removed ten screws.

Figure 009-11 Attaching the Top Cover



NAP-200-009

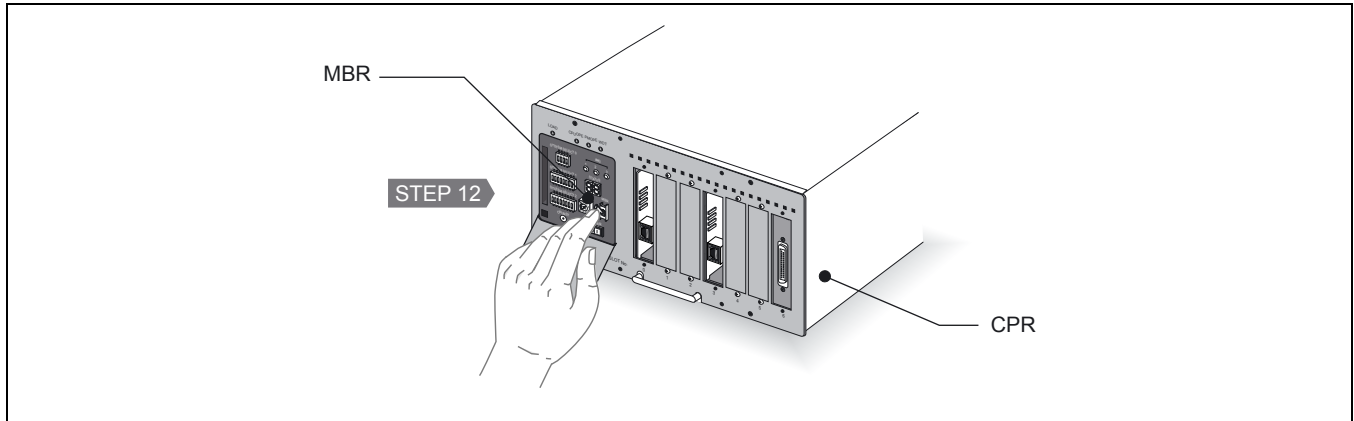
Sheet 11/13

Setting of Switch Positions and
Mounting of Circuit Cards



STEP 12: Turn ON the MBR key on the DSP of the CPR.

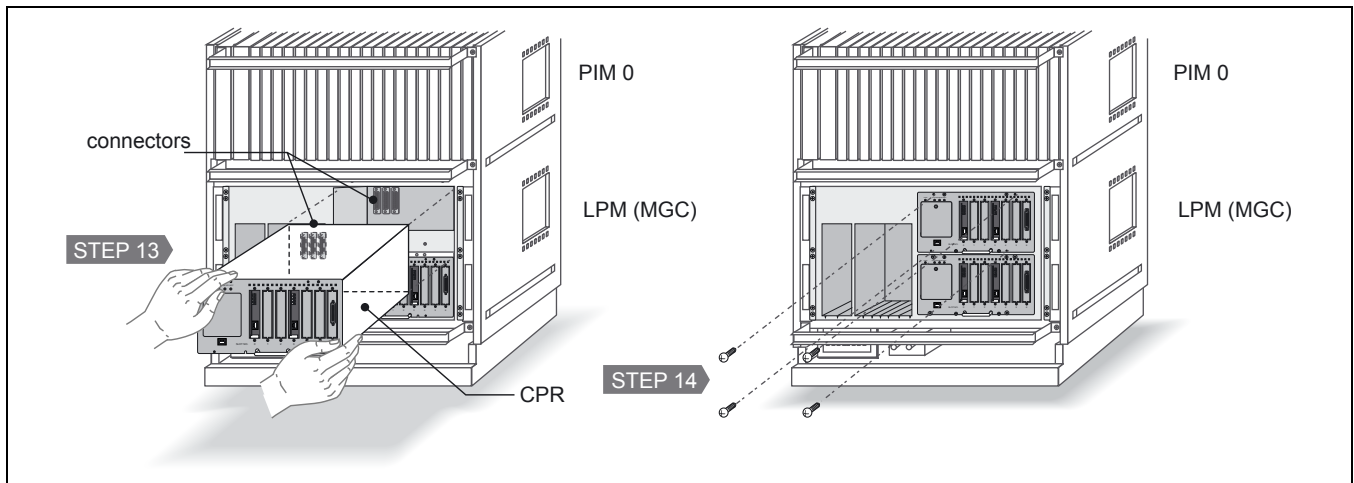
Figure 009-12 Turning ON the MBR key



STEP 13: Insert the CPR into the LPM so that three connectors may be firmly plugged into the connectors on the backplane.

STEP 14: Fasten the CPR to the LPM (MGC) using the four screws

Figure 009-13 Accommodation of CPR into LPM (MGC)



INSTALLATION PROCEDURE

NAP-200-009

Sheet 12/13

Setting of Switch Positions and
Mounting of Circuit Cards



Table 009-1 ISAGT and LANI Mounting Slots

Circuit Card	Slot No.	Bus Type	Reference
ISAGT (PZ-GT25/26) Note1	6	ISA	Required
LANI (PZ-PC19)	0	PCI	Optional (used for FCCS Link Note2)
LANI (PZ-PC19)	3	PCI	Optional (used for FCCS Link <dual>)

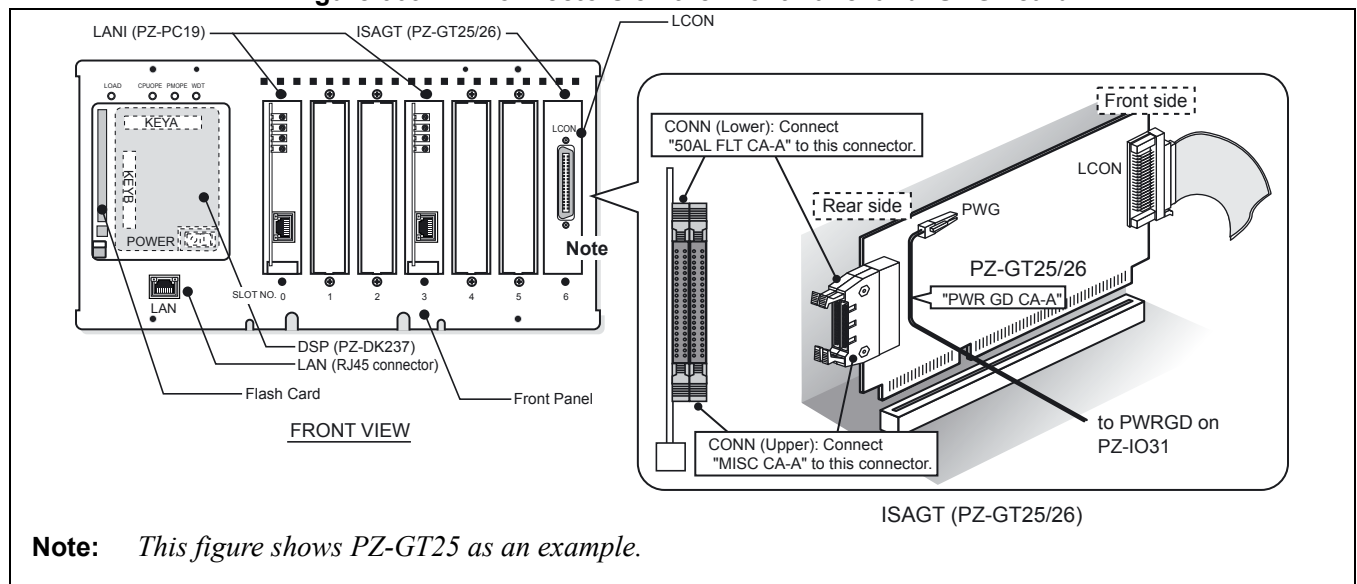
Note 1: PZ-GT25 is for Single IMG, PZ-GT26 is for Multiple IMG.

Note 2: FCCS stands for Fusion Call Control Signaling.

Table 009-2 Cable Connections to the ISAGT card

No.	CABLE NAME	FROM	TO	Reference
1	50AL FLT CA-A	KEYA/KEYB	CONN (lower)	KEY A and KEY B are on PZ-DK237.
2	MISC CA-A	M0/M1	CONN (upper)	
3	PWR GD CA-A	PWRGD	PWRG	PWRGD is on PZ-IO31 card.

Figure 009-14 Connectors on the Front Panel and ISAGT card



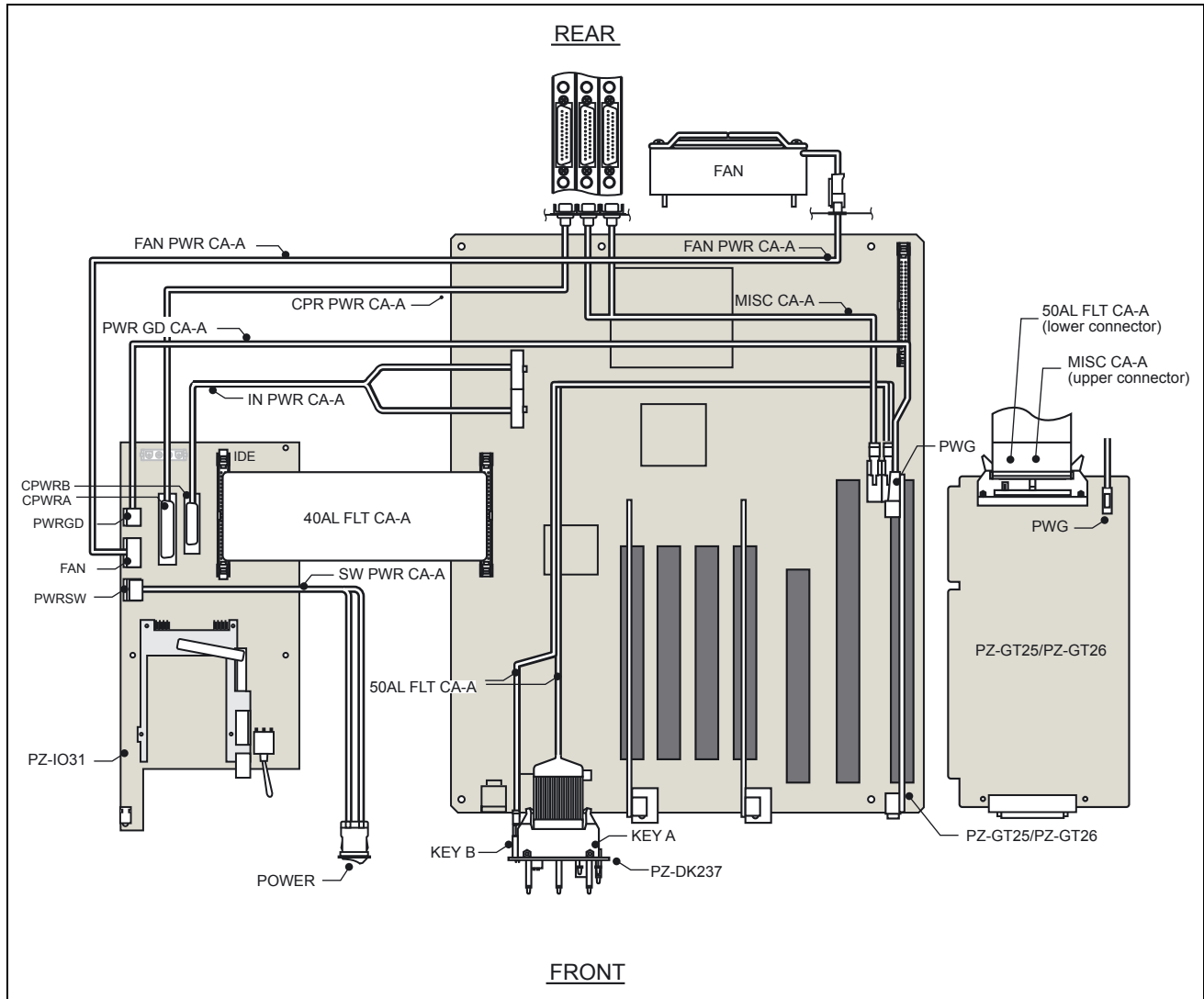
NAP-200-009

Sheet 13/13

Setting of Switch Positions and
Mounting of Circuit Cards



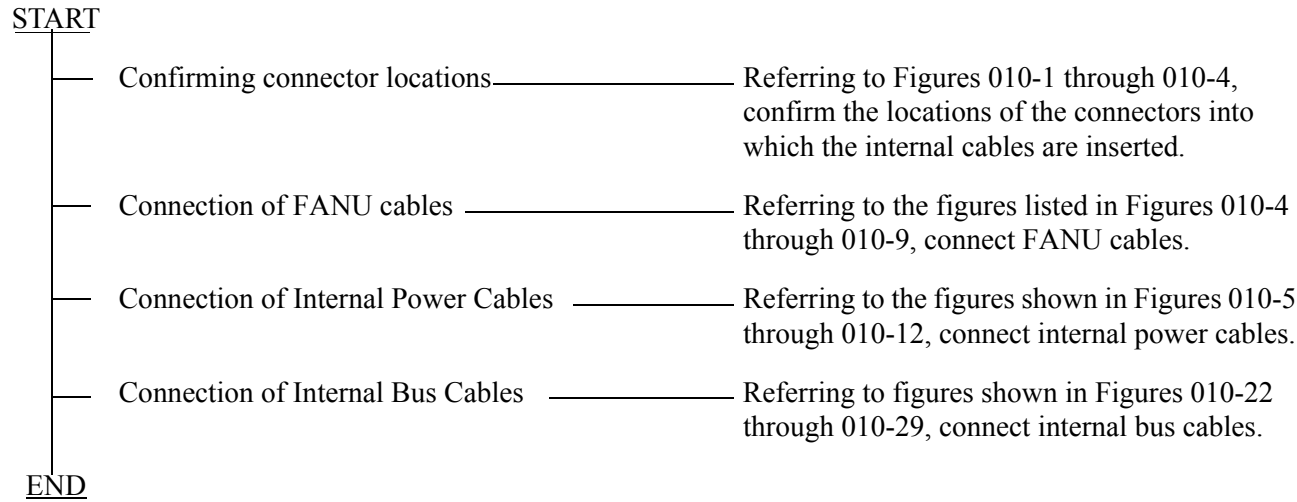
Figure 009-15 Cable Connection Diagram for CPR



INSTALLATION PROCEDURE

NAP-200-010
Sheet 1/64
Internal Cable Connections

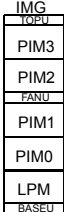
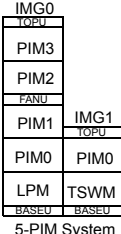
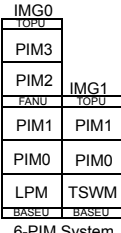
This NAP explains how to run the following internal cables between Modules.



NAP-200-010
Sheet 2/64
Internal Cable Connections

Since cable connections vary depending on the system configuration, which includes how many Port Interface Modules (PIMs) are accommodated in the system or whether redundancy is taken into account as to the CPU. Before starting cable connections, find your system in “Quick Reference Table.” When you find your system in the table, open the related pages, on which necessary information is provided, and then set about the cable connections.


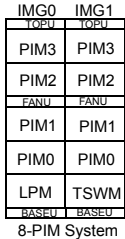
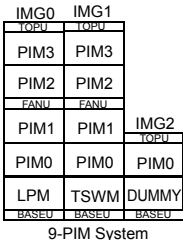
Table 010-1 Quick Reference Table

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
Single IMG Configuration				
	Power Cable	IMG0	010-5 ~ 010-12	010-2 ~ 010-5
	Internal Cable	IMG0	010-22 ~ 010-29	010-15 ~ 010-18
Multiple IMG Configuration				
	Power Cable	IMG0	010-13	010-6
		IMG1	010-14	010-7
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-31	010-20
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
	Power Cable	IMG0	011-13	010-6
		IMG1	010-15	010-8
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-32	010-21
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11

INSTALLATION PROCEDURE

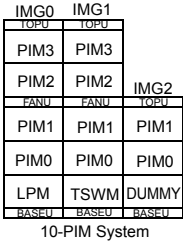
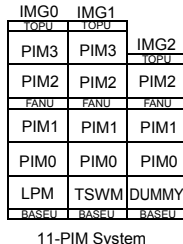
NAP-200-010
Sheet 3/64
Internal Cable Connections

Table 010-1 Quick Reference Table (Continued)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
 <p>7-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-16	010-9
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-33	010-22
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
 <p>8-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
 <p>9-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-18	010-11
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
		IMG1-IMG2	011-3	011-3
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
		IMG0-IMG2	011-12	011-12

NAP-200-010
Sheet 4/64
Internal Cable Connections


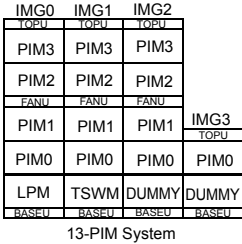
Table 010-1 Quick Reference Table (Continued)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
 <p>10-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-19	010-12
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
		IMG2	010-35	-
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
	Inter-Frame Alarm Bus Cable	IMG0-IMG2	011-4	011-4
			011-11	011-11
 <p>11-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-20	010-13
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
		IMG2	010-36	-
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
	Inter-Frame Alarm Bus Cable	IMG0-IMG2	011-5	011-5
			011-11	011-11

INSTALLATION PROCEDURE

NAP-200-010
Sheet 5/64
Internal Cable Connections

Table 010-1 Quick Reference Table (Continued)

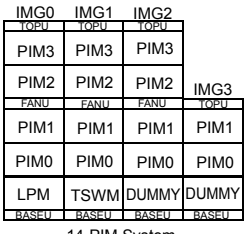
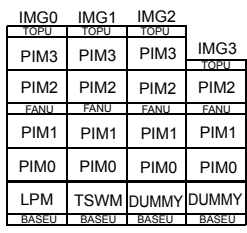
SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
 <p>12-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-21	010-14
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
		IMG2	010-37	-
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
	Inter-Frame Alarm Bus Cable	IMG1-IMG2	011-6	011-6
		IMG0-IMG1	011-11	011-11
 <p>13-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-21	010-14
		IMG3	010-18	010-11
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
		IMG2	010-37	-
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
		IMG1-IMG2	011-6	011-6
	Inter-Frame Alarm Bus Cable	IMG1-IMG3	011-7	011-7
		IMG0-IMG1	011-11	011-11
		IMG0-IMG2	011-12	011-12
		IMG0-IMG3	011-13	011-13

NAP-200-010

Sheet 6/64

Internal Cable Connections

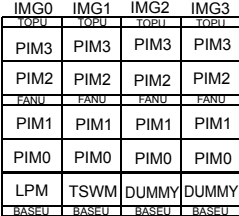
Table 010-1 Quick Reference Table (Continued)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
 <p>14-PIM System</p>	Power Cable	IMG0	011-13	010-6
		IMG1	010-17	010-10
		IMG2	010-21	010-14
		IMG3	010-19	010-12
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
		IMG2	010-37	-
		IMG3	010-35	-
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
		IMG1-IMG2	011-6	011-6
		IMG1-IMG3	011-8	011-8
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
		IMG0-IMG2	011-12	011-12
		IMG0-IMG3	011-13	011-13
 <p>15-PIM System</p>	Power Cable	IMG0	011-13	010-6
		IMG1	010-17	010-10
		IMG2	010-21	010-14
		IMG3	010-20	010-13
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
		IMG2	010-37	-
		IMG3	010-36	-
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
		IMG1-IMG2	011-6	011-6
		IMG1-IMG3	011-9	011-9
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
		IMG0-IMG2	011-12	011-12
		IMG0-IMG3	011-13	011-13

INSTALLATION PROCEDURE

NAP-200-010
Sheet 7/64
Internal Cable Connections

Table 010-1 Quick Reference Table (Continued)

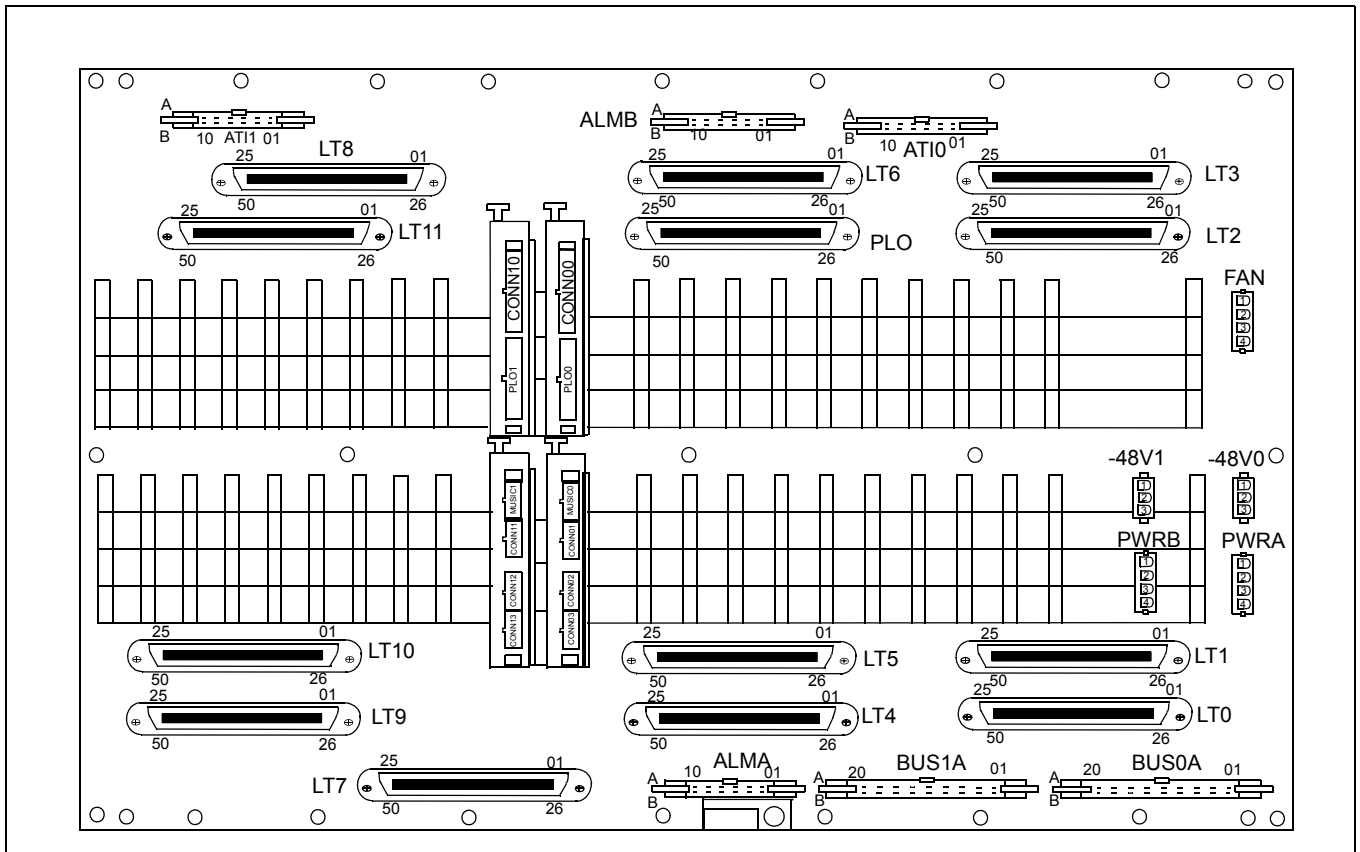
SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
 <p>16-PIM System</p>	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-21	010-14
		IMG3	010-21	010-14
	Internal Cable	IMG0	010-30	010-19
		IMG1	010-34	010-23
		IMG2	010-37	-
		IMG3	010-37	-
	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
			011-2	011-2
		IMG1-IMG2	011-6	011-6
		IMG1-IMG3	011-10	011-10
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
		IMG0-IMG2	011-12	011-12
		IMG0-IMG3	011-13	011-13

NAP-200-010

Sheet 8/64

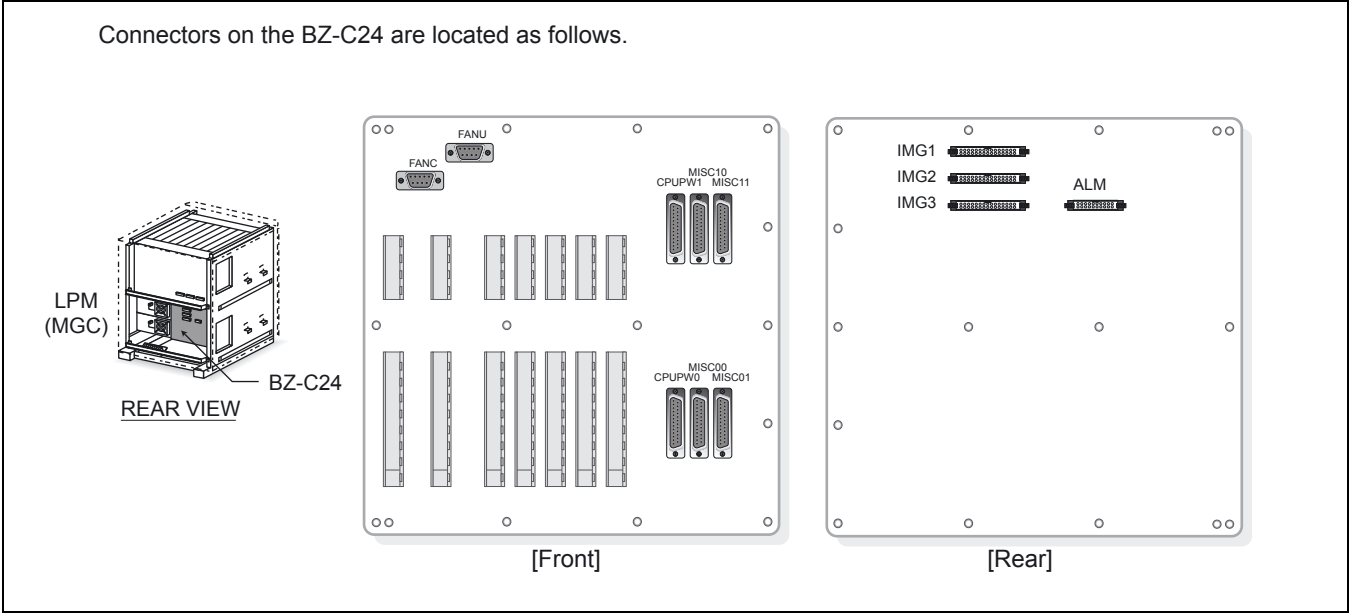
Internal Cable Connections

Figure 010-1 Locations of Connectors on the PIM Backplane



NAP-200-010
Sheet 9/64
Internal Cable Connections

Figure 010-2 Locations of Connectors on the LPM (MGC) Backplane (BZ-C24)

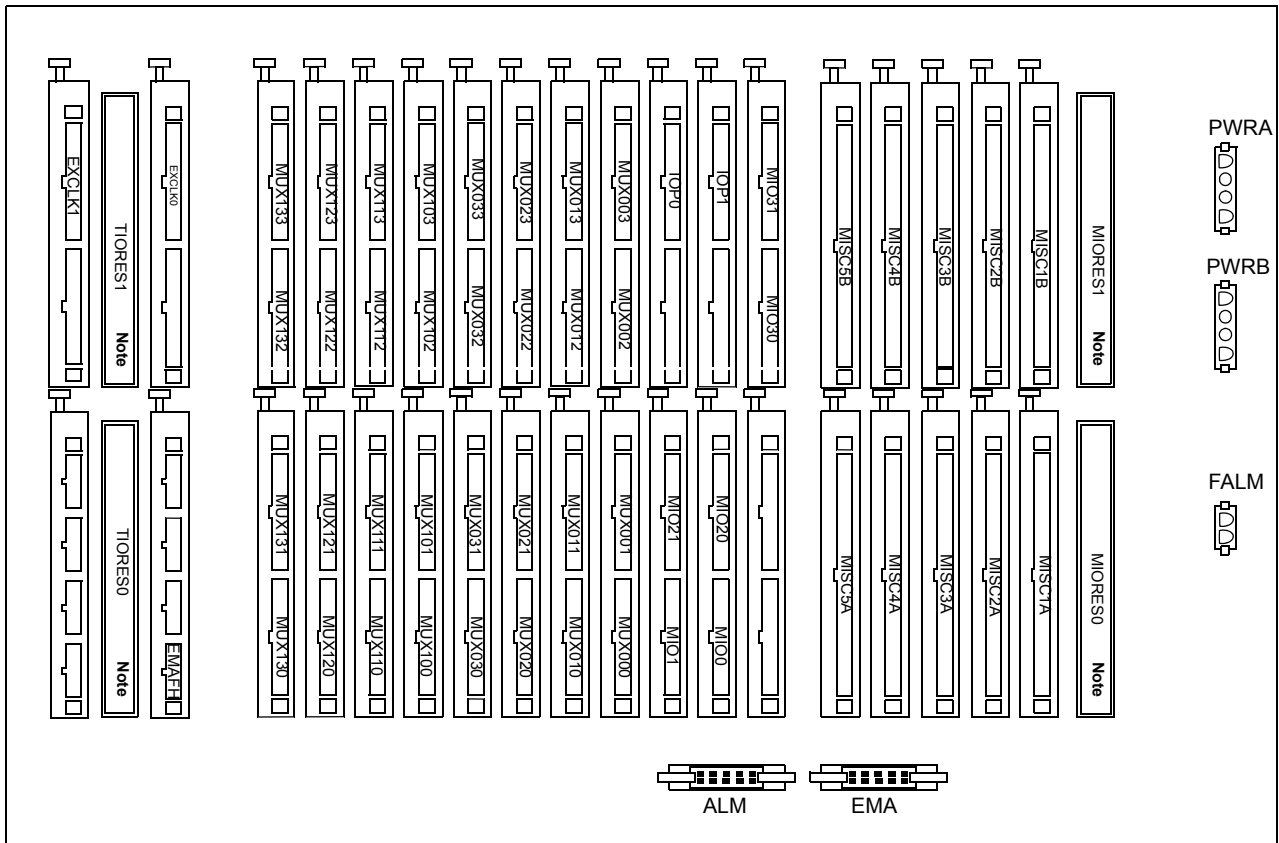


NAP-200-010

Sheet 10/64

Internal Cable Connections

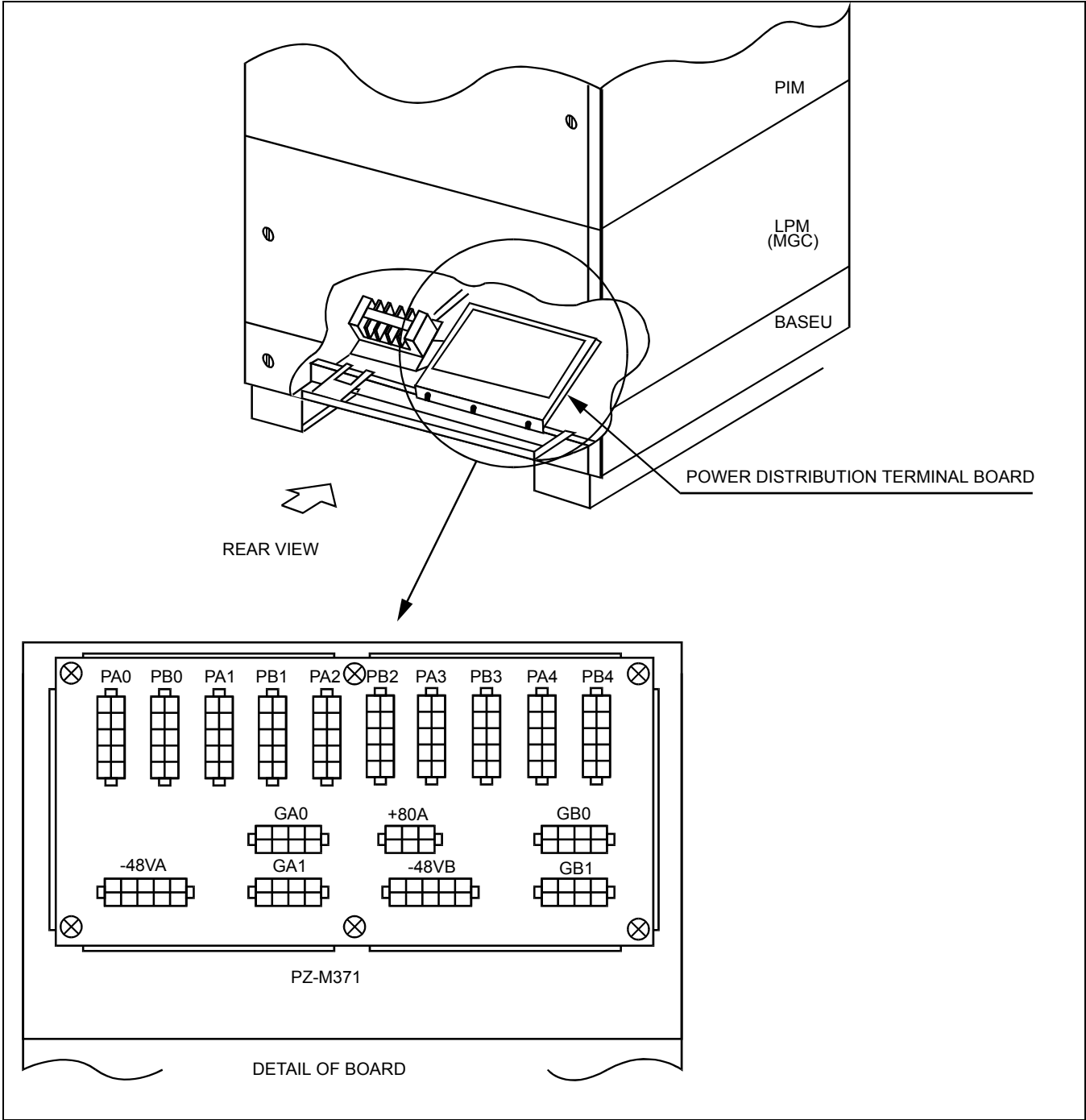
Figure 010-3 Location of Connectors on the TSWM Backplane (Multiple IMG Configuration)



Note: Terminal Resistors (PZ-M497) are to be fastened onto these connectors. (MIORES1 and TIORES1 are for dual configuration)

NAP-200-010
Sheet 11/64
Internal Cable Connections

Figure 010-4 Locations of Connectors on the Power Distribution Terminal Board (PZ-M371)



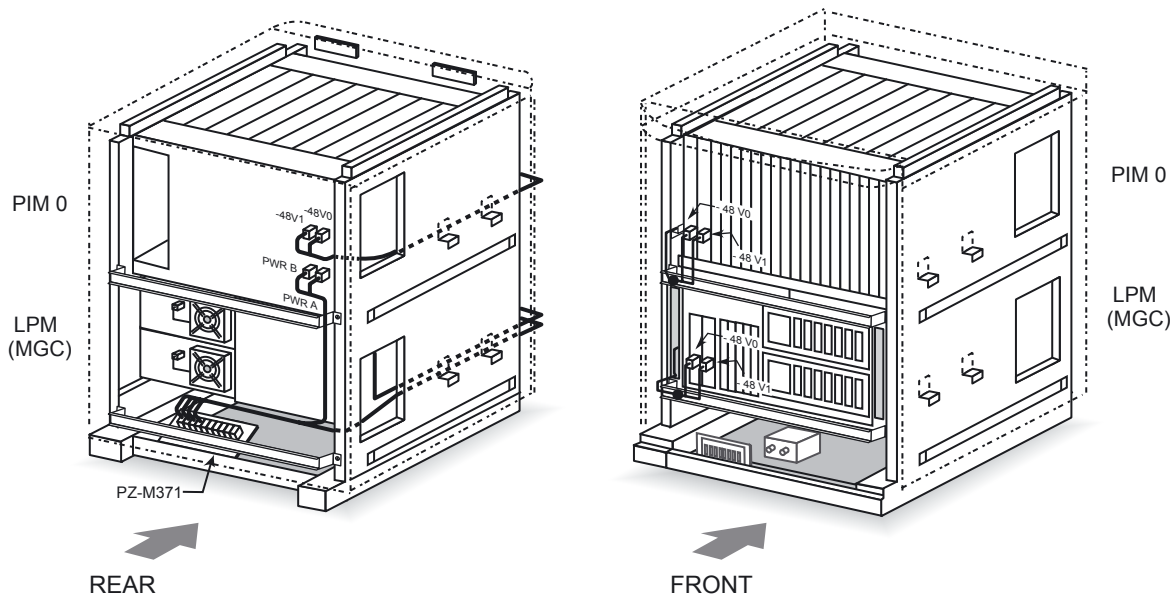
NAP-200-010	
Sheet 12/64	
Internal Cable Connections	Single IMG Configuration



Run the power cables, referring to Figure 010-6. Then, fasten the cables to the cabinet, referring to the figure below.

Figure 010-5 Power Cable Connections for 1-PIM System

The drawing below illustrates how to run the power cables for the 1-PIM system. For details on actual cable running, see Figure 010-6.



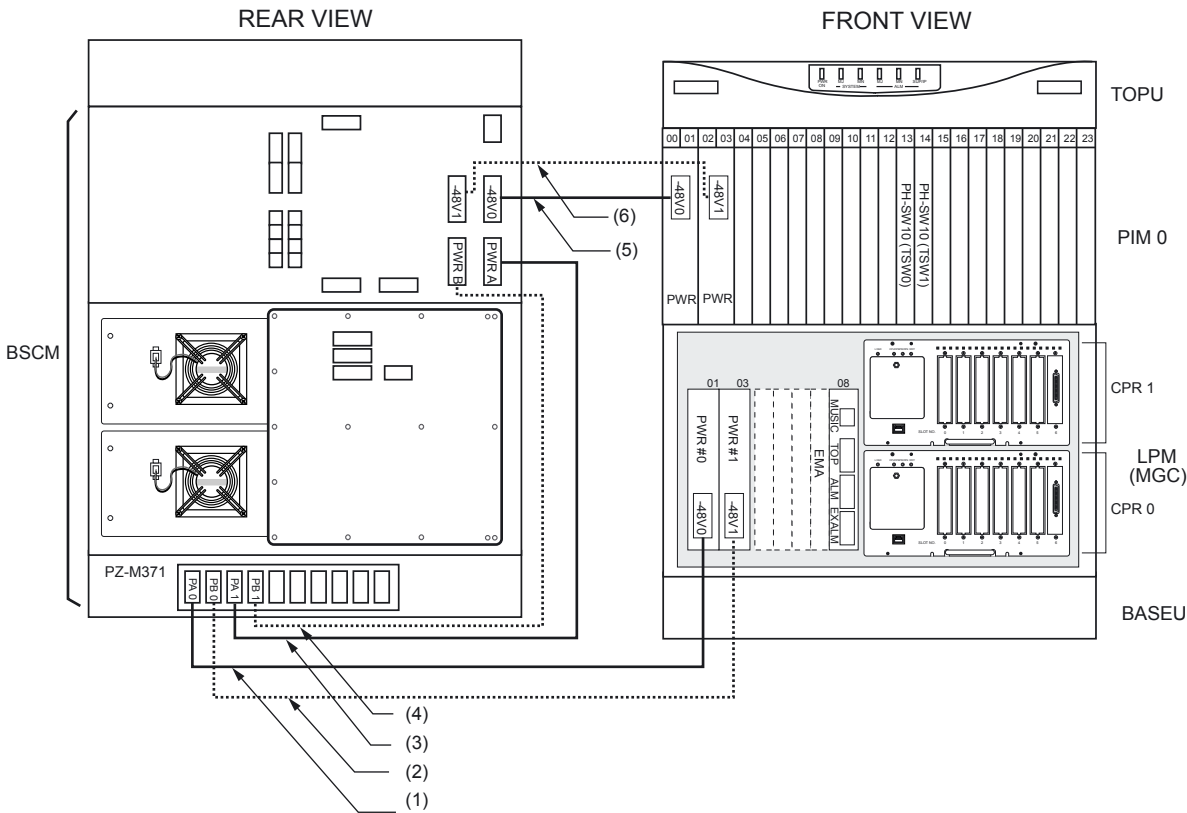
Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.

NAP-200-010	
Sheet 13/64	
Internal Cable Connections	Single IMG Configuration



Figure 010-6 Details on Power Cable Connections (for 1-PIM System)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



NAP-200-010	
Sheet 14/64	
Internal Cable Connections	Single IMG Configuration



Table 010-2 Details on Power Cable Connections (for 1-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	BASEU	PA0	LPM (PWR)	-48V IN CONN	MISC PWR CA-A	
2	BASEU	PB0	LPM (PWR)	-48V IN CONN	MISC PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	PIM0	-48V0	PIM0 (PWR)	-48V IN CONN	3P PWR CA-A	
6	PIM0	-48V1	PIM0 (PWR)	-48V IN CONN	3P PWR CA-B	

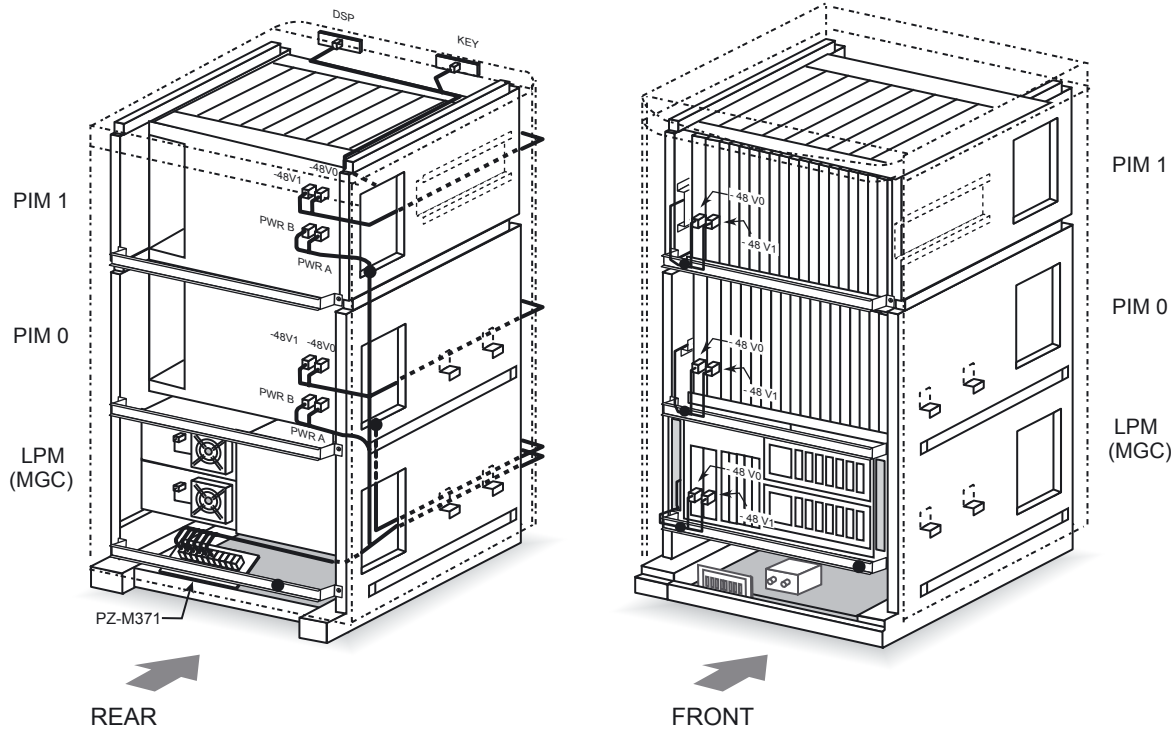
NAP-200-010	
Sheet 15/64	
Internal Cable Connections	Single IMG Configuration



Run the power cables, referring to Figure 010-8. Then, fasten the cables to the cabinet, referring to the figure below.

Figure 010-7 Power Cable Connections for 2-PIM System

The drawing below illustrates how to run the power cables for the 2-PIM system. For details on actual cable running, see Figure 010-8.



Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.



The diagram illustrates the internal components and connections of a BSCM (Base Station Control Module) from both rear and front perspectives.

REAR VIEW:

- Top Section:** Features two power input terminals labeled $-48V0$ and $-48V1$, and two power output terminals labeled $PWR\ A$ and $PWR\ B$.
- Bottom Section:** Includes a fan, a PZ-M371 power supply unit, and a terminal block with labels $PA\ 0$, $PA\ 1$, $PA\ 2$, $PA\ 3$, $PA\ 4$, $PA\ 5$, $PA\ 6$, $PA\ 7$, $PA\ 8$, $PA\ 9$, $PA\ 10$, $PA\ 11$, $PA\ 12$, $PA\ 13$, $PA\ 14$, $PA\ 15$, $PA\ 16$, $PA\ 17$, $PA\ 18$, $PA\ 19$, $PA\ 20$, $PA\ 21$, $PA\ 22$, $PA\ 23$.

FRONT VIEW:

- Top Section:** Features a terminal block with labels 00 through 23 , and two power input terminals labeled $-48V0$ and $-48V1$, and two power output terminals labeled $PWR\ A$ and $PWR\ B$.
- Bottom Section:** Includes a fan, a PZ-M371 power supply unit, and a terminal block with labels 01 through 08 .

Connections:

- Connections (1) through (6) are shown between the rear and front views, indicating the flow of power and data.
- Connections (7) through (10) are shown between the rear and front views, indicating the flow of power and data.

Labels:

- REAR VIEW:** $-48V0$, $-48V1$, $PWR\ A$, $PWR\ B$, $PA\ 0$, $PA\ 1$, $PA\ 2$, $PA\ 3$, $PA\ 4$, $PA\ 5$, $PA\ 6$, $PA\ 7$, $PA\ 8$, $PA\ 9$, $PA\ 10$, $PA\ 11$, $PA\ 12$, $PA\ 13$, $PA\ 14$, $PA\ 15$, $PA\ 16$, $PA\ 17$, $PA\ 18$, $PA\ 19$, $PA\ 20$, $PA\ 21$, $PA\ 22$, $PA\ 23$.
- FRONT VIEW:** 00 , 01 , 02 , 03 , 04 , 05 , 06 , 07 , 08 , 09 , 10 , 11 , 12 , 13 , 14 , 15 , 16 , 17 , 18 , 19 , 20 , 21 , 22 , 23 , $-48V0$, $-48V1$, $PWR\ A$, $PWR\ B$, 01 , 03 , 08 , $PWR\ #0$, $PWR\ #1$, $MISC$, TOP , ALM , $EXALM$, EMA .

INSTALLATION PROCEDURE

NAP-200-010	
Sheet 17/64	
Internal Cable Connections	Single IMG Configuration



Table 010-3 Details on Power Cable Connections (for 2-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	BASEU	PA0	LPM (PWR)	-48V IN CONN	MISC PWR CA-A	
2	BASEU	PB0	LPM (PWR)	-48V IN CONN	MISC PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
6	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
7	PIM0	-48V0	PIM0 (PWR)	-48V IN CONN	3P PWR CA-A	
8	PIM0	-48V1	PIM0 (PWR)	-48V IN CONN	3P PWR CA-B	
9	PIM1	-48V0	PIM1 (PWR)	-48V IN CONN	3P PWR CA-A	
10	PIM1	-48V1	PIM1 (PWR)	-48V IN CONN	3P PWR CA-B	

NAP-200-010

Sheet 18/64

Internal Cable Connections

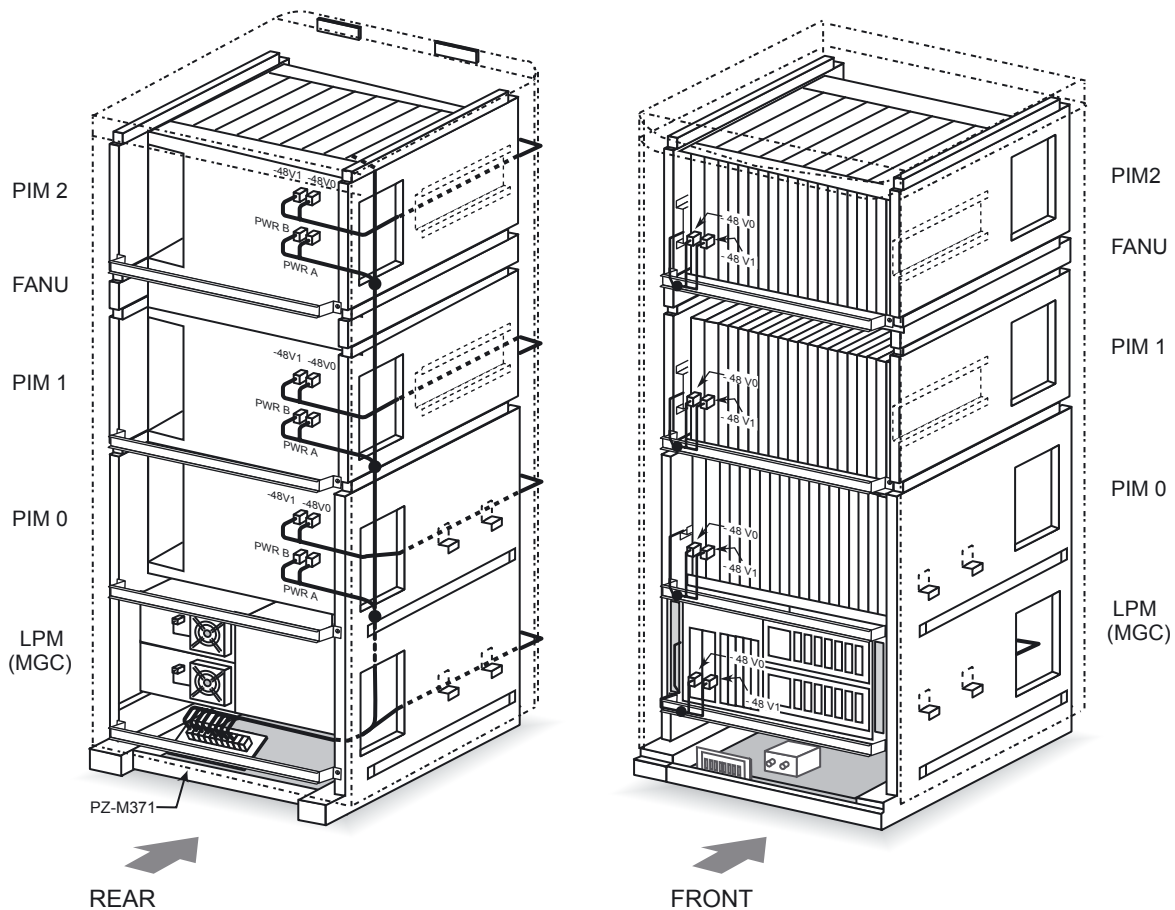
Single IMG Configuration



Run the power cables, referring to Figure 010-10. Then, fasten the cables to the cabinet, referring to the figure below.

Figure 010-9 Power Cable Connections for 3-PIM System

The drawing below illustrates how to run the power cables for the 3-PIM system. For details on actual cable running, see Figure 010-10.



Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.

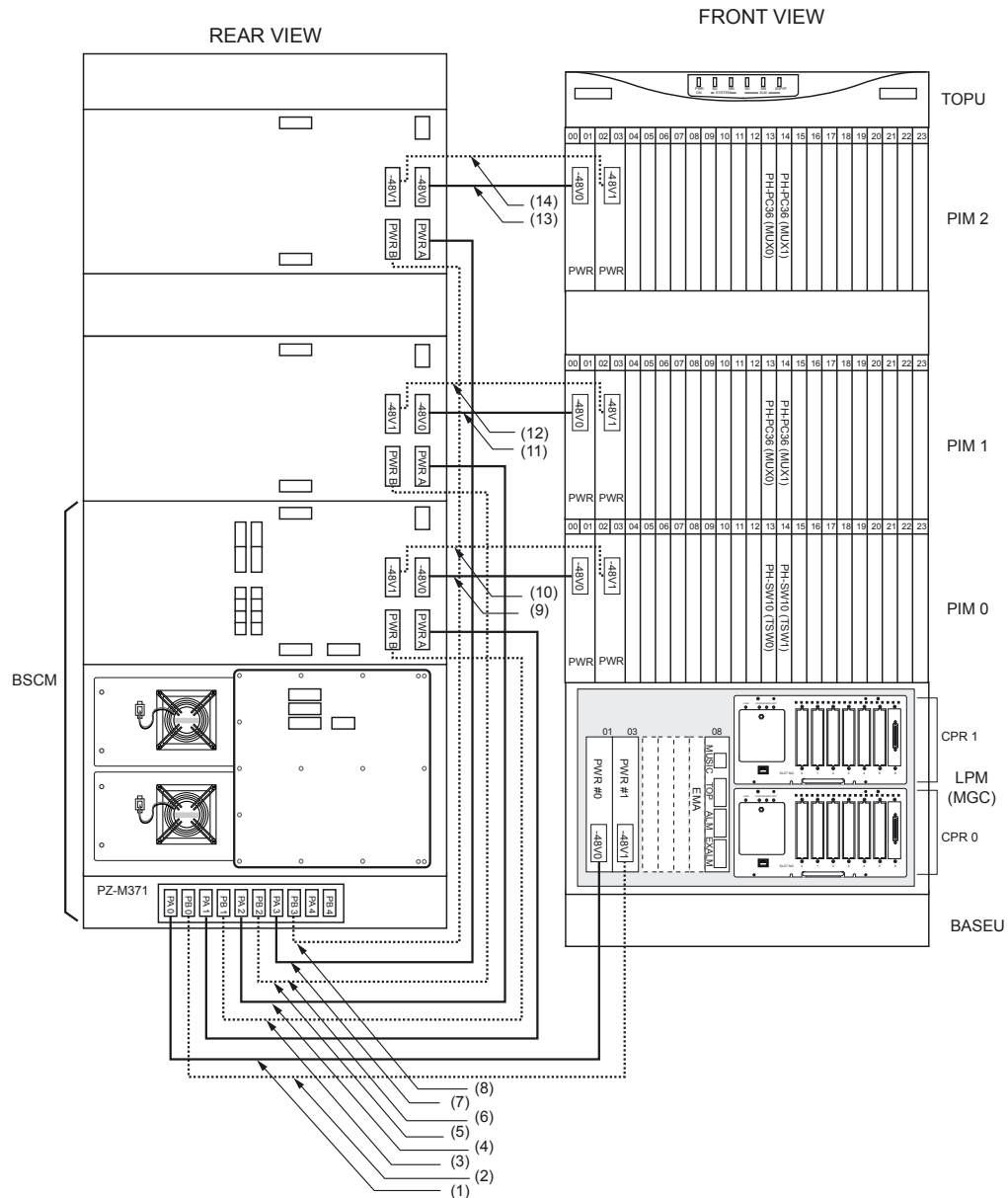
INSTALLATION PROCEDURE

NAP-200-010	
Sheet 19/64	
Internal Cable Connections	Single IMG Configuration



Figure 010-10 Details on Power Cable Connections (for 3-PIM System)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



NAP-200-010	
Sheet 20/64	
Internal Cable Connections	Single IMG Configuration



Table 010-4 Details on Power Cable Connections (for 3-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	BASEU	PA0	LPM (PWR)	-48V IN CONN	MISC PWR CA-A	
2	BASEU	PB0	LPM (PWR)	-48V IN CONN	MISC PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
6	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
7	BASEU	PA3	PIM2	PWR A	4P PWR CA-G	
8	BASEU	PB3	PIM2	PWR B	4P PWR CA-H	
9	PIM0	-48V0	PIM0 (PWR)	-48V IN CONN	3P PWR CA-A	
10	PIM0	-48V1	PIM0 (PWR)	-48V IN CONN	3P PWR CA-B	
11	PIM1	-48V0	PIM1 (PWR)	-48V IN CONN	3P PWR CA-A	
12	PIM1	-48V1	PIM1 (PWR)	-48V IN CONN	3P PWR CA-B	
13	PIM2	-48V0	PIM2 (PWR)	-48V IN CONN	3P PWR CA-A	
14	PIM2	-48V1	PIM2 (PWR)	-48V IN CONN	3P PWR CA-B	

INSTALLATION PROCEDURE

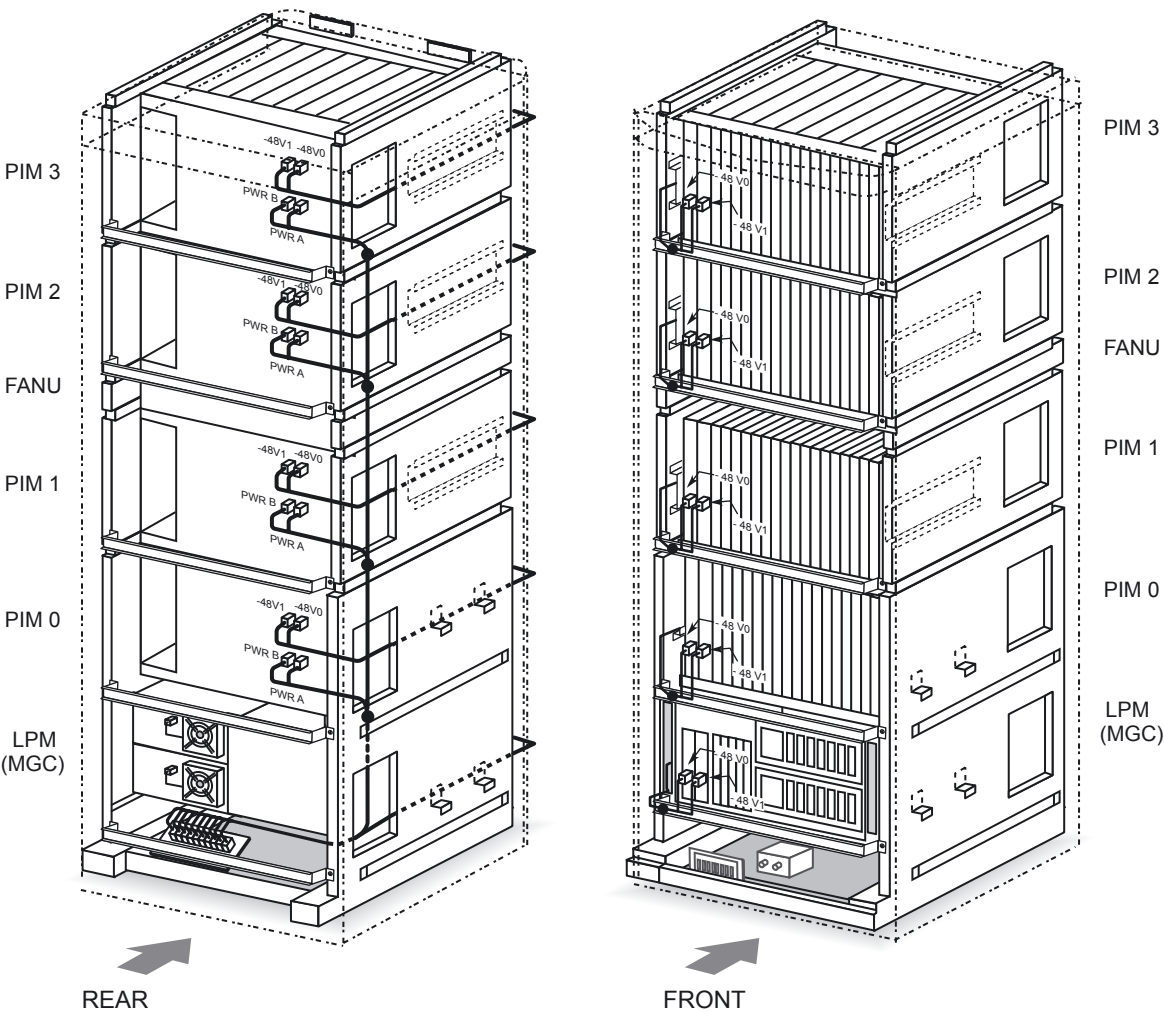
NAP-200-010	
Sheet 21/64	
Internal Cable Connections	Single IMG Configuration



Run the power cables, referring to Figure 010-12. Then, fasten the cables to the cabinet, referring to the figure below.

Figure 010-11 Power Cable Connections for 4-PIM System

The drawing below illustrates how to run the power cables for the 4-PIM system. For details on actual cable running, see Figure 010-12.



Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.

NAP-200-010

Sheet 22/64

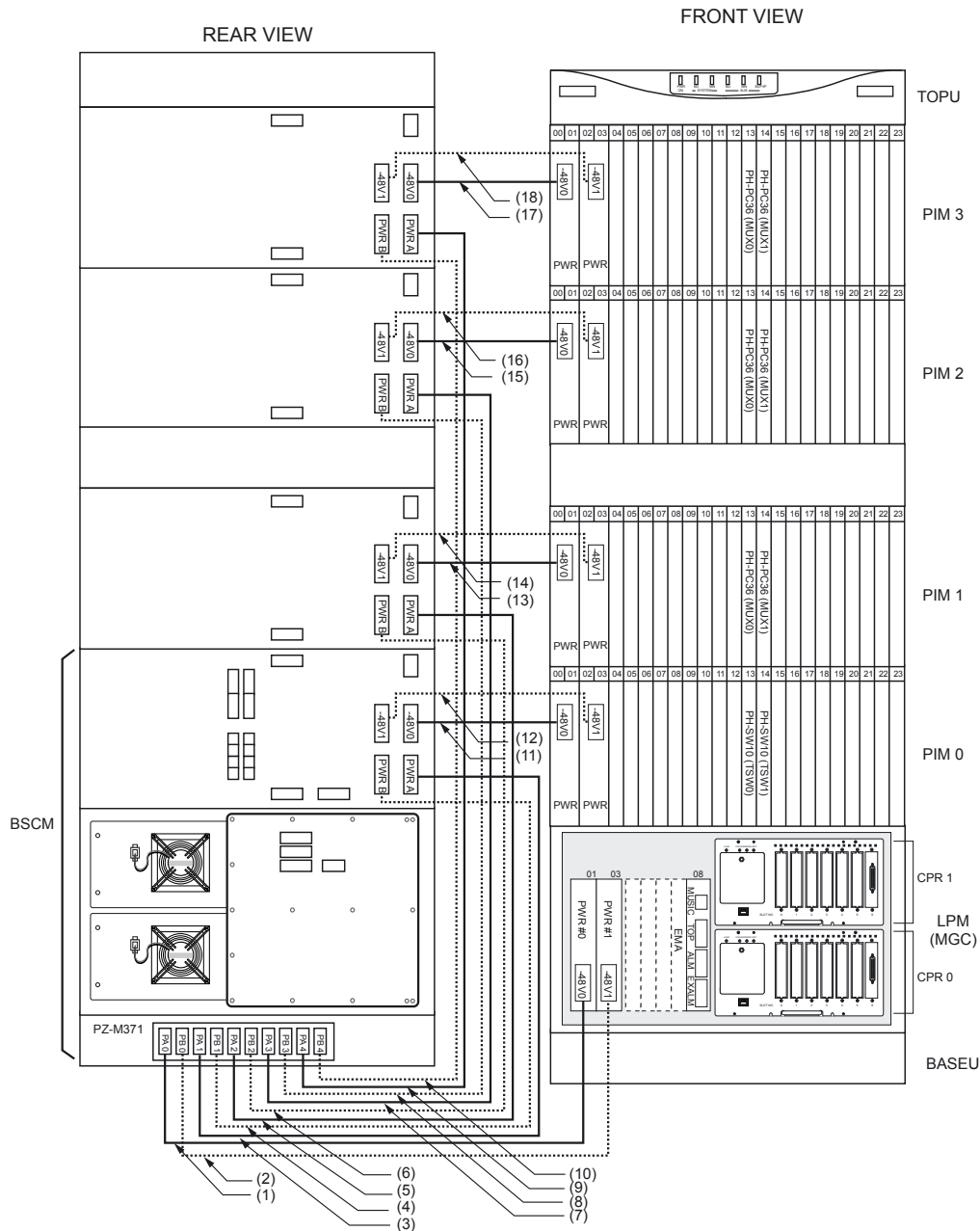
Internal Cable Connections

Single IMG Configuration



Figure 010-12 Details on Power Cable Connections (for 4-PIM System)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 23/64	
Internal Cable Connections	Single IMG Configuration



Table 010-5 Details on Power Cable Connections (for 4-PIM System)

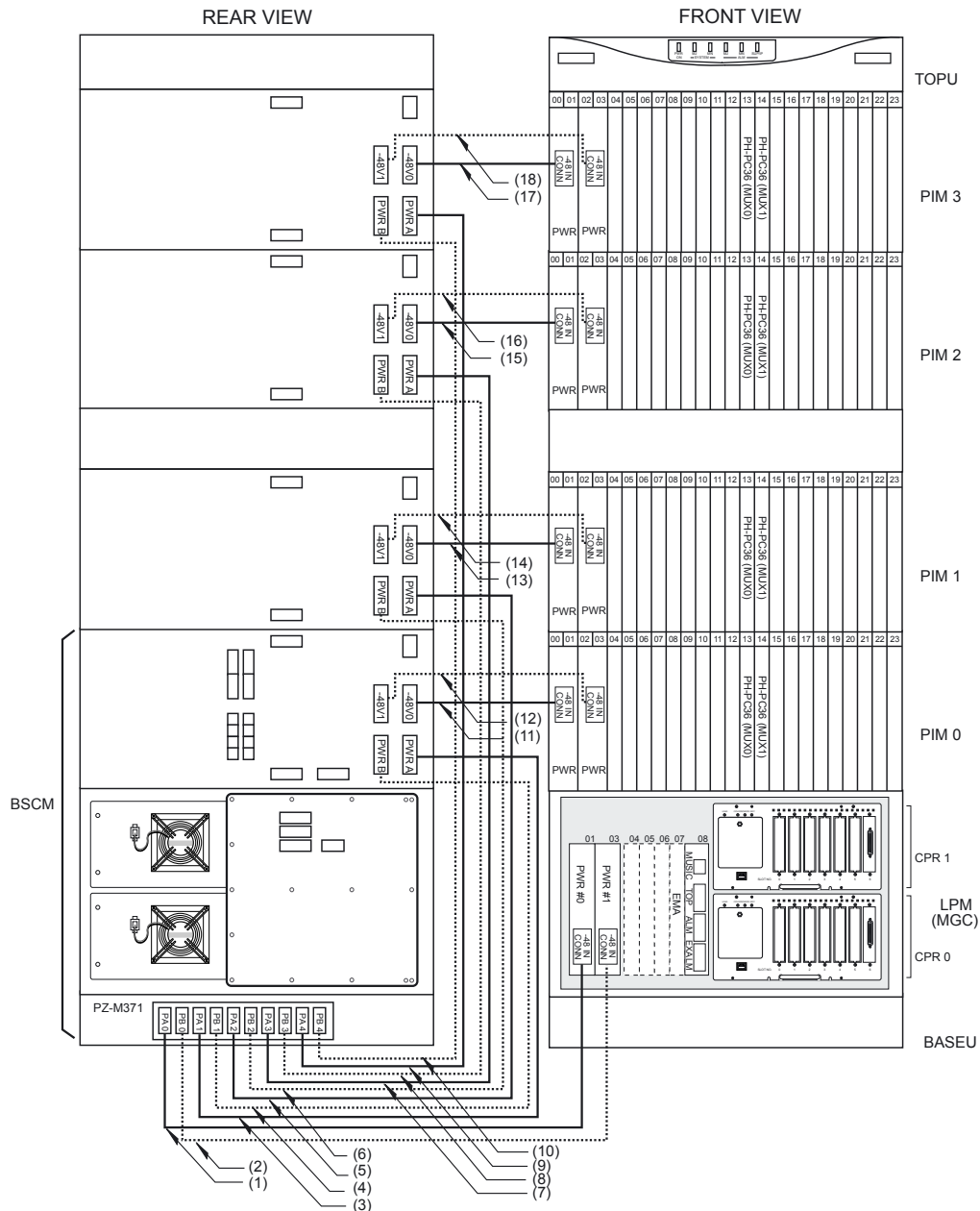
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	BASEU	PA0	LPM (PWR)	-48V IN CONN	MISC PWR CA-A	
2	BASEU	PB0	LPM (PWR)	-48V IN CONN	MISC PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
6	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
7	BASEU	PA3	PIM2	PWR A	4P PWR CA-G	
8	BASEU	PB3	PIM2	PWR B	4P PWR CA-H	
9	BASEU	PA4	PIM3	PWR A	4P PWR CA-I	
10	BASEU	PB4	PIM3	PWR B	4P PWR CA-J	
11	PIM0	-48V0	PIM0 (PWR)	-48V IN CONN	3P PWR CA-A	
12	PIM0	-48V1	PIM0 (PWR)	-48V IN CONN	3P PWR CA-B	
13	PIM1	-48V0	PIM1 (PWR)	-48V IN CONN	3P PWR CA-A	
14	PIM1	-48V1	PIM1 (PWR)	-48V IN CONN	3P PWR CA-B	
15	PIM2	-48V0	PIM2 (PWR)	-48V IN CONN	3P PWR CA-A	
16	PIM2	-48V1	PIM2 (PWR)	-48V IN CONN	3P PWR CA-B	
17	PIM3	-48V0	PIM3 (PWR)	-48V IN CONN	3P PWR CA-A	
18	PIM3	-48V1	PIM3 (PWR)	-48V IN CONN	3P PWR CA-B	

NAP-200-010	
Sheet 24/64	
Internal Cable Connections	Multiple IMG Configuration

Run the internal power cables, referring to Figure 010-13 through Figure 010-21.

Figure 010-13 Power Cable Connections for IMG0 (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 25/64	
Internal Cable Connections	Multiple IMG Configuration



Table 010-6 Power Cable Connections for IMG0 (Multiple IMG Configuration)

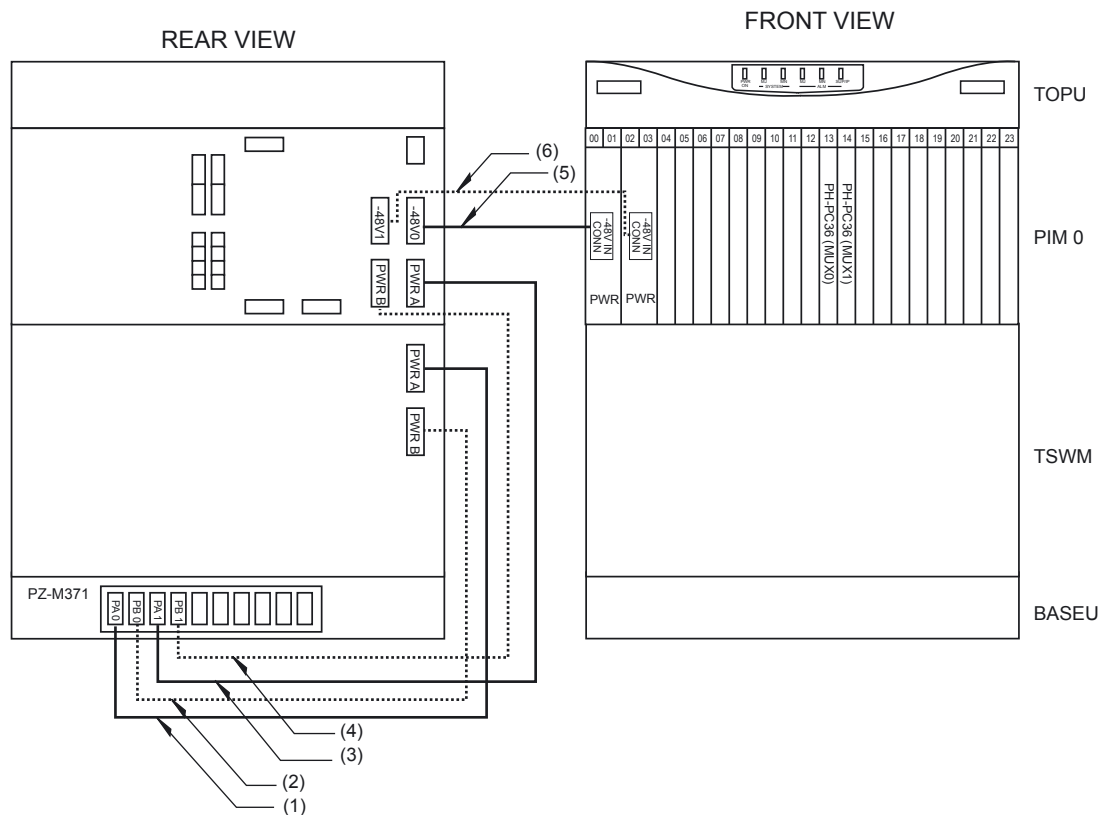
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	BASEU	PA0	LPM (PWR)	-48V IN CONN	MISC PWR CA-A	
2	BASEU	PB0	LPM (PWR)	-48V IN CONN	MISC PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
6	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
7	BASEU	PA3	PIM2	PWR A	4P PWR CA-G	
8	BASEU	PB3	PIM2	PWR B	4P PWR CA-H	
9	BASEU	PA4	PIM3	PWR A	4P PWR CA-I	
10	BASEU	PB4	PIM3	PWR B	4P PWR CA-J	
11	PIM0	-48V0	PIM0 (PWR)	-48V IN CONN	3P PWR CA-A	
12	PIM0	-48V1	PIM0 (PWR)	-48V IN CONN	3P PWR CA-B	
13	PIM1	-48V0	PIM1 (PWR)	-48V IN CONN	3P PWR CA-A	
14	PIM1	-48V1	PIM1 (PWR)	-48V IN CONN	3P PWR CA-B	
15	PIM2	-48V0	PIM2 (PWR)	-48V IN CONN	3P PWR CA-A	
16	PIM2	-48V1	PIM2 (PWR)	-48V IN CONN	3P PWR CA-B	
17	PIM3	-48V0	PIM3 (PWR)	-48V IN CONN	3P PWR CA-A	
18	PIM3	-48V1	PIM3 (PWR)	-48V IN CONN	3P PWR CA-B	

NAP-200-010	
Sheet 26/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-14 Power Cable Connections for IMG1 (1-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 27/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-7 Power Cable Connections for IMG1 (1-PIM System) (Multiple IMG Configuration)

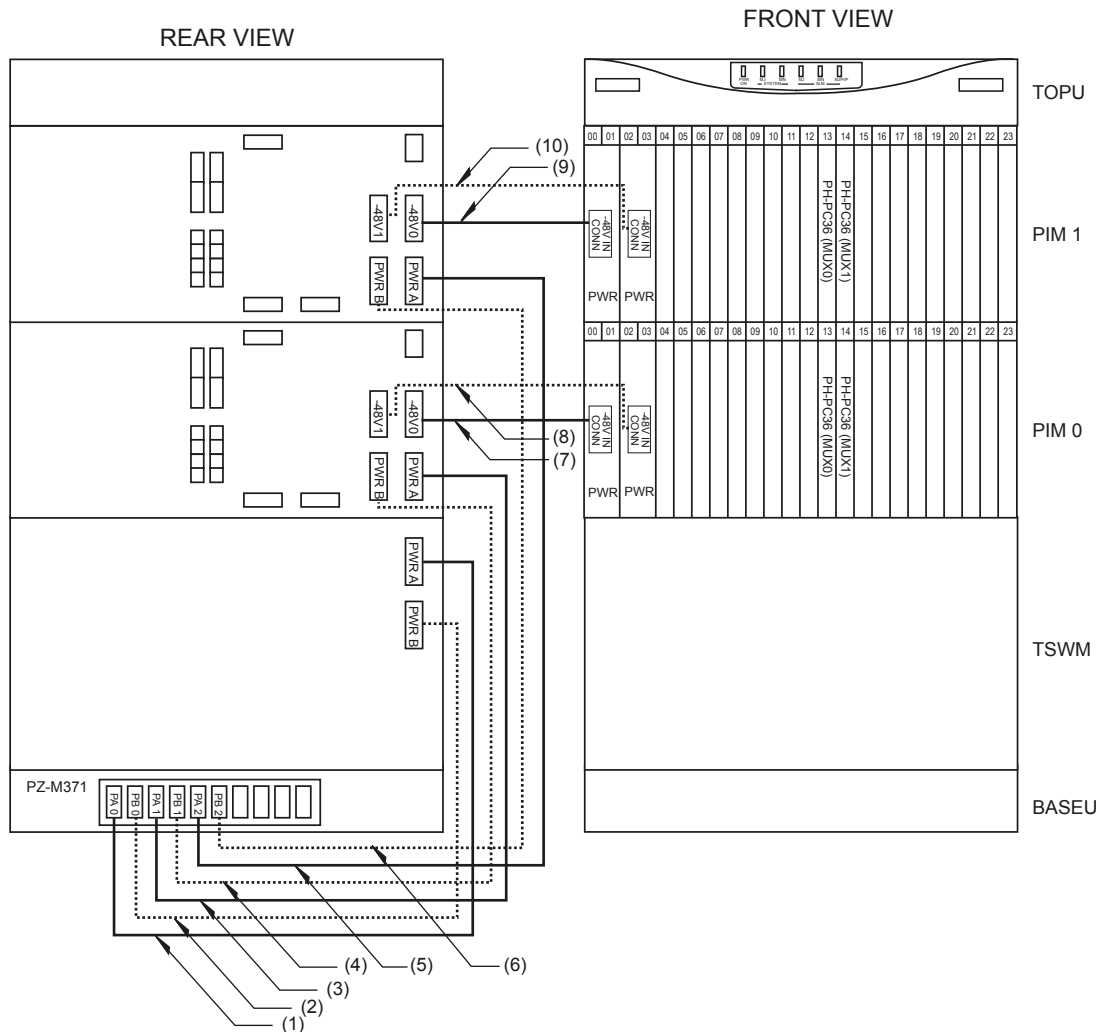
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA0	TSWM	PWR A	4P PWR CA-A	
2	BASEU	PB0	TSWM	PWR B	4P PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
6	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	

NAP-200-010	
Sheet 28/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-15 Power Cable Connections for IMG1 (2-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 29/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-8 Power Cable Connections for IMG1 (2-PIM System) (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA0	TSWM	PWR A	4P PWR CA-A	
2	BASEU	PB0	TSWM	PWR B	4P PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
6	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
7	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
8	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	
9	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	
10	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	

NAP-200-010

Sheet 30/64

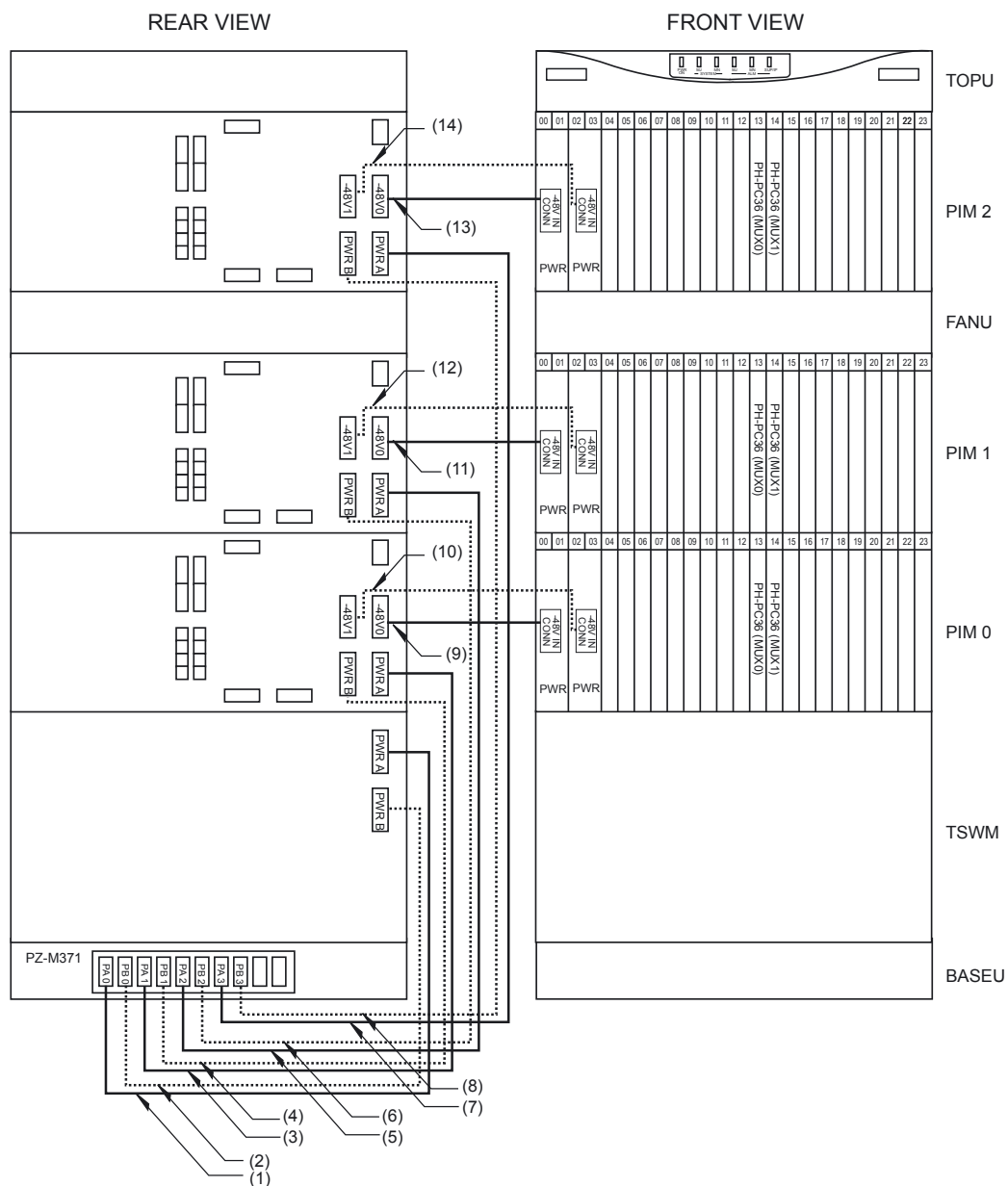
Internal Cable Connections

Multiple IMG Configuration



Figure 010-16 Power Cable Connections for IMG1 (3-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 31/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-9 Power Cable Connections for IMG1 (3-PIM System) (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA0	TSWM	PWR A	4P PWR CA-A	
2	BASEU	PB0	TSWM	PWR B	4P PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
6	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
7	BASEU	PA3	PIM2	PWR A	4P PWR CA-G	
8	BASEU	PB3	PIM2	PWR B	4P PWR CA-H	
9	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
10	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	
11	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	
12	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	
13	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	
14	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	

NAP-200-010

Sheet 32/64

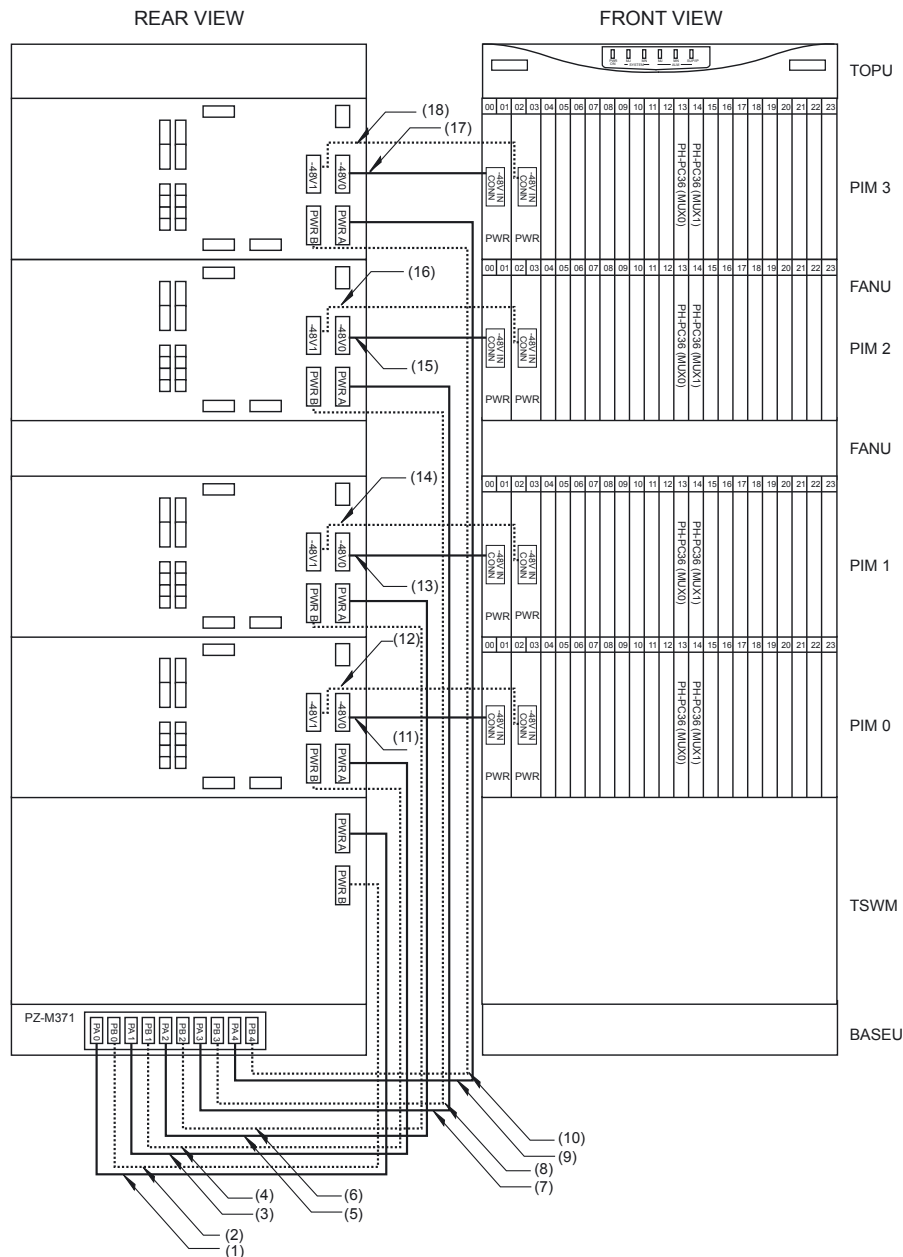
Internal Cable Connections

Multiple IMG Configuration



Figure 010-17 Power Cable Connections for IMG1 (4-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 33/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-10 Power Cable Connections for IMG1 (4-PIM System) (Multiple IMG Configuration)

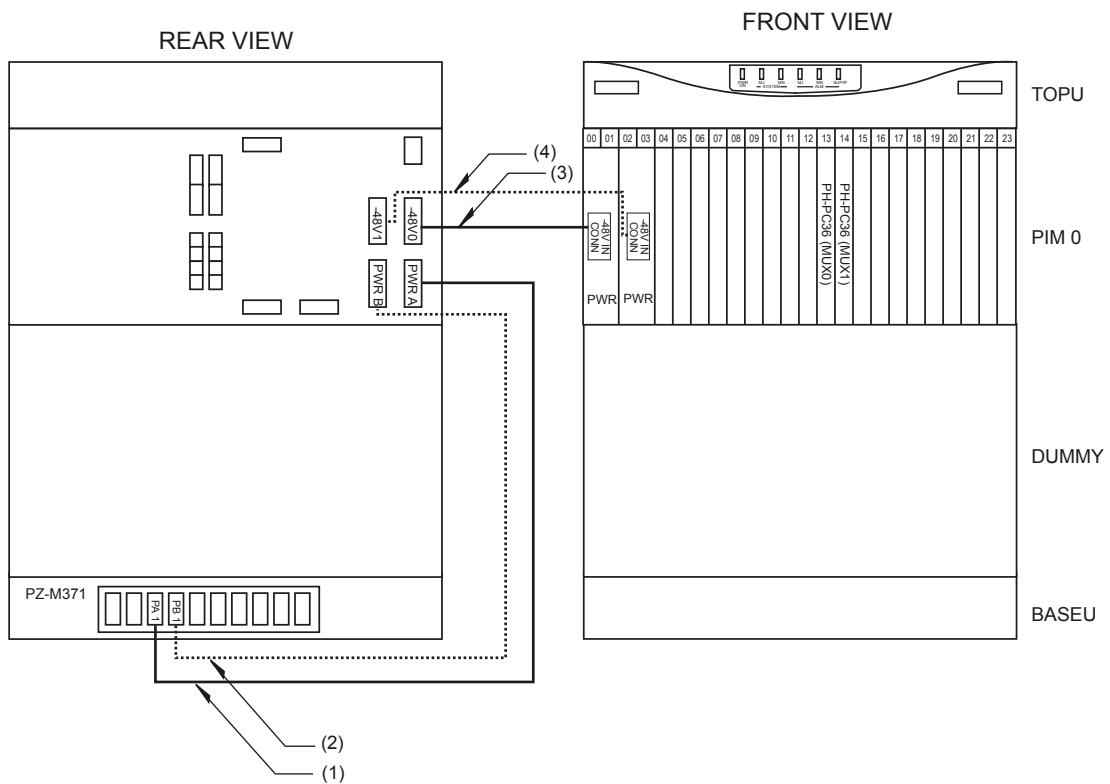
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA0	TSWM	PWR A	4P PWR CA-A	
2	BASEU	PB0	TSWM	PWR B	4P PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
6	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
7	BASEU	PA3	PIM2	PWR A	4P PWR CA-G	
8	BASEU	PB3	PIM2	PWR B	4P PWR CA-H	
9	BASEU	PA4	PIM3	PWR A	4P PWR CA-I	
10	BASEU	PB4	PIM3	PWR B	4P PWR CA-J	
11	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
12	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	
13	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	
14	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	
15	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	
16	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	
17	PIM3 (PWR)	-48V IN CONN	PIM3	-48V0	3P PWR CA-A	
18	PIM3 (PWR)	-48V IN CONN	PIM3	-48V1	3P PWR CA-B	

NAP-200-010	
Sheet 34/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-18 Power Cable Connections for IMG2/3 (1-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 35/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-11 Power Cable Connections for IMG2/3 (1-PIM System) (Multiple IMG Configuration)

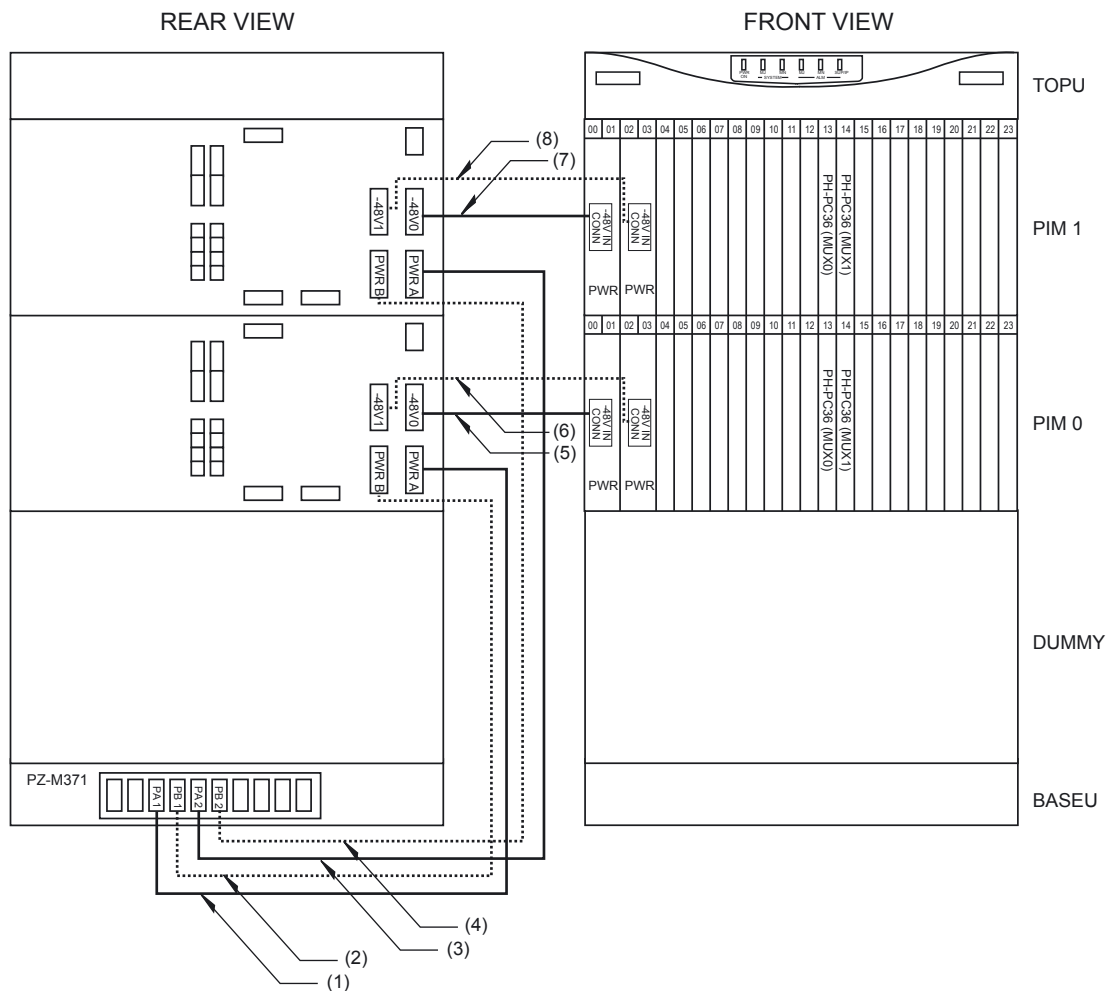
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
2	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
3	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
4	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	

NAP-200-010	
Sheet 36/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-19 Power Cable Connections for IMG2/3 (2-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 37/64	
Internal Cable Connections	Multiple IMG Configuration

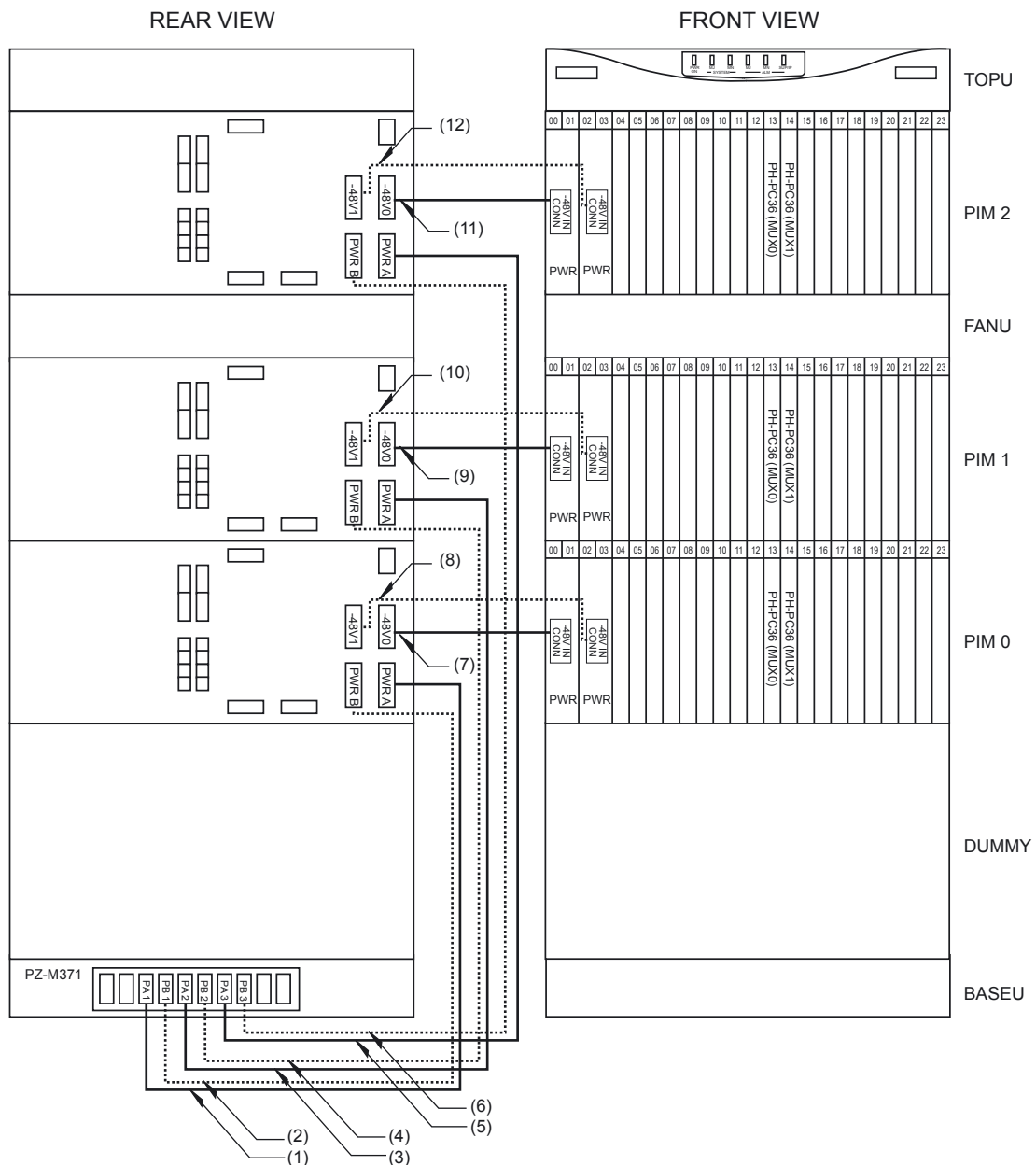
Table 010-12 Power Cable Connections for IMG2/3 (2-PIM System) (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
2	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
3	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
4	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
5	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
6	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	
7	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	
8	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	



Figure 010-20 Power Cable Connections for IMG2/3 (3-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 39/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-13 Power Cable Connections for IMG2/3 (3-PIM System) (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
2	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
3	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
4	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
5	BASEU	PA3	PIM2	PWR A	4P PWR CA-G	
6	BASEU	PB3	PIM2	PWR B	4P PWR CA-H	
7	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
8	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	
9	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	
10	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	
11	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	
12	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	

NAP-200-010

Sheet 40/64

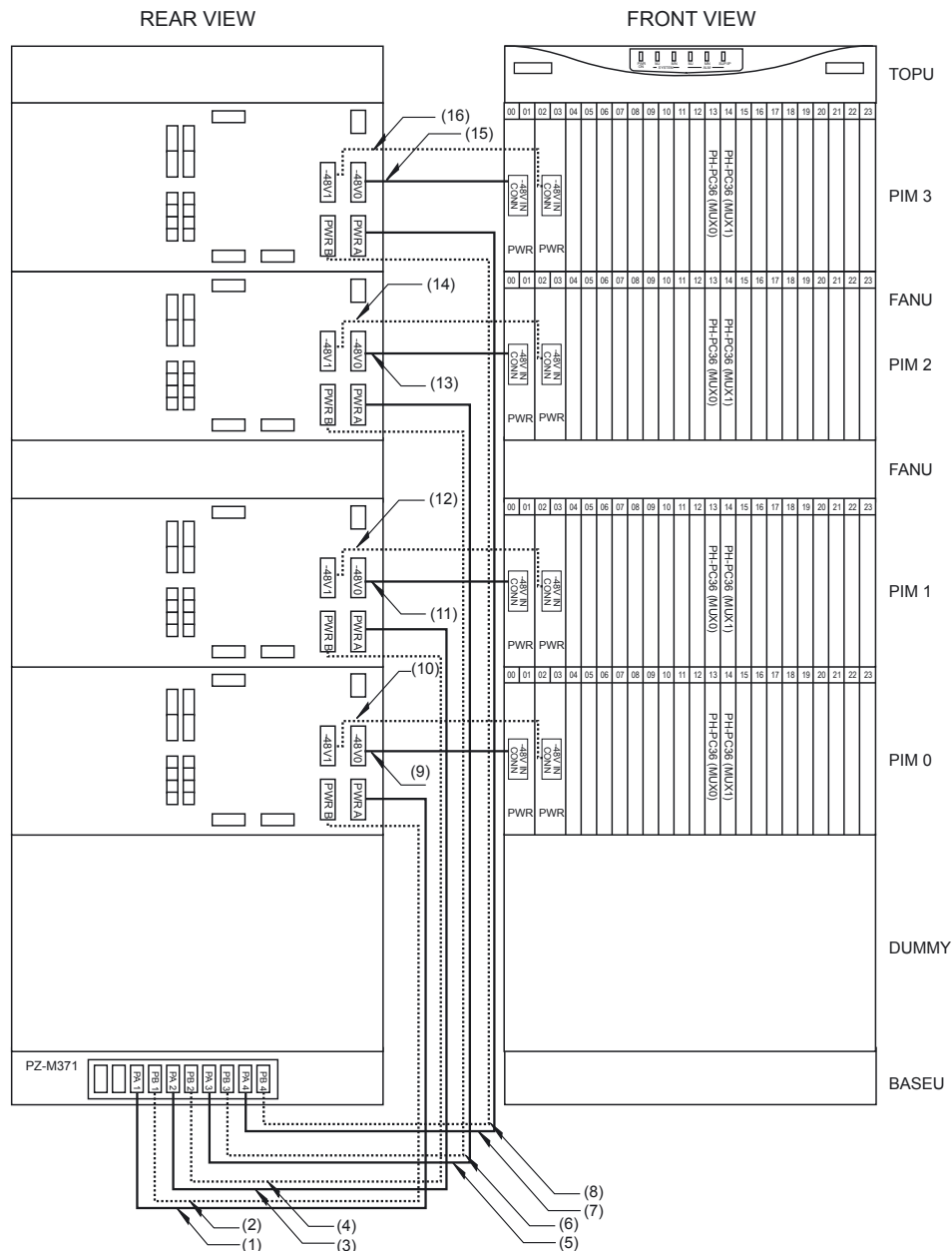
Internal Cable Connections

Multiple IMG Configuration



Figure 010-21 Power Cable Connections for IMG2/3 (4-PIM System) (Multiple IMG Configuration)

Connect the power cables as shown below. Cables represented in dotted-lines indicate power cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 41/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-14 Power Cable Connections for IMG2/3 (4-PIM System) (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
2	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
3	BASEU	PA2	PIM1	PWR A	4P PWR CA-E	
4	BASEU	PB2	PIM1	PWR B	4P PWR CA-F	
5	BASEU	PA3	PIM2	PWR A	4P PWR CA-G	
6	BASEU	PB3	PIM2	PWR B	4P PWR CA-H	
7	BASEU	PB4	PIM3	PWR A	4P PWR CA-I	
8	BASEU	PB4	PIM3	PWR B	4P PWR CA-J	
9	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	
10	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	
11	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	
12	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	
13	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	
14	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	
15	PIM3 (PWR)	-48V IN CONN	PIM3	-48V0	3P PWR CA-A	
16	PIM3 (PWR)	-48V IN CONN	PIM3	-48V1	3P PWR CA-B	

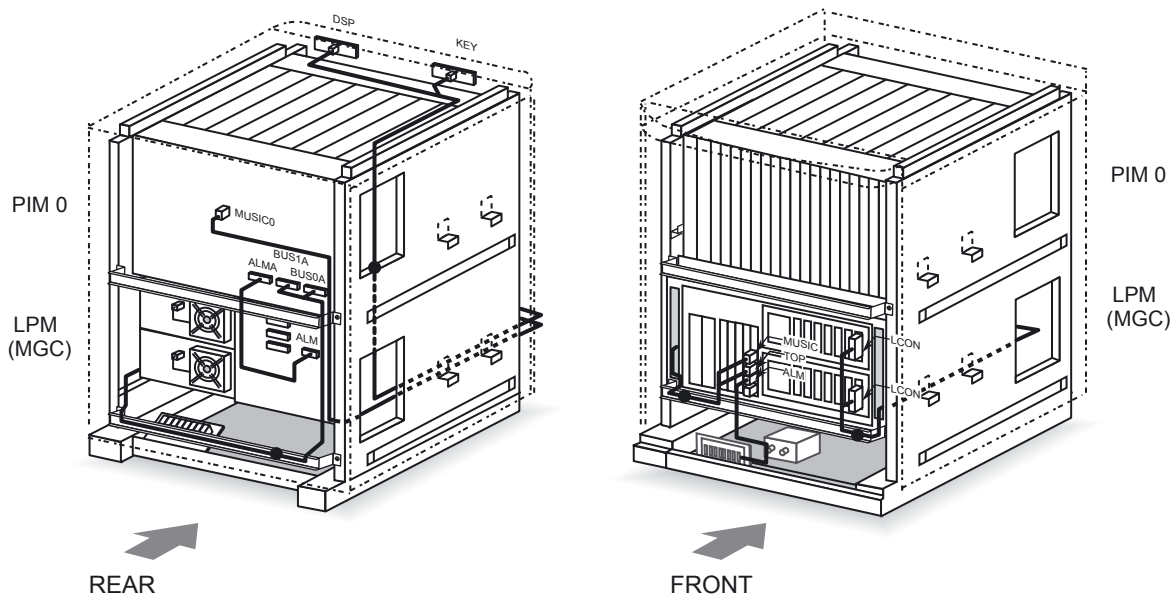
NAP-200-010	
Sheet 42/64	
Internal Cable Connections	Single IMG Configuration



Run the bus cables, referring to Figure 010-23. Then, fasten the bus cables to the cabinet, referring to the figure below.

Figure 010-22 Bus Cable Connections for 1-PIM System

The drawing below illustrates how to run the bus cables for the 1-PIM system. For details on actual cable running, see Figure 010-23.



Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.

INSTALLATION PROCEDURE

NAP-200-010	
Sheet 43/64	
Internal Cable Connections	Single IMG Configuration



Figure 010-23 Details on Bus Cable Connections (for 1-PIM System)

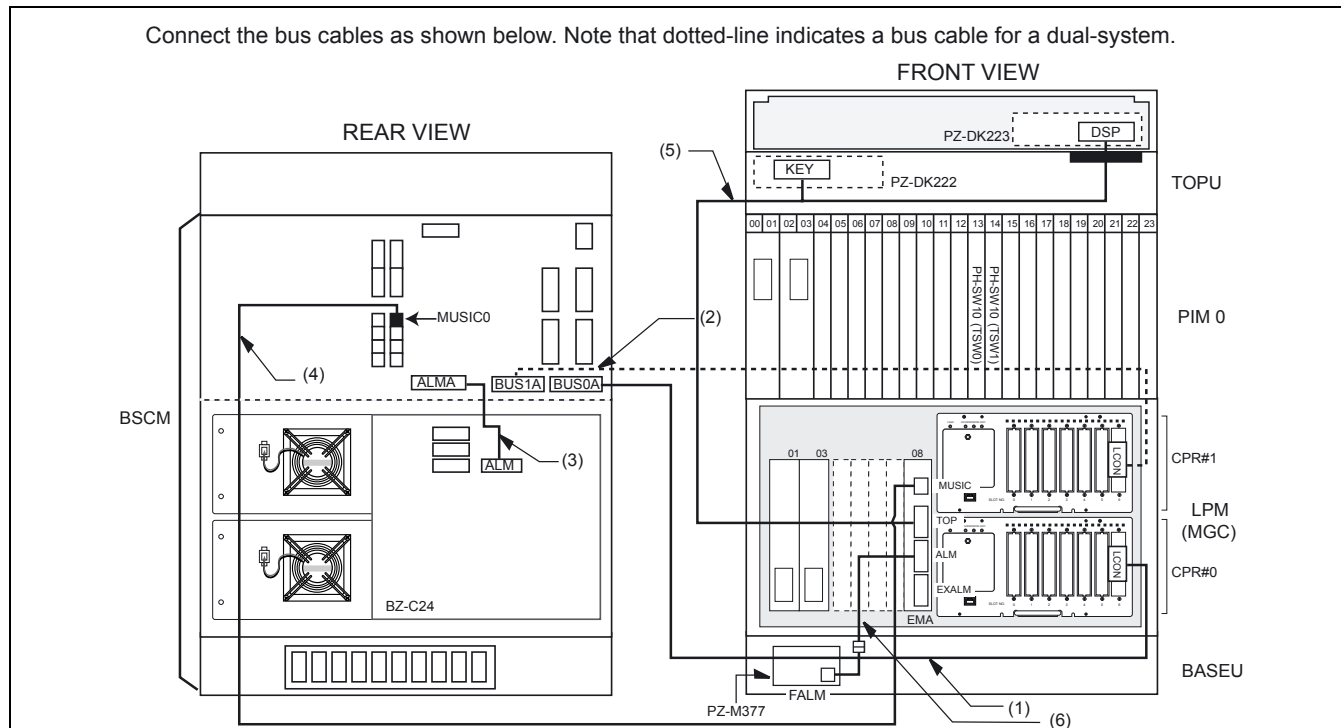


Table 010-15 Bus Cable Connections (for 1-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	LPM (CPR#0)	LCON (GT-25 Front Connector)	PIM0	BUS0A	IPX GT BUS CA-A	
(2)	LPM (CPR#1)	LCON (GT-25 Front Connector)	PIM0	BUS1A	IPX GT BUS CA-A	
3	LPM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
4	LPM	MUSIC (EMA Front Connector)	PIM0	MUSIC0	IPX MUSIC CA-A	
5	LPM	TOP (EMA Front Connector)	TOPU	KEY and DSP (DSPL for single stack)	DSPKEY CA-A	
6	LPM	ALM (EMA Front Connector)	BASEU	(FALM)	FALM CA-A	

Note: Cable in bracket is for a dual-system.

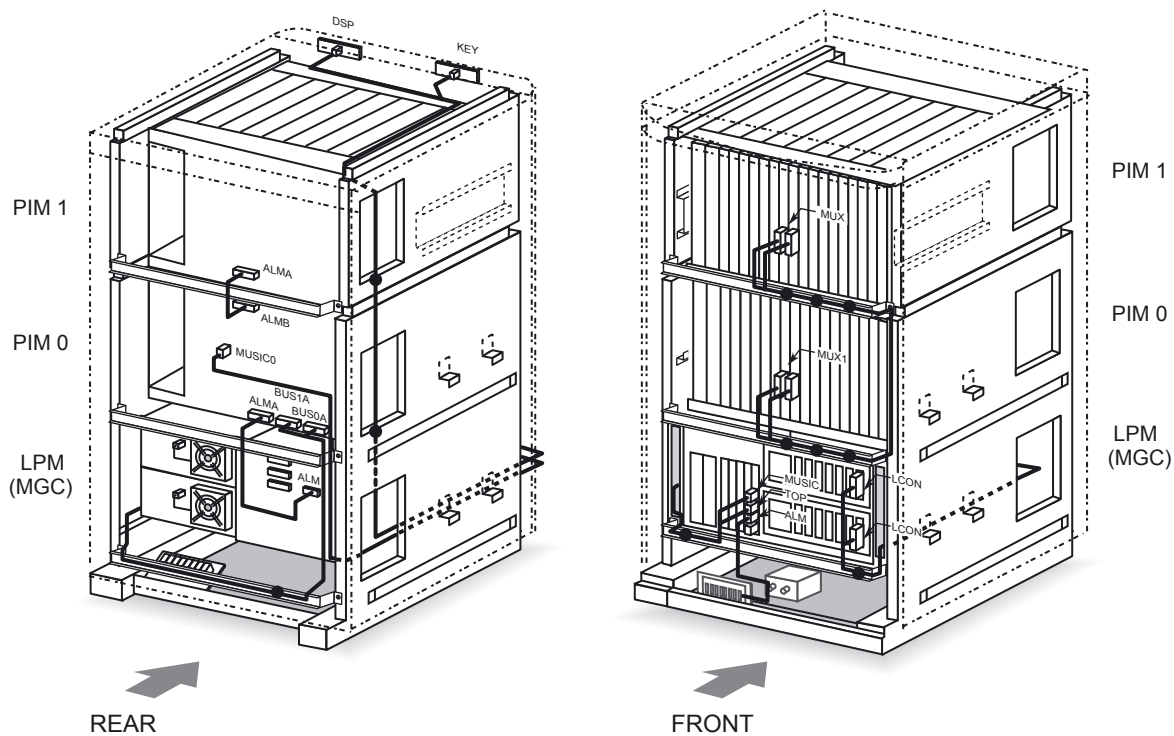
NAP-200-010	
Sheet 44/64	
Internal Cable Connections	Single IMG Configuration



Run the bus cables, referring to Figure 010-25. Then, fasten the bus cables to the cabinet, referring to the figure below.

Figure 010-24 Bus Cable Connections for 2-PIM System

The drawing below illustrates how to run the bus cables for the 2-PIM system. For details on actual cable running, see Figure 010-25.



Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.

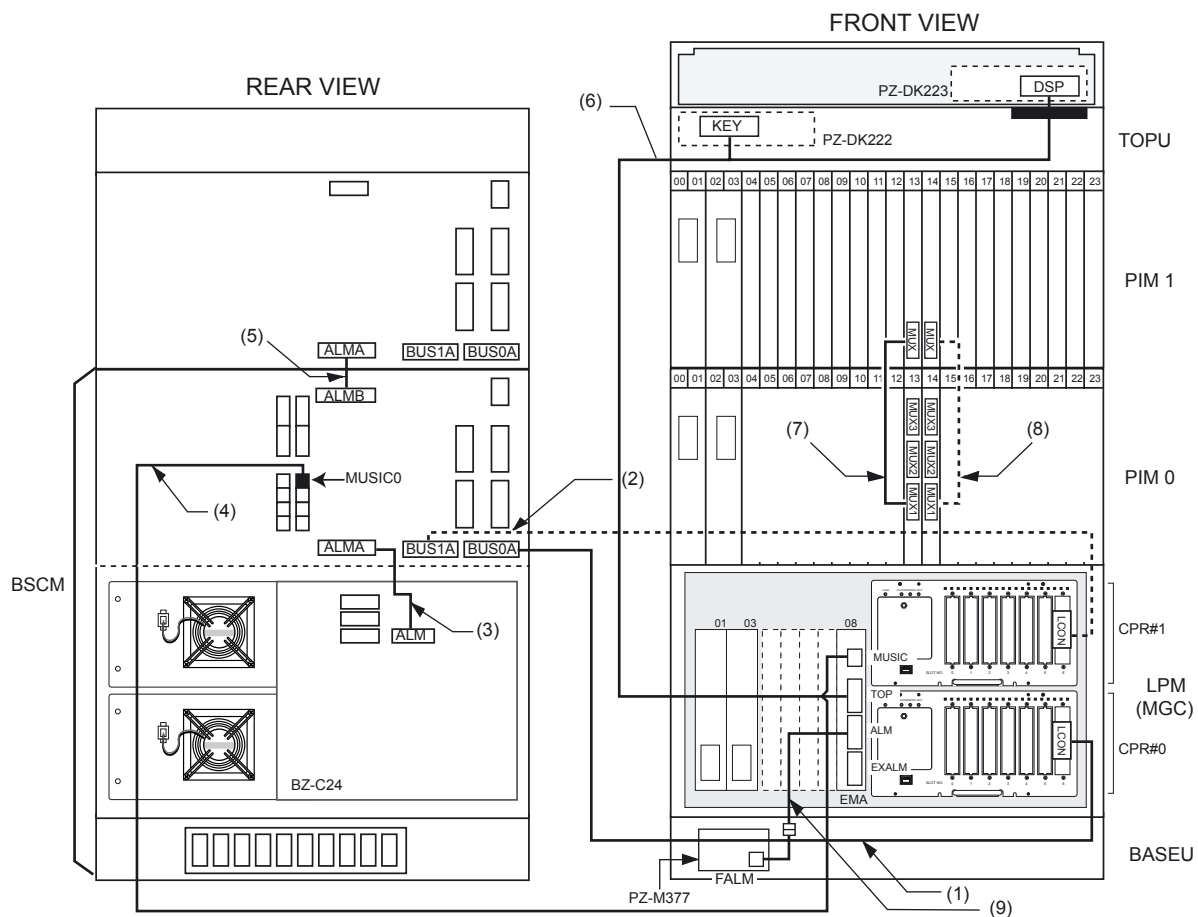
INSTALLATION PROCEDURE

NAP-200-010	
Sheet 45/64	
Internal Cable Connections	Single IMG Configuration



Figure 010-25 Details on Bus Cable Connections (for 2-PIM System)

Connect the bus cables as shown below. Note that dotted-lines indicate bus cables for a dual-system.



NAP-200-010	
Sheet 46/64	
Internal Cable Connections	Single IMG Configuration



Table 010-16 Bus Cable Connections (for 2-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	LPM (CPR#0)	LCON (GT-25 Front Connector)	PIM0	BUS0A	IPX GT BUS CA-A	
(2)	LPM (CPR#1)	LCON (GT-25 Front Connector)	PIM1	BUS1A	IPX GT BUS CA-A	
3	LPM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
4	LPM	MUSIC (EMA Front Connector)	PIM0	MUSIC0	IPX MUSIC CA-A	
5	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
6	LPM	TOP (EMA Front Connector)	TOPU	KEY and DSP (DSPL for single stack)	DSPKEY CA-A	
7	PIM0	MUX1 (PH-SW10 Front Connector)	PIM1	MUX (PH-PC36 Front Connector)	MT24 TSW CA-90	TSW / MUX card in Slot No. 13
(8)	PIM0	MUX1 (PH-SW10 Front Connector)	PIM1	MUX (PH-PC36 Front Connector)	MT24 TSW CA-90	TSW / MUX card in Slot No. 14
9	LPM	ALM (EMA Front Connector)	BASEU	(FALM)	FALM CA-A	

Note: Cable in bracket is for a dual-system.

INSTALLATION PROCEDURE

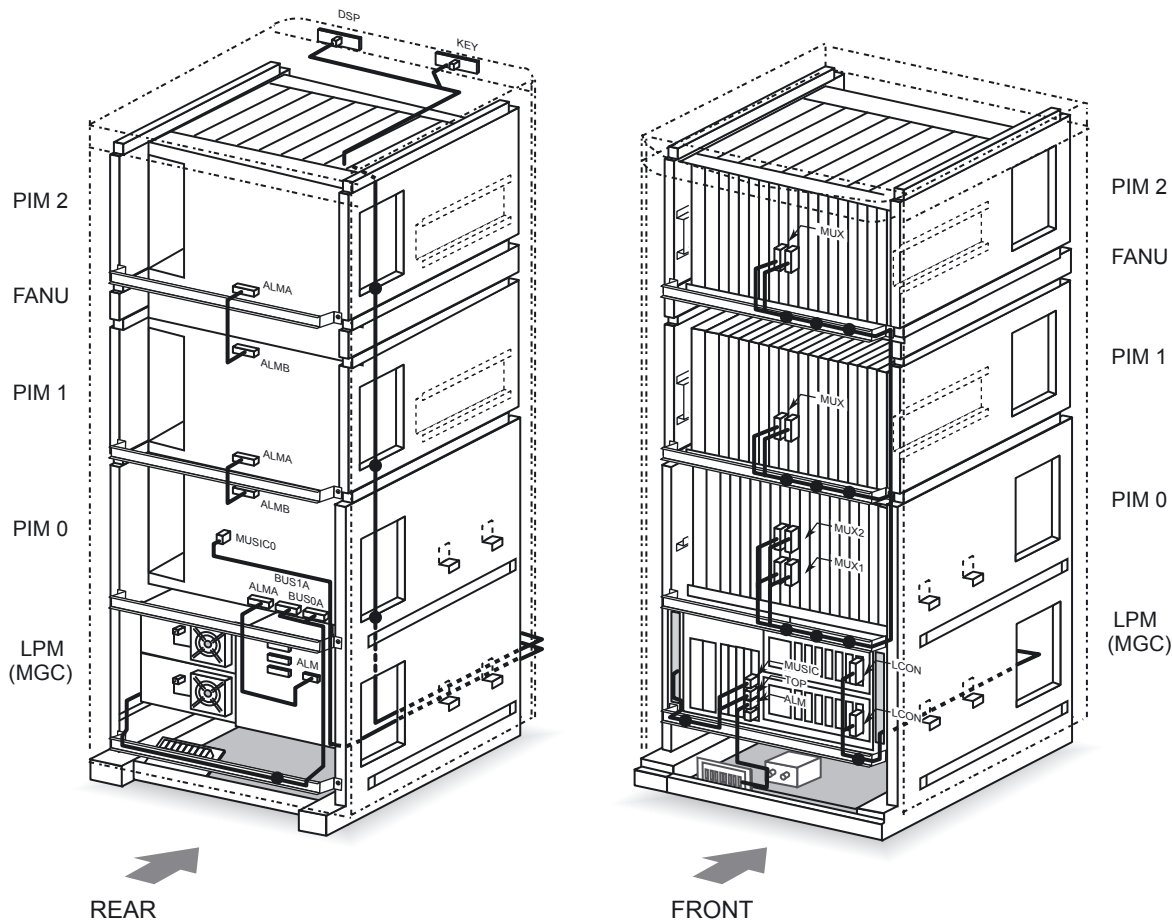
NAP-200-010	
Sheet 47/64	
Internal Cable Connections	Single IMG Configuration



Run the bus cables, referring to Figure 010-27. Then, fasten the bus cables to the cabinet, referring to the figure below.

Figure 010-26 Bus Cable Connections for 3-PIM System

The drawing below illustrates how to run the bus cables for the 3-PIM system. For details on actual cable running, see Figure 010-27.



Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.

NAP-200-010

Sheet 48/64

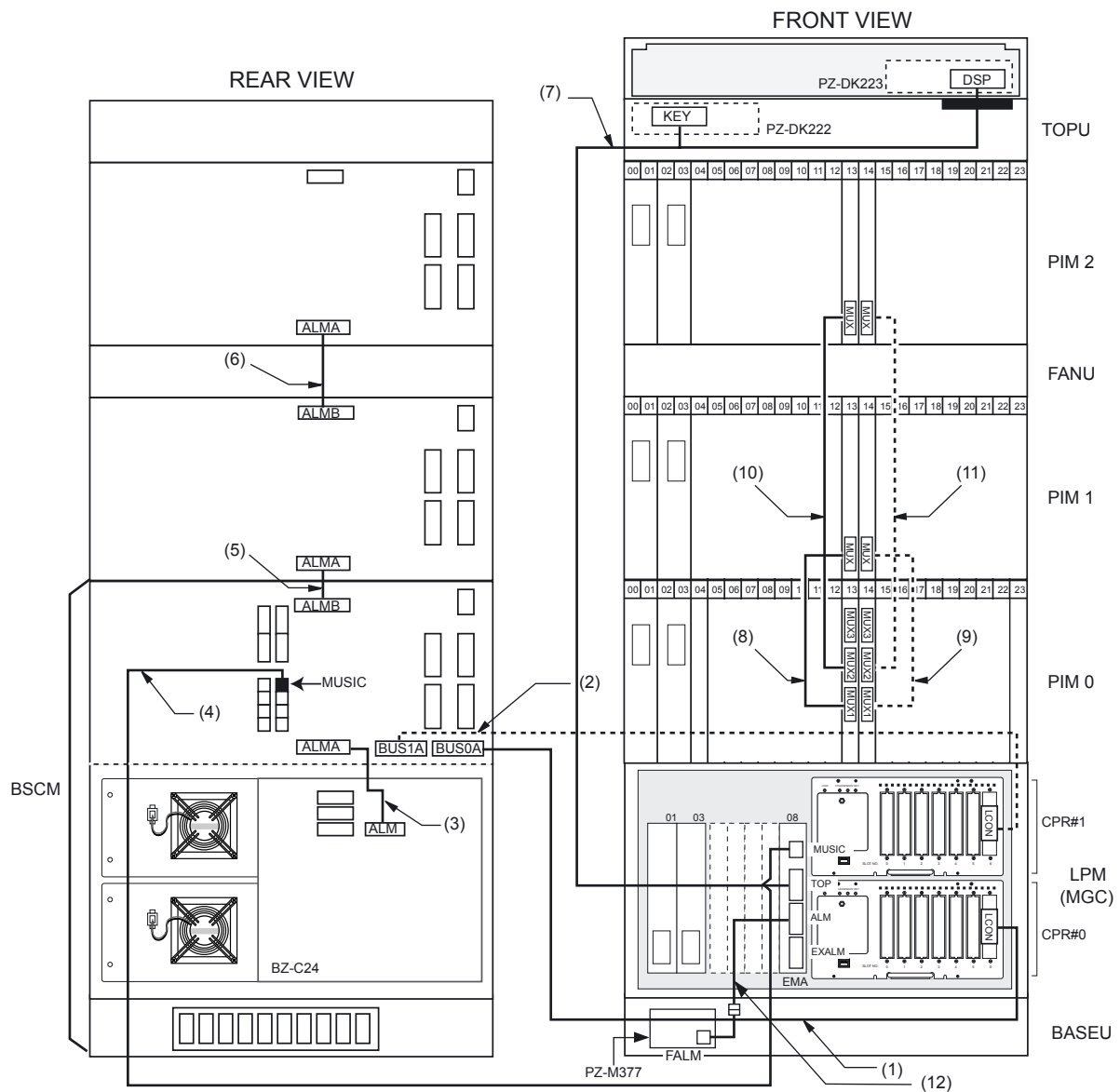
Internal Cable Connections

Single IMG Configuration



Figure 010-27 Details on Bus Cable Connections (for 3-PIM System)

Connect the bus cables as shown below. Note that dotted-lines indicate bus cables for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 49/64	
Internal Cable Connections	Single IMG Configuration



Table 010-17 Bus Cable Connections (for 3-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	LPM (CPR#0)	LCON (GT-25 Front Connector)	PIM0	BUS0A	IPX GT BUS CA-A	
(2)	LPM (CPR#1)	LCON (GT-25 Front Connector)	PIM1	BUS1A	IPX GT BUS CA-A	
3	LPM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
4	LPM	MUSIC (EMA Front Connector)	PIM0	MUSIC0	IPX MUSIC CA-A	
5	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
6	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	
7	LPM	TOP (EMA Front Connector)	TOPU	KEY and DSP (DSPL for single stack)	DSPKEY CA-A	
8	PIM0	MUX1 (PH-SW10 Front Connector)	PIM1	MUX (PH-PC36 Front Connector)	MT24 TSW CA-90	TSW / MUX card in Slot No. 13
(9)	PIM0	MUX1 (PH-SW10 Front Connector)	PIM1	MUX (PH-PC36 Front Connector)	MT24 TSW CA-90	TSW / MUX card in Slot No. 14
10	PIM0	MUX2 (PH-SW10 Front Connector)	PIM2	MUX (PH-PC36 Front Connector)	MT24 TSW CA-140	TSW / MUX card in Slot No. 13
(11)	PIM0	MUX2 (PH-SW10 Front Connector)	PIM2	MUX (PH-PC36 Front Connector)	MT24 TSW CA-140	TSW / MUX card in Slot No. 14
12	LPM	ALM (EMA Front Connector)	BASEU	(FALM)	FALM CA-A	

Note: Cable in bracket is for a dual-system.

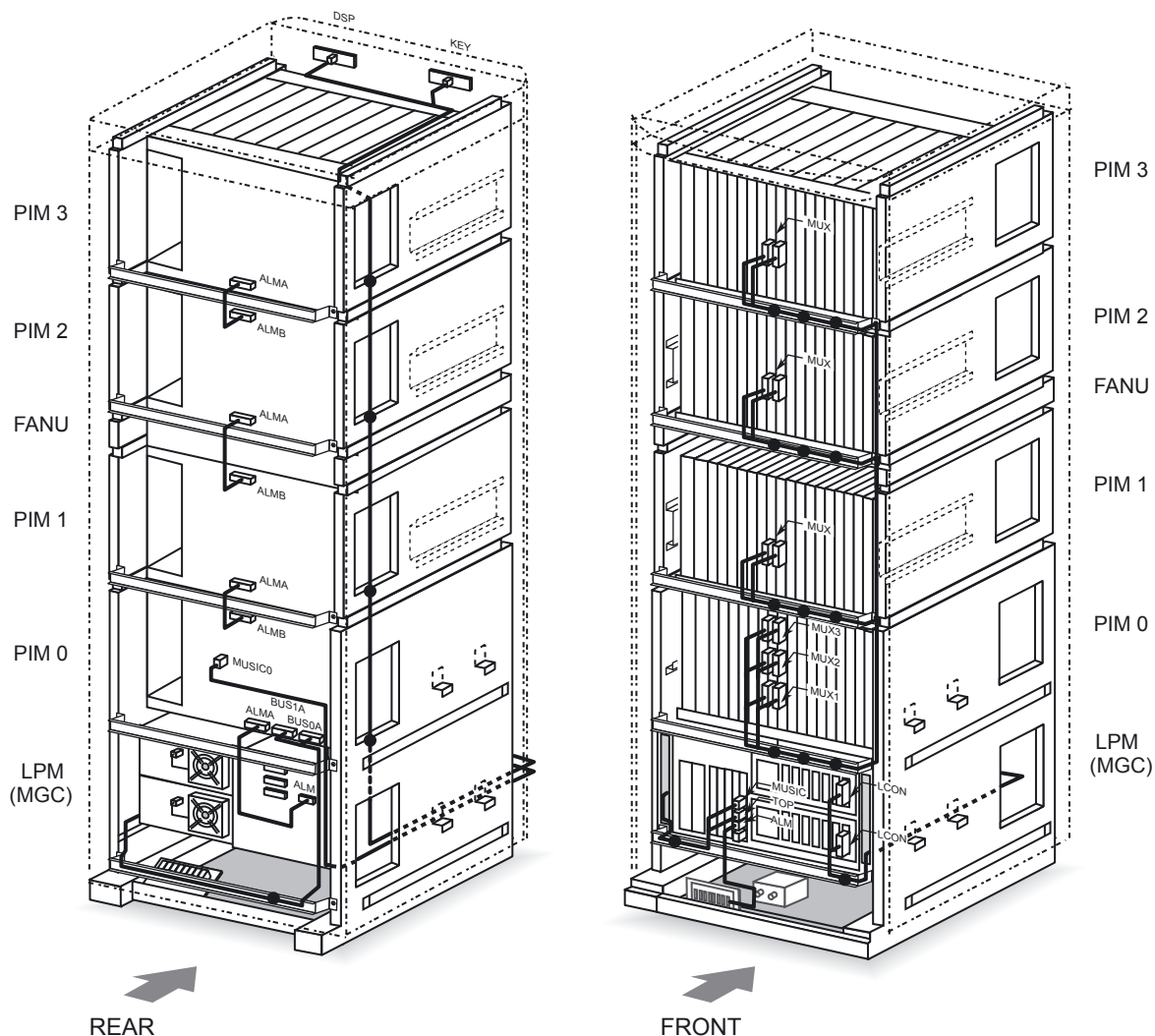
NAP-200-010	
Sheet 50/64	
Internal Cable Connections	Single IMG Configuration



Run the power cables, referring to Figure 010-29. Then, fasten the cables to the cabinet, referring to the figure below.

Figure 010-28 Bus Cable Connections for 4-PIM System

The drawing below illustrates how to run the bus cables for the 4-PIM system. For details on actual cable running, see Figure 010-29.



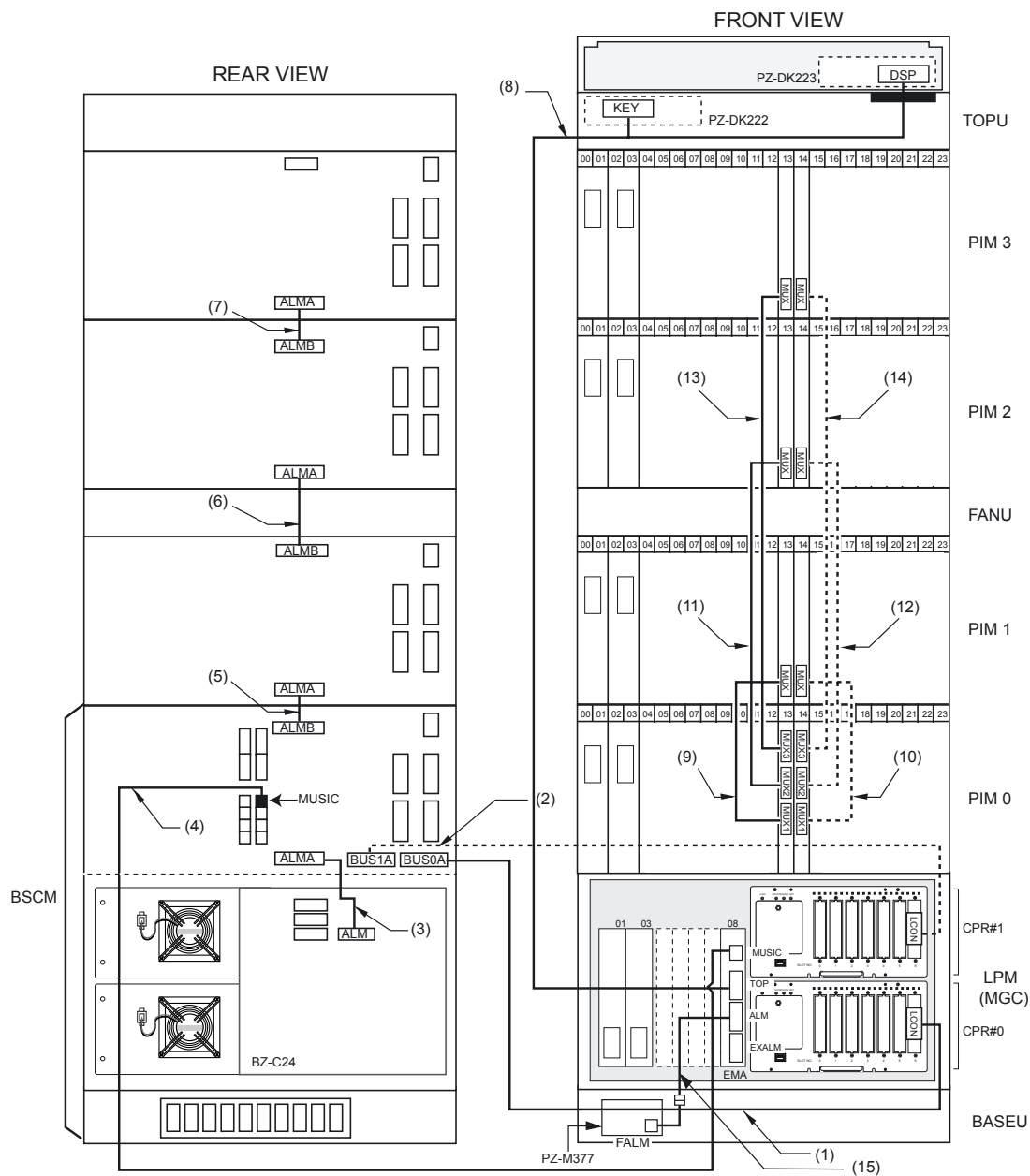
Note: Normally, the cable are fastened onto the cabinet at the proposed locations, where small dots (•) are provided in this figure.

NAP-200-010	
Sheet 51/64	
Internal Cable Connections	Single IMG Configuration



Figure 010-29 Details on Bus Cable Connections (for 4-PIM System)

Connect the bus cables as shown below. Note that dotted-lines indicate bus cables for a dual-system.



NAP-200-010	
Sheet 52/64	
Internal Cable Connections	Single IMG Configuration



Table 010-18 Bus Cable Connections (for 4-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	LPM (CPR#0)	LCON (GT-25 Front Connector)	PIM0	BUS0A	IPX GT BUS CA-A	
(2)	LPM (CPR#1)	LCON (GT-25 Front Connector)	PIM1	BUS1A	IPX GT BUS CA-A	
3	LPM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
4	LPM	MUSIC (EMA Front Connector)	PIM0	MUSIC0	IPX MUSIC CA-A	
5	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
6	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	
7	PIM2	ALMB	PIM3	ALMA	20AL-(10) FLT CA	
8	LPM	TOP (EMA Front Connector)	TOPU	KEY and DSP (DSPL for single stack)	DSPKEY CA-A	
9	PIM0	MUX1 (PH-SW10 Front Connector)	PIM1	MUX (PH-PC36 Front Connector)	MT24 TSW CA-90	TSW / MUX card in Slot No. 13
(10)	PIM0	MUX1 (PH-SW10 Front Connector)	PIM1	MUX (PH-PC36 Front Connector)	MT24 TSW CA-90	TSW / MUX card in Slot No. 14
11	PIM0	MUX2 (PH-SW10 Front Connector)	PIM2	MUX (PH-PC36 Front Connector)	MT24 TSW CA-140	TSW / MUX card in Slot No. 13
(12)	PIM0	MUX2 (PH-SW10 Front Connector)	PIM2	MUX (PH-PC36 Front Connector)	MT24 TSW CA-140	TSW / MUX card in Slot No. 14
13	PIM0	MUX3 (PH-SW10 Front Connector)	PIM3	MUX (PH-PC36 Front Connector)	MT24 TSW CA-180	TSW / MUX card in Slot No. 13
(14)	PIM0	MUX3 (PH-SW10 Front Connector)	PIM3	MUX (PH-PC36 Front Connector)	MT24 TSW CA-180	TSW / MUX card in Slot No. 14
15	LPM	ALM (EMA Front Connector)	BASEU	(FALM)	FALM CA-A	

Note: Cable in bracket is for a dual-system.

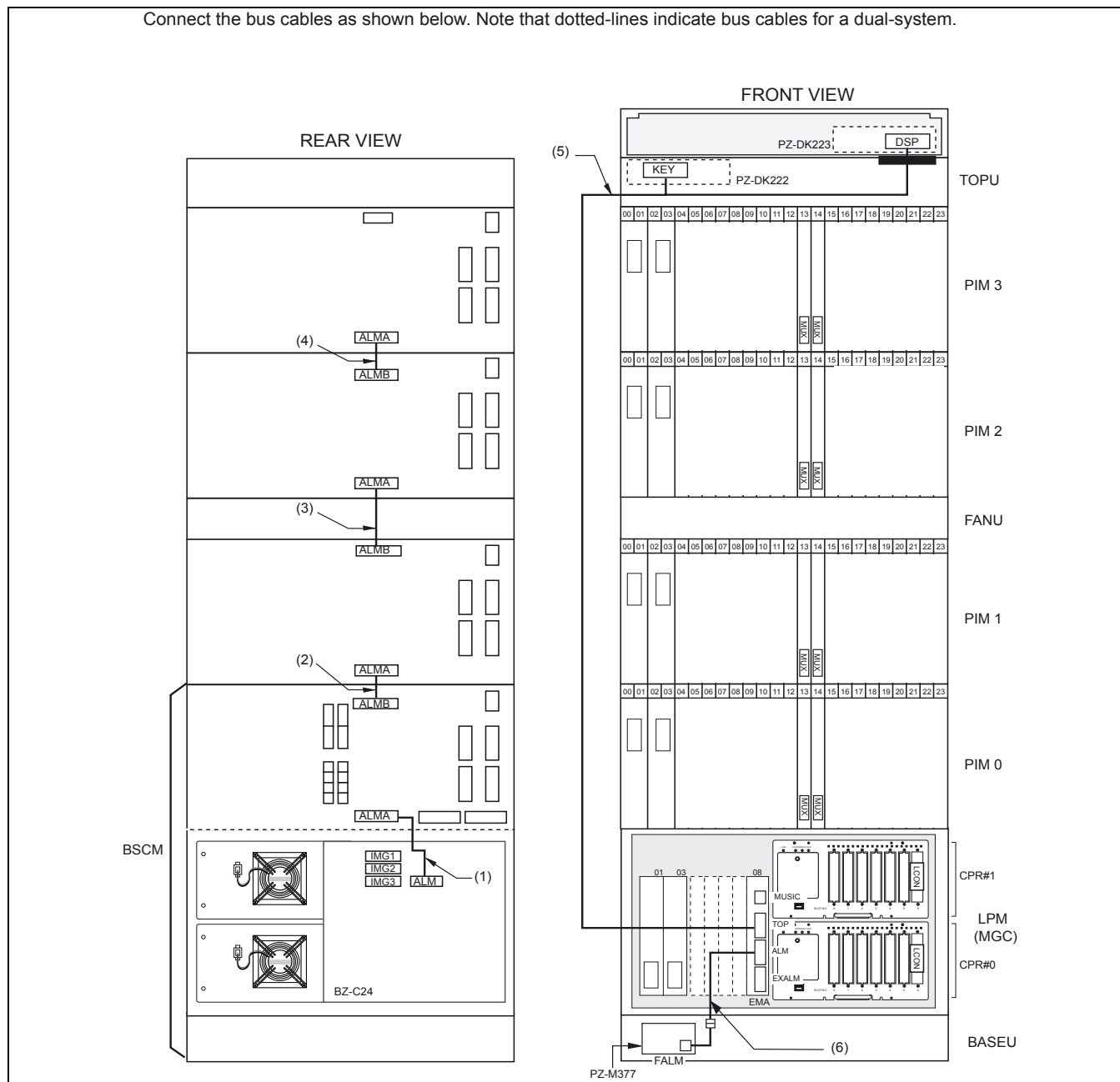
INSTALLATION PROCEDURE

NAP-200-010	
Sheet 53/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-30 Internal Bus Cable Connections for IMG0 (Multiple IMG Configuration)

Connect the bus cables as shown below. Note that dotted-lines indicate bus cables for a dual-system.



NAP-200-010	
Sheet 54/64	
Internal Cable Connections	Multiple IMG Configuration



Table 010-19 Internal Bus Cable Connections for IMG0 (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	LPM (MGC)	ALM	PIM0	ALMA	20AL-(60) FLT CA	
2	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
3	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	
4	PIM2	ALMB	PIM3	ALMA	20AL-(10) FLT CA	
5	LPM (MGC)	TOP (EMA Front Connector)	TOPU	KEY and DSP (DSPL for single stack)	DSPKEY CA-A	
6	LPM	ALM (EMA Front Connector)	BASEU	(FALM)	FALM CA-A	

NAP-200-010	
Sheet 55/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-31 Internal Bus Cable Connections for IMG1 (1-PIM System) (Multiple IMG Configuration)

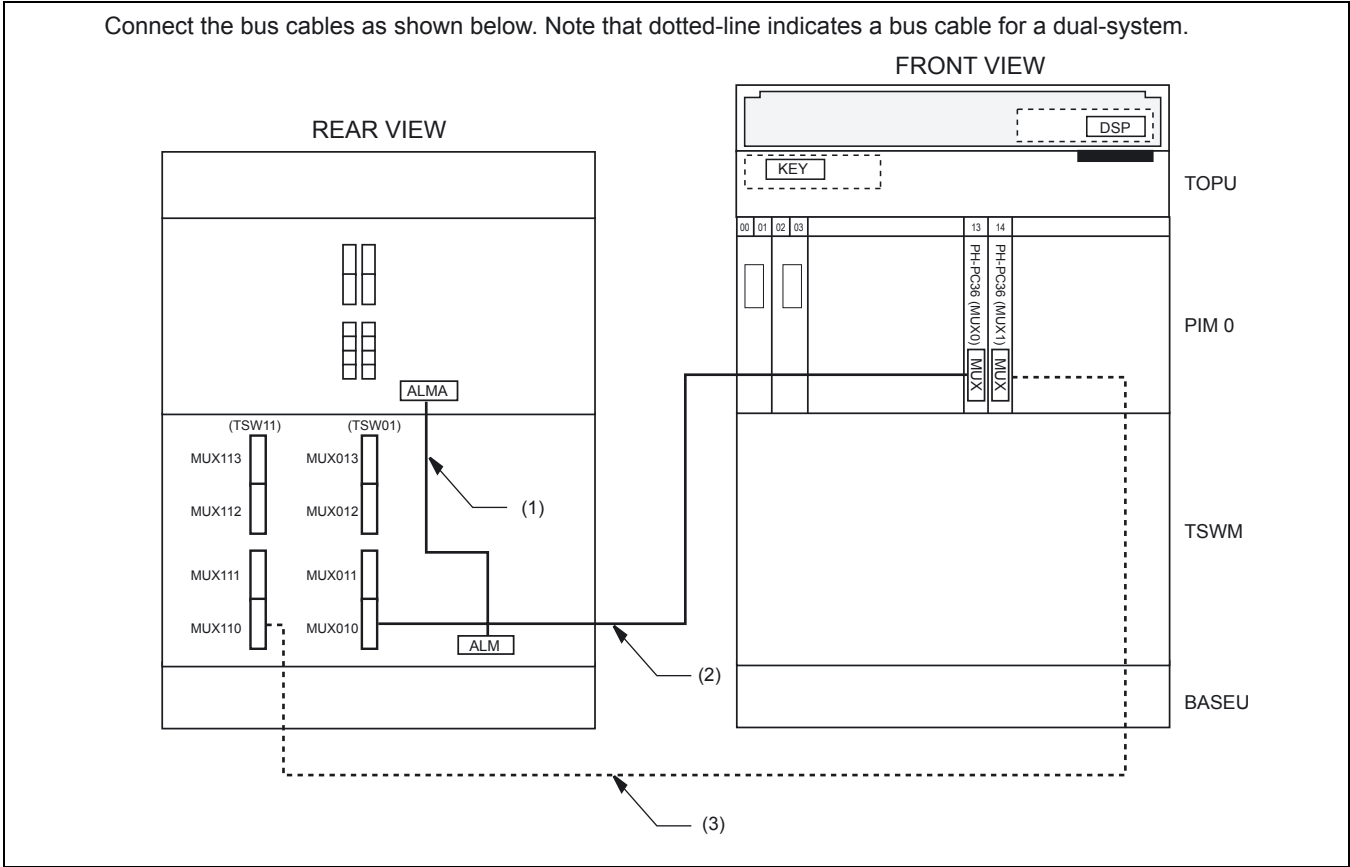


Table 010-20 Internal Bus Cable Connections for IMG1 (1-PIM System) (Multiple IMG Configuration)

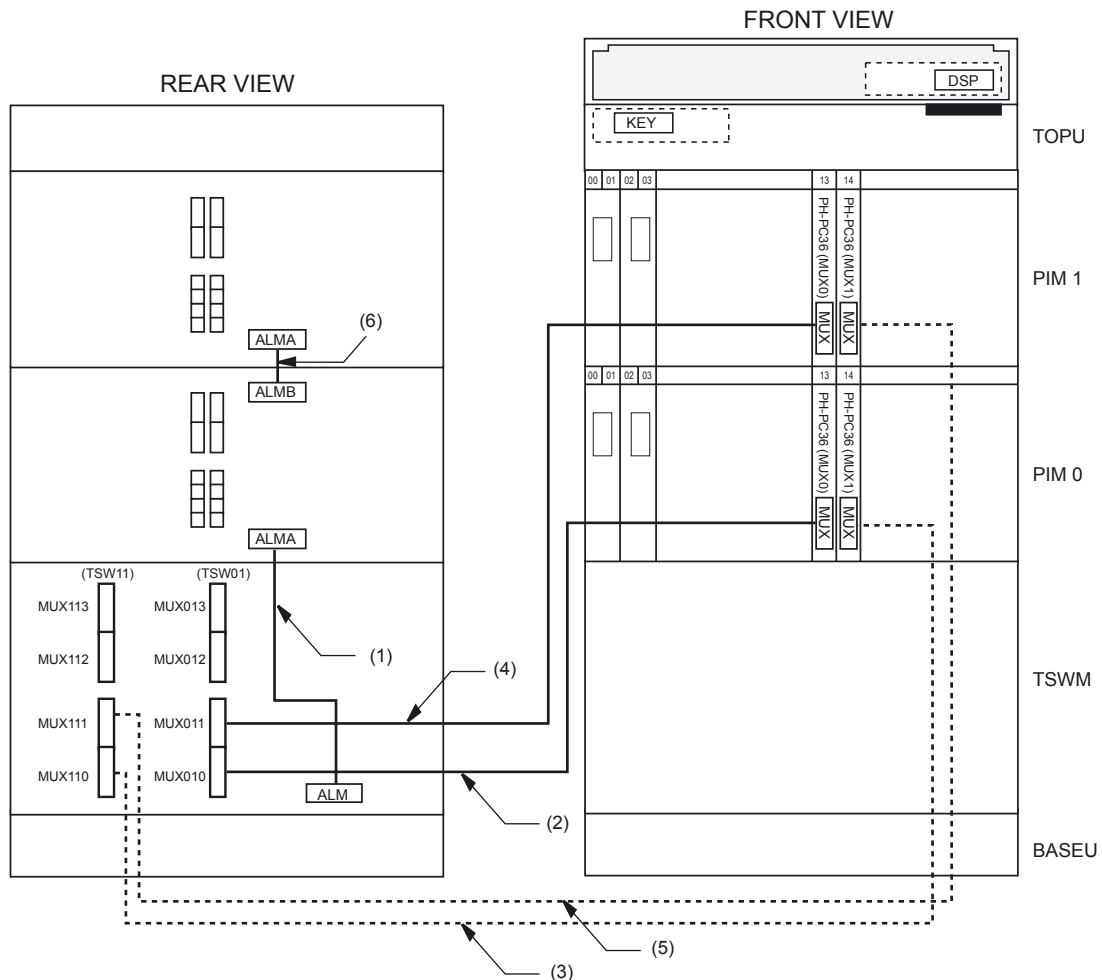
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
2	TSWM	MUX010	PIM0	MUX (slot 13)	34PH MT24 TSW CA-D	TSW 01
3	TSWM	MUX110	PIM0	MUX (slot 14)	34PH MT24 TSW CA-D	TSW 11

NAP-200-010	
Sheet 56/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-32 Internal Bus Cable Connections for IMG1 (2-PIM System) (Multiple IMG Configuration)

Connect the internal bus cables for 2-PIM system of IMG1 as shown below. Note that dotted-line indicates bus cables for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 57/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-21 Internal Bus Cable Connections for IMG1 (2-PIM System) (Multiple IMG Configuration)

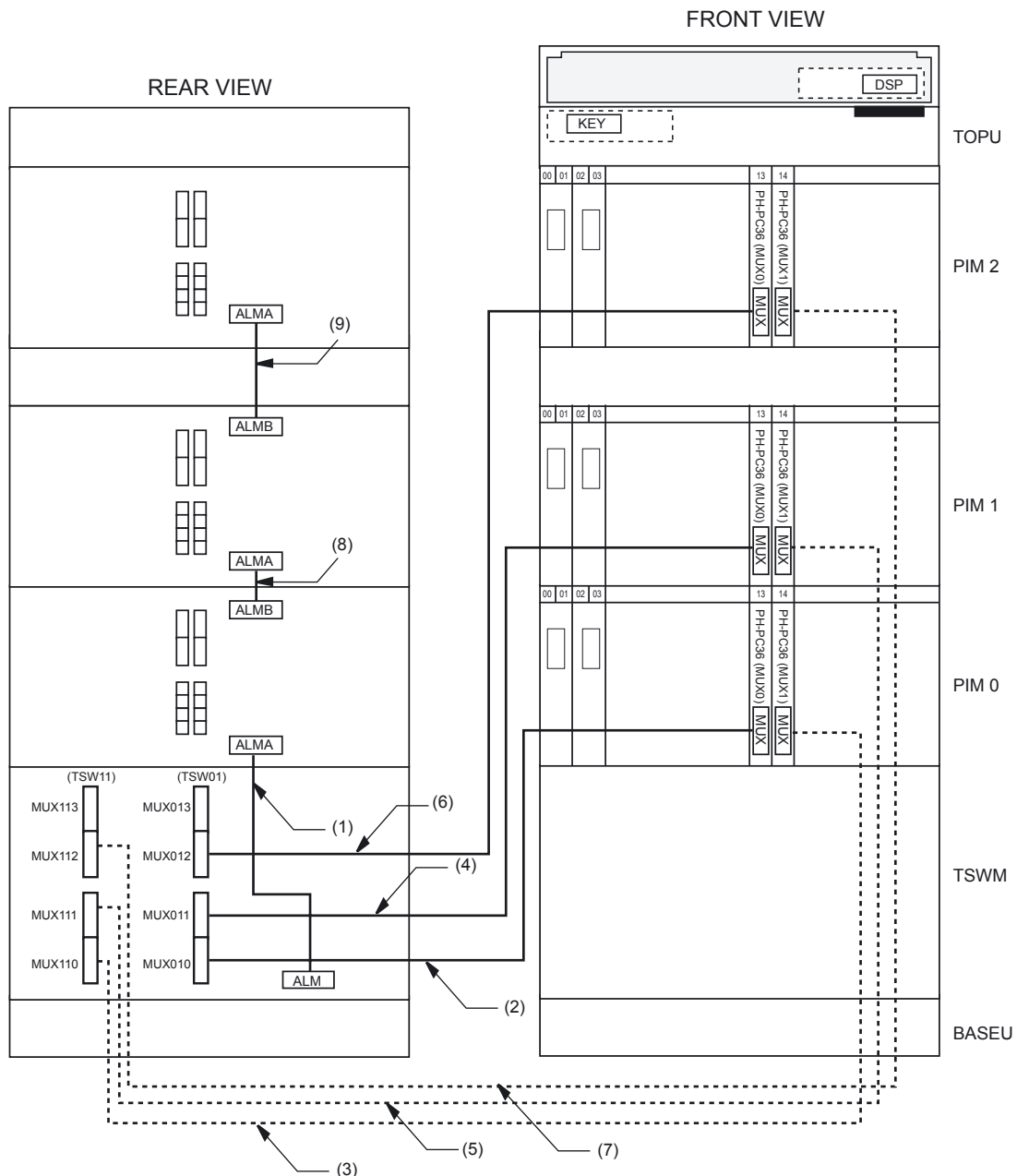
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
2	TSWM	MUX010	PIM0	MUX (Slot 13)	34PH MT24 TSW CA-D	TSW 01
3	TSWM	MUX110	PIM0	MUX (Slot 14)	34PH MT24 TSW CA-D	TSW 11
4	TSWM	MUX011	PIM1	MUX (Slot 13)	34PH MT24 TSW CA-G	TSW 01
5	TSWM	MUX111	PIM1	MUX (Slot 14)	34PH MT24 TSW CA-G	TSW 11
6	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	

NAP-200-010	
Sheet 58/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-33 Internal Bus Cable Connections for IMG1 (3-PIM System) (Multiple IMG Configuration)

Connect the internal bus cables for 3-PIM system of IMG1 as shown below. Note that dotted-line indicates bus cables for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 59/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-22 Internal Bus Cable Connections for IMG1 (3-PIM System) (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
2	TSWM	MUX010	PIM0	MUX (Slot 13)	34PH MT24 TSW CA-D	TSW 01
3	TSWM	MUX110	PIM0	MUX (Slot 14)	34PH MT24 TSW CA-D	TSW 11
4	TSWM	MUX011	PIM1	MUX (Slot 13)	34PH MT24 TSW CA-G	TSW 01
5	TSWM	MUX111	PIM1	MUX (Slot 14)	34PH MT24 TSW CA-G	TSW 11
6	TSWM	MUX012	PIM2	MUX (Slot 13)	34PH MT24 TSW CA-F	TSW 01
7	TSWM	MUX112	PIM2	MUX (Slot 14)	34PH MT24 TSW CA-F	TSW 11
8	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
9	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	

NAP-200-010

Sheet 60/64

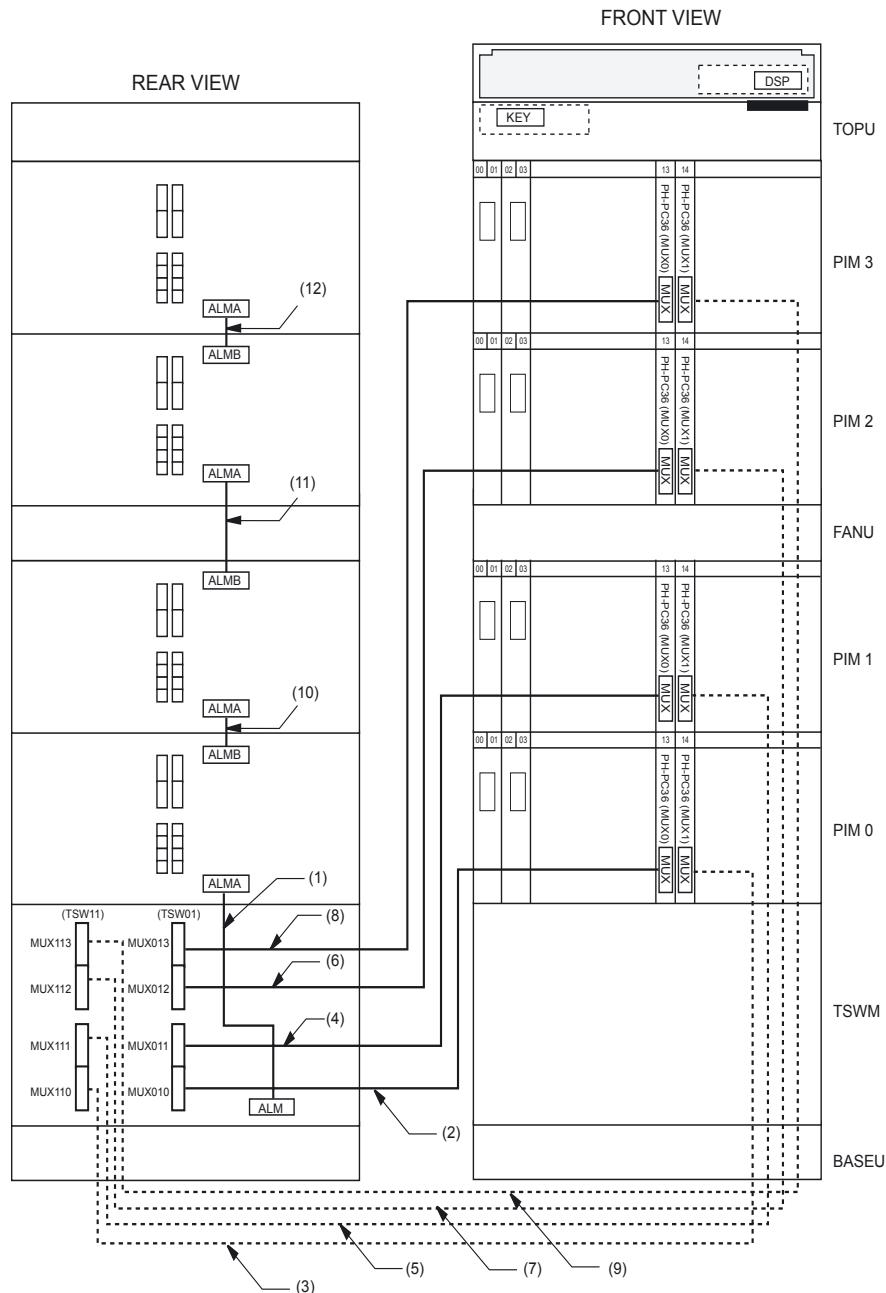
Internal Cable Connections

Multiple IMG Configuration



Figure 010-34 Internal Bus Cable Connections for IMG1 (4-PIM System) (Multiple IMG Configuration)

Connect the internal bus cables for 4-PIM system of IMG1 as shown below. Note that dotted-line indicates bus cables for a dual-system.



INSTALLATION PROCEDURE

NAP-200-010	
Sheet 61/64	
Internal Cable Connections	Multiple IMG Configuration

Table 010-23 Internal Bus Cable Connections for IMG1 (4-PIM System) (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
2	TSWM	MUX010	PIM0	MUX (Slot 13)	34PH MT24 TSW CA-D	TSW 01
3	TSWM	MUX110	PIM0	MUX (Slot 14)	34PH MT24 TSW CA-D	TSW 11
4	TSWM	MUX011	PIM1	MUX (Slot 13)	34PH MT24 TSW CA-G	TSW 01
5	TSWM	MUX111	PIM1	MUX (Slot 14)	34PH MT24 TSW CA-G	TSW 11
6	TSWM	MUX012	PIM2	MUX (Slot 13)	34PH MT24 TSW CA-F	TSW 01
7	TSWM	MUX112	PIM2	MUX (Slot 14)	34PH MT24 TSW CA-F	TSW 11
8	TSWM	MUX013	PIM3	MUX (Slot 13)	34PH MT24 TSW CA-G	TSW 01
9	TSWM	MUX113	PIM3	MUX (Slot 14)	34PH MT24 TSW CA-G	TSW 11
10	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
11	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	
12	PIM2	ALMB	PIM3	ALMA	20AL-(10) FLT CA	

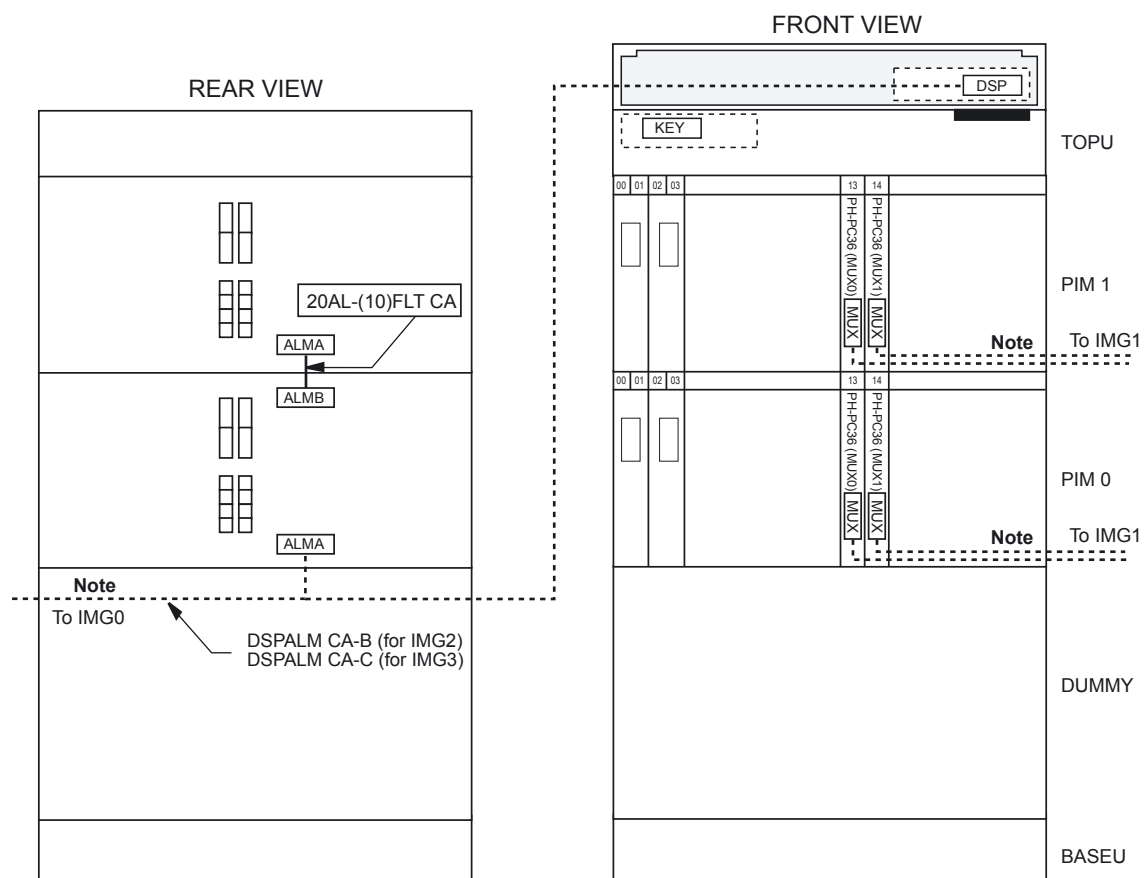
NAP-200-010	
Sheet 62/64	
Internal Cable Connections	Multiple IMG Configuration



Figures 010-35 through 010-37 show the configuration of the internal bus cables for IMG2/3. Because bus cables for the 1-PIM system all adopt inter-frame connections with other cabinets (IMG0 and 1), explanations are given here about the 2-PIM configuration or more. (cf. NAP 200-011; "Inter-frame Cable Connections.")

Figure 010-35 Internal Bus Cable Connections for IMG2/3 (2-PIM System) (Multiple IMG Configuration)

When 2-PIM system is adopted in IMG2 or 3, the required connection is as follows:



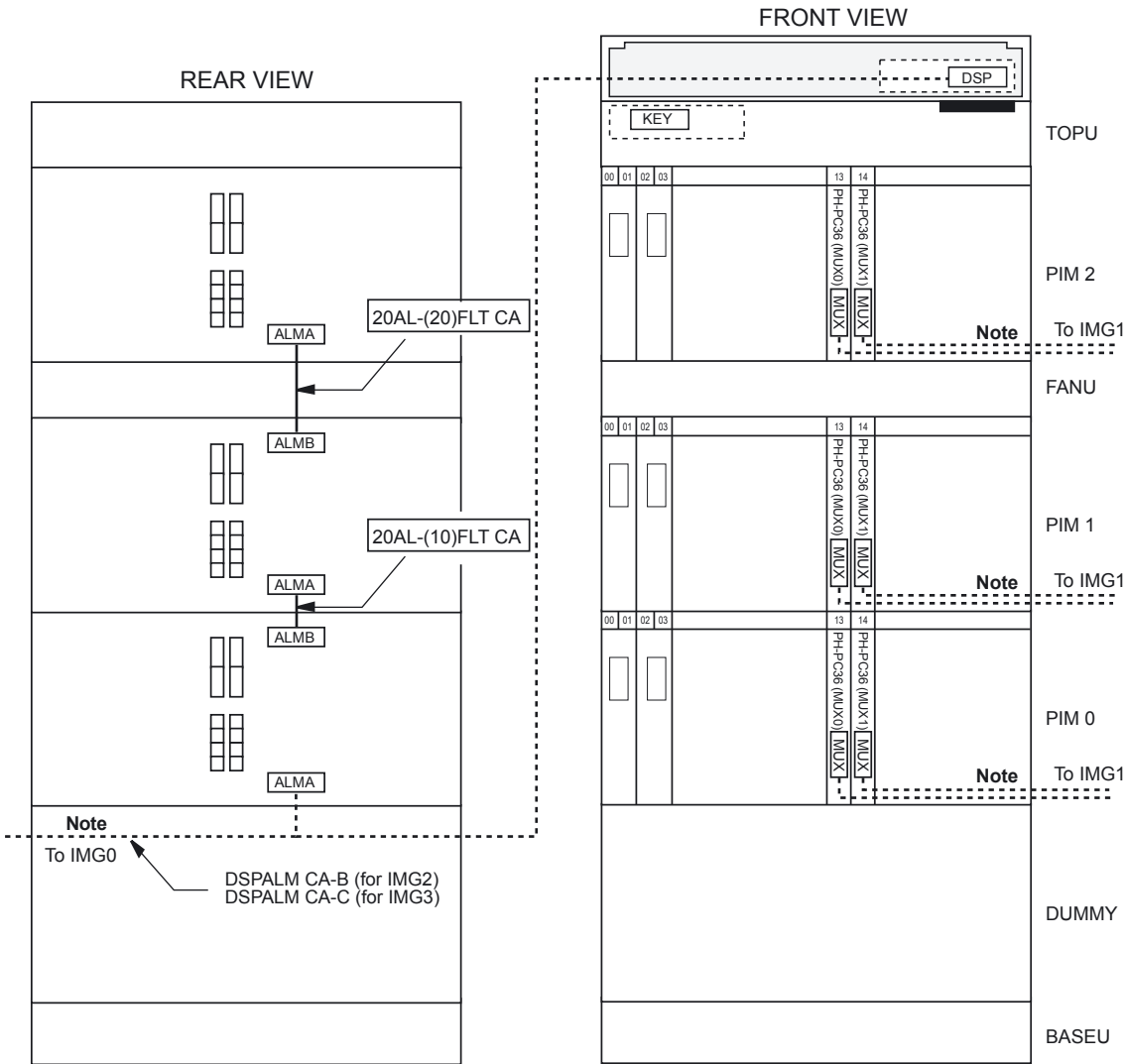
Note: For these cable running, refer to NAP-011: "Inter-frame Cable Connections."

NAP-200-010	
Sheet 63/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-36 Internal Bus Cable Connections for IMG2/3 (3-PIM System) (Multiple IMG Configuration)

When 3-PIM system is adopted in IMG2 or 3, the required connection is as follows:



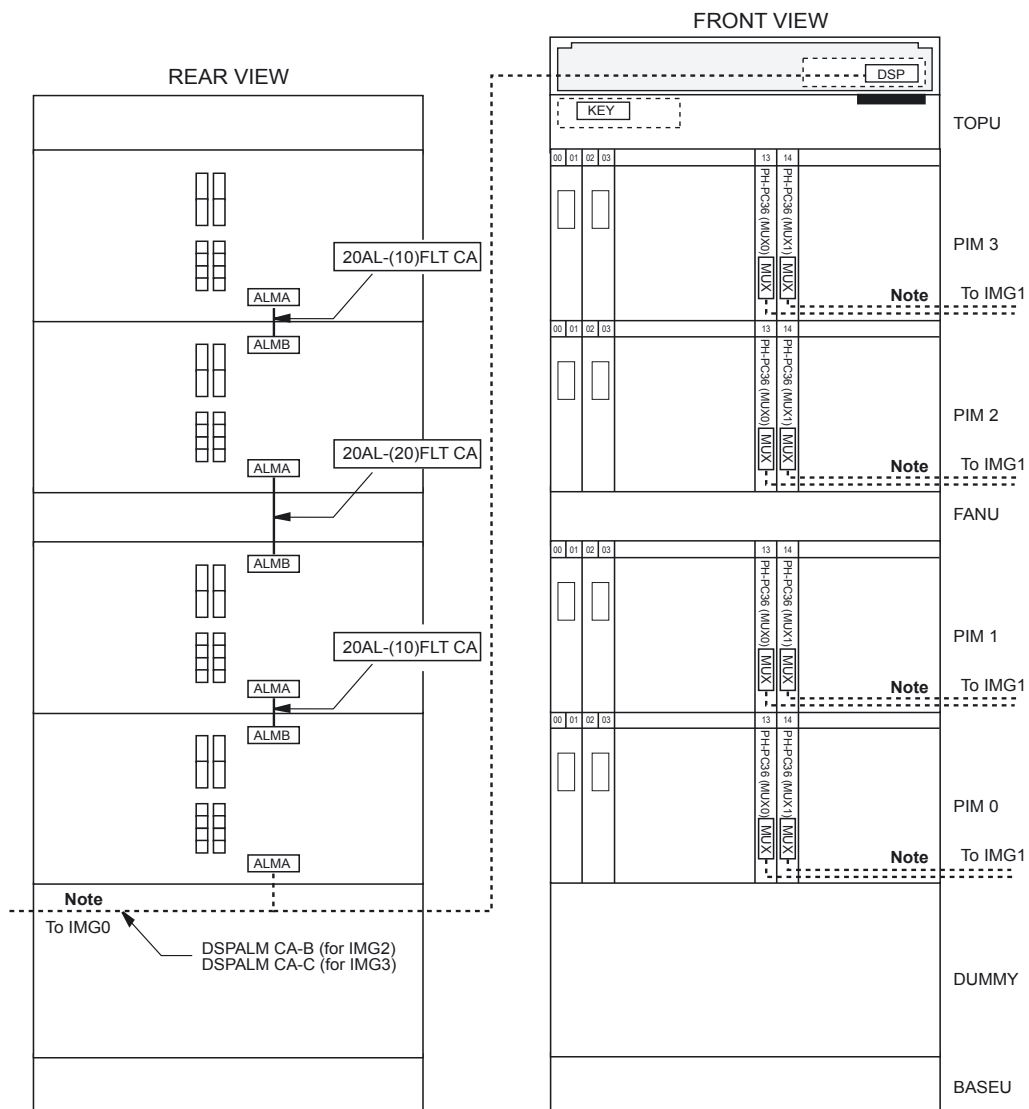
Note: For these cable running, refer to NAP-011: "Inter-frame Cable Connections."

NAP-200-010	
Sheet 64/64	
Internal Cable Connections	Multiple IMG Configuration



Figure 010-37 Internal Bus Cable Connections for IMG2/3 (4-PIM System) (Multiple IMG Configuration)

When 4-PIM system is adopted in IMG2 or 3, the required connection is as follows.



Note: For these cable running, refer to NAP-011: "Inter-frame Cable Connections."

INSTALLATION PROCEDURE

NAP-200-011	
Sheet 1/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

This NAP explains how to run the frame-to-frame cables for 2/3/4-IMG System.

STAR

T

- Connection of Inter-frame ISA Bus Cables _____ Refer to Figure 011-1.
- Connection of Inter-frame Bus Cables _____ Refer to Figures 011-2 through 011-10.
- Connection of Inter-frame Alarm Bus Cables _____ Refer to Figures 011-11 through 011-13.

END

NAP-200-011	
Sheet 2/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-1 Inter-Frame ISA Bus Cable Connections for IMG0-IMG1 (Multiple IMG Configuration)

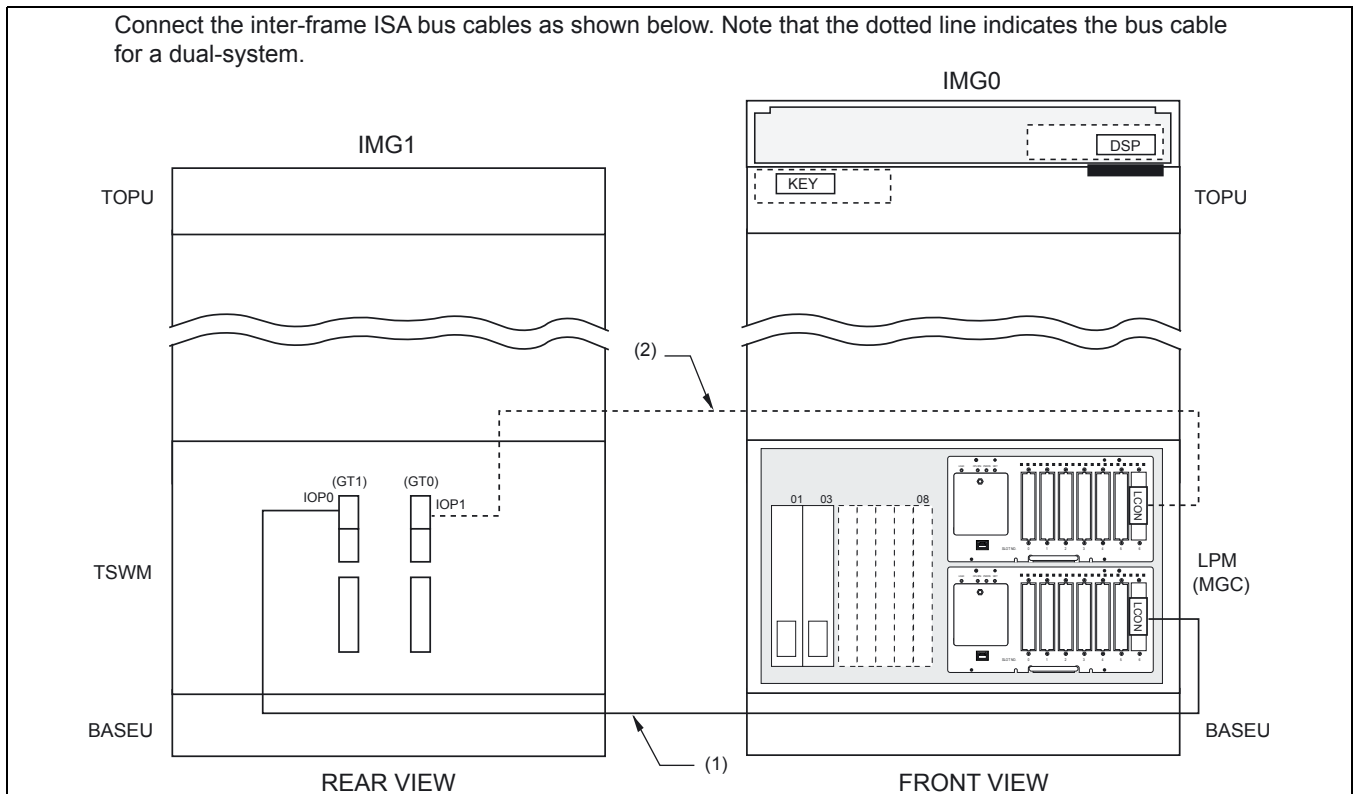


Table 011-1 Inter-Frame ISA Bus Cable Connections for IMG0-IMG1 (Multiple IMG Configuration)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	CPR#0 in LPM (MGC)	LCON (PZ-GT26)	TSWM	IOP0 (Slot 11)	34PH 50AL CA-A	
2	CPR#1 in LPM (MGC)	LCON (PZ-GT26)	TSWM	IOP1 (Slot 10)	34PH 50AL CA-A	

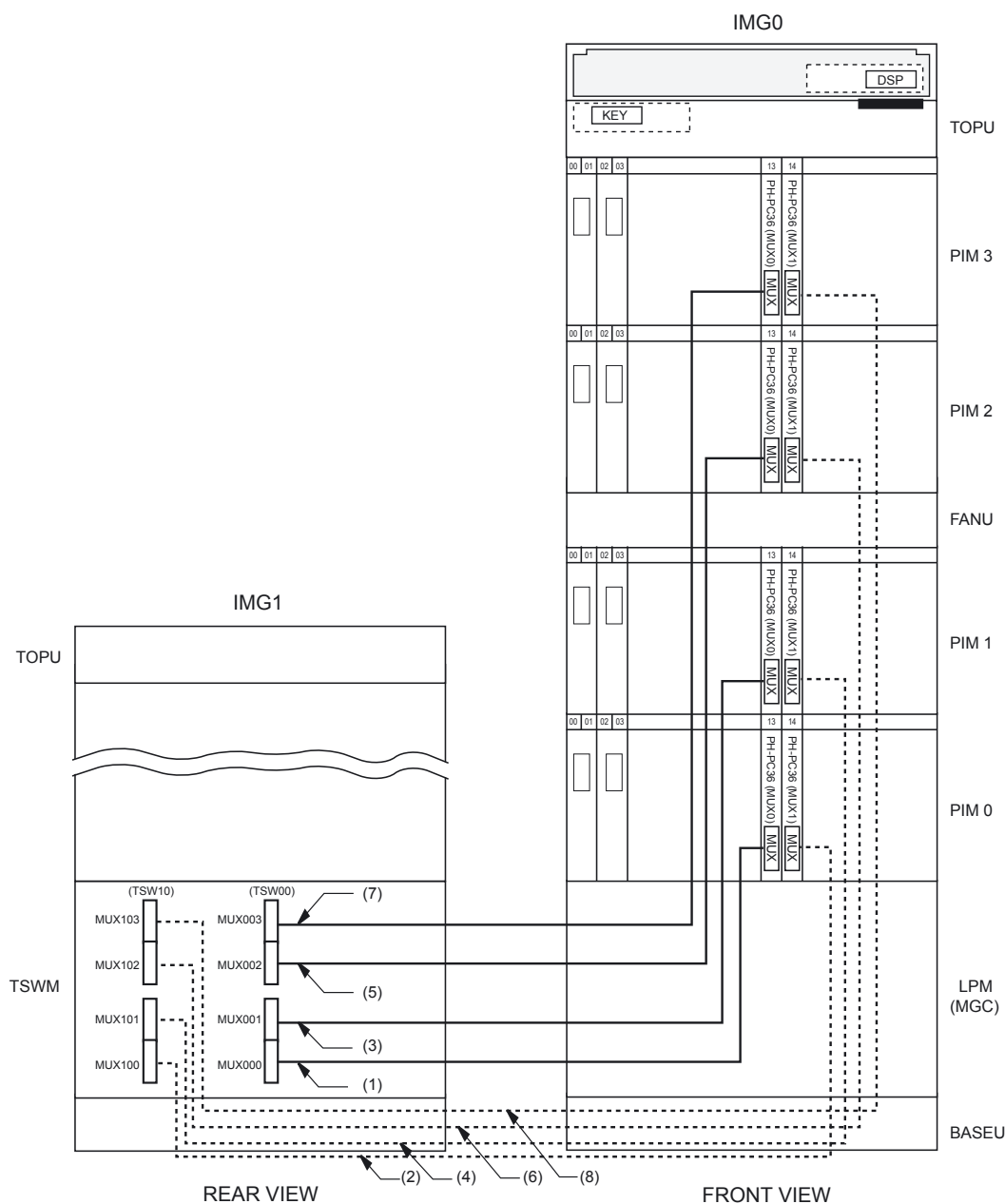
INSTALLATION PROCEDURE

NAP-200-011	
Sheet 3/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-2 Inter-Frame Bus Cable Connections for IMG0-IMG1 (Multiple IMG Configuration)

Connect the inter-frame bus cables between IMG0 and IMG1 as shown below. Note that dotted-line indicates bus cables for a dual-system.



NAP-200-011	
Sheet 4/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-2 Inter-Frame Bus Cable Connections for IMG0-IMG1

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME		
1	TSWM	MUX000	PIM0 (IMG0)	MUX (Slot 13)	34PH MT24 TSW CA-F	TSW 00
2	TSWM	MUX100	PIM0 (IMG0)	MUX (Slot 14)	34PH MT24 TSW CA-F	TSW 10
3	TSWM	MUX001	PIM1 (IMG0)	MUX (Slot 13)	34PH MT24 TSW CA-E	TSW 00
4	TSWM	MUX101	PIM1 (IMG0)	MUX (Slot 14)	34PH MT24 TSW CA-E	TSW 10
5	TSWM	MUX002	PIM2 (IMG0)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 00
6	TSWM	MUX102	PIM2 (IMG0)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 10
7	TSWM	MUX003	PIM3 (IMG0)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 00
8	TSWM	MUX103	PIM3 (IMG0)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 10

NAP-200-011	
Sheet 5/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-3 Inter-Frame Bus Cable Connections for IMG1-IMG2 (1-PIM System)

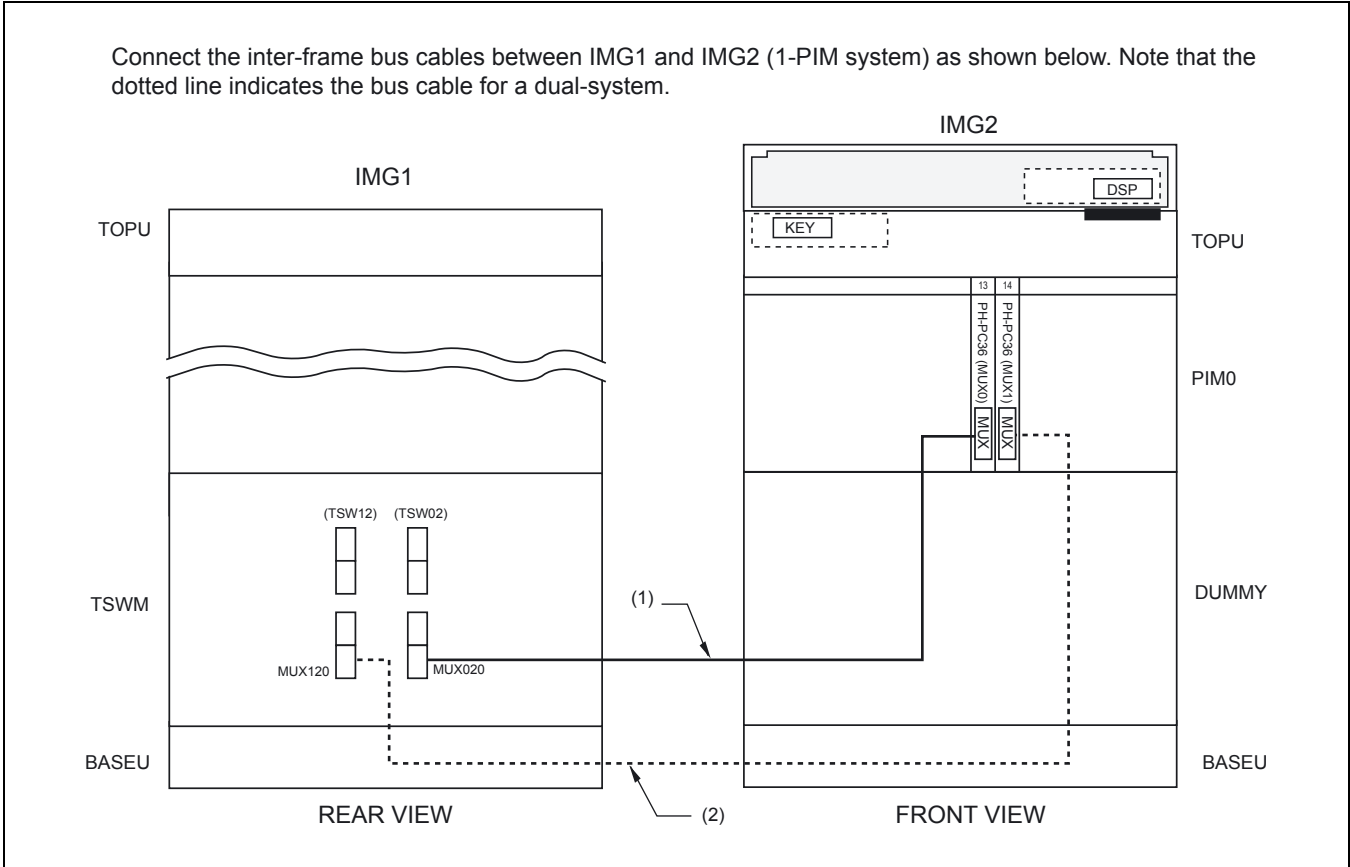


Table 011-3 Inter-Frame Bus Cable Connections for IMG1-IMG2 (1-PIM System)

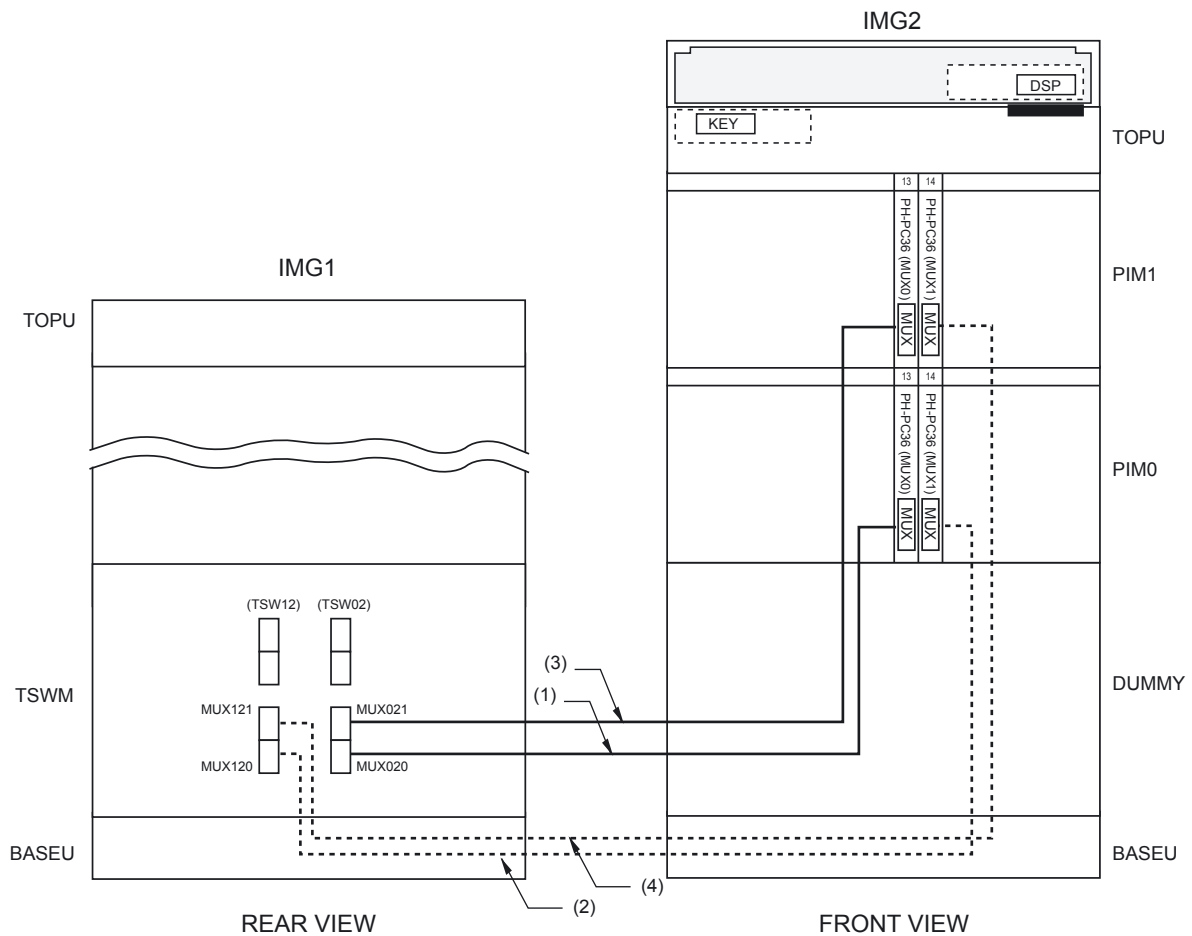
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX020	PIM0 (IMG2)	MUX (Slot13)	34PH MT24 TSW CA-F	TSW 02
2	TSWM	MUX120	PIM0 (IMG2)	MUX (Slot14)	34PH MT24 TSW CA-F	TSW 12

NAP-200-011	
Sheet 6/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-4 Inter-Frame Bus Cable Connections for IMG1-IMG2 (2-PIM System)

Connect the inter-frame bus cables between IMG1 and IMG2 (2-PIM system) as shown below. Note that the dotted line indicates the bus cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-011	
Sheet 7/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-4 Inter-Frame Bus Cable Connections for IMG1-IMG2 (2-PIM System)

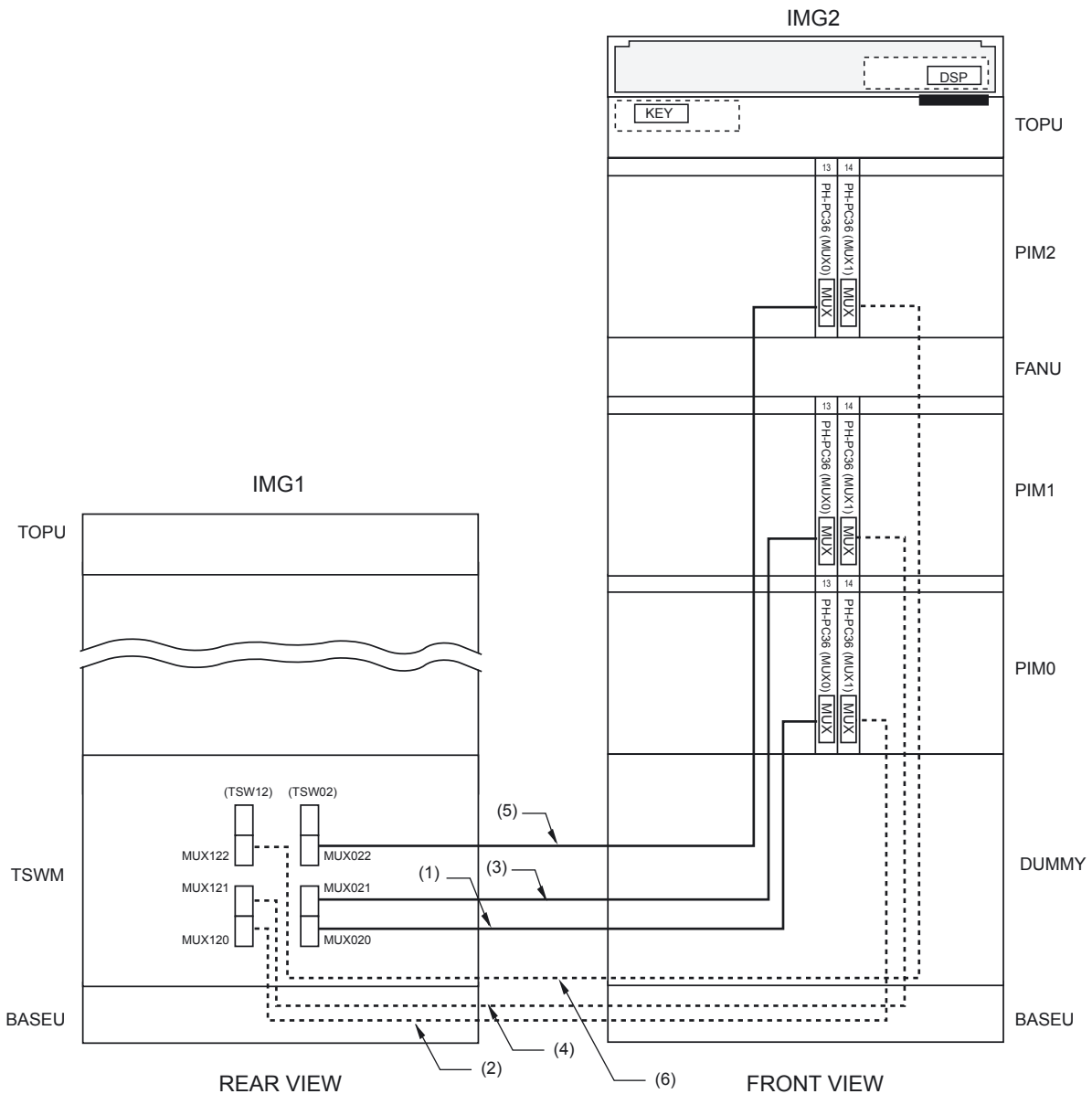
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX020	PIM0 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-F	TSW 02
2	TSWM	MUX120	PIM0 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-F	TSW 12
3	TSWM	MUX021	PIM1 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-G	TSW 02
4	TSWM	MUX121	PIM1 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-G	TSW 12

NAP-200-011	
Sheet 8/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-5 Inter-Frame Bus Cable Connections for IMG1-IMG2 (3-PIM System)

Connect the inter-frame bus cables between IMG1 and IMG2 (3-PIM system) as shown below. Note that the dotted line indicates the bus cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-011	
Sheet 9/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-5 Inter-Frame Bus Cable Connections for IMG1-IMG2 (3-PIM System)

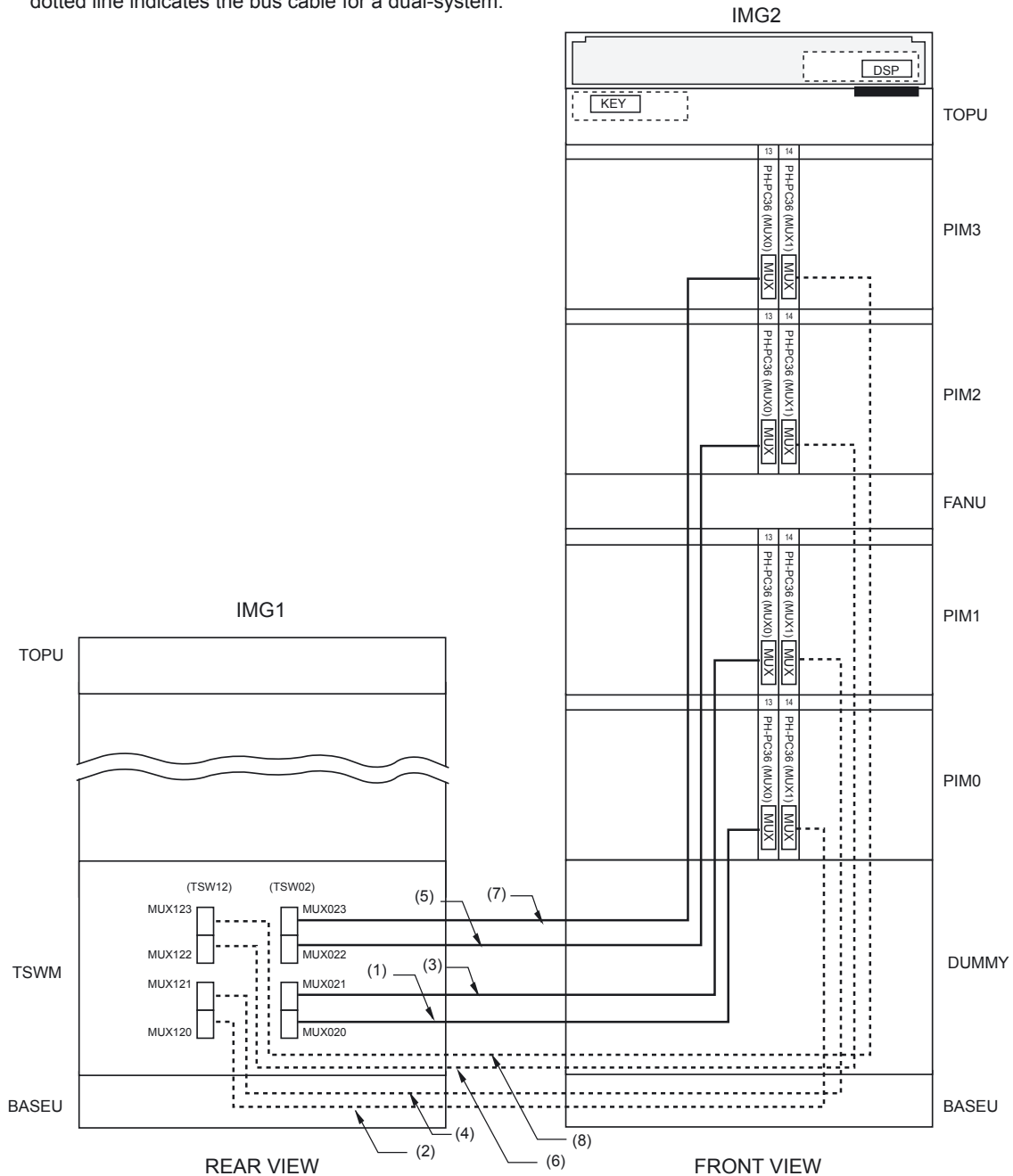
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX020	PIM0 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-F	TSW 02
2	TSWM	MUX120	PIM0 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-F	TSW 12
3	TSWM	MUX021	PIM1 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-G	TSW 02
4	TSWM	MUX121	PIM1 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-G	TSW 12
5	TSWM	MUX022	PIM2 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 02
6	TSWM	MUX122	PIM2 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 12

NAP-200-011	
Sheet 10/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-6 Inter-Frame Bus Cable Connections for IMG1-IMG2 (4-PIM System)

Connect the inter-frame bus cables between IMG1 and IMG2 (4-PIM system) as shown below. Note that the dotted line indicates the bus cable for a dual-system.



INSTALLATION PROCEDURE

NAP-200-011	
Sheet 11/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-6 Inter-Frame Bus Cable Connections for IMG1-IMG2 (4-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX020	PIM0 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-F	TSW 02
2	TSWM	MUX120	PIM0 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-F	TSW 12
3	TSWM	MUX021	PIM1 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-G	TSW 02
4	TSWM	MUX121	PIM1 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-G	TSW 12
5	TSWM	MUX022	PIM2 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 02
6	TSWM	MUX122	PIM2 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 12
7	TSWM	MUX023	PIM3 (IMG2)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 02
8	TSWM	MUX123	PIM3 (IMG2)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 12

NAP-200-011	
Sheet 12/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-7 Inter-Frame Bus Cable Connections for IMG1-IMG3 (1-PIM System)

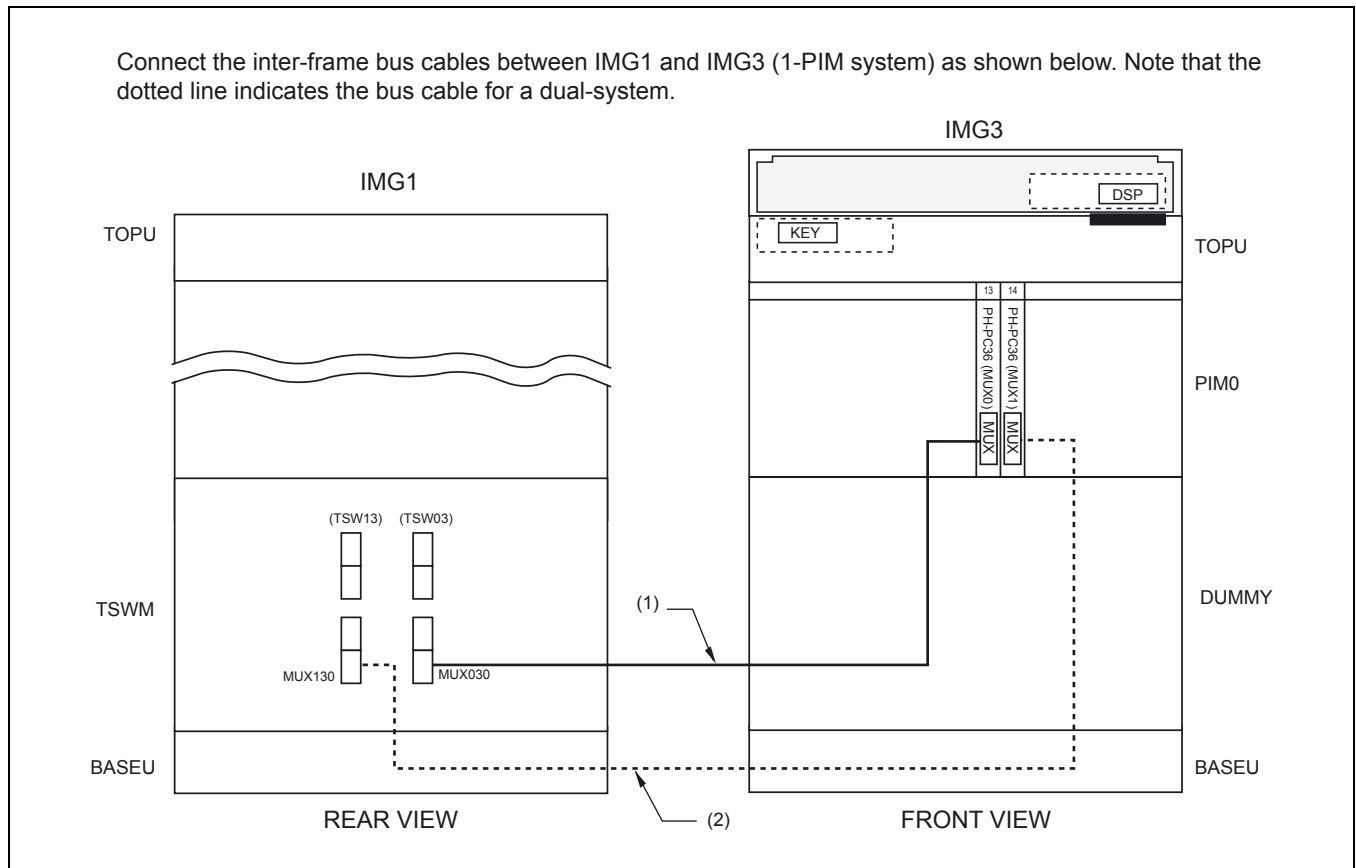


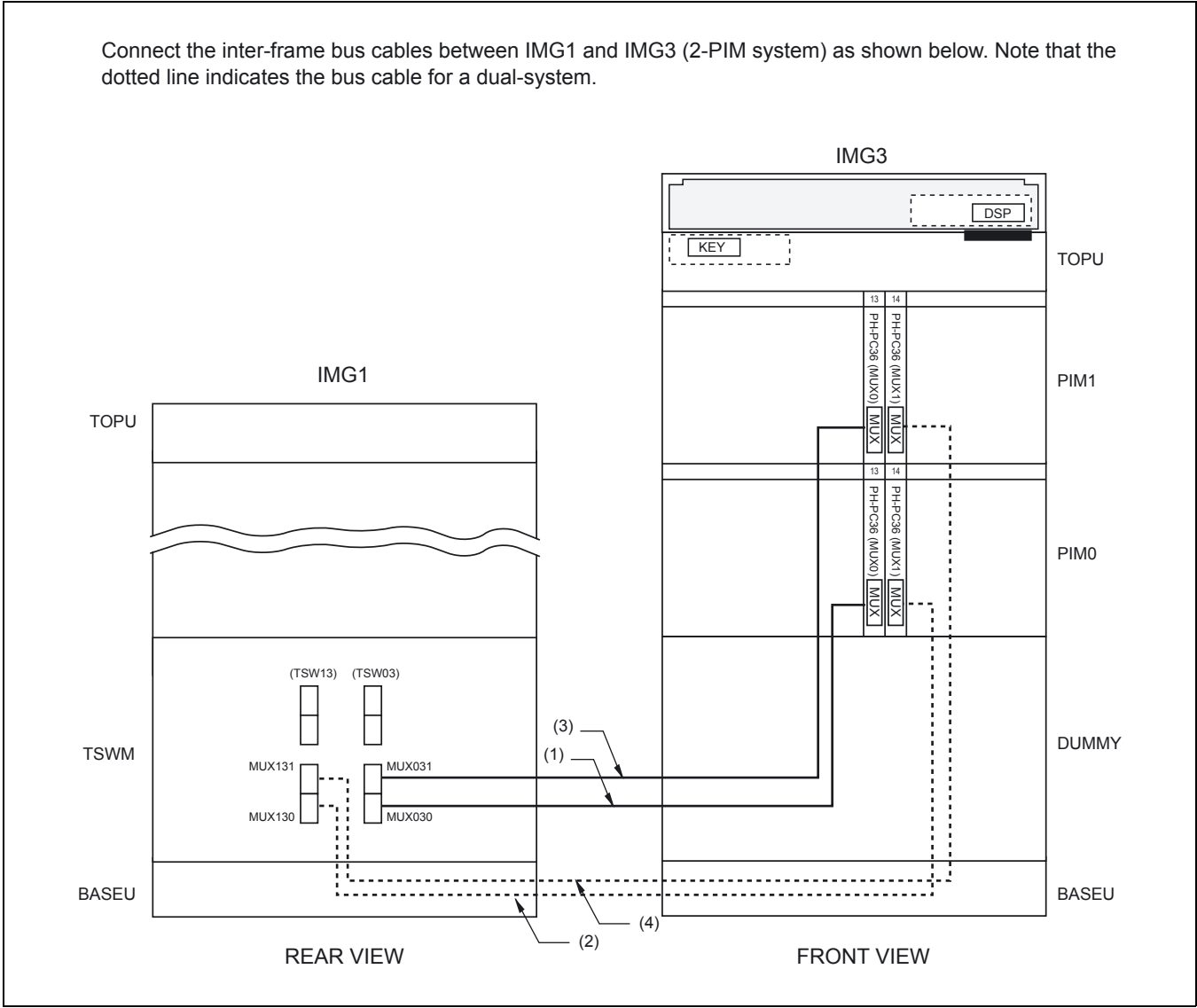
Table 011-7 Inter-Frame ISA Bus Cable Connections for IMG1-IMG3 (1-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX030	PIM0 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 03
2	TSWM	MUX130	PIM0 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 13

NAP-200-011	
Sheet 13/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-8 Inter-Frame Bus Cable Connections for IMG1-IMG3 (2-PIM System)



NAP-200-011	
Sheet 14/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-8 Inter-Frame Bus Cable Connections for IMG1-IMG3 (2-PIM System)

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX030	PIM0 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 03
2	TSWM	MUX130	PIM0 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 13
3	TSWM	MUX031	PIM1 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 03
4	TSWM	MUX131	PIM1 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 13

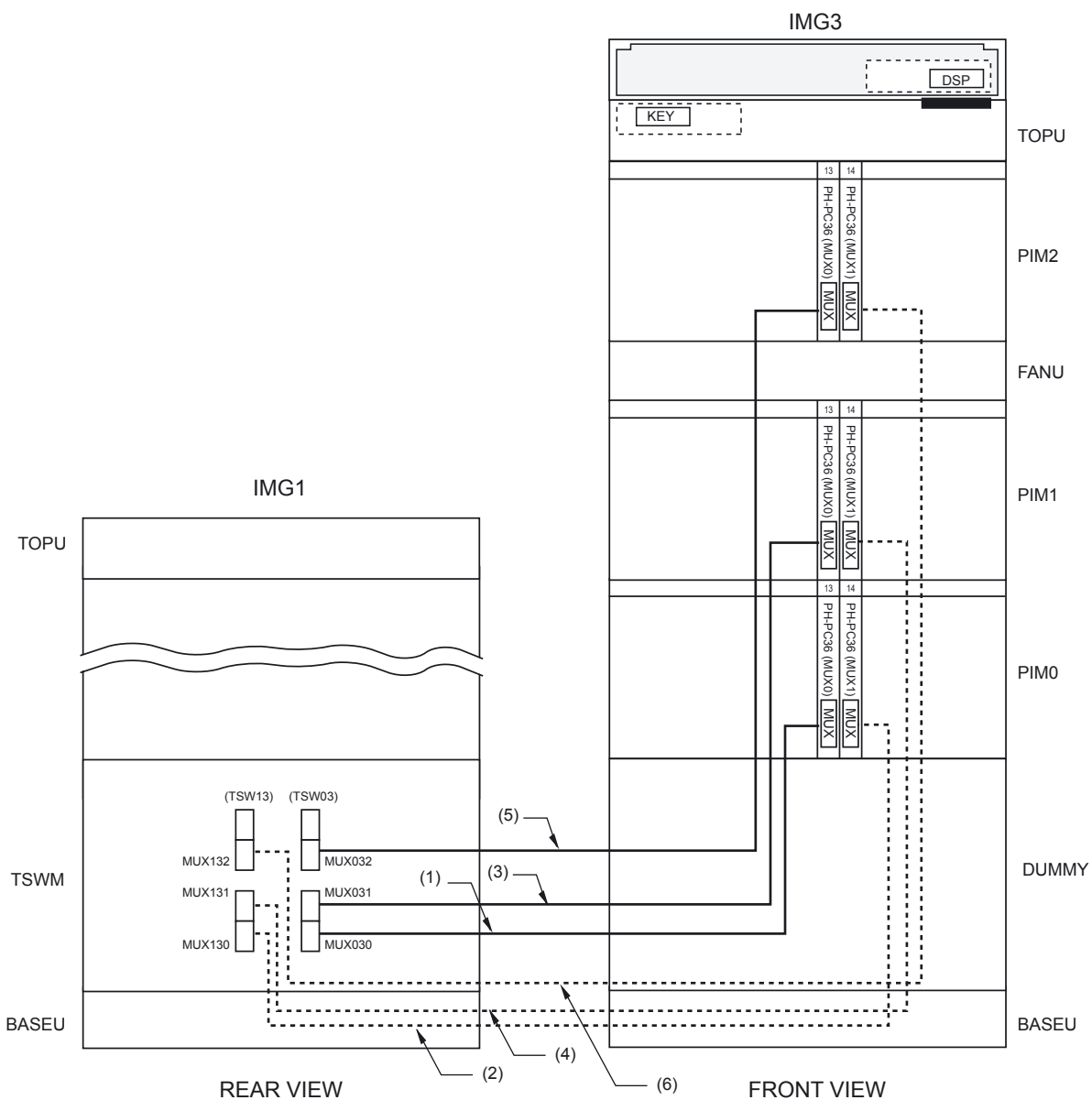
INSTALLATION PROCEDURE

NAP-200-011	
Sheet 15/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-9 Inter-Frame Bus Cable Connections for IMG1-IMG3 (3-PIM System)

Connect the inter-frame bus cables between IMG1 and IMG3 (3-PIM system) as shown below. Note that the dotted line indicates the bus cable for a dual-system.



NAP-200-011	
Sheet 16/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-9 Inter-Frame Bus Cable Connections for IMG1-IMG3 (3-PIM System)

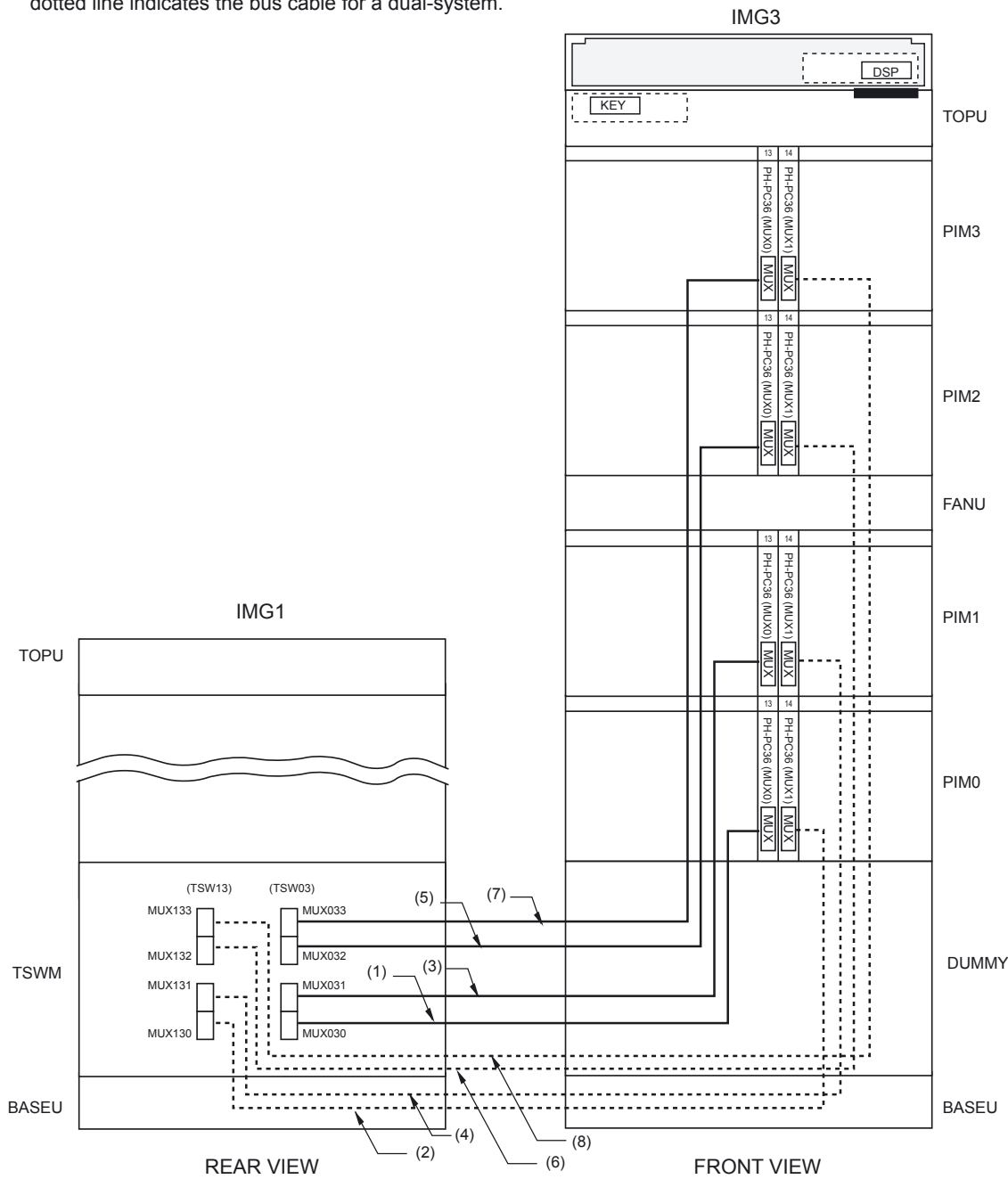
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX030	PIM0 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 03
2	TSWM	MUX130	PIM0 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 13
3	TSWM	MUX031	PIM1 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 03
4	TSWM	MUX131	PIM1 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 13
5	TSWM	MUX032	PIM2 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-I	TSW 03
6	TSWM	MUX132	PIM2 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-I	TSW 13

NAP-200-011	
Sheet 17/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-10 Inter-Frame Bus Cable Connections for IMG1-IMG3 (4-PIM System)

Connect the inter-frame bus cables between IMG1 and IMG3 (4-PIM system) as shown below. Note that the dotted line indicates the bus cable for a dual-system.



NAP-200-011	
Sheet 18/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-10 Inter-Frame Bus Cable Connections for IMG1-IMG3 (4-PIM System)

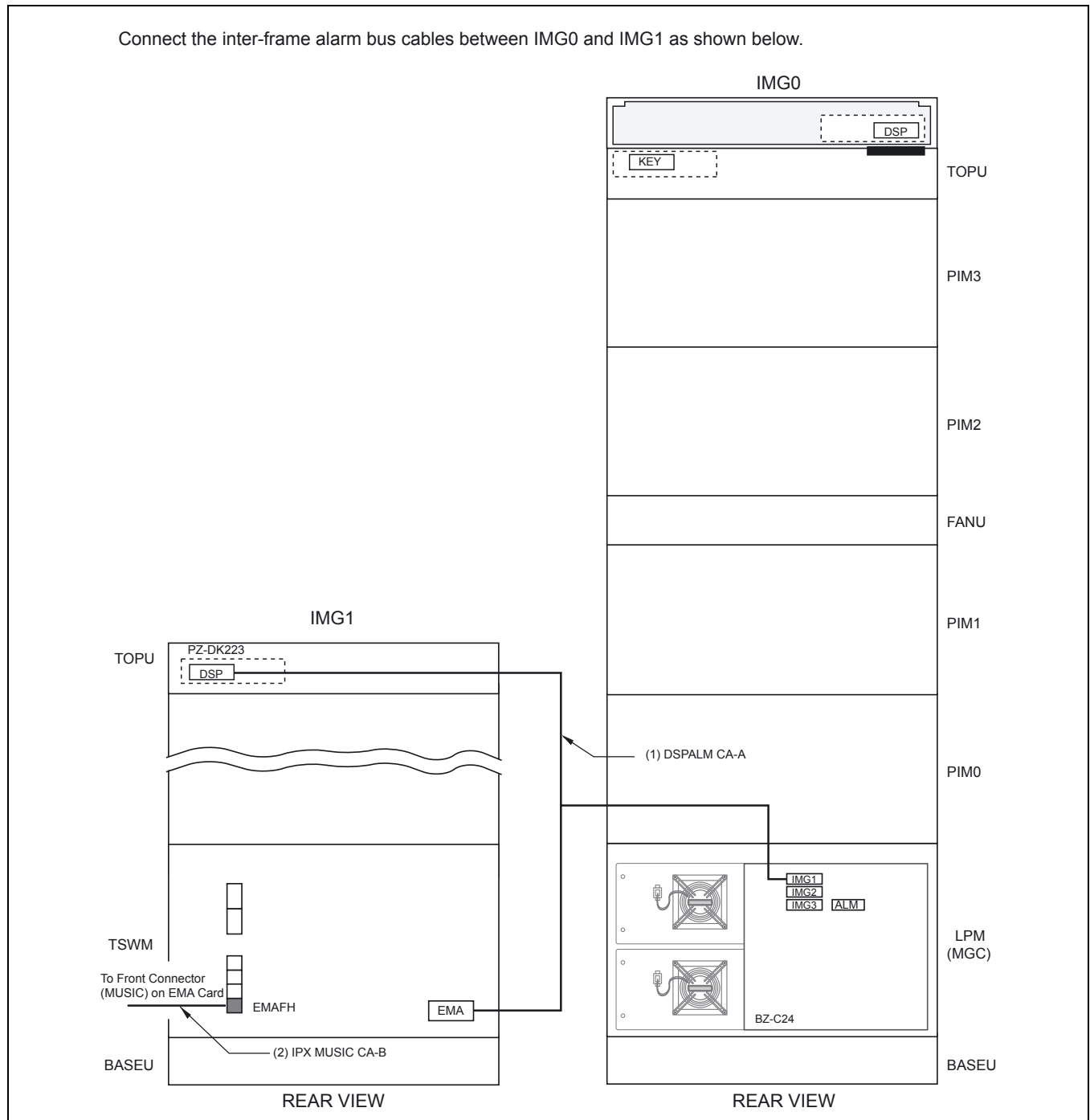
No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	TSWM	MUX030	PIM0 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 03
2	TSWM	MUX130	PIM0 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 13
3	TSWM	MUX031	PIM1 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-H	TSW 03
4	TSWM	MUX131	PIM1 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-H	TSW 13
5	TSWM	MUX032	PIM2 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-I	TSW 03
6	TSWM	MUX132	PIM2 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-I	TSW 13
7	TSWM	MUX033	PIM3 (IMG3)	MUX (Slot 13)	34PH MT24 TSW CA-J	TSW 03
8	TSWM	MUX133	PIM3 (IMG3)	MUX (Slot 14)	34PH MT24 TSW CA-J	TSW 13

INSTALLATION PROCEDURE

NAP-200-011	
Sheet 19/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-11 Inter-Frame Alarm Bus Cable Connections for IMG0-IMG1



NAP-200-011	
Sheet 20/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

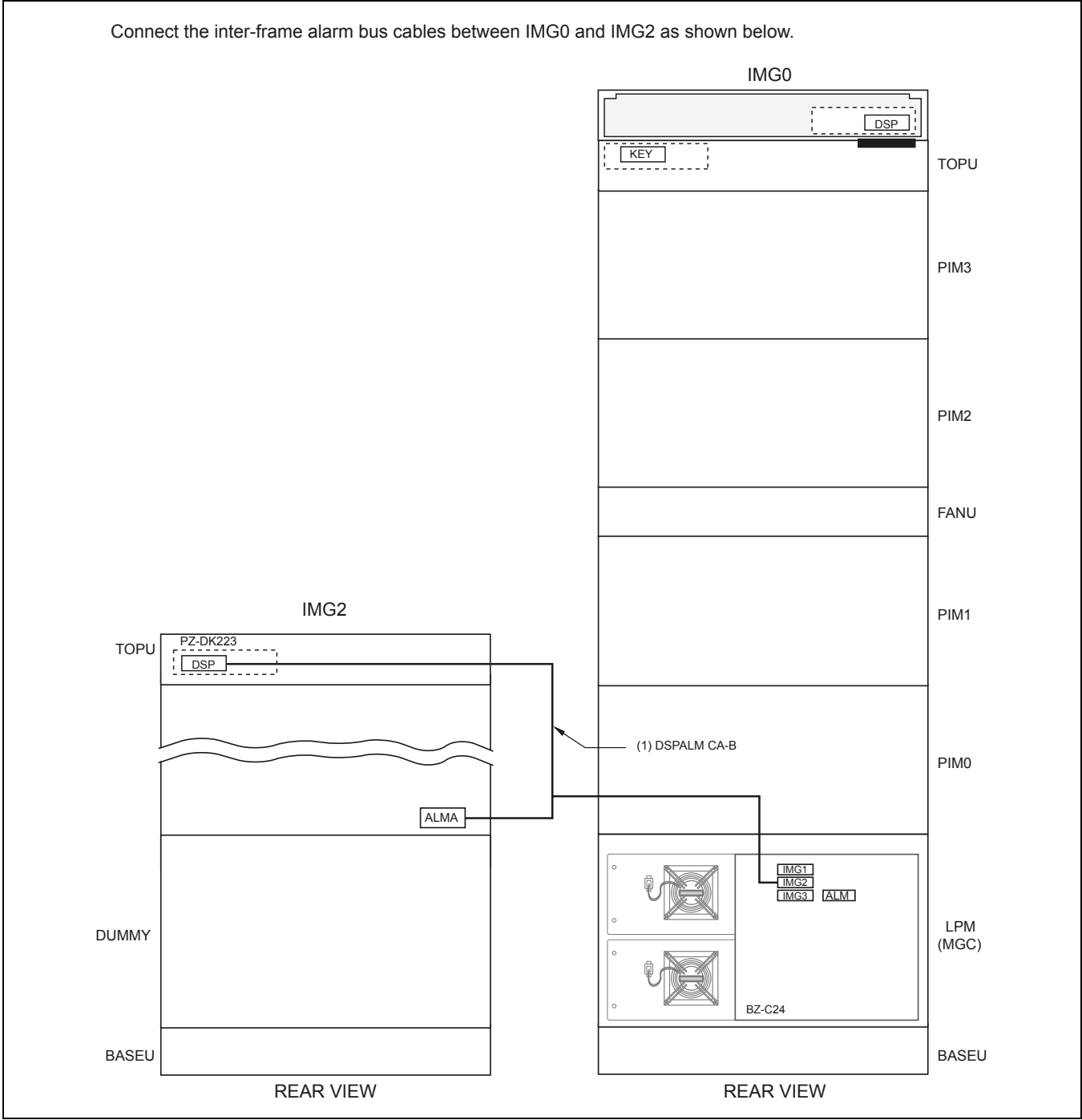
Table 011-11 Inter-Frame Alarm Bus Cable Connections for IMG0-IMG1

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	LPM (MGC)	IMG1	TOPU(IMG1)	DSP	DSPALM CA-A	
			TSWM	EMA		

NAP-200-011	
Sheet 21/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-12 Inter-Frame Alarm Bus Cable Connections for IMG0-IMG2



NAP-200-011	
Sheet 22/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

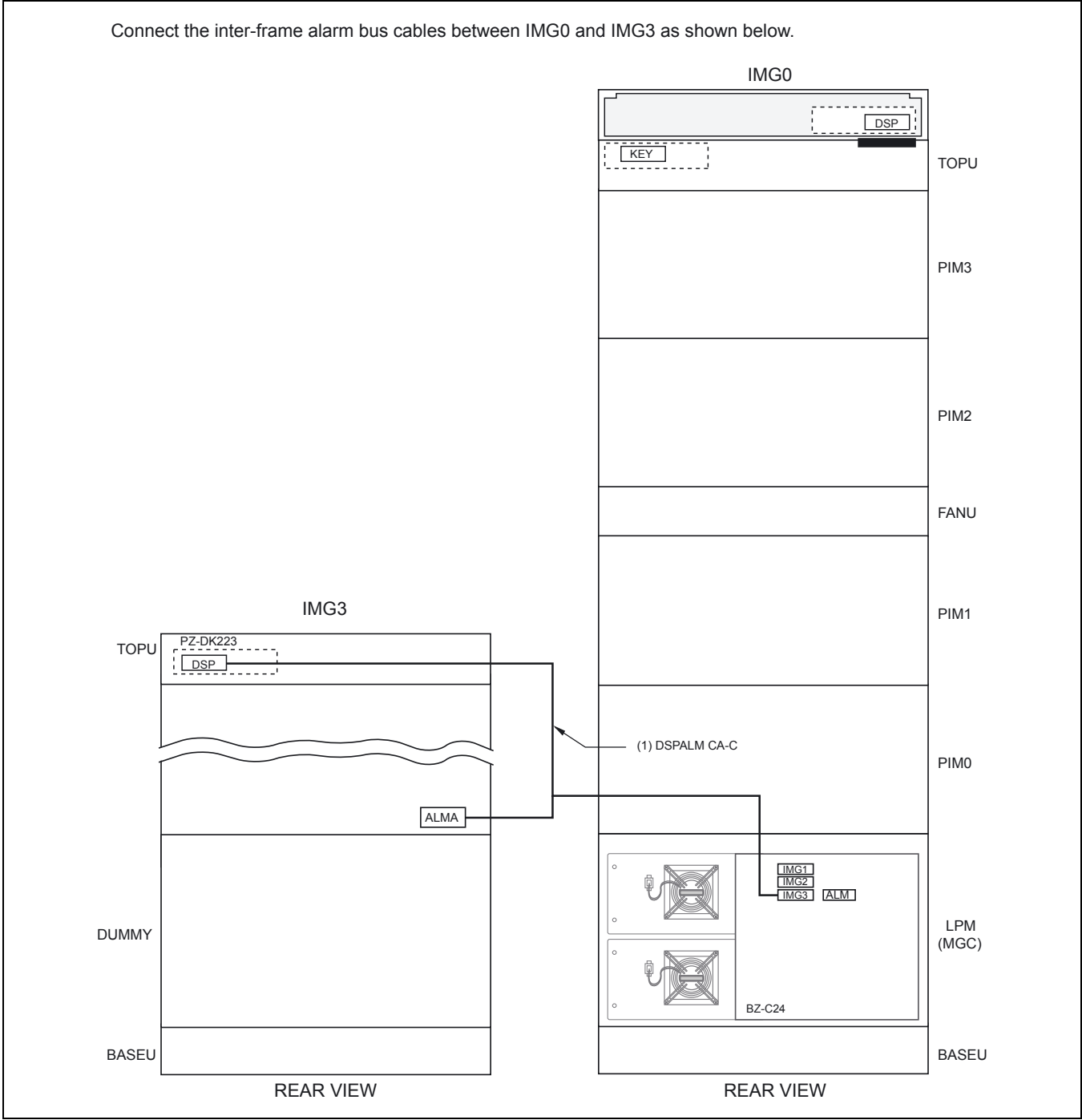
Table 011-12 Inter-Frame Alarm Bus Cable Connections for IMG0-IMG2

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	LPM (MGC)	IMG2	TOPU (IMG2)	DSP	DSPALM CA-B	
			PIM0 (IMG2)	ALMA		

NAP-200-011	
Sheet 23/24	
Inter-Frame Cable Connections	Multiple IMG Configuration



Figure 011-13 Inter-Frame Alarm Bus Cable Connections for IMG0-IMG3



NAP-200-011	
Sheet 24/24	
Inter-Frame Cable Connections	Multiple IMG Configuration

Table 011-13 Inter-Frame Alarm Bus Cable Connections for IMG0-IMG3

No.	FROM		TO		CABLE NAME	REMARKS
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME		
1	LPM (MGC)	IMG3	TOPU (IMG3)	DSP	DSPALM CA-C	
			PIM0 (IMG3)	ALMA		

INSTALLATION PROCEDURE

NAP-200-012
Sheet 1/1
Front Cable Connections between Circuit Cards



This NAP describes front cable connections between circuit cards.

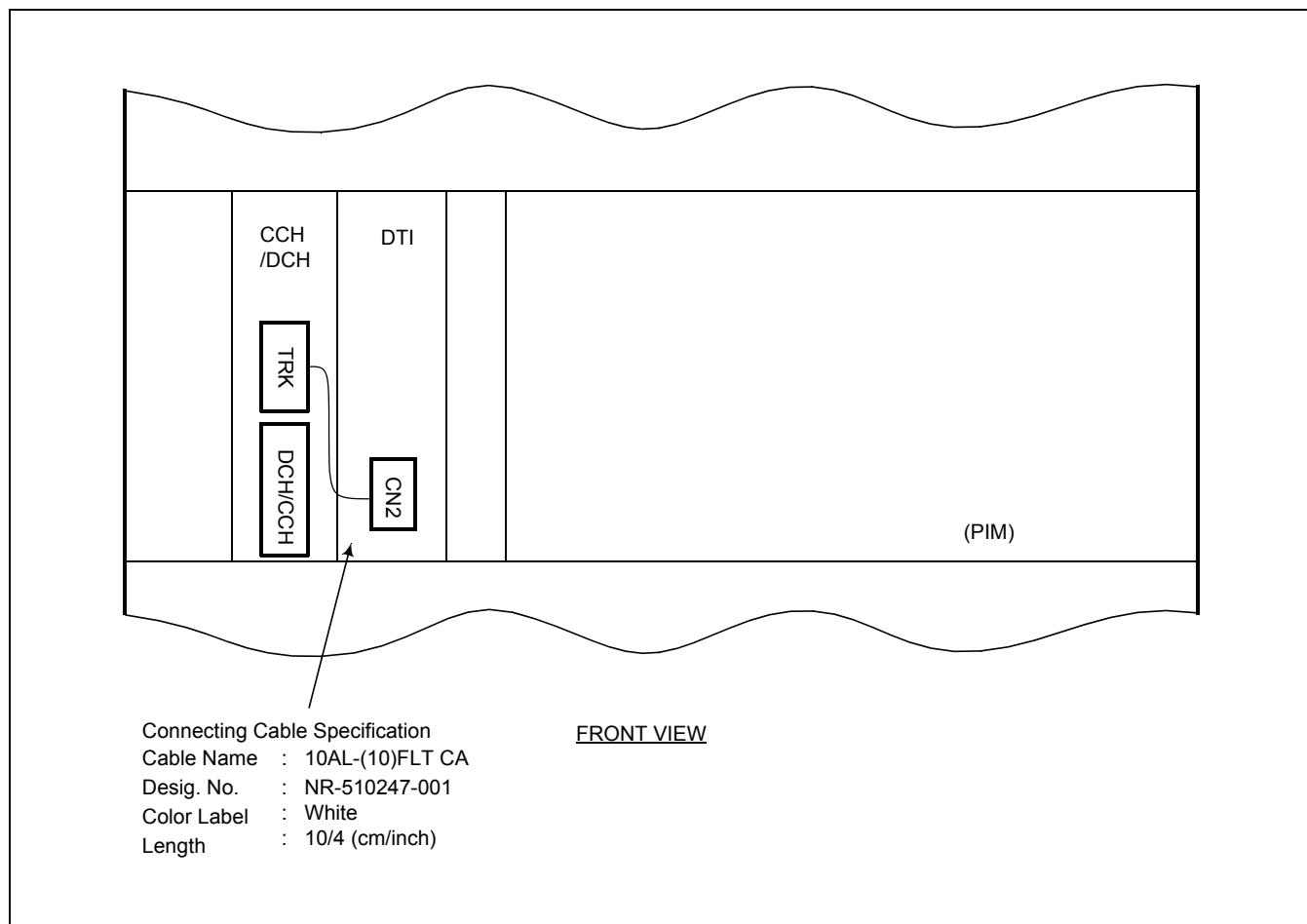
Note: *Protection against static electricity:
A Portable Field Service Grounding Kit must be used to protect system components from static discharge.*

START

When CCH/DCH and DTI cards are mounted in PIM (For CCIS/ISDN), connect the front cable between CCH/DCH and DTI cards by referring to Figure 012-1.

END

Figure 012-1 Front Cable Connections between Circuit Cards for CCIS/ISDN



NAP-200-013
Sheet 1/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

This NAP explains the following work items:

- Cable Running from the PBX to the MDF and ATTCON (Desk Console)
- Cable Running from the PBX to the MAT and SMDR
- Connections at the PBX Side
- Cable Tying at the Equipment Frame

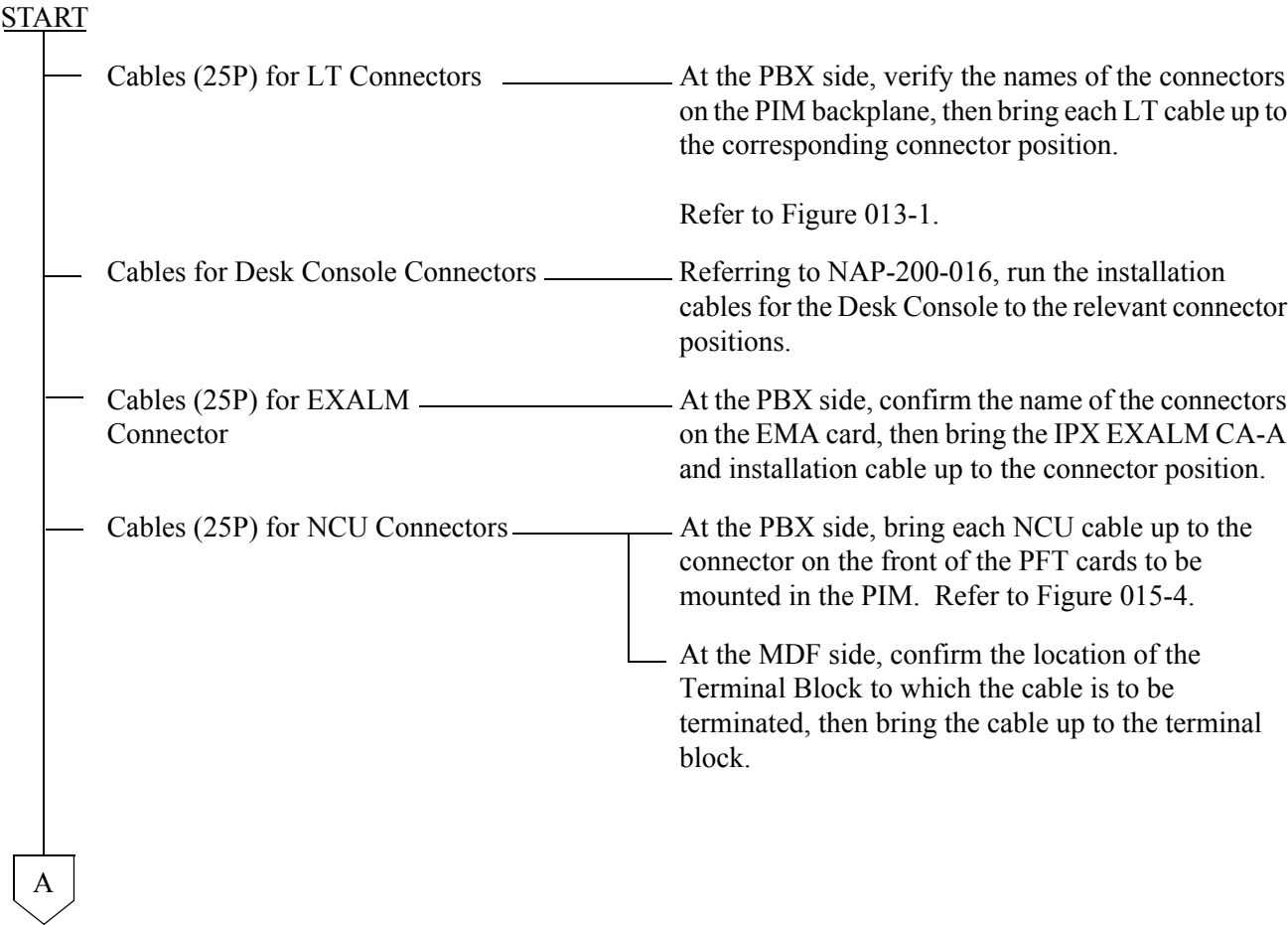
Note: *Compliance with EMI*

To comply with EMI, Shielded cables with CHAMP connector should be used for the following installation cables:

- *Cable from the PBX to the MDF*
- *Cable from the PBX to Attendant Console*
- *Cable from the PBX to alarm indicating equipment*
- *Cable from the PBX to the external music-on-hold source*
- *Cable for line test (connected to TEST connection)*

NAP-200-013
Sheet 2/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

1. CABLE RUNNING FROM THE PBX TO THE MDF AND ATTCON



NAP-200-013

Sheet 3/13

Cable Running from the PBX to MDF,
ATTCON, MAT, and SMDR

A

Cables for ODT Connectors

Referring to description of 8TLT card in the Circuit Card Manual, connect each 2400 ODT CABLE/2400 ODT CABLE-A and the corresponding installation cables.

At the PBX side, bring each 2400 ODT CABLE/2400 ODT CABLE-A up to the connector position on the front of the 8TLT cards to be mounted in the PIM.

At the MDF side, confirm the location of the Terminal Blocks to which each cable is to be terminated, then bring the cables up to the terminal blocks.

END

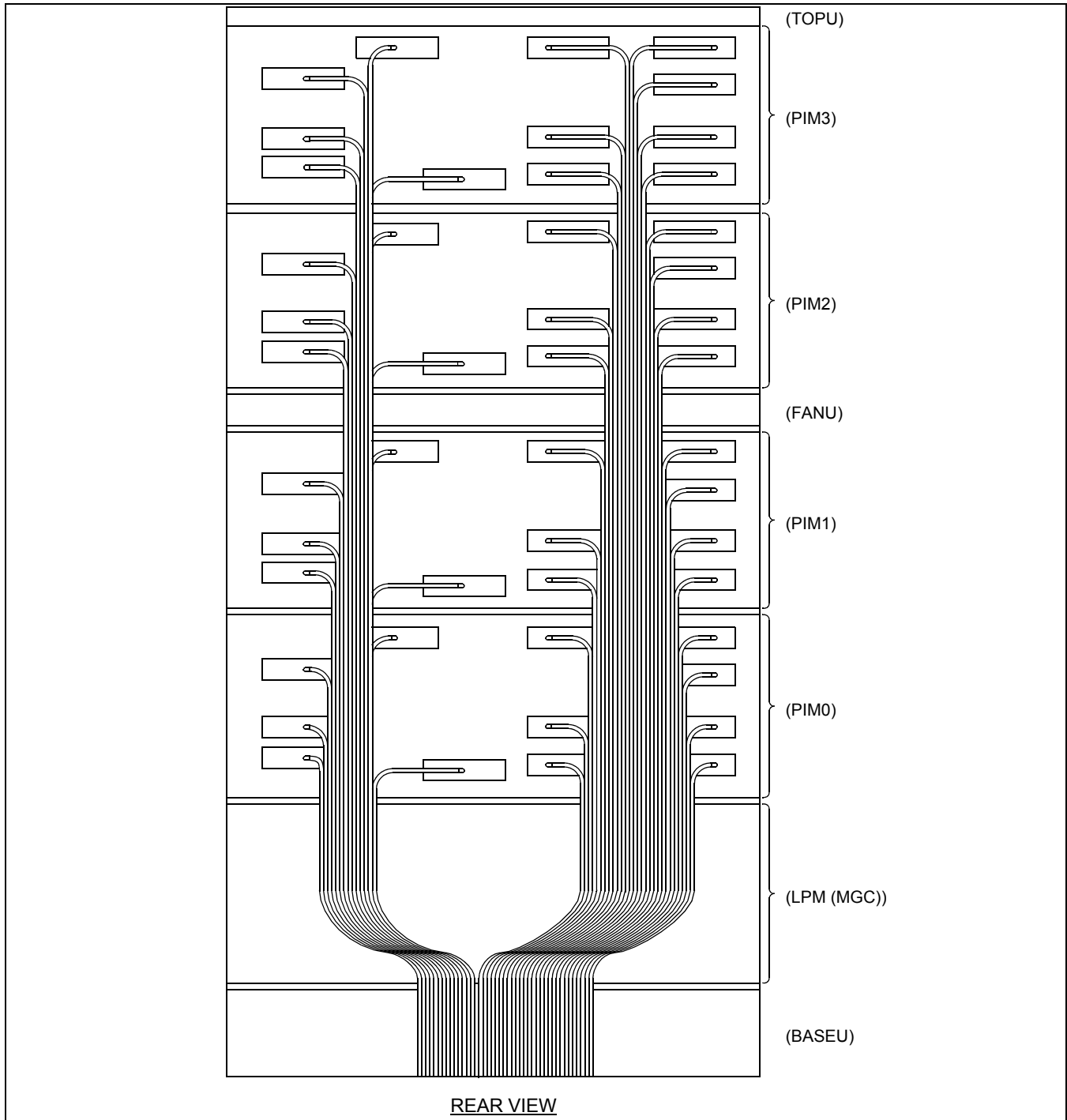
INSTALLATION PROCEDURE

NAP-200-013

Sheet 4/13

Cable Running from the PBX to MDF,
ATTCON, MAT, and SMDR

Figure 013-1 LT Cable Routing



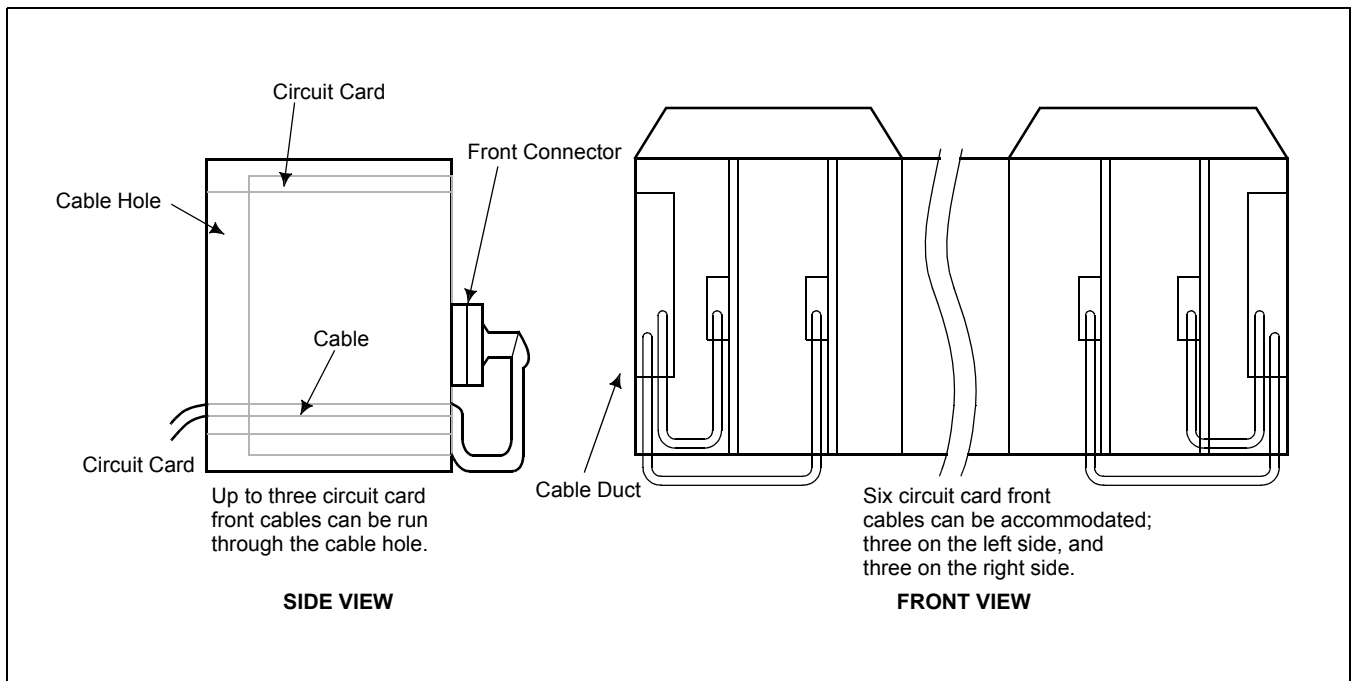
NAP-200-013

Sheet 5/13

Cable Running from the PBX to MDF,
ATTCON, MAT, and SMDR

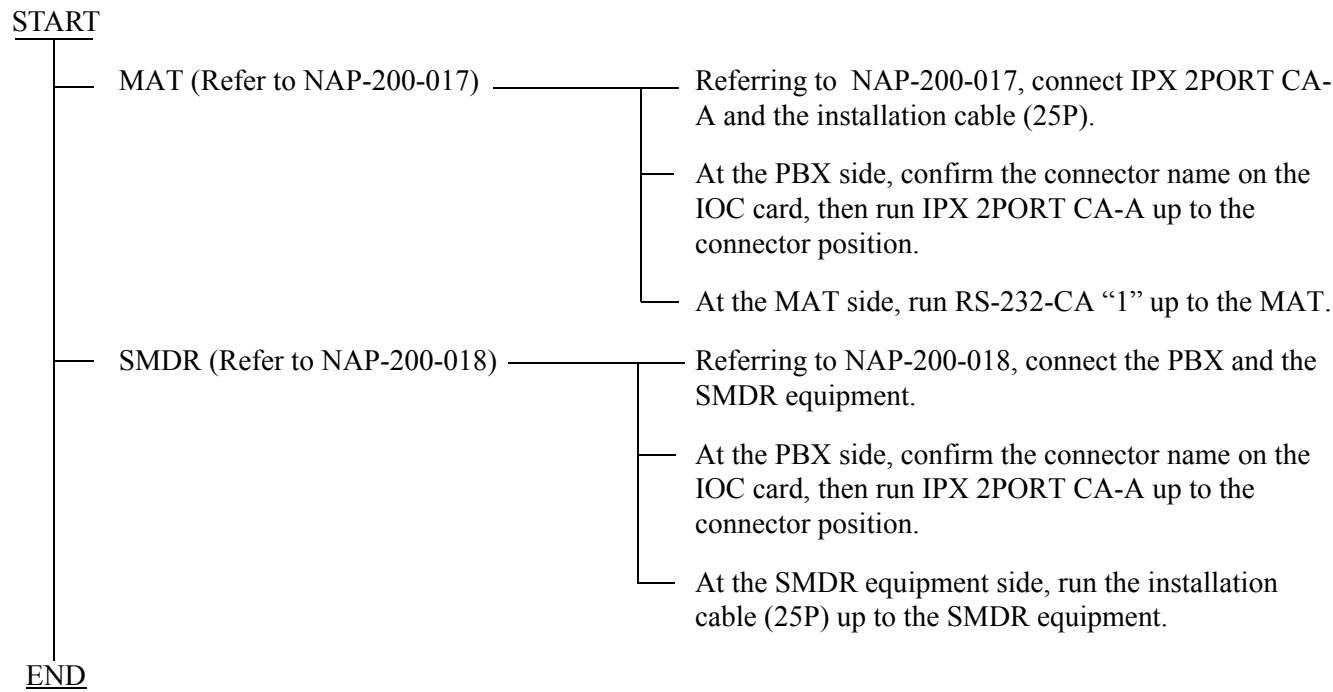


Figure 013-2 Cable Routing of Circuit Card Front Cable



NAP-200-013
Sheet 6/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

2. CABLE RUNNING FROM THE PBX TO THE MAT AND SMDR



NAP-200-013
Sheet 7/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR



3. CONNECTIONS AT THE PBX SIDE

START

- | | | | | |
|--|---|-----------------|-------|--------------------------------------------------------------------------------------------------------|
| | — | LT Connectors | _____ | Confirm each connector name on the backplane and the corresponding LT connector, then connect the two. |
| | — | EXALM Connector | _____ | Connect the IPX EXALM CA-A to the EXALM connector on the EMA card. |
| | — | NCU Connectors | _____ | Connect the NCU cable to the connector on the front of the PFT card. |
| | — | IOC Connectors | _____ | Connect IPX 2PORT CA-A to the CONN0/1 connectors on the IOC card. |

END

4. CABLE TYING AT THE PBX

START

- | | | |
|--|---|-----------------------------------------------------------------------|
| | — | Referring to Figure 013-3, secure the connector cables to the Module. |
|--|---|-----------------------------------------------------------------------|

END

INSTALLATION PROCEDURE

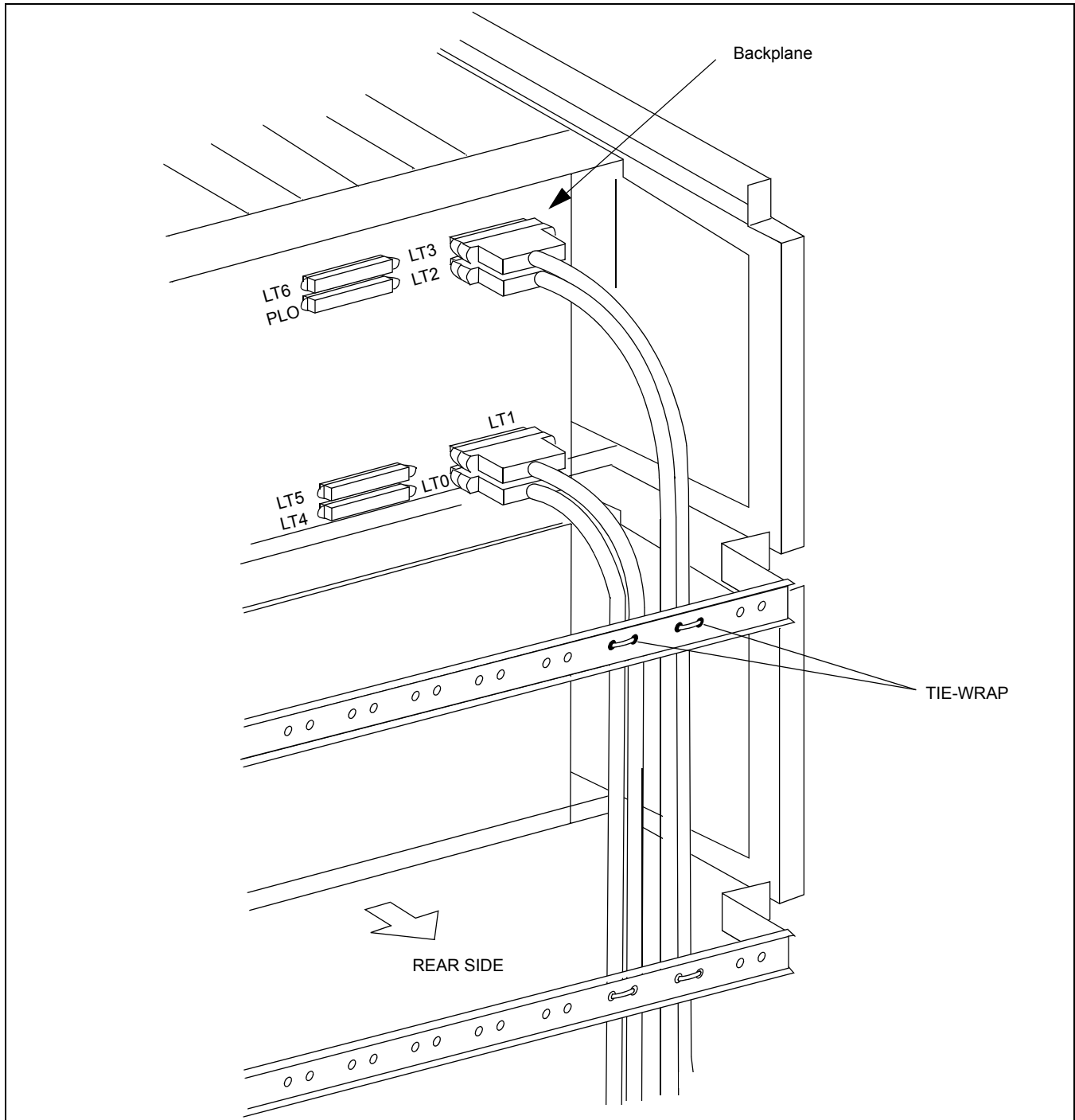
NAP-200-013

Sheet 8/13

Cable Running from the PBX to MDF,
ATTCON, MAT, and SMDR



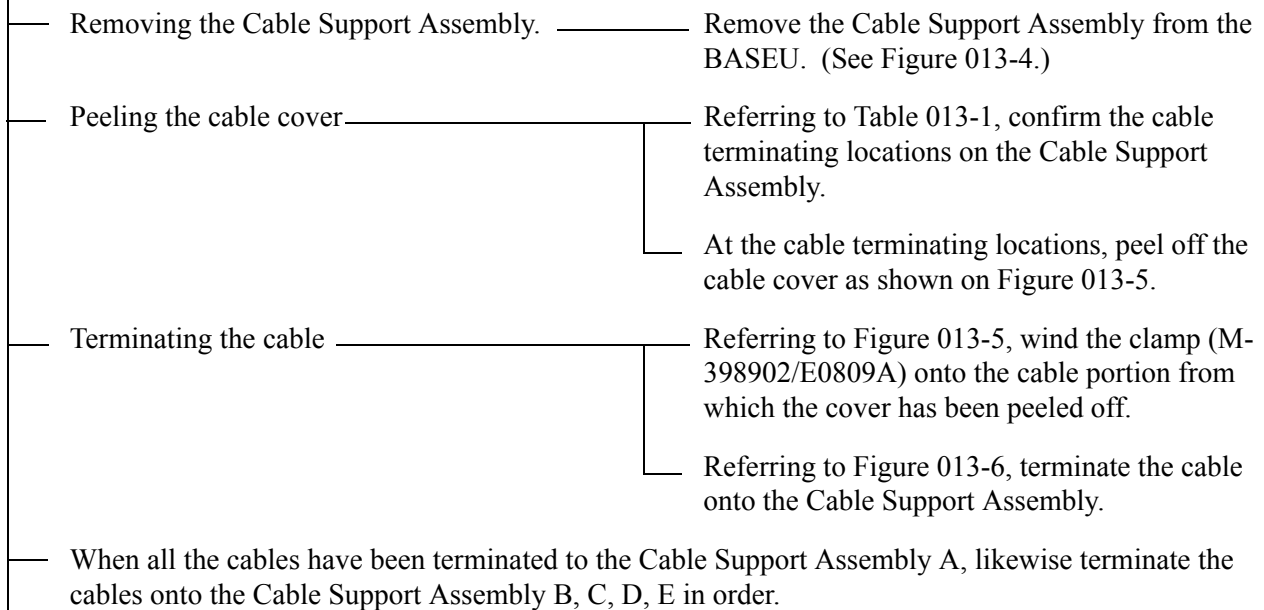
Figure 013-3 Example of Cable Tying Using Tie-Wrap



NAP-200-013
Sheet 9/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

5. TERMINATION OF THE CABLES BETWEEN THE PBX AND THE MDF OR ATTCON ONTO THE CABLE SUPPORT ASSEMBLY

START



END

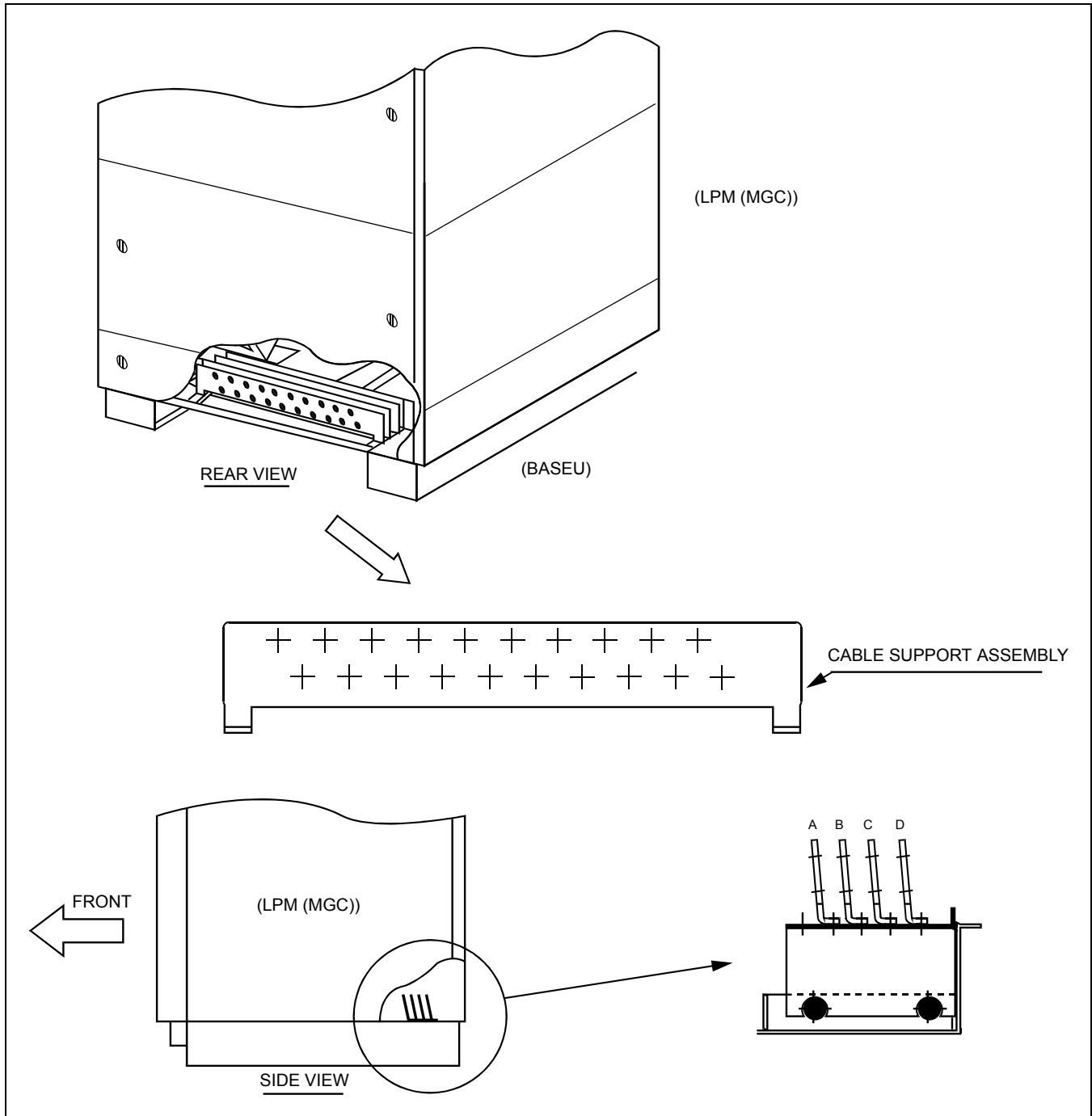
INSTALLATION PROCEDURE

NAP-200-013

Sheet 10/13

Cable Running from the PBX to MDF,
ATTCON, MAT, and SMDR

Figure 013-4 Cable Support Assembly



NAP-200-013
Sheet 11/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

Table 013-1 Cable Support Assembly

BACKPLANE		CABLE SUPPORT No.	USE	REMARKS
MODULE	CONNECTOR NAME			
LPM (MGC)	CONN0, CONN1	Not Used	For I/O Equipment (MAT, Printer, etc.)	These connectors appear on the front edge of IOC/EMA card.
	EXALM	Not Used	For Alarm Indicating Panel, etc.	
PIM0	Front of Circuit Card	A	The number of cables is limited to three for one side, and six for both sides.	When the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.
	LT0 - LT11	A	LT cable	
PIM1	Front of Circuit Card	B	The number of cables is limited to three for one side, and six for both sides.	When the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.
	LT0 - LT11	B	LT cable	
PIM2	Front of Circuit Card	C	The number of cables is limited to three for one side, and six for both sides.	When the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.
	LT0 - LT11	C	LT cable	
PIM3	Front of Circuit Card	D	The number of cables is limited to three for one side, and six for both sides.	When the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.
	LT0 - LT11	D	LT cable	

INSTALLATION PROCEDURE

NAP-200-013

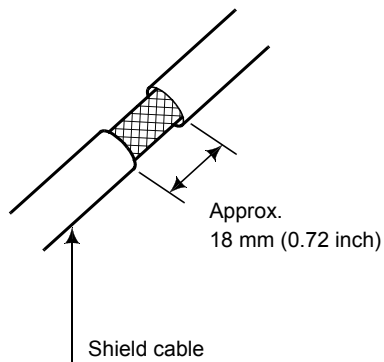
Sheet 12/13

Cable Running from the PBX to MDF,
ATTCON, MAT, and SMDR

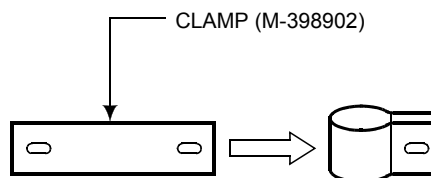
Figure 013-5 Clamp Winding

There are 2 kinds of clamp (M-398902 and E0809A), this figure shows an example where M-398902 clamp is used. In the case of E0809A, you can bypass step 2.

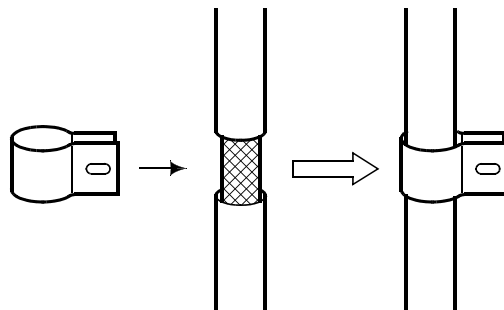
Step 1: Strip off about 18mm of cable sheath as shown below.



Step 2: Fold over the clamp (M-398902) as shown below. In the case of E0809A clamp, this step is not necessary.



Step 3: Wind the clamp (M-398902/E0809A) onto the cable portion where the cover has been stripped off.

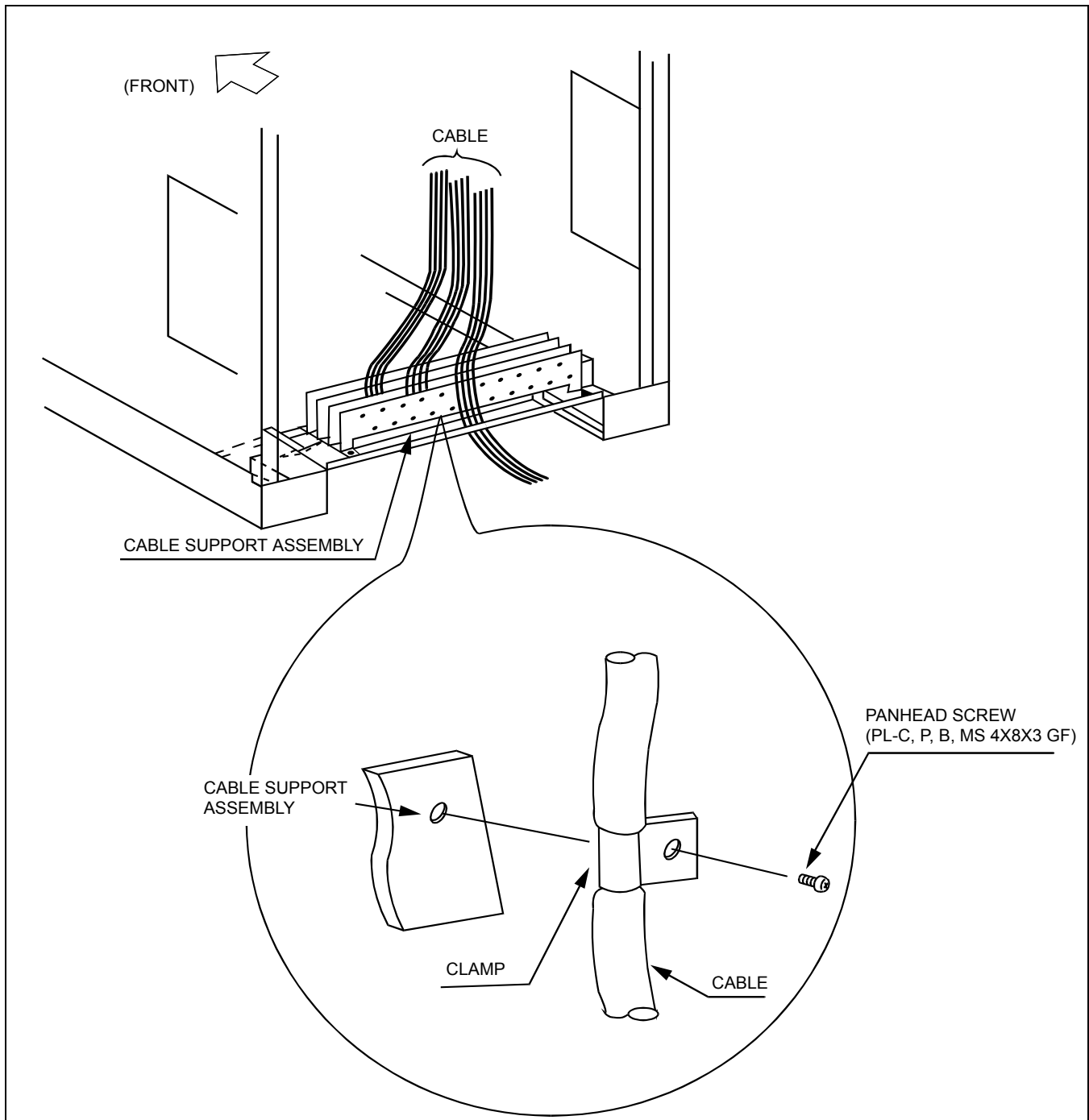


NAP-200-013

Sheet 13/13

Cable Running from the PBX to MDF,
ATTCON, MAT, and SMDR

Figure 013-6 Termination of Installation Cables



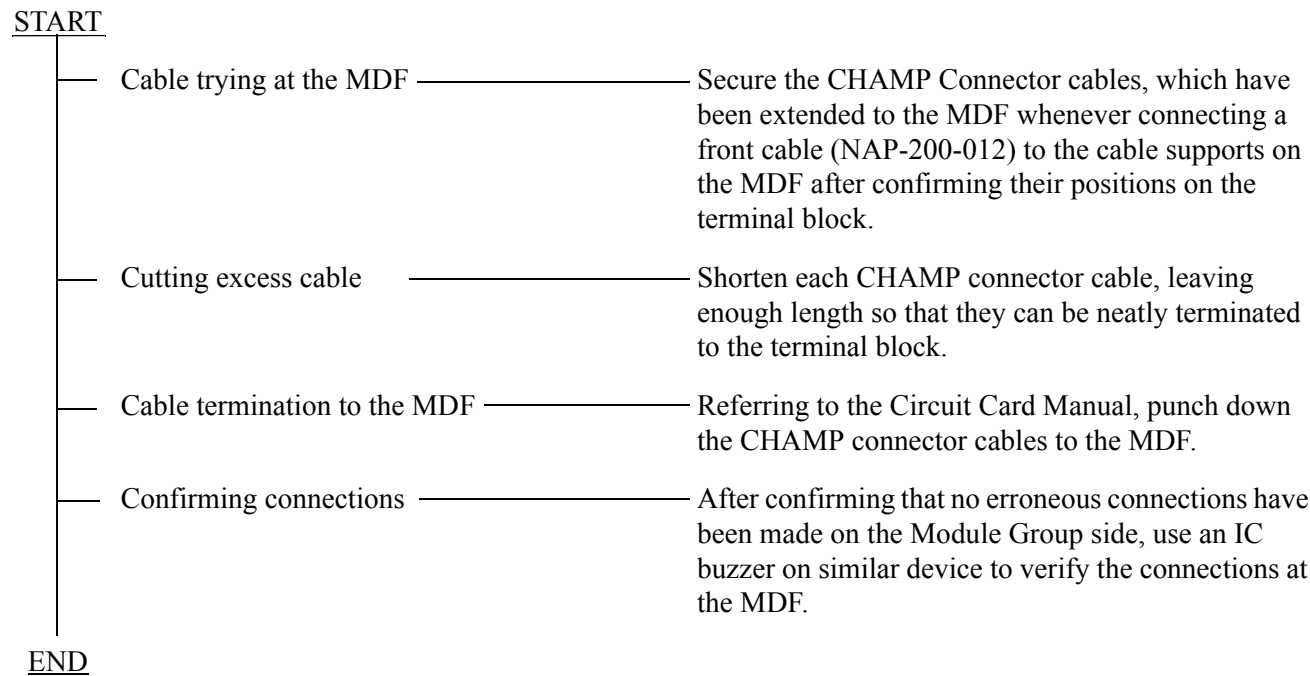
INSTALLATION PROCEDURE

NAP-200-014
Sheet 1/1
Termination of Cables on MDF (Wire Accommodation of Each Cable)



This NAP explains the procedures for terminating cables at the MDF.

CAUTION: *When terminating Cables to the MDF, the line/trunk circuit card should extend about 50 mm (2 inches) from the module and must not contact the backplane connector.*

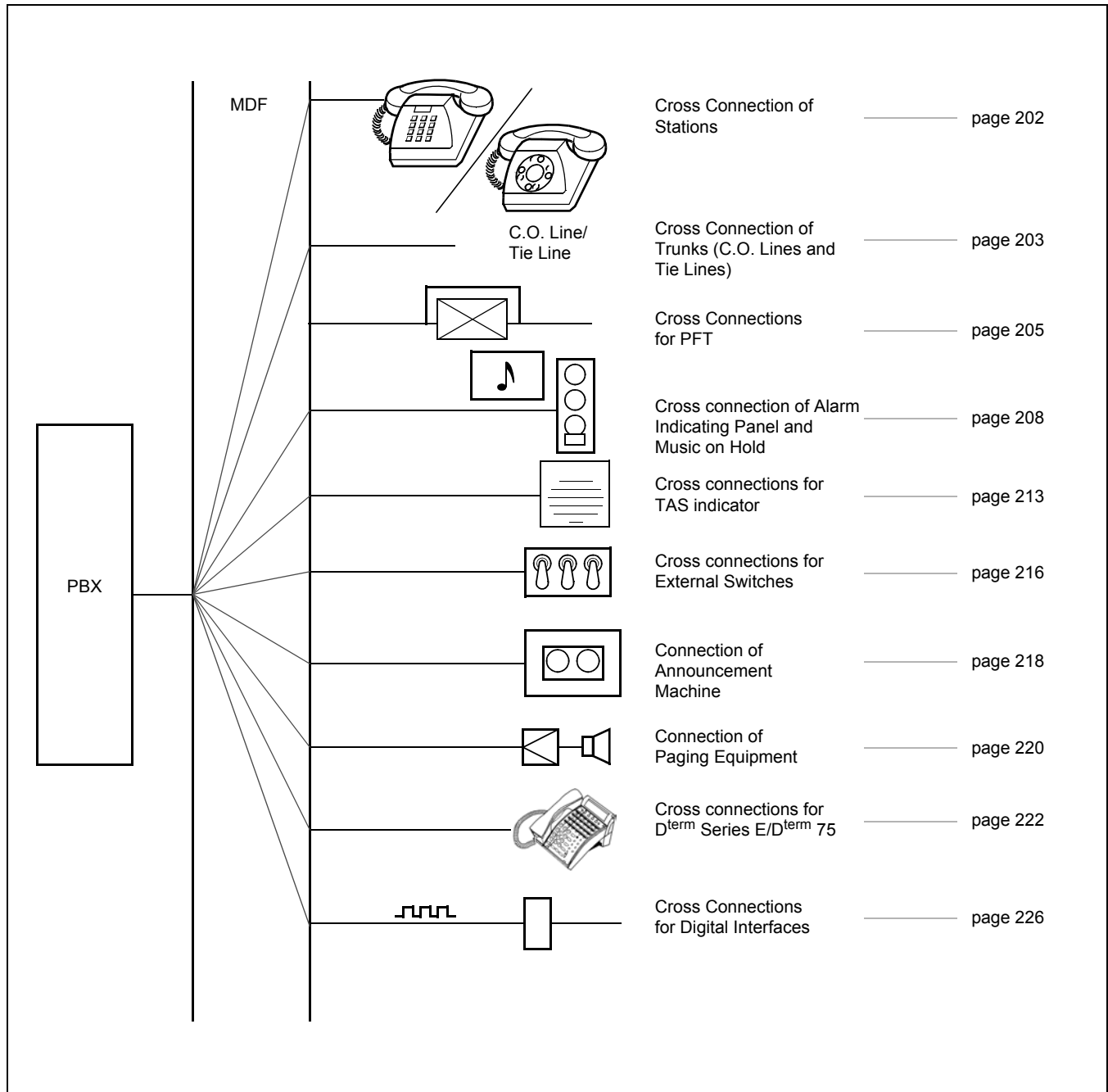


NAP-200-015

Sheet 1/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines

This NAP explains the following work items:



NAP-200-015
Sheet 2/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



1. CROSS CONNECTION OF STATIONS

Note 1: Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

Note 2: For cross connections between stations and C.O. lines for PFT, refer to Section 3., "CROSS CONNECTIONS FOR PFT".

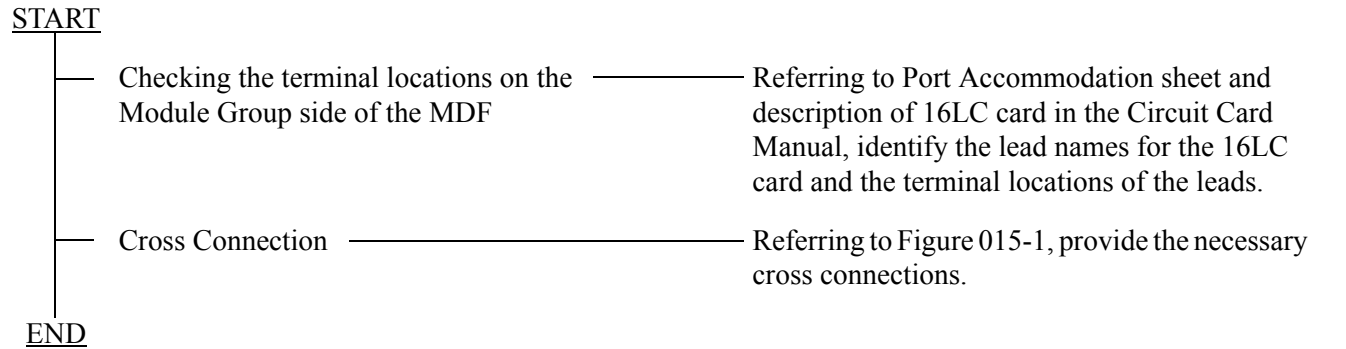
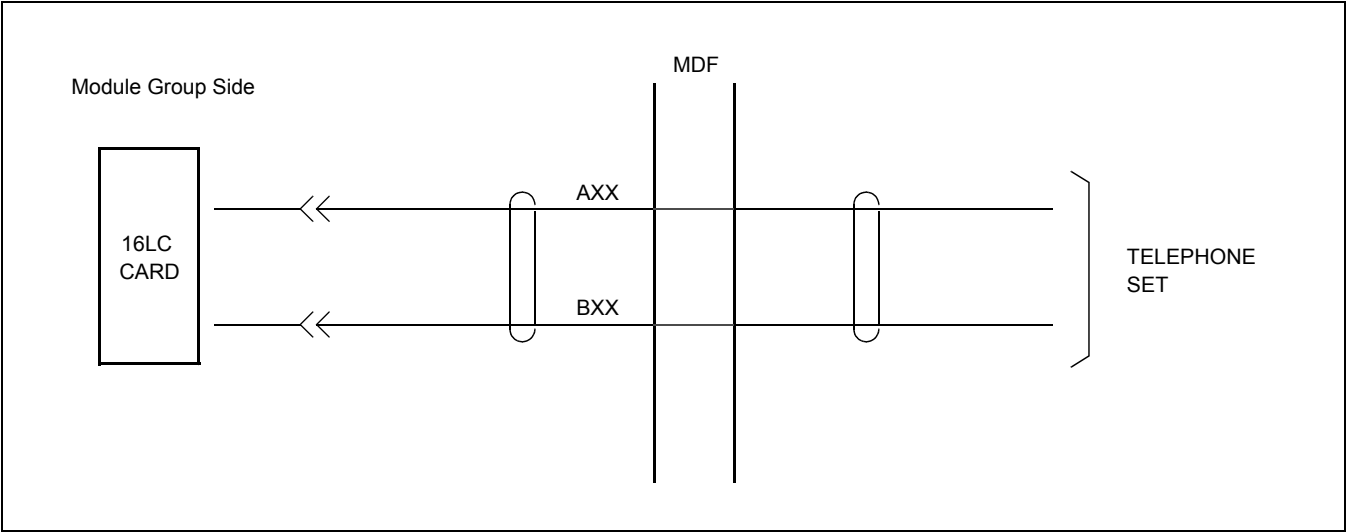


Figure 015-1 Cross Connection of Stations



NAP-200-015
Sheet 3/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

2. CROSS CONNECTION OF TRUNKS (C.O. LINES AND TIE LINES)

Note 1: *Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.*

Note 2: *For cross connections between stations and C.O. lines for PFT, refer to Section 3., "CROSS CONNECTIONS FOR PFT" in this NAP.*

START

Checking the terminal locations on
the Module Group side of the MDF

Referring to Port Accommodation sheet and description of 16COT card or 8TLT card in the Circuit Card Manual, identify the lead names for the 16COT, or 8TLT card and the terminal locations of the leads.

Cross Connection

Referring to Figure 015-2, provide the necessary cross connections.

END

INSTALLATION PROCEDURE

NAP-200-015

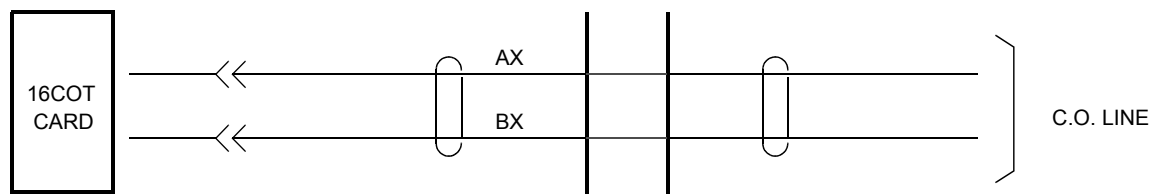
Sheet 4/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines

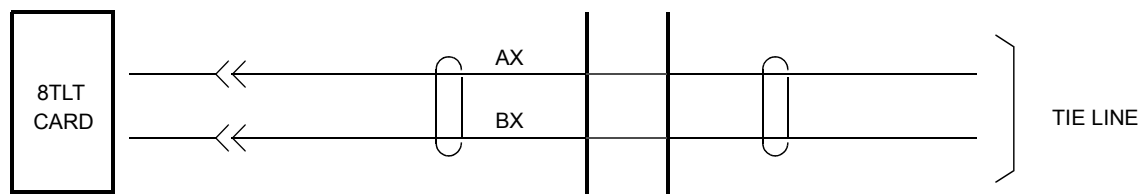
Figure 015-2 Cross Connection of Trunks (C.O. Lines and Tie Lines)

Module Group Side

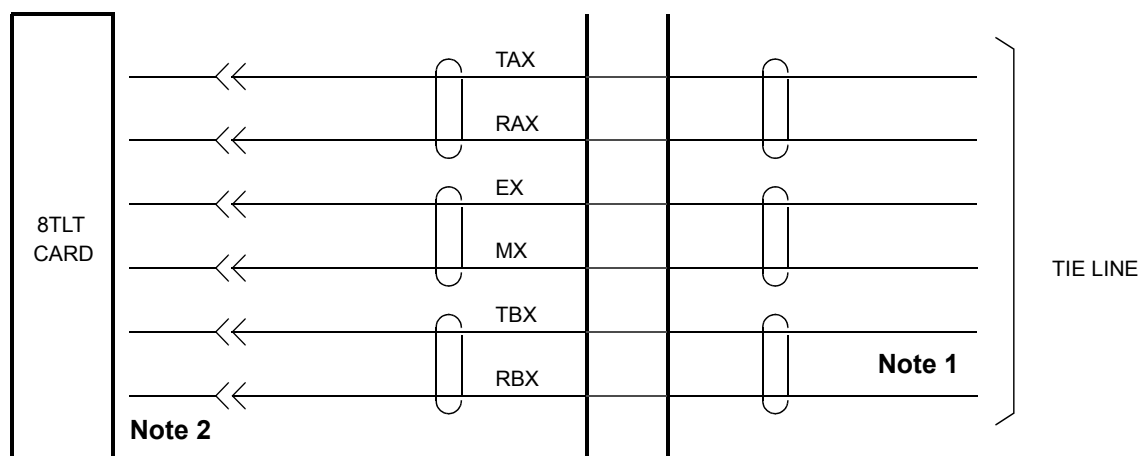
(1) 16COT card



(2) 8TLT card (for DID Trunk)



(3) 8TLT card (for E&M Trunk)



Note 1: For 2W/4W E&M systems, these leads are not used.

Note 2: For No. 4–7 trunks, the leads appear at the front of the card. Refer to the description of the 8TLT card in the Circuit Card Manual.

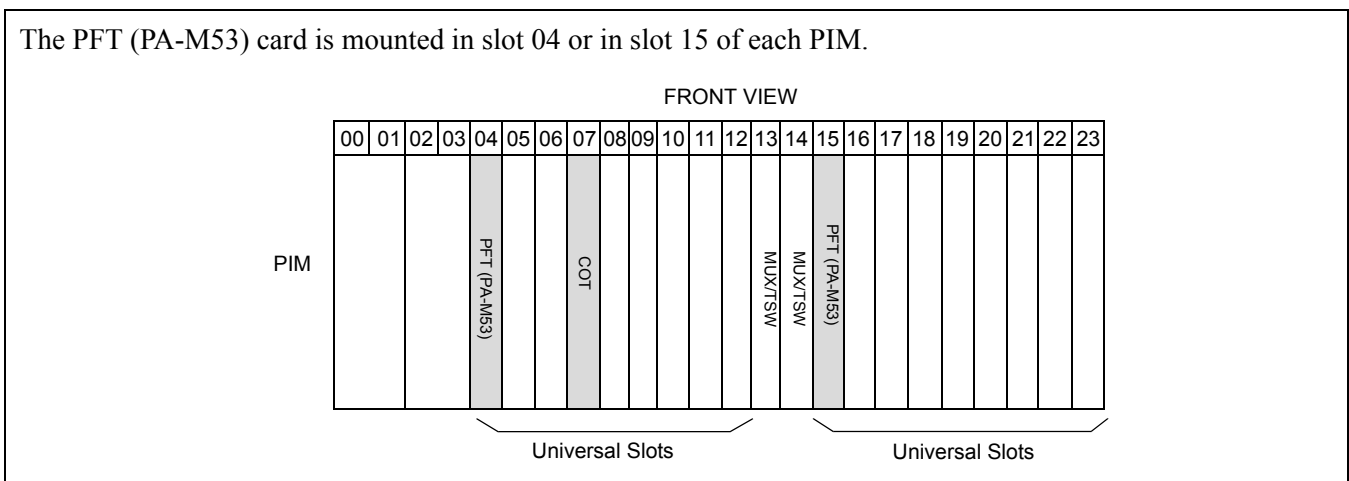
NAP-200-015
Sheet 5/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

3. CROSS CONNECTIONS FOR PFT

Note 1: *The COT must be accommodated in a universal slot of the same Unit (U) in which the cross-connected PFT is mounted. See the figure below.*

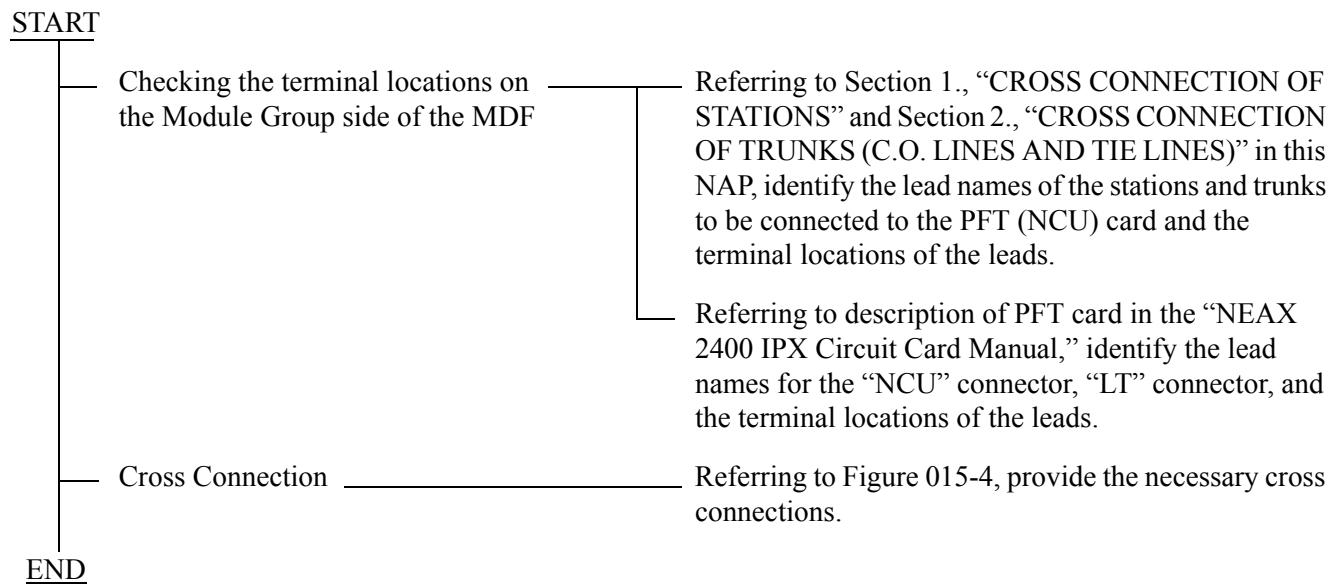
Note 2: *Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.*

Figure 015-3 Mounting Locations of PFT (PA-M53)



INSTALLATION PROCEDURE

NAP-200-015
Sheet 6/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

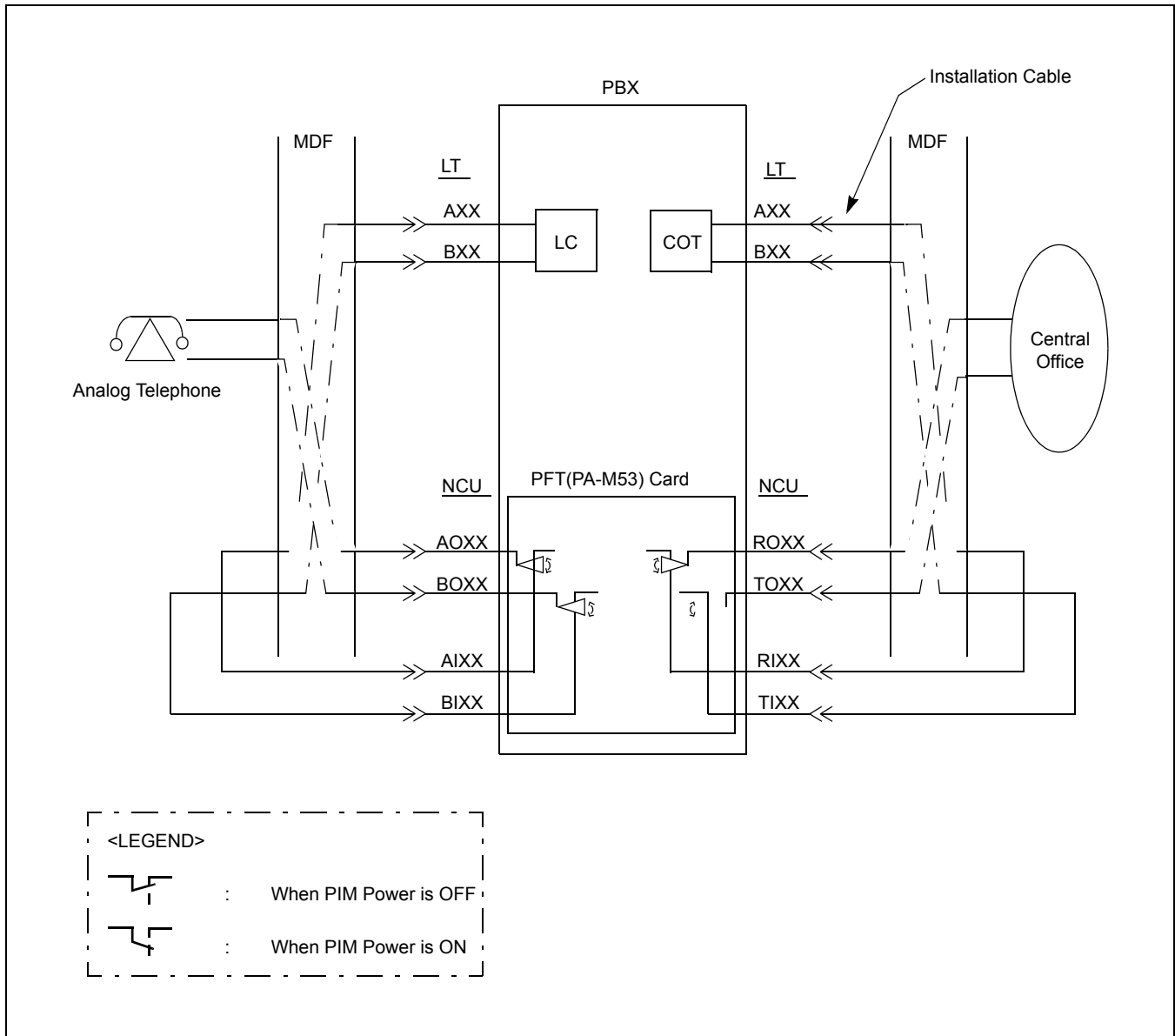


NAP-200-015

Sheet 7/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines

Figure 015-4 Cross Connection for PFT

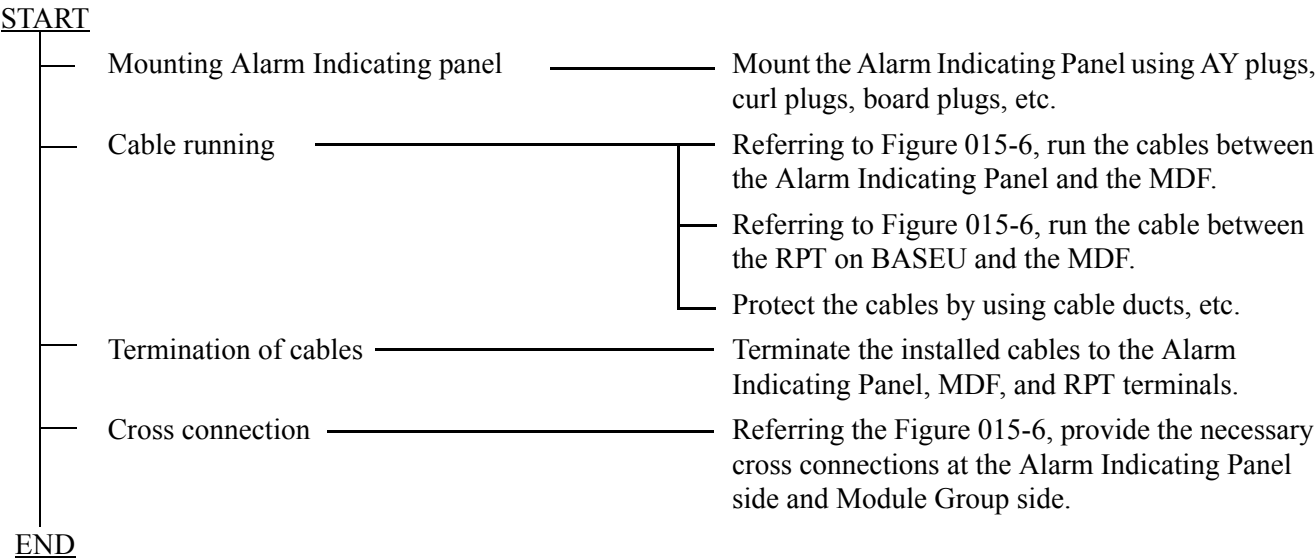


NAP-200-015
Sheet 8/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

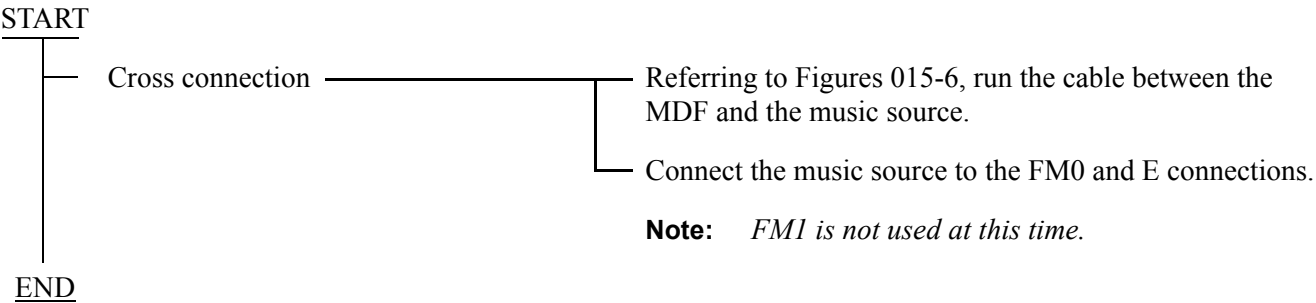
4. CROSS CONNECTION OF ALARM INDICATING PANEL AND MUSIC ON HOLD

Note: Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

- Alarm Indicating Panel



- Music On Hold



NAP-200-015

Sheet 9/32

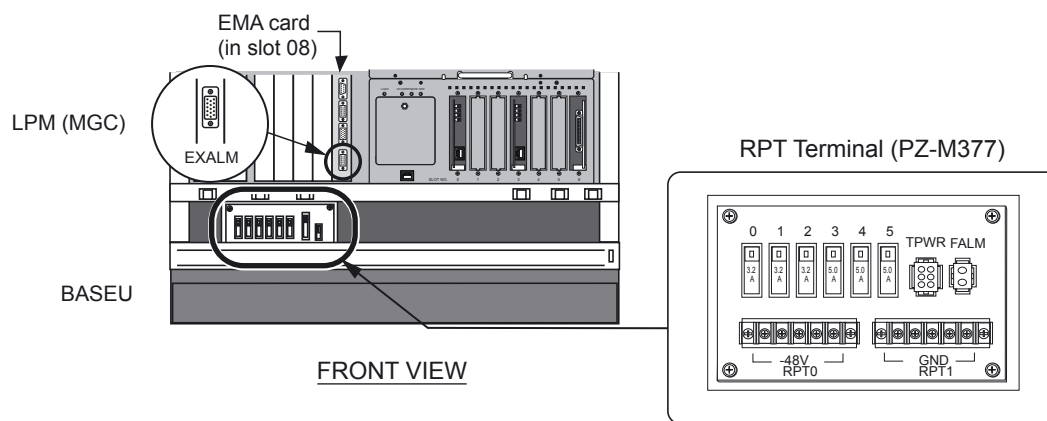
Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines



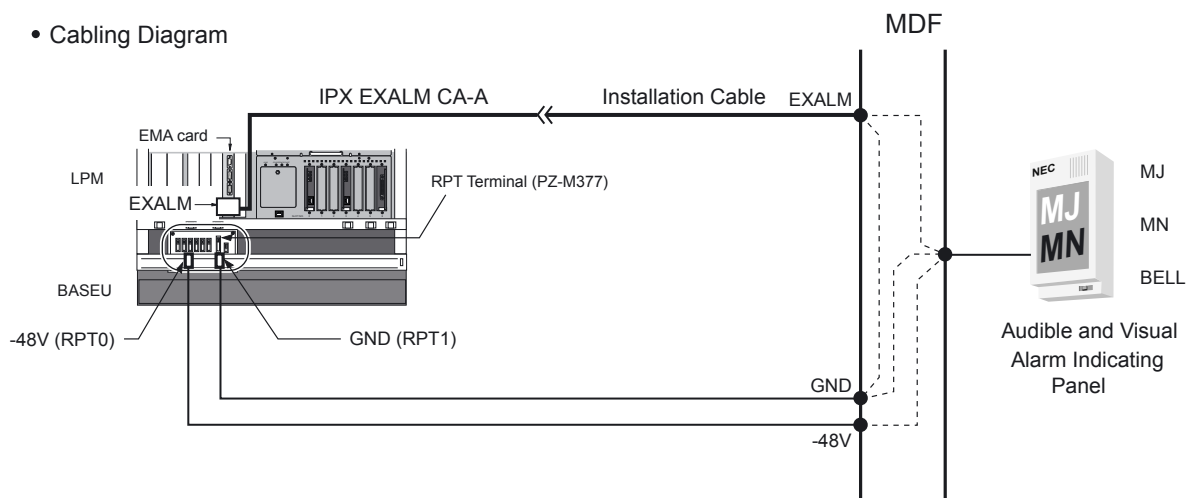
Figure 015-5 IPX EXALM CA-A Cabling Diagram

- Locations of Terminal and Connector

EXALM connector appears on the front edge of PX-PC00-A (EMA) card.



- Cabling Diagram



INSTALLATION PROCEDURE

NAP-200-015

Sheet 10/32

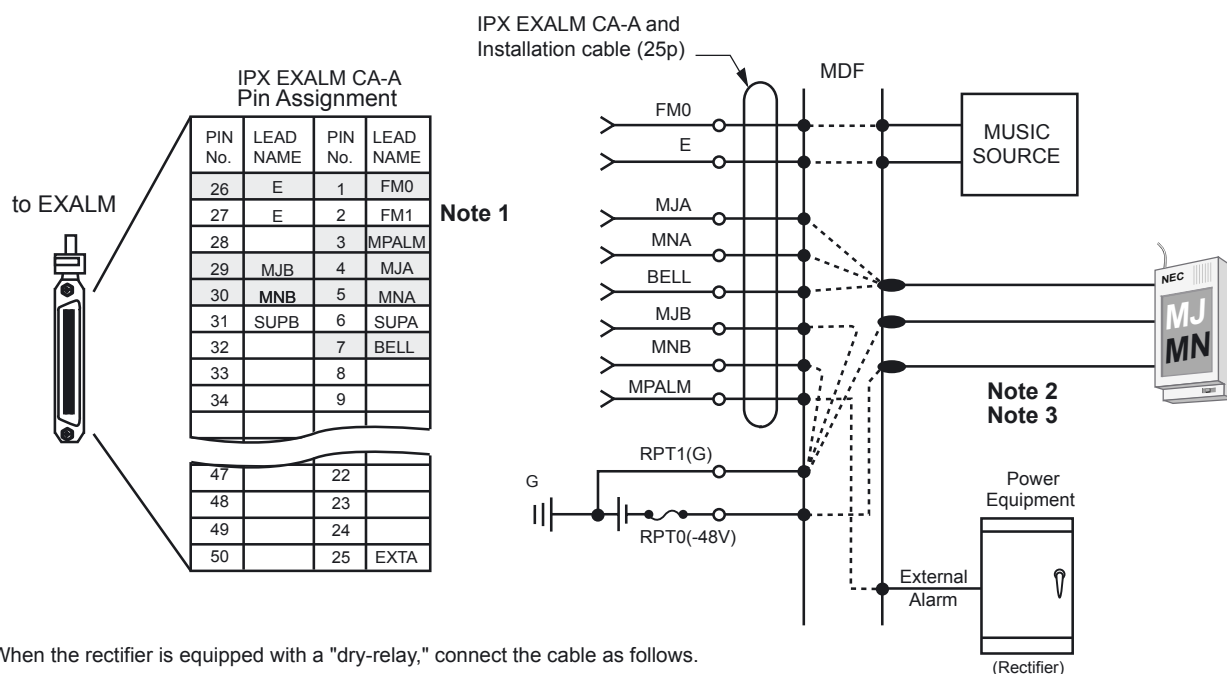
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



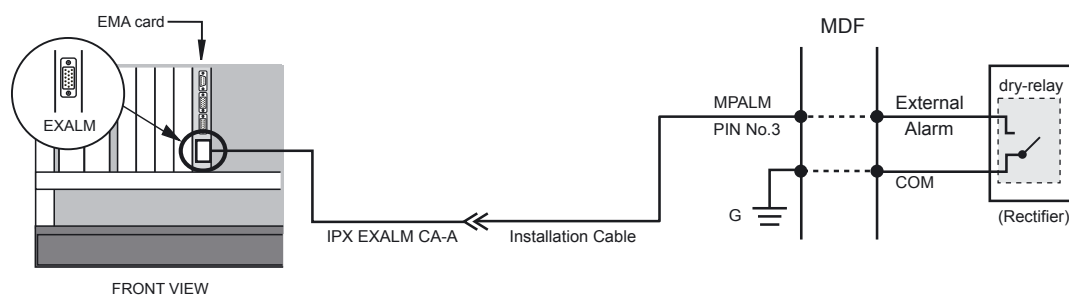
Figure 015-6 Connection of Alarm Indicating Panel and Music on Hold (Single IMG Configuration)

• Cross Connections

MPALM is used to receive alarm information from Power Equipment (Rectifier). When Ground is detected, the PBX regards it as "alarm."



When the rectifier is equipped with a "dry-relay," connect the cable as follows.



WIRE GAUGE	NUMBER OF REQUIRED LINES
0.4	More than 6 lines for each -48V wire/GND wire
0.5	More than 3 lines for each -48V wire/GND wire
0.65	More than 2 lines for each -48V wire/GND wire

NAP-200-015

Sheet 11/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines



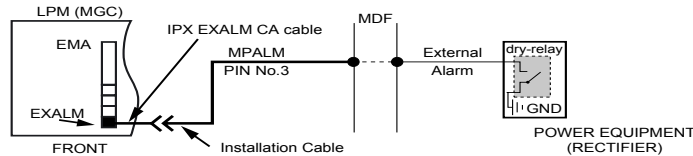
Figure 015-7 Connection of Alarm Indicating Panel (Multiple IMG Configuration)

• Cabling Diagram

MPALM is used to receive alarm information from Power Equipment (Rectifier). When Ground is detected, the PBX regards it as "Alarm."



When the power equipment (Rectifier) is equipped with a "dry-relay," connect the MPALM as shown below.



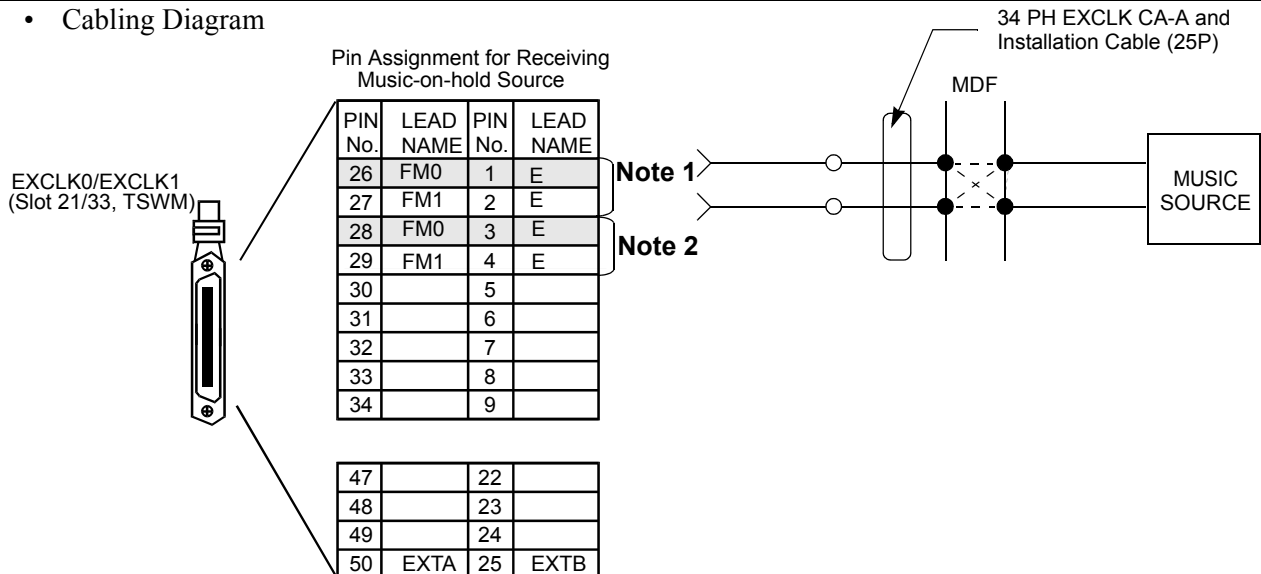
Note 1: The distance between PBX and Alarm Indicating Panel must be less than 100 m (3.281 feet).

Note 2: Following numbers of lines (-48V wire/GND wire) are required, depending on the wire gauge.

WIRE GAUGE	NUMBER OF REQUIRED LINES
0.4	More than 6 lines for each -48V wire/GND wire
0.5	More than 3 lines for each -48V wire/GND wire
0.65	More than 2 lines for each -48V wire/GND wire

Figure 015-8 Connection of Music on Hold (Multiple IMG Configuration)

• Cabling Diagram



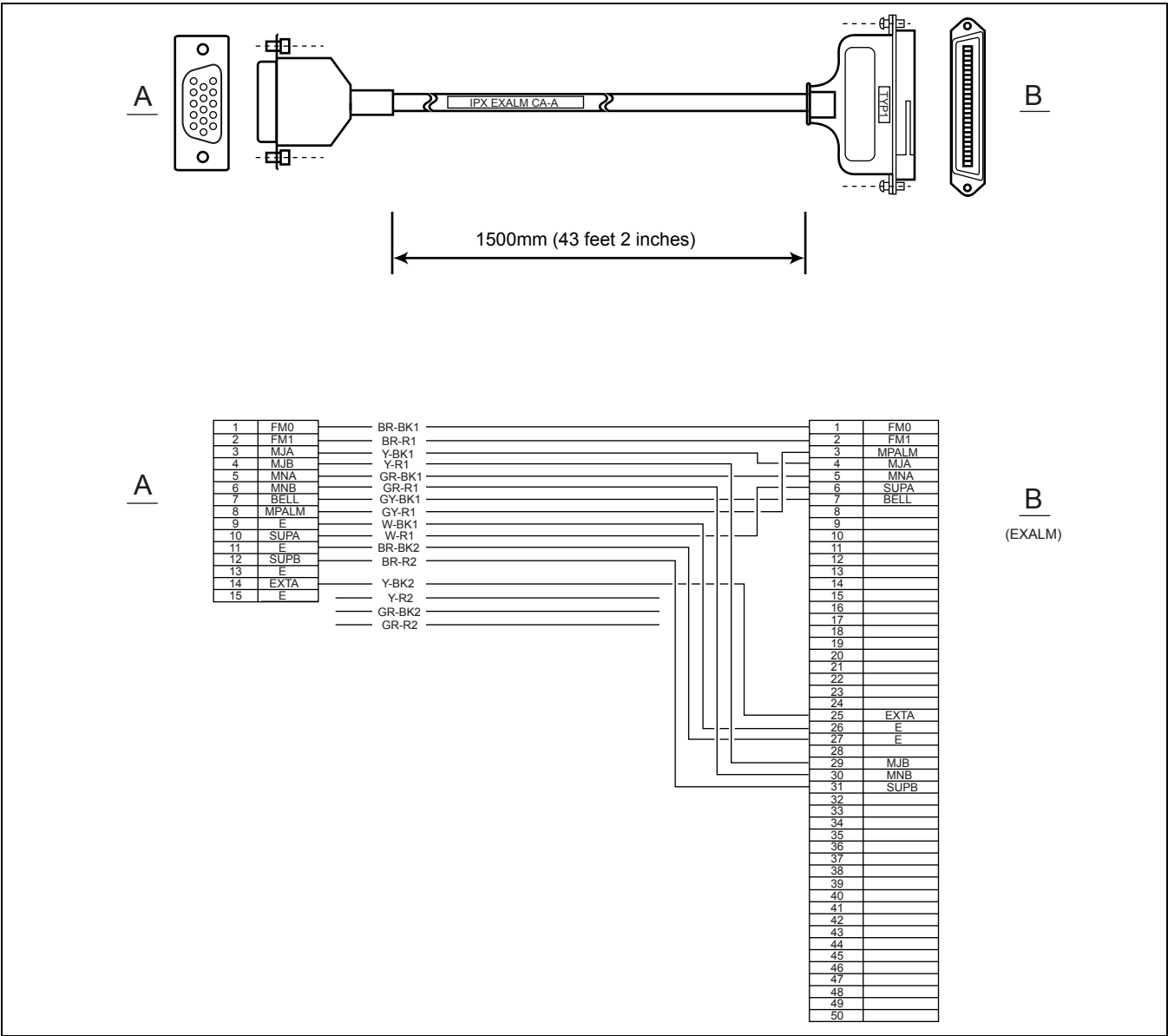
Note 1, Note 2 : FM1 is not used.

INSTALLATION PROCEDURE

NAP-200-015
Sheet 12/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

<Cable Specification>

Figure 015-9 IPX EXALM CA-A Cable

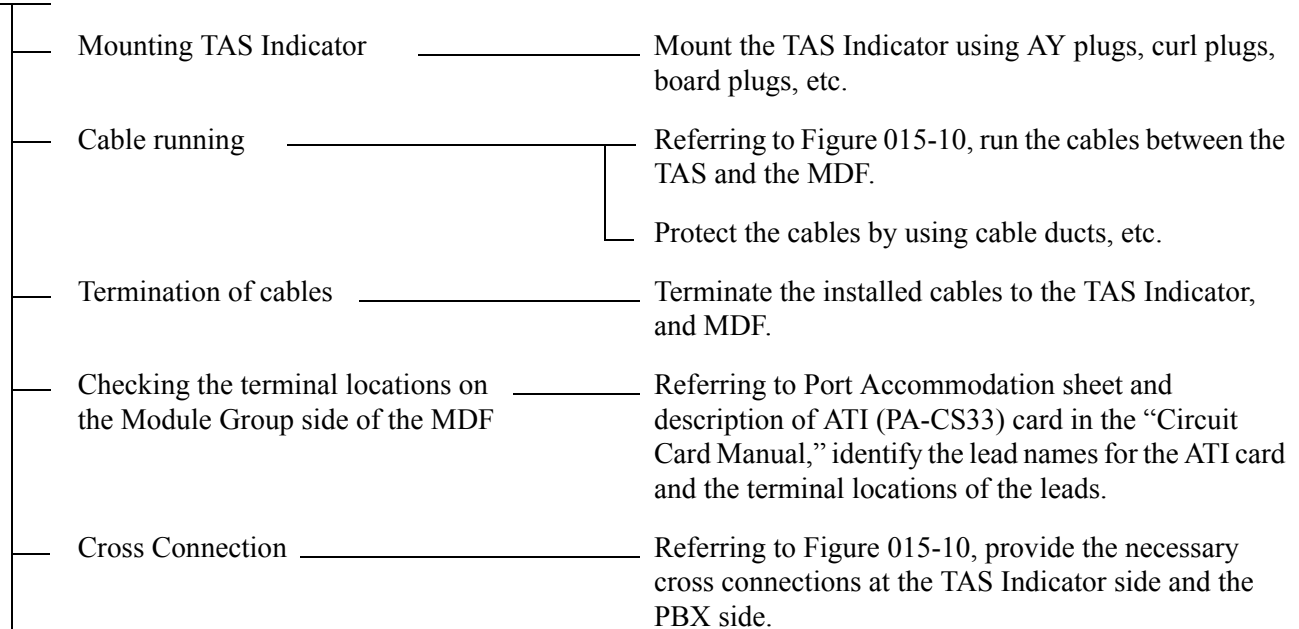


NAP-200-015
Sheet 13/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

5. CROSS CONNECTIONS FOR TAS INDICATOR

Note: *Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.*

START



END

NAP-200-015
Sheet 14/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

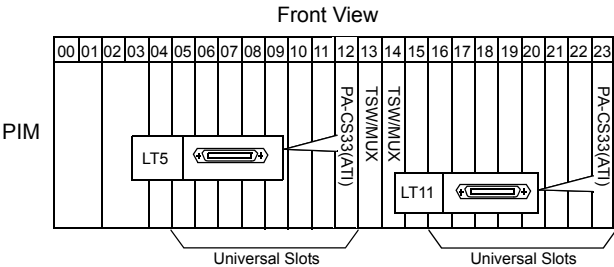


Figure 015-10 Cable Connection Diagram for TAS

To connect TAS the PA-CS33 card is used as the interface card. The card may be mounted in Slot No. 12 or in Slot No. 23. The leads appear on LT5 and LT11, respectively.

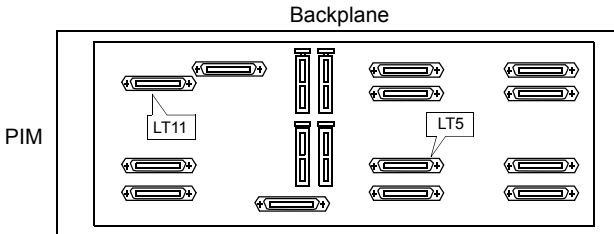
- PA-CS33 (ATI) mounting slots

PA-CS33 (ATI) card may be mounted in Slot 12 and/or 23.



- LT cable connectors

Use LT5 connector when the PA-CS33 card is mounted in Slot 12. When the card is mounted in Slot 23, use LT11 connector.



- LT cable Pin Assignment

Pins are assigned as follows on the LT connector for PA-CS33 card.

PA-CS33 Pin Assignment

PIN No.	LEAD NAME	PIN No.	LEAD NAME
26		1	
27		2	
32		7	
33		8	
34	BN4800	9	BN4801
35		10	
36	BN4820	11	BN4821
37		12	
38	TAS1B	13	TAS1A
39	BN4810	14	BN4811
40	TAS0B	15	TAS0A
41	BN4830	16	BN4831
42		17	
43		18	
44	B2	19	A2
45		20	
46		21	
47		22	
48	B3	23	A3
49		24	
50		25	

for TAS #1 →

for TAS #0 →

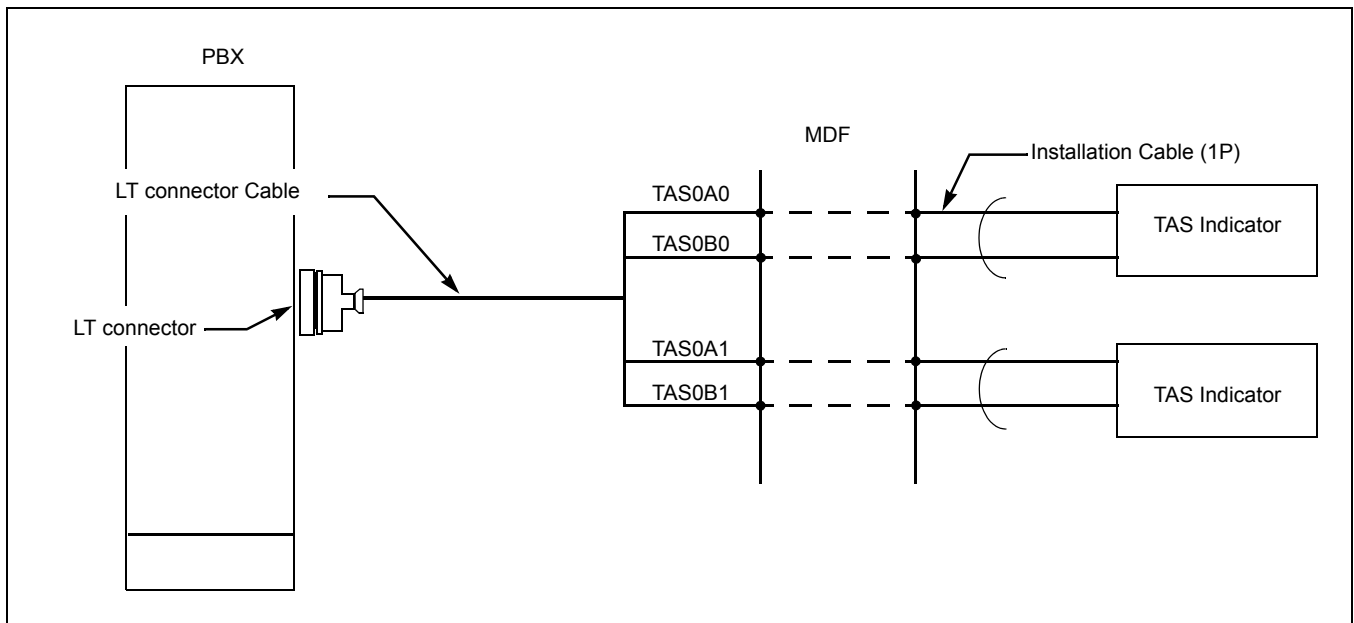
NAP-200-015

Sheet 15/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines

- Cable Connection Diagram
Provide the following connections at the MDF.

Figure 015-10 Cable Connection Diagram for TAS (Continued)



NAP-200-015
Sheet 16/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

6. CROSS CONNECTIONS FOR EXTERNAL SWITCHES

Note: Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

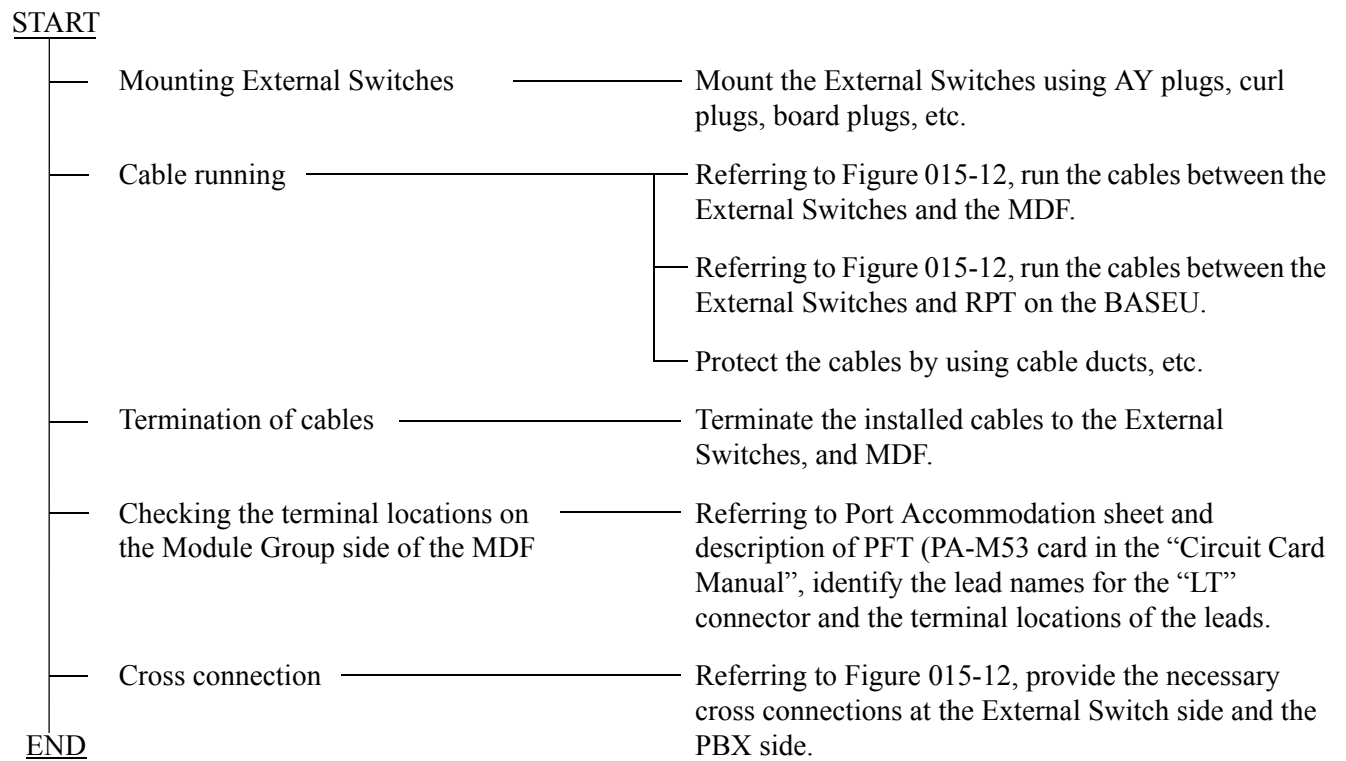
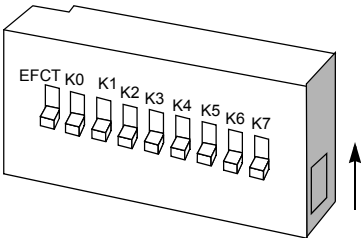


Figure 015-11 Outer View of External Switch

When the EFCT key is in the UP position, operations of K0-K7 are effective. To turn on a circuit, set the corresponding key (K0-K7) in the UP position.



NAP-200-015

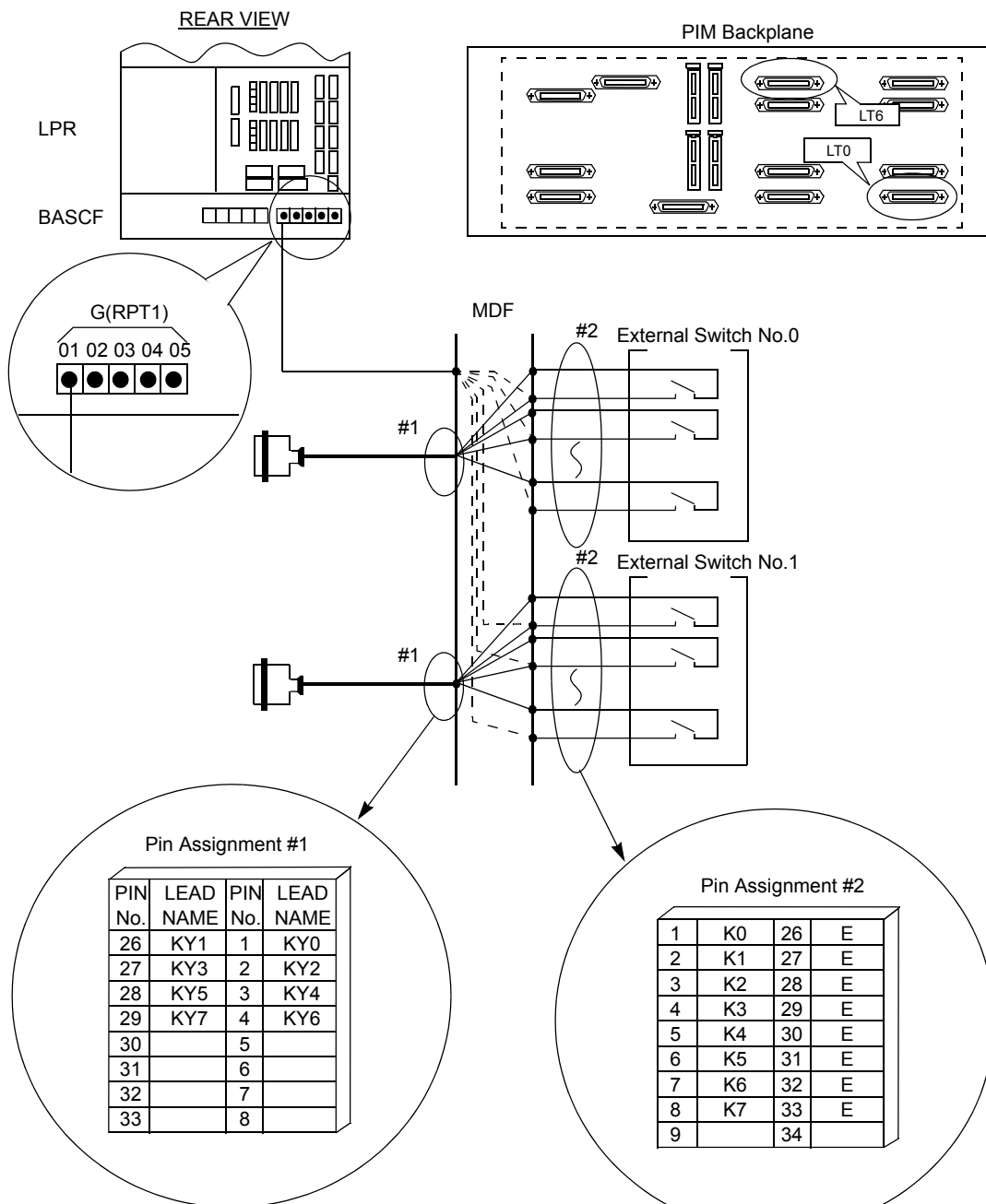
Sheet 17/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines



Figure 015-12 Connection of External Switches

Provide cable connections at the MDF as shown below.



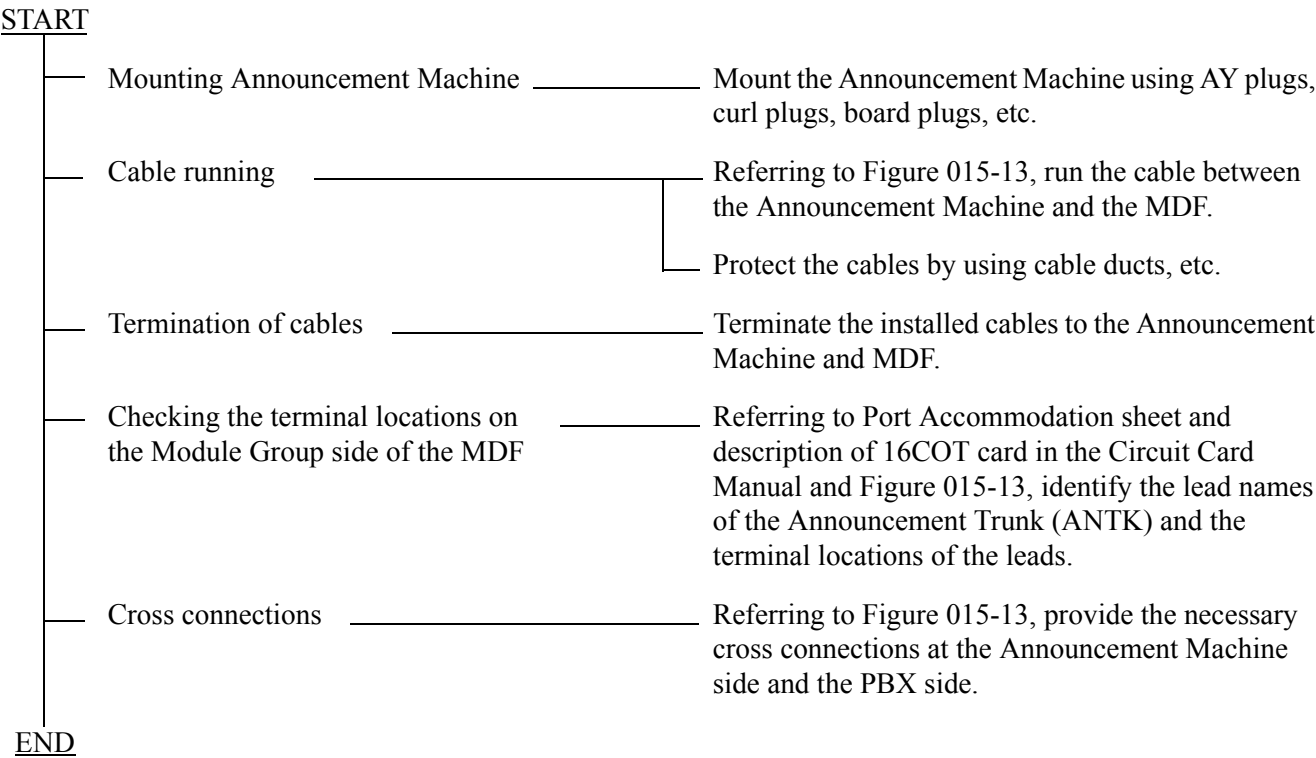
NAP-200-015
Sheet 18/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



7. CONNECTION OF ANNOUNCEMENT MACHINE

Note: *Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire.*

It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.



NAP-200-015

Sheet 19/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines



Figure 015-13 Connection of Announcement Machine

Configuration of 16COT Lead

No. OF CKT	LEAD	
	B	A
No.0	B0	A0
1	B1	A1
2	B2	A2
3	B3	A3
4	B4	A4
5	B5	A5

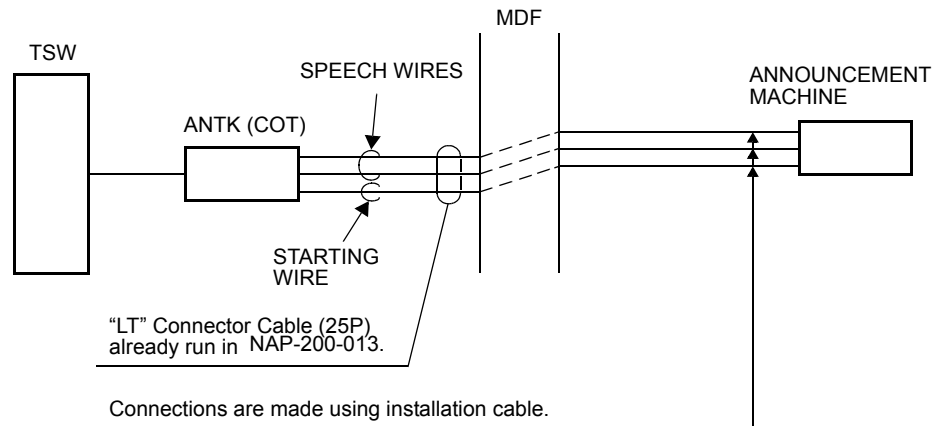
When No. 0 circuit is used for COT.

No. OF CKT	LEAD	
	B	A
No.0	B0	A0
1	B1 (M)	A1
2	B2	A2
3	B3	A3
4	B4	A4
5	B5	A5

When No. 0 circuit is used for
Announcement Trunk.

Starting Wire
Speech Wires
When using 16COT-BE,
connect to ground

Announcement Machine Cabling Diagram



A total of three wires are required per line: two wires
for speech and one starting wire.
For a loop start system, only two wires are required.

Note: An ANTK circuit is only available on the No. 0 circuit of the 16COT card.
If a starting wire is required, the No. 1 circuit cannot be used for a COT.

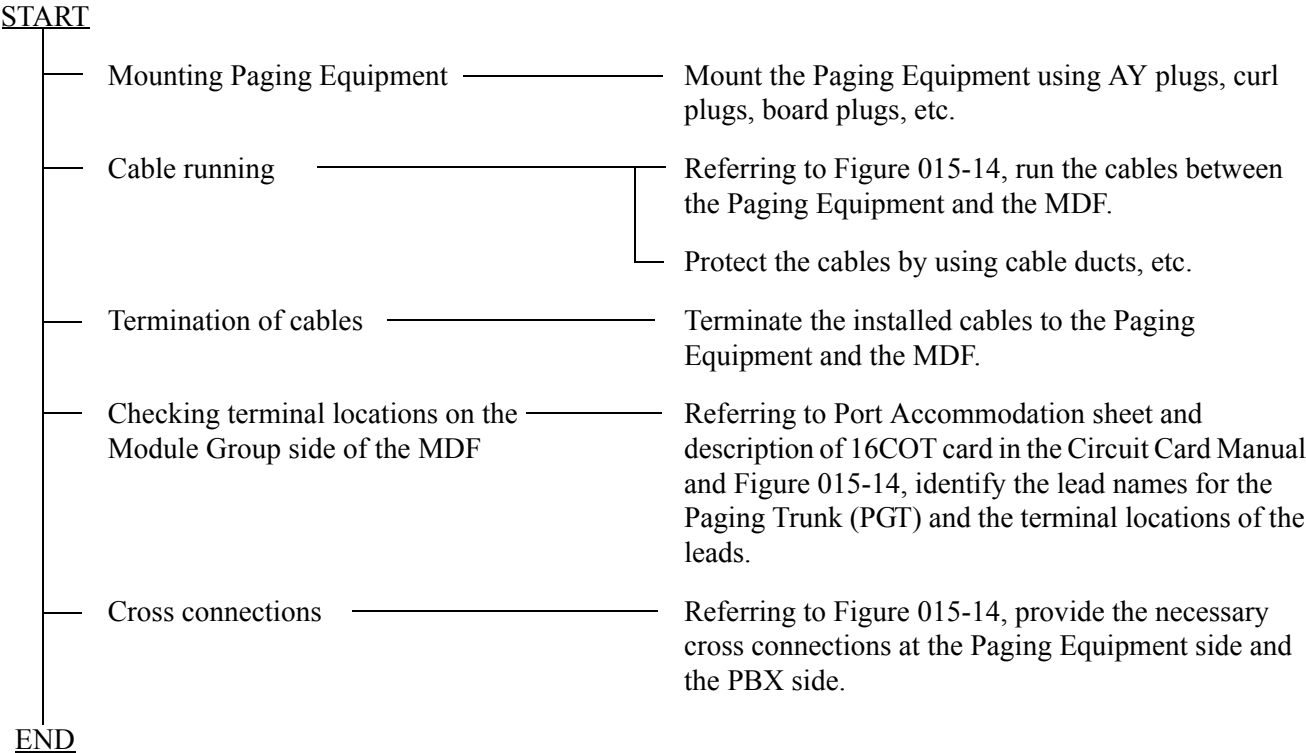
NAP-200-015
Sheet 20/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



8. CONNECTION OF PAGING EQUIPMENT

Note: *Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire.*

It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.



NAP-200-015

Sheet 21/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines



Figure 015-14 Connection of Paging Equipment

Configuration of 16 COT Lead

No. OF CKT	LEAD	
	B	A
No.0	B0	A0
1	B1	A1
2	B2	A2
3	B3	A3
4	B4	A4
5	B5	A5

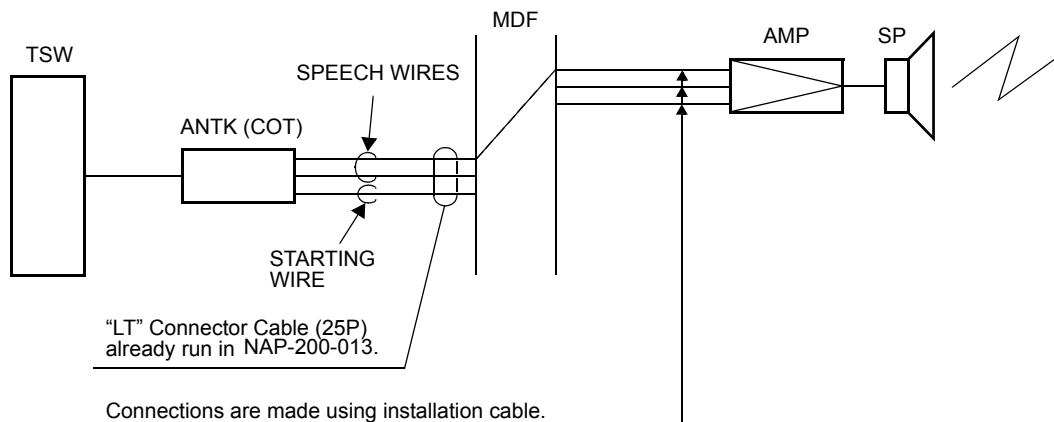
When No. 0 circuit is used for COT.

No. OF CKT	LEAD	
	B	A
No.0	B0	A0
1	B1 (M)	A1
2	B2	A2
3	B3	A3
4	B4	A4
5	B5	A5

When No. 0 circuit is used for PGT.

Starting Wire
Speech Wires
When using 16 COT-BE,
connect to ground

Paging Equipment Cabling Diagram



A total of three wires are required per line: two wires
for speech and one starting wire.
For a loop start system, only two wires are required.

Note: A PGT circuit is only available on the No. 0 circuit of the 16COT card. If a starting wire is required, the No. 1 circuit cannot be used for a COT.

NAP-200-015
Sheet 22/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

9. CROSS CONNECTIONS

9.1 When Using D^{term} Series E/D^{term} 75

Note 1: Available distance between Module Group and D^{term} is a maximum of 850 meters (2459 feet). The installation cable must be 24 AWG (0.5 mm dia.) or larger.

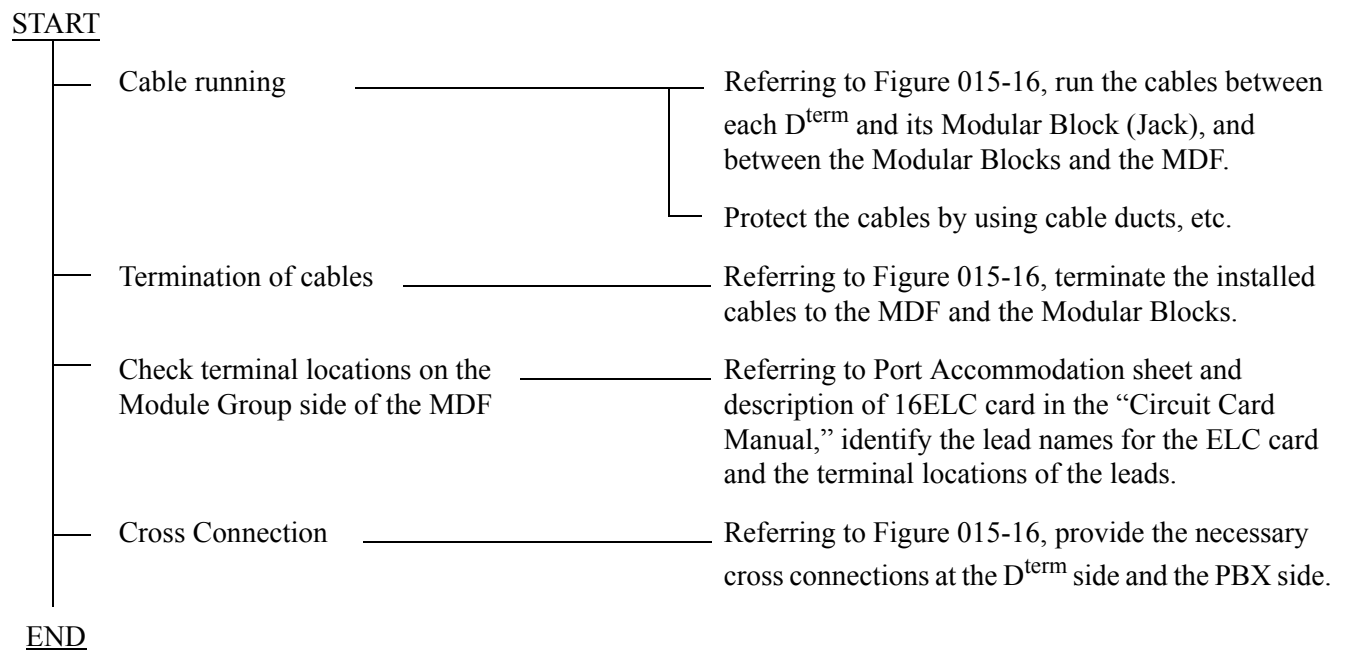
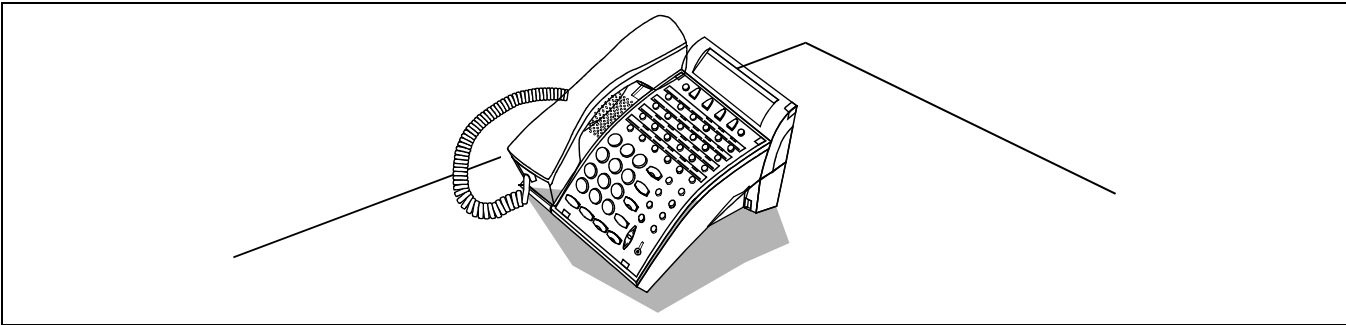


Figure 015-15 Outer View of D^{term} Series E/D^{term} 75



NAP-200-015

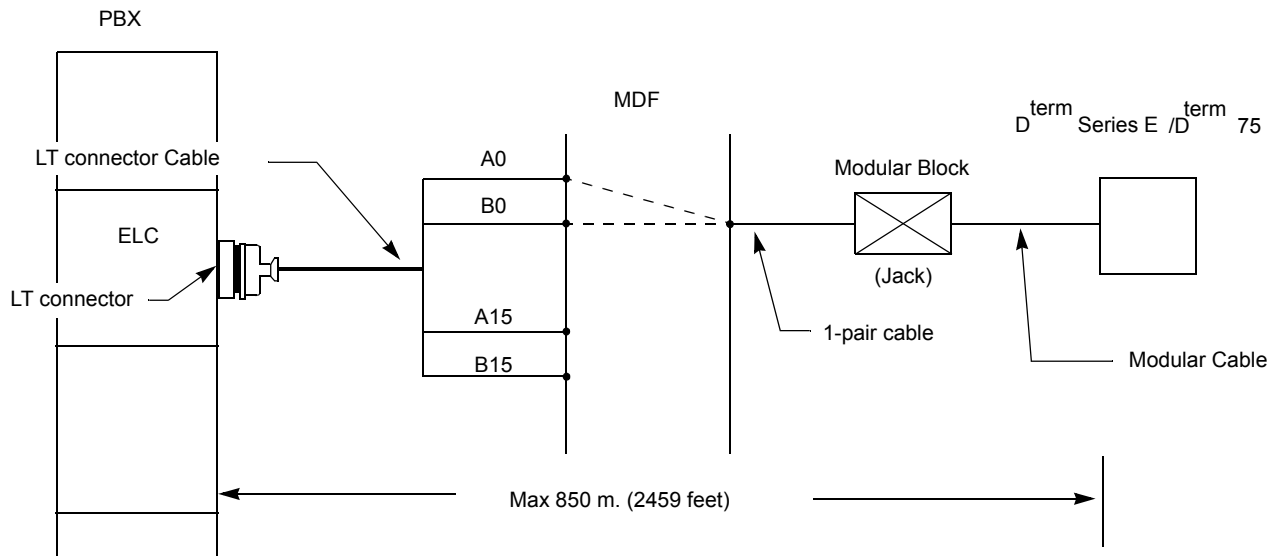
Sheet 23/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines



Figure 015-16 Cable Connection for D^{term} Series E/D^{term} 75

Provide the following connections at the MDF.



NAP-200-015
Sheet 24/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

9.2 When using IP Terminals (IP Enabled D^{term} and D^{term}IP INASET)

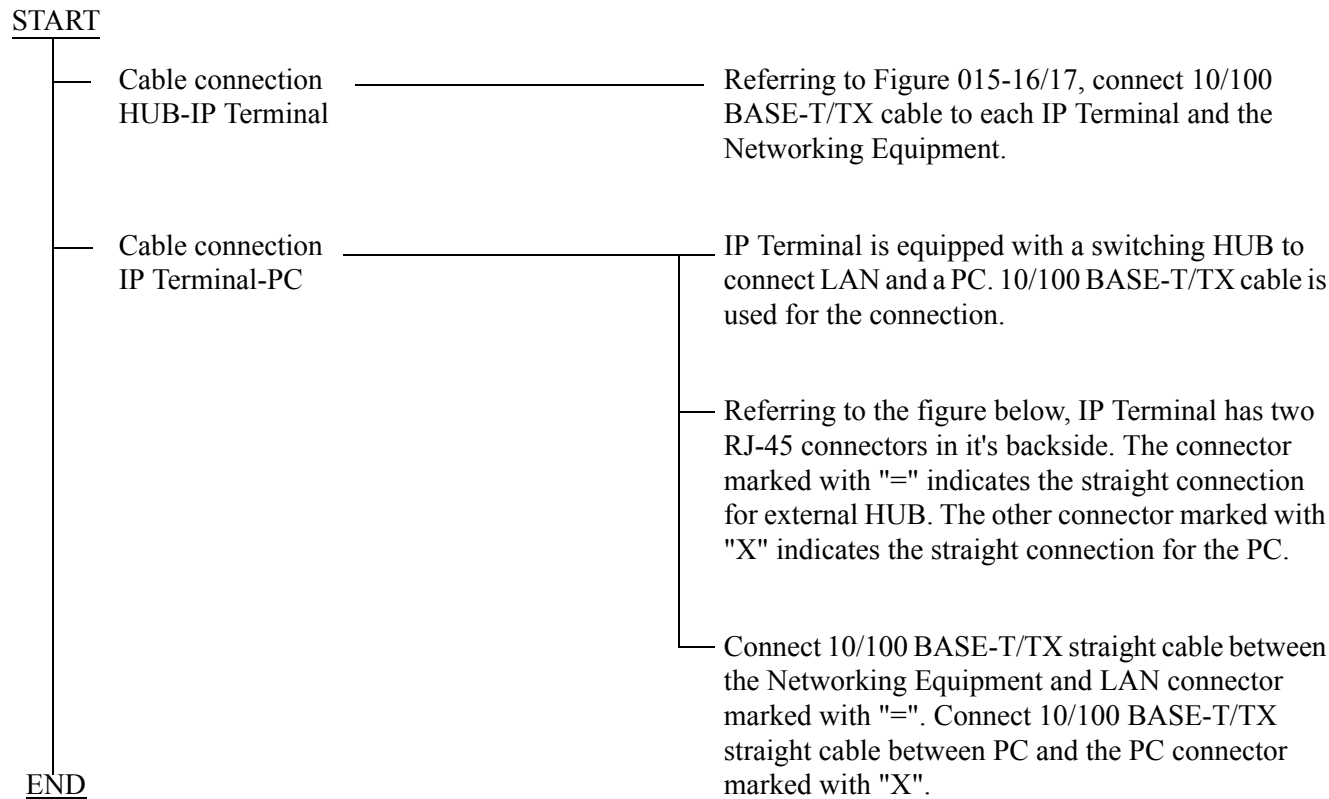
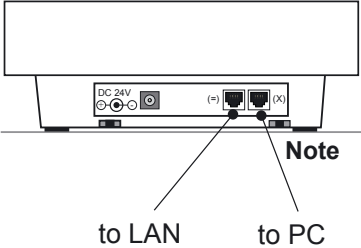


Figure 015-17 Rear Connector Locations of IP terminal

The rear connectors have switching HUB function to forward each packet only to required port.

Rear View



Note

to LAN

to PC

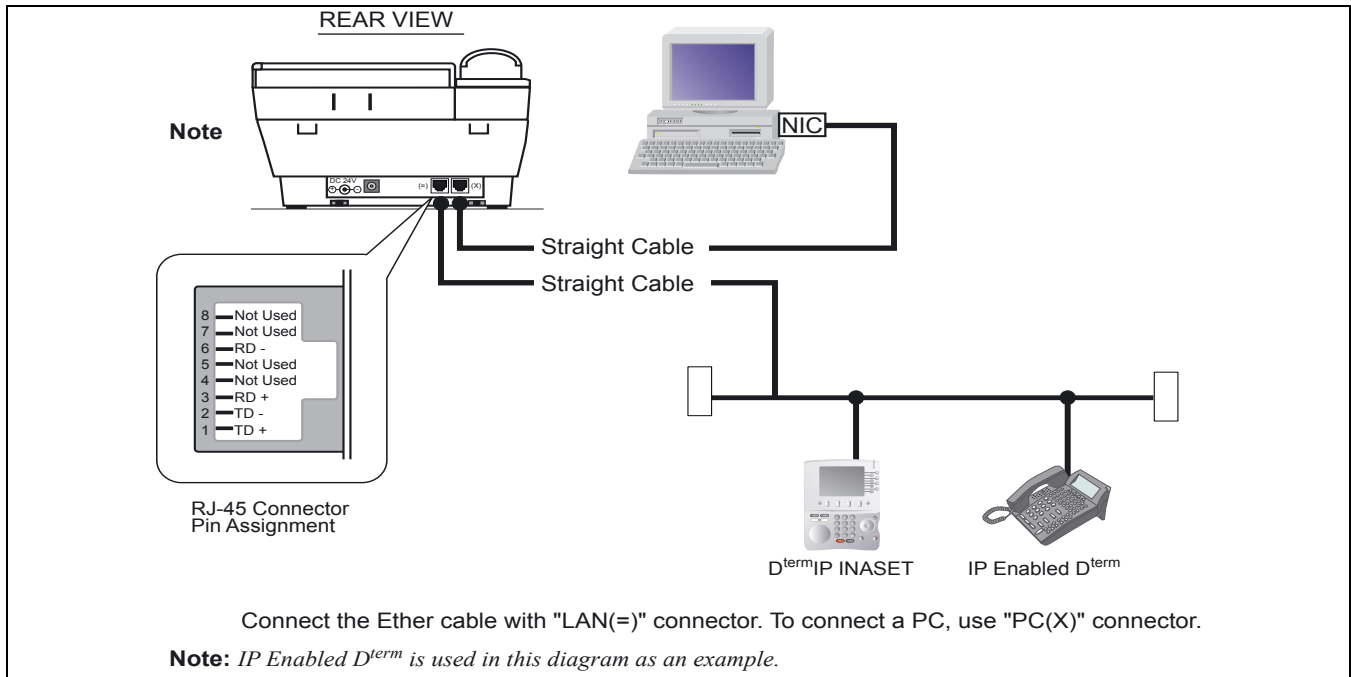
Note: PC connector marked with "X" on IP terminal is exclusively for PC, not IP terminal.

NAP-200-015

Sheet 25/32

Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines

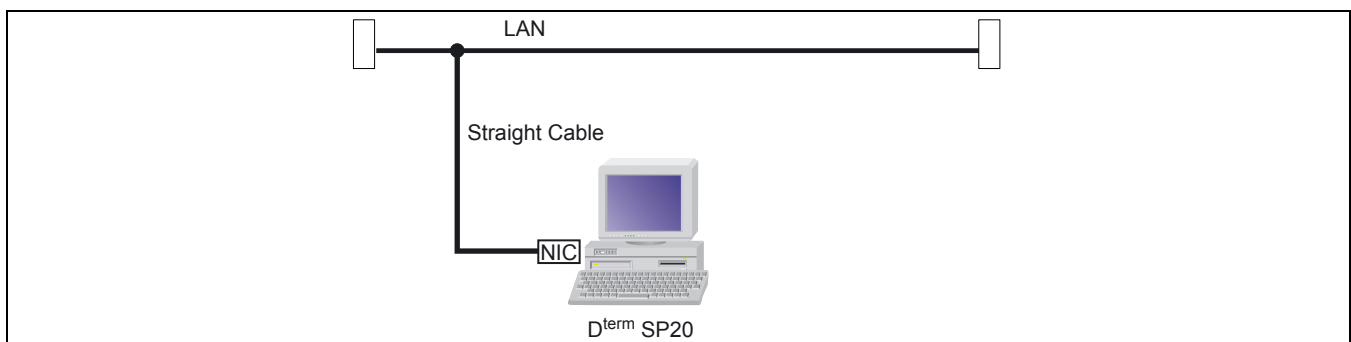
Figure 015-18 Connecting IP Terminals to Network



9.3 When using D^{term} SP20

D^{term} SP20 is a software which is installed in PC and has the same function as IP terminals. The following shows an example of connecting D^{term} SP20 to LAN.

Figure 015-19 Connecting D^{term} SP20 to Network



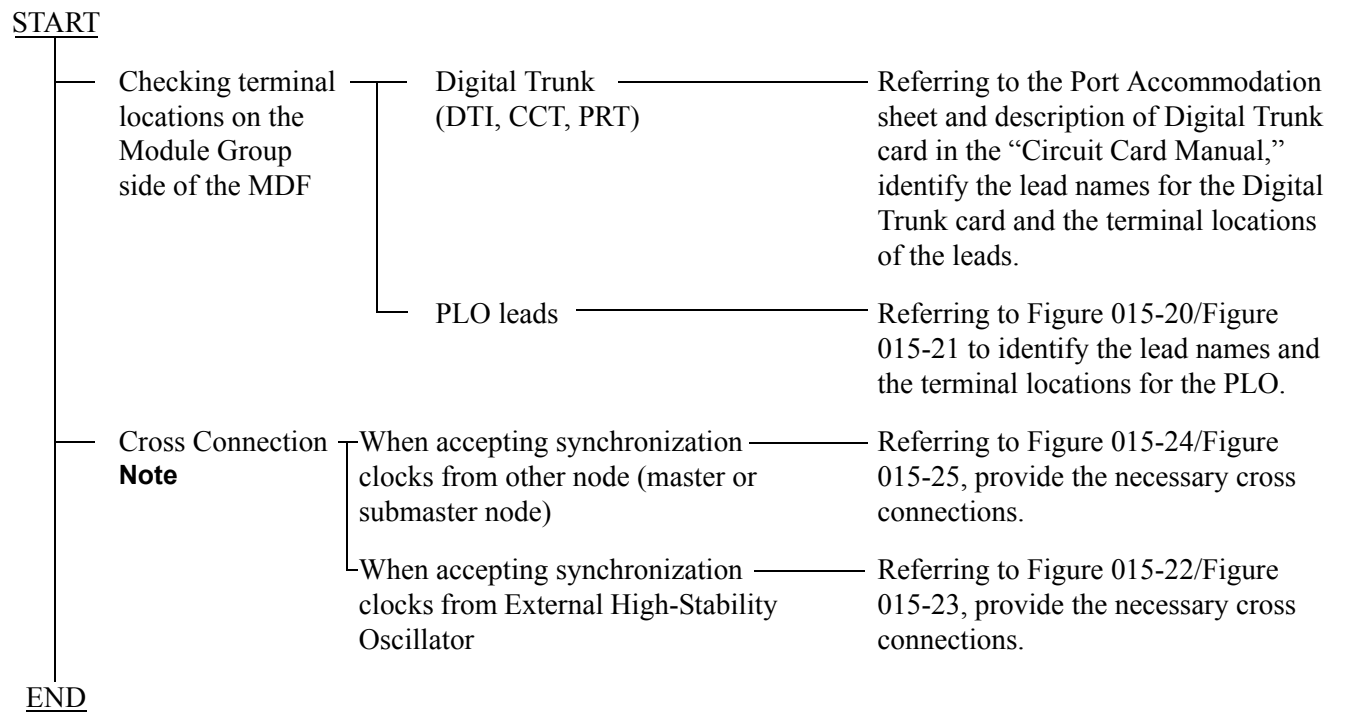
NAP-200-015
Sheet 26/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

10. CROSS CONNECTIONS FOR DIGITAL INTERFACES

Perform the cross connections for digital interfaces as shown below:

- Note 1:** *When your system is single IMG configuration, Time Division Switch (TSW) card is equipped with Phase Lock Oscillator (PLO). Therefore, dedicated PLO card is not required when using Digital Interfaces. However, when the system requires a higher-precision oscillator, use the Oscillator (OSC: PA-CK14) card. The cards may be mounted in slots numbered 9, and 17 of PIM0. For the OSC card, no external wiring is required.*
- Note 2:** *Provide the necessary cross connections at the MDF by using copper wires of 0.5 mm diameter (24 AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. It is recommended that wires of different colors be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.*

WARNING: *Back card out of the module before attempting cross connection. Otherwise, the fuse mounted on the DTI card will blow and the card will become inoperative.*



NAP-200-015
Sheet 27/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

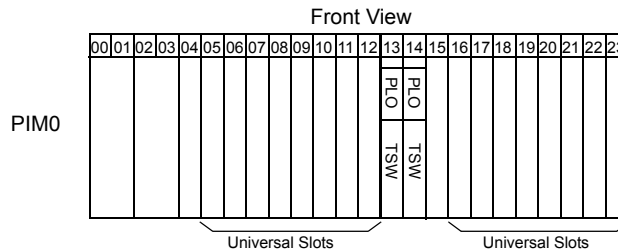


Figure 015-20 PLO Pin Assignments for Receiving Clock (Single IMG Configuration)

Since PLO circuit is equipped with TSW card, PLO input leads appear on the LT connector labeled PLO.

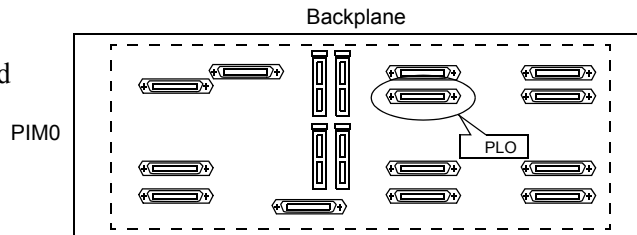
- TSW mounting slots

TSW card is mounted in slots 13 and 14 of PIM0.



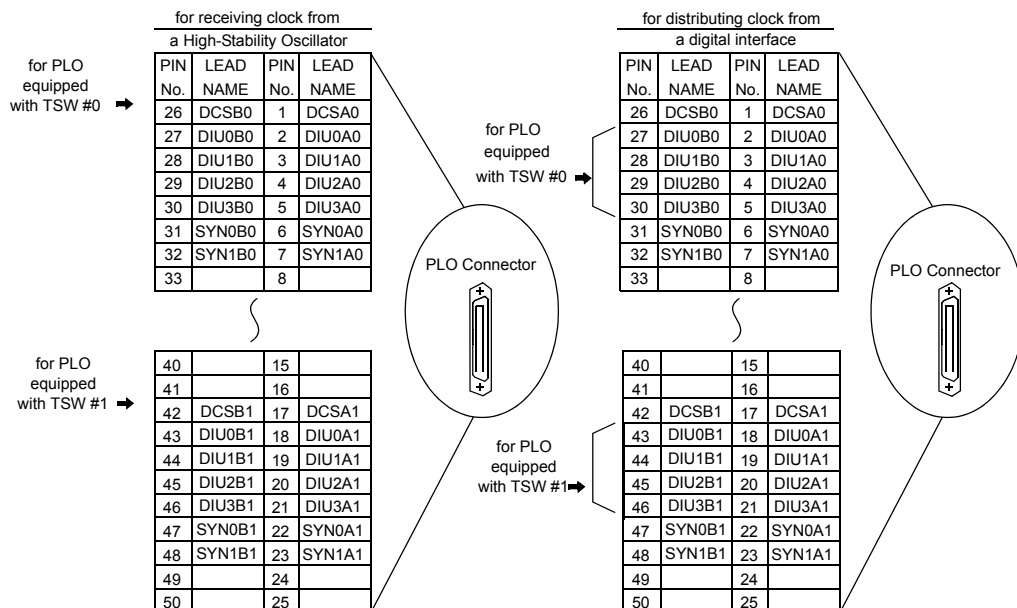
- LT cable connector

Connect an LT cable to the connector labeled “PLO” on PIM0 backplane.



- PLO connector Pin Assignment

Pins are assigned as follows on “PLO” connector. When clock is distributed from a digital interface, use one pair of “DIUxxx” leads among a maximum of 4 inputs. DIU leads have the following precedence: DIU0xx(High)-> DIU3xx(Low). To receive clock from an external high-stability oscillator, use “DCSxx”



NAP-200-015
Sheet 28/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



Figure 015-21 PLO Pin Assignments for Receiving Clock (Multiple IMG Configuration)

PLO input leads appear on the LT connectors labeled EXCLK0 and EXCLK1.

- PLO mounting slots

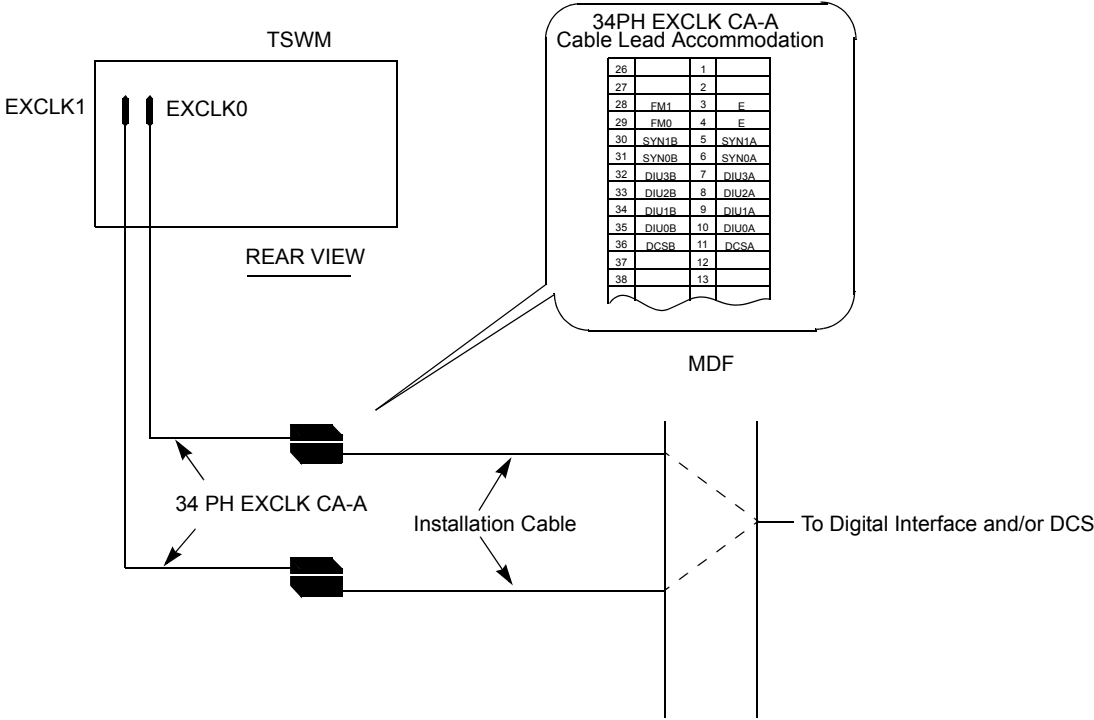
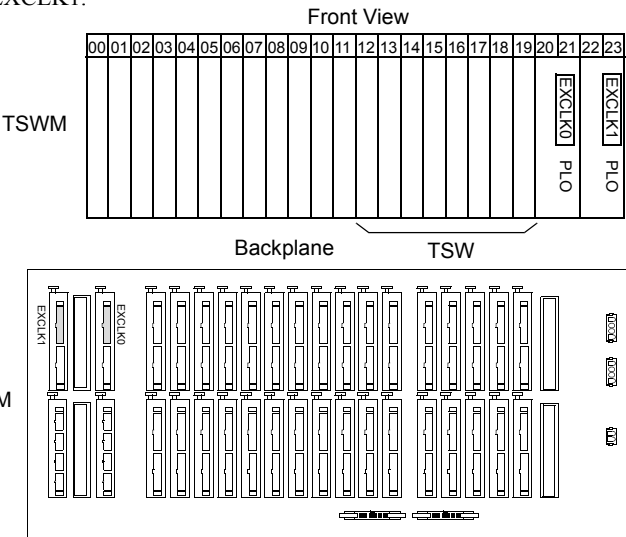
PLO card is mounted in slots 21 and 23 of TSWM.

- LT cable connectors

Connect LT cables to the connectors labeled “EXCLK0” and “EXCLK1” on the TSWM backplane.

- EXCLK0/EXCLK1 connector Pin Assignment

Pins are assigned as follows on “EXCLK0/EXCLK1” connector. When clock is distributed from a digital interface, use one pair of “DI-Uxxx” leads among a maximum of 4 inputs. DIU leads have the following precedence: DIU0xx (High)-> DIU3xx (Low). On the contrary, to receive clock from an external high-stability oscillator, use “DCSxx” leads.



NAP-200-015

Sheet 29/32

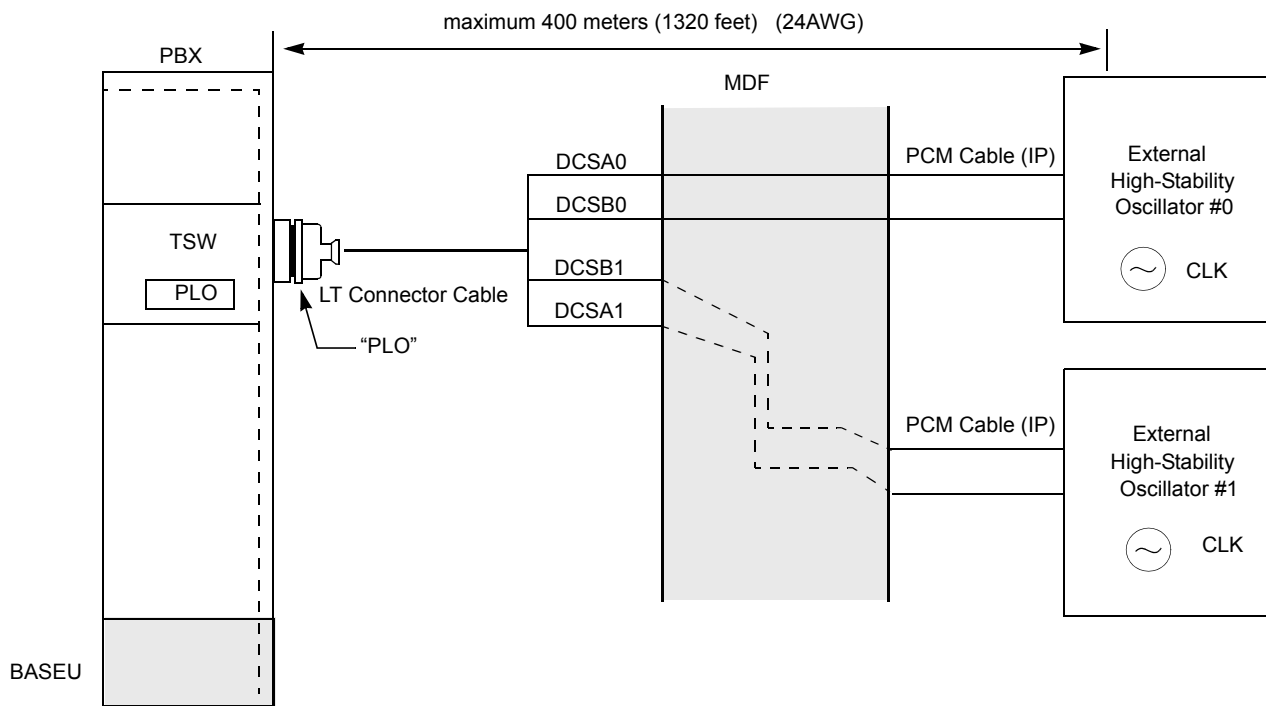
Cable Termination and Cross
Connections from MDF to Peripheral
Equipment, C. O. Lines, and Tie Lines



Figure 015-22 Cable Connection Diagram for Accepting Synchronization Clocks from an External High-Stability Oscillator (Single IMG Configuration)

- Cable Connection Diagram

Provide the following wirings at the MDF. The following connection diagram shows an example where the system has the TSW cards in a dual configuration.



Note: This diagram shows connections for a system having dual TSWs.

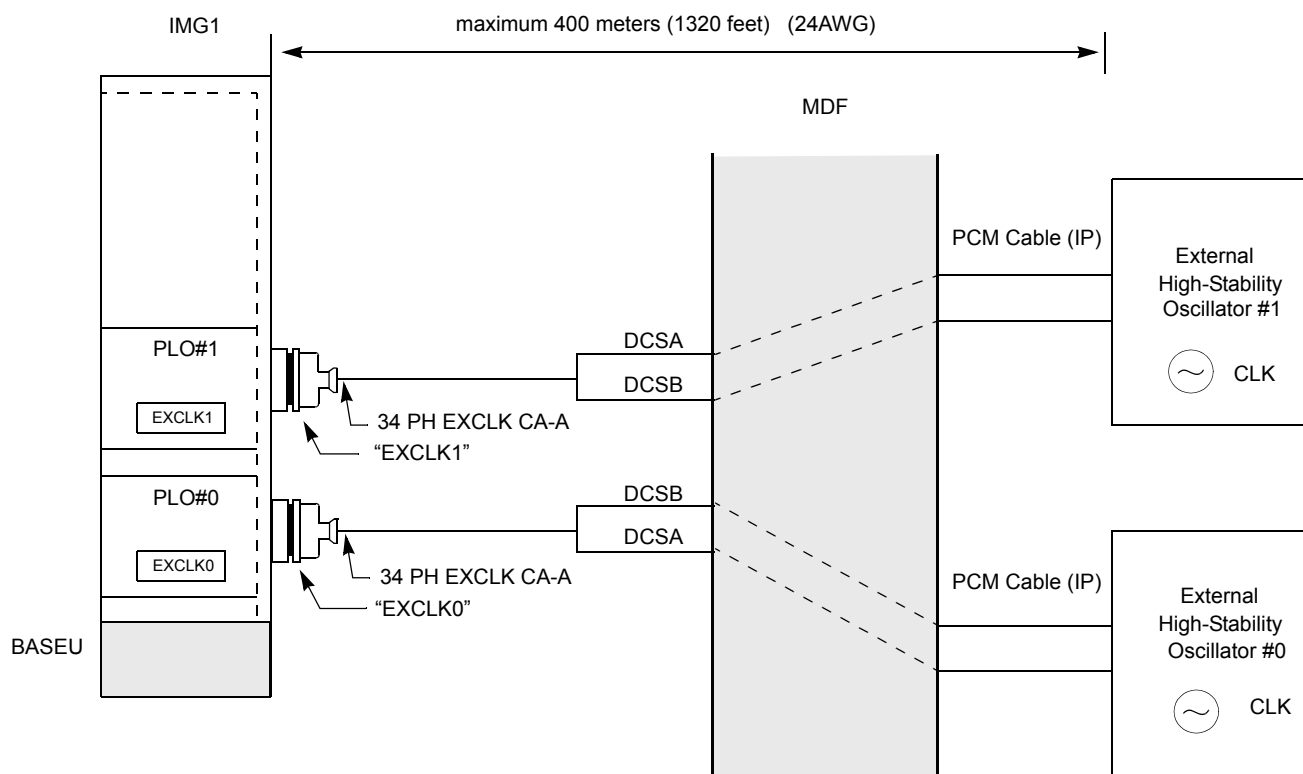
NAP-200-015
Sheet 30/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



Figure 015-23 Cable Connection Diagram for Accepting Synchronization Clocks from an External High-Stability Oscillator (Multiple IMG Configuration)

- Cable Connection Diagram

Provide the following wirings at the MDF. The following connection diagram shows an example where the system has the PLO cards in a dual configuration.



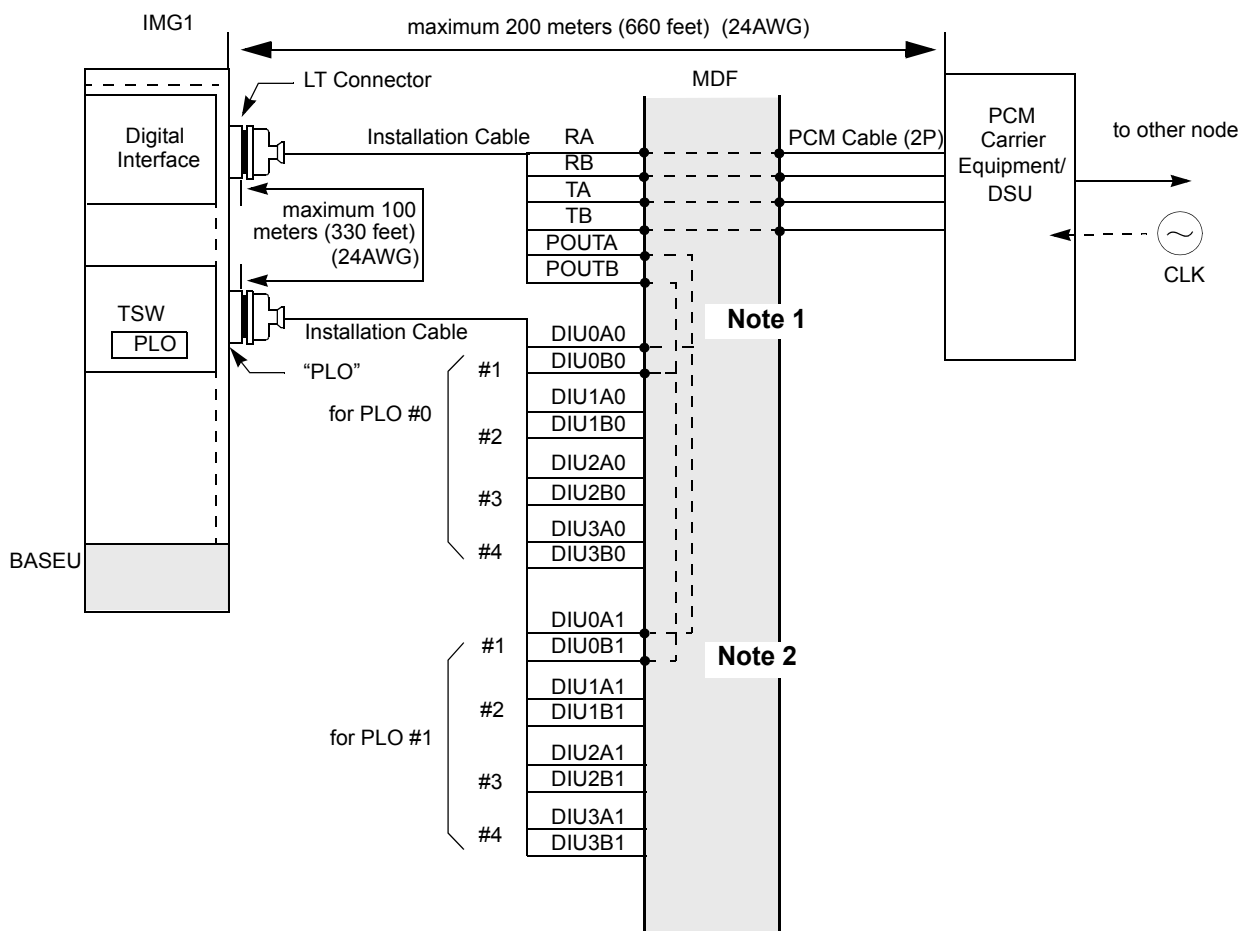
NAP-200-015
Sheet 31/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



Figure 015-24 Cable Connection Diagram for Distributing Clock from a Digital Interface (Single IMG Configuration)

• Cable Connection Diagram

Perform the following wirings at the MDF. The following connection diagram shows an example where the Digital Trunk POUT leads are used as the 1st clock distribution route.



Note 1: PLO has a maximum of four inputs. DIU1xx leads are used for the first clock distribution routes. Thus, DIU4xx leads are used for the fourth. The first input has the highest priority.

Note 2: This connection is required for a dual-TSW system.

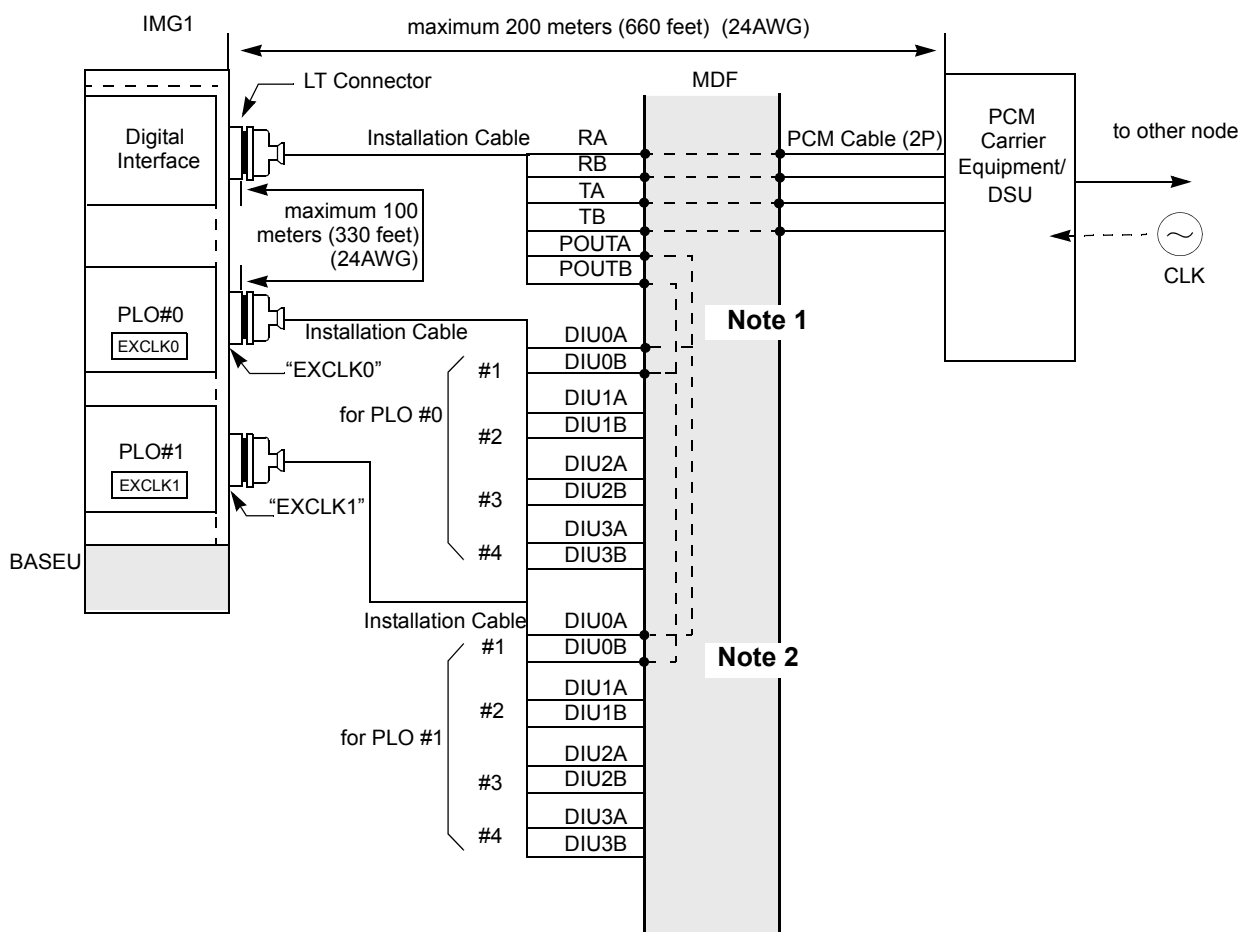
NAP-200-015
Sheet 32/32
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines



Figure 015-25 Cable Connection Diagram for Distributing Clock from a Digital Interface (Multiple IMG Configuration)

• Cable Connection Diagram

Perform the following wirings at the MDF. The following connection diagram shows an example where the Digital Trunk POUT leads are used as the 1st clock distribution route.



Note 1: PLO has a maximum of four inputs. DIU1xx leads are used for the first clock distribution routes. Thus, DIU4xx leads are used for the fourth. The first input has the highest priority.

Note 2: This connection is required for a dual-PLO system.

NAP-200-016
Sheet 1/44
Installation of the DESK CONSOLE and Cable Connection

This NAP explains the installation of the DESK CONSOLE and Cable Connection. Figure 016-1 shows the outer view of the DESK CONSOLE. Use the PA-CS33 (ATI) card as an interface card between the system and the DESK CONSOLE. The card can connect a maximum of two DESK CONSOLES.

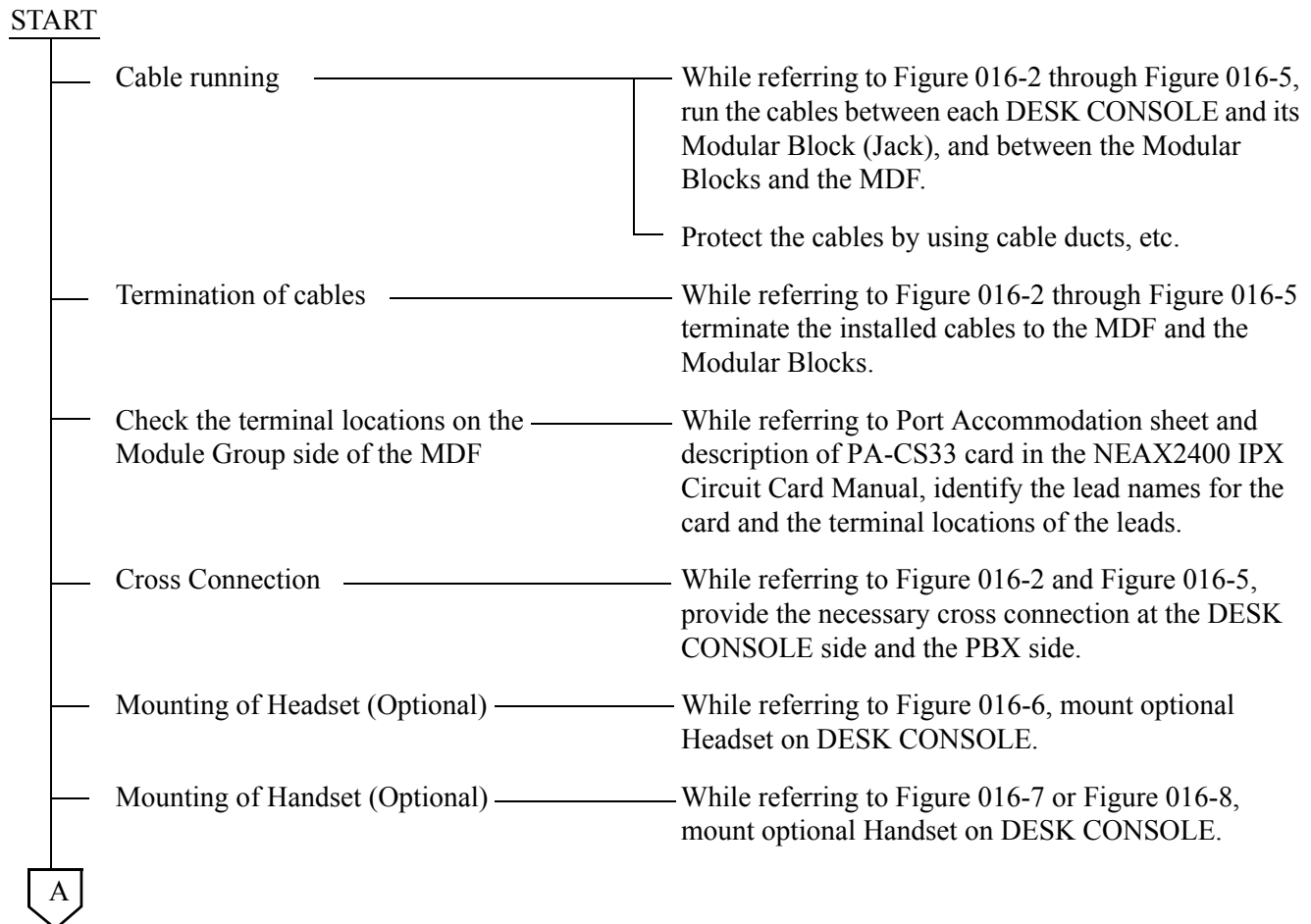
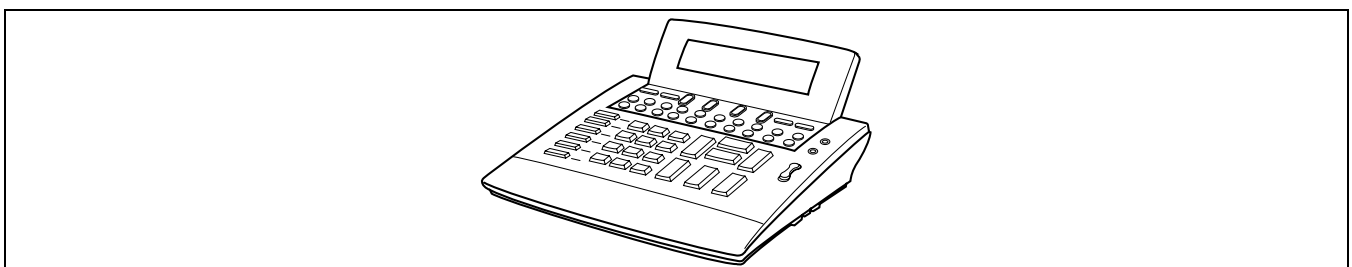


Figure 016-1 Outer View of Desk Console



NAP-200-016

Sheet 2/44

Installation of the DESK CONSOLE and Cable Connection

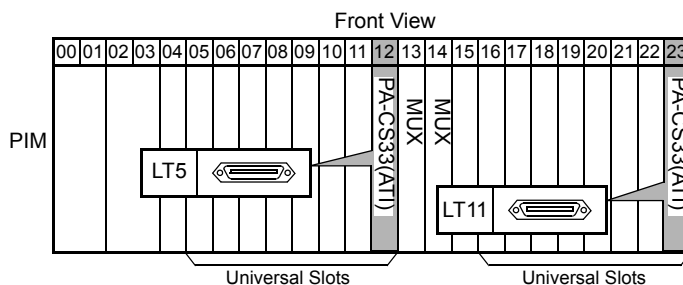


Figure 016-2 Cable Connection Diagram for Desk Console

To connect DESK CONSOLE(s), the PA-CS33 card is used as the interface card. The card may be mounted in slot No. 12 or in slot No. 23. The leads appear on LT5 and LT11 respectively. However, when replacing Attendant Console with DESK CONSOLE, the leads appear on the LT connector on the ATT TERM (See **Note** on the next page).

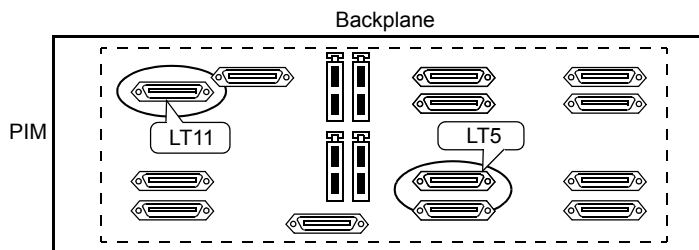
• PA-CS33 (ATI) mounting slots

PA-CS33 (ATI) card may be mounted in slots 12 and/or 23.



• LT cable connectors

Use LT5 connector when the PA-CS33 card is mounted in slot 12. When the card is mounted in slot 23, use LT11 connector.



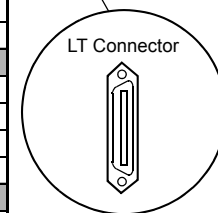
• LT cable Pin Assignment

Pins are assigned as follows for PA-CS33 card.

PA-CS33 Pin Assignment

PIN No.	LEAD NAME	PIN No.	LEAD NAME
26		1	
27		2	

	33		8	
For ADD-ON CONSOLE #0 →	34	BN4800	9	BN4801
	35		10	
For DESK CONSOLE #0 →	36	BN4820	11	BN4821
	37		12	
	38	TAS1B	13	TAS1A
For ADD-ON CONSOLE #1 →	39	BN4810	14	BN4811
	40	TAS0B	15	TAS0A
For DESK CONSOLE #1 →	41	BN4830	16	BN4831
For ADD-ON CONSOLE #0 →	42	B0	17	A0
	43		18	
For DESK CONSOLE #0 →	44	B2	19	A2
	45		20	
For ADD-ON CONSOLE #1 →	46	B1	21	A1
	47		22	
For DESK CONSOLE #1 →	48	B3	23	A3
	49		24	
	50		25	



NAP-200-016

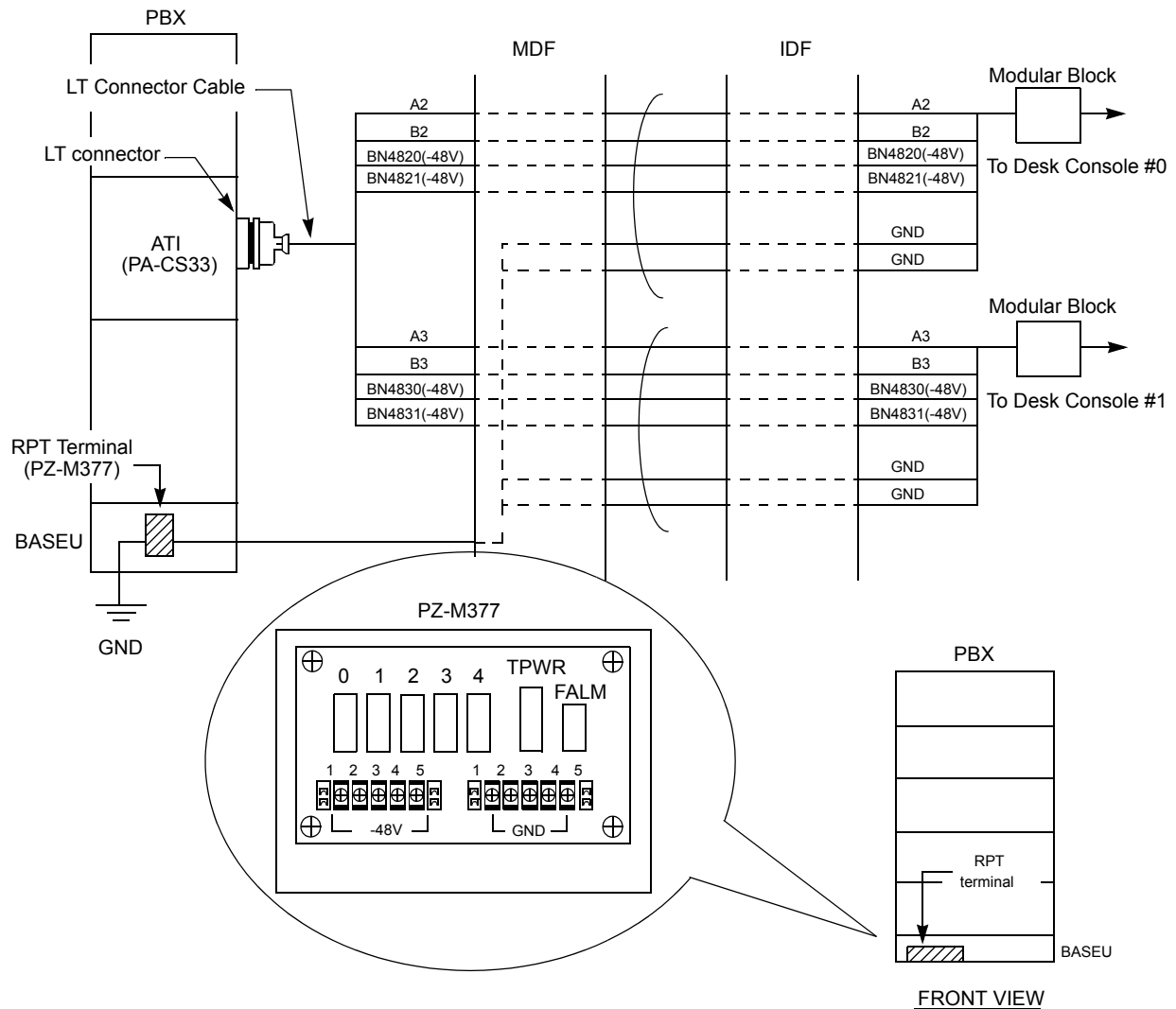
Sheet 3/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-2 Cable Connection Diagram for Desk Console (Continued)

• Cable Connection Diagram

Provide the following wirings at the MDF and IDF.



INSTALLATION PROCEDURE

NAP-200-016
Sheet 4/44
Installation of the DESK CONSOLE and Cable Connection

Note: *When replacing Attendant Console with DESK CONSOLE, follow the procedure below:*

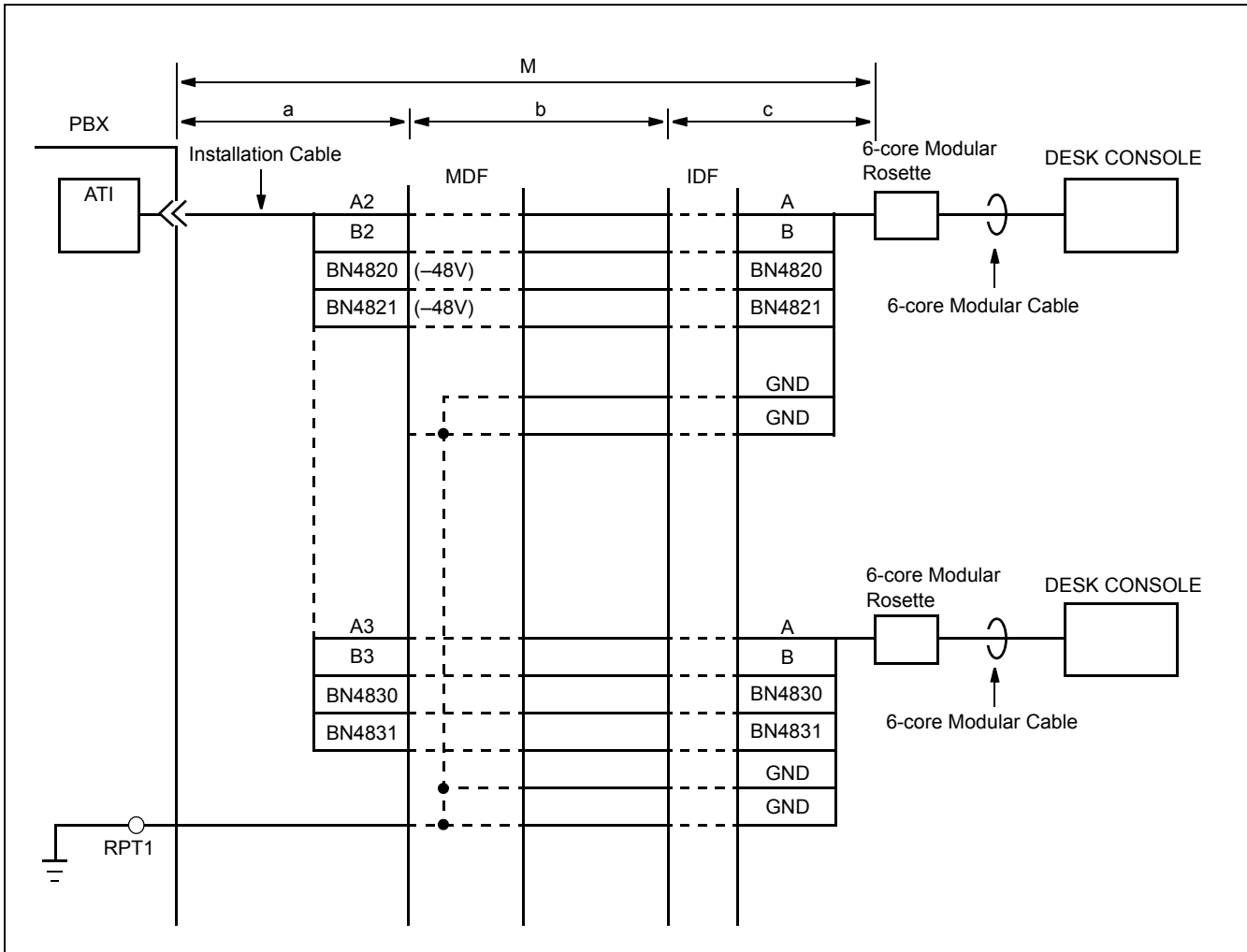
- 1 Turn OFF the PWR card in the PIM.*
- 2 Remove installation cables connected to ATT0, ATT1 and LT connectors on the ATT TERM.*
- 3 Remove installation cables connected to the following connectors:*
 - RLT connector on the ATT TERM*
 - AT10 and LT5, AT11 and LT11 connectors on the PIM*
- 4 Install DESK CONSOLE using the LT connector on the ATT TERM.*
- 5 Turn ON the PWR card in the PIM.*

NAP-200-016
Sheet 5/44
Installation of the DESK CONSOLE and Cable Connection

1. CABLE CONNECTION DIAGRAM

(a) When the power is supplied from the PBX

Figure 016-3 Cable Connection Diagram (When the Power Is Supplied from the PBX)



The maximum distance between the AT1 circuit card and DESK CONSOLE is as shown below.

Source	0.5 ϕ Cable	0.65 ϕ Cable
PBX	350 m (1,148 ft.)	500 m (1,640 ft.)

When exceeding the distance above, calculate the distance referring to the next page.

NAP-200-016
Sheet 6/44
Installation of the DESK CONSOLE and Cable Connection

2. CALCULATION OF THE DISTANCE BETWEEN THE ATI CIRCUIT CARD AND MODULAR ROSETTE

The distance M in Figure 016-3 is determined by the Direct-Current resistance of power supply cables (–48V and GND). Note that the maximum resistance is 26 Ω as shown in the following formula:

$M = a + b + c \leq 26 \, \Omega$

M: Maximum Direct–Current resistance between the ATI circuit card and Modular Rosette

- a: Direct-Current resistance of power supply cables (–48V and GND) in the range of A
- b: Direct-Current resistance of power supply cables (–48V and GND) in the range of B
- c: Direct-Current resistance of power supply cables (–48V and GND) in the range of C

Example of Calculation

a, b, and c are calculated by the following formula:

Note: *You are not required to use cable lengths in meters in the following formula. You may use cable lengths in feet, yards, or whatever unit you prefer. However, the units of resistance you use must match the units of length you use. For example, if you use distance in feet, you must also use DC resistance per foot.*

$$a = \frac{\overset{\text{Resistance of } -48\text{V cables}}{u \, (\Omega/\text{m}) \times x \, (\text{m})}}{\underset{\text{Number of } -48\text{V cables}}{2}} + \frac{\overset{\text{Resistance of GND cables}}{u \, (\Omega/\text{m}) \times x \, (\text{m})}}{\underset{\text{Number of GND cable}}{1}}$$

$$b = \frac{\overset{\text{Resistance of } -48\text{V cables}}{v \, (\Omega/\text{m}) \times y \, (\text{m})}}{\underset{\text{Number of } -48\text{V cables}}{2}} + \frac{\overset{\text{Resistance of GND cables}}{v \, (\Omega/\text{m}) \times y \, (\text{m})}}{\underset{\text{Number of GND cables}}{2}}$$

$$c = \frac{\overset{\text{Resistance of } -48\text{V cables}}{w \, (\Omega/\text{m}) \times z \, (\text{m})}}{\underset{\text{Number of } -48\text{V cables}}{2}} + \frac{\overset{\text{Resistance of GND cables}}{w \, (\Omega/\text{m}) \times z \, (\text{m})}}{\underset{\text{Number of GND cables}}{2}}$$

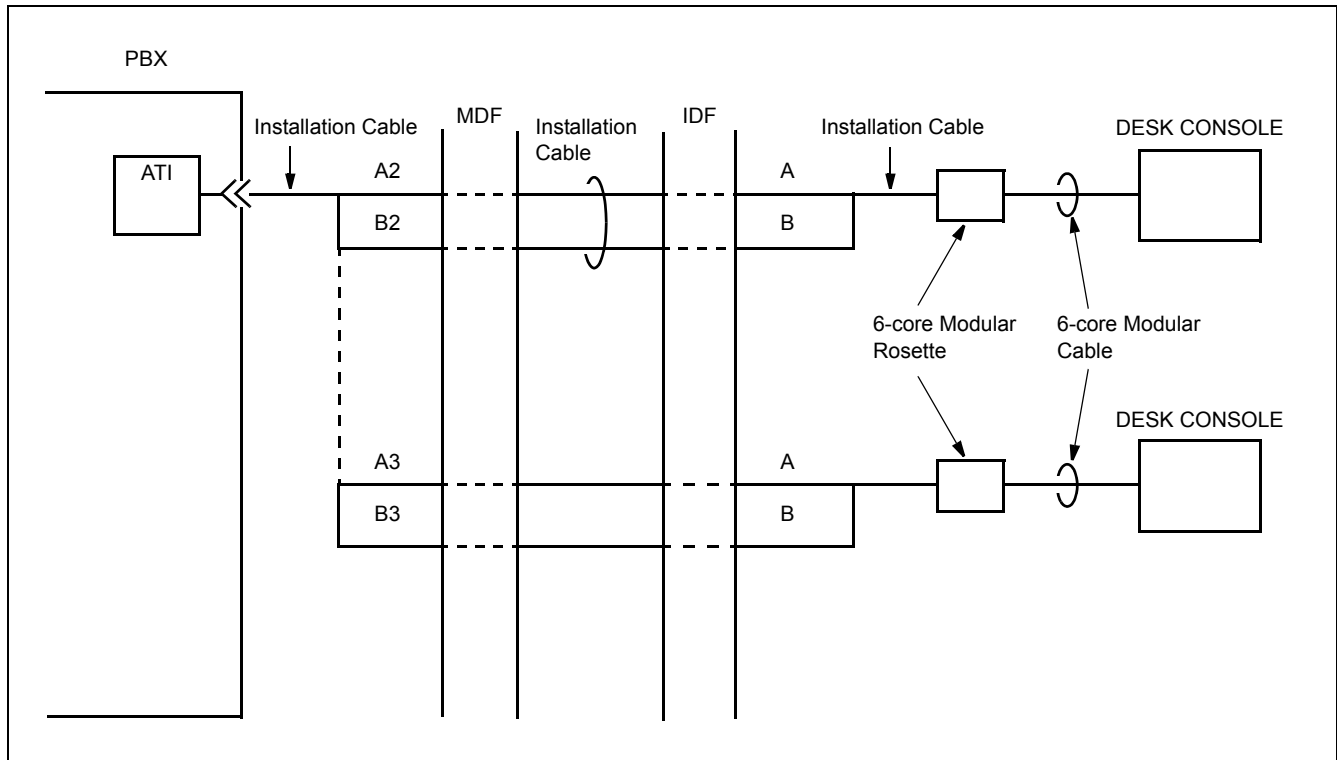
- u: Direct-Current resistance per meter in the range of A (Ω/m)
- v: Direct-Current resistance per meter in the range of B (Ω/m)
- w: Direct-Current resistance per meter in the range of C (Ω/m)
- x: Cable length (m) in the range of A
- y: Cable length (m) in the range of B
- z: Cable length (m) in the range of C

NAP-200-016
Sheet 7/44
Installation of the DESK CONSOLE and Cable Connection

(b) When using Local Power Supply **Note**

Note: When using local power supply, DESK CONSOLE cannot be used in case of power failure.

Figure 016-4 Cable Connection Diagram (When Using Local Power Supply)

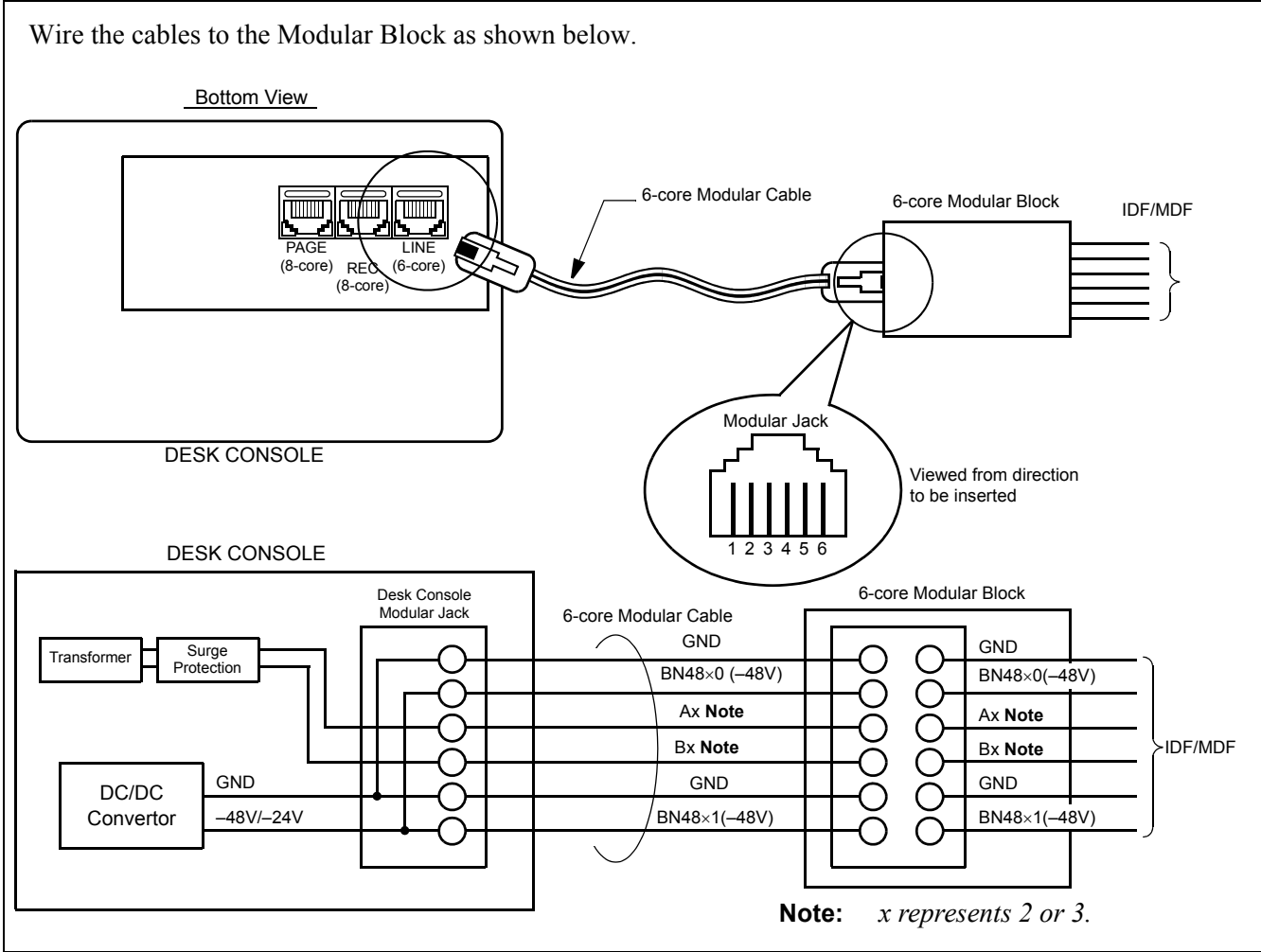


The maximum distance between the ATI circuit card and DESK CONSOLE is as shown below.

Source	0.5 ϕ Cable	0.65 ϕ Cable
Local Power Supply	1,200 m (3,937 ft.)	1,500 m (4,921 ft.)

NAP-200-016
Sheet 8/44
Installation of the DESK CONSOLE and Cable Connection

Figure 016-5 Cable Connection Diagram for DESK CONSOLE Modular Block

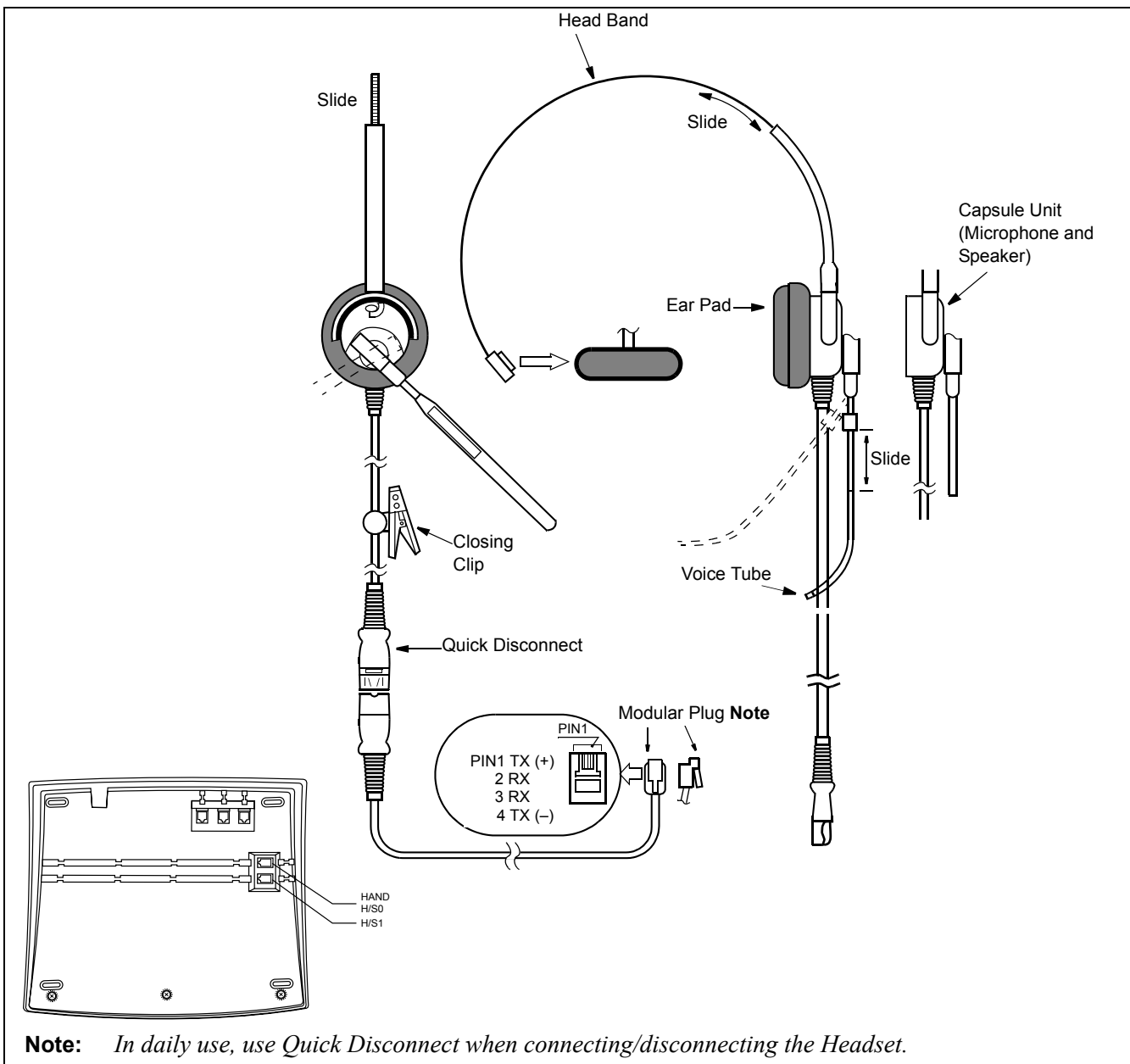


NAP-200-016
Sheet 9/44
Installation of the DESK CONSOLE and Cable Connection

3. MOUNTING OF HEADSET (OPTIONAL)

The Headset cable connects to one of the modular jacks (HAND H/S 0 or H/S 1) on the bottom of DESK CONSOLE.

Figure 016-6 Headset



INSTALLATION PROCEDURE

NAP-200-016

Sheet 10/44

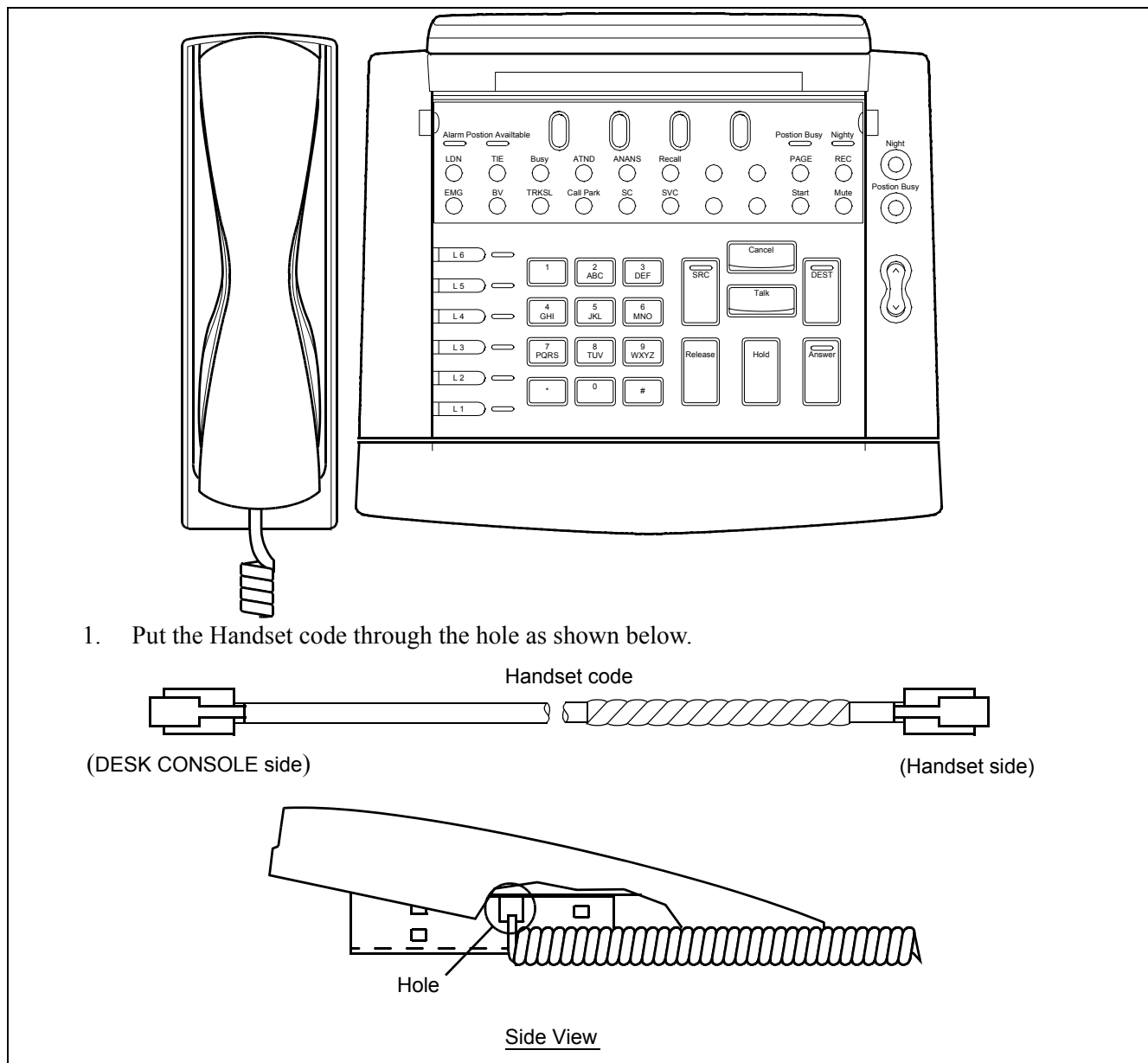
Installation of the DESK CONSOLE and
Cable Connection

4. MOUNTING OF HANDSET (OPTIONAL)

The Handset cable connects to the modular jack (HAND H/S 0) on the bottom of DESK CONSOLE.

- (a) When mounting at the left side of DESK CONSOLE (Standard)

Figure 016-7 Mounting of Handset (Left Side of DESK CONSOLE)

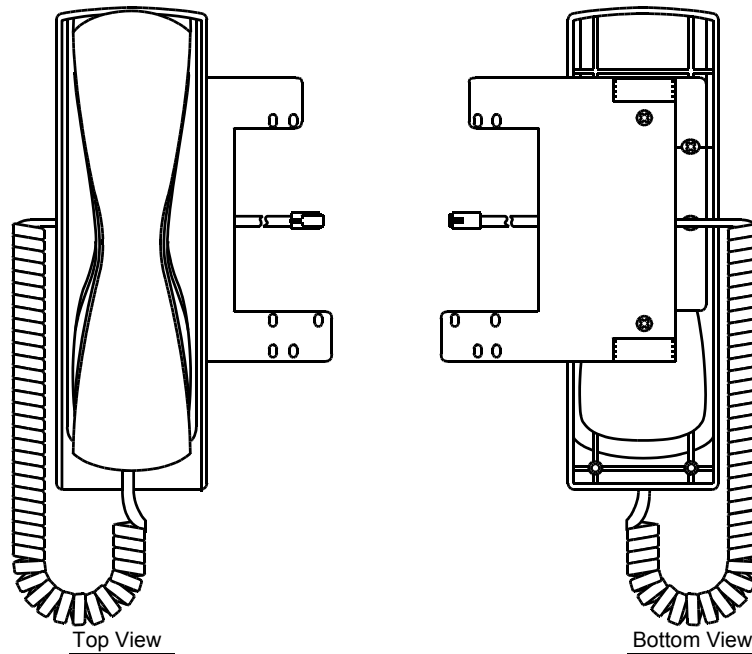


NAP-200-016

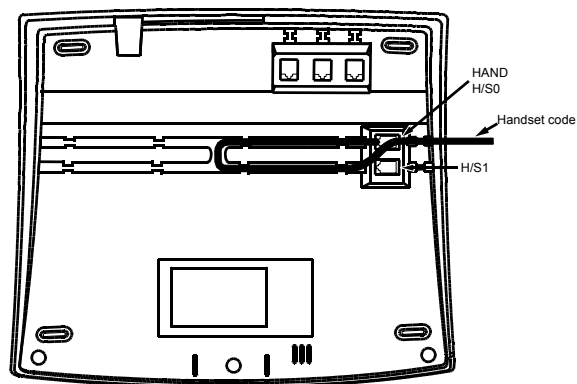
Sheet 11/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-7 Mounting of Handset (Left Side of DESK CONSOLE) (Continued)



2. Connect the Handset code to HAND H/S0 connector as shown below (H/S1 is not used for the Handset).



Bottom View of DESK CONSOLE

INSTALLATION PROCEDURE

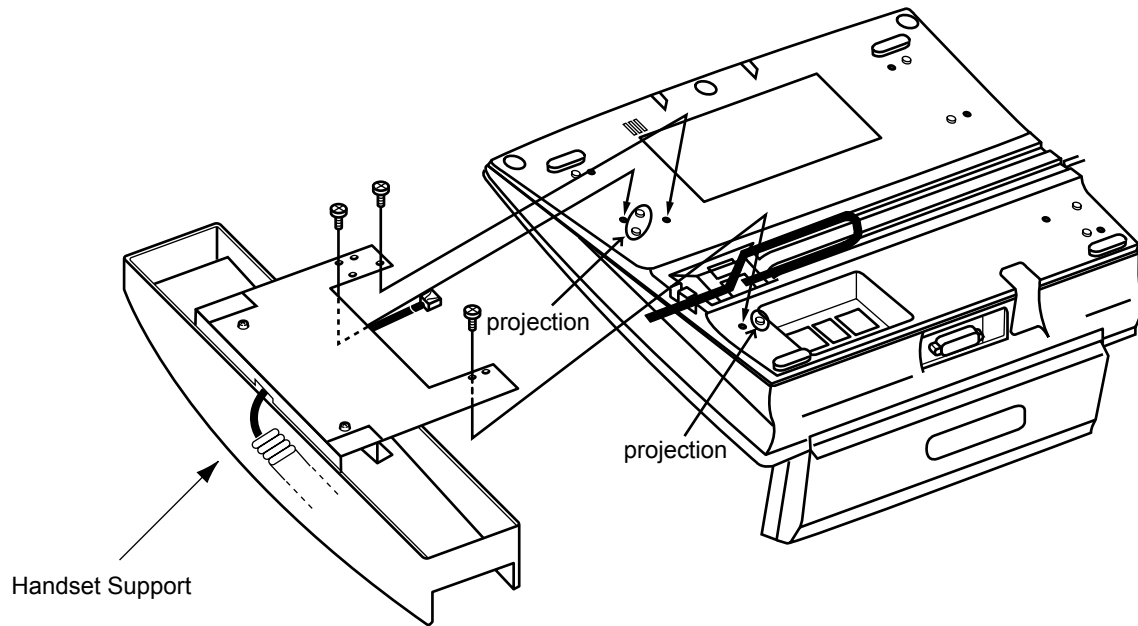
NAP-200-016

Sheet 12/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-7 Mounting of Handset (Left Side of DESK CONSOLE) (Continued)

Mount the Handset Support to DESK CONSOLE with 3 screws as shown below.



NAP-200-016

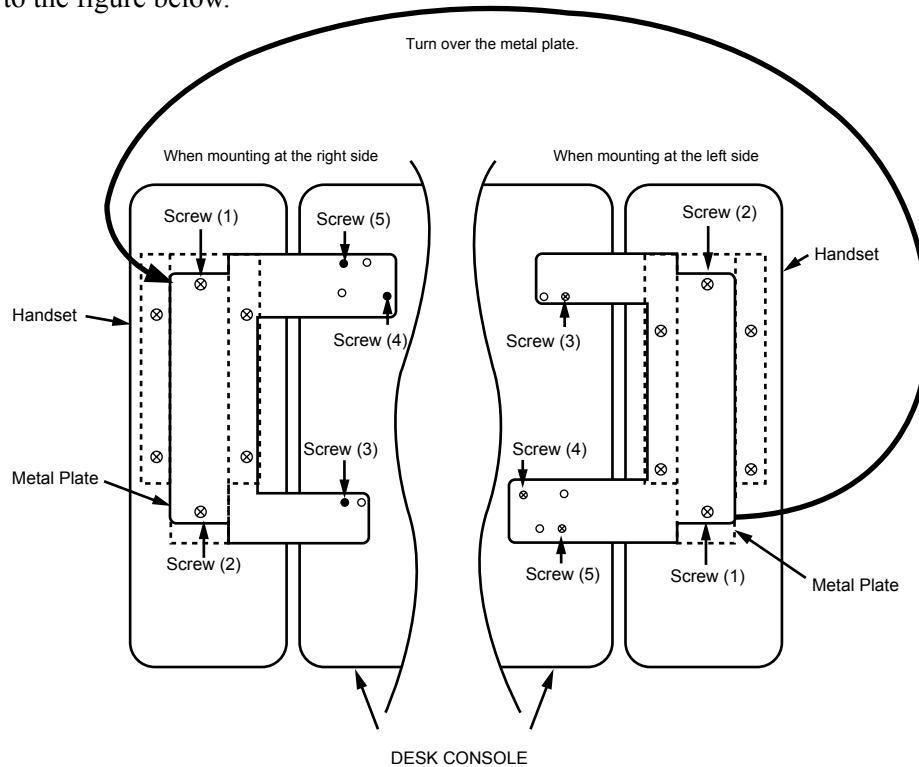
Sheet 13/44

Installation of the DESK CONSOLE and
Cable Connection

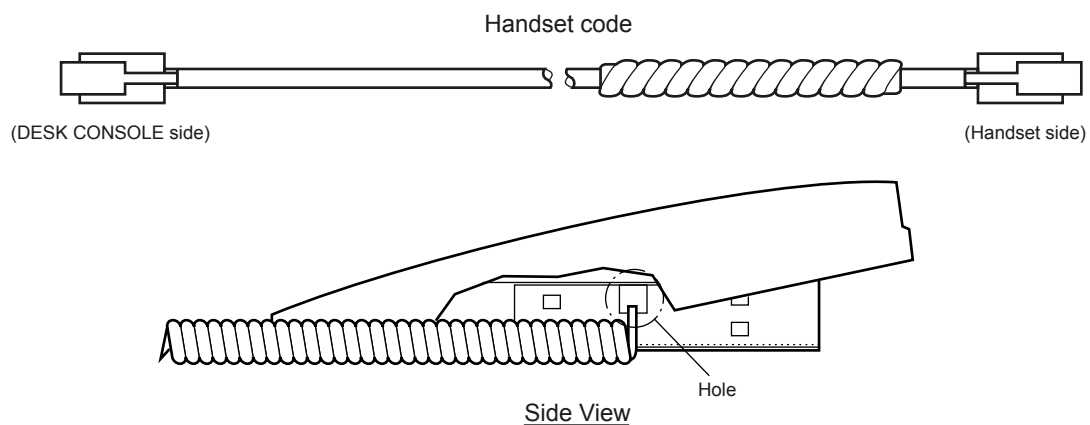
(b) When mounting at the right side of DESK CONSOLE

Figure 016-8 Mounting of Handset (Right Side of DESK CONSOLE)

1. Remove the metal plate from the Handset, turn it over, and mount it to the Handset again.
Refer to the figure below.



2. Put the Handset code through the hole as shown below.



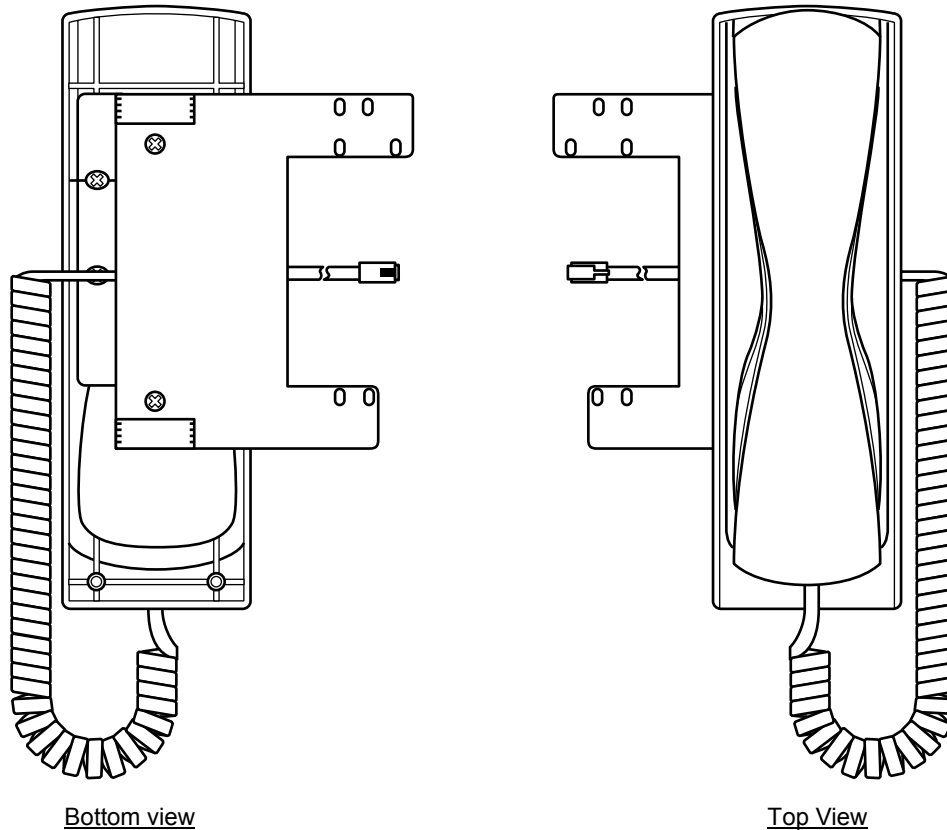
INSTALLATION PROCEDURE

NAP-200-016

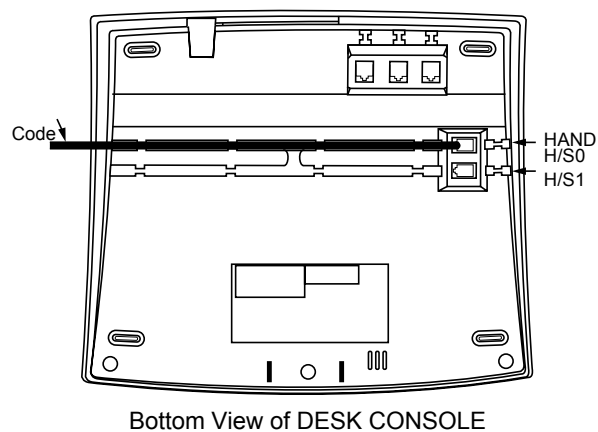
Sheet 14/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-8 Mounting of Handset (Right Side of DESK CONSOLE) (Continued)



3. Connect the Handset code to HAND H/S0 connector as shown below (H/S1 is not used for the Handset).



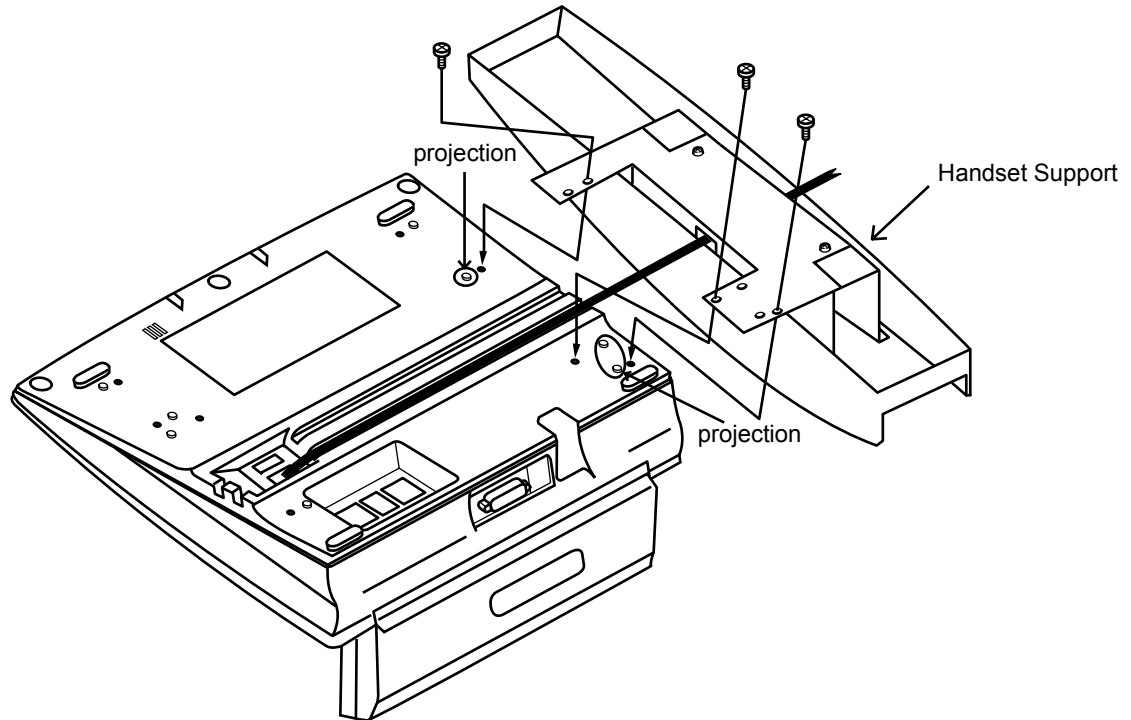
NAP-200-016

Sheet 15/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-8 Mounting of Handset (Right Side of DESK CONSOLE) (Continued)

Mount the Handset Support to DESK CONSOLE with 3 screws as shown below.



INSTALLATION PROCEDURE

NAP-200-016

Sheet 16/44

Installation of the DESK CONSOLE and
Cable Connection

5. CONNECTION OF RECORDING EQUIPMENT

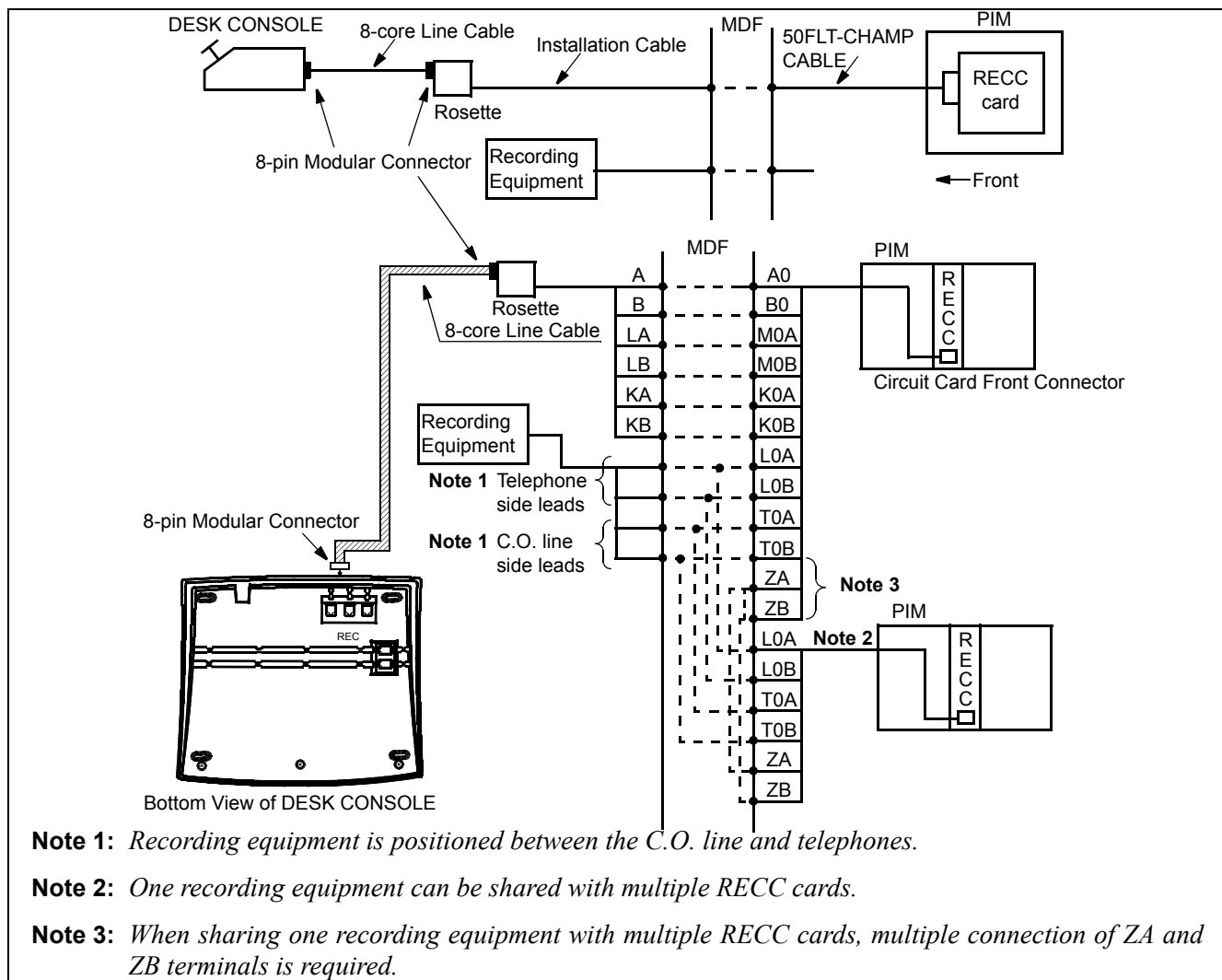
The following are required for using recording function:

- The RECC circuit card
- Recording Equipment
- 8-core Line Cable
- Rosette

An RECC card (PA-M87) connects DESK CONSOLES and recording equipment in the following combinations:

- Six DESK CONSOLES and one recording equipment × 1 set
- Three DESK CONSOLES and one recording equipment × 2 set

Figure 016-9 RECC Card Cable Connection Diagram

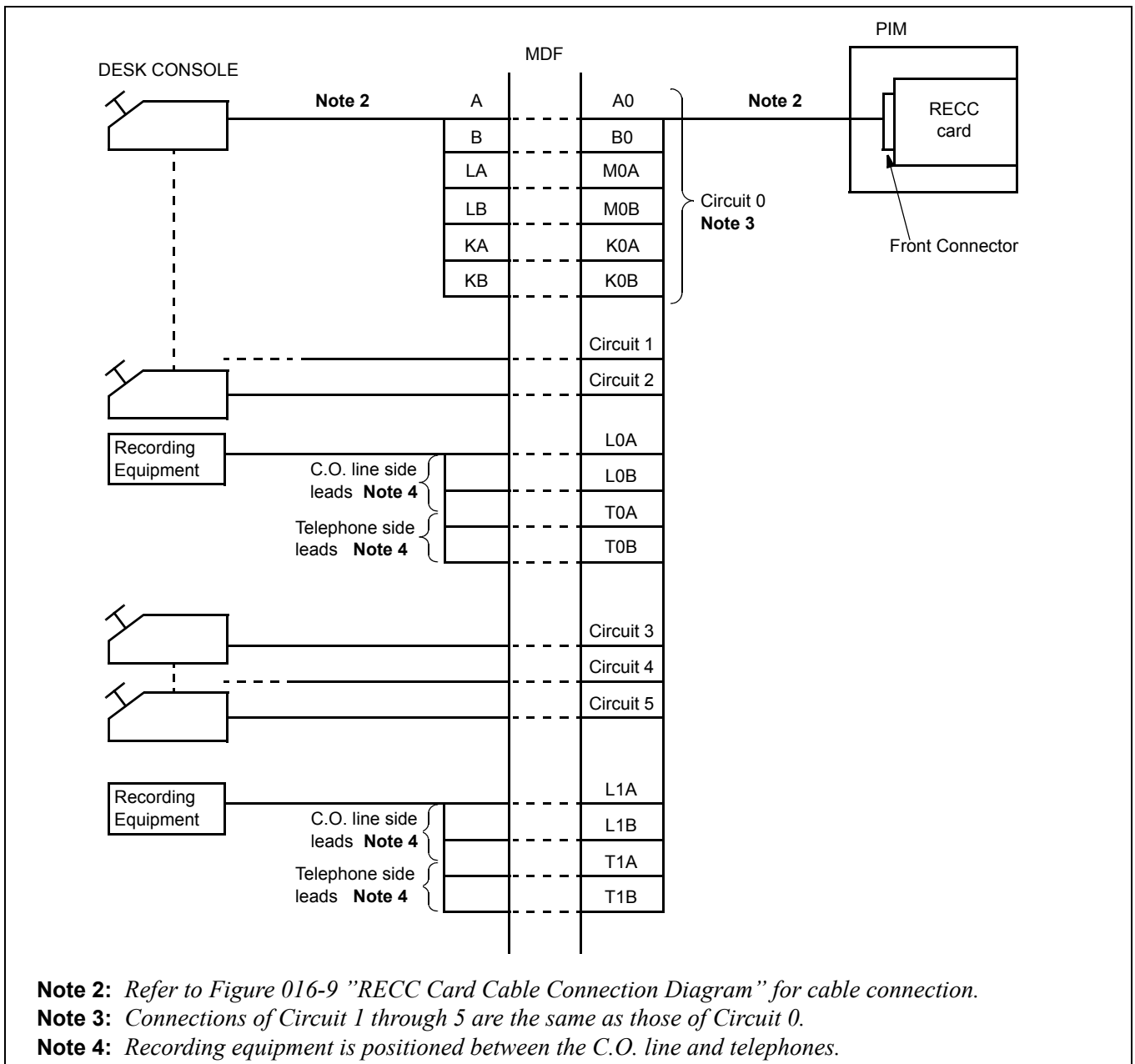


NAP-200-016
Sheet 17/44
Installation of the DESK CONSOLE and Cable Connection

(a) When using three DESK CONSOLES and one recorder **Note 1**

Note 1: Switch settings of SW10, SW12 and SW13 on the PA-M87 card are required. For switch setting and connector lead accommodation, refer to the NEAX2400 IPX Circuit Card Manual.

Figure 016-10 Three DESK CONSOLES and One Recording Equipment



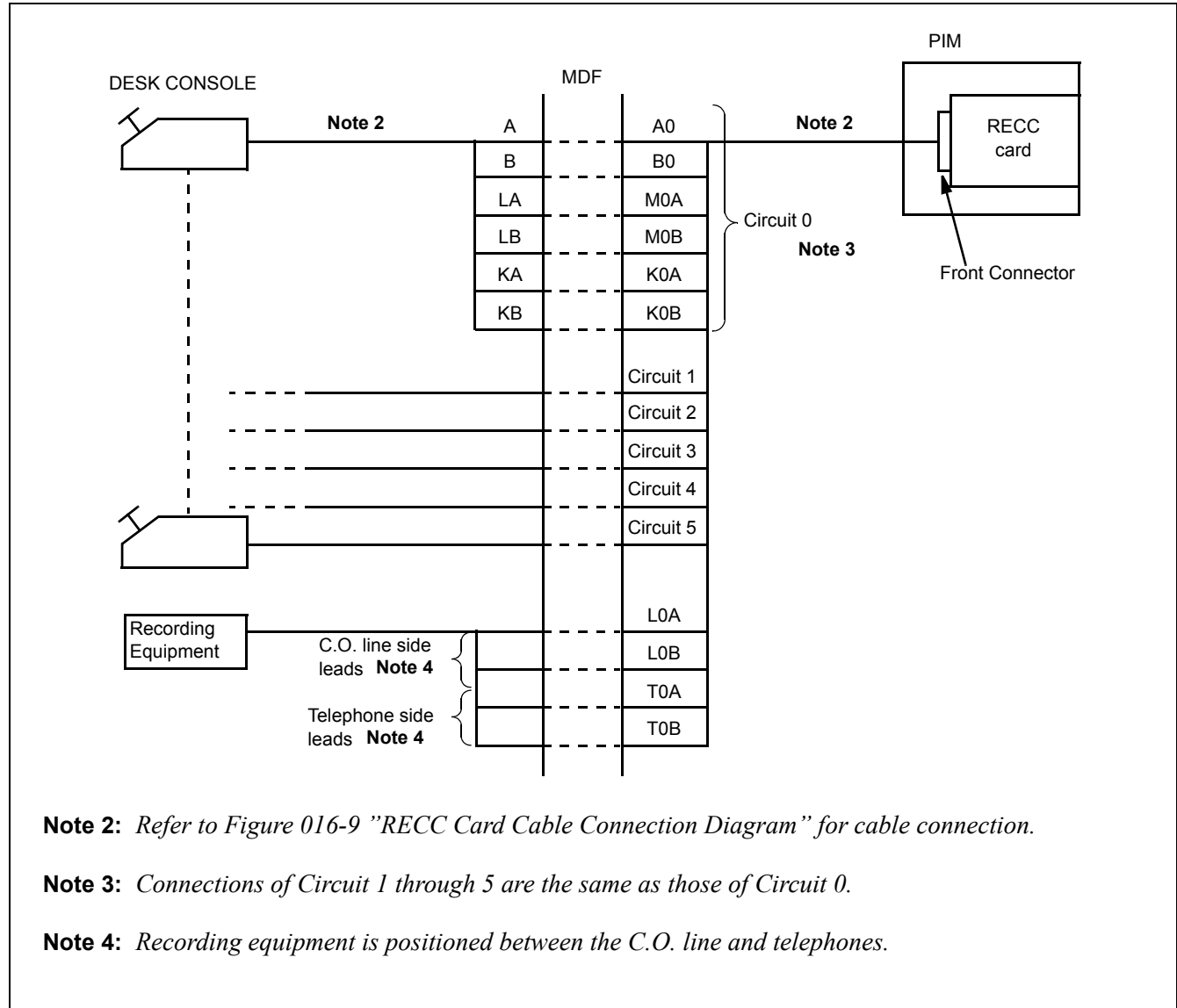
INSTALLATION PROCEDURE

NAP-200-016
Sheet 18/44
Installation of the DESK CONSOLE and Cable Connection

(b) When using six DESK CONSOLES and one recording equipment **Note 1**

Note 1: Switch settings of SW10, SW12 and SW13 on the PA-M87 card are required. For switch setting and connector lead accommodation, refer to the NEAX2400 IPX Circuit Card Manual.

Figure 016-11 Six DESK CONSOLES and One Recording Equipment



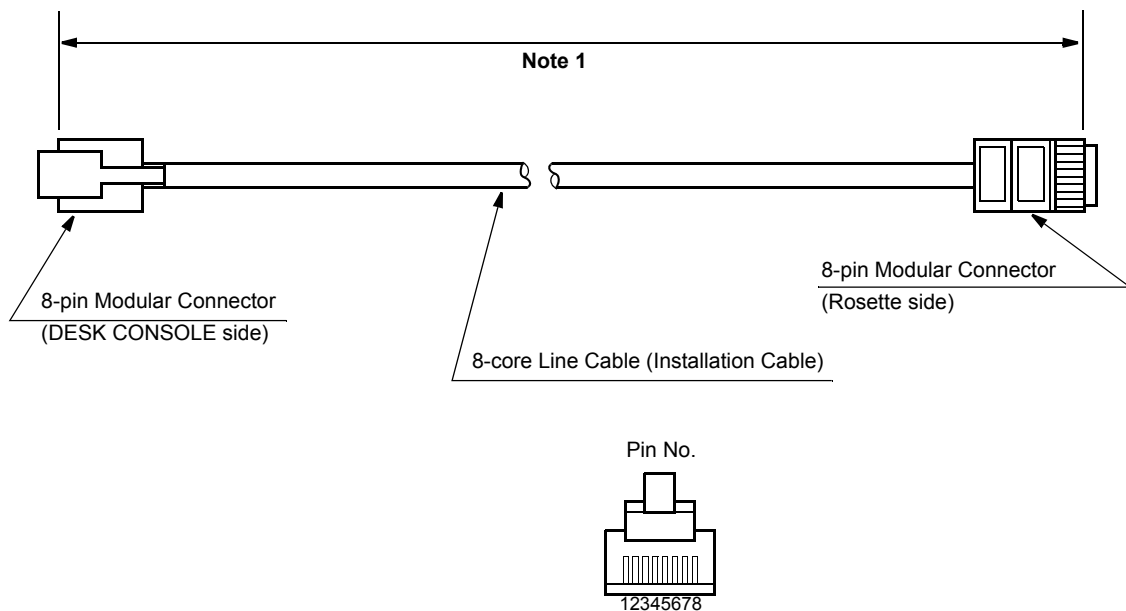
NAP-200-016

Sheet 19/44

Installation of the DESK CONSOLE and
Cable Connection

6. 8-CORE LINE CABLE (INSTALLATION CABLE)

Figure 016-12 8-core Line Cable



Pin No.	LEAD NAME	MEANING
1	A	Speech
2	B	Speech
3	—	Not used
4	—	Not used
5	KA	Recording Start Signal (Relay Contact)
6	KB	Recording Start Signal (Relay Contact)
7	LA (Note 2)	Recording Lamp Signal (+)
8	LB (Note 2)	Recording Lamp Signal (—)

Note 1: Cut the cable in proper length. Attach the modular connector to both sides of the 8-core line cable using installation tool.

Note 2: Be sure to check the polarity of pin numbers 7 (LA) (+) and 8 (LB) (—).

NAP-200-016

Sheet 20/44

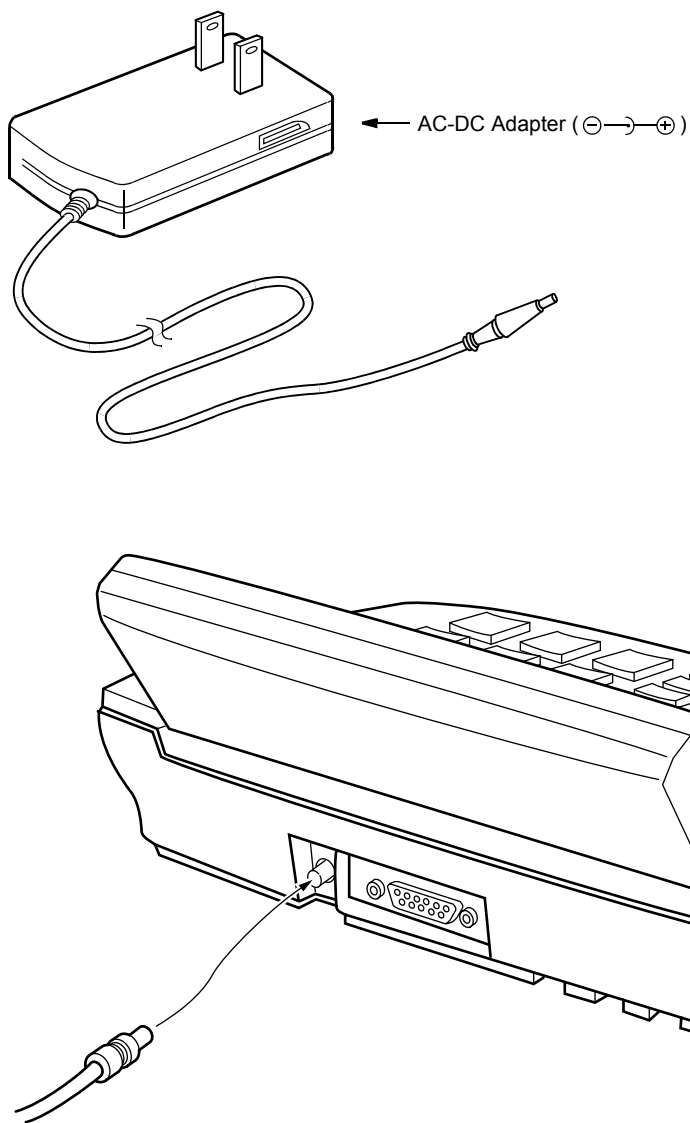
Installation of the DESK CONSOLE and
Cable Connection

7. CONNECTION OF AC-DC ADAPTER (OPTIONAL)

The AC-DC adapter is required when the power supply from the distant PBX is not available.

Figure 016-13 Connection of AC-DC Adapter

The connector for the AC-DC adapter is on the rear side of DESK CONSOLE.



NAP-200-016

Sheet 21/44

Installation of the DESK CONSOLE and
Cable Connection

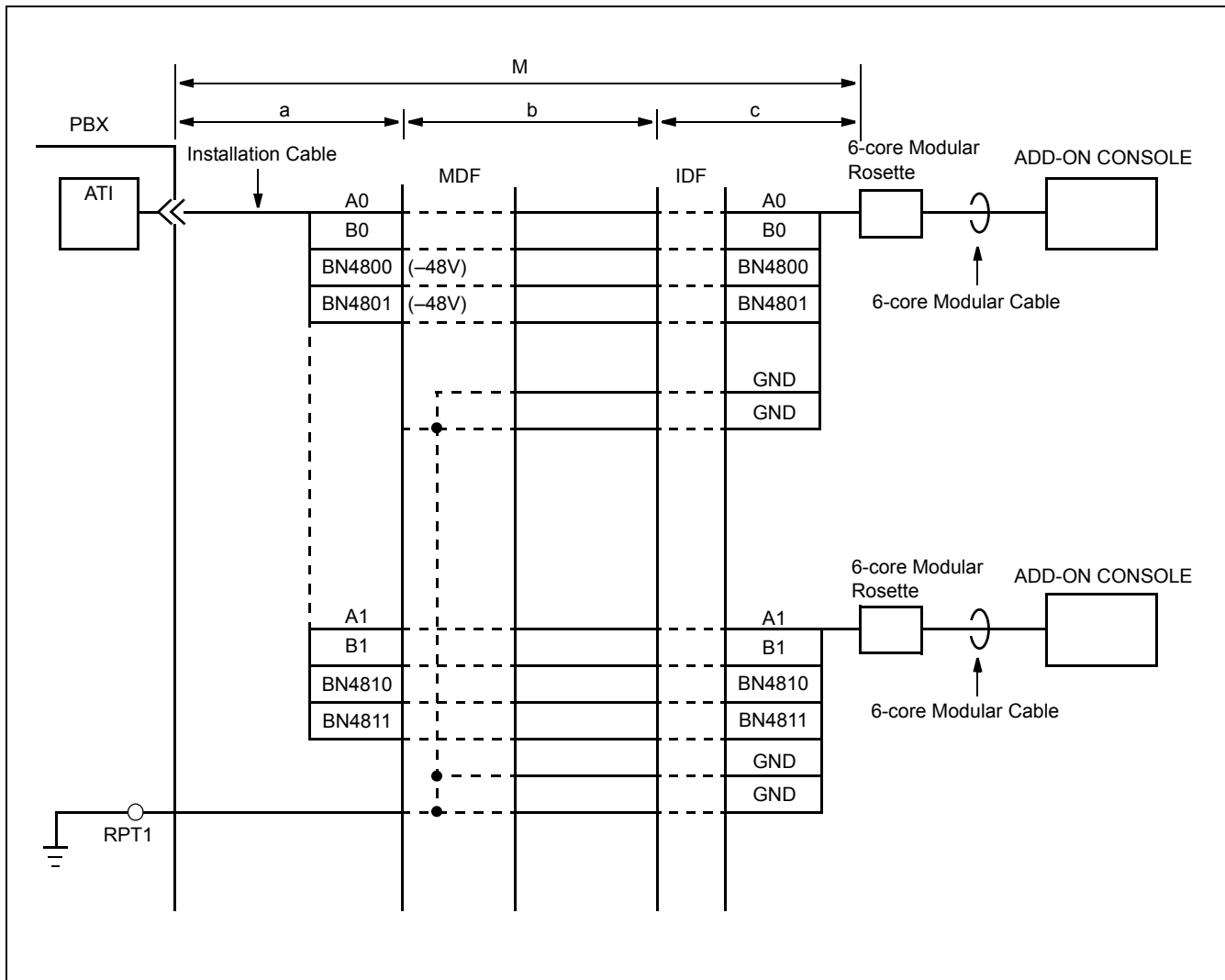
8. MOUNTING OF ADD-ON CONSOLE (FOR HOTEL SYSTEM)

ADD-ON CONSOLE is used in the Hotel System.

1. Cable Connection Diagram

(a) Cable Connection Diagram of Add-On Console (When the power is supplied from the PBX)

Figure 016-14 Add-On Console Cable Connection Diagram (When the Power Is Supplied from the PBX)



INSTALLATION PROCEDURE

NAP-200-016

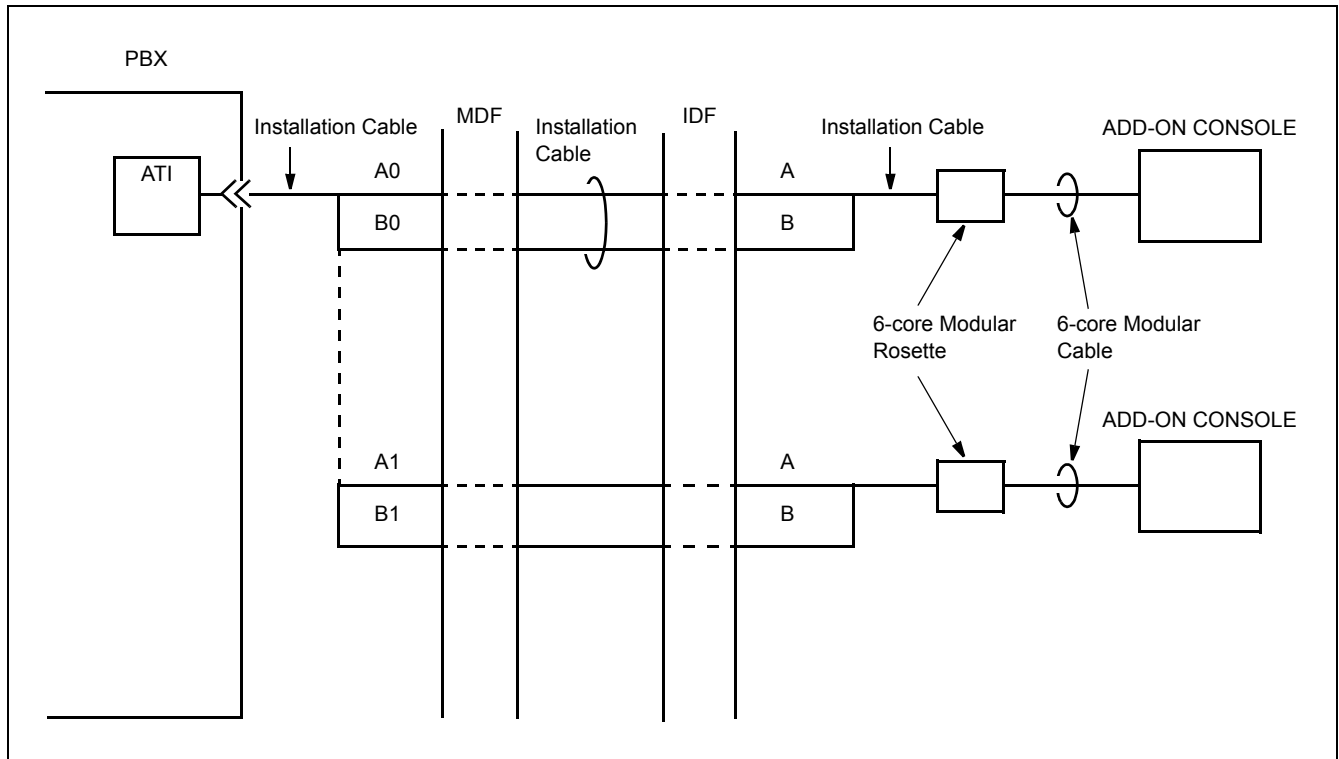
Sheet 22/44

Installation of the DESK CONSOLE and
Cable Connection

(b) Cable Connection Diagram of Add-On Console (When using Local Power Supply) **Note**

Note: When using local power supply, DESK CONSOLE cannot be used in case of power failure.

Figure 016-15 Add-On Console Cable Connection Diagram (When Using Local Power Supply)



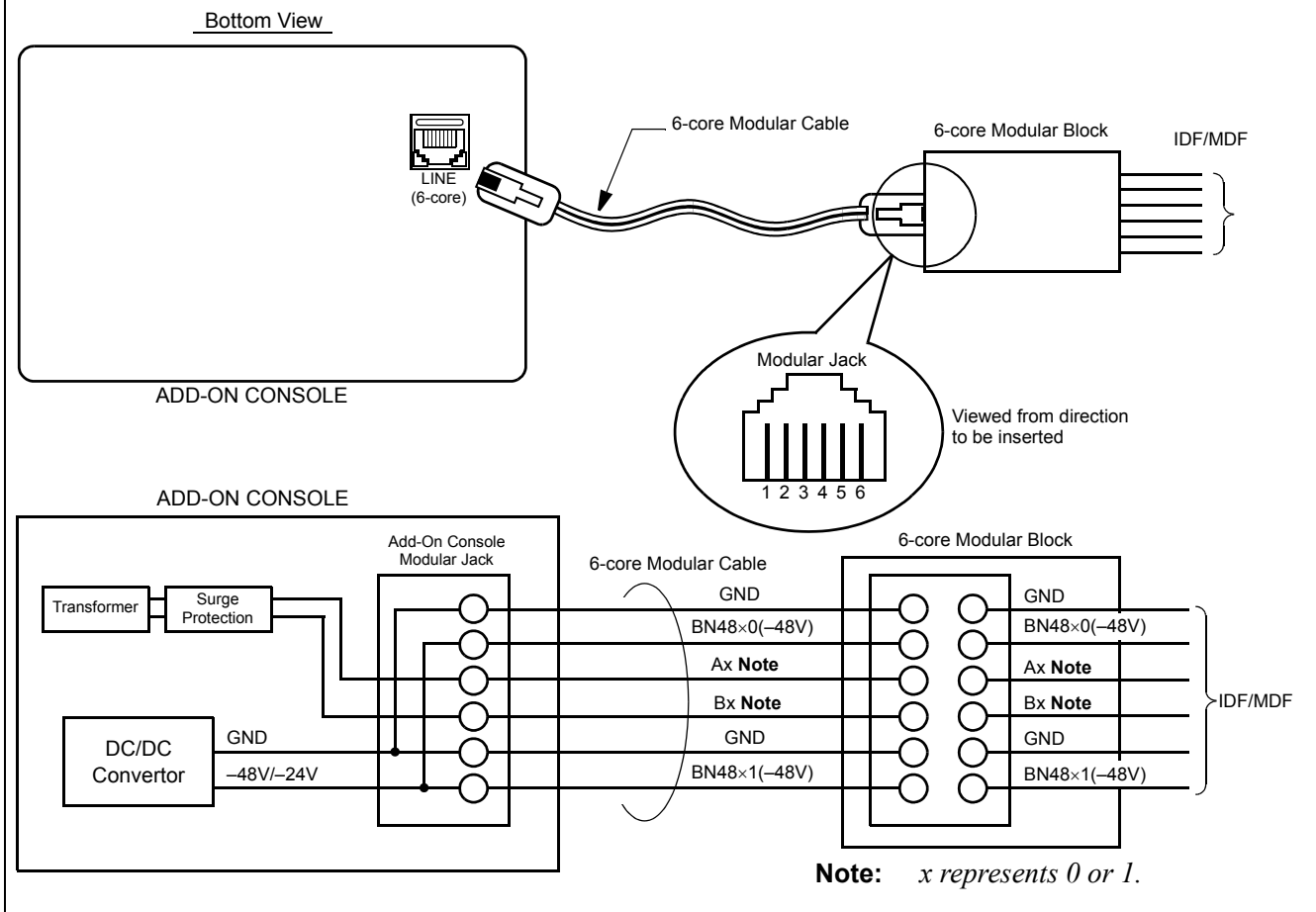
NAP-200-016

Sheet 23/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-16 Cable Connection Diagram for Add-On Console Modular Block

Wire the cables to the Modular Block as shown below.

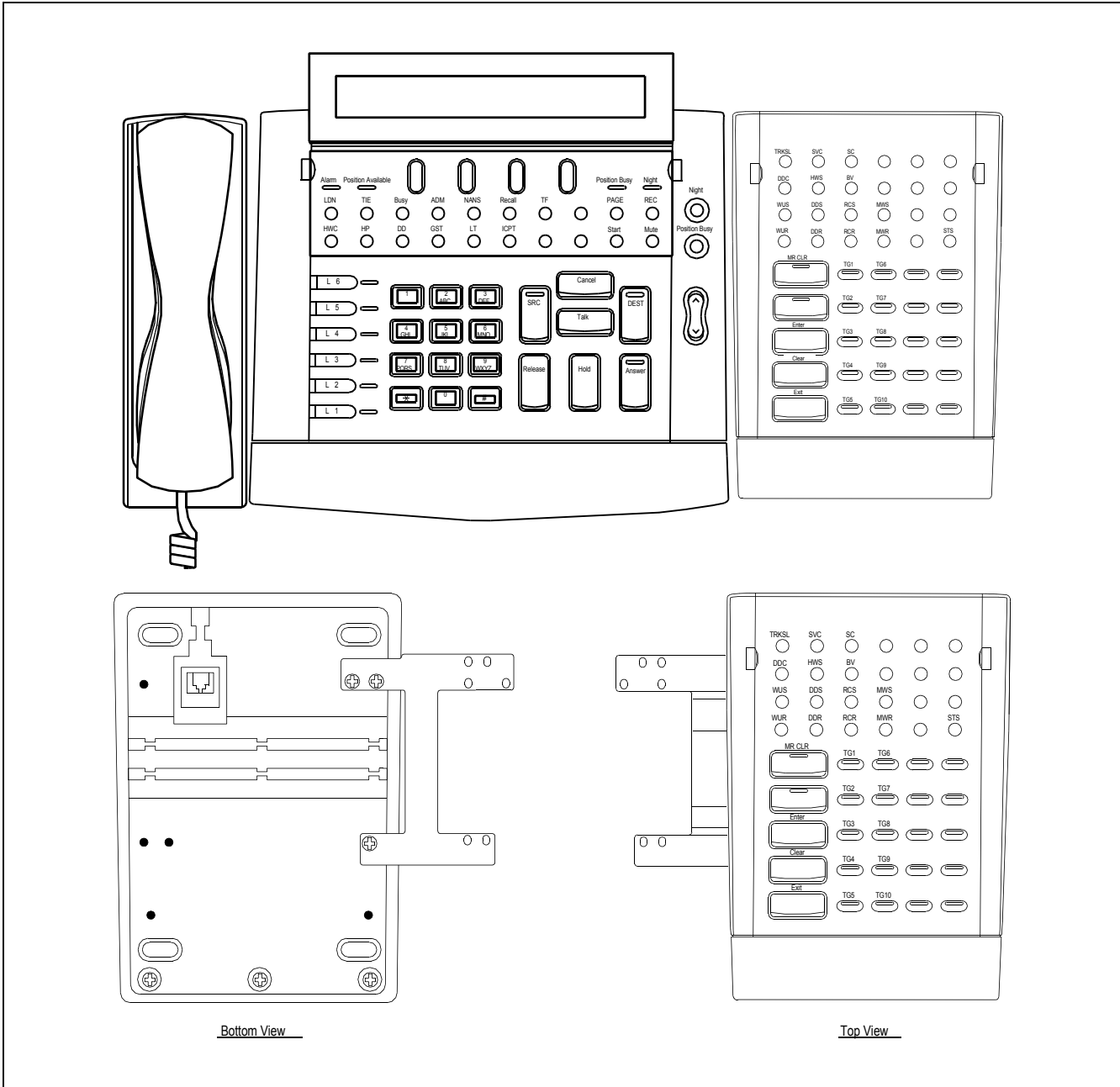


NAP-200-016
Sheet 24/44
Installation of the DESK CONSOLE and Cable Connection

9. MOUNTING OF ADD-ON CONSOLE

(a) When mounting at the right side of DESK CONSOLE

Figure 016-17 Mounting of Add-On Console (Right Side of DESK CONSOLE)



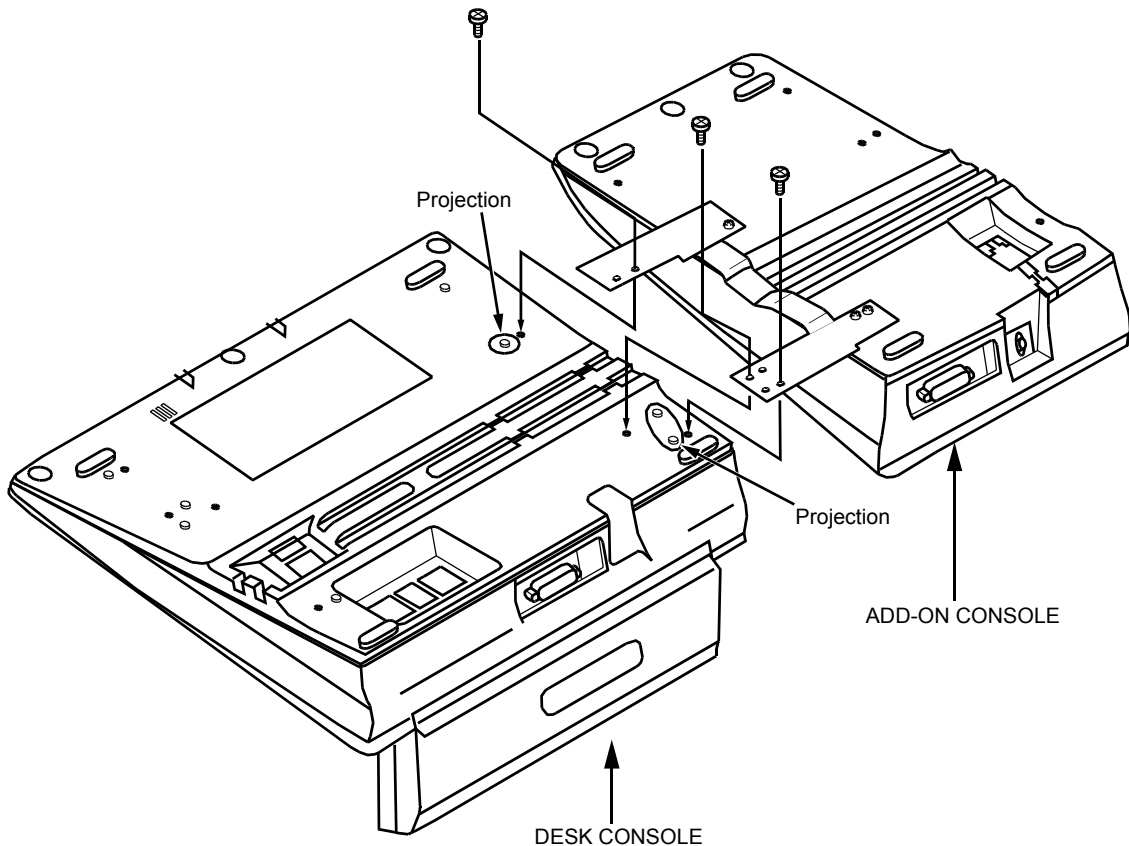
NAP-200-016

Sheet 25/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-17 Mounting of Add-On Console (Right Side of DESK CONSOLE) (Continued)

Mount the ADD-ON CONSOLE to DESK CONSOLE with 3 screws as shown below.



INSTALLATION PROCEDURE

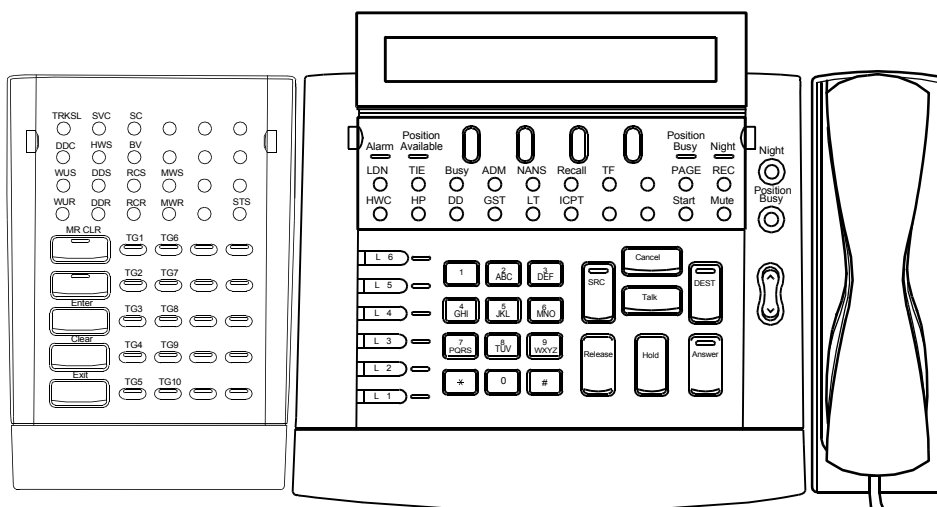
NAP-200-016

Sheet 26/44

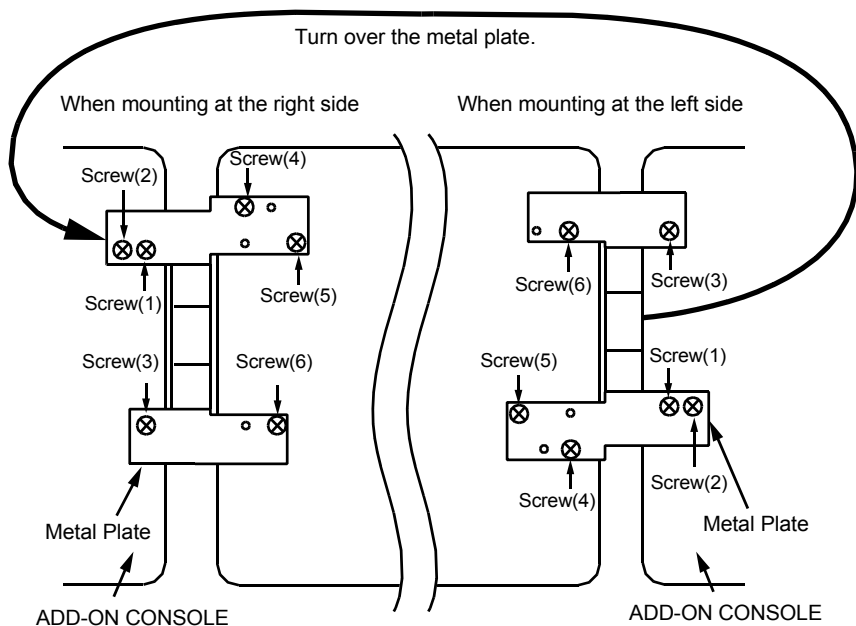
Installation of the DESK CONSOLE and
Cable Connection

(b) When mounting at the left side of DESK CONSOLE

Figure 016-18 Mounting of Add-On Console (Left Side of DESK CONSOLE)



1. Remove the metal plate from the ADD-ON CONSOLE, turn it over, and mount it to the ADD-ON CONSOLE again. Refer to the figure below.

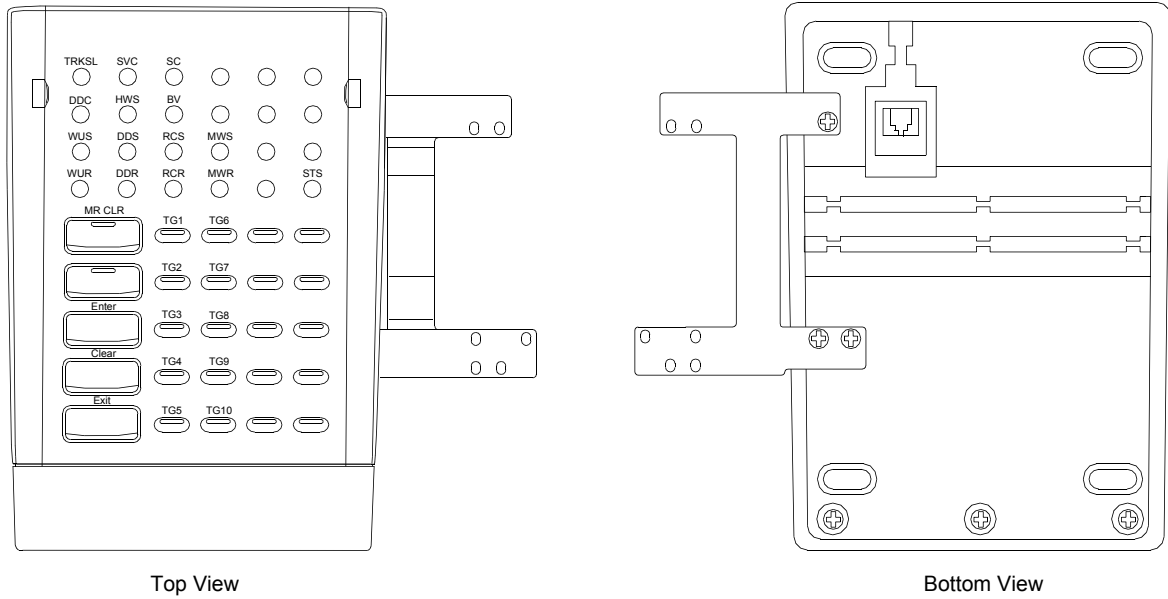


NAP-200-016

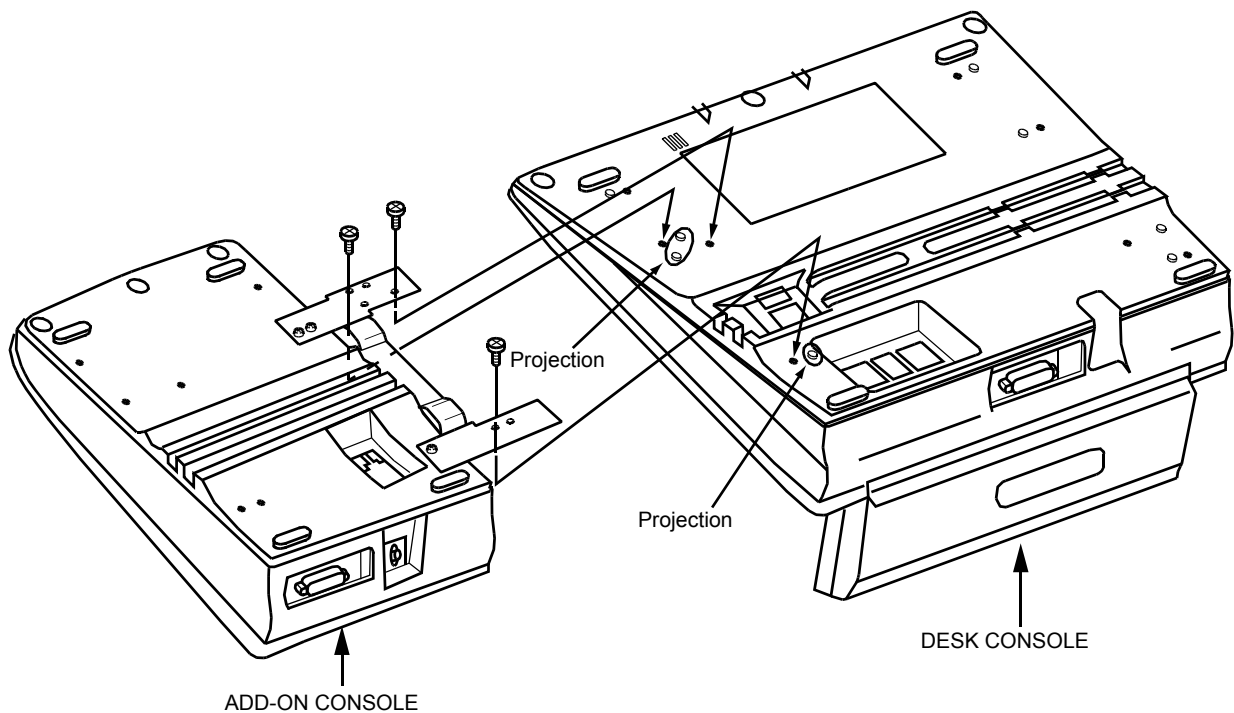
Sheet 27/44

Installation of the DESK CONSOLE and
Cable Connection

Figure 016-18 Mounting of Add-On Console (Left Side of DESK CONSOLE) (Continued)



2. Mount the ADD-ON CONSOLE to DESK CONSOLE with 3 screws as shown below.



INSTALLATION PROCEDURE

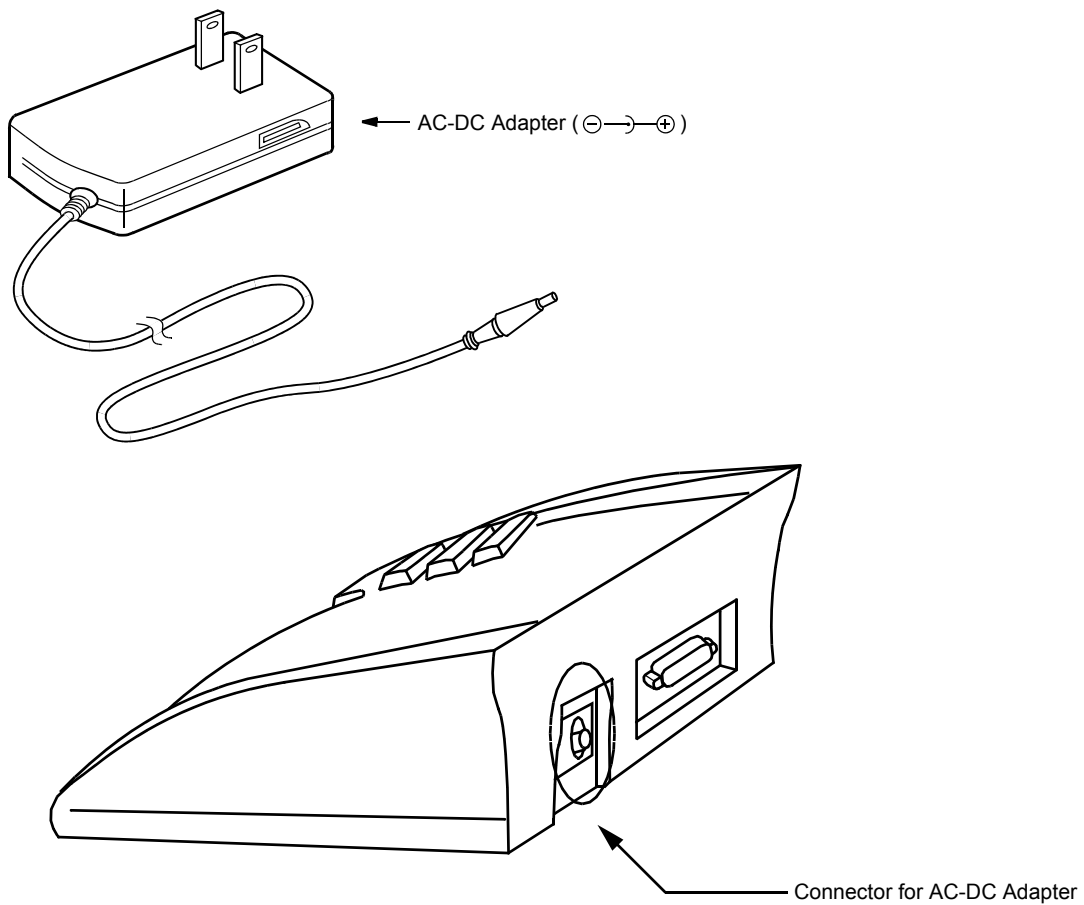
NAP-200-016
Sheet 28/44
Installation of the DESK CONSOLE and Cable Connection

10. CONNECTION OF AC-DC ADAPTER FOR ADD-ON CONSOLE (OPTIONAL)

The AC-DC adapter is required when the power supply from the distant PBX is not available.

Figure 016-19 Connection of AC-DC Adapter for Add-On Console

The connector for the AC-DC adapter is on the rear side of ADD-ON CONSOLE.



NAP-200-016
Sheet 29/44
Installation of the DESK CONSOLE and Cable Connection

11. CONFIGURATION MENU

11.1 General

Configuration Menu is used for assigning configuration data for DESK CONSOLE. The menu has the following items:

1. HEADSET/HANDSET
2. HEADSET TYPE
3. MUTE
4. REC CONTROL
5. PAGE CONTROL **Note**
6. SUP CONNECTION
7. REC VOLUME
8. BLF
9. HOLD/START/RELEASE/SWAP
10. 2ND RINGING
11. RINGING

Note: *Do not change this data.*

11.2 Selection of Configuration Item

1. Displaying Configuration Menu

INSTALLATION PROCEDURE

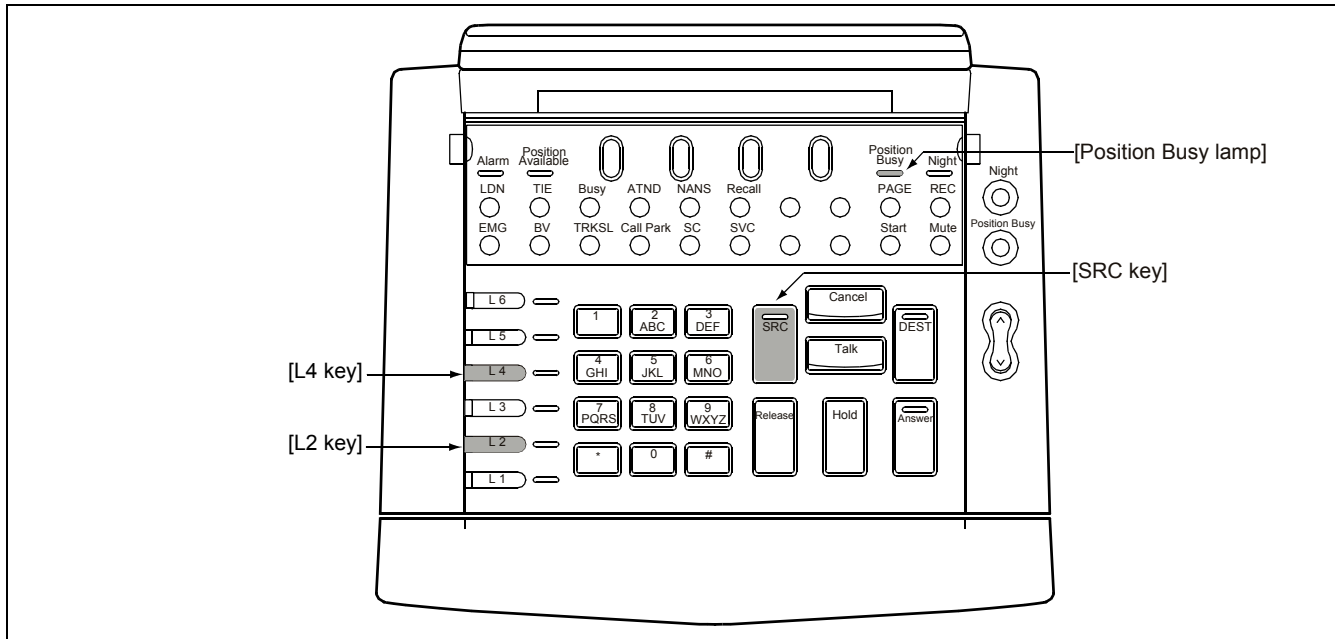
NAP-200-016

Sheet 30/44

Installation of the DESK CONSOLE and
Cable Connection

- (a) Turn on the Position Busy lamp.
When the Position Busy lamp is off, press the Position Busy key to turn on the Position Busy lamp (red).
- (b) Press the L2, L4, and SRC keys simultaneously.

Figure 016-20 Displaying the Configuration Menu



NAP-200-016
Sheet 31/44
Installation of the DESK CONSOLE and Cable Connection

The first page of Configuration Menu appears on the LCD. Configuration Menu has a total of four pages.

- 1st Page

[CONFIG MENU P1] VER x	DEST: next page
1: HEADSET/HANDSET	Release: exit
2: HEADSET TYPE	Answer: update
3: MUTE	

- 2nd Page

[CONFIG MENU P2] VER x	SRC: prev page
1: REC CONTROL	DEST: next page
2: PAGE CONTROL Note	Release: exit
3: SUP CONNECTION	Answer: update

Note: Do not change this data.

- 3rd Page

[CONFIG MENU P3] VER x	SRC: prev page
1: REC VOLUME	DEST: next page
2: BLF	Release: exit
3: HOLD/START/RELEASE/SWAP	Answer: update

- 4th Page

[CONFIG MENU P4] VER x	SRC: prev page
1: 2ND RINGING	DEST: next page
2: RINGING	Release: exit
	Answer: update

- (c) When pressing the DEST key, the display changes to the next page. When returning to the previous page, press the SRC key.
- (d) When pressing the Release key, Configuration Menu disappears and the DESK CONSOLE returns to normal operation.

INSTALLATION PROCEDURE

NAP-200-016

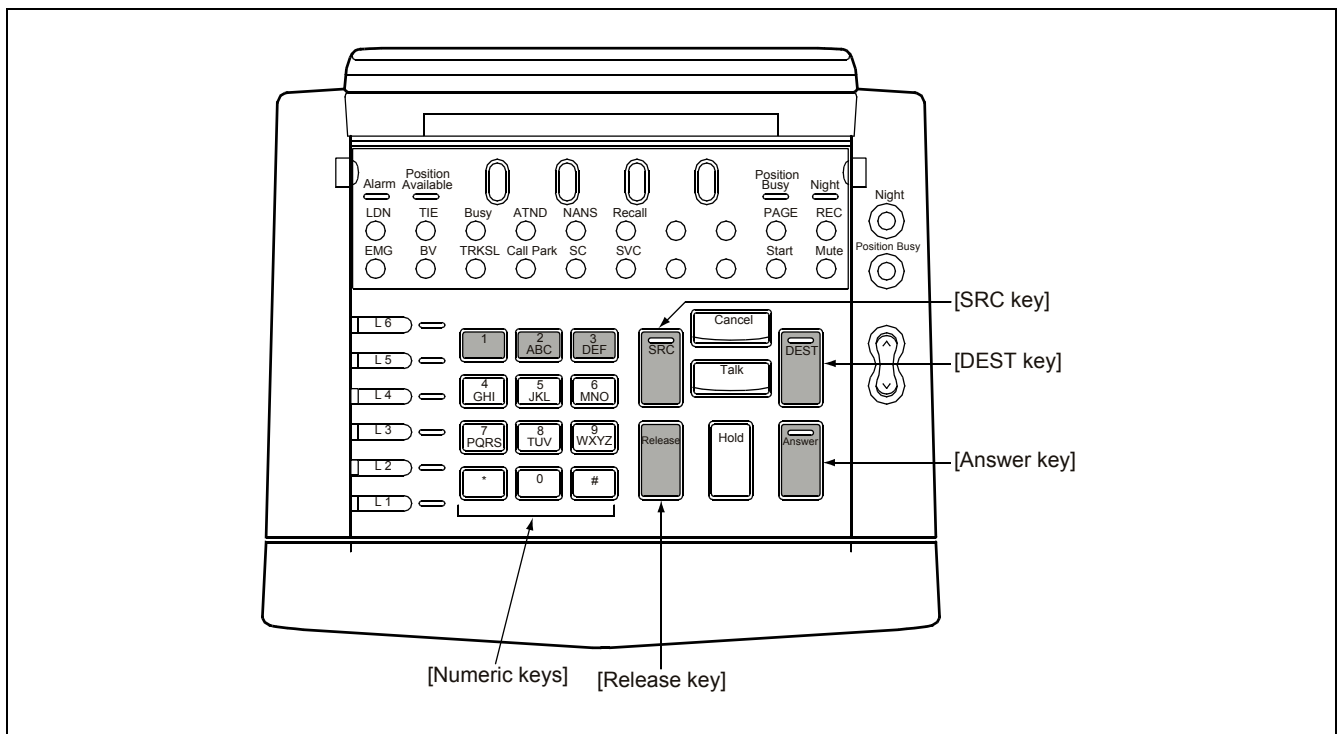
Sheet 32/44

Installation of the DESK CONSOLE and
Cable Connection

12. SELECTION OF CONFIGURATION ITEM

By using a numeric key, press the desired number in Configuration Menu. A menu for assigning configuration data appears. Assign configuration data referring to “Assignment of Configuration Data” on the next page.

Figure 016-21 Selecting a Configuration Item



NAP-200-016

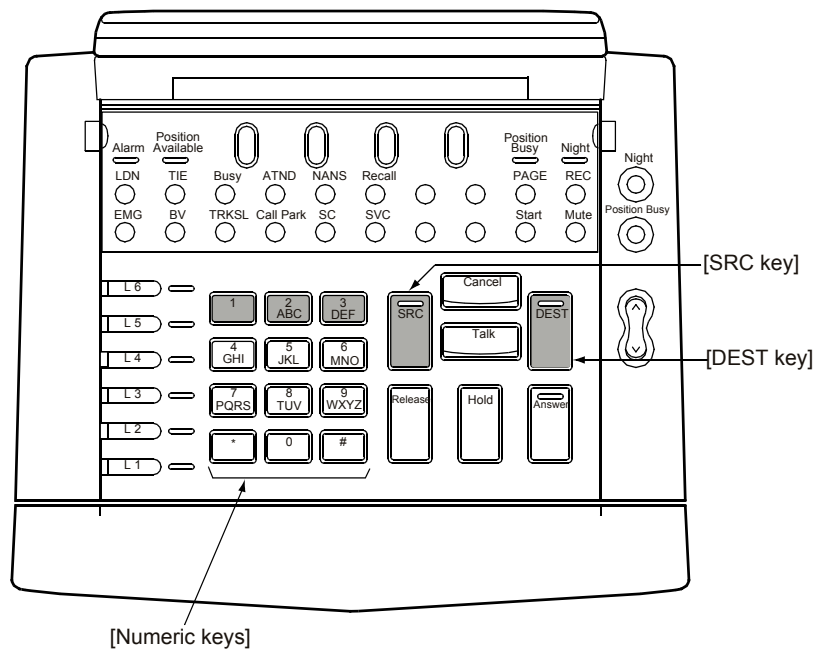
Sheet 33/44

Installation of the DESK CONSOLE and
Cable Connection

13. ASSIGNMENT OF CONFIGURATION DATA

This section explains how to assign each configuration data. When assigning configuration data, the following shaded keys are used.

Figure 016-22 Assigning Configuration Data



INSTALLATION PROCEDURE

NAP-200-016
Sheet 34/44
Installation of the DESK CONSOLE and Cable Connection

14. HEADSET/HANDSET

This item specifies an optional device connected to the HAND H/S0 connector.

Note: *With regard to the H/S1 connector, only the Headset is connected. Accordingly, data assignment for H/S1 connector is not required.*

- (a) Press the desired number. An asterisk shows the selected number.

[HEADSET/HANDSET]	SRC: menu
*1: HEADSET	
2: HANDSET	

1. Headset is connected to the HAND H/S0 connector
2. Handset is connected to the HAND H/S0 connector

SRC: Return to Configuration Menu

Note: *Default setting is "1: HEADSET".*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P1] VER x	DEST: next page
1: HEADSET/HANDSET	Release: exit
2: HEADSET TYPE	Answer: update
3: MUTE	

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

NAP-200-016
Sheet 35/44
Installation of the DESK CONSOLE and Cable Connection

15. HEADSET TYPE

This item specifies the type of Headset connected to the H/S1 connector.

- (a) Press the desired number. An asterisk shows the selected number.

[HEADSET TYPE]	SRC: menu
*1: SUPRA	
2: OTHER	

1. The type of Headset is “SUPRA”
2. The type of Headset is other than “SUPRA”

SRC: Return to Configuration Menu

Note: *Default setting is “1: SUPRA”.*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P1] VER x	DEST: next page
1: HEADSET/HANDSET	Release: exit
2: HEADSET TYPE	Answer: update
3: MUTE	

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

NAP-200-016
Sheet 36/44
Installation of the DESK CONSOLE and Cable Connection

16. MUTE

This item specifies On/Off setting of the mute function for the HAND H/S0 or H/S1 connector. While the mute function is set to On, if the Mute key is pressed, the voice at the DESK CONSOLE side is not sent to the other party.

- (a) Press the desired number. An asterisk shows the selected number.

[MUTE]	SRC: menu
*1: H/S0 ON, H/S1 ON	
2 : H/S0 ON, H/S1 OFF	
3 : H/S0 OFF, H/S1 ON	

- 1. Both H/S0 and H/S1 are set to On
- 2. Only H/S0 is set to On
- 3. Only H/S1 is set to Off

SRC: Return to Configuration Menu

Note: *Default setting is “1: H/S0 ON, H/S1 ON”.*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P1] VER x	DEST: next page
1: HEADSET/HANDSET	Release: exit
2: HEADSET TYPE	Answer: update
3: MUTE	

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

NAP-200-016
Sheet 37/44
Installation of the DESK CONSOLE and Cable Connection

17. REC CONTROL

This item specifies the operation mode of a recording device. The following two types of modes are available:

Manual mode

Manual mode is available when the REC circuit card is mounted in the system. When the REC key is pressed, the system starts recording and the REC lamp lights. When the REC key is pressed again, the recording stops and the REC lamp goes off.

Automatic mode

In Automatic mode, a dedicated recording device is directly connected to the REC connector. When a call is connected/disconnected, the system starts/ends recording automatically. Note that the REC key is not effective in Automatic mode.

- (a) Press the desired number. An asterisk (*) shows the selected number.

[REC CONTROL]	SRC: menu
*1: MANUAL	
2 : AUTO	

1. Manual mode
2. Automatic mode

SRC: Return to Configuration Menu

Note: *Default setting is "1: MANUAL".*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P2] VER x	DEST: next page
1: REC CONTROL	Release: exit
2: PAGE CONTROL Note	Answer: update
3: SUP CONNECTION	

Note: *Do not change this data.*

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

INSTALLATION PROCEDURE

NAP-200-016
Sheet 38/44
Installation of the DESK CONSOLE and Cable Connection

18. SUP CONNECTION

This item specifies whether the supervisory console is connected or not.

- (a) Press the desired number. An asterisk (*) shows the selected number.

[SUP CONNECTION]	SRC: menu
*1: NONE	
2 : CONNECTED	

1. Supervisory Console is not connected
2. Supervisory Console is connected

SRC:Return to Configuration Menu

Note: *Default setting is "1: NONE".*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P2] VER x	SRC: prev page
1: REC CONTROL	DEST: next page
2: PAGE CONTROL Note	Release: exit
3: SUP CONNECTION	Answer: update

Note: *Do not change this data.*

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

NAP-200-016
Sheet 39/44
Installation of the DESK CONSOLE and Cable Connection

19. REC VOLUME ADJUSTMENT

This item specifies the recording level of the received voice from the other party. Note that the voice level at the operator side cannot be adjusted.

- (a) Press the desired number. An asterisk (*) shows the selected number.

[REC VOLUME ADJUSTMENT]	SRC: menu
1: +2dB	4: -8dB
*2: 0dB	
3: -4dB	

1. +2dB Up
2. 0dB (Standard level)
3. -4dB Down
4. -8dB Down

SRC: Return to Configuration Menu

Note: *Default setting is “2: 0dB”.*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P3] VER x	SRC: prev page
1: REC VOLUME	Release: exit
2: BLF	Answer: update
3: HOLD/START/RELEASE/SWAP	

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

INSTALLATION PROCEDURE

NAP-200-016
Sheet 40/44
Installation of the DESK CONSOLE and Cable Connection

20. BLF

This item specifies On/Off setting of the BLF function. When using BLF function, system data assignment is also required.

- (a) Press the desired number. An asterisk (*) shows the selected number.

[BLF]	SRC: menu
1: ENABLE	
*2: DISABLE	

1. BLF Available
2. BLF Not available

SRC: Return to Configuration Menu

Note: *Default setting is "2: DISABLE".*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P3] VER x	DEST: next page
1: REC VOLUME	Release: exit
2: BLF	Answer: update
3: HOLD/START/RELEASE/SWAP	

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

NAP-200-016
Sheet 41/44
Installation of the DESK CONSOLE and Cable Connection

21. HOLD/START/RELEASE/SWAP

This item specifies the locations of HOLD, START and RELEASE key.

- (a) Press the desired number. An asterisk (*) shows the selected number.

[HOLD/START/RELEASE/SWAP] SRC: menu *1: ORIGINAL 2: SWAPPED

1. Original setting
2. Swapped setting

Note: *The locations of each key changes as shown below.*

ORIGINAL SETTING	SWAPPED SETTING
RELEASE	START
HOLD	RELEASE
START	HOLD

SRC: Return to Configuration Menu

Note: *Default setting is "1: ORIGINAL".*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P3] VER x 1: REC VOLUME 2: BLF 3: HOLD/START/RELEASE/SWAP	DEST: next page Release: exit Answer: update
---------------------------------------------------------------------------------	----------------------------------------------------

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

NAP-200-016
Sheet 42/44
Installation of the DESK CONSOLE and Cable Connection

22. 2ND RINGING

This item specifies on/off setting of the 2nd ringing.

- (a) Press the desired number. An asterisk shows the selected number.

[2ND RINGING]	SRC: menu
1: ENABLE	
*2: DISABLE	

1. 2nd Ringing available
2. 2nd Ringing Not available

SRC Return to Configuration Menu

Note: *Default setting is “2: DISABLE”.*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P4]VER x	SRC: menu
1: 2ND RINGING	DEST: next page
2: RINGING	Release: exit
	Answer: update

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

NAP-200-016
Sheet 43/44
Installation of the DESK CONSOLE and Cable Connection

23. RINGING

This item specifies on/off setting of ringing.

- (a) Press the desired number. An asterisk shows the selected number.

[2ND RINGING]	SRC: menu
*1: ENABLE	
2: DISABLE	

1. Ringing available
2. Ringing Not available

SRC Return to Configuration Menu

Note: *Default setting is "1: ENABLE".*

- (b) Press the SRC key. The display returns to Configuration Menu.

[CONFIG MENU P4]VER x	SRC: prev
1: 2ND RINGING	DEST: next page
2: RINGING	Release: exit
	Answer: update

- (c) When configuration data assignment is completed, proceed to UPDATING CONFIGURATION DATA. When the other item is also specified, return to SELECTION OF CONFIGURATION ITEM.

INSTALLATION PROCEDURE

NAP-200-016
Sheet 44/44
Installation of the DESK CONSOLE and Cable Connection

24. UPDATING CONFIGURATION DATA

After assigning the configuration data, take the next step as below:

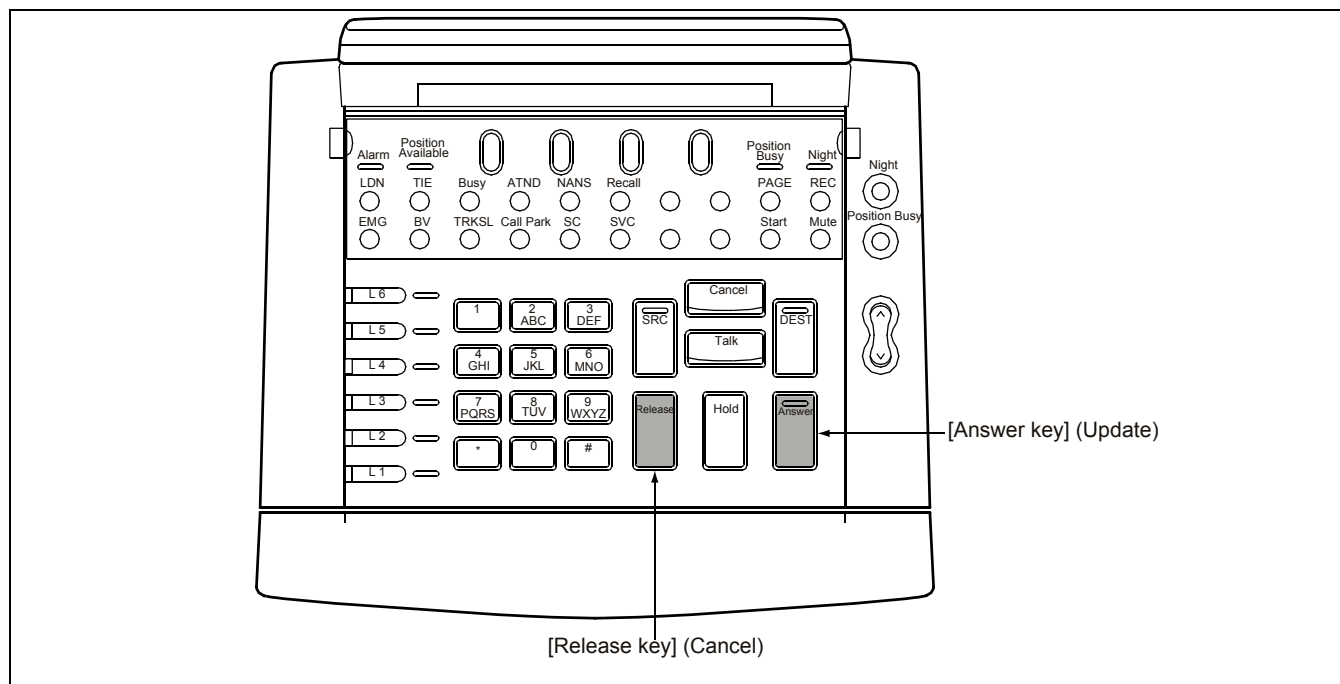
- To update the configuration data

While one of configuration menus is displayed on the LCD, press ANSWER key. (DESK CONSOLE is automatically restarted.)

- To cancel the update

Press RELEASE key.

Figure 016-23 Updating Configuration Data



NAP-200-017
Sheet 1/10
Installation of Maintenance Administration Terminal (MAT) and Cable Connections



This NAP explains the installation of Maintenance Administration Terminal (MAT) and System Message Printer focusing on their cable connections.

1. INSTALLATION OF MAT AND CABLE CONNECTIONS

START

- Preparation of the MAT _____ Set up PC, CRT Display, Printer, and so on.
- Cable Connection _____ Connect the cables between the MAT and the PBX referring to Figures 017-1 and 017-2.

END

INSTALLATION PROCEDURE

NAP-200-017

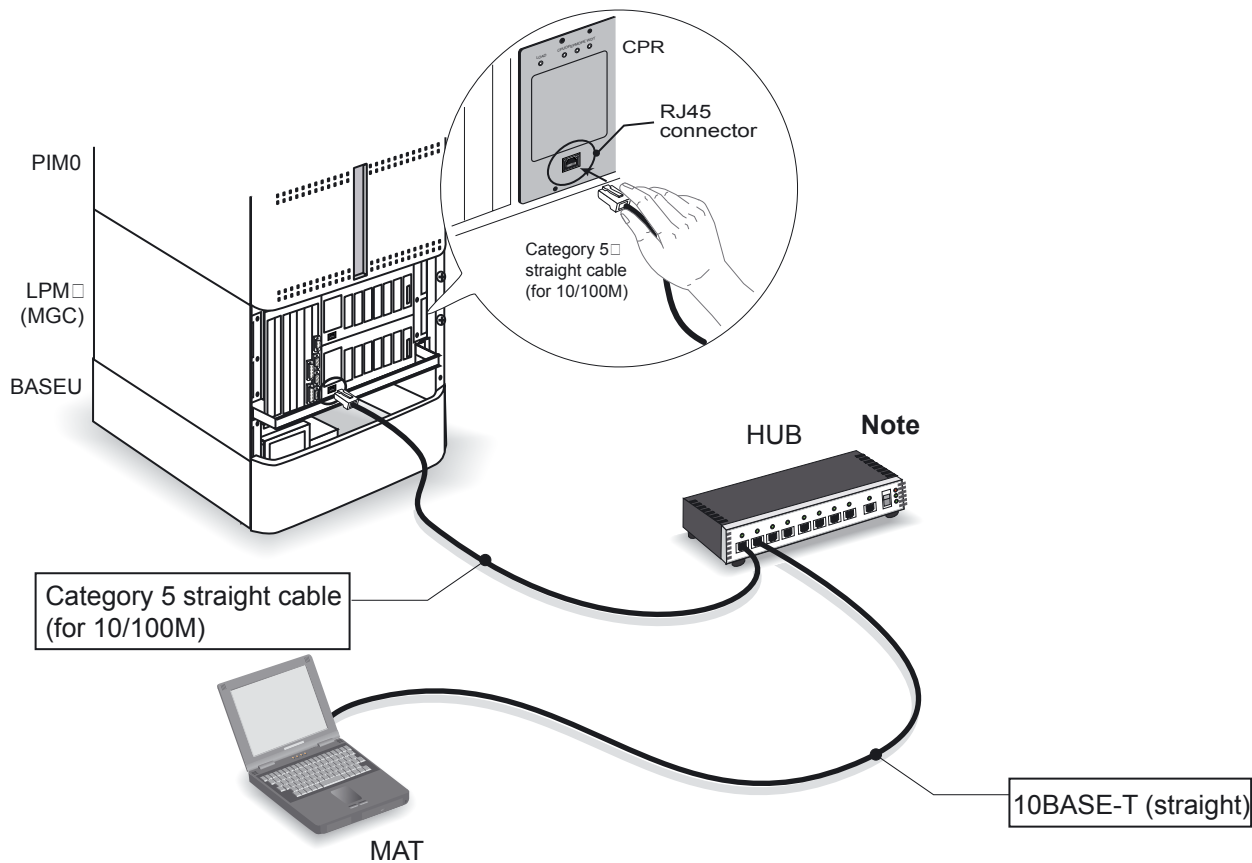
Sheet 2/10

Installation of the Maintenance
Administration Terminal (MAT) and Cable
Connections



Figure 017-1 Cabling of MAT when Using Ethernet

Connect a 10BASE-T (straight) cable to the RJ-45 connector on the front panel of CPR.



Note: In the case of connecting some equipment (MC, PHA, PHD, PHC, IP PAD), a switching hub is necessary to connect them with MAT.

NAP-200-017

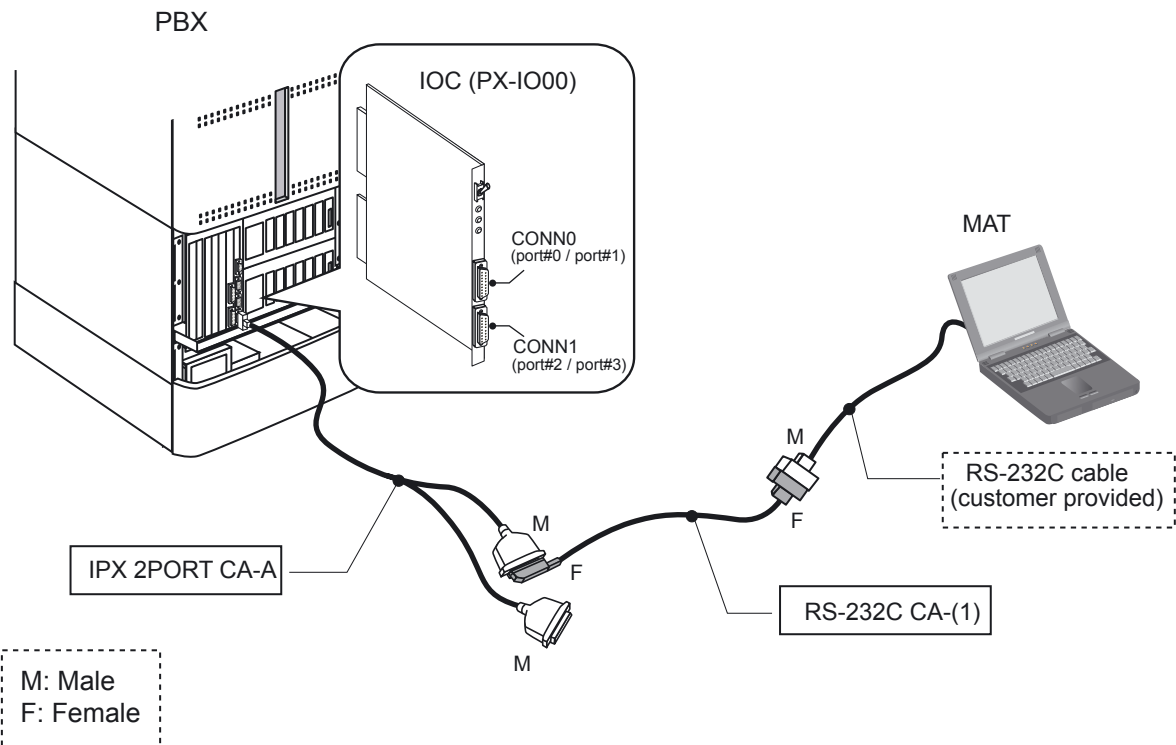
Sheet 3/10

Installation of the Maintenance
Administration Terminal (MAT) and Cable
Connections



Figure 017-2 Cable Connection Diagram for the MAT when Using RS-232C

Connect the MAT using the cables (IPX 2PORT CA-A, RS-232C CA-(1), and RS-232C cable).



INSTALLATION PROCEDURE

NAP-200-017
Sheet 4/10
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections



2. INSTALLATION OF MAT AND CABLE CONNECTION BY USING MODEM

Note: *When the distance between PBX and the MAT (Maintenance Administration Terminal) exceeds 15 meters (50 feet), connect them with Modems as shown in Figure 017-3.*

START

- Preparation of the MAT _____ Set up PC, CRT Display, Printer, and so on.
- Preparation of the modems _____ Set up the modems referring to its instruction book.
- Cable connection _____ Connect the cables referring to Figure 017-3.

END

NAP-200-017

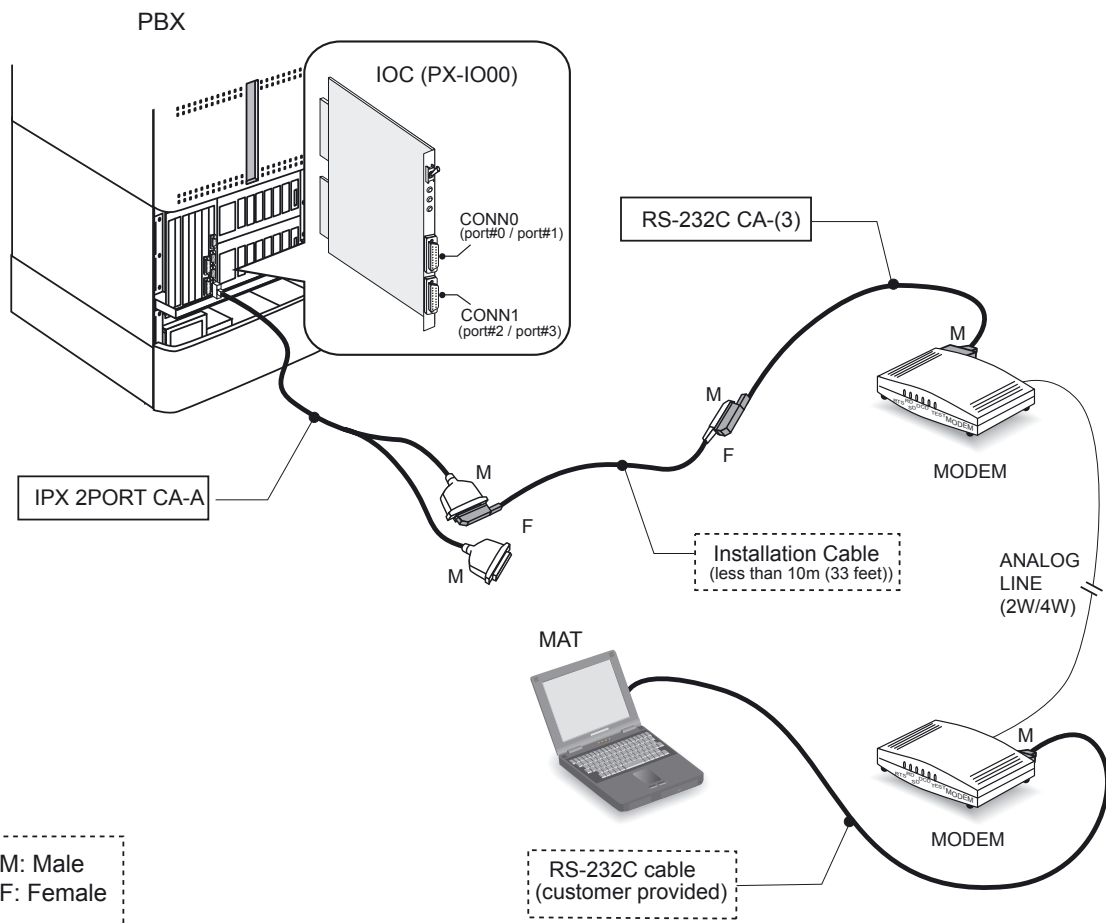
Sheet 5/10

Installation of the Maintenance
Administration Terminal (MAT) and Cable
Connections



Figure 017-3 Cabling of MAT Using Modems

To connect PBX and the MAT via modems, the following cables are used. RS-232C cable should be prepared by the customer.



INSTALLATION PROCEDURE

NAP-200-017
Sheet 6/10
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections



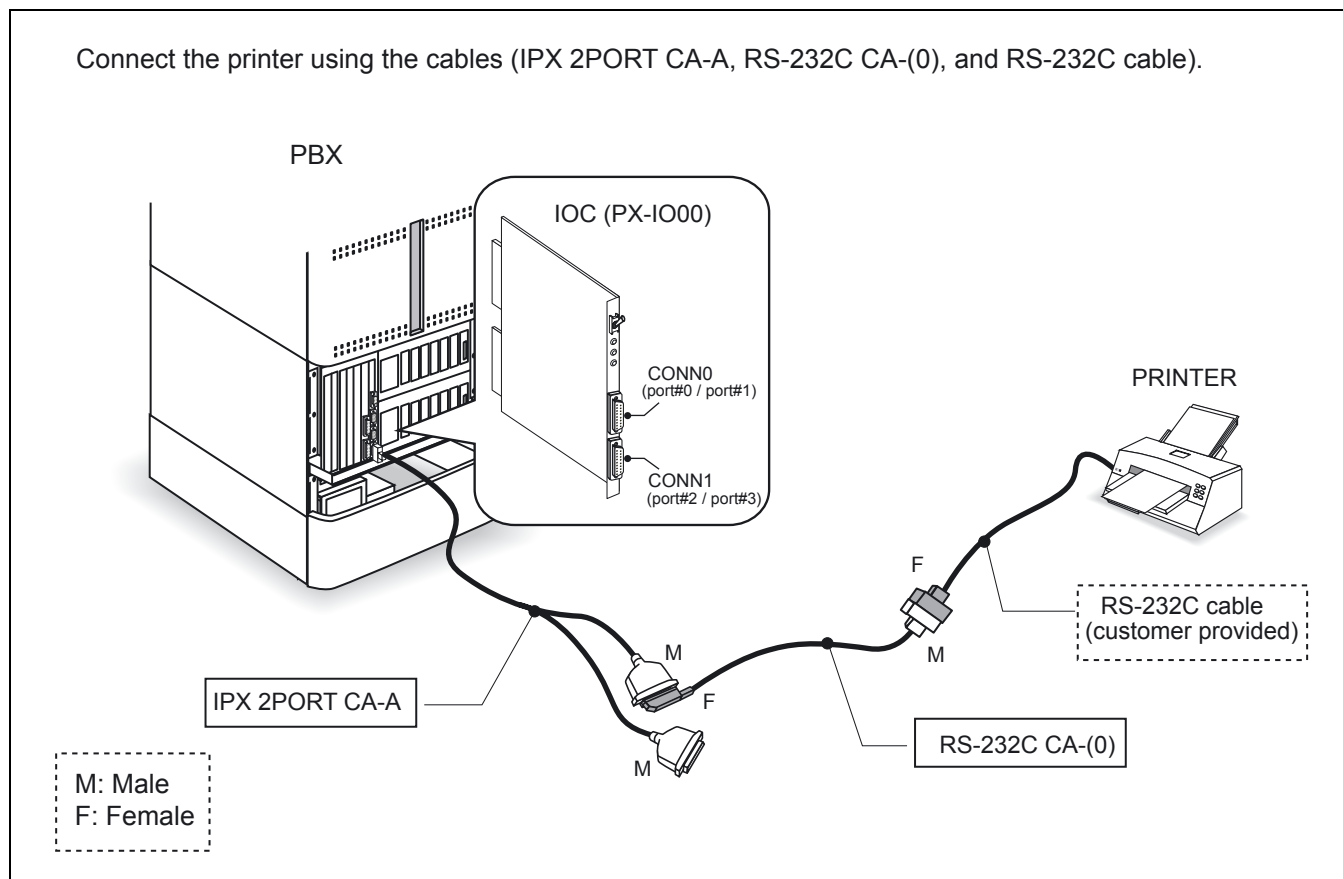
3. INSTALLATION OF SYSTEM MESSAGE PRINTER AND CABLE CONNECTIONS

START

- Installing printer ————— Install printer according to its instructions.
- Cable connection ————— Connect the cable between PBX and the dedicated System Message Printer which is equipped with a parallel port referring to Figure 017-4.

END

Figure 017-4 Connection of System Message Printer



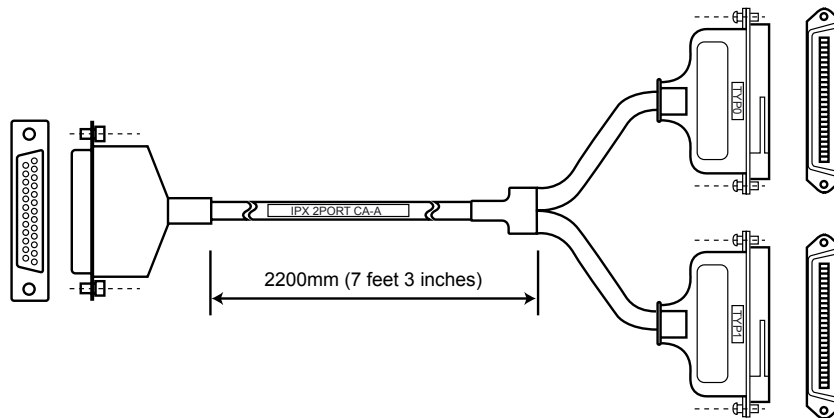
NAP-200-017

Sheet 7/10

Installation of the Maintenance
Administration Terminal (MAT) and Cable
Connections

Figure 017-5 IPX 2PORT CA-A Cable

<Cable Specification>



Cable Accommodation (A)			
1	RD	2	CS
3	ST2	4	CD
5	RT	6	DR
7	CI	8	SD
9	RS	10	ST1
11	ER	12	G
13		14	RD
15	CS	16	ST2
17	CD	18	RT
19	DR	20	CI
21	SD	22	RS
23	ST1	24	ER
25	G		

OR-BK1
GY-BK1
W-BK1
Y-BK1
P-BK1
OR-BK2
GY-BK2
W-BK2
Y-BK2
P-BK2
OR-BK3
GY-BK3

Cable Accommodation (TYP1)			
02	RD	04	CS
12	ST2	07	CD
10	RT	05	DR
09	CI	01	SD
03	RS	11	ST1
08	ER	06	G
25		50	

W-BK3
Y-BK3
P-BK3
OR-BK4
GY-BK4
W-BK4
Y-BK4
P-BK4
OR-BK5
GY-BK5
W-BK5
Y-BK5

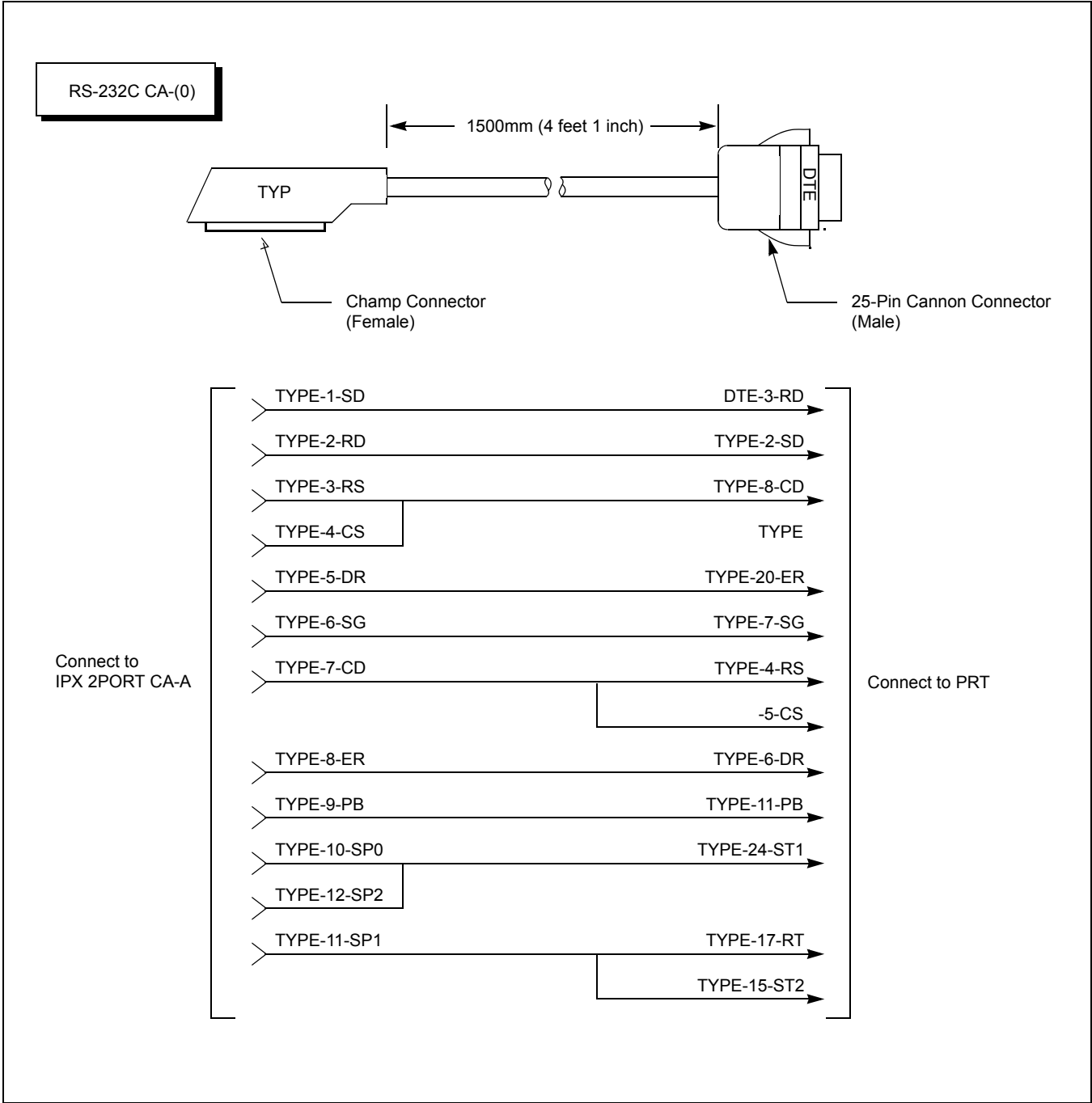
Cable Accommodation (TYP0)			
02	RD	04	CS
12	ST2	07	CD
10	RT	05	DR
09	CI	01	SD
03	RS	11	ST1
08	ER	06	G
25		50	

Note: Line with no indication within the diagram is treated all open.

INSTALLATION PROCEDURE

NAP-200-017
Sheet 8/10
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

Figure 017-6 Detail of RS-232C CA-(0)

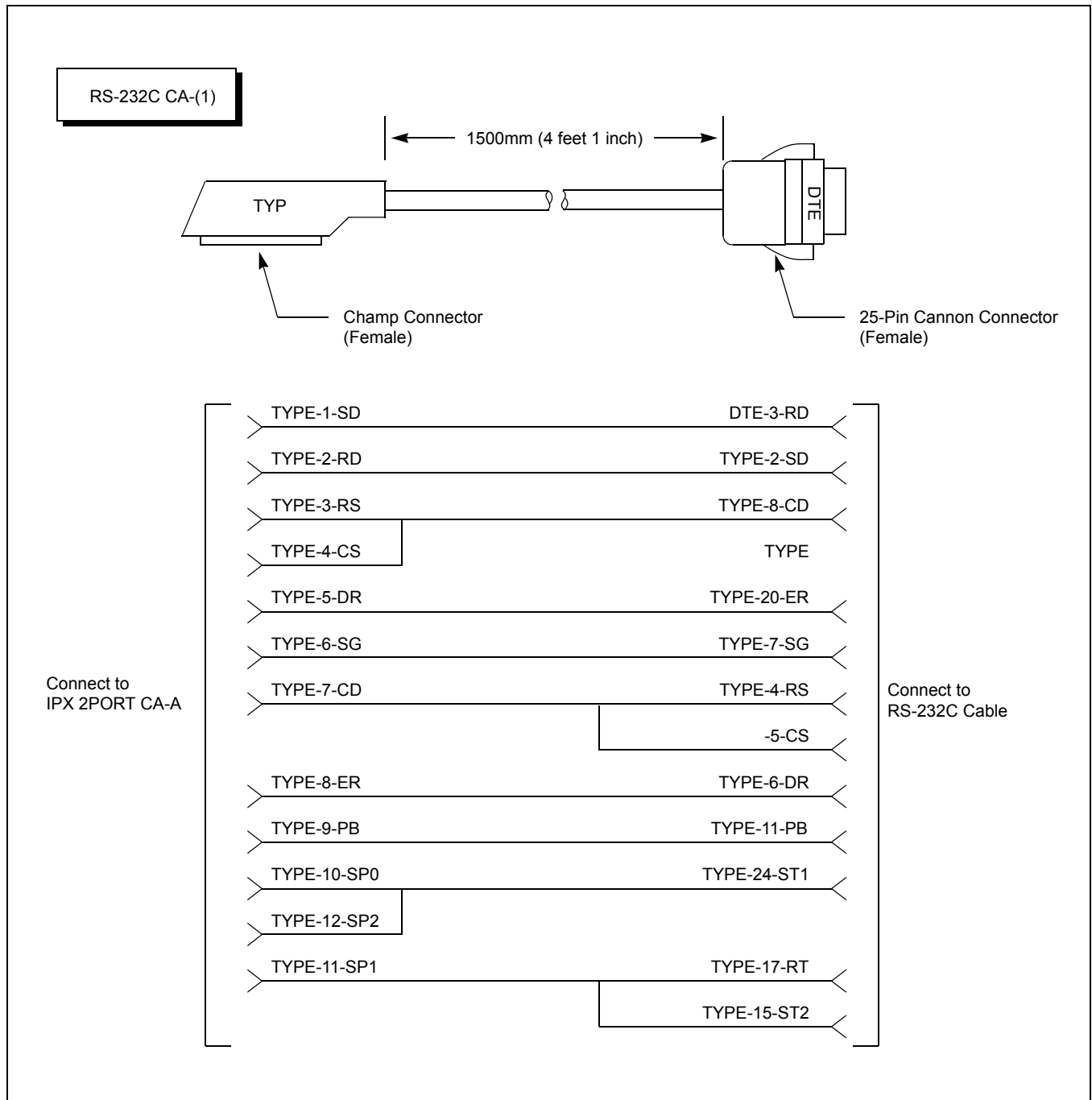


NAP-200-017

Sheet 9/10

Installation of the Maintenance
Administration Terminal (MAT) and Cable
Connections

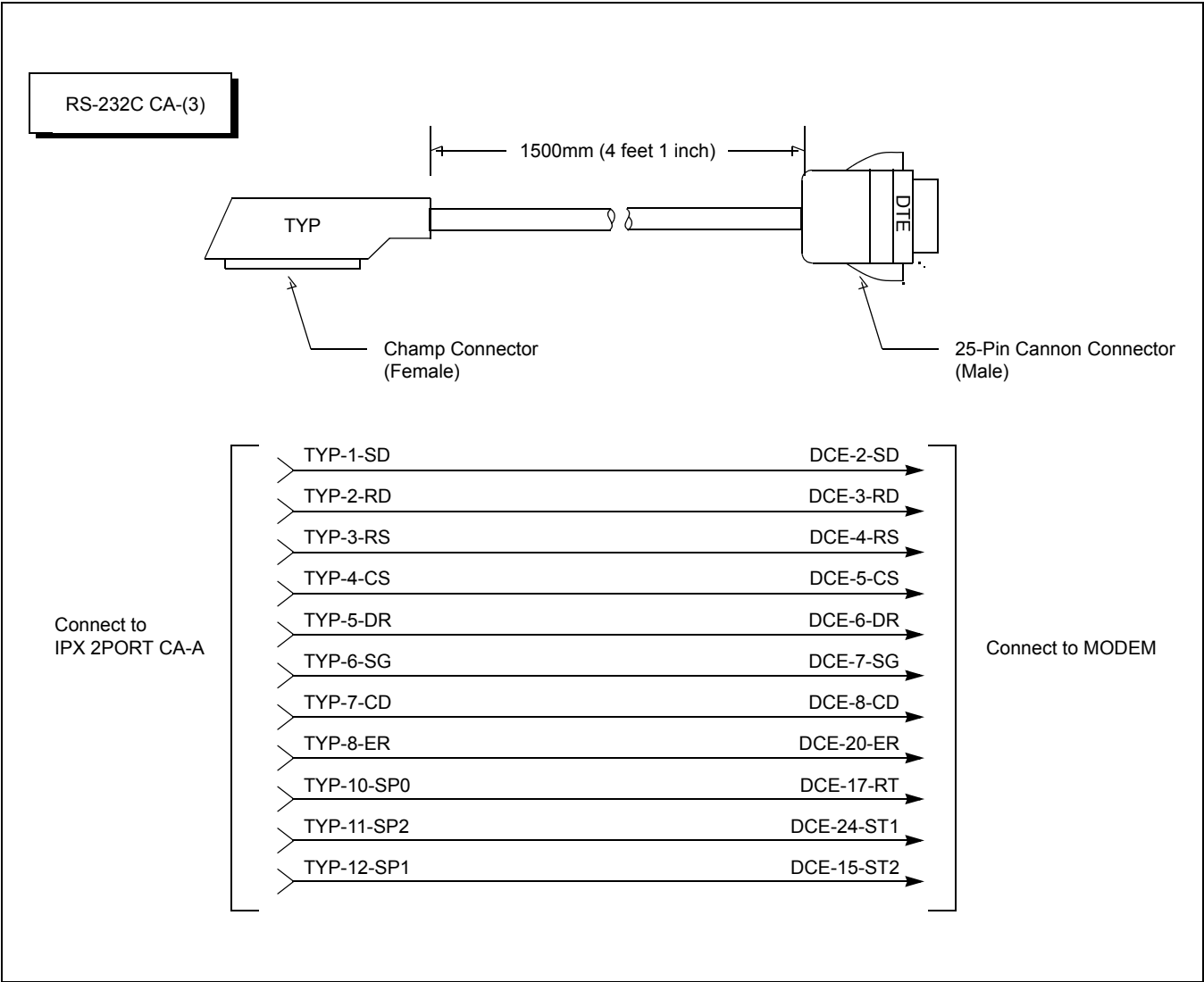
Figure 017-7 Detail of RS-232C CA-(1)



INSTALLATION PROCEDURE

NAP-200-017
Sheet 10/10
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

Figure 017-8 Detail of RS-232C CA-(3)





NAP-200-018
Sheet 1/4
Connections of SMDR

This NAP explains the cable connection of SMDR equipment.

Note: *The SMDR RS-232C interface specifications are:*

- *Synchronization* — *Asynchronous*
- *Data Speed* — *9600 bps (maximum)*
- *Code* — *ASCII 7-bit + Parity Bit*
- *Maximum Distance* — *15 meters (50 feet) without Modems.*

START

— Installation of SMDR equipment

— Cable connection ————— Connect the cables, referring to Figure 018-1.

- Refer to Figure 018-3 when the length of the cables exceeds 15 meters (49.5 feet).

END

INSTALLATION PROCEDURE

NAP-200-018

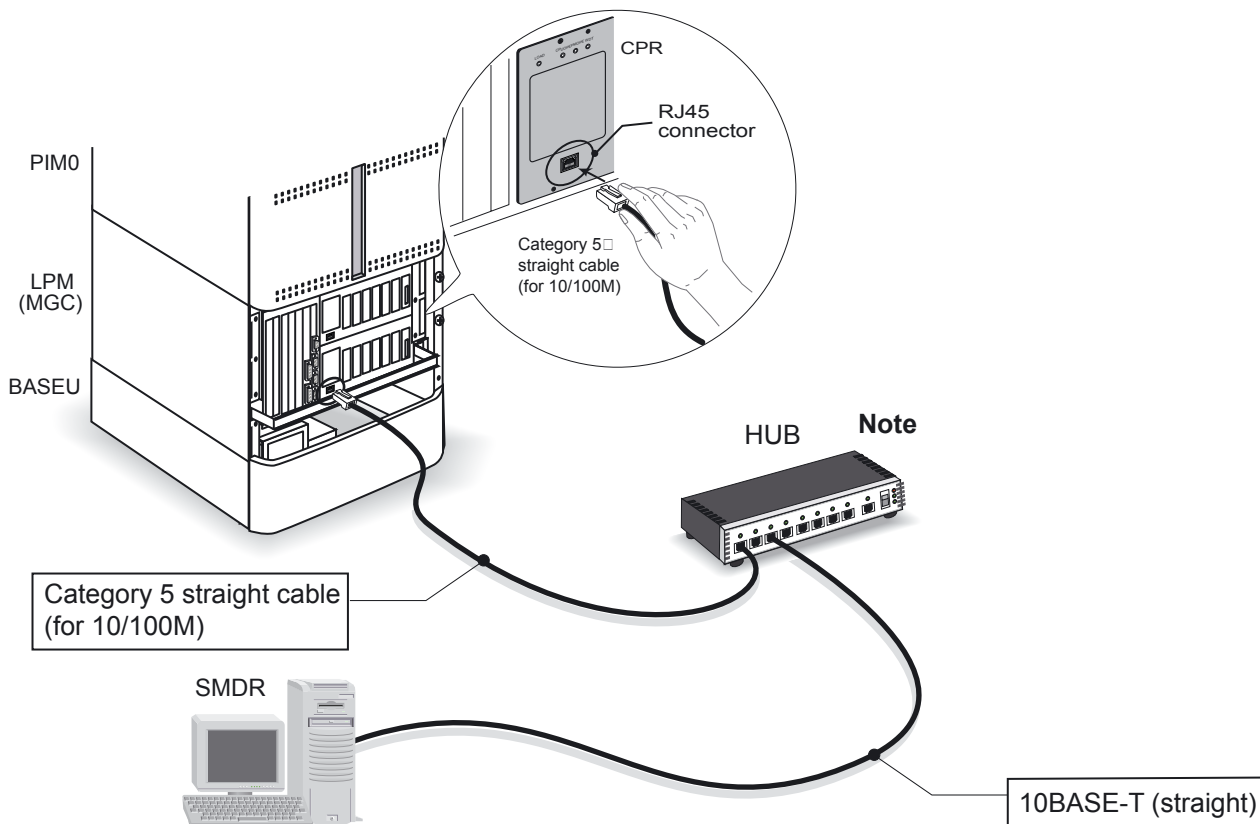
Sheet 2/4

Connections of SMDR



Figure 018-1 Cabling of SMDR when Using Ethernet

Connect a 10BASE-T (straight) cable to the RJ-45 connector on the front panel of CPR.



Note: In the case of connecting some equipment (MC, PHA, PHD, PHC, IP PAD), a switching hub is necessary to connect them with SMDR.

NAP-200-018

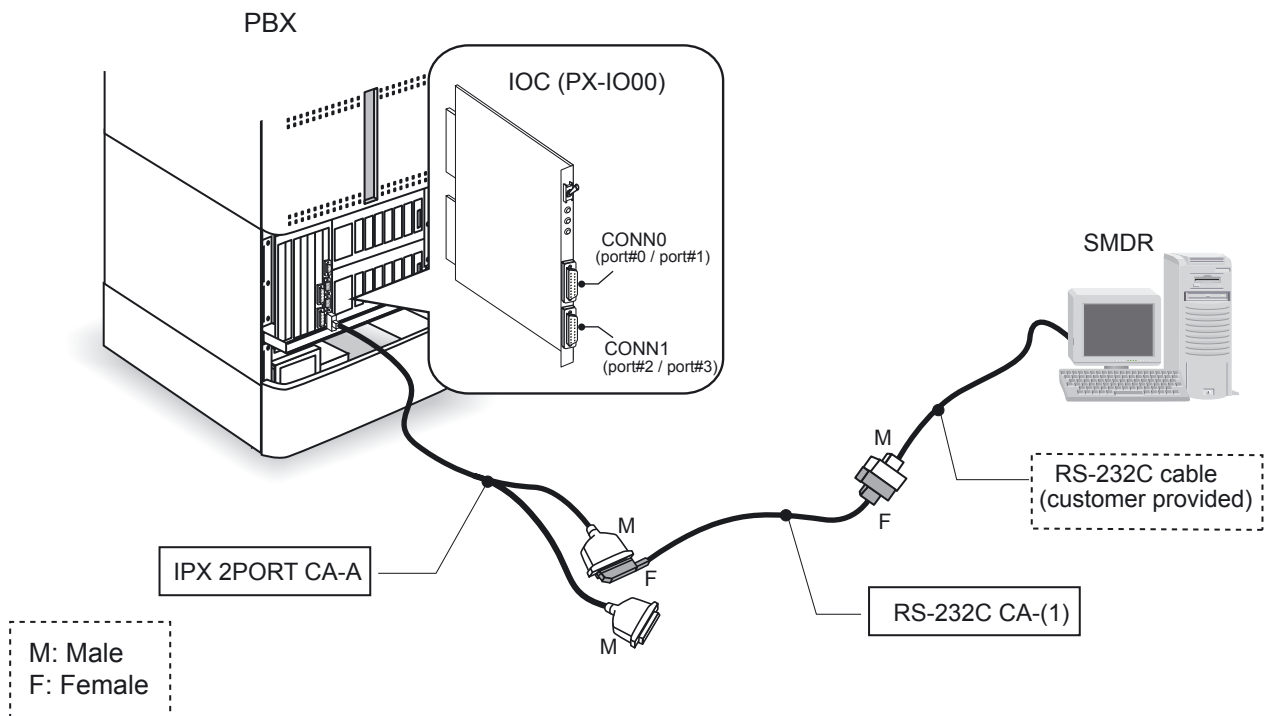
Sheet 3/4

Connections of SMDR



Figure 018-2 Cable Connection Diagram for the SMDR when Using RS-232C

Connect SMDR using the cables (IPX 2PORT CA-A, RS-232C CA-(1), and RS-232C cable).



INSTALLATION PROCEDURE

NAP-200-018

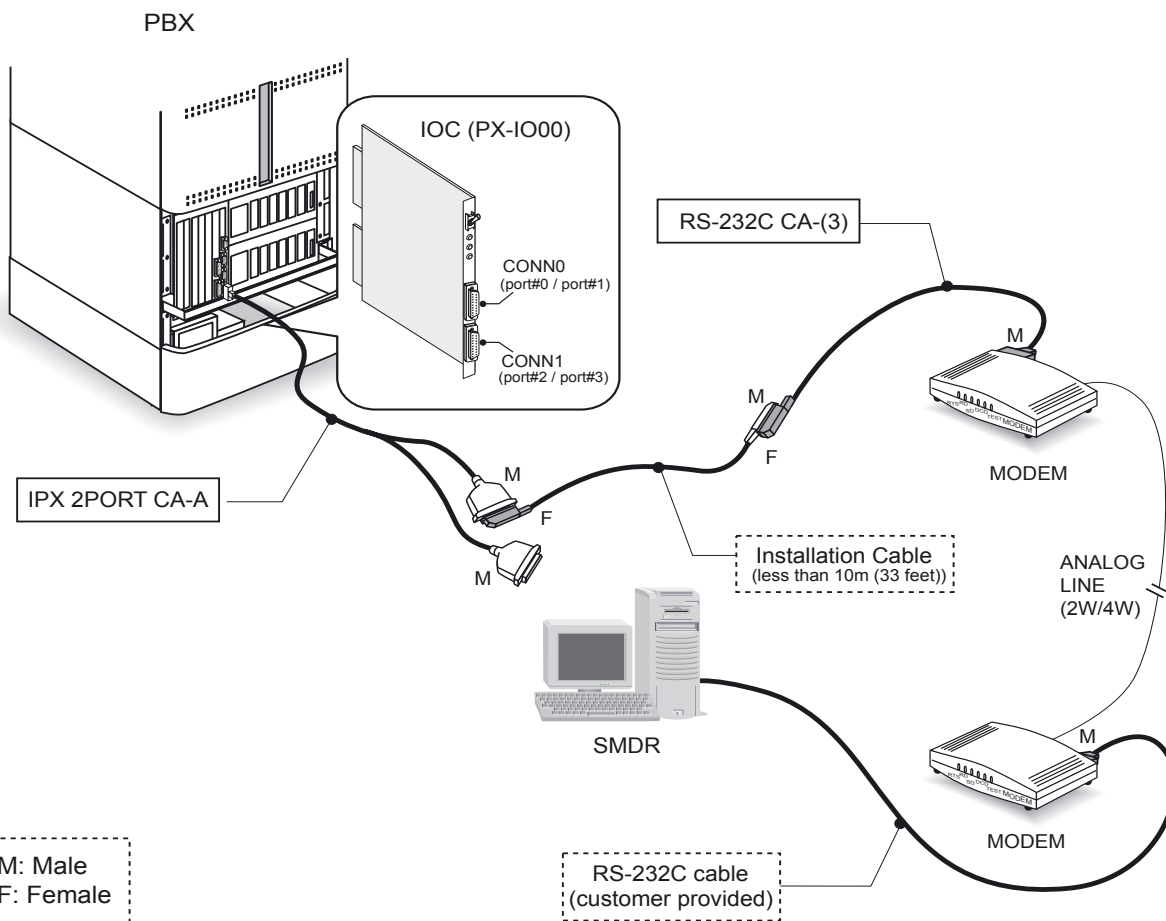
Sheet 4/4

Connections of SMDR



Figure 018-3 Connection of SMDR by Using MODEM

To connect PBX and the SMDR via modems, the following cables are used. RS-232C cable should be prepared by the customer.



CHAPTER 4 SYSTEM STARTUP

1. GENERAL

This Chapter describes the initial startup procedure and the diagnosis procedure after installing PBX. Before beginning the system startup, thoroughly read Section 2., “PRECAUTIONS BEFORE BEGINNING SYSTEM STARTUP” of this Chapter, and observe the precautions while performing the system startup. Neglecting the precautions may delay the system cutover or may damage the system equipment.

2. PRECAUTIONS BEFORE BEGINNING SYSTEM STARTUP

1. The system is to be started up using the basic system data.
2. When starting up the system, it is necessary to start up the MAT.
3. The following preparatory steps must be completed before the tests are executed:
 - All circuit card switches should be correctly set.
 - Flat cables should be securely connected.
 - CHAMP connectors should be securely connected.
 - All connector-ended cables should be secured at both ends.
 - The –48 V (Blue) and G (Red) power supply leads must be correctly connected.
 - An earth lead (less than 10 ohms) must be connected to the communication ground.
 - The installer should confirm at this point that all installation steps have been completed.
4. Do not place any object (a tool, manual, etc.) on top of the Module Group or within a unit (module).
 - An object such as a book, when placed on top of the Module Group, will adversely affect heat dissipation from the Module Group.
 - If an object placed on top of the Module Group or left within a unit (module) falls out, it may cause backplane pins, circuit cards, etc. to short-circuit.
5. Before initially turning ON power to the system, read the Power On Procedure (NAP-200-019).
 - Until the normal operation of all circuit cards has been confirmed, leave power ON only during testing.
6. Observe the temperature in the switch room.
 - Does the air-conditioning function properly at night?
 - Does the temperature fluctuate constantly because people go in and out frequently, or rise above the recommended level due to excessive heat being generated by any single piece of equipment?
 - The fan should be left ON constantly until the installation tests are completed.
7. A floppy disk (FD) copy of the programmed Office Data should be created. If the backup is not stored, and the contents of the Data Memory are accidentally altered or destroyed, all the Office Data will have to be programmed again.

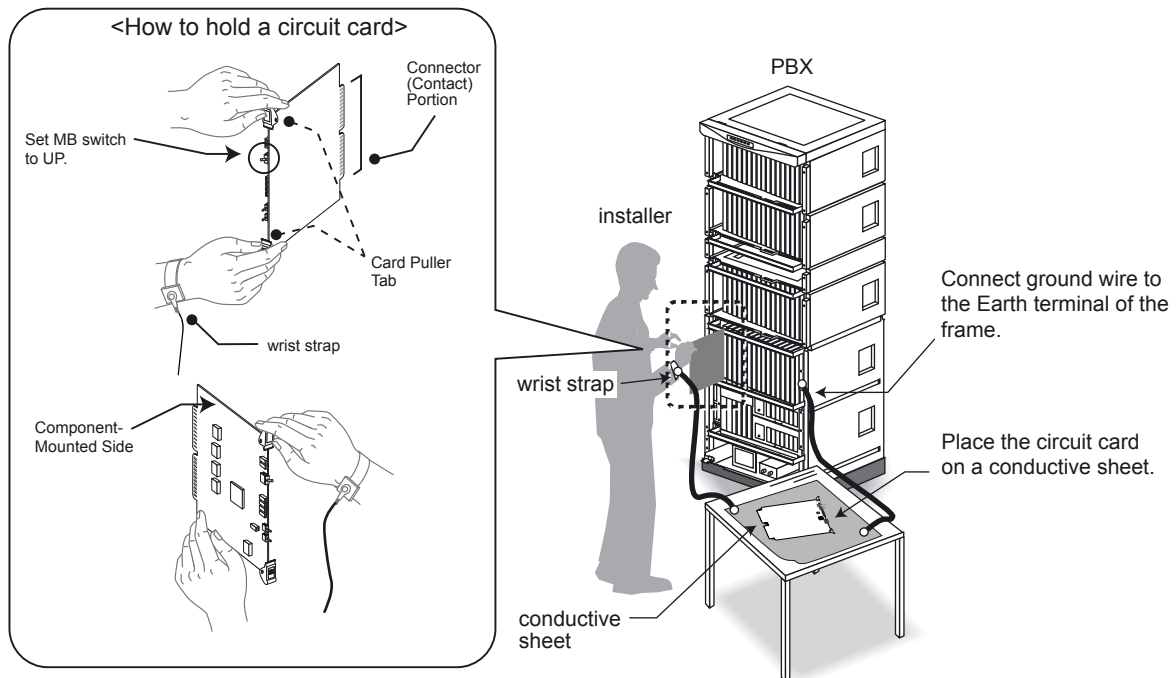
SYSTEM STARTUP

8. If any portion of the Office Data (especially data related to ringing patterns) has been changed via commands “ARTD”, “AKYD”, or “ASYD”, the system must be initialized and test must be performed to verify the data.
9. After the system is initialized, perform the following:
 - Set the current date and time using MAT command “ATIM”.
 - When the system is initialized, the system begins operating with Day Mode. To change over to Night Mode, depress the NITE key on the Attendant Console.
 - If no Attendant Console is equipped, the system begins operating with Night Mode.
10. The following cross connections must be made at the MDF:
 - Complete necessary cross connections by extracting the related circuit cards from their mounting slots or by disconnecting the circuits with a cut plug if test springs are in use.
 - If the connection to a D^{term} is made incorrectly, the electronic fuse of the circuit card may be damaged. (Repair Method: Correct the cross connections and flip the MB switch on the card Down-Up-Down).
 - While a test is in progress, do not perform cross connections without notifying to the person conducting the test (Ringing signal: AC 20 Hz, effective value 90 V, may be flowing through the terminals).
 - Remove all temporary cross connections after the tests have been completed (If Office Data was assigned for test purposes, restore the original Office Data).
11. Observe the following when connecting cables:
 - Before connecting or disconnecting the control cable (Front & Backplane), turn OFF power to the Module Group (LPM / PIM etc.).
 - Before connecting or disconnecting a CHAMP connector, turn OFF power to the Module Group. This will prevent an accident from occurring in the event that a metal object such as a screw, screwdriver, etc. accidentally contacts the backplane circuitry or pins.
 - When connecting or disconnecting the connector cable of the Attendant Console, first set the MB switch on the ATI circuit card to the UP position, then connect/disconnect the cable.
12. Precautions when Handling Circuit Cards
 - When handling a circuit card, use a Field Service Kit to protect against static discharge (example: 3M No. 8012 Portable Field Service Kit; available from NEC).
 - When touching a circuit card, be sure to wear the grounded wrist strap provided with the Portable Field Service Kit.
 - Set the MB switch to the UP position and extract the circuit card from its mounting slot.
 - When holding a circuit card with bare hands, do not touch the component mounted side of the card or the connector portion.



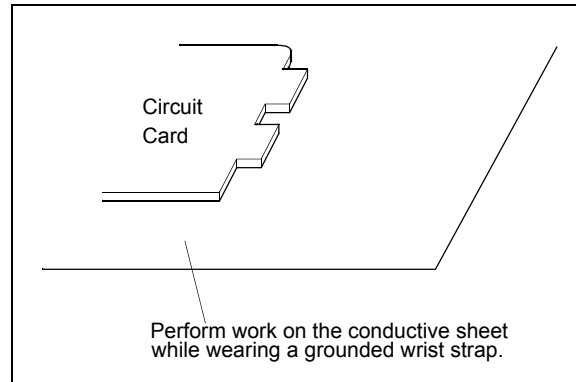
Figure 4-1 How to handle Circuit Cards

When holding a circuit card with bare hands, do not touch the component mounted side of the card or the connector portion.



SYSTEM STARTUP

- When placing a circuit card on a table or other flat surface, spread out a conductive sheet and set the card on the sheet.



- Set the MB switch of the circuit card to the UP position and confirm its mounting slot (**Note**). Then insert the card into its mounting slot.

Note: Confirm that the color of the card puller tab is the same as that of the label showing the Slot Number.

3. SYSTEM STARTUP PROCEDURE

The NAPs in the following flowchart describe the procedures for powering on, starting up the system, assigning Office Data, and checking the startup conditions.

START

Power On:	NAP-200-019
Program Install/Load:	NAP-200-020
Office Data Assignment:	NAP-200-021
Check of Lamp Indication and System Messages:	NAP-200-022
Check of Alarm Lamps of the TOPU:	NAP-200-023

END

NAP-200-019

Sheet 1/2

Power ON



START

- | | |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Visual Inspection | <p>Check whether any pins on the backplane of each Module are bent and cause a short.</p> <p>Check whether any foreign matter such as a cleaning fluid residue is present on the connector portion of the circuit cards.</p> <p>On each circuit card equipped with ROM (CPU, etc.), check whether any pins of the ROM are bent or improperly seated.</p> |
| Leave all circuit cards inserted halfway | Mount all circuit cards (including PWR Supplies) in the Module, leaving them inserted only halfway. (They should not be inserted into their connectors.) |
| Check input voltage | <p>Check insulation across the -48 V and G terminals on the power receiving terminal of the Base Unit.</p> <p>Turn ON power to the rectifier and check the voltage (DC -48V \pm 5V) and its polarity on the power receiving terminal of the Base Unit.</p> |
| Turn ON Fan Units | <p>Turn FAN UNIT ON.</p> <p>Verify that air is blown upwards.</p> <p>If the Fuse blows, the input polarity is reversed.</p> <p>Turn OFF the FAN UNIT.</p> <p>Correct polarity, replace the fuse and turn FAN UNIT ON.</p> <p>Verify that the FAN blows air upwards.</p> |
| Check PWR Supply | <p>Check the Power Supplies for each Module one at a time.</p> <p>Check Steps:</p> <ol style="list-style-type: none"> 1. Turn circuit breaker OFF and insert the PWR Supply. 2. Turn circuit breaker ON (See Note). 3. Various lamps (Green) illuminate. 4. Observe the PWR Supply for a while and confirm that nothing abnormal (unusual smell, smoke, etc.) occurs. 5. Turn the circuit breaker ON/OFF a few times and observe the condition. 6. Turn the circuit breaker OFF and remove the PWR Supply. |

Note: *If a Module is equipped with dual PWR Supplies, they must be turned ON/OFF.*

A

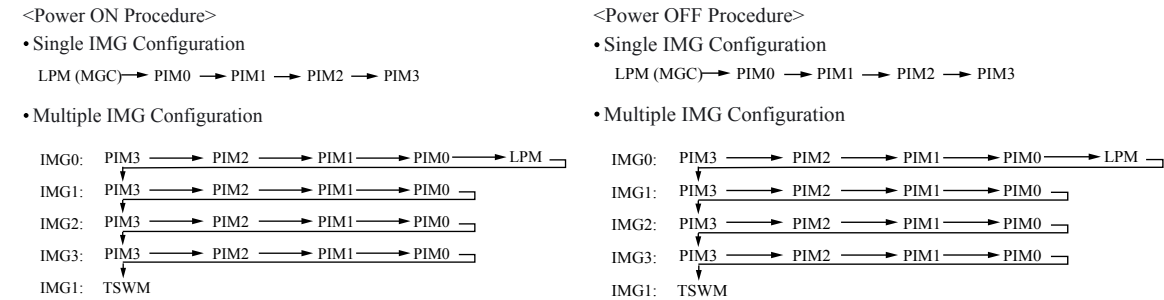
NAP-200-019
Sheet 2/2
Power ON



A

- | | |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| — Insert all PWR Supplies | Insert all PWR Supplies into their positions.
Insertion Steps:
1. Turn each Power Supply's circuit breaker OFF and insert them one at a time.
2. Turn circuit breakers ON.
3. Confirm that there are no abnormal indications (unusual smell, smoke, alarm, etc.) |
| — Insert and check Line/Trunk circuit cards | Insert Line (16LC, etc.) and Trunk (16COT, etc.) circuit cards into their backplane connectors one at a time and confirm that no fuses are blown in the process.
Check Steps:
1. Set MB switch UP and insert the card.
2. Set MB switch DOWN.
3. Confirm that there are no abnormal indications.
4. Set MB switch UP and remove the card. |
| — Insert and check control system cards | Insert control system circuit cards (TSW, MUX, etc.) one at a time and confirm that no fuses are blown in the process.
Check Steps:
1. Set MB switch UP and insert the card.
2. Set MB switch DOWN.
3. Confirm that there are no abnormal indications.
4. Set MB switch UP and remove the card. |

Note: *If a module contains dual PWR Supplies, they must be turned ON or OFF.*



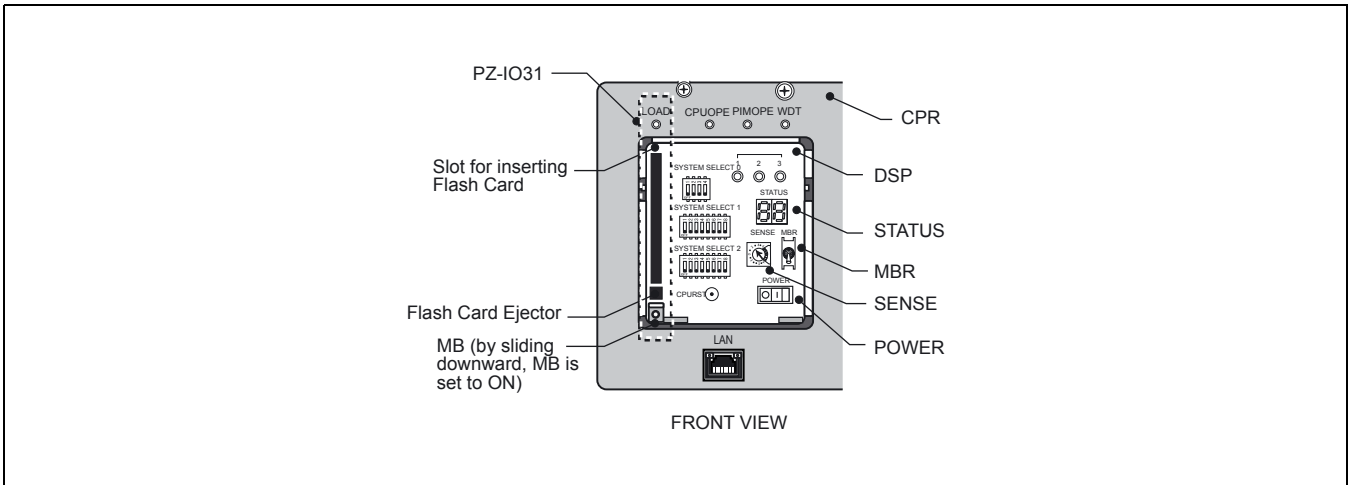
END



NAP-200-020
Sheet 1/7
Program Install and Load

Perform the following items for loading the program from the flash card.

Figure 020-1 Locations of Switches, OPE, and Flash Card Slot



NAP-200-020
Sheet 2/7
Program Install and Load



START

Flash Card Insertion

Here describes the procedure for inserting a flash card into PC. PC needs to be installed Windows 2000 and equipped with PCMCIA card slot.

Insert Steps:

1. Insert a flash card into PC.
Note: *The flash card (FLASH-ATA-320M) prepared by NEC must be used.*
2. Make sure the card icon appears in the task box, indicating PC recognized the flash card successfully.

Software Merging

Here describes the procedure for merging basic software and software(s). Prepare the appropriate CDs to be installed.

Merger Steps:

1. Select "Program"→"MAT tools"→"MSVICD" to display "MSVICD" window.
2. Select "Initial Setup" and click "Execute" button.
3. When "Step 1 Basic Software CD Copy" window displays, Insert a CD containing Basic Software and select a folder to be copied in "Copy To" field. Then click "Next" button.
4. A confirmation dialog displays indicating that making sure the path on the screen, click "Yes" button to copy Basic Software into the folder.
5. When "Step 2 Software Merge" window displays, insert the CDs (System Capacity License, IP Capacity License, and Softphone Client License) to be merged with the basic software. Then click "Next" button.
Note: *The merged file varies depending on the system.*
6. After the merger is complete, a dialog box displays, indicating whether to keep merging software. To merge the file again, click "Yes" button. Otherwise, click "No" button to exit the process. The merged file varies depending on the system.
7. After the merger is complete, a dialog box displays, indicating whether to keep merging software. To merge the file again, click "Yes" button. Otherwise, click "No" button to exit the process.
Note: *When other message is displayed, refer to "ERROR MESSAGE LIST".*
8. Click "OK" button to close the window.

A

NAP-200-020

Sheet 3/7

Program Install and Load



B

Software Writing

Here describes the procedure for writing updated program into a flash card. This step is performed using FLCVTR. Be careful when using this command as following:

- Login to PC as administrator or the same level privilege.
 - Do not restart the PC installing a flash card.
 - Do not attach a lot of equipment (CD-R, MO, etc) to a PC.
- It might cause the PC not to recognize the flash card drive.

Writing Steps:

1. Select "Program"→"MAT tools"→"FLCVTR" to display "FLCVTR" window.
2. Click "Execute" button next to "Initial installation".
3. Select the flash card drive in "Flash Card" field, and specify the path for the merged software in "Folder" field.
Note: When selecting the drive (partition) to be written in the flash card, select "option"→"drive" to display the drive field. Then click the drive check box.
4. Click "Set" button.
5. After "Start writing the data?" message box displays, make sure the updated program path and the flash card drive on the message box, then click "OK" button. It takes approximately 5 minutes to complete the data writing.
6. "Data write was completed" message box displays, click "OK" button to close it.

Note: When other message is displayed, refer to "ERROR MESSAGE LIST".

Flash Card Removal

Here describes the procedure for removing a flash card from PC.

Removal Steps:

1. Click the card icon in the task bar.
2. Select "Cancel" on the menu, and wait until the message appears.
3. Make sure the message, and push the eject button to remove the flash card.

Note: Do not remove the flash card without this procedure. It might damage your system.

END

NAP-200-020
Sheet 4/7
Program Install and Load



ERROR MESSAGE LIST

ERROR MESSAGE	ANSWER
Specify the flash card.	Make sure the flash card drive is correctly selected.
Specify a folder.	Make sure the folder is correctly specified.
The specified CD is not correct. The process is aborted.	Make sure the appropriate CD is inserted and the path ("ICS-BOOT.SYS" is located) is correctly specified.
The specified folder is not correct. The process is aborted.	Make sure the appropriate CD is inserted and the path ("ICS-BOOT.SYS" is located) is correctly specified.
The flash card is not in the normal state. The process is aborted.	Make sure the flash card has been formatted.
Flash card space is not enough. The process is aborted.	Check the program capacity to be installed.
Failed to write the data into the flash card. The process is aborted.	Check the flash card is firmly inserted in the slot.
Failed to read the data from the flash card. The process is aborted.	Check the flash card is firmly inserted in the slot.
Drive is not specified.	Specify a drive (partition).
Only one drive can be specified.	Make sure the one drive (partition) is selected; Do not specify more than one drive.
Failed to write the data. The process is aborted.	Make sure the folder exists.

NAP-200-020

Sheet 5/7

Program Install and Load

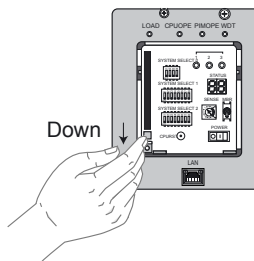


C

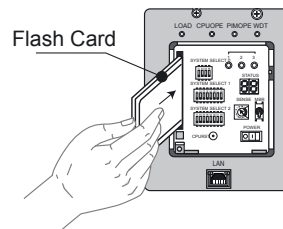
Prepare the flash card containing the program.

Make sure that all power of the PBX is off.

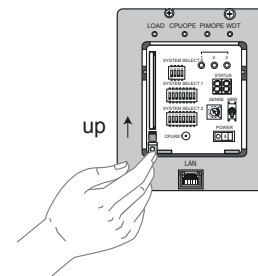
Insert the Flash Card into the slot.



Slide the MB plate downward.



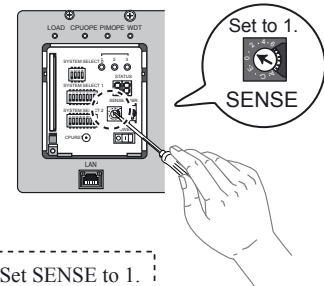
Insert the flash card into the slot.



Return the MB plate to the previous position.

Set the SENSE switch to "1" for loading the program on to the MEM.

SENSE => 1: Program is loaded from the flash card to the MEM,
then the data memory is cleared.



Set SENSE to 1.

D

NAP-200-020
Sheet 6/7
Program Install and Load

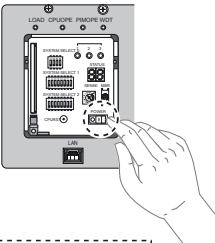


D

Turn ON the PBX as follows. **(Note)**

Turn on the PX-PW01 card(s).
Turn on the CPR#0 by pressing the PWR switch.
Turn on the CPR#1 by pressing the PWR switch. (option)
Turn on the power of the PIMs as follows:
PIM0 => PIM1 => PIM2 => PIM3

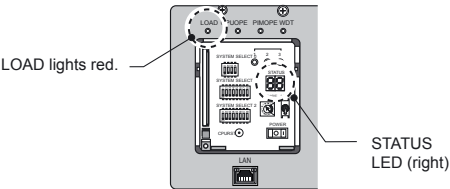
Note: CPR#1, PIM1-3 may not be used depending on the system configuration.



Turn on the CPR.

Loading starts. ("LOAD" lamp lights red while the Flash Card is being accessed.)
The 7-seg LED (right side) indicates the process of the loading as follows.

LED	MEANING
	Flash card access Accessing the flash card.
	Program LOAD Loading the program from the flash card.
	Office Data LOAD Loading the office data from the flash card.
	System Initialization Initializing the system.
	The system starts up again. Initializing is completed.



Loading completes.

When the CPU OPE lamp comes on the DSP, the loading is completed.

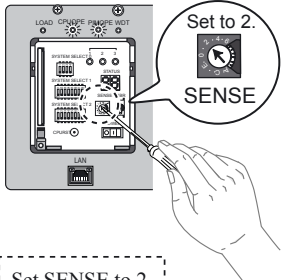
Set the SENSE switch to "2" on the CPU front panel.

SENSE => 2: On-Line mode (Restart without data memory clear)

Specify the LDM installation by using ASYDL (SYS 1 Index513).

Using AACT command, input Activation Code labeled on the back of Basic Software CD.

Note: In the case of North America and Austria, contact the supplier.



END

NAP-200-021

Sheet 1/2

Assignment of Office Data

START

Start up the MAT

Enter basic data

Assign the following data via the MAT for each of the office data programming sheet.

— “ATIM”: Assignment of Date and Time

— “ASYD” (SYS 1, 2, & 3) /ASYDL (SYS 1 & 2):
System Data assignment

— “ASYD”: Assign SYS1, INDEX 92, bit 3=1

— “AUNT”: Unit Data assignment

— “ADTM”: Assign TCP/IP Module data.

Save basic data

Save the above data onto the Flash Card using the
“MEM_HDD” Command.Initialization
(with office Data Loading)Make sure that the SENSE switch on the CPU Front
Panel has been set to “2”.

Set the keys on the TOPU as follows:

- PROGRAM KEY →NON LOAD
- SYSTEM DATA KEY →LOAD

Press CPURST button on the CPU Front Panel.

Clear the alarm by pressing ALM RST button on the
TOPU.

Assign Office Data

Assign data according to the office data programming
sheet.

A

SYSTEM STARTUP

NAP-200-021
Sheet 2/2
Assignment of Office Data



Save Office Data onto Flash Card ————— Save the Office Data onto the Flash Card from the MEM using the “MEM_HDD” command.

END

NAP-200-022

Sheet 1/5

Check of Lamp Indications and System Messages

START

Check lamp indications on Line/
Trunk circuit cards

Check lamp indications on each of the assigned Line/
Trunk circuit cards.

OPE lamp (G): ON

BL lamp (R): OFF

If the lamp indications are other than above, investigate
per Chapter 6: "FAULT RECOVERY DURING
TESTS."

Check lamp indications on control
system circuit cards

The OPE lamps (G) are shown in Figure 022-1 through
Figure 022-4.

If any alarm lamp illuminates, check switch settings on
the circuit card on that module, control cable
connections (Front & Backplane), and Office Data
assignments.

Confirm that no alarm lamps (R) / (Y)
are illuminating on the TOPU

As for the TOPU (Top Unit) lamp indications, refer to
the System Operations and Maintenance Manual.

Check System Messages

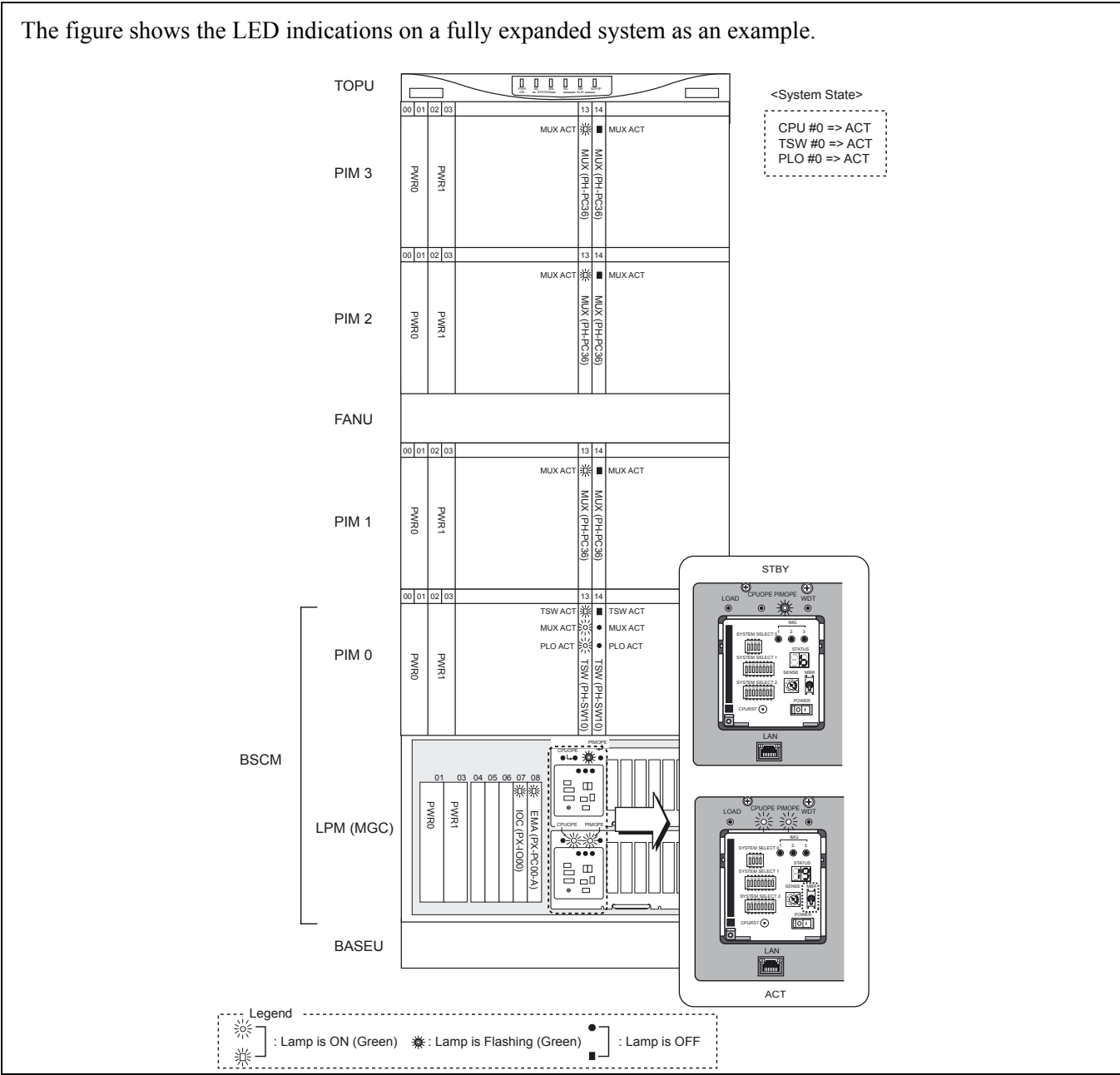
Display System Messages using MAT command
"DFTD."

If a message indicating a fault is displayed, investigate
and recover the fault, referring to the System Operations
and Maintenance Manual.

END

NAP-200-022
Sheet 2/5
Check of Lamp Indications and System Messages

Figure 022-1 LED Indications in Normal Operation (Single IMG Configuration)



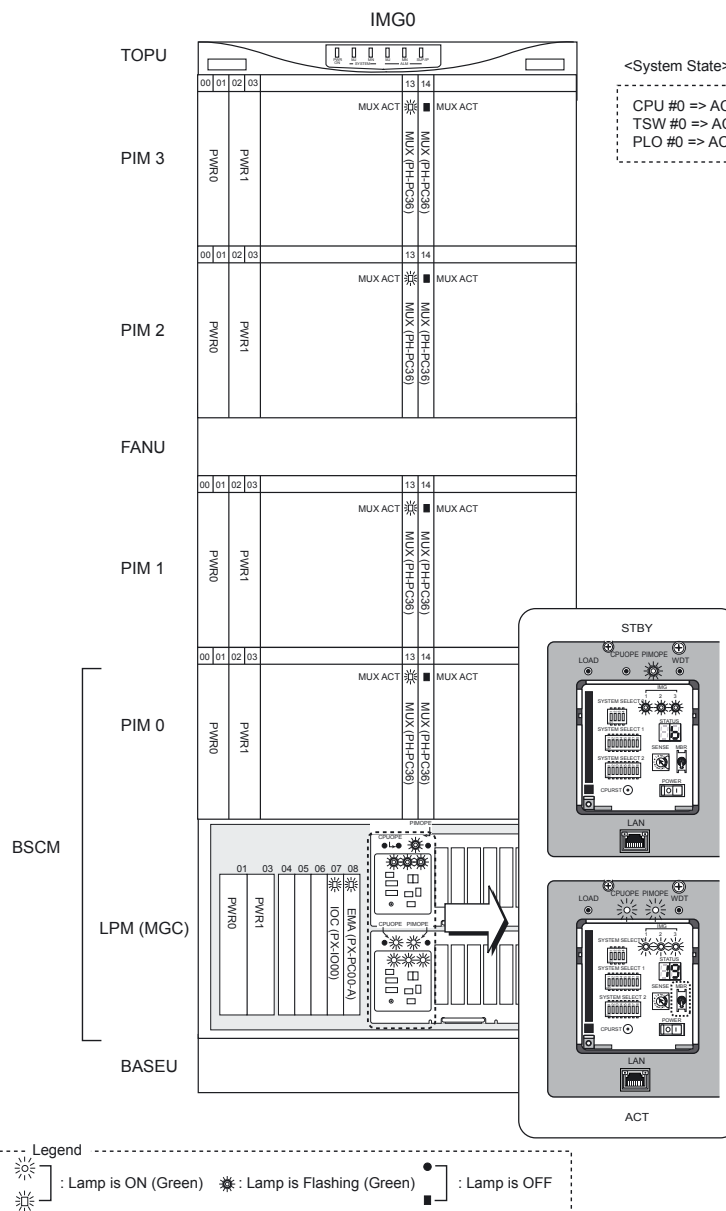
NAP-200-022

Sheet 3/5

Check of Lamp Indications and System Messages

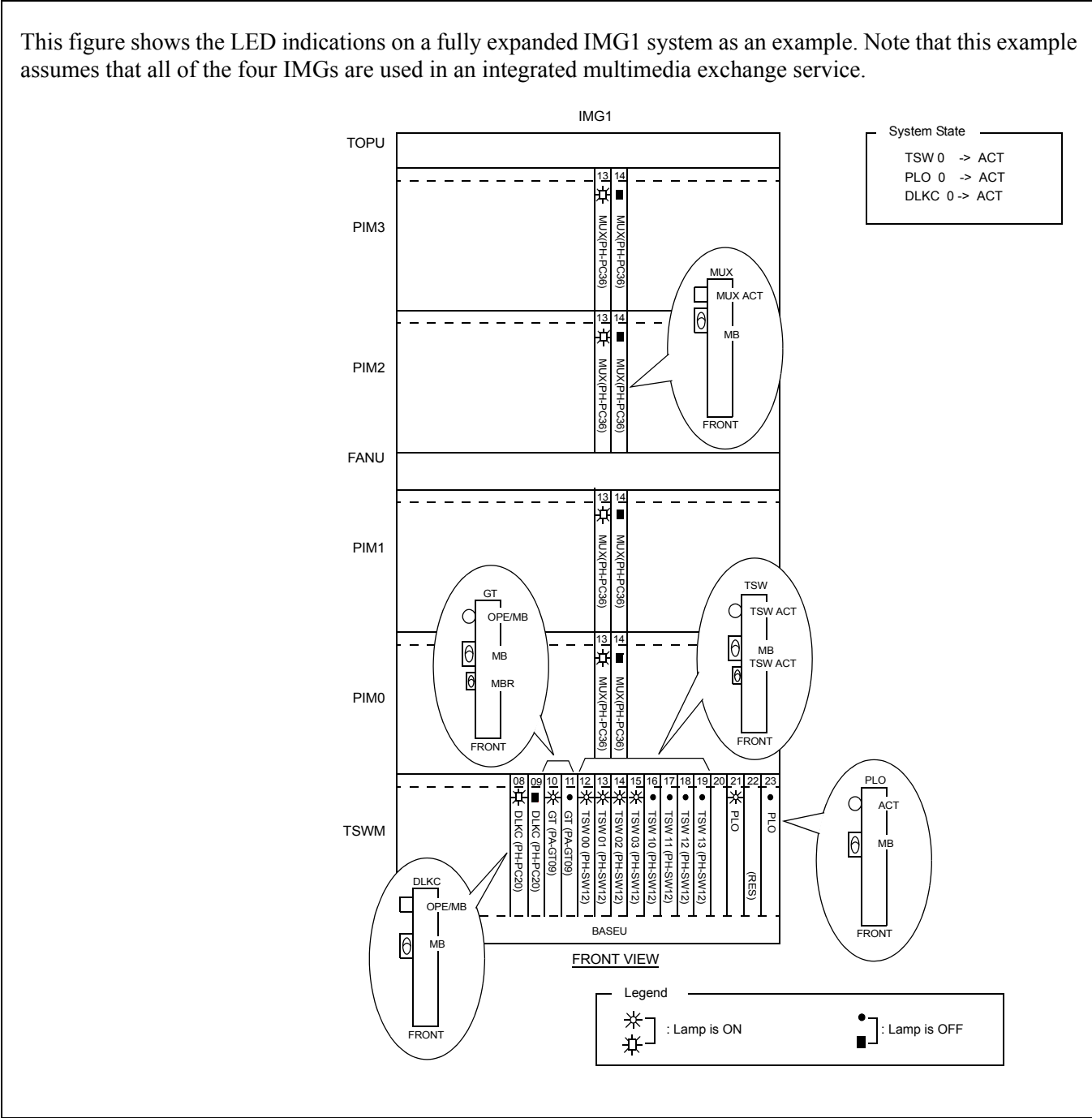
Figure 022-2 LED Indications of IMG0 in Normal Operation (Multiple IMG Configuration)

The figure shows the LED indications on a fully expanded system as an example.



NAP-200-022
Sheet 4/5
Check of Lamp Indications and System Messages

Figure 022-3 LED Indications of IMG1 in Normal Operation (Multiple IMG Configuration)



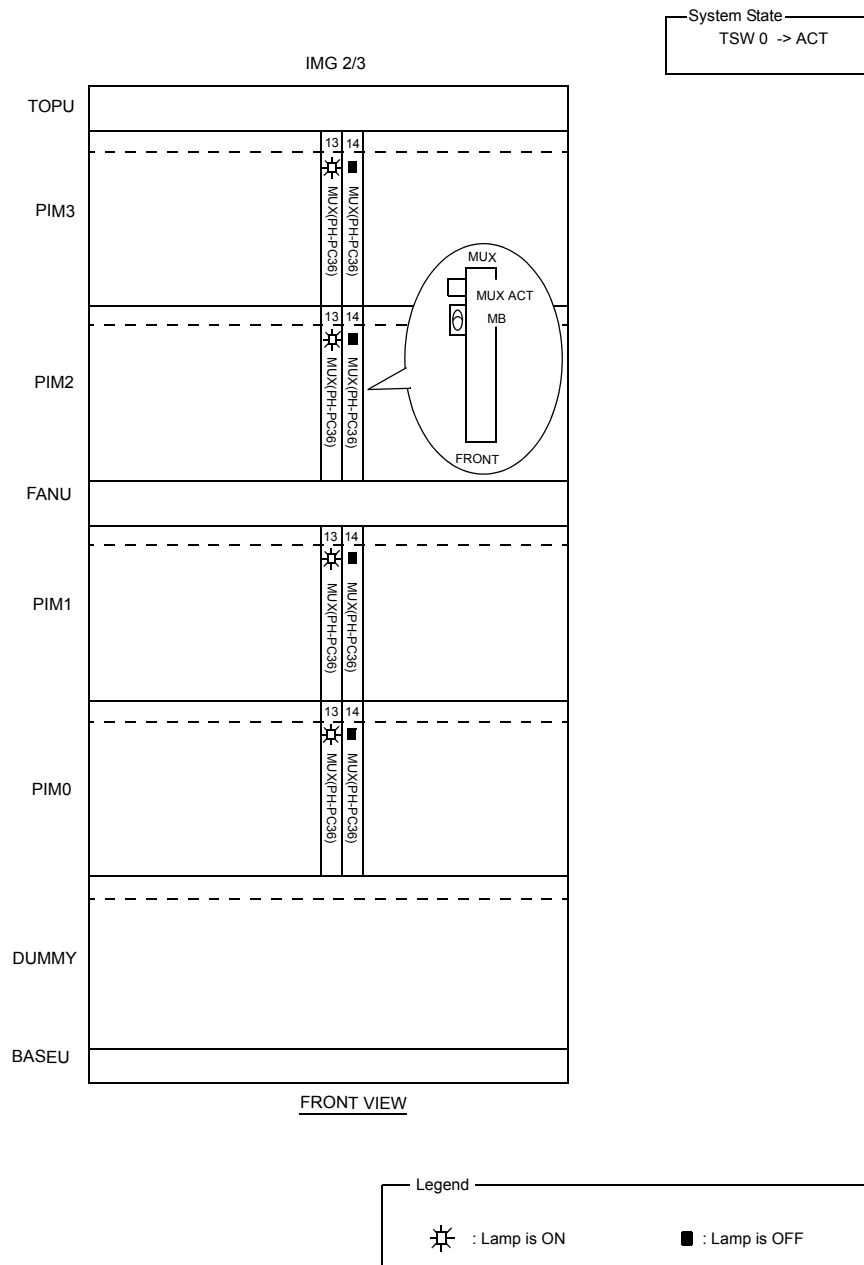
NAP-200-022

Sheet 5/5

Check of Lamp Indications and System Messages

Figure 022-4 LED Indications of IMG 2/3 in Normal Operation (example) (Multiple IMG Configuration)

This figure shows the LED indications on a fully expanded system of IMG 2/3 as an example.

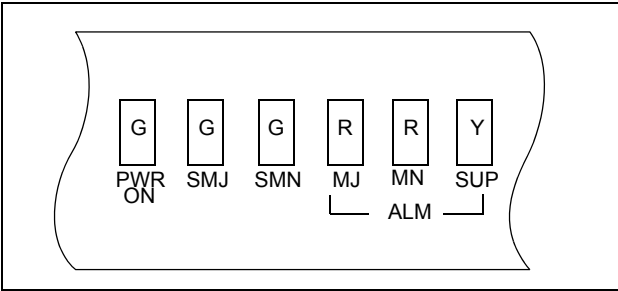


NAP-200-023
Sheet 1/2
Check of Alarm Lamps of the TOPU



Test Outline: The System has Alarm Lamps on the TOPU. Figure 023-1 shows the Alarm Lamps on the TOPU. For more information about each lamp, see the NEAX2400 IPX System Operations and Maintenance Manual.

Figure 023-1 Alarm Lamps on the TOPU



Note: *SMJ and SMN are used in multiple IMG configuration only.*

NAP-200-023

Sheet 2/2

Check of Alarm Lamps of the TOPU

START

Test of MJ (MAJOR) Lamp

Set the circuit breakers of the Power Supplies (PWR0, 1) in a PIM to OFF (About 10 seconds later, set the circuit breaker(s) to ON again.

Confirm that the MJ lamp (red) on TOPU turns ON.

Stop the alarm indication by pressing ALM RST button on TOPU.

Test of MN (MINOR) Lamp

Take an act side RGU Fuse out of the PWR card.

Confirm that the MN lamp (red) on TOPU turns ON.

Stop the alarm indication by pressing ALM RST button on TOPU.

Test of SUP (SUPERVISORY) Lamp

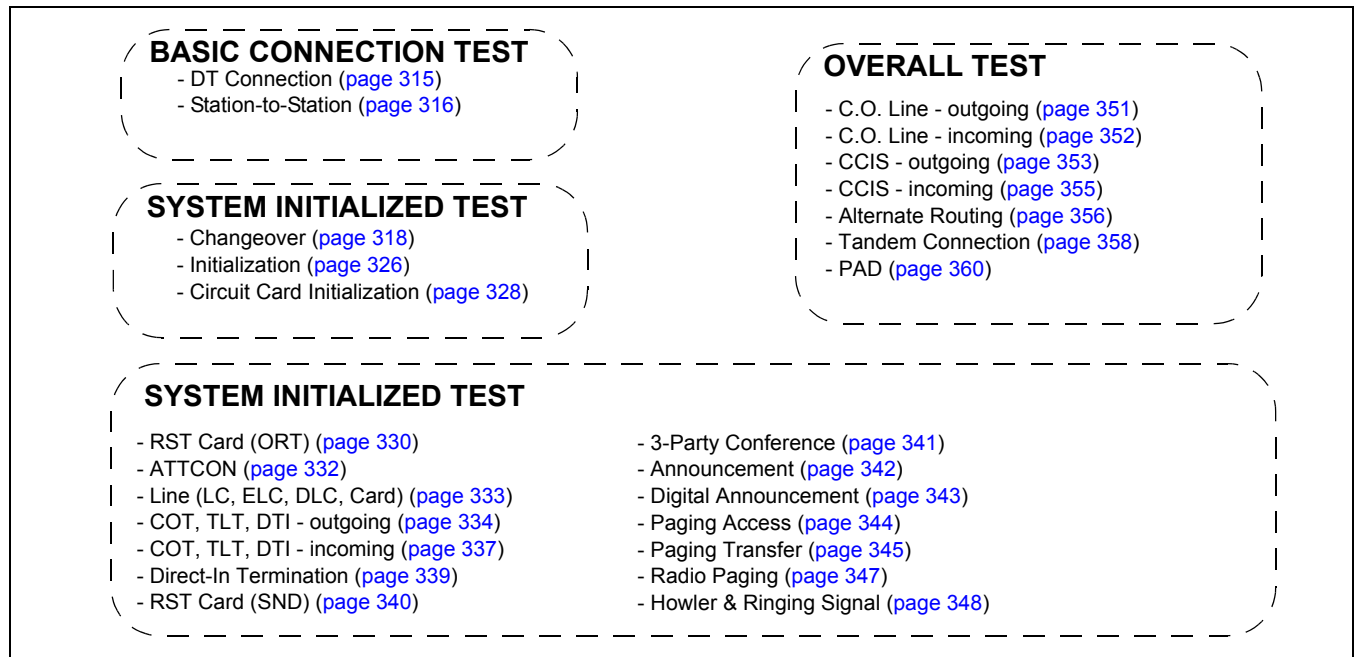
On the EMA circuit card, flip the MB switch DOWN-UP-DOWN

Confirm that the SUP lamp (yellow) on TOPU turns ON.

Stop the alarm indication by pressing ALM RST button on TOPU.

END

CHAPTER 5 INSTALLATION TEST PROCEDURE



1. HOW TO ENTER DATA IN THE TEST CHECK COLUMN

Each NAP in this Chapter has check column for test result entry for each test item (see Figure 5-1). This paragraph explains the method of entering test result into the check column concerned using Figure 5-1 as an example.

1. Method of Entry

Each check column consists of two sections (“PROVIDED” and “CHECK”). If the equipment or service feature pertaining to the test item is provided in the system, enter “*” in the PROVIDED section. At the time of performing installation tests, the test item with “*” in the PROVIDED section must be tested without exception.

In the “CHECK” column, enter the results of each test as follows:

- When the test result is good: “√”
- When the test result is no good: “—”

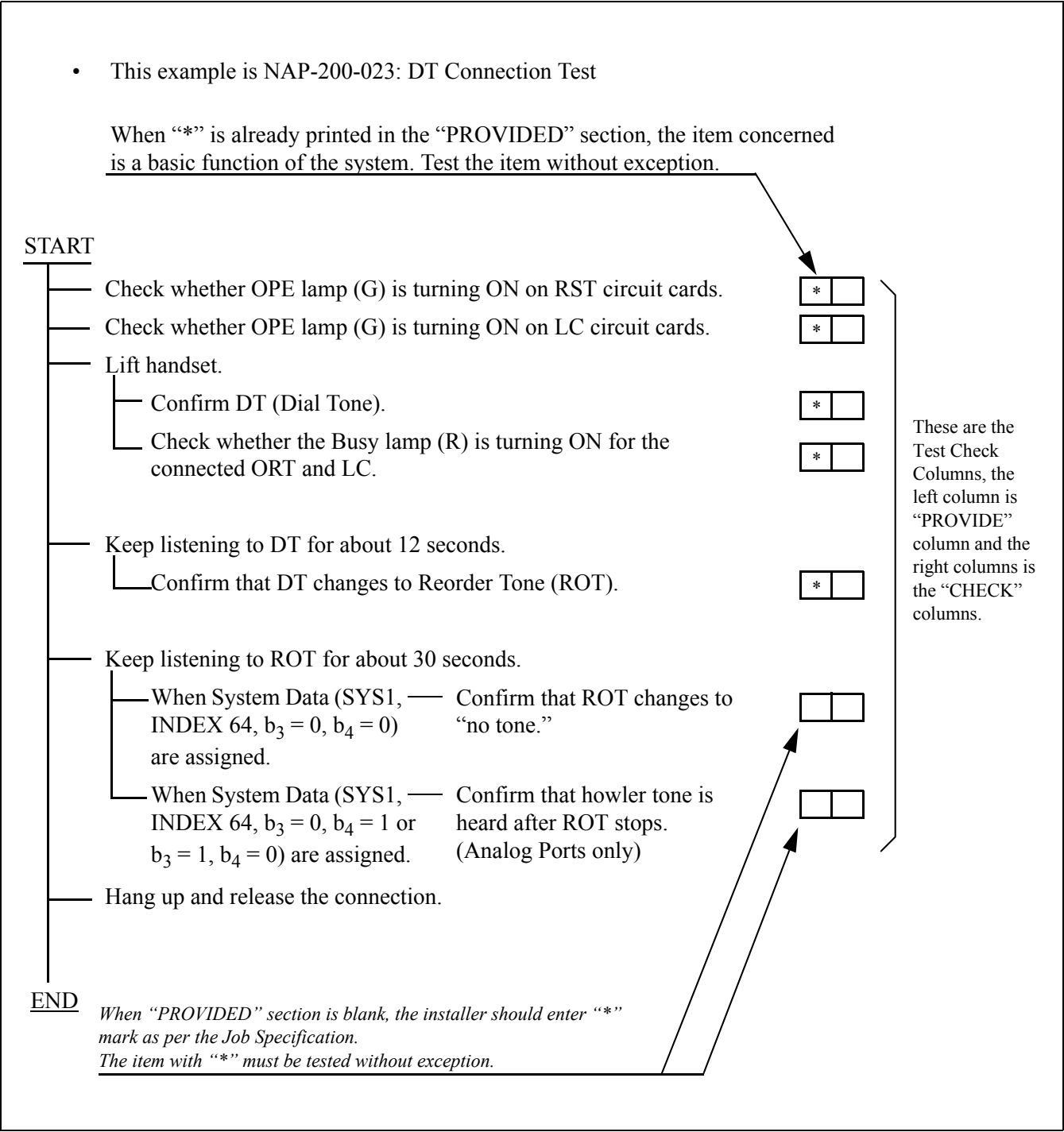
2. Fault Recovery

If a fault is detected as a result of an installation test, enter “F” into the related check sheet. After finishing all tests in the same category, be sure to repair the fault before proceeding to the next test.

3. Entry into Check Column after Fault Recovery

After completing fault recovery work, a test must be performed to confirm that the fault has been corrected. If the result of this confirmation indicates that the fault has been corrected, enter “√” next to the “—” entered previously. This entry should appear as: “— √”.

Figure 5-1 Example of Entry to Test Check Column



INSTALLATION TEST PROCEDURE

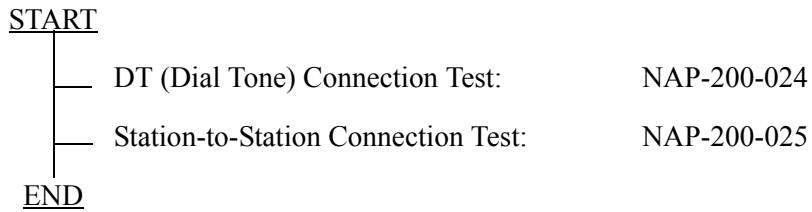
2. BASIC CONNECTION TEST

2.1 Outline

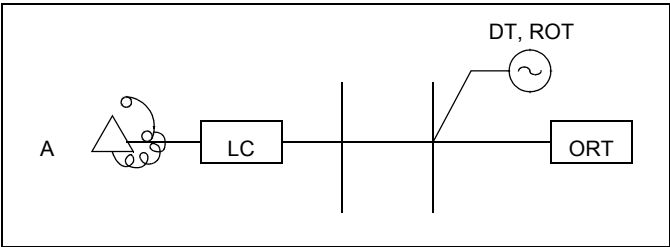
After the system has been started up, establish some basic connections and verify that the system operates normally.

2.2 Basic Connection Test Procedure

Perform tests on the operations of the processors and the system by referring to the NAP Number indicated to the right of each item in the following flowchart. If an operation cannot be performed satisfactorily, perform the necessary repair procedure(s) based on Chapter 6, "FAULT RECOVERY DURING TESTS".



NAP-200-024
Sheet 1/1
DT (Dial Tone) Connection Test



START

—	Check whether the OPE lamp (G) is turning ON on the RST circuit cards.	<div><div>*</div><div></div></div>
—	Check whether the OPE lamp (G) is turning ON on the LC circuit cards.	<div><div>*</div><div></div></div>
—	Lift handset.	
—	— Confirm DT (Dial Tone).	<div><div>*</div><div></div></div>
—	— Check whether the Busy lamp (R) is turning ON for the connected ORT and LC.	<div><div>*</div><div></div></div>
—	Keep listening to DT for about 12 seconds.	
—	— Confirm that DT changes to Reorder Tone (ROT).	<div><div>*</div><div></div></div>
—	Keep listening to ROT for about 30 seconds.	
—	— When System Data (SYS1, INDEX 64, $b_3 = 0$, $b_4 = 0$) are assigned.	<div><div></div><div></div></div>
—	— When System Data (SYS1, INDEX 64, $b_3 = 0$, $b_4 = 1$ or $b_3 = 1$, $b_4 = 0$) are assigned.	<div><div></div><div></div></div>
—	Hang up and release the connection.	

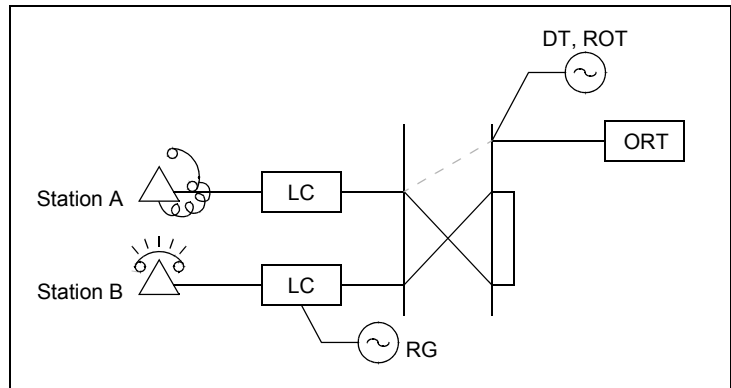
END

INSTALLATION TEST PROCEDURE

NAP-200-025

Sheet 1/1

Station to Station Connection Test



START

Confirm that a connection can be established between Station A and Station B.

Station A goes off-hook.

└ Station A hears DT.

*

Station A dials the station number of Station B.

└ Station A confirms that DT stops when the first digit has been dialed.

*

└ Station A confirms that RBT (Ring Back Tone) is heard after dialing ends.

*

Station B hears ringing on the telephone set.

*

Station B lifts handset and answers the call.

└ After answering, both Stations A and B confirm that they can talk with each other.

*

Stations A and B hang up. The connection is released.

END

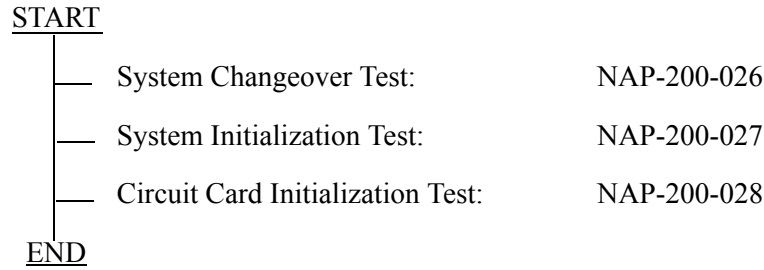
3. SYSTEM INITIALIZED TEST

3.1 Outline

Tests are to be performed on the restart processing (reinitialization) and system changeover functions which enable the system to restart its operations and services.

3.2 System Initialized Test Procedure

The System Changeover Test and Initialization Tests are to be performed per the NAP Numbers indicated to the right of each item in the following flowchart.



INSTALLATION TEST PROCEDURE

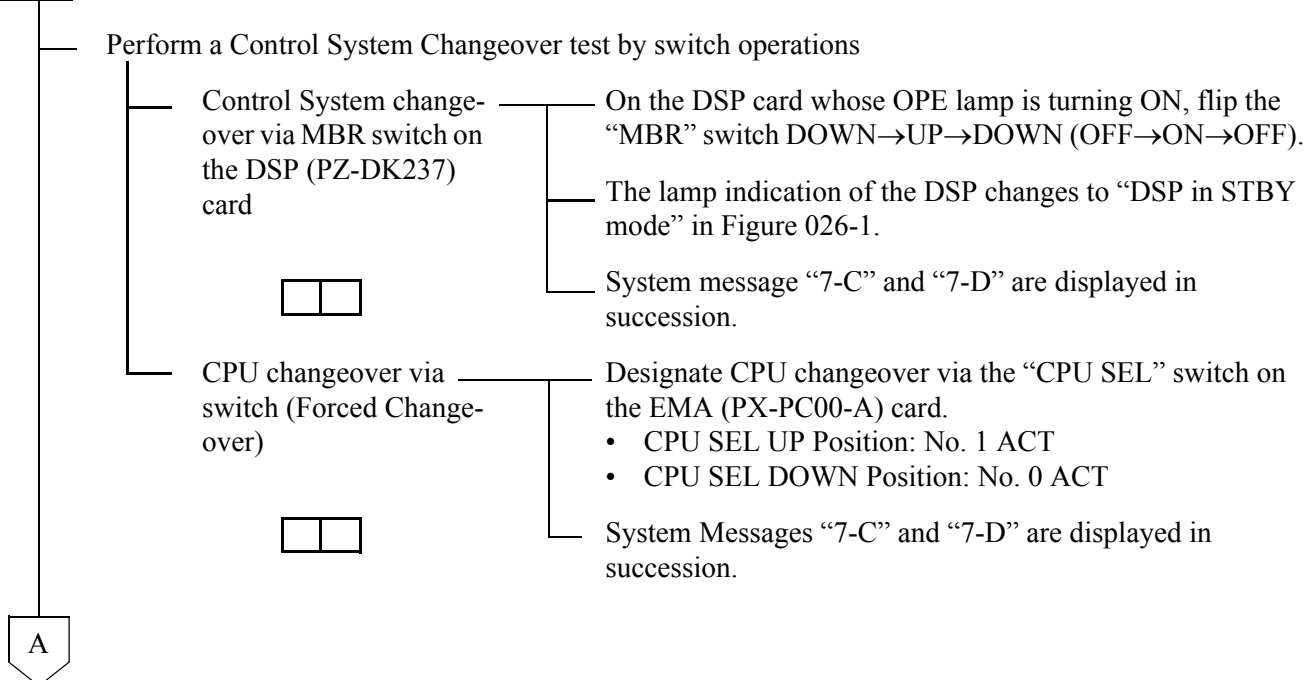
NAP-200-026	
Sheet 1/8	
System Changeover Test	Single IMG and Multiple IMG Configuration



Test Outline:

Tests are performed to see if a changeover of the dual systems (Control Systems and Speech Path Systems) of the PBX can be executed.

START



NAP-200-026	
Sheet 2/8	
System Changeover Test	Single IMG and Multiple IMG Configuration



Figure 026-1 How to Perform a Control System Changeover (Single IMG Configuration)

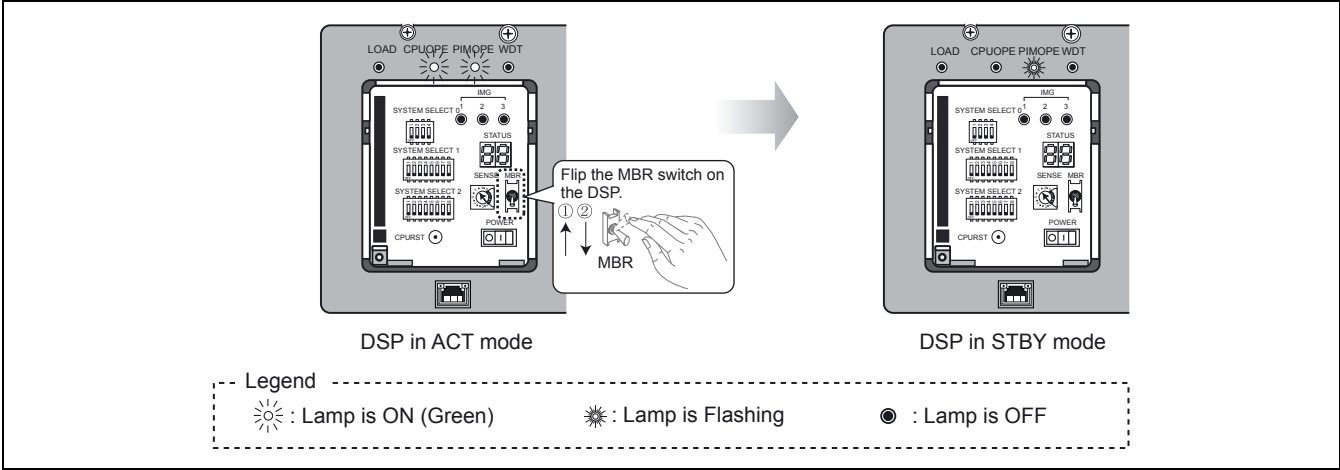
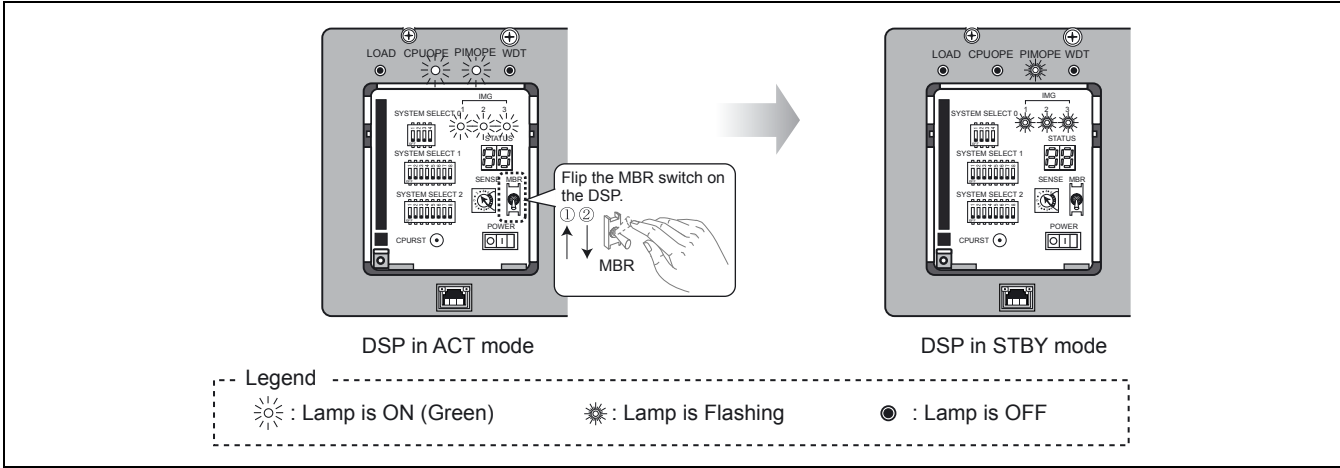


Figure 026-2 How to Perform a Control System Changeover (Multiple IMG Configuration)



INSTALLATION TEST PROCEDURE

NAP-200-026	
Sheet 3/8	
System Changeover Test	Single IMG Configuration

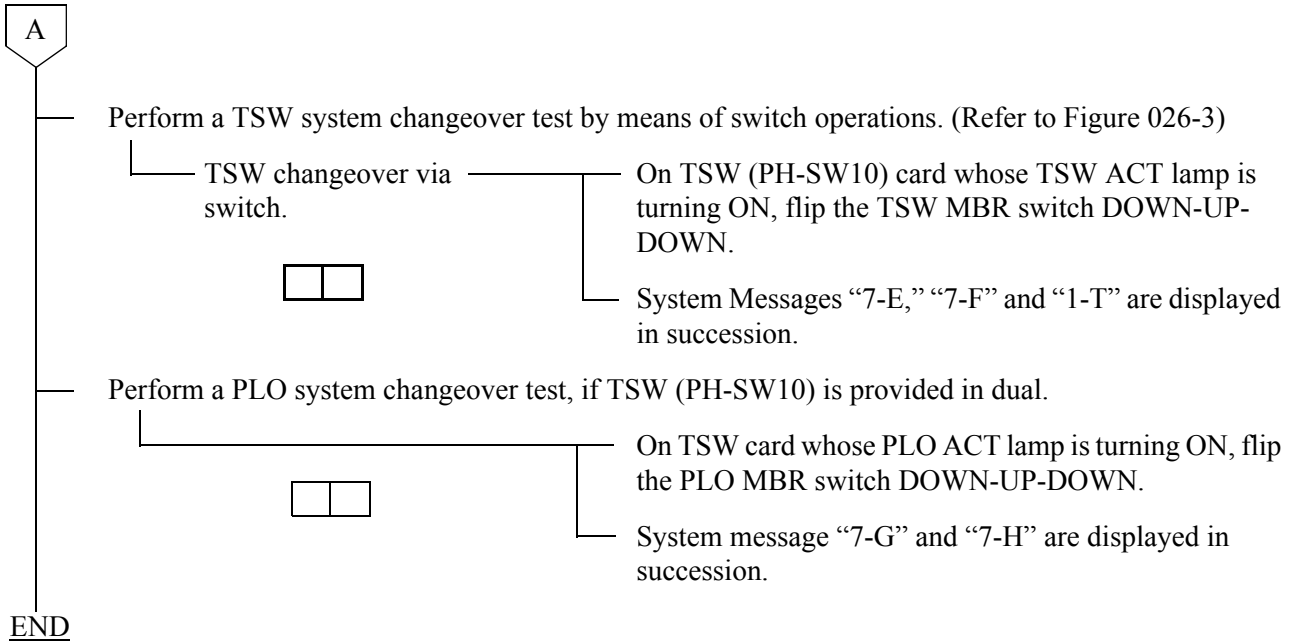
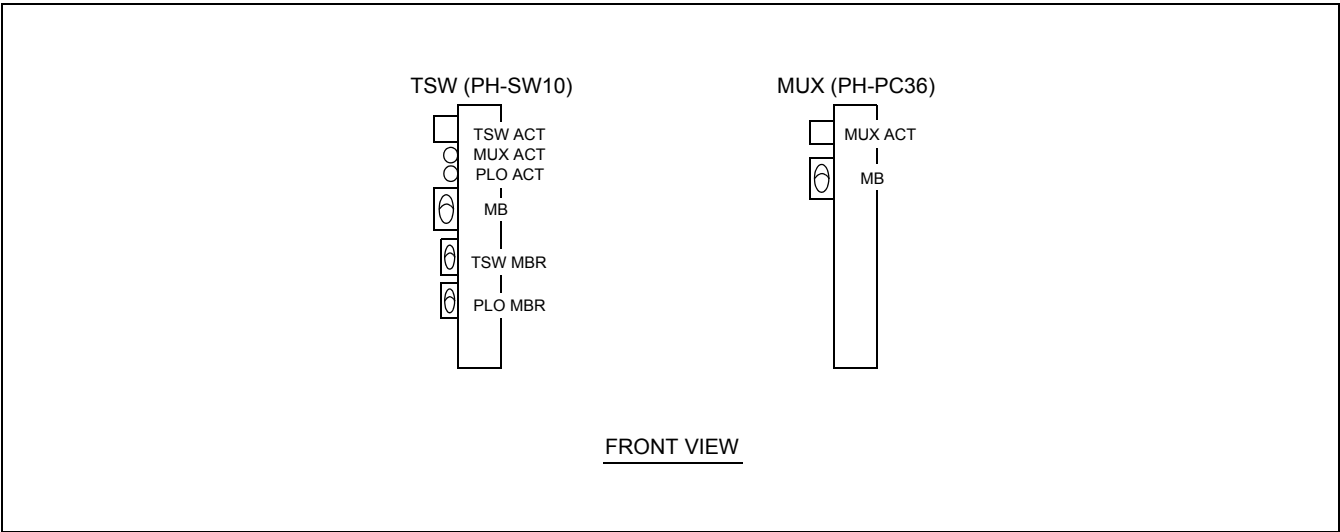


Figure 026-3 LEDs and Switches on TSW/MUX



NAP-200-026	
Sheet 4/8	
System Changeover Test	Multiple IMG Configuration



A

Perform a Speech Path system changeover test by switch operations. (Refer to Figure 026-4)

TSW changeover via
switch



On the active GT (PH-GT09) card whose OPE/MB lamp is illuminating, flip the MBR switch DOWN-UP-DOWN.

Make sure that the active Speech Path system has been changed over to the STBY mode. (Check all the related circuit cards, which were formerly active, have been totally changed over to the STBY mode.

Circuit Cards to be affected

- TSW (PH-SW12)
- DLKC (PH-PC20)
- MUX (PH-PC36)

Note: Refer to Figure 026-4.

Analyze the system messages “7-E,” “7-F” and “1-T” to be displayed automatically.

Perform a PLO system changeover test by switch operations. (Refer to Figure 026-3)

PLO changeover via
switch.



On PLO card on which ACT/OPE lamp is illuminating, flip the MB switch DOWN-UP-DOWN.

Note

Make sure that the active PLO system has been changed over to the STBY mode (ACT/OPE lamp goes OFF).

Analyze the system messages “7-U” and “7-V” to be displayed automatically.

Note: As for the PLO, any of the following cards can be used:

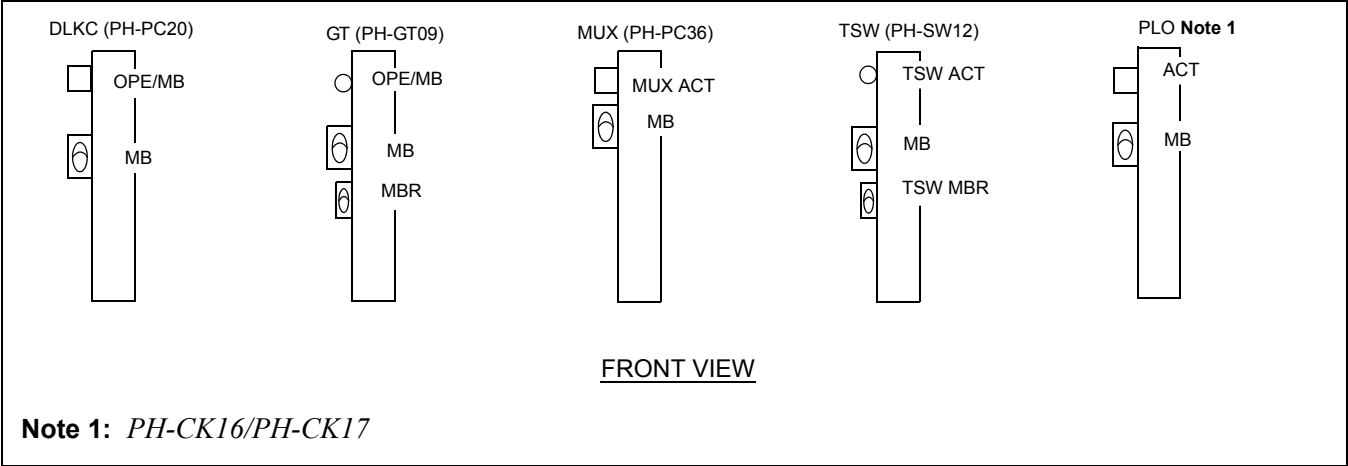
- PH-CK16
- PH-CK17

END

NAP-200-026	
Sheet 5/8	
System Changeover Test	Multiple IMG Configuration

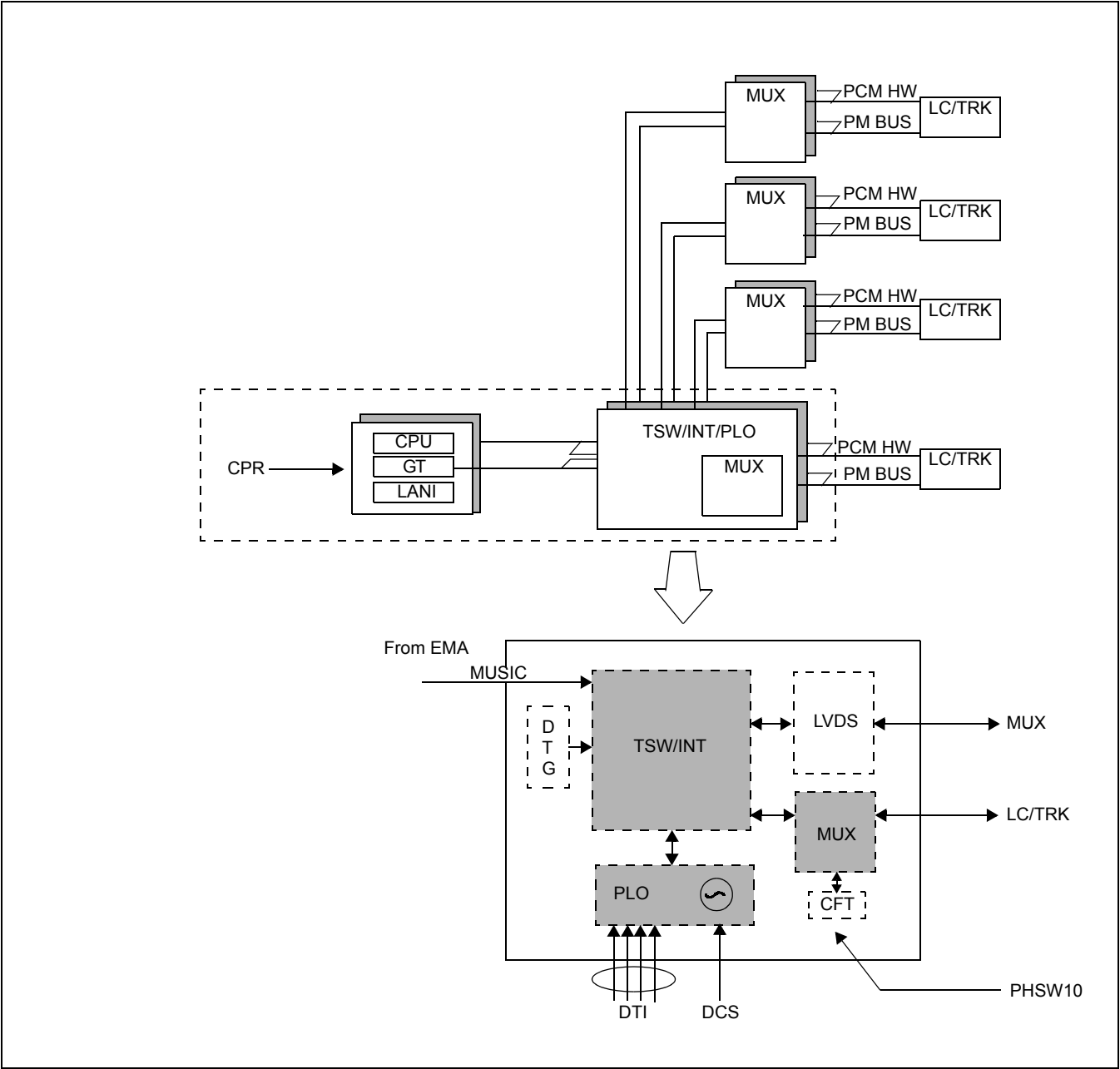


Figure 026-4 LEDs and Switches for System Changeover (Multiple IMG Configuration)



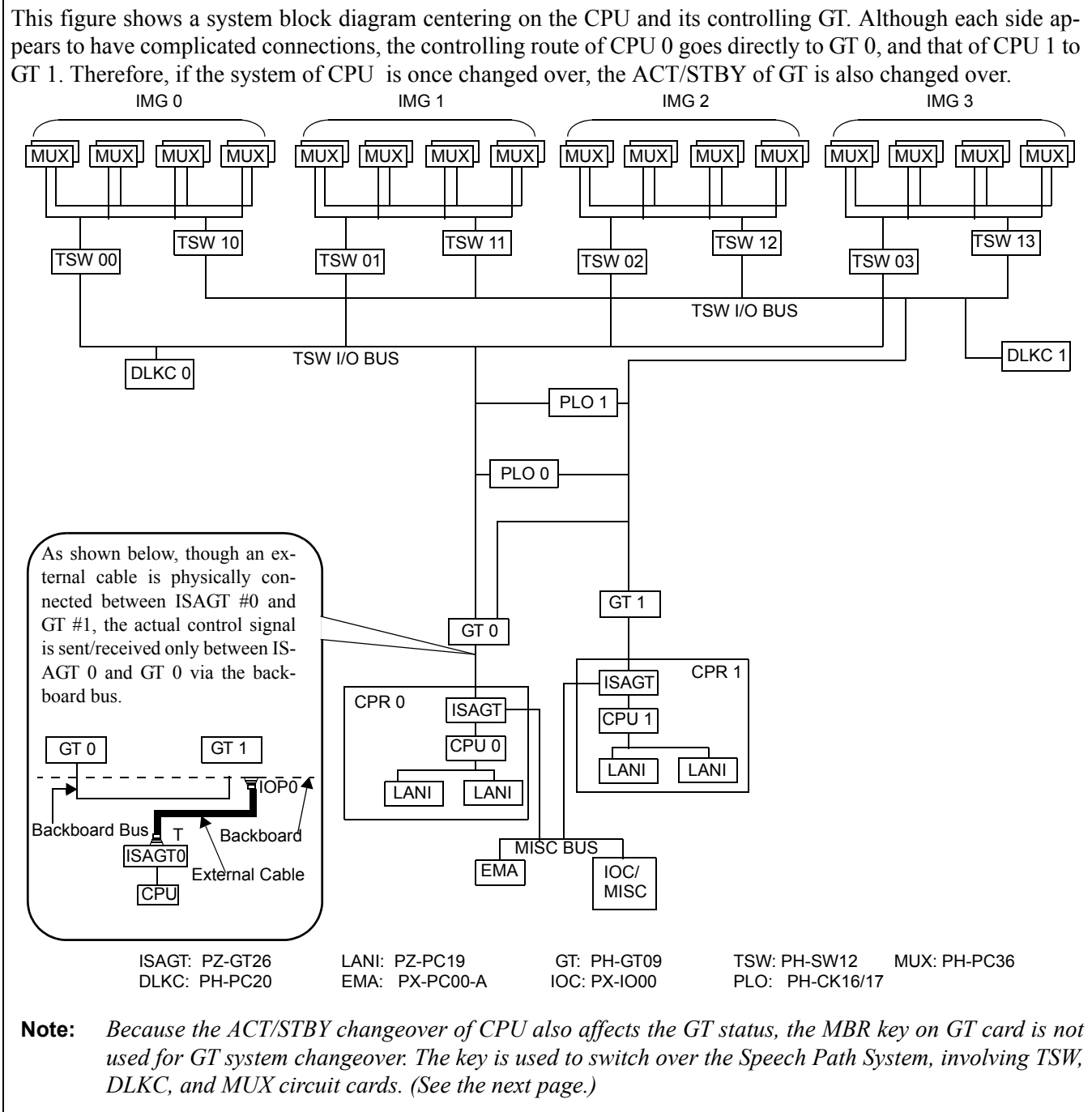
NAP-200-026	
Sheet 6/8	
System Changeover Test	Single IMG Configuration

Figure 026-5 System Block Diagram (TSW and MUX) (Single IMG Configuration)



NAP-200-026	
Sheet 7/8	
System Changeover Test	Multiple IMG Configuration

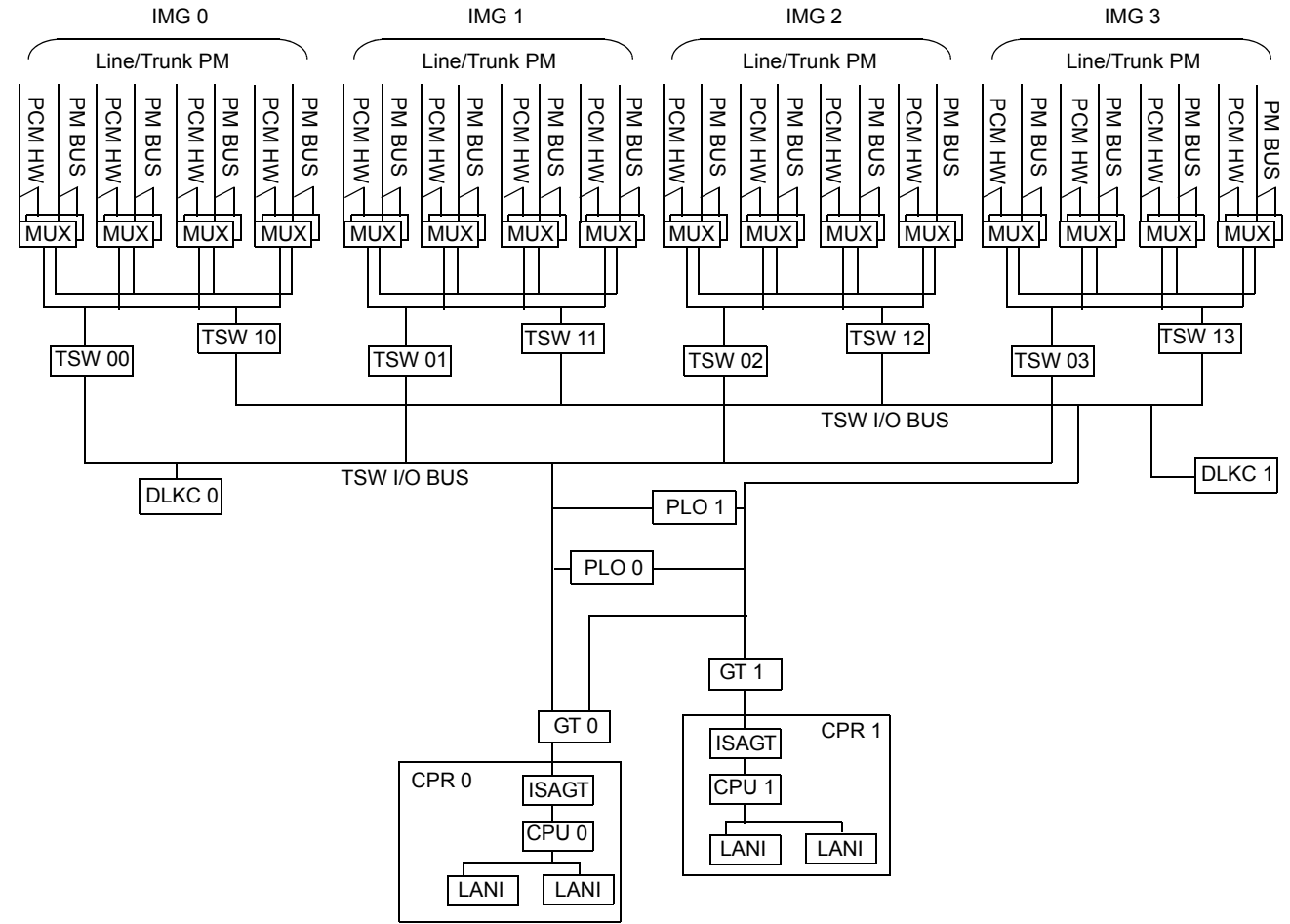
Figure 026-6 System Block Diagram (GT and Other Controlling Blocks) (Multiple IMG Configuration)



NAP-200-026	
Sheet 8/8	
System Changeover Test	Multiple IMG Configuration

Figure 026-7 System Block Diagram (Speech Path) (Multiple IMG Configuration)

This figure shows a system block diagram centering on the GT and its controlling Speech Path System. By changing over the ACT/STBY of the Speech Path System, all the related systems, such as TSW/INT, DLKC, and MUX, are totally switched over. The changeover can be executed by a key operation on the active GT card.



ISAGT: PZ-GT26 LANI: PZ-PC19 GT: PH-GT09 TSW: PH-SW12 MUX: PH-PC36
DLKC: PH-PC20 PLO: PH-CK16/17

Note: If the MBR key is once flipped on the active GT card, all the Speech Path related systems (TSW/INT, DLKC, and MUX) in the same switching block are totally changed over. However, ACT/STBY of GT and PLO is not affected.

INSTALLATION TEST PROCEDURE

NAP-200-027
Sheet 1/2
System Initialization Test



Test Outline:

Tests are performed to see if system initialization can be executed. There are two kinds of test method; test by using START button on the TOPU, and test by turning power ON/OFF.

START

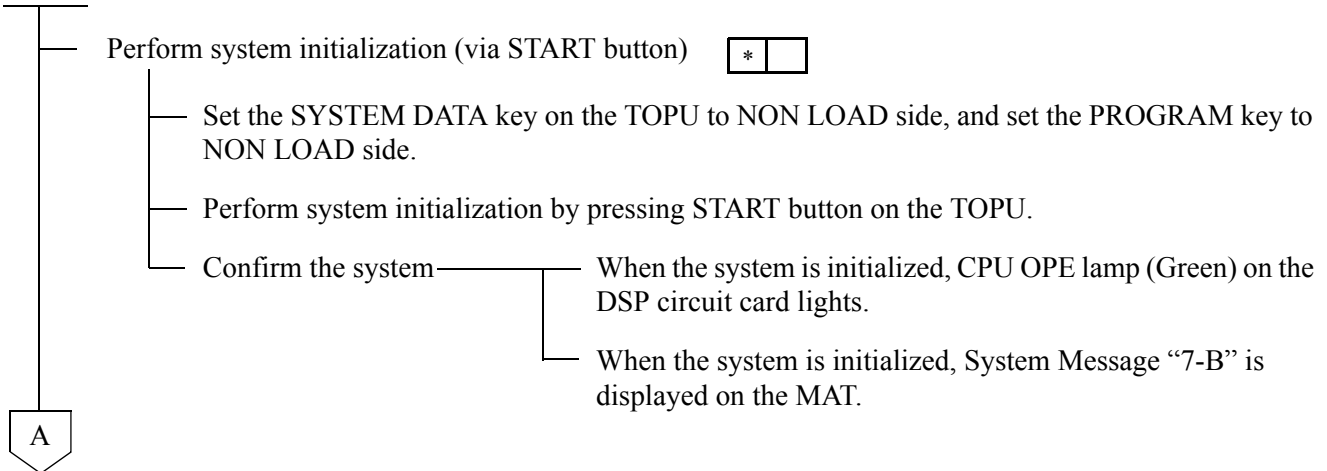
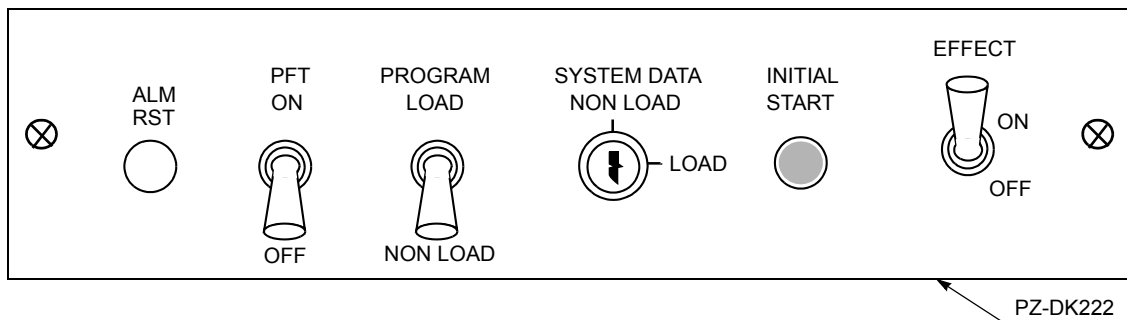
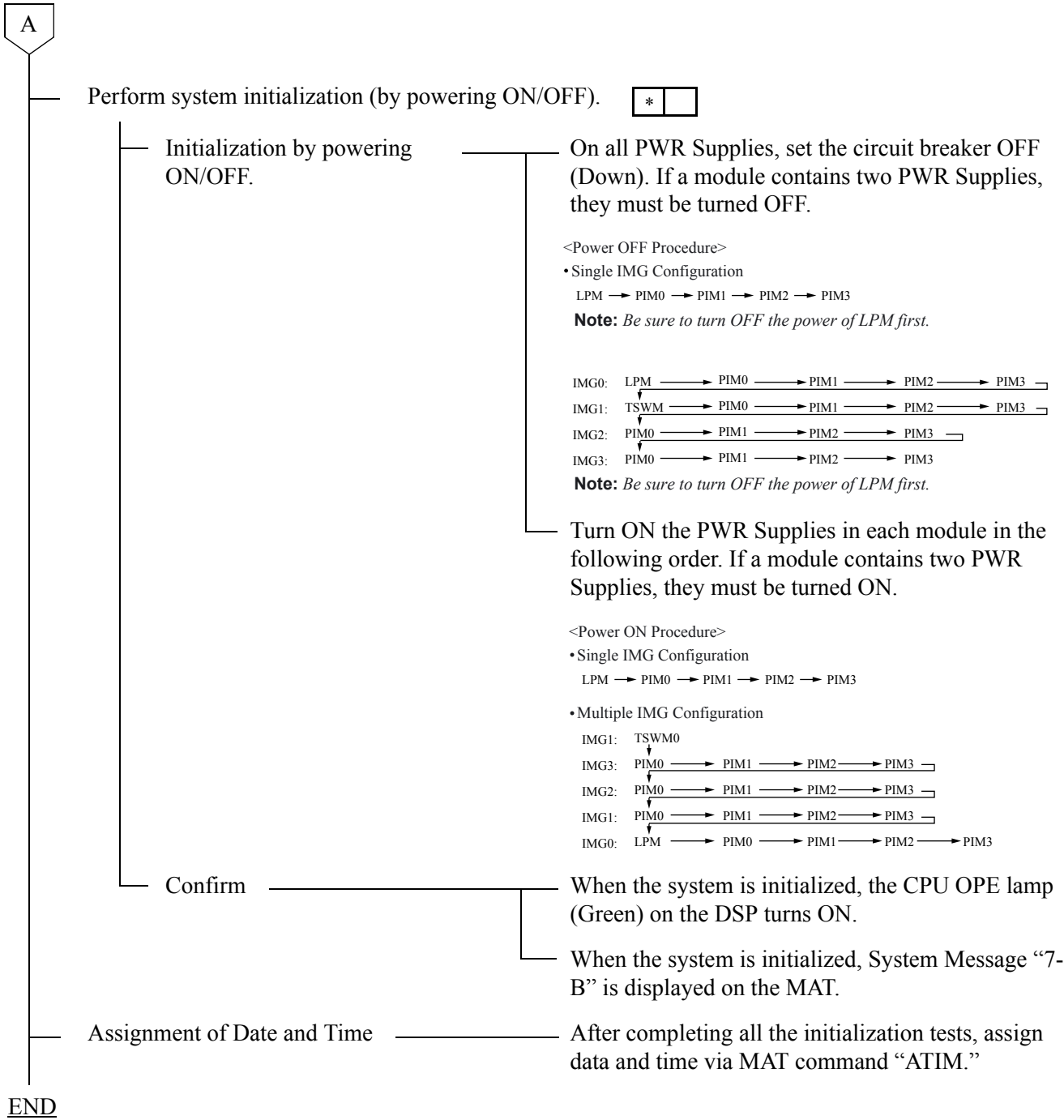


Figure 027-1 System Initialization via ‘Start’ Button

To perform system initialization, set the switch keys on the TOPU as shown below, then press START button.



NAP-200-027
Sheet 2/2
System Initialization Test

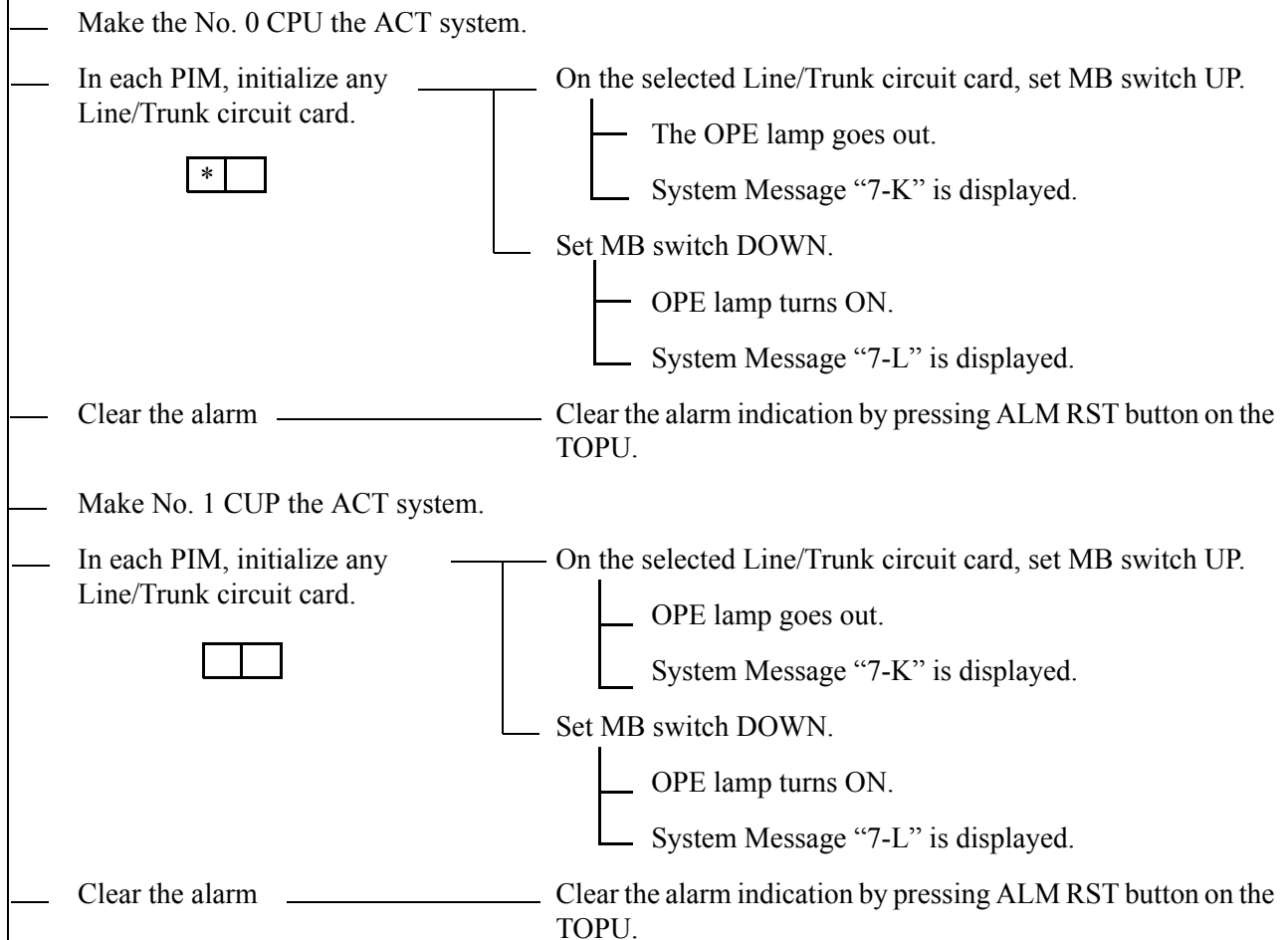


INSTALLATION TEST PROCEDURE

NAP-200-028
Sheet 1/1
Circuit Card Initialization Test



START



END

4. PORT CONNECTION TEST

4.1 Outline

Tests are to be performed on all the circuits of LC and Trunk circuit cards and PWR Supplies. LC and Trunk circuit cards are tested to confirm their operations and speech path conditions. PWR Supplies are tested to confirm howler tone and ringing signal.

While tests are in progress, the No. 0 CPU and TSW systems must be ACT (active).

4.2 Port Connection Test Procedure

The connection test procedure for each type of circuit card is described in the NAP indicated to the right of each item in the following flowchart.

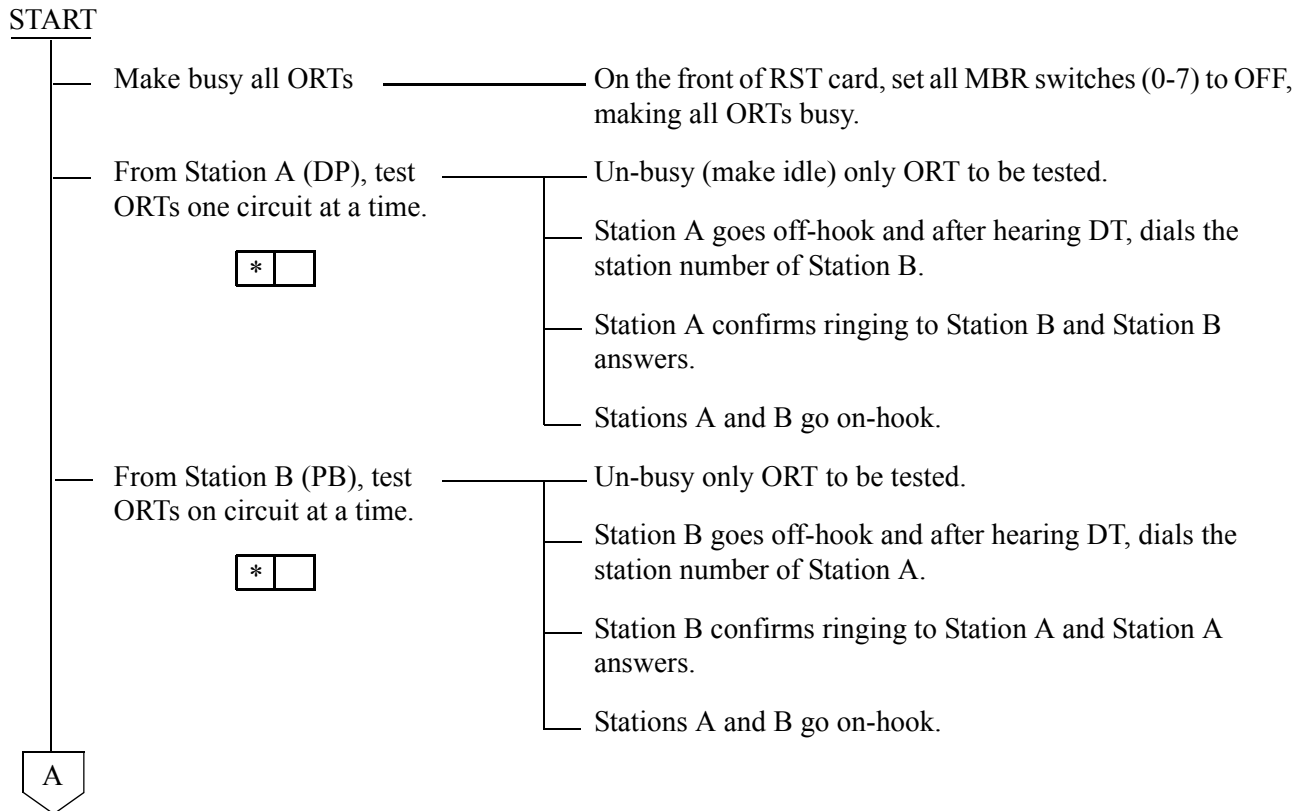
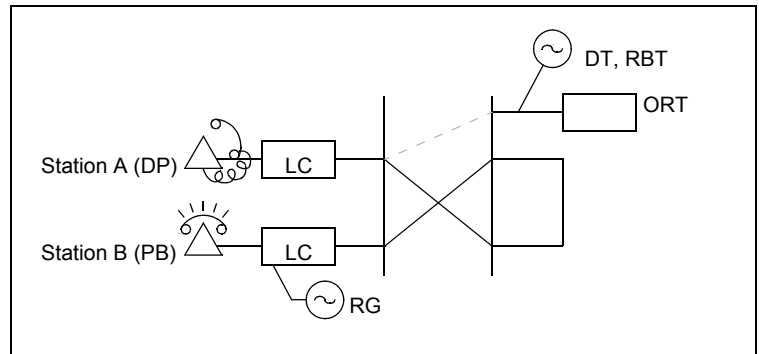
START

—	ORT (RST Card) Connection Test:	NAP-200-029
—	ATTCON (ATI Card) Connection Test:	NAP-200-030
—	Line (LC, ELC Card) Connection Test:	NAP-200-031
—	Outgoing Trunk (COT, TLT, DTI Card) Connection Test:	NAP-200-032
—	Incoming Trunk (COT, TLT, DTI Card) Connection Test:	NAP-200-033
—	Direct-In Termination Trunk (COT Card) Connection Test:	NAP-200-034
—	SND (RST Card) Connection Test:	NAP-200-035
—	3-Party Conference Trunk Function Test:	NAP-200-036
—	Connection Test - Announcement Trunk for Announcement Service:	NAP-200-037
—	Connection Test - Digital Announcement Trunk for Announcement Service:	NAP-200-038
—	Connection Test - Paging Trunk for Paging Access Service:	NAP-200-039
—	Connection Test - Paging Trunk for Paging Transfer Service:	NAP-200-040
—	Radio Paging Trunk (COT Card) Connection Test:	NAP-200-041
—	Howler and Ringing Signal Test:	NAP-200-042

END

INSTALLATION TEST PROCEDURE

NAP-200-029
Sheet 1/2
ORT (RST Card) Connection Test



NAP-200-029
Sheet 2/2
ORT (RST Card) Connection Test

A

Perform tests for a situation where all ORTs are busy.

System Data SYS1,
INDEX 4, $b_0 = 0$



- Station A goes off-hook.
- Station A confirms that Reorder Tone (ROT) is heard
- Station A goes off-hook.

System Data SYS1,
INDEX 4, $b_0 = 1$



- Station A goes off-hook.
- Station A confirms that no tone is heard.
- Un-busy (make idle) a single ORT circuit.
- Station A confirms that DT is heard.
- Station A goes off-hook.

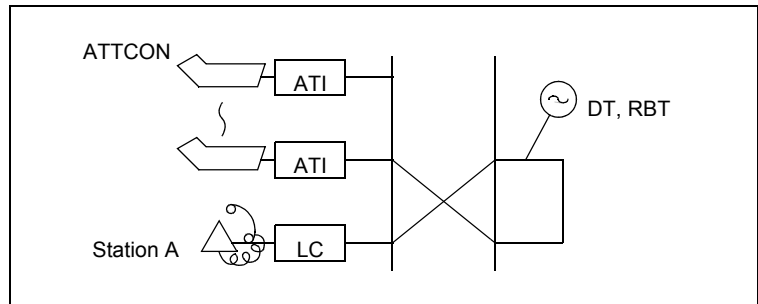
END

INSTALLATION TEST PROCEDURE

NAP-200-030

Sheet 1/1

ATTCON (ATI Card) Connection Test



START

A station repeats an ATTCON call. Each ATTCON answers the call.

* []

Station A dials the operator access code (normally, "0").

At each ATTCON, the operator confirms that ATT lamp flashes and the ringer sounds.

At each ATTCON, the operator answers the call by pressing ATND key.

Station A confirms speech with each ATTCON.

The operator at each ATTCON releases by pressing CANCEL key.

Station A goes on-hook.

Each ATTCON calls a station by pressing LOOP keys one at a time.

* []

At each ATTCON, the operator dials the number of Station A by using LOOP keys (L1-L6) one at a time.

Ringing at Station A is confirmed.

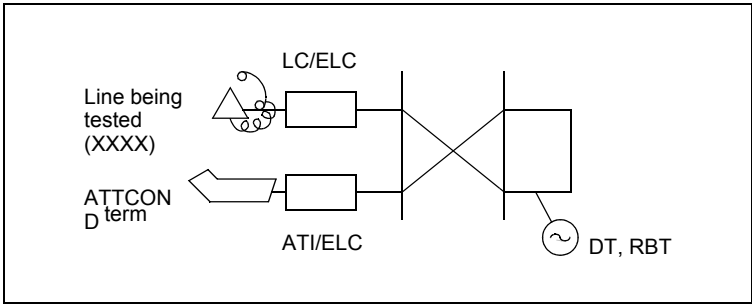
Station A answers the call and confirms speech.

The operator at the ATTCON releases by pressing CANCEL key.

Station A goes on-hook.

END

NAP-200-031
Sheet 1/1
Line (LC, ELC, DLC, Card) Connection Test



A

An ATTCON or D^{term} is called from each station. The called party confirms the station number.

* []

- On the MDF, a telephone set is connected to the line circuit to be tested
- The station (XXXX) to be tested goes off-hook and confirms DT (Dial Tone).
- The station (XXXX) calls an ATTCON or D^{term}.
- The called ATTCON or D^{term} answers the call, and confirms speech and the station number of the calling station.
- The call is released.

The ATTCON or D^{term} calls a station being tested.

* []

- The ATTCON or D^{term} dials the station number of the station being tested.
- The called station answers and confirms speech.
- The ATTCON or D^{term} confirms that the dialed number and the number of the station being tested are the same.
- The call is released.

The test involving the station is assigned as a Hot Line/House Phone.

[] []

- The station being tested goes off-hook and confirms Ring Back Tone (RBT).
- The station checks whether the call is routed to the predetermined station/ATTCON or that a call is originated to a predetermined trunk.
- The called side answers the call and confirms speech.
- The call is released.

END

INSTALLATION TEST PROCEDURE

NAP-200-032
Sheet 1/3
Outgoing Trunk (COT, TLT, DTI Card) Connection Test

Test Outline:

The purpose of this test is to confirm, by setting up an outgoing connection test for each outgoing trunk, that speech can be made and that the call can be released.

Outgoing trunks must be tested one at a time, using the sequence of Routes and Trunk Numbers assigned at each office.

START

When a C. O. Line or Tie Line is not connected with a trunk circuit, temporary cross connections between the outgoing trunk being tested and the terminating trunk should be set up on the MDF as a loop-back circuit.

Referring to Figures 032-1 through 032-3, make temporary cross connections on the MDF for a loop-back circuit.

Temporarily assign Office Data from the MAT so that a loop-back connection from the trunk can be established.

Make busy all outgoing trunks.

On the front of the Trunk circuit card, set the MB switch to the OFF position, making the trunk busy.

Test the trunk circuits one at a time by establishing access from a station.

Un-busy (make idle) only the trunk to be tested.

The station dials the Access Code of the trunk being tested and the number for the call destination.

The called side answers.

The station confirms speech.

The call is released.

Make temporary cross connections for the next trunk to be tested.

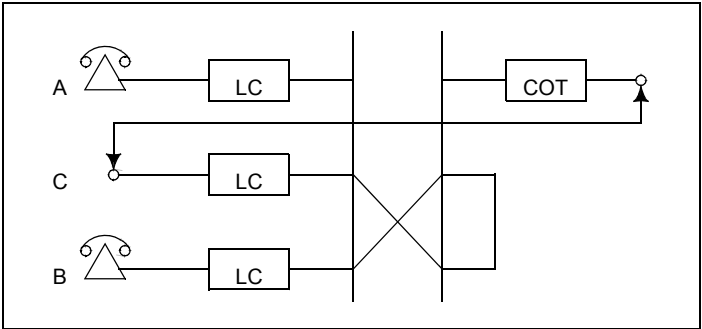
Restore the temporary connections, temporary Office Data, etc. to original configuration.

END

NAP-200-032
Sheet 2/3
Outgoing Trunk (COT, TLT, DTI Card) Connection Test

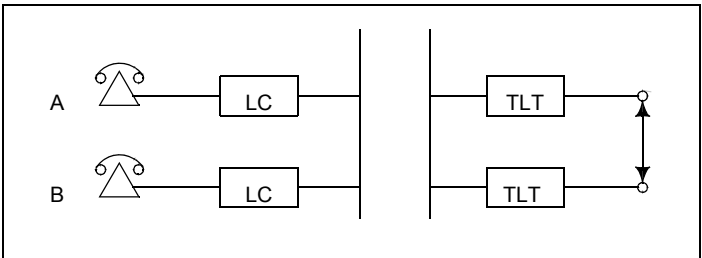
- Set up a loop-back connection between the COT (C.O. Trunk) to be tested and a station line.

Figure 032-1 COT Test Configuration

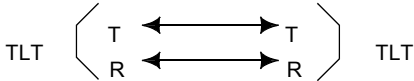


- The trunk route must be assigned for Loop Start.

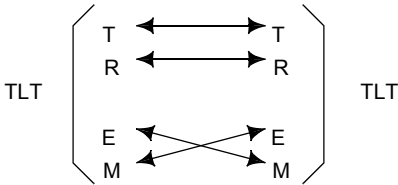
Figure 032-2 TLT Test Configuration



- Set up a loop-back connection between the TLT (Tie Line Trunk) to be tested and another EMT.
- If the TLT is a DID (Direct Inward Dialing) Trunk, connected the related leads as shown below:



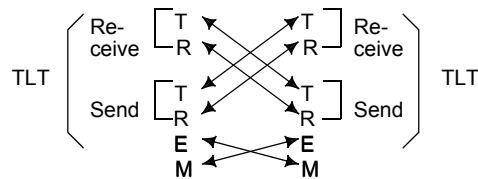
- If the TLT is a 2W E&M System, connect the related leads as shown below:



INSTALLATION TEST PROCEDURE

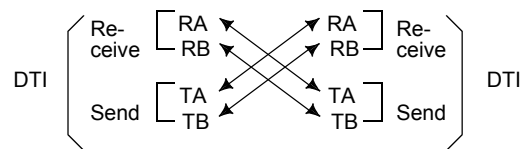
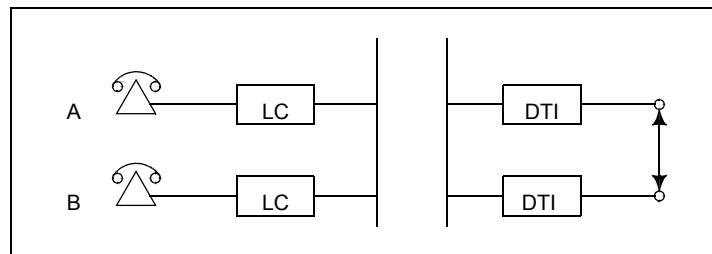
NAP-200-032
Sheet 3/3
Outgoing Trunk (COT, TLT, DTI Card) Connection Test

- If the TLT is a 4W E&M System, connect the related leads as shown below:



- Set up a loop-back connection between the DTI Trunk to be tested and another DTI Trunk as shown below:

Figure 032-3 DTI Test Configuration

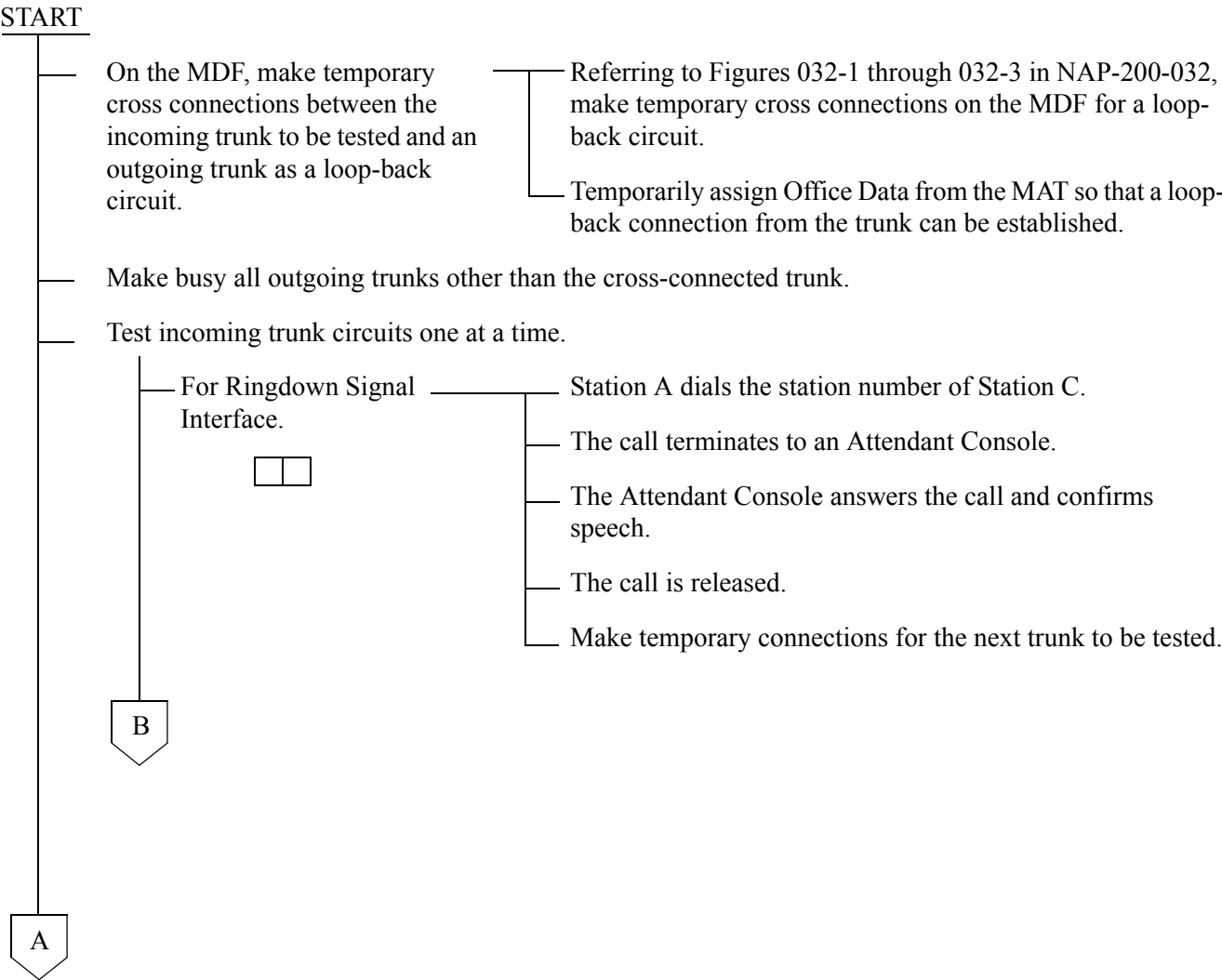


- If the office is the primary office (Clock-Source-Office), perform the tests by disconnecting the PLO and the M-OSC. (The mode of the PLO becomes "Self Operation Mode.")

NAP-200-033
Sheet 1/2
Incoming Trunk (COT, TLT, DTI Card) Connection Test

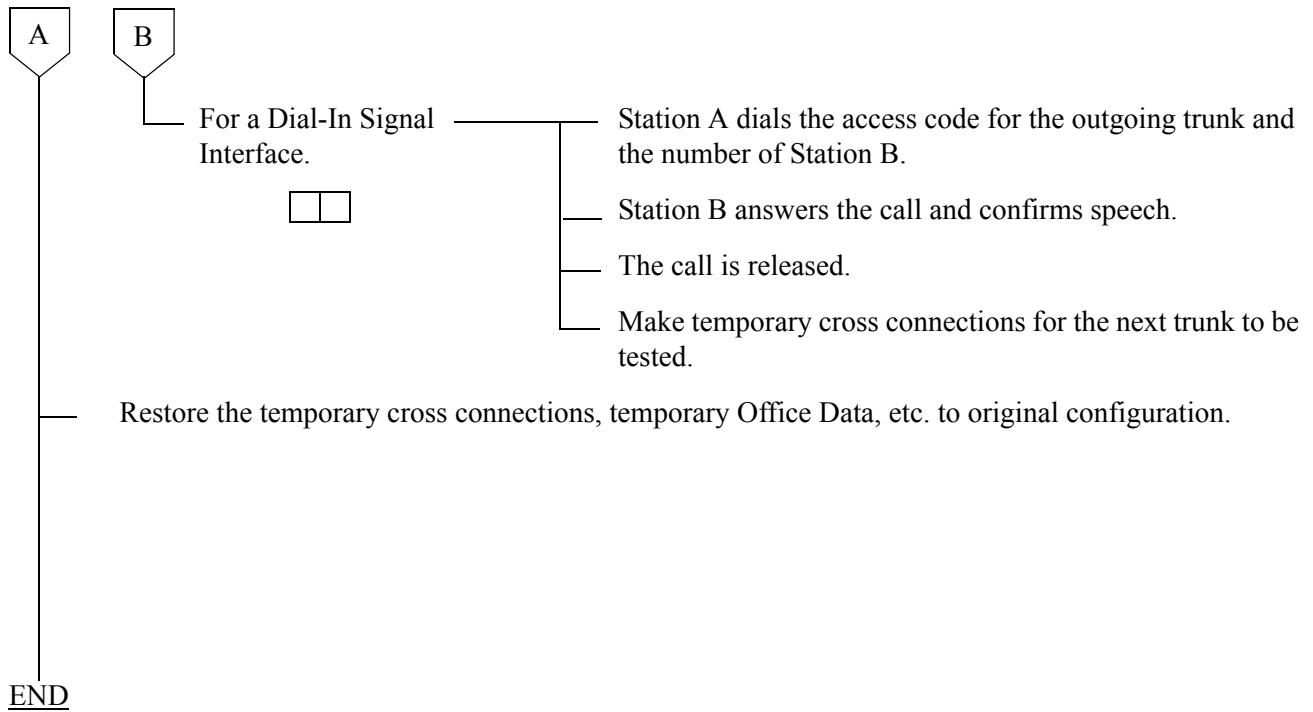
Test Outline:

The purpose of this test is to confirm, by setting up an incoming trunk connection test for each incoming trunk, that speech can be made with ATTCON when a Ringdown Signal Interface is used, or with a station when a Dial-In Signal Interface is used. This test also confirms that the call can be released. Incoming trunks must be tested one at a time, using the sequence of Route and Trunk Numbers assigned at each office.

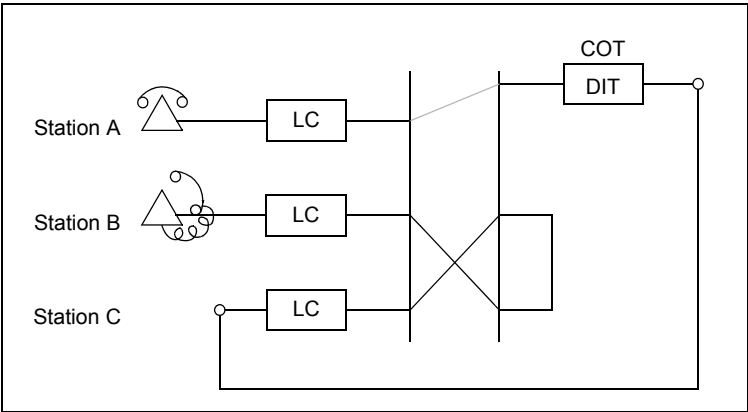


INSTALLATION TEST PROCEDURE

NAP-200-033
Sheet 2/2
Incoming Trunk (COT, TLT, DTI Card) Connection Test



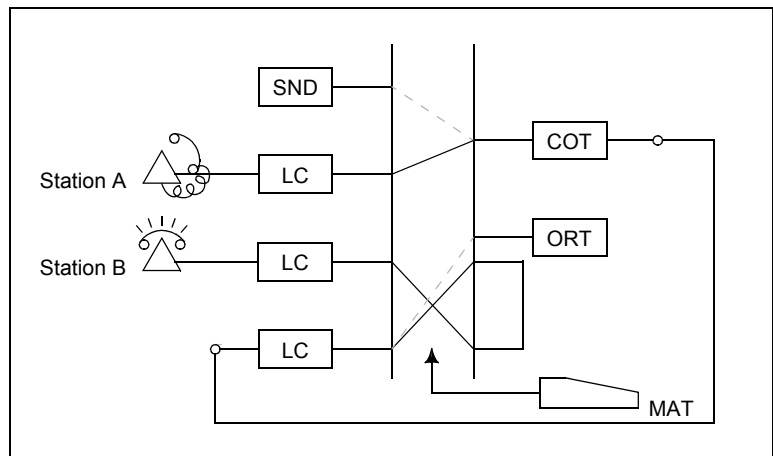
NAP-200-034
Sheet 1/1
Direct-In Termination Trunk (COT Card) Connection Test



<u>START</u>	
On the MDF, make temporary cross connections between the Trunk for Direct-In Termination (DIT) and an LC.	
C.O.Line Incoming Call	Station B dials the number of LC "C" (Station C).
Incoming Call to Station via DIT Trunk.	The call terminates to Station A; Station A rings. Confirm that the ringing is distinct from that of an intra-office call or ordinary C.O. call. • The ringing signal for Direct-In Termination calls can be the same as that used for C.O. calls if the related Office Data is assigned. System Data SYS1, INDEX 72, SYS3, INDEX 0, and parameter DR of Command "ARTD".
Answer and Talk	Station A goes off-hook. Stations A and B talk with each other.
Release	Station A and B both go on-hook.
Remove the temporary cross connections.	
<u>END</u>	

INSTALLATION TEST PROCEDURE

NAP-200-035
Sheet 1/1
SND (RST Card) Connection Test



START

When a C.O. Line or Tie Line is not connected with the trunk, make an arrangement for trunk loop-back as illustrated above.

On the MDF, make temporary cross connections for a loop back circuit.

Temporarily assign Office Data from the MAT so that a connection can be set up with Station B via a SND.

Make busy all SNDs

On the front of the RST circuit card, set all MBS switches (0-7) to the OFF position, thereby making all SNDs busy.

Test SNDs one after another

Un-busy (make idle) only the SND to be tested.

Station A dials the access code of the trunk and the station number of Station B.

Station B answers and talks

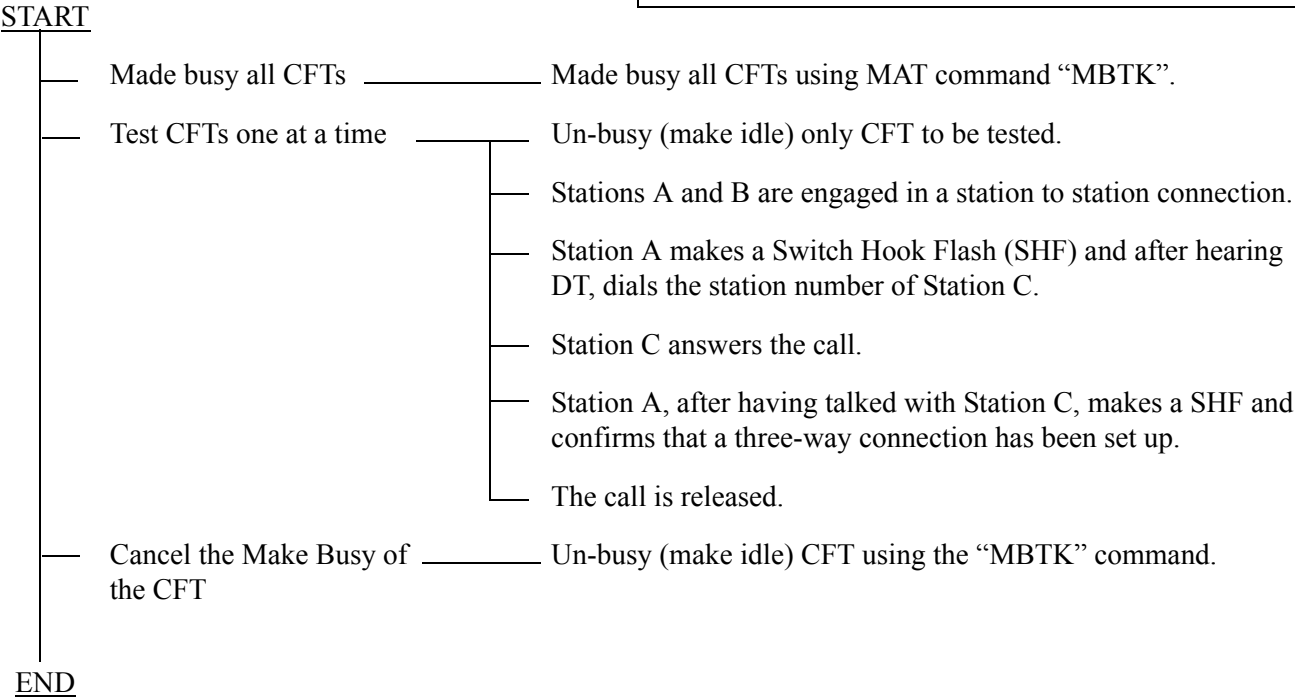
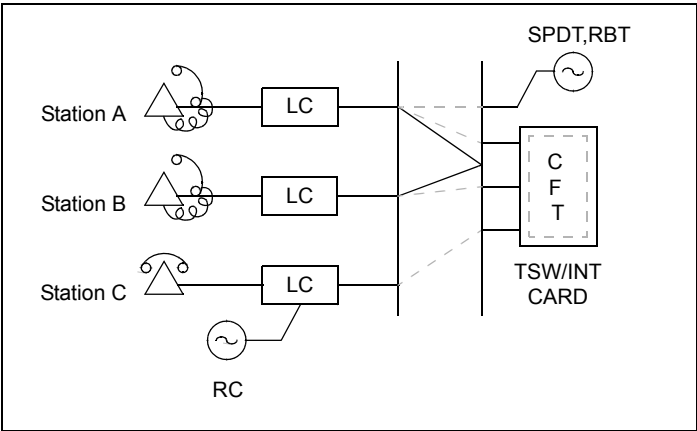
The call is released.

Restore the temporary cross connections, temporary Office Data etc. to original configuration.

END

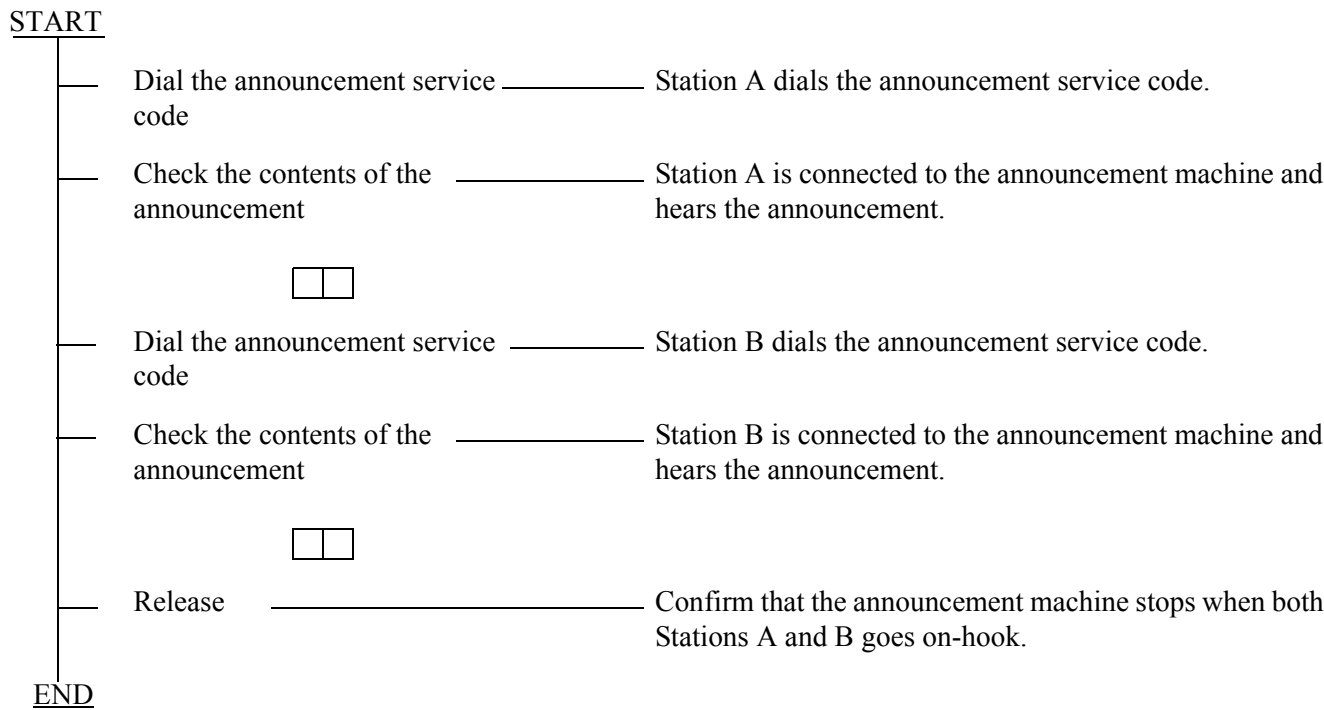
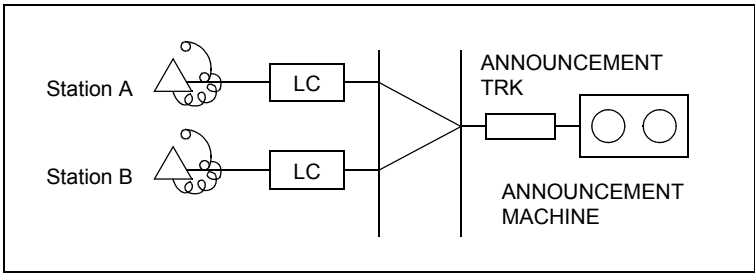


NAP-200-036
Sheet 1/1
3-party Conference Trunk Function Test

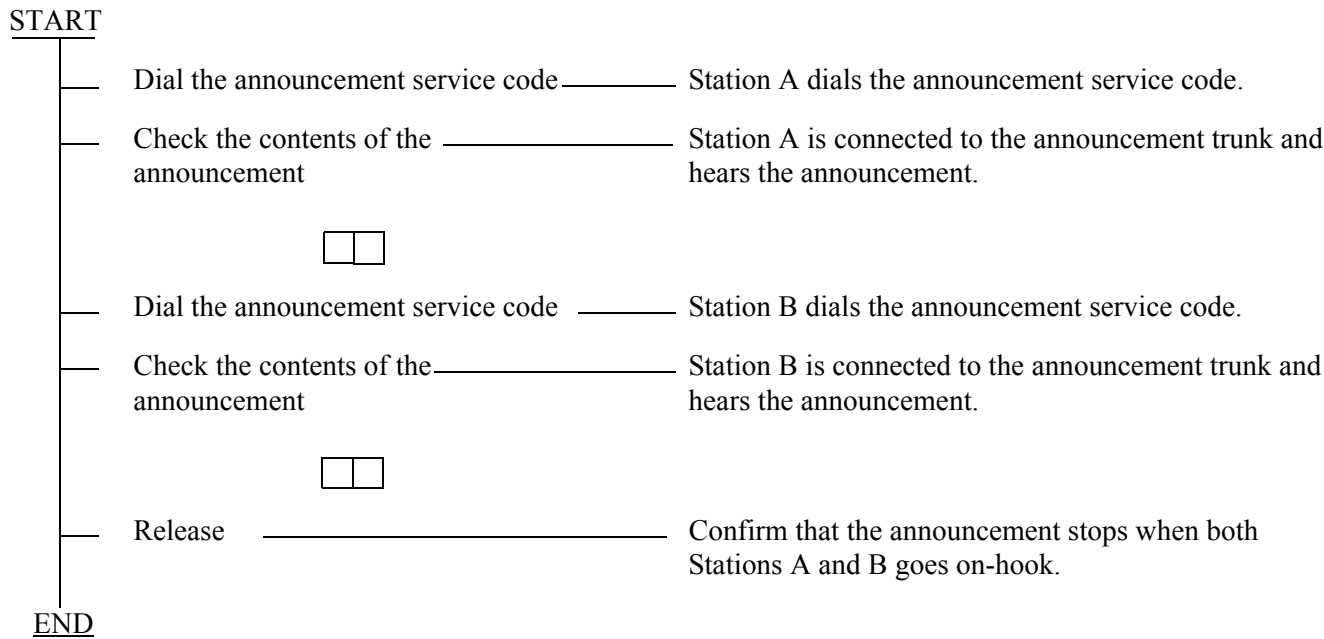
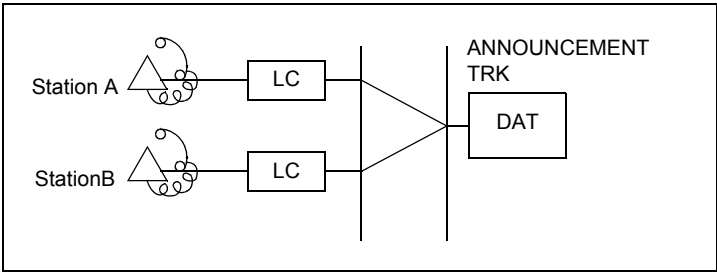


INSTALLATION TEST PROCEDURE

NAP-200-037
Sheet 1/1
Connection Test-Announcement Trunk for Announcement Service

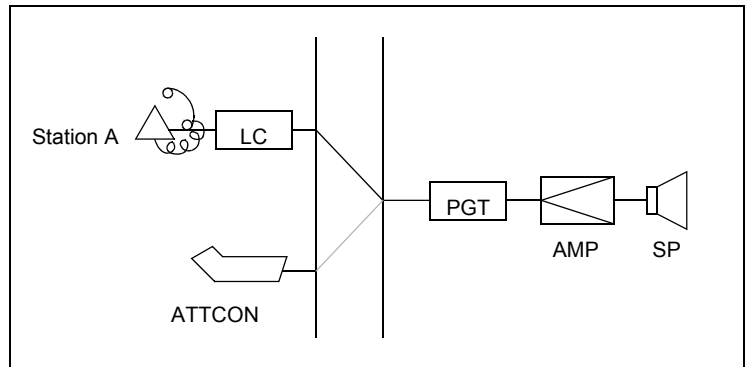


NAP-200-038
Sheet 1/1
Connection Test-Digital Announcement Trunk for Announcement Service



INSTALLATION TEST PROCEDURE

NAP-200-039
Sheet 1/1
Connection Test-Paging Trunk for Paging Access Service



START

Dial the paging access code

Station A/ATTCON dials the paging access code and hears CRBT (Continuous Ringback Tone).

In about 1 second, CRBT stops.

Speaker Paging

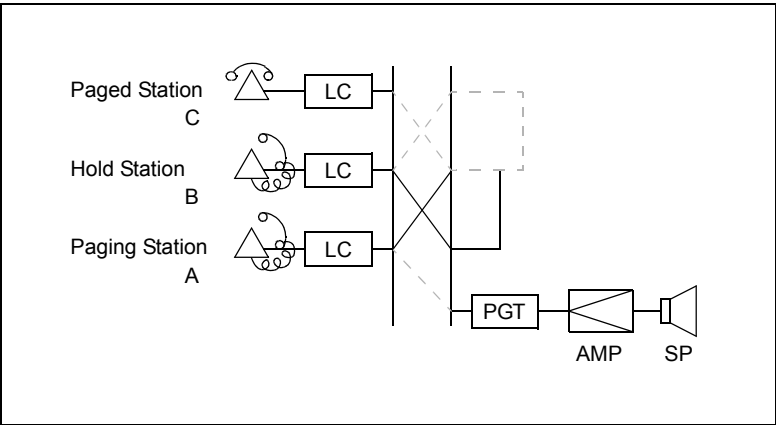
Check whether speaker paging is possible after CRBT has stopped.

Release

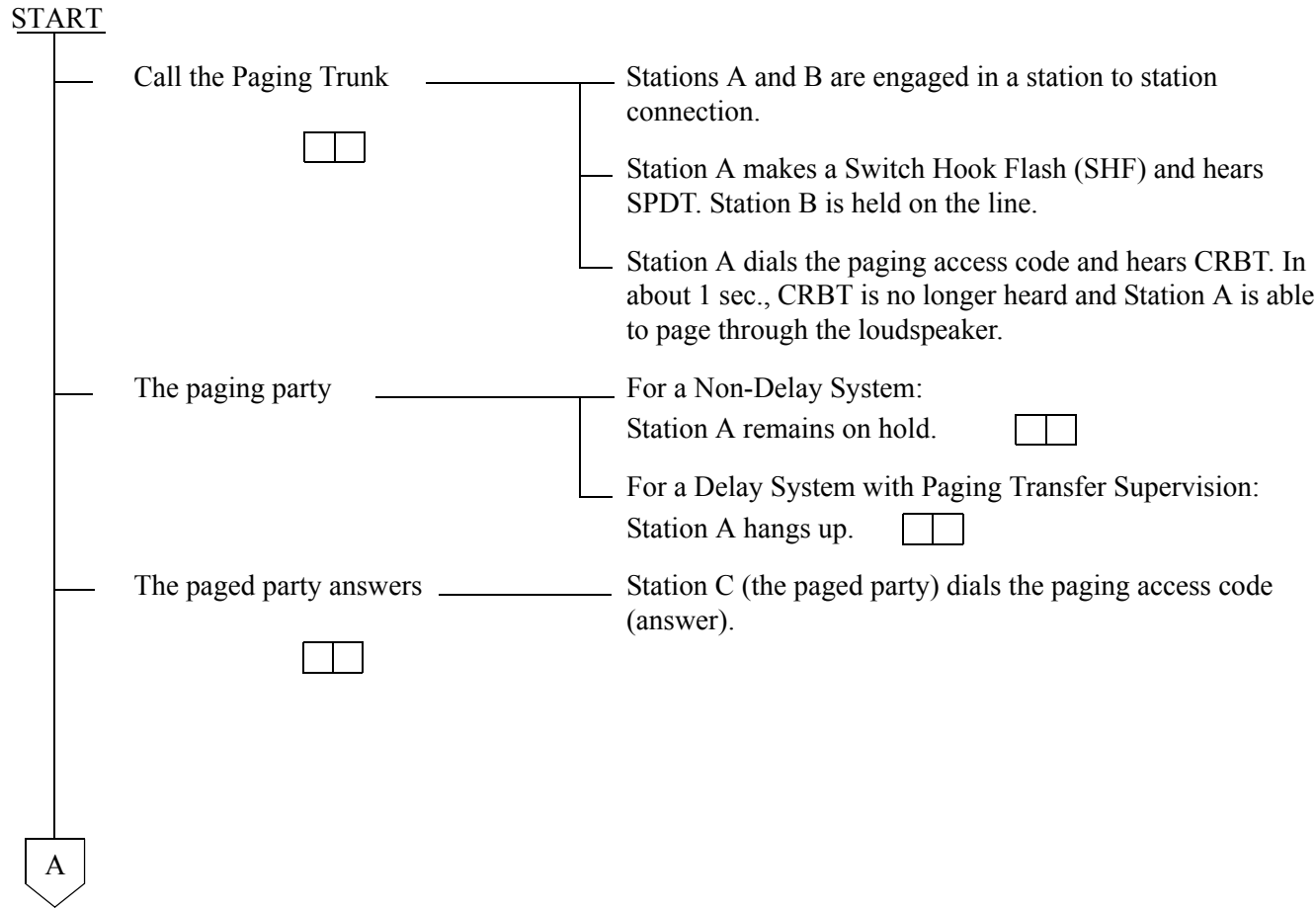
Station A goes on-hook or the ATTCON depresses CANCEL key.

END

NAP-200-040
Sheet 1/2
Connection Test-Paging Trunk for Paging Transfer Service



- Paging Transfer Service can be selected according to System Data (SYS1, INDEX 73).
 1. Non-Delay System
 2. Delay and Non-Delay System
 3. Paging Transfer Supervision

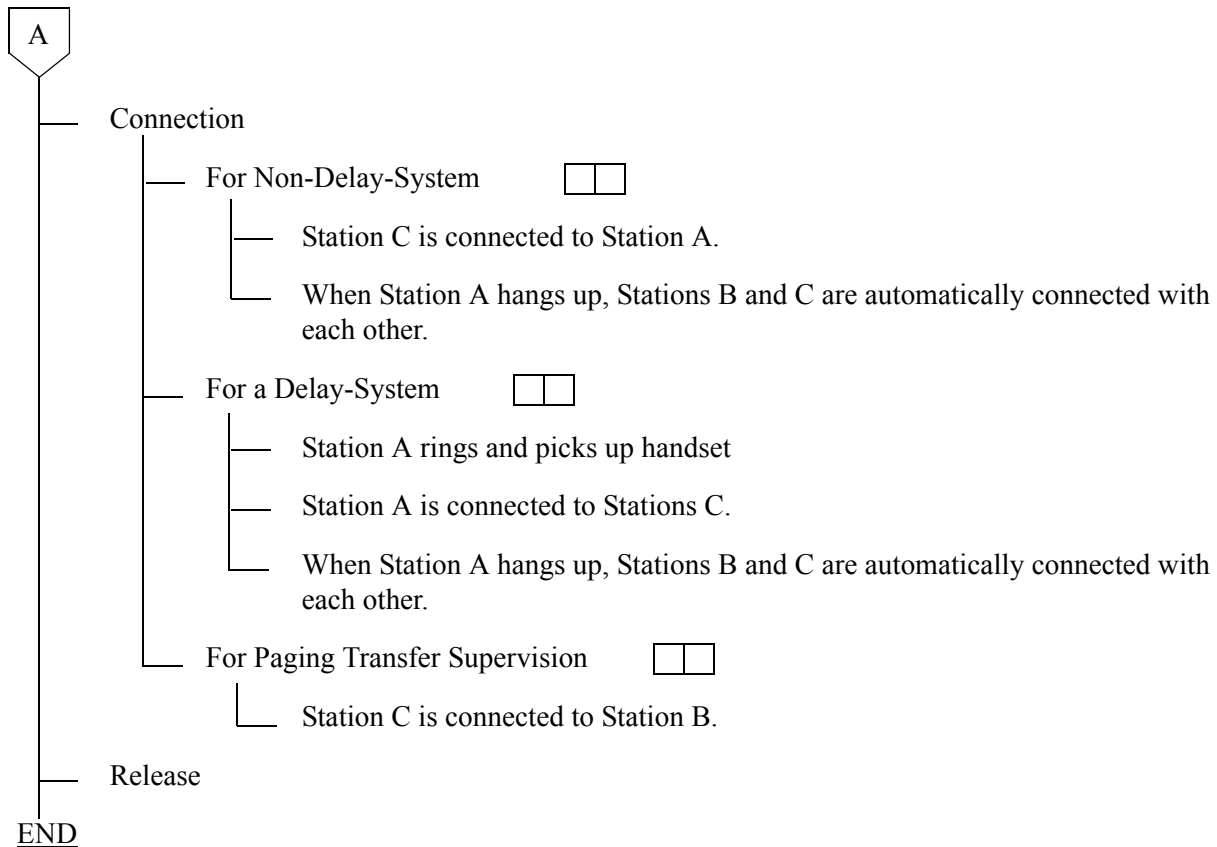


INSTALLATION TEST PROCEDURE

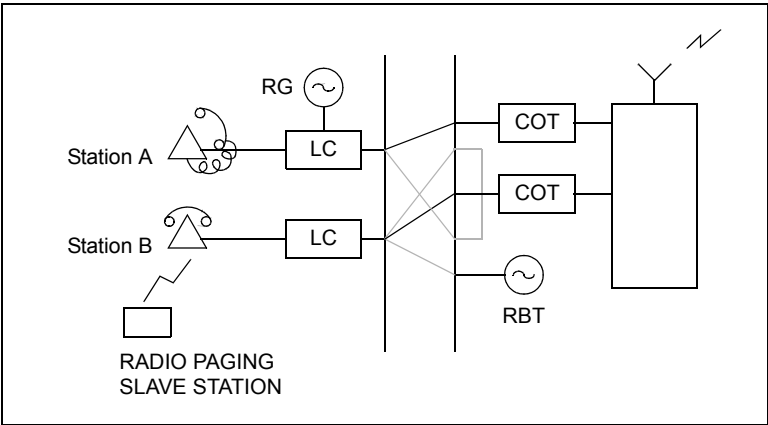
NAP-200-040

Sheet 2/2

Connection Test-Paging Trunk for Paging
Transfer Service



NAP-200-041
Sheet 1/1
Radio Paging Trunk (COT Card) Connection Test



START

Call the Radio Paging Equipment



Station A dials the radio paging access code and hears Special Dial Tone from the Radio Paging Equipment, then dials the slave station number.

The paging radio of the slave station starts ringing.

By hearing CRBT (Continuous Ring Back Tone) from the Radio Paging Equipment, Station A confirms that the slave station is being paged, then goes on-hook.

The paged party answers



The slave station (the radio-pages party) dials the paging answer code at the nearby Station B, hears SPDT through the Radio Paging Equipment, then dials the paging answer code.

Station A rings and picks up the handset.

Confirm that Stations A and B can talk with each other.

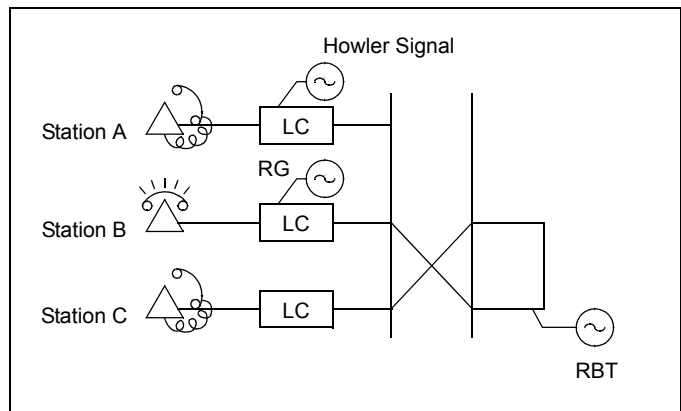
Release

Stations A and B both go on-hook.

END

INSTALLATION TEST PROCEDURE

NAP-200-042
Sheet 1/2
Howler & Ringing Signal Test



Test Outline:

The Howler Tone Generator and the Ringing Generator are equipped on the PWR Supply.
The purpose of the test is to confirm ringing signal by setting up a station to station connection and a howler tone connection from a station accommodated in any PIM.

START

Check PWR0 in each PIM.

While both PWR Supplies are OFF, turn ON power to PWR0. Leave PWR1 OFF.

Check howler tone. *

A station accommodated in the PIM whose PWR Supply is to be tested goes off-hook.
(analog port only)

The station hears DT.

The station hears ROT within 12 seconds.

The station should confirm hearing howler tone within 30 seconds.

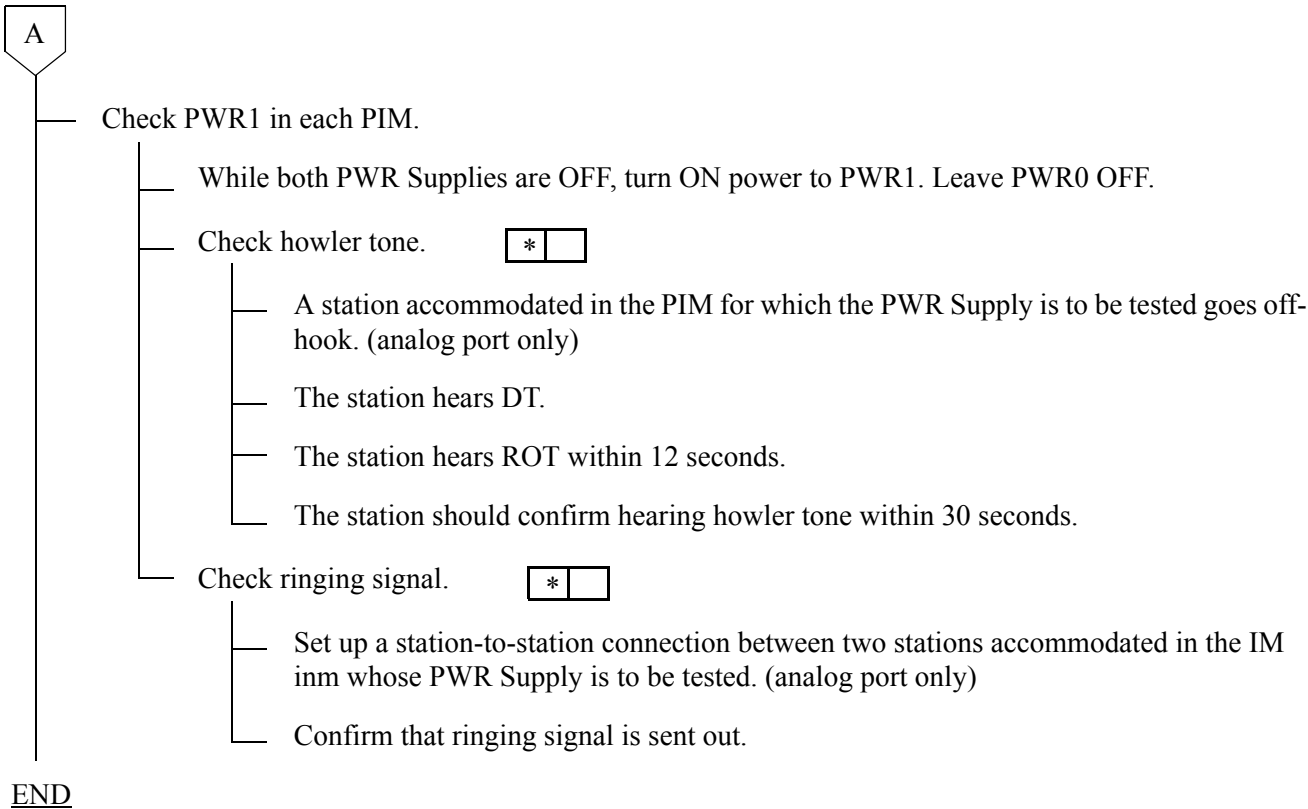
Check ringing signal. *

Set up a station-to-station connection between two stations in the IM inn whose PWR Supply is to be tested. (analog port only)

Confirm that ringing signal is sent out.

A

NAP-200-042
Sheet 2/2
Howler & Ringing Signal Test



INSTALLATION TEST PROCEDURE

5. OVERALL TEST

5.1 Outline

Tests are to be performed to check C.O. Lines and/or Tie Lines by connecting them to a trunk on an individual basis.

The speech path conditions (speech level, presence of noise, one-way speech, no speech, etc.) over the connection to the distant office will be checked. Release of the trunk used will also be checked.

5.2 Overall Test Procedure

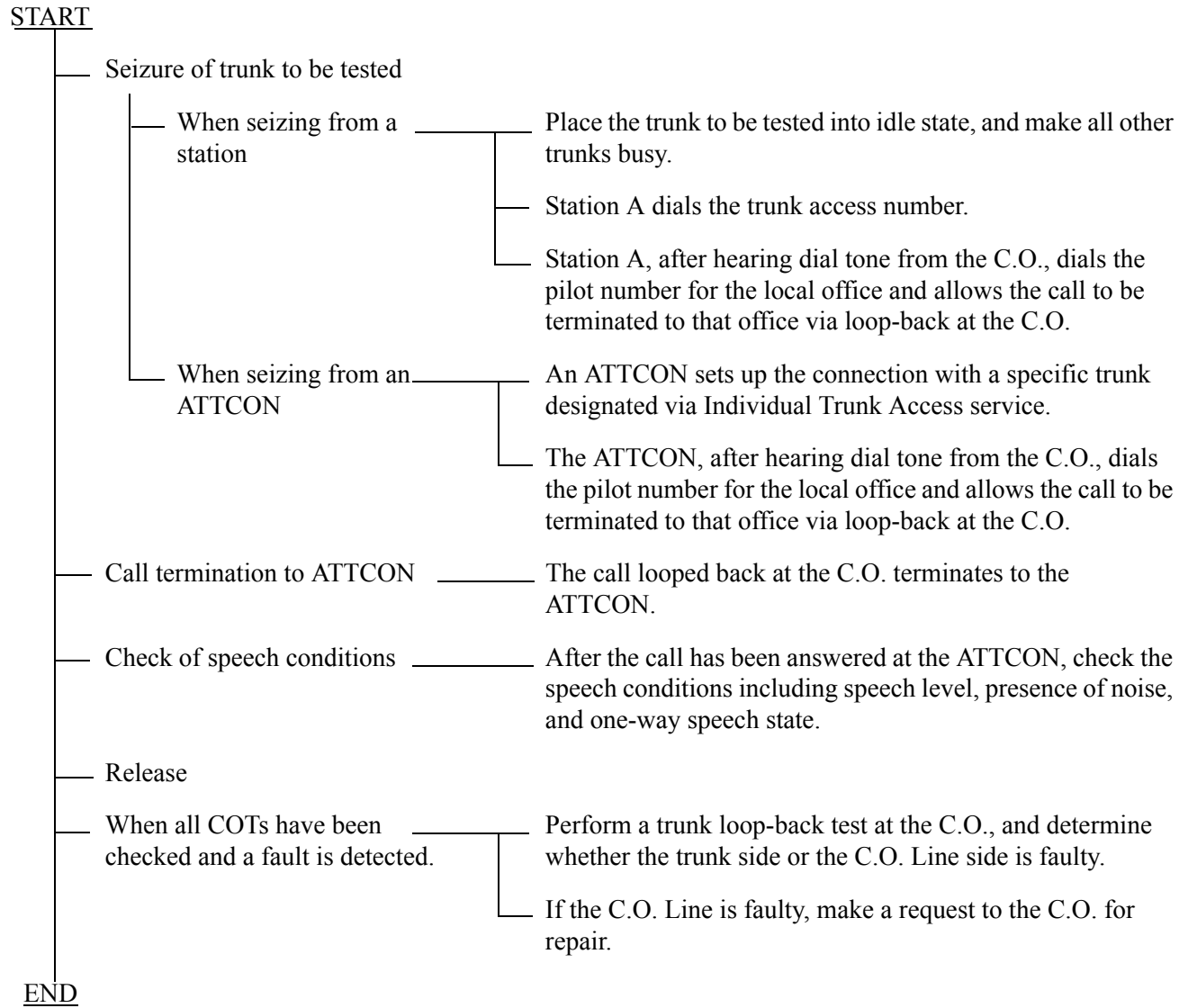
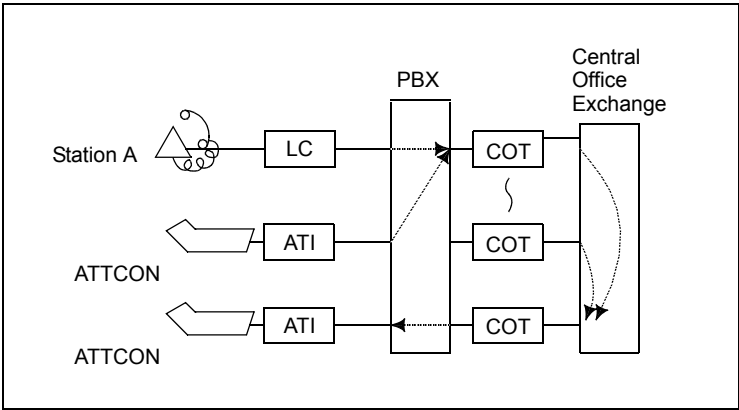
The procedure for the Overall Test is described in the NAPs indicated to the right of each item in the following flowchart.

START

—	Overall Test of C.O. Line Outgoing Call:	NAP-200-043
—	Overall Test of C.O. Line Incoming Call:	NAP-200-044
—	Overall Test of CCIS Tie Line Outgoing Call:	NAP-200-045
—	Overall Test of CCIS Tie Line Incoming Call:	NAP-200-046
—	Test of Connection Alternate Routing to All Tie Lines:	NAP-200-047
—	Test of Tandem Connection to Tie Line:	NAP-200-048
—	PAD Setting:	NAP-200-049

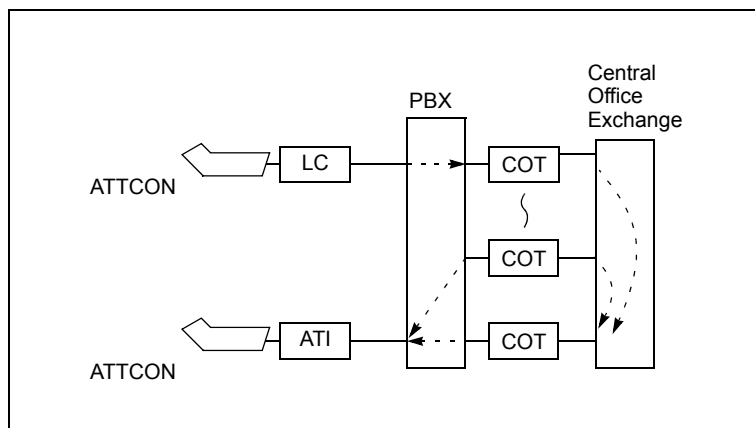
END

NAP-200-043
Sheet 1/1
Overall Test for C.O. Line Outgoing Call



INSTALLATION TEST PROCEDURE

NAP-200-044
Sheet 1/1
Overall Test for C.O. Line Incoming Call



Test Outline:

The tests comprising this NAP are to be performed according to the C.O. Line Number Table provided by the C.O. If the C.O. Line Numbers are not known, tests cannot be performed because loop-back cannot be performed at the C.O.

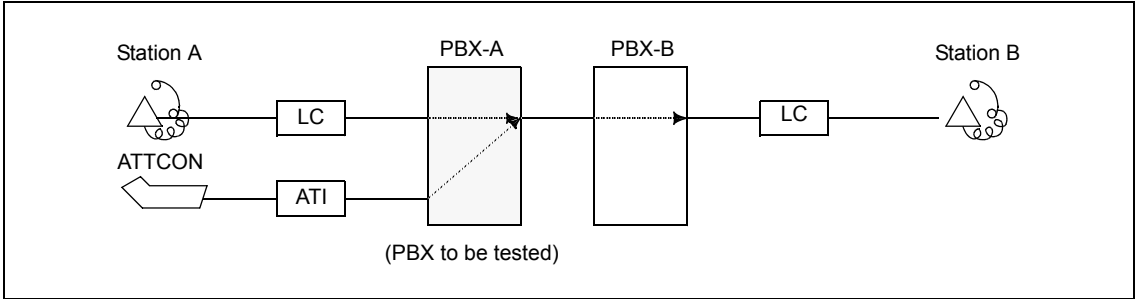
In addition, tests cannot be performed which involve Direct Inward Dialing. Under such circumstances, ask the C.O. to perform an incoming test.

START

- Seizure of trunk to be tested — From the ATTCON, set up a connection with a specific trunk designated via Individual Trunk Access.
After hearing dial tone from the C.O., dial the C.O. Line number of the trunk being tested from the ATTCON.
- Call termination to ATTCON — The call looped back at the C.O. terminates to the ATTCON.
- Speech Condition Check — After the call has been answered at the ATTCON, check the speech conditions including speech level, presence of noise, and one-way speech.
- Release
- When all COT trunks have been checked and a fault is detected. — Perform a trunk loop-back test at the C.O. and identify whether the trunk side or the C.O. Line side is faulty.
If the C.O. Line side is faulty, make a request to the C.O. for repair.

END

NAP-200-045
Sheet 1/2
Overall Test of CCIS Tie Line Outgoing Call



START		
	Seizure of trunk to be tested	
	When seizing from a station	Place the trunk to be tested into idle state, and make busy all other trunks.
	When seizing from an ATTC	An ATTC sets up the connection with a specific trunk designated by Individual Trunk Access for CCIS TRK service and dials the number for Station B in the PBX-B.
	Call termination to Station B in the PBX-B	The call terminates to Station B via a CCIS Tie Line.
	Check of speech conditions	After the call has been answered at the ATTC, check the speech conditions including speech level, presence of noise and one-way speech state.
	Release	
	When all CCIS Tie Line Trunks have been checked and a fault has been detected	Perform fault localization procedure when a fault has occurred to CCIS Tie Line (See Procedure A).
		If the distant office is faulty, make a request to the distant office for repair.
END		

INSTALLATION TEST PROCEDURE

NAP-200-045

Sheet 2/2

Overall Test of CCIS Tie Line Outgoing
Call

(Procedure A)

START

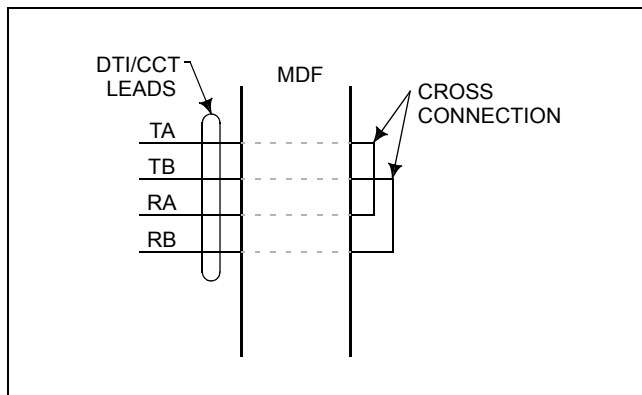
On the DTI/CCT card, set its MB switch UP.

In any office other than the Primary Office (Clock-Source-Office), disconnect the DTI/CCT cable connector at the DTI/CCT side (Backplane of PIM)

PLO alarm is generated, but ignore it.

The PLO starts running by itself.

Make the following connection at the MDF using a paired wire.



The DTI does not recover. (CCH/CCT Link Failure may occur, but ignore it.)

System message “3-J” is not displayed.

The DTI/CCT is faulty.

The DTI recovered. (CCH/CCT Link Failure may occur, but ignore it.)

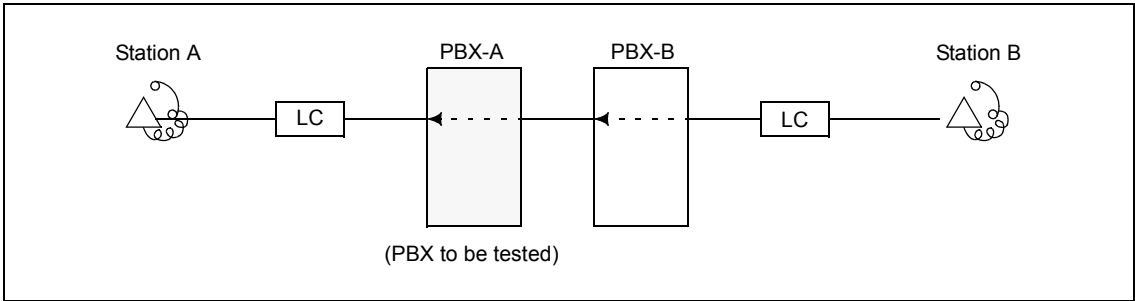
System message “3-J” is displayed.

The DTI/CCT is normal.

Call the distant office and ask for repair.

END

NAP-200-046
Sheet 1/1
Overall Test of CCIS Tie Line Incoming Call



<u>START</u>	
Seizure of trunk to be tested	Place the trunk to be tested into idle state, and make busy all other trunks.
Termination of incoming call to Station A in the self office	An incoming call from the distant office terminates to Station A.
Check of speech	After the call has been answered at Station A, check the speech conditions including speech level, presence of noise and one-way speech state.
Release	
When all CCIS Tie Line Trunks have been checked and a fault has been detected	Perform fault localization procedure when a fault has occurred to CCIS Tie Line. (See Procedure A of NAP-200-045.)
	If the distant office is faulty, make a request to the distant office for repair.
<u>END</u>	

INSTALLATION TEST PROCEDURE

NAP-200-047

Sheet 1/2

Test of Connection and Alternate Routing
to All Tie Lines

START

Test the trunks in the primary
route one at a time.

Make busy all trunks in the primary route except the trunk to
be tested.

Station A calls Station B via the primary route.

After Station B answers, check the normality of the speech
condition including the speech level, presence of noise, and
one-way speech.

Release.

Make all the trunks in the primary route busy.

Test the trunks in the alternate
route one at a time.

Make busy all trunks in the alternate route except the trunk
to be tested.

Station A calls Station B via the alternate route.

After Station B answers, check the normality of the speech
condition including the speech level, presence of noise, and
one-way speech.

Release.

Cancel the Make Busy condition of the trunks.

END

NAP-200-047
Sheet 2/2
Test of Connection and Alternate Routing to All Tie Lines

Figure 047-1 Combination of Tie Line Network and Public Network

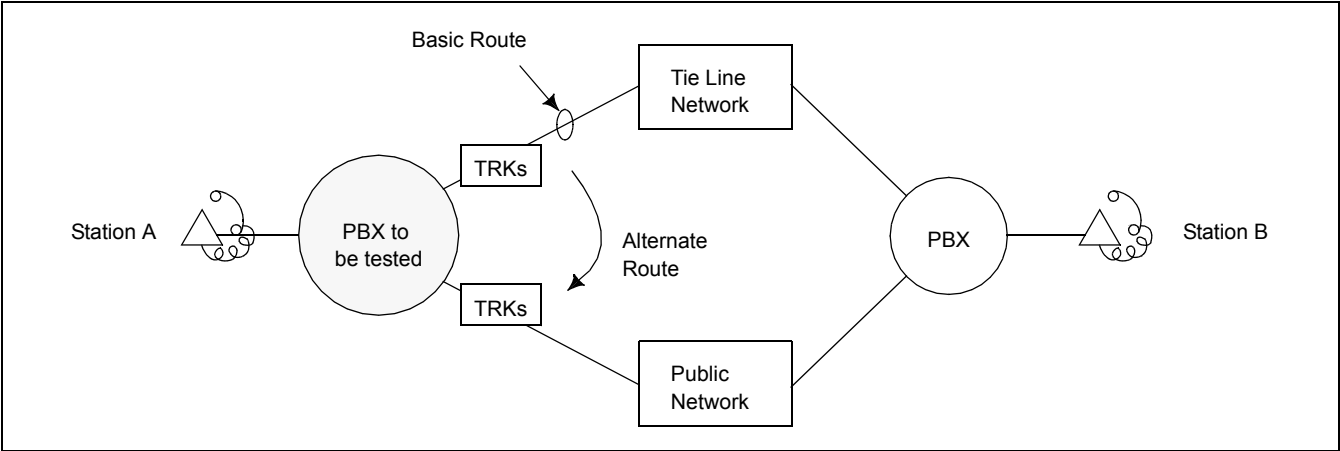
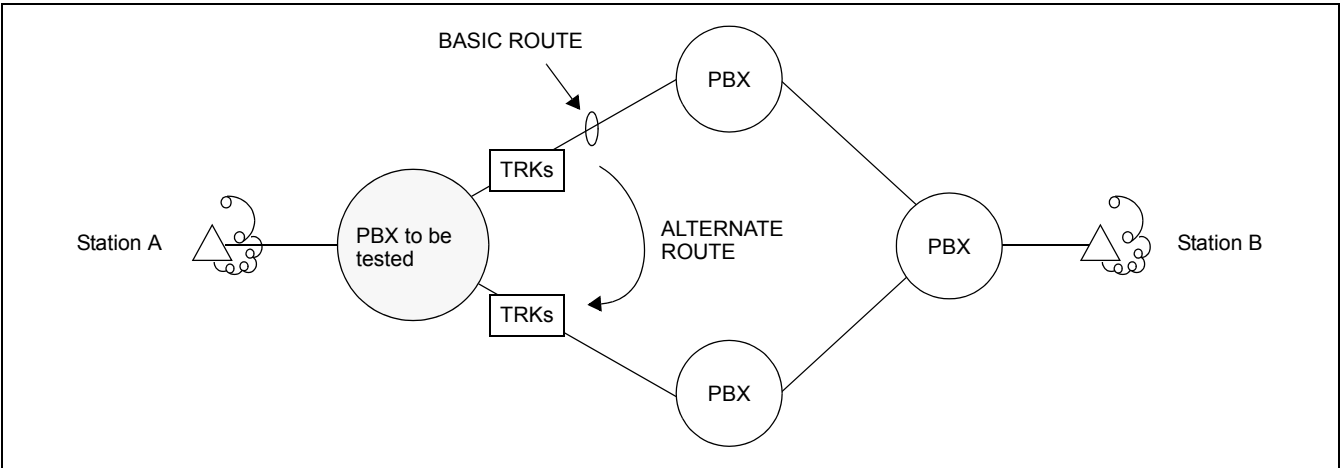


Figure 047-2 Tie Line Network



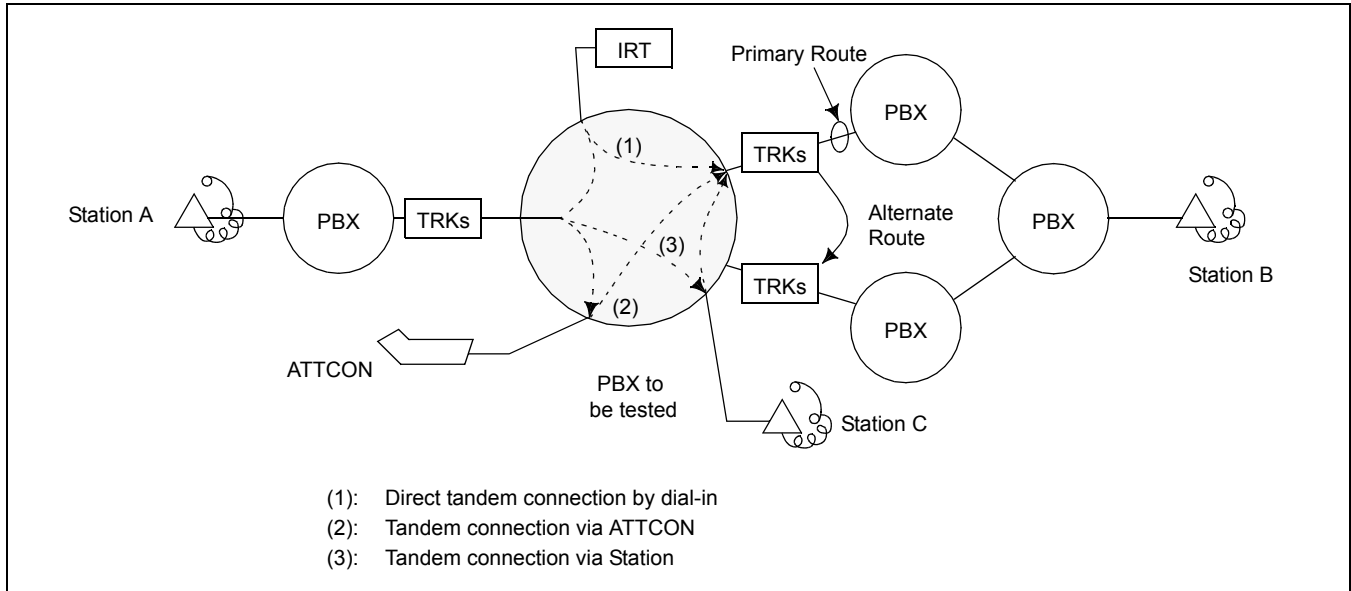
INSTALLATION TEST PROCEDURE

NAP-200-048

Sheet 1/2

Test of Tandem Connection to Tie Line

Figure 048-1 Test of Tandem Connection to Tie Line



START

Test of direct dial-in tandem connection

Test of Primary Route

Station A calls Station B.

Confirm speech between Stations A and B.

Release.

Test of Alternate Route

Make busy all the trunks in the primary route.

Station A calls Station B.

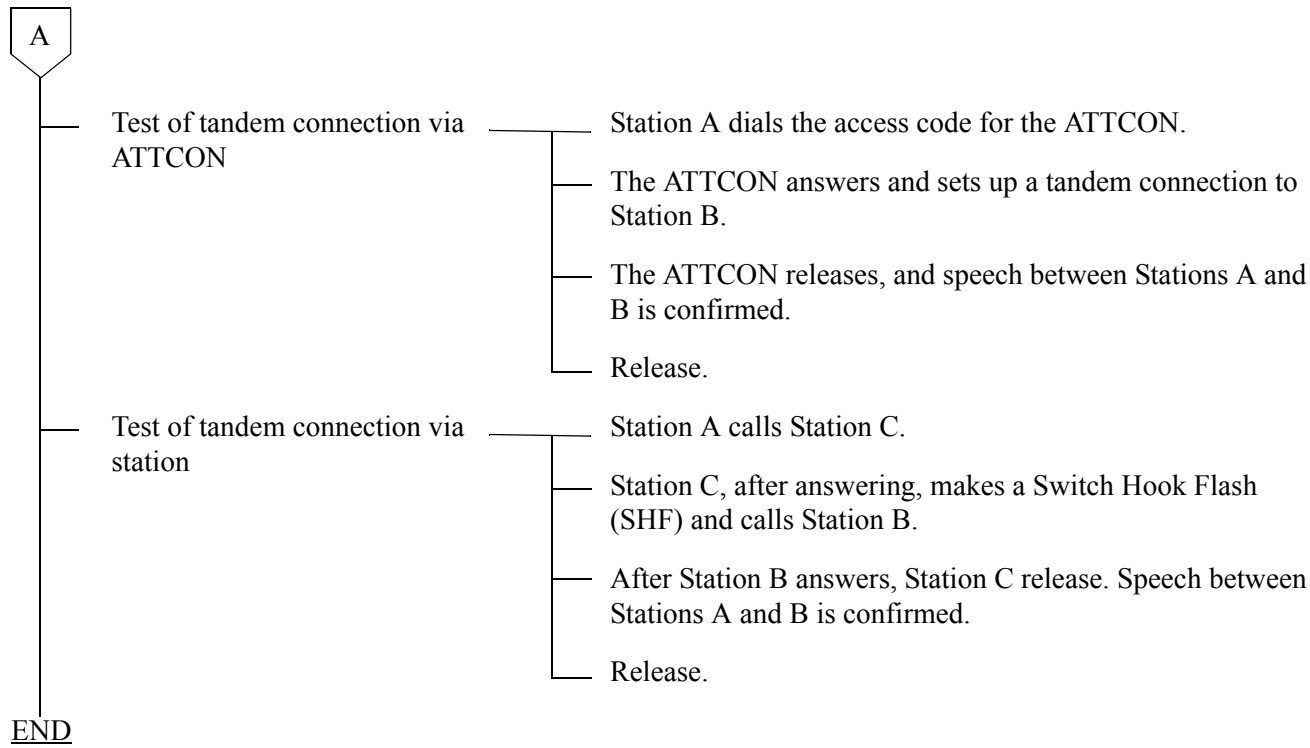
Confirm speech between Stations A and B.

Release.

Un-busy (make idle) all the trunks.

A

NAP-200-048
Sheet 2/2
Test of Tandem Connection to Tie Line



INSTALLATION TEST PROCEDURE

NAP-200-049
Sheet 1/2
PAD Setting

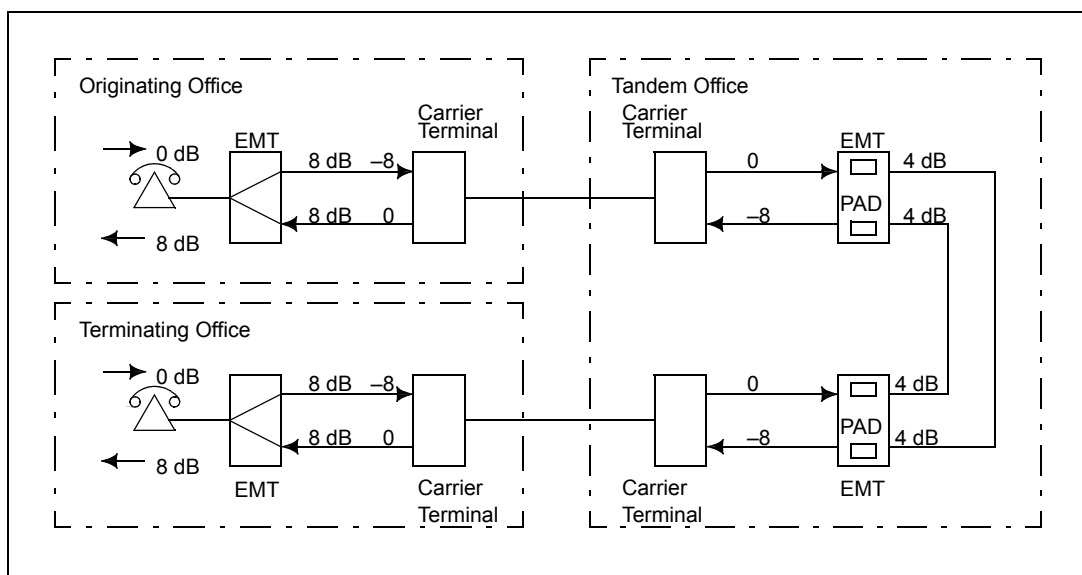
For the PBX, PADs can be set according to the connecting status of the Tie Line involved.

- (a) For an outgoing/incoming call via a Tie Line:
 - Via MAT command “ARTD” and switch settings on the TLT circuit card.
- (b) For a tandem Tie Line connection:
 - Via command “APAD” or switch settings on the TLT circuit card(s).

At both the originating and terminating offices, an 8 dB PAD is set for the EMT route via “ARTD” command or switch settings. At the tandem office, a 4 dB PAD is set for the terminating and originating sides of each EMT route via command “APAD”.

Through this arrangement, an 8 dB PAD is in service for outgoing and incoming connections, and 4 dB PADs are in service for each line in a tandem connection (total: 8 dB). This arrangement is shown in Figure 049-1.

Figure 049-1 Example of PAD Setting



NAP-200-049
Sheet 2/2
PAD Setting

When setting up a No. 7 CCIS Network, PAD setting differs from that in the analog network.

(c) For an outgoing call to/incoming call from a Tie Line:

- Via “ARTD” command.

(d) For a tandem Tie Line connection:

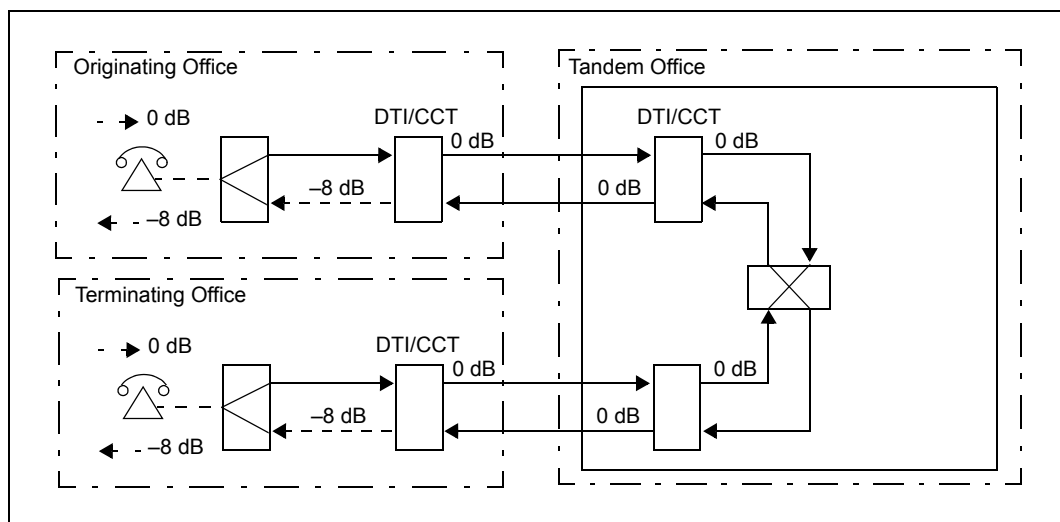
- Via “APAD” command.

At both the originating and terminating offices, 0 dB is set to the outgoing side and 8 dB is set to the terminating of the DTI/CCT route via “ARTD” command.

At the tandem office, 0 dB is set for both the terminating and originating sides of each DTI/CCT route via “APAD” command.

This arrangement is shown in Figure 049-2.

Figure 049-2 Example of PAD Setting for CCIS



INSTALLATION TEST PROCEDURE

6. IP CONNECTION TEST

6.1 Outline

Connection tests are to be performed to check IP connection by connecting terminals to the trunks and verify the normality of the system. FCCS stands for Fusion Call Control Signaling.

6.2 IP Connection Test Procedure

The procedures for the IP connection test are described in the NAPs at the right of each item in the following flowchart.

START

IP PAD Connection Test: (IP PAD Card)	NAP-200-050
IPTRK Connection Test: (IP Trunk Card for FCCS)	NAP-200-051
IPTRK Connection Test: (IP Trunk Card for CCIS)	NAP-200-052
IPTRK Connection Test: (IP Trunk Card for H.323)	NAP-200-053
PHA Connection Test: (PHA Card)	NAP-200-054
PHD Connection Test: (PHD Card)	NAP-200-055
PHC Connection Test: (PHC Card)	NAP-200-056

END

NAP-200-050

Sheet 1/3

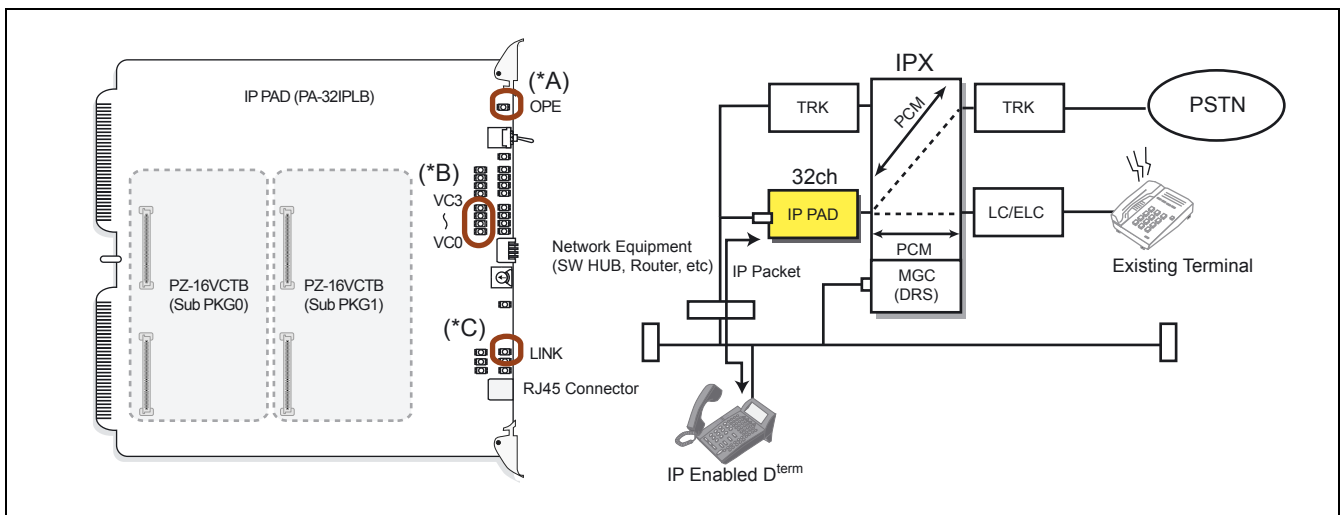
IP PAD Connection Test

The following describes the procedure for confirming the normality of IP PAD. Here describes procedure for performing connection test between IP Enabled D^{term} and the existing terminal (D^{term} and analog terminal) or the existing trunk (COT, TLT, and so on). Perform the test with the other combinations of terminals, when needed.

Note 1: *It is essential that IPX and the controlled LC/TRK are in normal condition.*

Note 2: *Perform the test after confirming that PHD/PHA is working normally by using tests.*

Figure 050-1 Diagram of IP PAD Connection Test



INSTALLATION TEST PROCEDURE

NAP-200-050

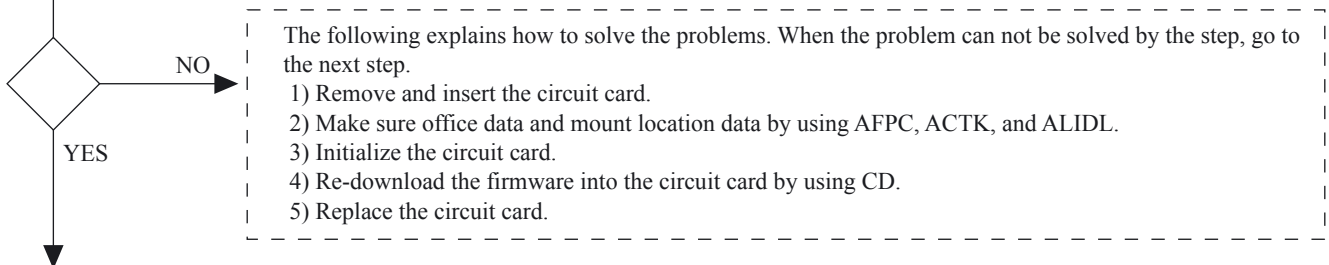
Sheet 2/3

IP PAD Connection Test



START

[1] Confirm that OPE lamp (*A) on IP PAD is lighting. (*A)

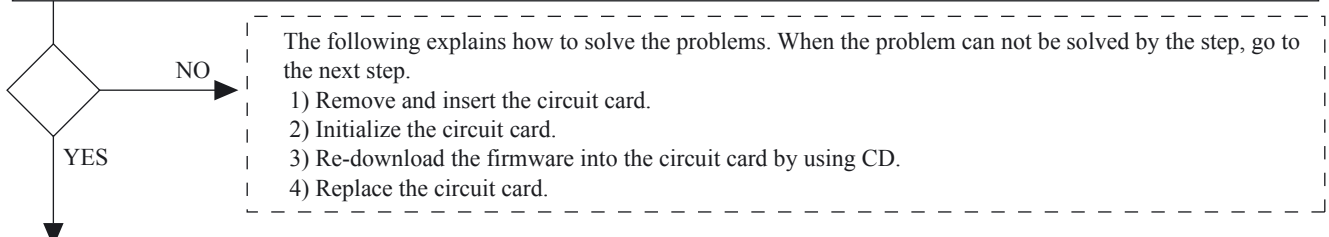


[2] Confirm that VC0-3 lamps (*B) on IP PAD are lighting when using voice compression sub card. (*B)

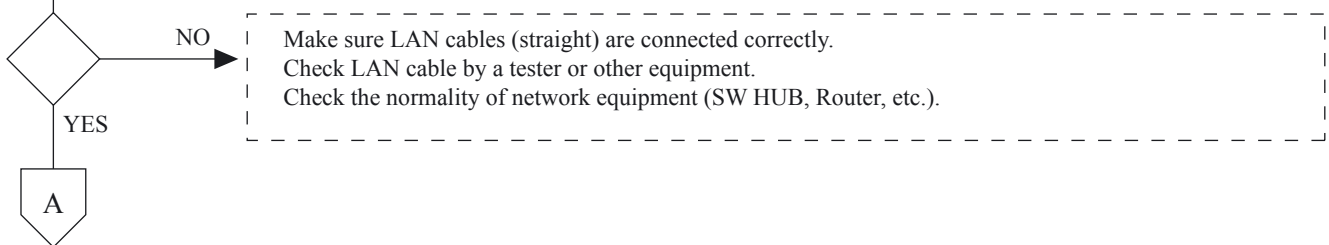
The lamps on the circuit card turn on in the following condition:

-When a sub card (Sub PKG0) is installed : VC0 and VC1 turn on.

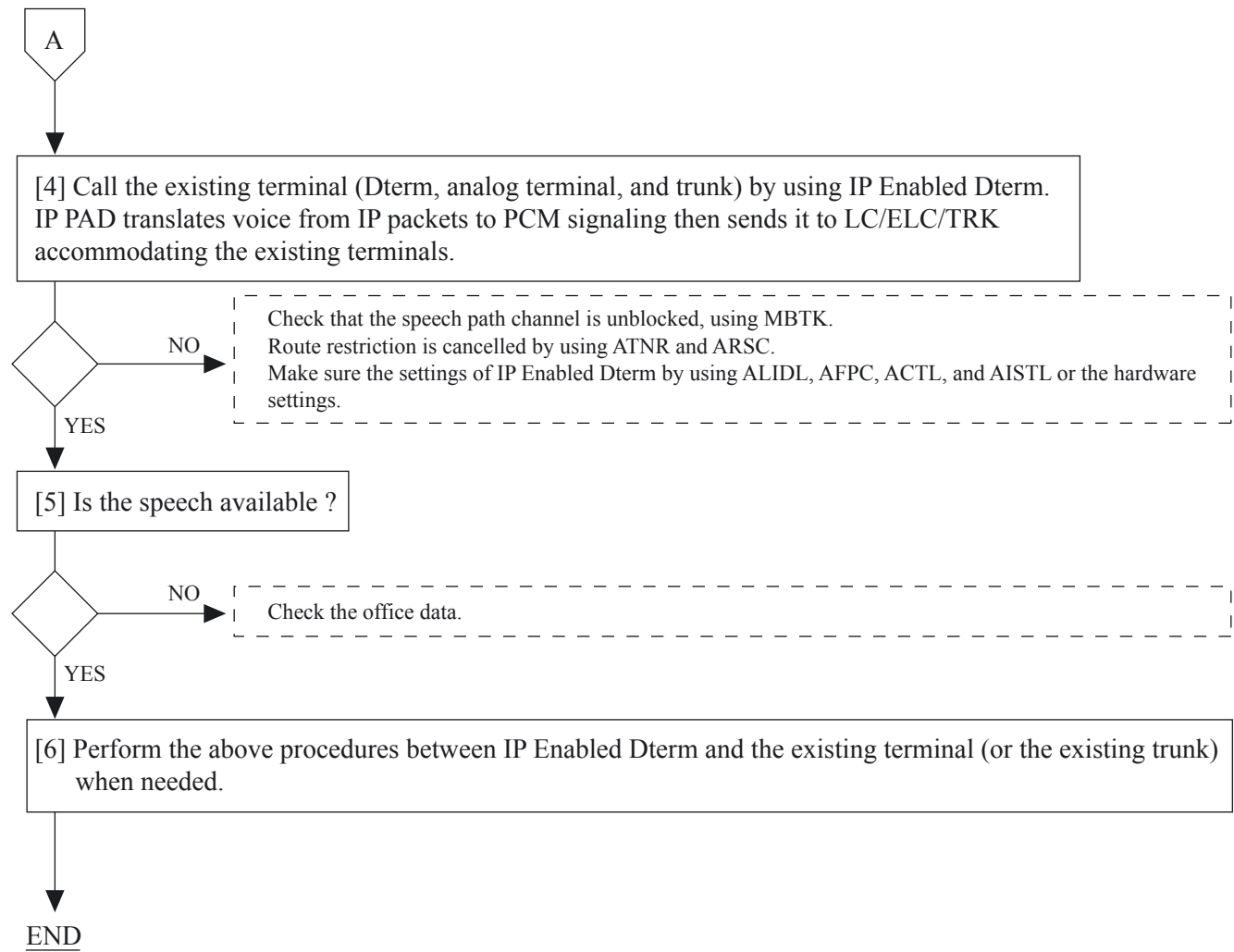
-When two sub cards (Sub PKG0/1) are installed : VC0, VC1, VC2 and VC3 turn on.



[3] Confirm that LINK lamp (*C) on IP PAD is lighting, which indicates that the circuit card is connected to the network physically.



NAP-200-050
Sheet 3/3
IP PAD Connection Test



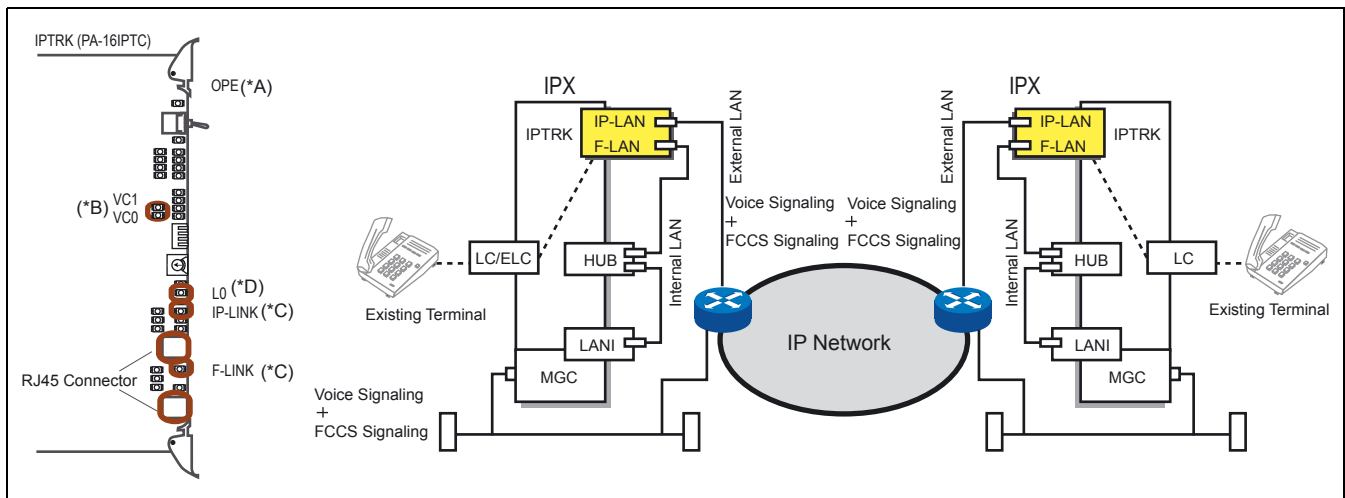
INSTALLATION TEST PROCEDURE

NAP-200-051
Sheet 1/3
IPTRK (IP Trunk Card for FCCS) Connection Test

The following describes the procedure for confirming the normality of IPTRK in the case of FCCS over IP. Here describes procedure for performing connection test over FCCS between existing terminals.

Note: *It is essential that IPX and the controlled LC/TRK are in normal condition.*

Figure 051-1 Diagram of IPTRK (FCCS) Connection Test



NAP-200-051

Sheet 2/3

IPTRK (IP Trunk Card for FCCS)
Connection Test



START

[1] Confirm that OPE lamp (*A) on IPTRK is lighting.



NO

YES

The following explains how to solve the problems. When the problem can not be solved by the step, go to the next step.

- 1) Remove and insert the circuit card, and make sure that the sub card is stable when used.
- 2) Make sure office data and mount location data by using ACRD/ACTK command.
- 3) Initialize the circuit card.
- 4) Re-download the firmware into the circuit card by using CD.
- 5) Replace the circuit card.

[2] Confirm that VC0 lamp (*B) on IPTRK is lighting, which indicates that voice compression is active.
When sub card is installed, confirm VC1 lamp (*B) on the circuit card is lighting.



NO

YES

The following explains how to solve the problems. When the problem can not be solved by the step, go to the next step.

- 1) Remove and insert the circuit card, and make sure that the sub card is stable when used.
- 2) Initialize the circuit card.
- 3) Re-download the firmware into the circuit card by using CD.
- 4) Replace the circuit card.

[3] Confirm that IP-LINK/F-LINK lamps (*C) on IPTRK are lighting green, which indicate that the circuit card is connected to the network (or FCCS Network) physically.



NO

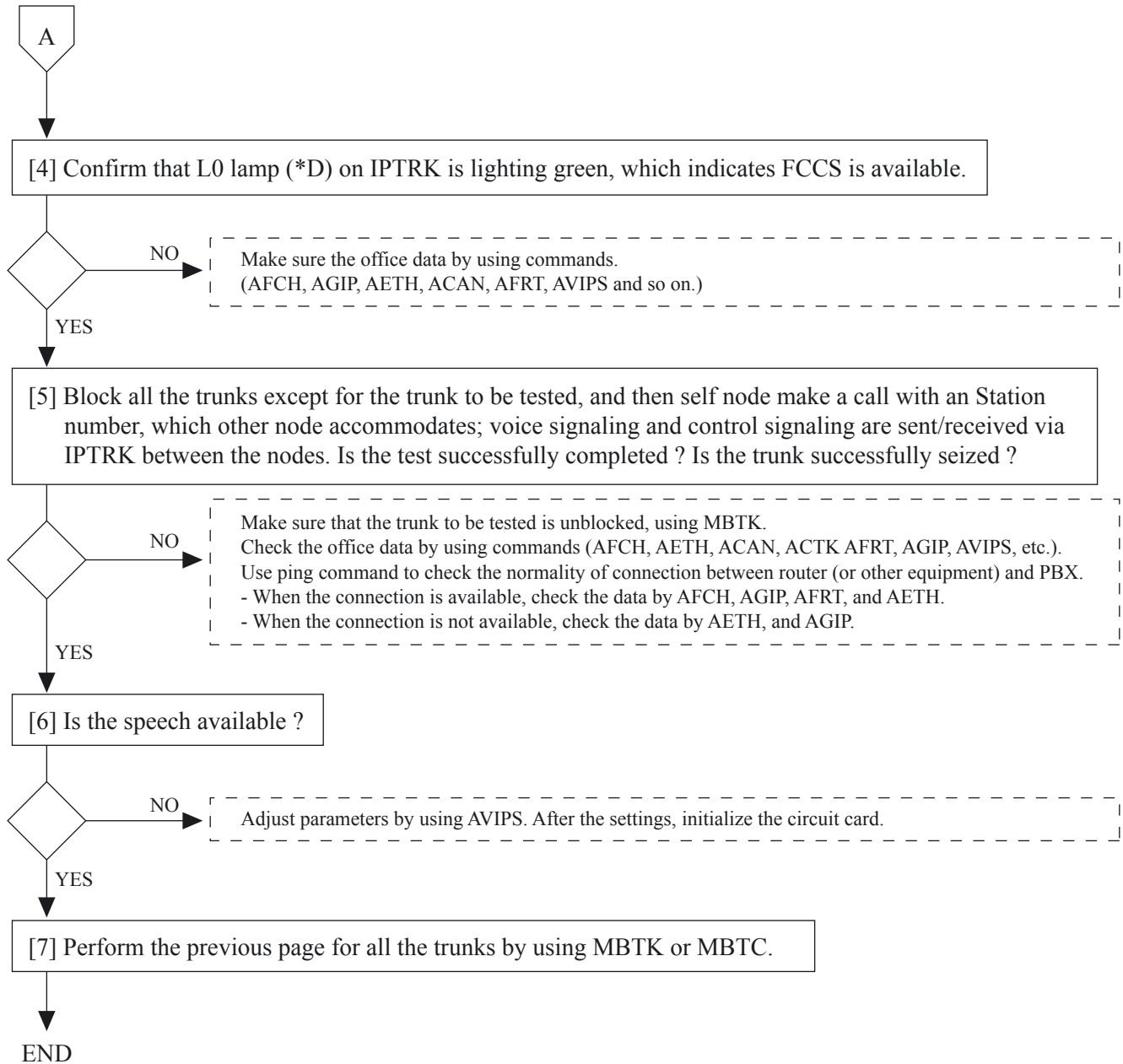
YES

When IP-LINK is off : Make sure IP-LAN connectors and external LAN cables are installed.
When F-LINK is off : Make sure F-LAN connectors and internal LAN cables are installed.

- Check LAN cables (straight) are stable in the connector.
- Check LAN cables by a tester or other equipment.
- Check the normality of network equipment (SW HUB and router) and HUB circuit card.

A

NAP-200-051
Sheet 3/3
IPTRK (IP Trunk Card for FCCS) Connection Test



NAP-200-052

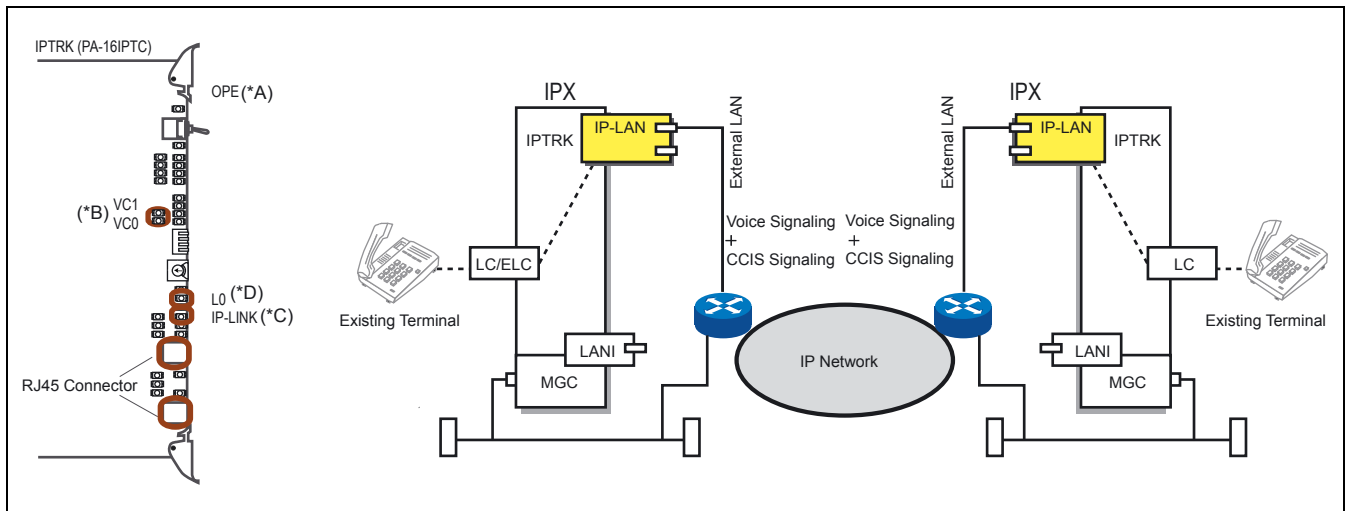
Sheet 1/3

IPTRK (IP Trunk Card for CCIS)
Connection Test

The following describes the procedure for confirming the normality of IPTRK in the case of CCIS over IP. Here describes procedure for performing connection test over CCIS between existing terminals.

Note: *It is essential that IPX and the controlled LC/TRK are in normal condition.*

Figure 052-1 Diagram of IPTRK (CCIS) Connection Test



NAP-200-052

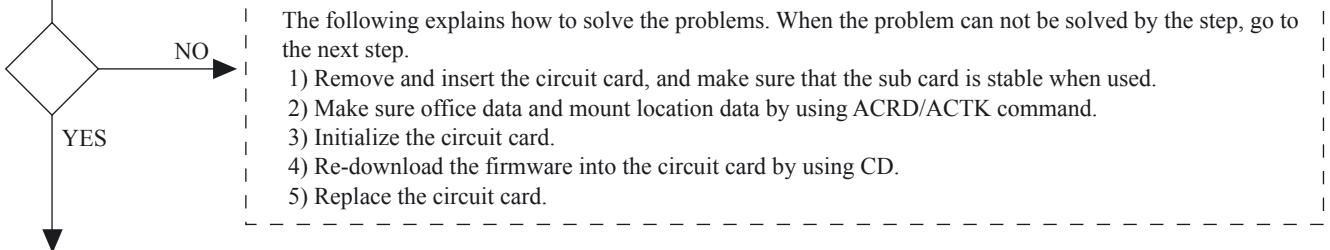
Sheet 2/3

IPTRK (IP Trunk Card for CCIS)
Connection Test

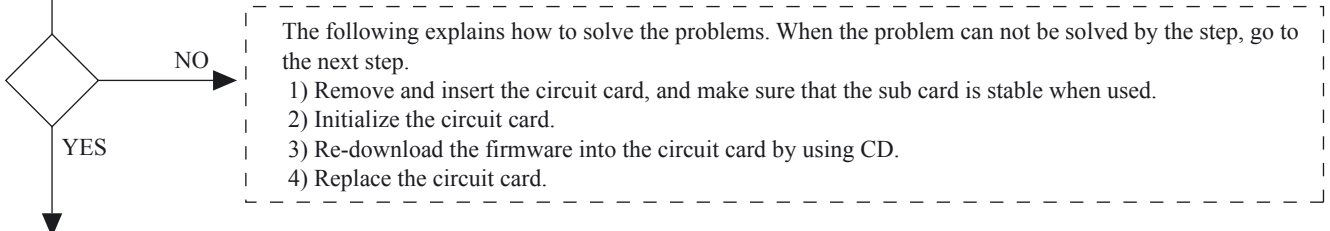


START

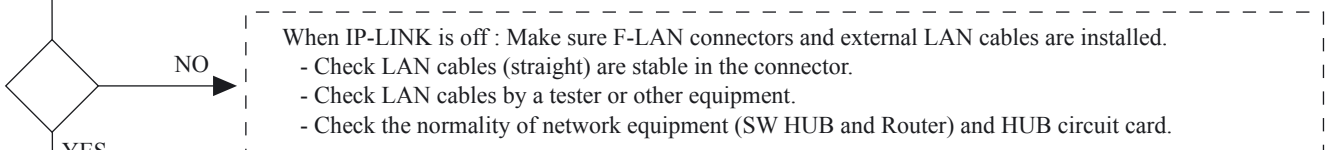
[1] Confirm that OPE lamp (*A) on IPTRK is lighting.



[2] Confirm that VC0 lamp (*B) on IPTRK is lighting, which indicates that voice compression is active. □
When sub card is installed, confirm VC1 lamp (*B) on the circuit card is lighting.



[3] Confirm that IP-LINK lamp (*C) on IPTRK is lighting green, which indicates that the circuit card is connected to the network physically.

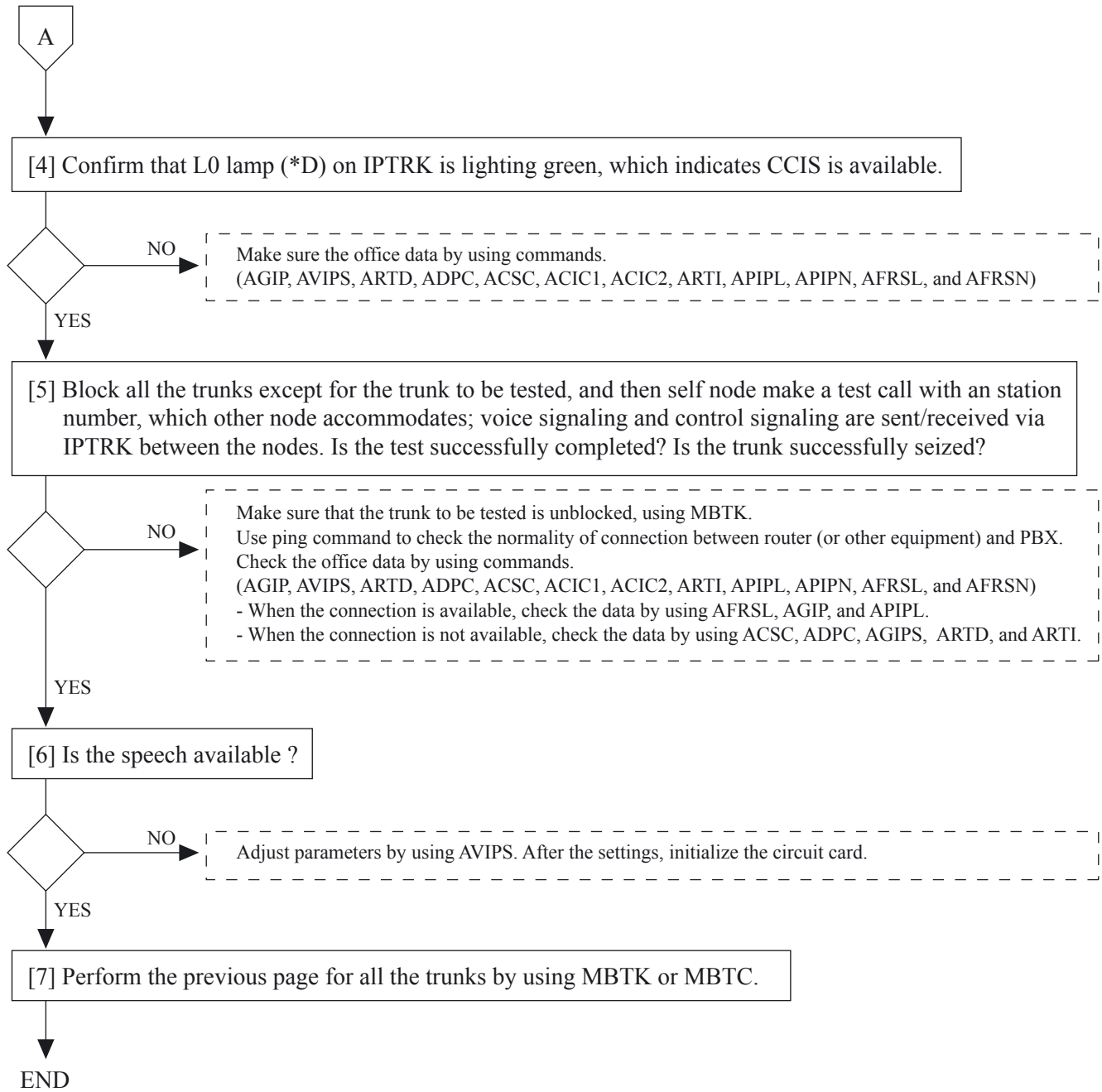


A

NAP-200-052

Sheet 3/3

IPTRK (IP Trunk Card for CCIS)
Connection Test



INSTALLATION TEST PROCEDURE

NAP-200-053

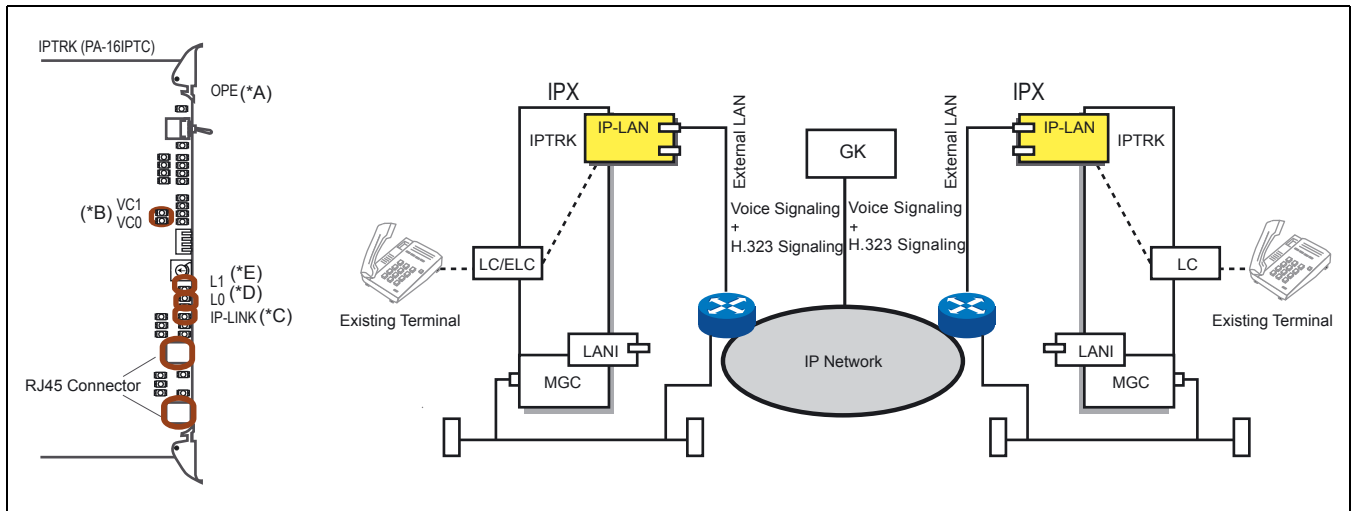
Sheet 1/3

IPTRK (IP Trunk Card for H.323)
Connection Test

The following describes the procedure for confirming the normality of IPTRK in the case of H.323 over IP. Here describes procedure for performing connection test with H.323 between existing terminals.

Note: *It is essential that IPX and the controlled LC/TRK are in normal condition.*

Figure 053-1 Diagram of IPTRK (H.323) Connection Test



NAP-200-053

Sheet 2/3

IPTRK (IP Trunk Card for H.323)
Connection Test



START

[1] Confirm that OPE lamp (*A) on IPTRK is lighting.



The following explains how to solve the problems. When the problem can not be solved by the step, go to the next step.

- 1) Remove and insert the circuit card, and make sure that the sub card is stable.
- 2) Make sure office data and mount location data by using ACRD/ACTK command when used.
- 3) Initialize the circuit card.
- 4) Re-download the firmware into the circuit card by using CD.
- 5) Replace the circuit card.

[2] Confirm that VC0 lamp (*B) on IPTRK is lighting, which indicates that voice compression is active. When sub card is installed, confirm VC1 lamp (*B) on the circuit card is lighting.



The following explains how to solve the problems. When the problem can not be solved by the step, go to the next step.

- 1) Remove and insert the circuit card, and make sure that the sub card is stable when used.
- 2) Initialize the circuit card.
- 3) Re-download the firmware into the circuit card by using CD.
- 4) Replace the circuit card.

[3] Confirm that IP-LINK lamp (*C) on IPTRK is lighting green, which indicates that the circuit card is connected to the network physically.



When IP-LINK is off : Make sure IP-LAN connectors and external LAN cables are installed.

- Check LAN cables (straight) are stable in the connector.
- Check LAN cables by a tester or other equipment.
- Check the normality of network equipment (SW HUB and Router) and HUB circuit card.

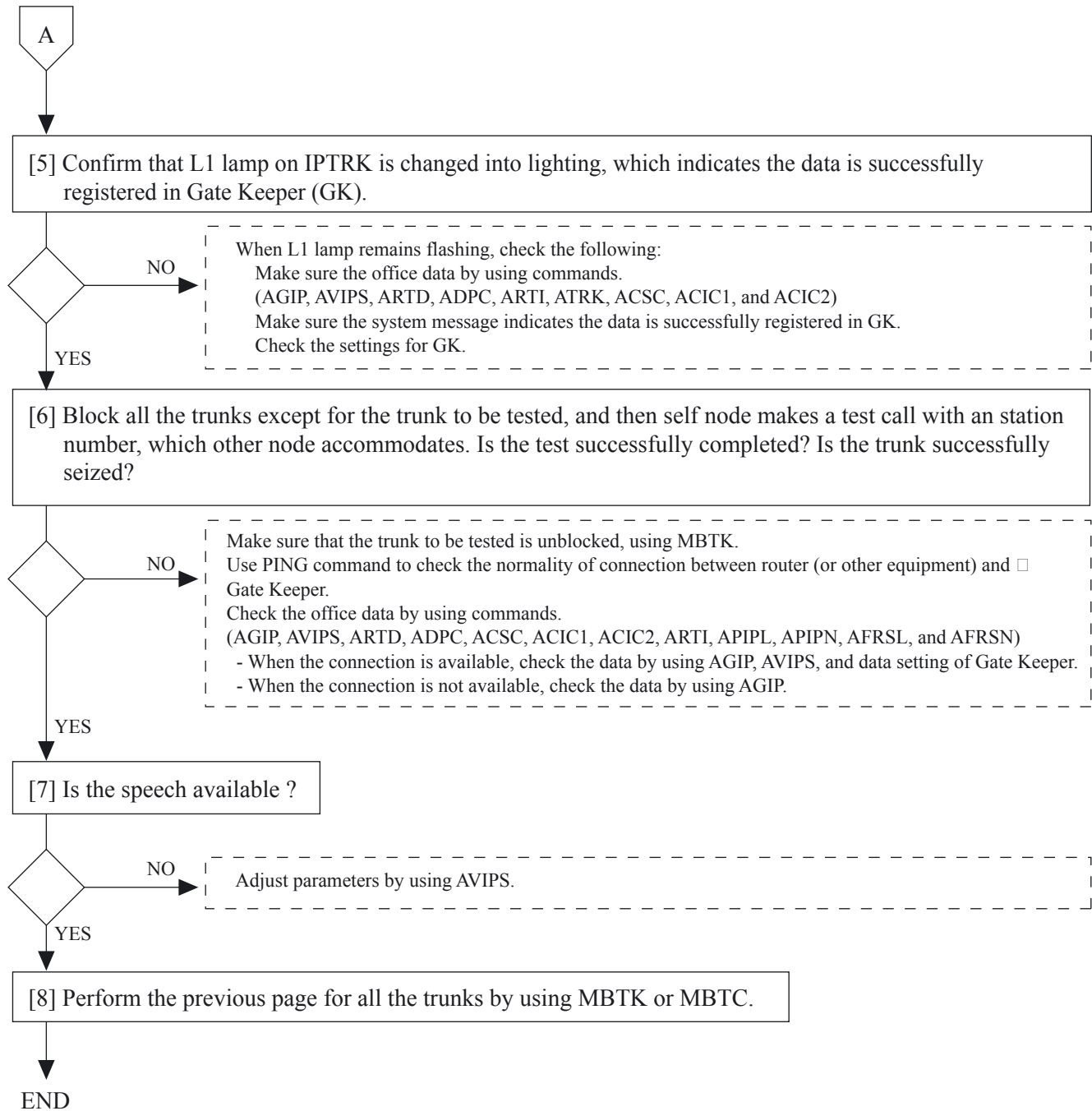
[4] Confirm that L0(*D)/L1(*E) lamps on IPTRK are lighting green, which indicate H.323 is available.



Check the system message.
Make sure the office data by using commands.
(AGIP, AVIPS, ARTD, ADPC, ARTI, ATRK, ACSC, ACIC1, and ACIC2)

A

NAP-200-053
Sheet 3/3
IPTRK (IP Trunk Card for H.323) Connection Test

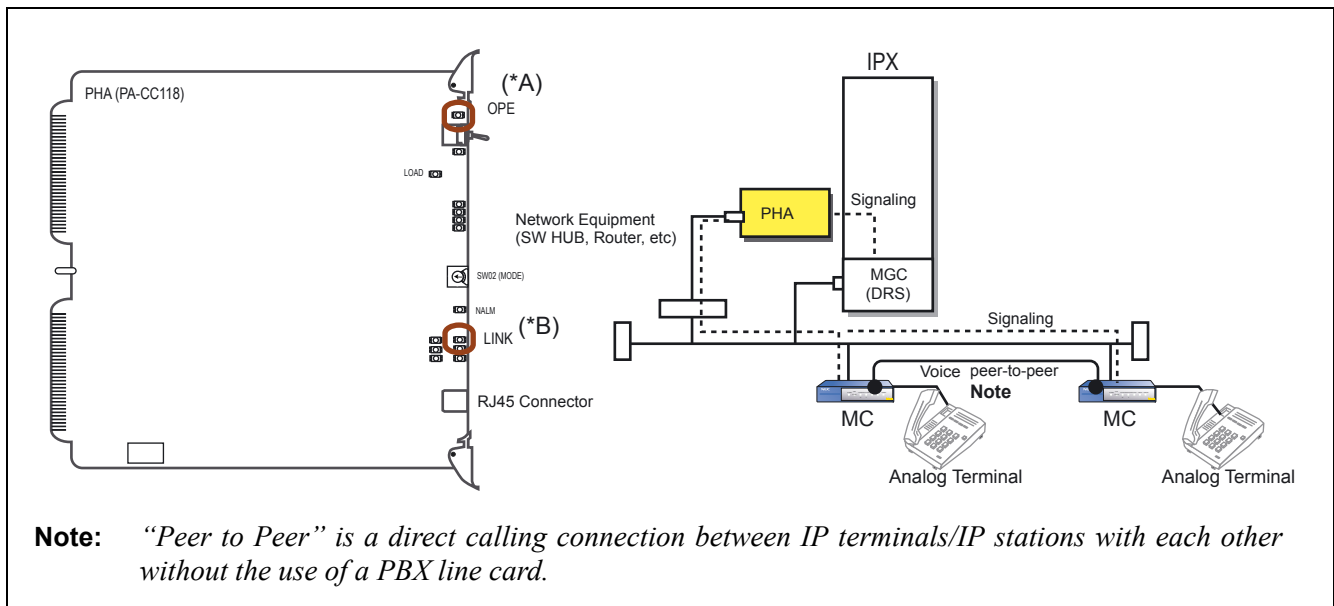


NAP-200-054
Sheet 1/2
PHA Connection Test

The following describes the procedure for confirming the normality of PHA. Here describes procedure for performing connection test between analog terminals attached to MC. Perform the test with the other combinations of terminals, when needed.

Note: *It is essential that IPX and the controlled LC/TRK are in normal condition.*

Figure 054-1 Diagram of PHA Connection Test



INSTALLATION TEST PROCEDURE

NAP-200-054

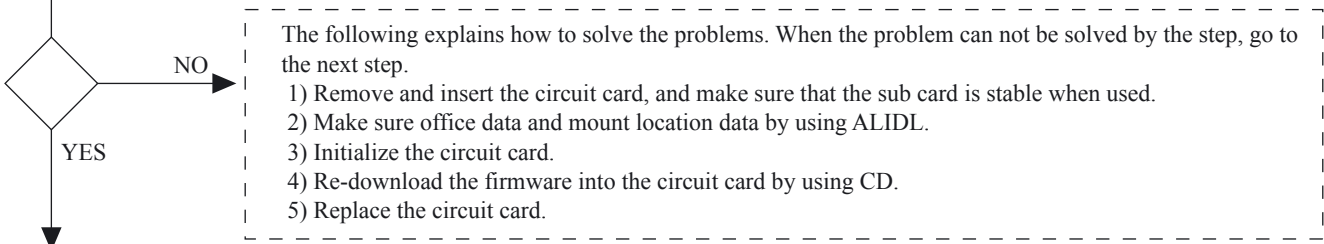
Sheet 2/2

PHA Connection Test

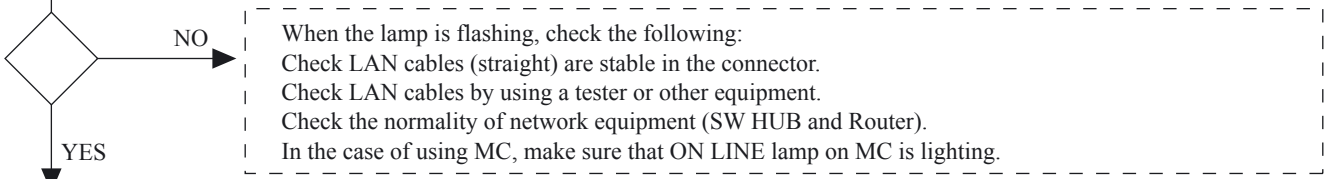


START

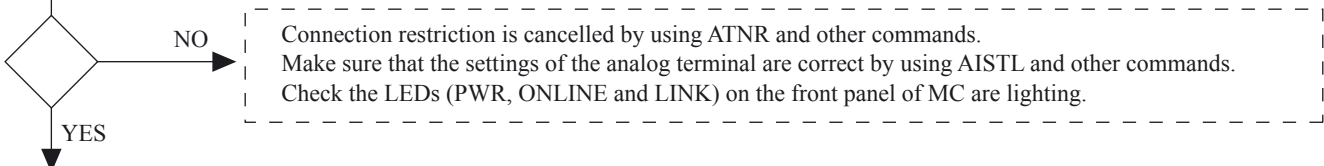
[1] Confirm that OPE lamp (*A) on PHA is lighting.(*A)



[2] Confirm that LINK lamp (*B) on PHA is lighting green, which indicates that the circuit card is connected to the network physically.



[3] Call an analog terminal attached to MC by using an analog terminal attached to MC.□
(At this time, analog signaling is received/sent between MC and MGC via PHA.) Is the test successfully completed?



[4] Perform the above procedures between an analog terminal (or IP Enabled Dterm) and an analog terminal via MC if necessary.

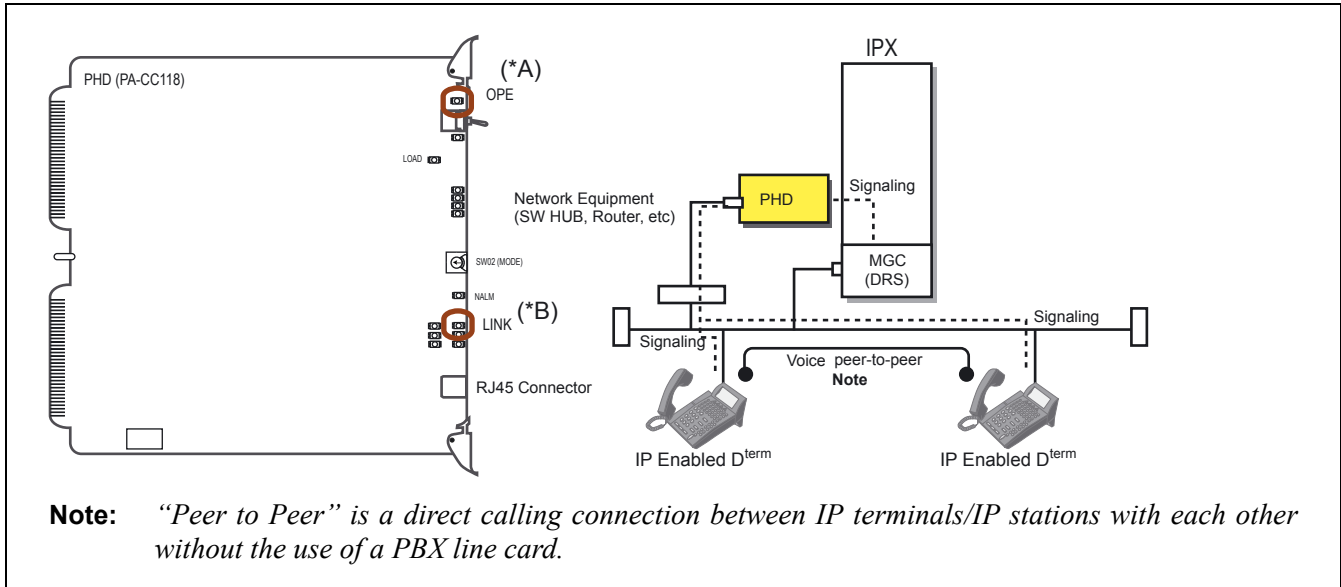
END

NAP-200-055
Sheet 1/3
PHD Connection Test

The following describes the procedure for confirming the normality of PHD. Here describes procedure for performing connection test between IP Enabled D^{term}s. Perform the test with the other combinations of terminals, when needed.

Note: *It is essential that IPX and the controlled LC/TRK are in normal condition.*

Figure 055-1 Diagram of PHD Connection Test



NAP-200-055

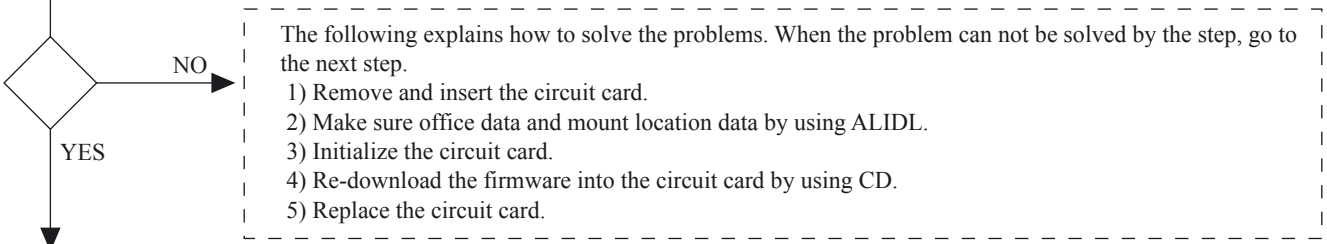
Sheet 2/3

PHD Connection Test

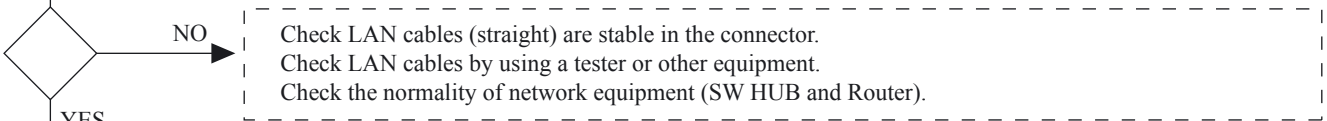


START

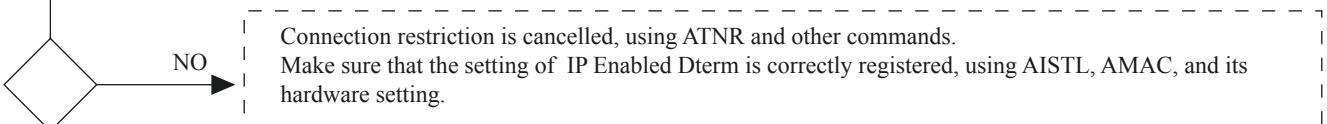
[1] Confirm that OPE lamp (*A) on PHD is lighting. OPE and BLN lamps need about one minute to turn on after the initialization.



[2] Confirm that LINK lamp (*B) on PHD is lighting green, which indicates that the circuit card is connected to the network physically.

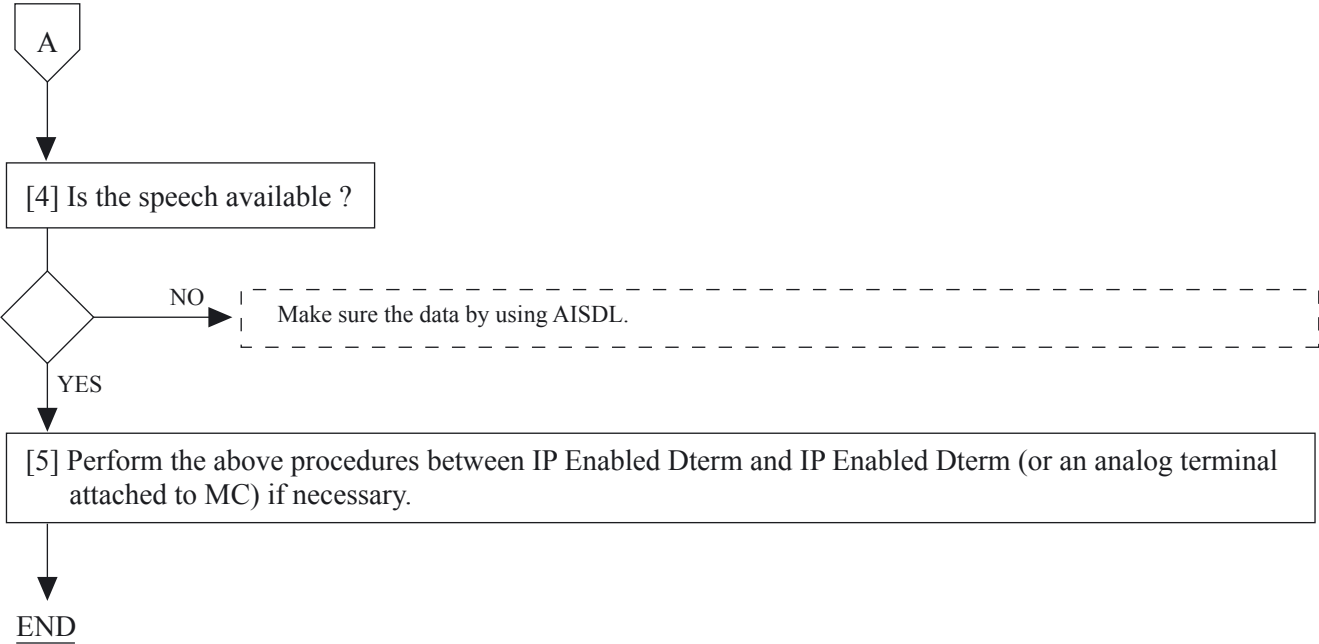


[3] Call IP Enabled Dterm by using IP Enabled Dterm.
(At this time, controlling signaling is received/sent between MGCs (or terminals) via PHD.)



A

NAP-200-055
Sheet 3/3
PHD Connection Test



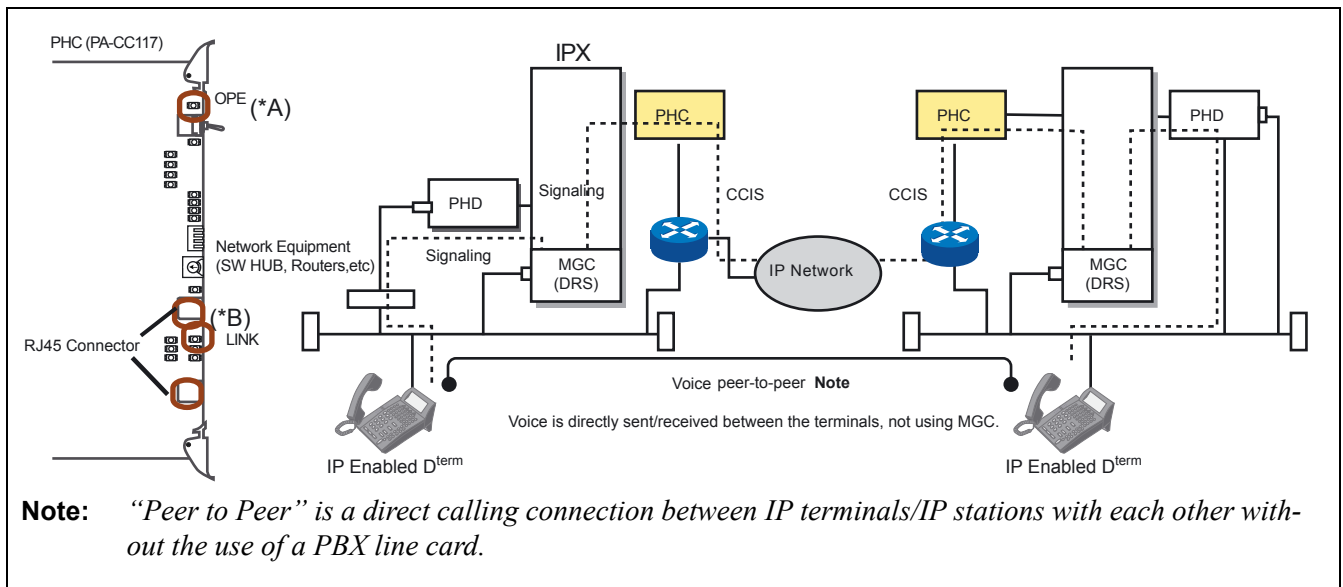
INSTALLATION TEST PROCEDURE

NAP-200-056
Sheet 1/3
PHC Connection Test

The following describes the procedure for confirming the normality of PHC. Here describes procedure for performing connection test between IP Enabled D^{term}s. Perform the test with the other combinations of terminals, when needed.

Note: *It is essential that IPX and the controlled LC/TRK are in normal condition.*

Figure 056-1 Diagram of PHC Connection Test



NAP-200-056

Sheet 2/3

PHC Connection Test



START

[1] Confirm that OPE lamp (*A) on PHC is lighting.



The following explains how to solve the problems. When the problem can not be solved by the step, go to the next step.

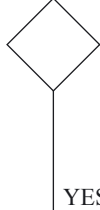
- 1) Remove and insert the circuit card.
- 2) Make sure office data and mount location data by using ARTD/ARTI/ATRK/DLEN.
- 3) Initialize the circuit card.
- 4) Re-download the firmware into the circuit card by using CD.
- 5) Replace the circuit card.

[2] Confirm that LINK lamp (*B) on PHC is lighting, which indicates that the circuit card is connected to the network physically.



Check LAN cables (straight) are stable in the connector.
Check LAN cables by using a tester or other equipment.
Check the normality of network equipment (HUB, SW HUB, and Router).

[3] Call the other IP Enabled Dterm by using IP Enabled Dterm. □
(At this time, controlling signaling is received/sent between MGCs via PHC.) □
Is the test successfully completed ?

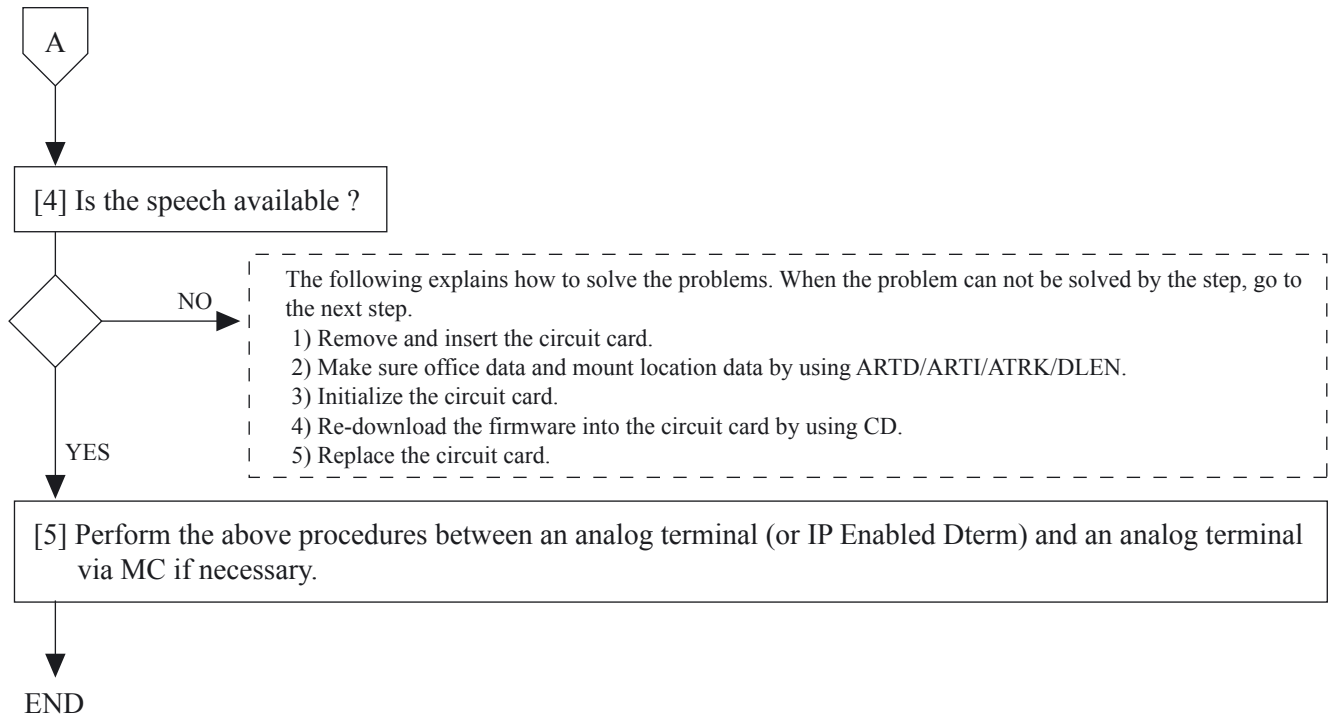


Check that the trunk is unblocked, using MBTK.
Check that the virtual trunk is initialized, using SCVT.
Route restriction is cancelled, using ARSC and other commands.
Make sure that the numbering plan data is correctly registered, using commands (ANDPL, ASPAL, AFRSL, AOPRL, APIPL, AMND, ARNPL).
Make sure that CCIS related data is correctly registered, using commands (ADPC, ACSC, ACIC1, ACIC2).
Make sure that PHC related data is correctly registered, using AGIP.

A

INSTALLATION TEST PROCEDURE

NAP-200-056
Sheet 3/3
PHC Connection Test



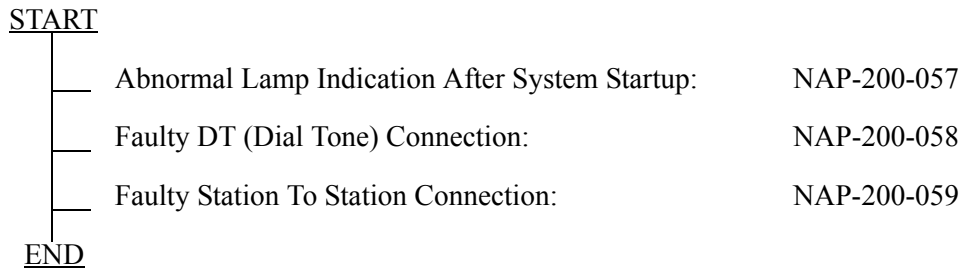
CHAPTER 6 FAULT RECOVERY DURING TESTS

1. GENERAL

The fault recovery procedures in this Chapter are used when a connection cannot be established in the normal manner or an abnormal connection is discovered as a result of the tests in Chapter 4, “SYSTEM STARTUP”, and Section 2., “BASIC CONNECTION TEST” of Chapter 5.

2. OUTLINE OF PROCEDURE FOR FAULT RECOVERY

The procedures for performing fault recovery are described in the NAPs indicated to the right of each item in the following flowchart.



NAP-200-057
Sheet 1/2
Abnormal Lamp Indications After System Startup



START

— Perform the following when the OPE lamp (Green) does not turn ON on any circuit cards in a PIM

— Using MAT command “AUNT”, check whether UNIT data has been assigned.

— Replace the TSW/MUX card in the PIM with a spare.

— Check whether the flat cable connected to the “BUSXX” terminal on the PIM backplane is securely connected.

— A PIM will occasionally malfunction due to a single circuit card in the PIM. Therefore, check the circuit cards via the following steps:

— Extract all circuit cards from the PIM other than the TSW/MUX and the PWR Supplies.

— Insert one circuit card into its mounting slot and see if its OPE lamp turns ON. Repeat this procedure for the remaining circuit cards.

— Perform the following when the OPE lamp (Green) does not turn ON on a Line Circuit card

— Confirm that the MB switch of the circuit card is DOWN.

— Using command “ASDT”, check whether station data is assigned to the circuits on the card.

— Replace the card with a spare.

— Perform the following when OPE lamp of a Line Circuit card illuminates, but the BL lamp (Red) for an individual line flashes

— Using command “MBST”, confirm that the specific line is not in Make Busy state.

— Using command “ASDT”, check whether station data has been assigned to the line circuit.

— Replace the circuit card with a spare.

A

NAP-200-057

Sheet 2/2

Abnormal Lamp Indications After System Startup



A

Perform the following when the OPE lamp (Green) does not turn ON on a Trunk circuit card.

Confirm that the MB switch of the circuit card is DOWN.

Using command “ATRK”, check whether Trunk data has been assigned for the circuits on the card.

Replace the circuit card with a spare.

Perform the following when the OPE lamp of a Trunk circuit card turns ON, but the BL lamp (Red) for an individual circuit flashes.

Confirm that the MB switch for each circuit of the card is OFF.

Using command “MBTK”, confirm that the trunk circuit is not in Make Busy state.

Using command “ATRK”, check whether trunk data has been assigned for the trunk circuit.

Replace the circuit card with a spare.

Perform the following before replacing a circuit card which is considered defective with a spare.

Confirm the switch settings on the circuit card.

Poor contact at the connector portion of the circuit card may be responsible for the malfunction. Check the circuit card once again by inserting and extracting it two or three times.

END

NAP-200-058
Sheet 1/1
DT (Dial Tone) Connection Fault



START

— Dial tone is not heard.

— On the MDF, check the cross connections between the telephone and the corresponding line circuit.

— Check whether LT cable is securely connected to the PIM.

— Replace LC card with a spare.

— DT cannot be heard from one or more lines of the same circuit card.

— Replace LC card with a spare.

— DT cannot be heard from the lines accommodated by a specific PIM.

— Check the switch settings on the TSW/MUX circuit card.

— Replace TSW/MUX card with a spare.

— Check the switch settings on the TSW circuit card.

— Replace TSW card with a spare.

— Check whether the “MT24 TSW” cable is securely inserted to the connectors on the front edge of TSW and MUX cards.

END

NAP-200-059

Sheet 1/2

Station to Station Connection Fault



START

— Dial Tone (DT) is still heard after a digit is dialed (cannot break dial tone)

- A specific RST card is involved
- A specific LC card is involved
- A specific UNIT card is involved
- Entire System is involved

— Reorder Tone (ROT) is heard after a station number is dialed.

- Using MAT command “ANPD/ANPDL/ANPDN,” check “Necessary Number of Digits” data.
- Using command “ASPA/ASPAL/ASPAN,” check “Special Number” data.
- Using command “ASDT,” check “Station” data.
- Using command “ATNR,” check “Tenant Restriction Class” data.

— Ring Back Tone (RBT) is heard, but the bell at the called station remains silent.

- Check whether the called station is assigned the correct LENS data in command “ASDT.”
- When all the stations accommodated in a specific PIM do not ring, replace PWR circuit card with a spare.
- If the fault involves one or more lines within the same LC circuit card, replace LC card with a spare.

A

FAULT RECOVERY DURING TESTS

NAP-200-059
Sheet 2/2
Station to Station Connection Fault



A

After the call has been answered, noise is heard or the speech path is one-way.

- If the fault involves one or more lines within the same LC circuit card, replace the card with a spare.
- If the fault involves a specific PIM, replace either the MUX or TSW circuit card with a spare.
- If noise is heard throughout the entire system, replace the TSW circuit card with a spare.

END

CHAPTER 7 WORK AFTER INSTALLATION TESTS

This Chapter explains various kinds of work and site cleaning, etc. which the installer must perform after completing installation tests so that the system can be cut over normally.

Upon completion of all the required tests, the technician must confirm or perform the following:

1. Office Data Management
2. Preparation of Test Result Reports
3. Mounting of the Front and Rear Covers
4. Attachment of Inter-frame Brackets
5. Site Cleaning

1. OFFICE DATA MANAGEMENT

This paragraph explains the method of creating backup of the Office Data and the method of protecting the Office Data.

The PBX executes various kinds of processing according to the results of access by the CPU to the Data Memory in which the Office Data are stored. If the contents of Data Memory become faulty, it may result in erroneous operation of the system or in a system down. If any part of the Office Data has been illegally changed, it may also bring about a trouble the same as in the case of a fault occurrence to the Data Memory.

Thus, upon completion of the installation tests, ensure to create backup of the Office Data and provide a proper measure of office data protection.

1.1 Preservation of Office Data

The following items should be kept at the job site after the installation test has been completed for preservation of office data.

1. Office Data Programming Sheets

Since the office data programming sheets should reflect the latest data at all times, entries into the office data programming sheets must be made with pencil.

2. Flash Card for Storing Data

If a major change is made to the office data, especially a change involving System Data (command “ASYD/ASYDL/ASYDN”), the system may not function as expected afterward. To prepare for such an occurrence, two flash cards should be kept on hand; one contains office data before the change, the other contains office data after the change. The flash card containing the data before the change allows the technician to restore the previous (running) condition if the system does not operate properly with the new data.

WORK AFTER INSTALLATION TESTS

2. PREPARATION OF TEST RESULT REPORT

When submitting a report of test results to the end user or when performing test with customer's representatives attending, prepare Test Result Report and record the test results into the prepared Test Result Report.

3. MOUNTING OF THE FRONT AND REAR COVERS

When mounting the front cover and the rear cover of the PBX, follow the procedure below.

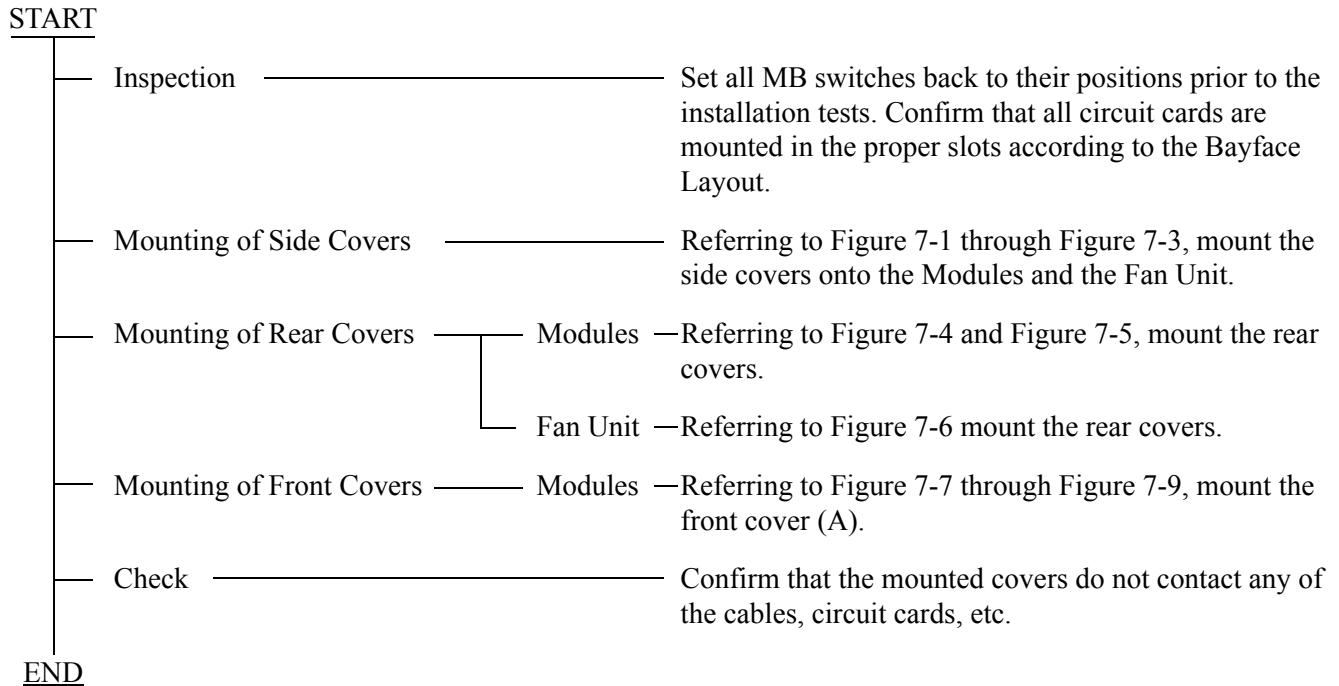


Figure 7-1 Mounting of the Covers

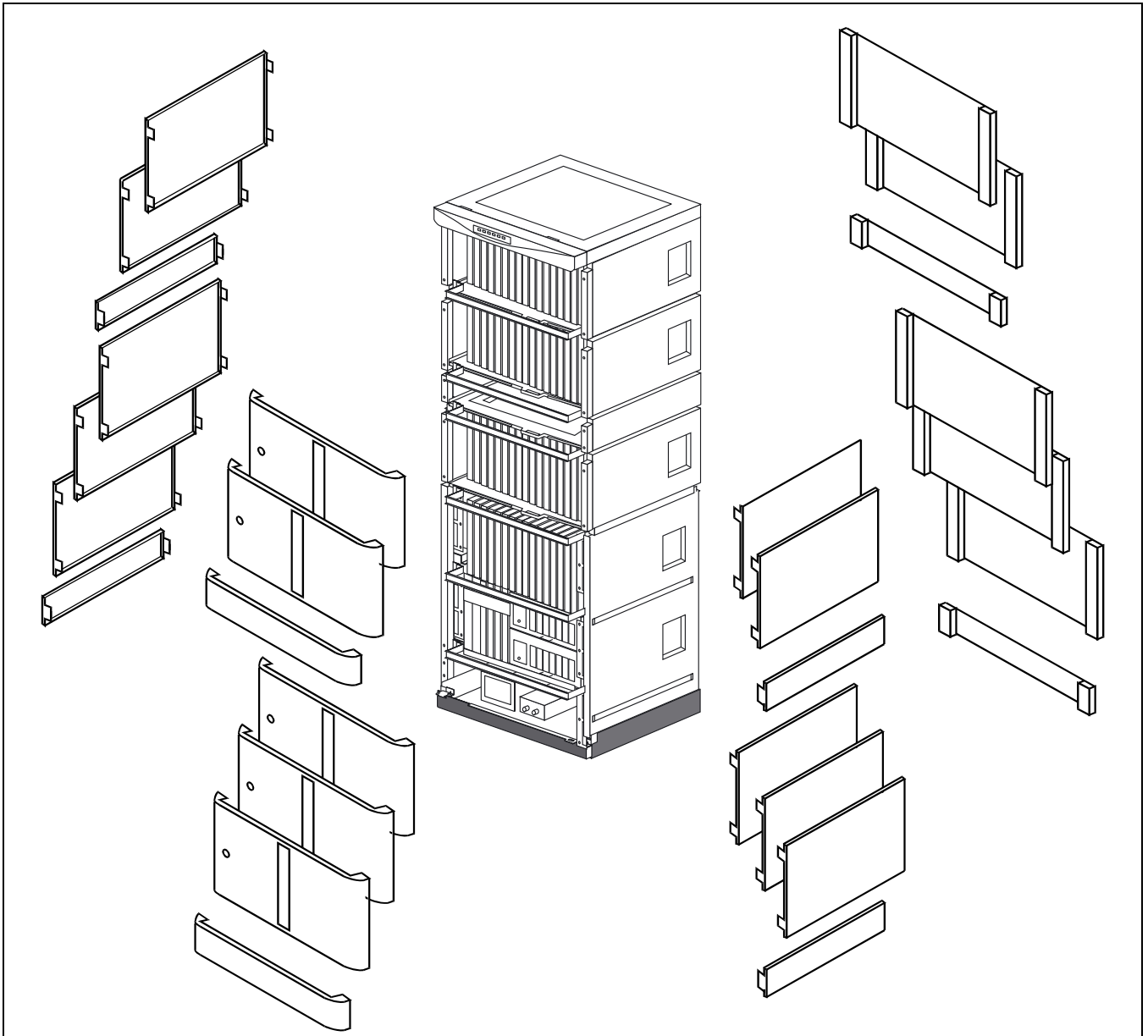


Figure 7-2 Side Cover Mounting Method (BASEU+LPR+PIM0)

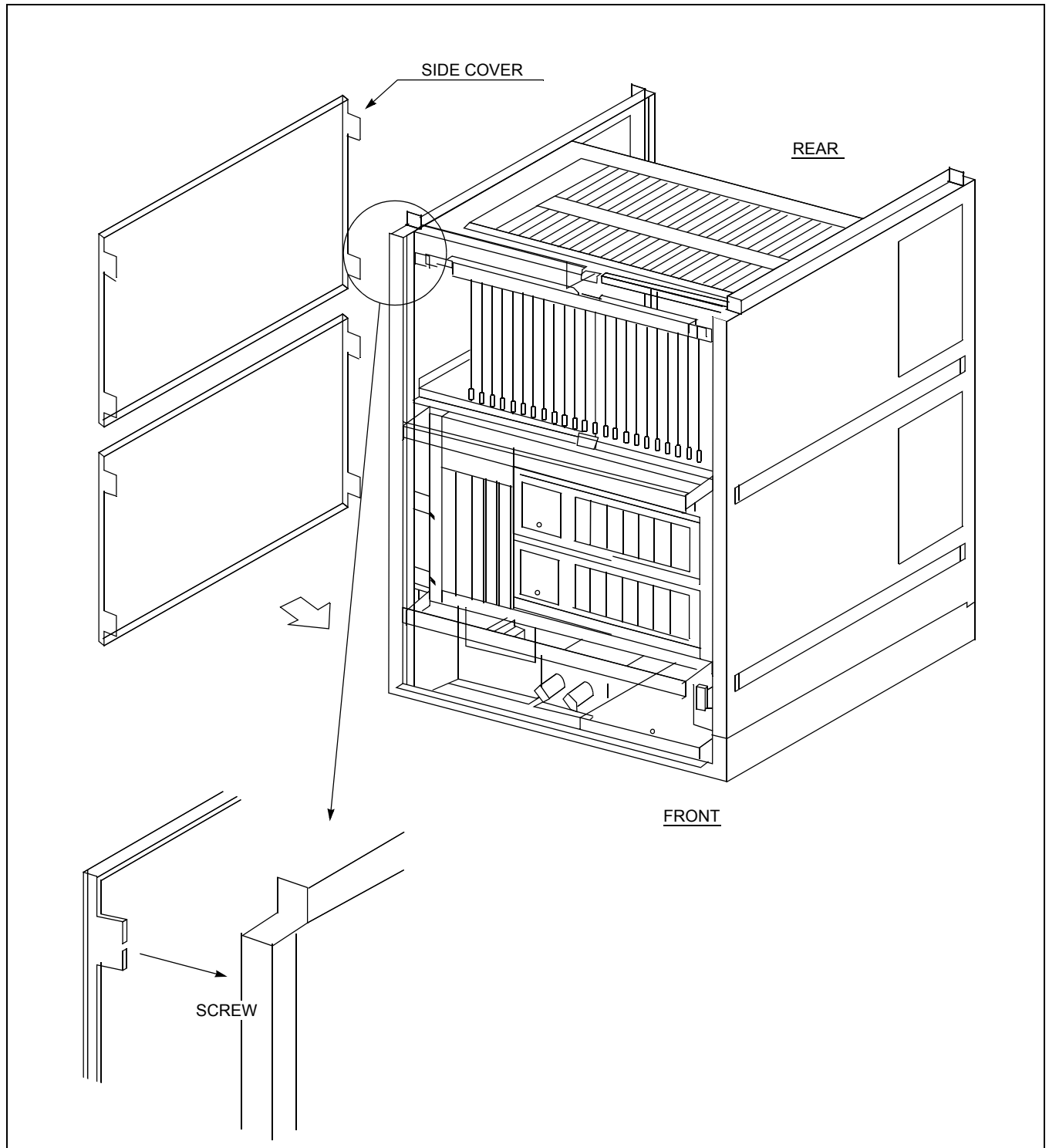


Figure 7-3 Side Cover Mounting Method (PIM)

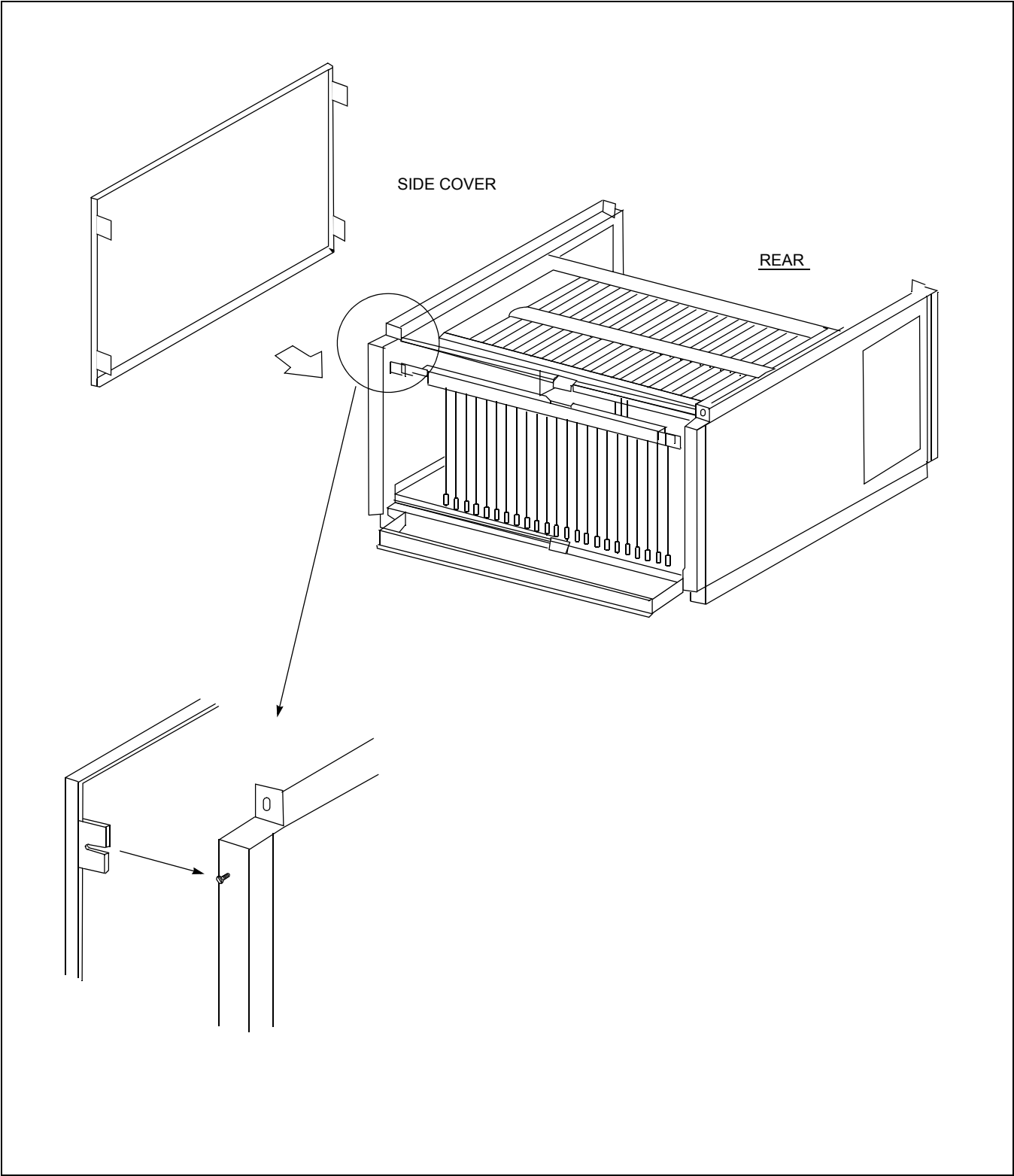


Figure 7-4 Rear Cover Mounting Method (BASEU+LPR+PIM0)

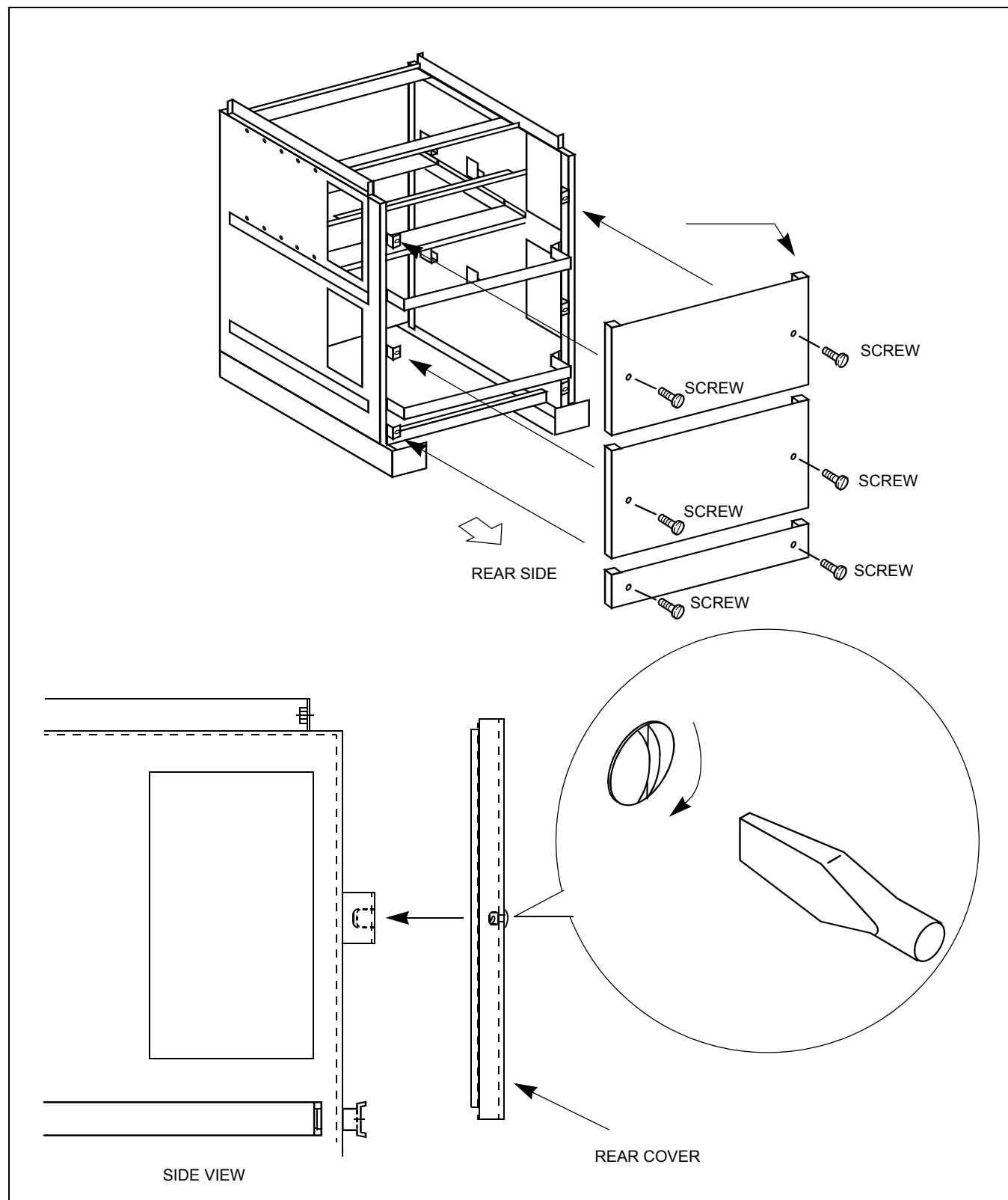


Figure 7-5 Rear Cover Mounting Method (PIM)

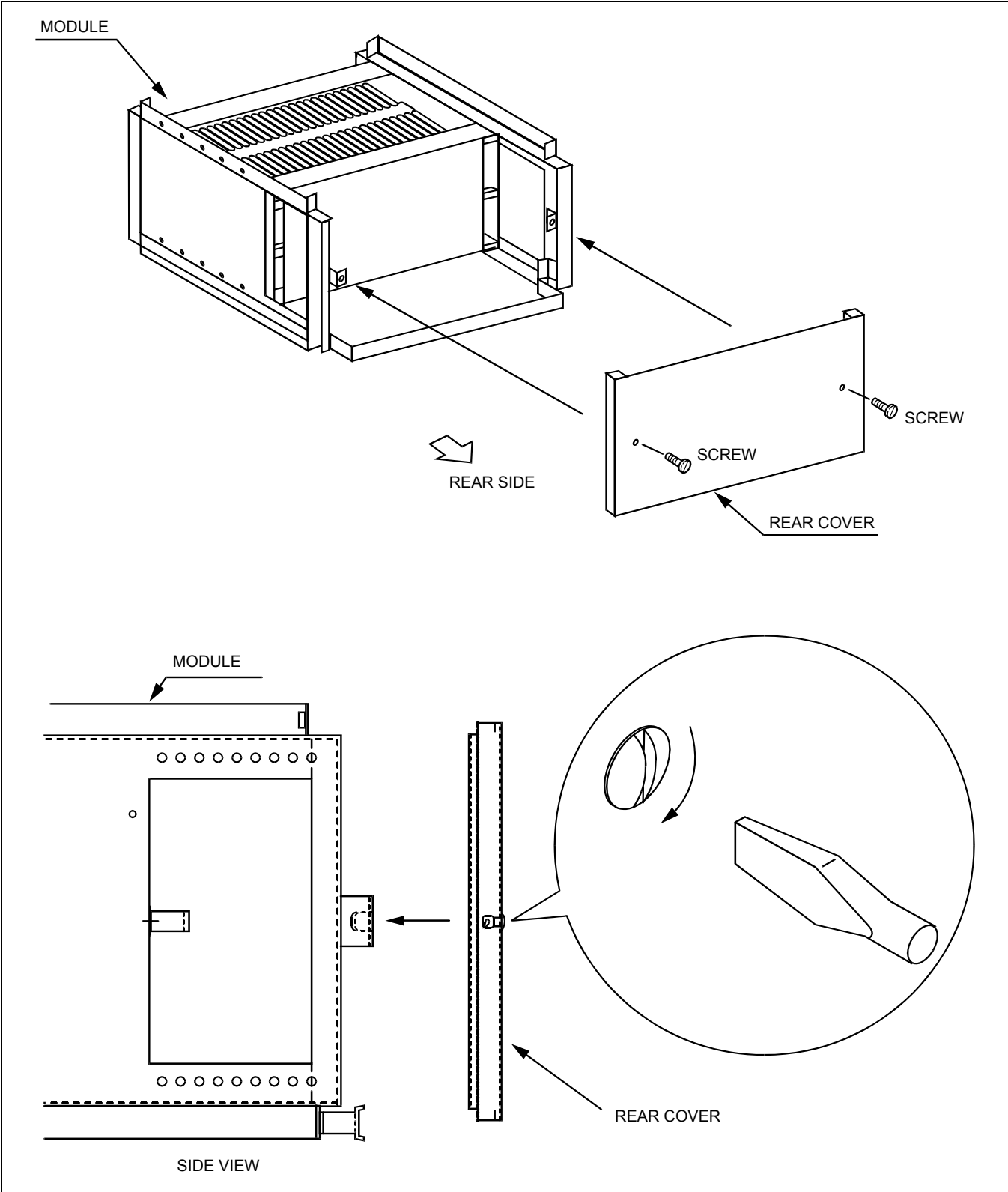


Figure 7-6 Rear Cover Mounting Method (FANU)

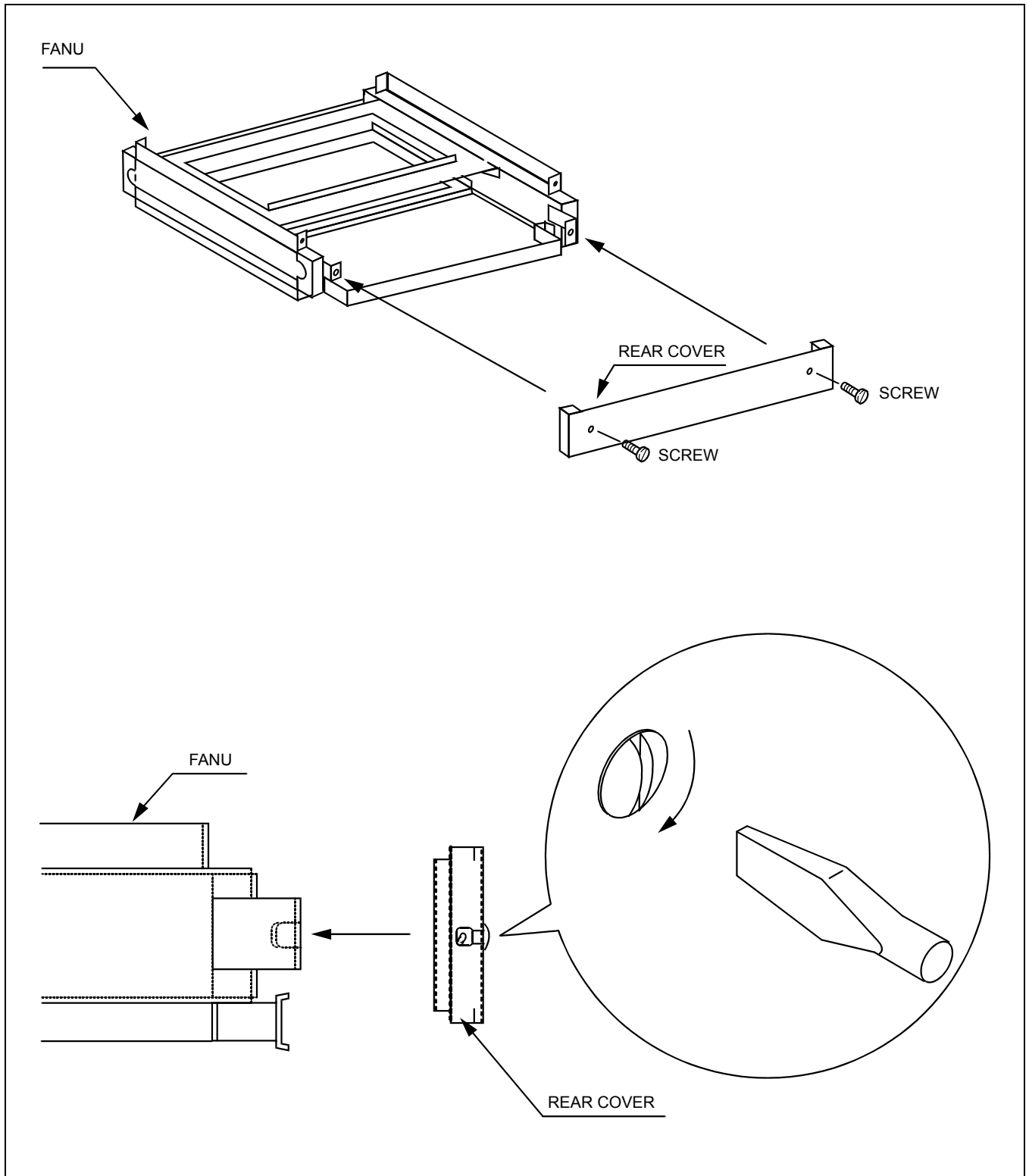


Figure 7-7 Front Cover Mounting Method (BASEU+LPR+PIM0)

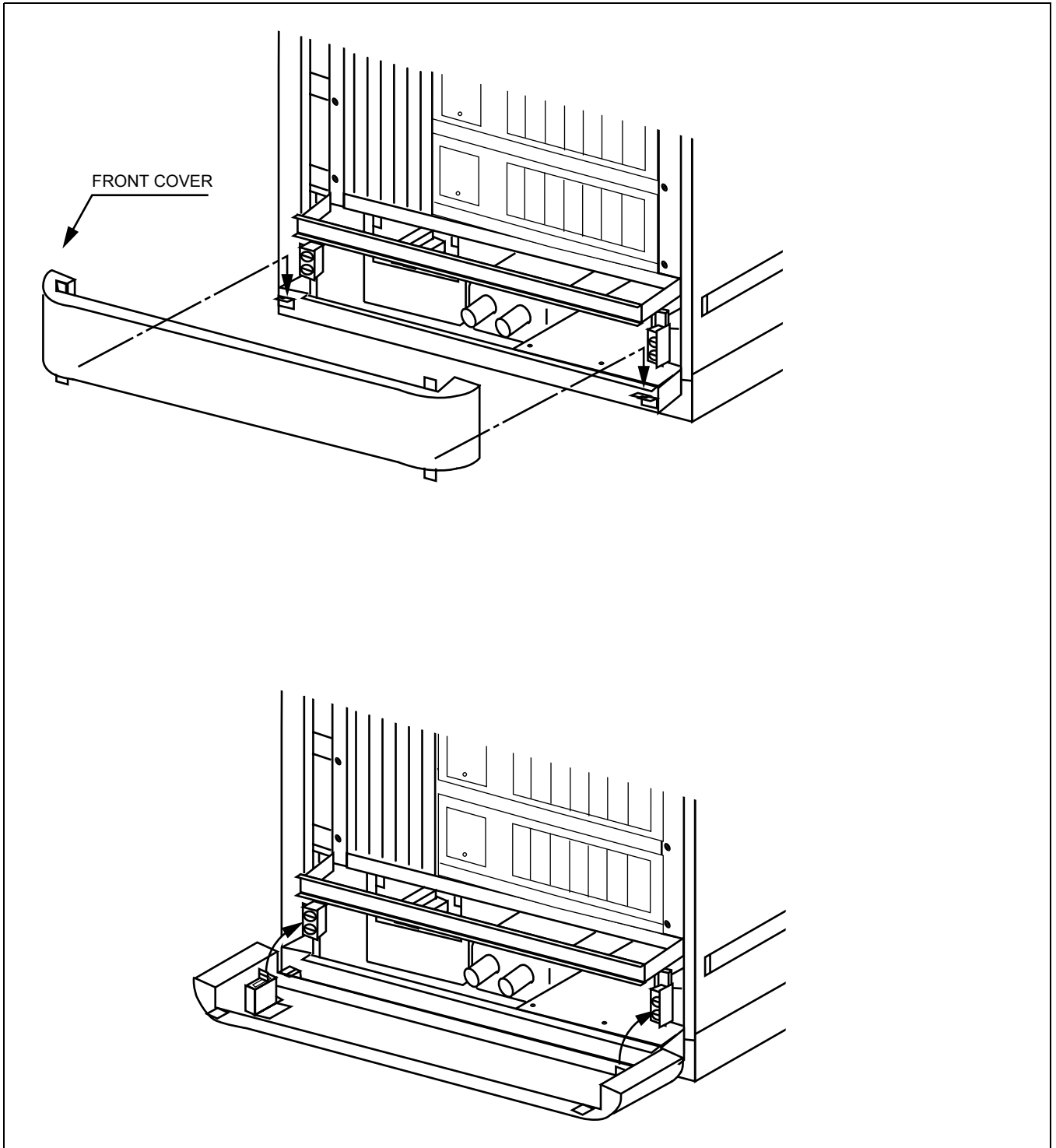
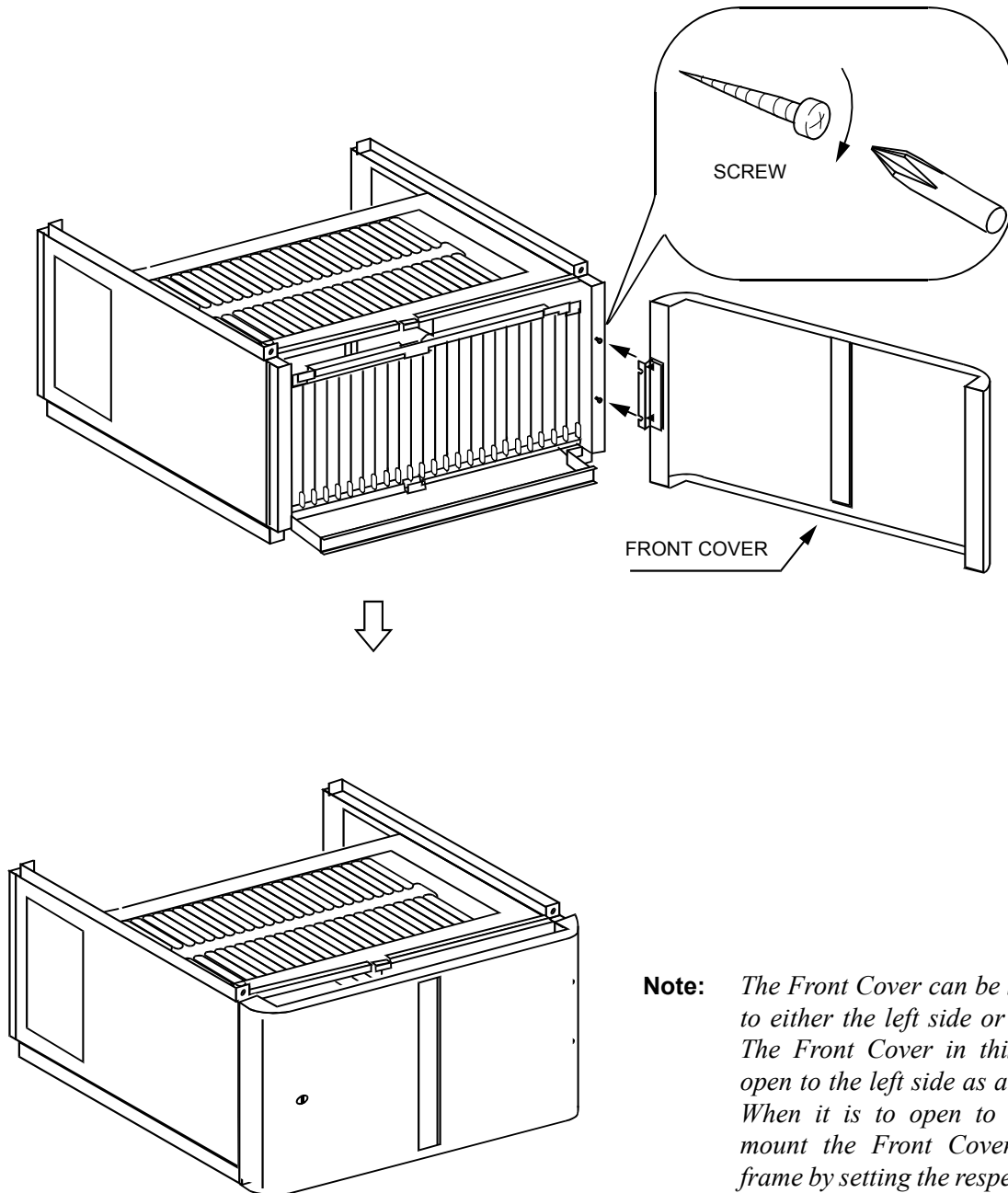


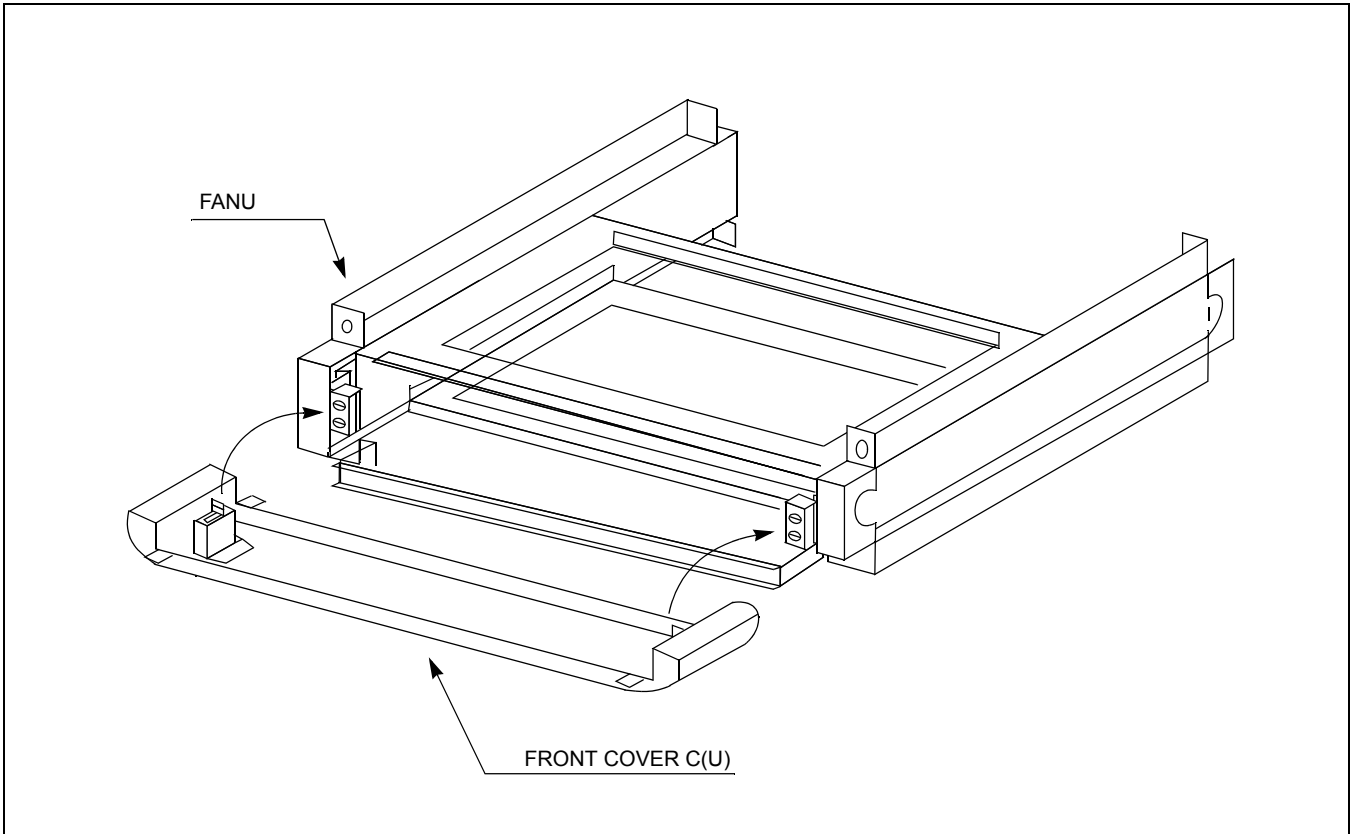
Figure 7-8 Front Cover Mounting Method (PIM)

Mount the Front Cover onto the module using screws.



Note: The Front Cover can be set to open to either the left side or right side. The Front Cover in this figure is open to the left side as an example. When it is to open to right side, mount the Front Cover onto the frame by setting the respective hinges on the left side of the frame and the Front Cover.

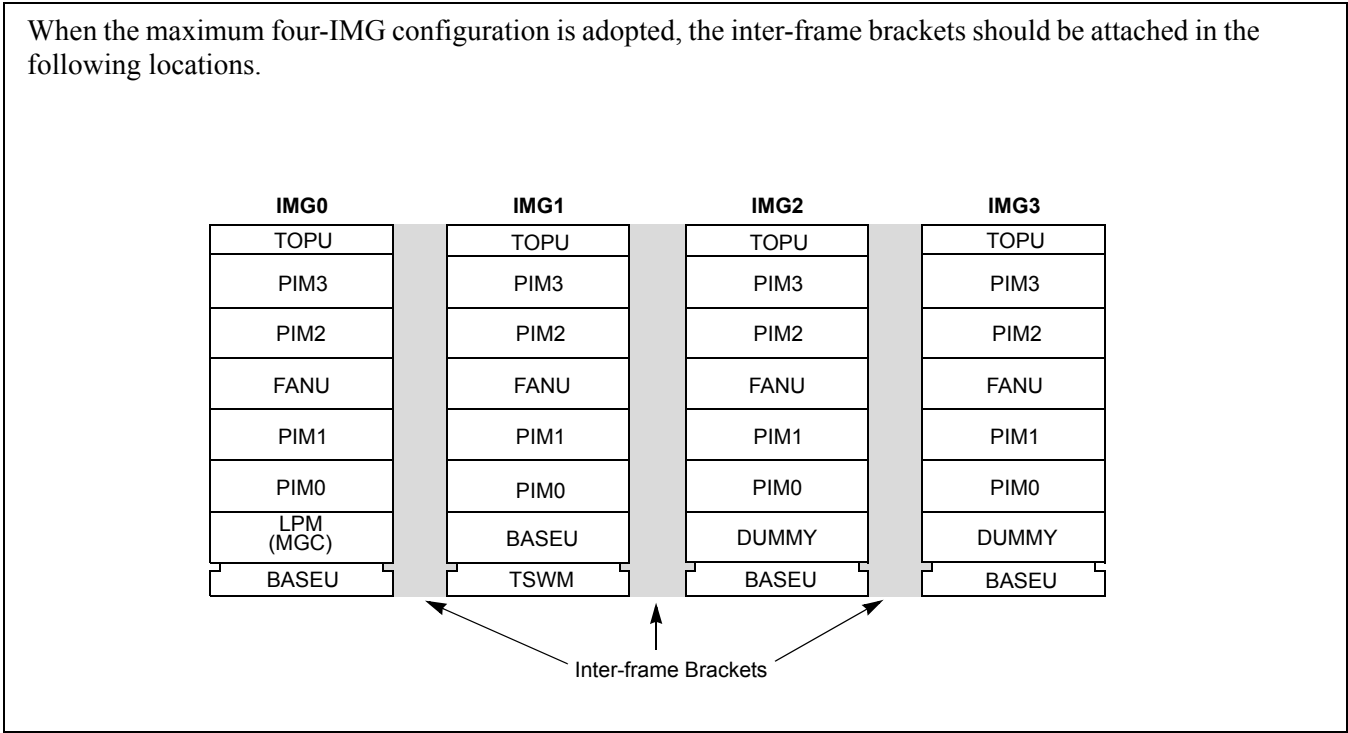
Figure 7-9 Front Cover Mounted Method (FANU)



4. ATTACHMENT OF INTER-FRAME BRACKETS

This section covers how to attach inter-frame brackets between the cabinets.

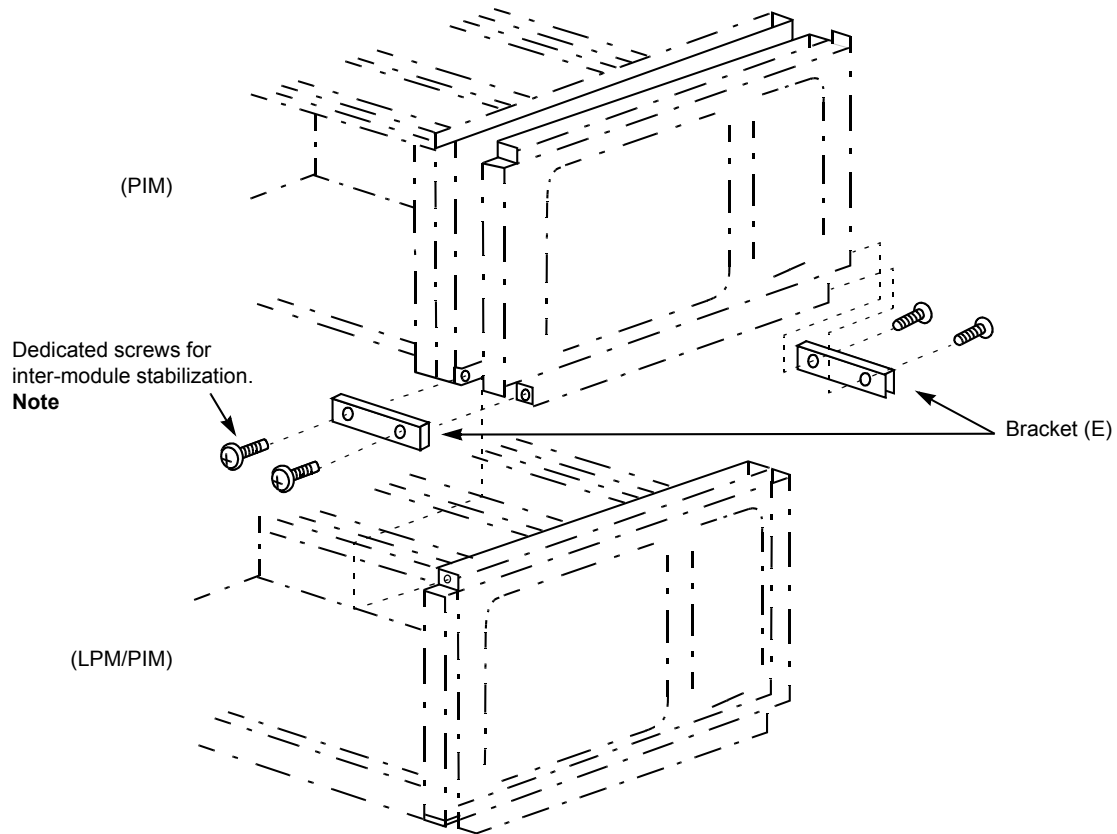
Figure 7-10 Locations of Inter-frame Brackets



<Attachment Procedure>

STEP 1: Referring to the Figure 7-11 through Figure 7-11, fix the brackets (E) between the modules.

Figure 7-11 How to Attach Inter-frame Brackets



Note: *These screws are appended when obtaining the module components from NEC.*

STEP 2: Referring to Figure 7-11 and Figure 7-11, fix the brackets (A) with the screws.

STEP 3: Referring to Figure 7-11 and Figure 7-11, fix the brackets (B) with the screws.

Figure 7-11 How to Attach Inter-frame Brackets (Continued)

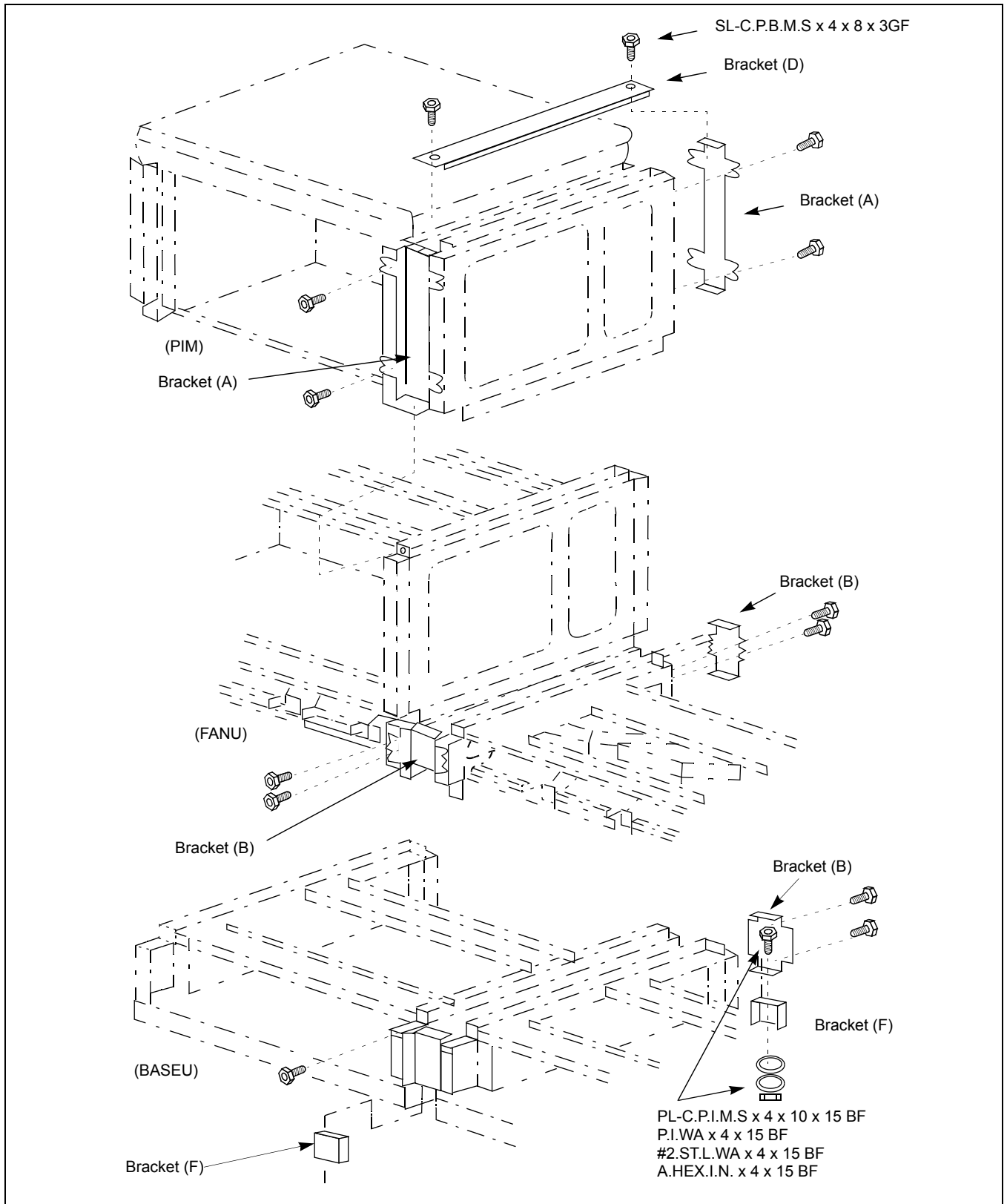
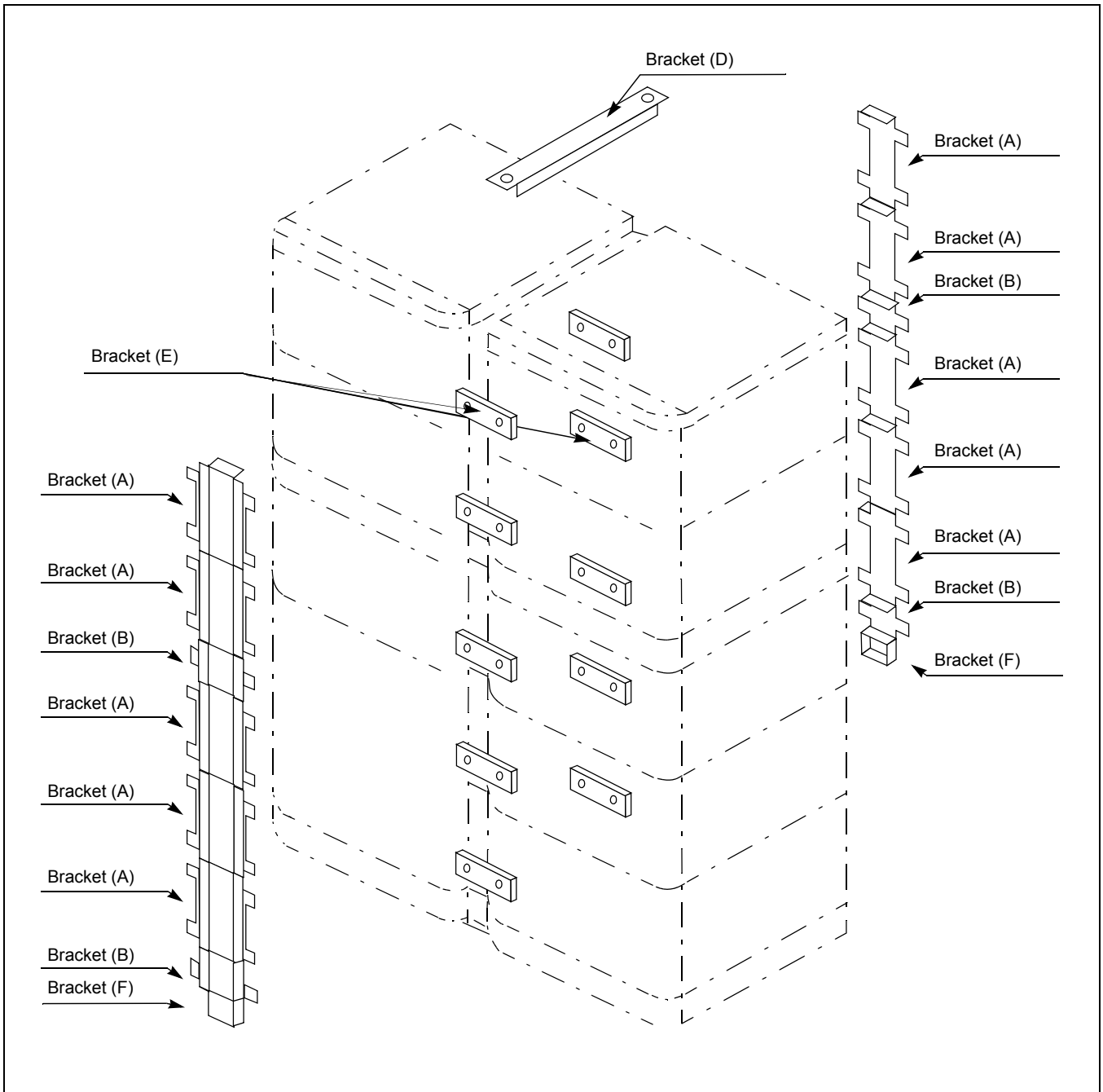


Figure 7-11 How to Attach Inter-frame Brackets (Continued)



STEP 4: Referring to Figure 7-11 and Figure 7-11, fix the brackets (D) with the screws.

STEP 5: Referring to Figure 7-11 and Figure 7-11, fix the brackets (F) with the screws.

WORK AFTER INSTALLATION TESTS

5. SITE CLEANING

Upon completion of the works described in Section 1 to 4 of this Chapter, execute or confirm the following items:

- Restore the cross connections arranged for test purposes to their original conditions.
- Clean around the Module Group and the MDF.
- Collect and organize all test equipment, tools, etc. used during the installation tests.
- Dispose of dust, trash, etc.

PAGE No.	ISSUE No.								PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
i	1	2							27	1	2						
ii	1	2							28	1	2						
iii	1	2							29	1	2						
iv	1	2							30	1	2						
v	1	2							31	1	2						
vi	1	2							32	1	2						
vii	1	2							33	1	2						
viii	1	2							34	1	2						
ix	1	2							35	1	2						
x	1	2							36	1	2						
xi	1	2							37	1	2						
xii	1	2							38	1	2						
1	1	2							39	1	2						
2	1	2							40	1	2						
3	1	2							41	1	2						
4	1	2							42	1	2						
5	1	2							43	1	2						
6	1	2							44	1	2						
7	1	2							45	1	2						
8	1	2							46	1	2						
9	1	2							47	1	2						
10	1	2							48	1	2						
11	1	2							49	1	2						
12	1	2							50	1	2						
13	1	2							51	1	2						
14	1	2							52	1	2						
15	1	2							53	1	2						
16	1	2							54	1	2						
17	1	2							55	1	2						
18	1	2							56	1	2						
19	1	2							57	1	2						
20	1	2							58	1	2						
21	1	2							59	1	2						
22	1	2							60	1	2						
23	1	2							61	1	2						
24	1	2							62	1	2						
25	1	2							63	1	2						
26	1	2							64	1	2						
ISSUE 1				ISSUE 2				ISSUE 3				ISSUE 4					
DATE	MAY, 2002			DATE	AUGUST, 2002			DATE				DATE					
ISSUE 5				ISSUE 6				ISSUE 7				ISSUE 8					
DATE				DATE				DATE				DATE					
NEAX2400 IPX Internet Protocol eXchange Installation Manual																	
																Revision Sheets 1/6	
ND-71548(E)																	

PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8
65	1	2						
66	1	2						
67	1	2						
68	1	2						
69	1	2						
70	1	2						
71	1	2						
72	1	2						
73	1	2						
74	1	2						
75	1	2						
76	1	2						
77	1	2						
78	1	2						
79	1	2						
80	1	2						
81	1	2						
82	1	2						
83	1	2						
84	1	2						
85	1	2						
86	1	2						
87	1	2						
88	1	2						
89	1	2						
90	1	2						
91	1	2						
92	1	2						
93	1	2						
94	1	2						
95	1	2						
96	1	2						
97	1	2						
98	1	2						
99	1	2						
100	1	2						
101	1	2						
102	1	2						

PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8
103	1	2						
104	1	2						
105	1	2						
106	1	2						
107	1	2						
108	1	2						
109	1	2						
110	1	2						
111	1	2						
112	1	2						
113	1	2						
114	1	2						
115	1	2						
116	1	2						
117	1	2						
118	1	2						
119	1	2						
120	1	2						
121	1	2						
122	1	2						
123	1	2						
124	1	2						
125	1	2						
126	1	2						
127	1	2						
128	1	2						
129	1	2						
130	1	2						
131	1	2						
132	1	2						
133	1	2						
134	1	2						
135	1	2						
136	1	2						
137	1	2						
138	1	2						
139	1	2						
140	1	2						

ISSUE 1			ISSUE 2			ISSUE 3			ISSUE 4		
DATE	MAY, 2002		DATE	AUGUST, 2002		DATE			DATE		
ISSUE 5			ISSUE 6			ISSUE 7			ISSUE 8		
DATE			DATE			DATE			DATE		

NEAX2400 IPX Internet Protocol eXchange
Installation Manual

Revision Sheets 2/6

ND-71548(E)

PAGE No.	ISSUE No.								PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
141	1	2							179	1	2						
142	1	2							180	1	2						
143	1	2							181	1	2						
144	1	2							182	1	2						
145	1	2							183	1	2						
146	1	2							184	1	2						
147	1	2							185	1	2						
148	1	2							186	1	2						
149	1	2							187	1	2						
150	1	2							188	1	2						
151	1	2							189	1	2						
152	1	2							190	1	2						
153	1	2							191	1	2						
154	1	2							192	1	2						
155	1	2							193	1	2						
156	1	2							194	1	2						
157	1	2							195	1	2						
158	1	2							196	1	2						
159	1	2							197	1	2						
160	1	2							198	1	2						
161	1	2							199	1	2						
162	1	2							200	1	2						
163	1	2							201	1	2						
164	1	2							202	1	2						
165	1	2							203	1	2						
166	1	2							204	1	2						
167	1	2							205	1	2						
168	1	2							206	1	2						
169	1	2							207	1	2						
170	1	2							208	1	2						
171	1	2							209	1	2						
172	1	2							210	1	2						
173	1	2							211	1	2						
174	1	2							212	1	2						
175	1	2							213	1	2						
176	1	2							214	1	2						
177	1	2							215	1	2						
178	1	2							216	1	2						
ISSUE 1			ISSUE 2			ISSUE 3			ISSUE 4								
DATE	MAY, 2002		DATE	AUGUST, 2002		DATE			DATE								
ISSUE 5			ISSUE 6			ISSUE 7			ISSUE 8								
DATE			DATE			DATE			DATE								
NEAX2400 IPX Internet Protocol eXchange Installation Manual																	
Revision Sheets 3/6																	
ND-71548(E)																	

PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8
217	1	2						
218	1	2						
219	1	2						
220	1	2						
221	1	2						
222	1	2						
223	1	2						
224	1	2						
225	1	2						
226	1	2						
227	1	2						
228	1	2						
229	1	2						
230	1	2						
231	1	2						
232	1	2						
233	1	2						
234	1	2						
235	1	2						
236	1	2						
237	1	2						
238	1	2						
239	1	2						
240	1	2						
241	1	2						
242	1	2						
243	1	2						
244	1	2						
245	1	2						
246	1	2						
247	1	2						
248	1	2						
249	1	2						
250	1	2						
251	1	2						
252	1	2						
253	1	2						
254	1	2						

PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8
255	1	2						
256	1	2						
257	1	2						
258	1	2						
259	1	2						
260	1	2						
261	1	2						
262	1	2						
263	1	2						
264	1	2						
265	1	2						
266	1	2						
267	1	2						
268	1	2						
269	1	2						
270	1	2						
271	1	2						
272	1	2						
273	1	2						
274	1	2						
275	1	2						
276	1	2						
277	1	2						
278	1	2						
279	1	2						
280	1	2						
281	1	2						
282	1	2						
283	1	2						
284	1	2						
285	1	2						
286	1	2						
287	1	2						
288	1	2						
289	1	2						
290	1	2						
291	1	2						
292	1	2						

ISSUE 1			ISSUE 2			ISSUE 3			ISSUE 4		
DATE	MAY, 2002		DATE	AUGUST, 2002		DATE			DATE		
ISSUE 5			ISSUE 6			ISSUE 7			ISSUE 8		
DATE			DATE			DATE			DATE		

NEAX2400 IPX Internet Protocol eXchange
Installation Manual

Revision Sheets 4/6

ND-71548(E)

PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8
293	1	2						
294	1	2						
295	1	2						
296	1	2						
297	1	2						
298	1	2						
299	1	2						
300	1	2						
301	1	2						
302	1	2						
303	1	2						
304	1	2						
305	1	2						
306	1	2						
307	1	2						
308	1	2						
309	1	2						
310	1	2						
311	1	2						
312	1	2						
313	1	2						
314	1	2						
315	1	2						
316	1	2						
317	1	2						
318	1	2						
319	1	2						
320	1	2						
321	1	2						
322	1	2						
323	1	2						
324	1	2						
325	1	2						
326	1	2						
327	1	2						
328	1	2						
329	1	2						
330	1	2						

PAGE No.	ISSUE No.							
	1	2	3	4	5	6	7	8
331	1	2						
332	1	2						
333	1	2						
334	1	2						
335	1	2						
336	1	2						
337	1	2						
338	1	2						
339	1	2						
340	1	2						
341	1	2						
342	1	2						
343	1	2						
344	1	2						
345	1	2						
346	1	2						
347	1	2						
348	1	2						
349	1	2						
350	1	2						
351	1	2						
352	1	2						
353	1	2						
354	1	2						
355	1	2						
356	1	2						
357	1	2						
358	1	2						
359	1	2						
360	1	2						
361	1	2						
362	1	2						
363	1	2						
364	1	2						
365	1	2						
366	1	2						
367	1	2						
368	1	2						

ISSUE 1			ISSUE 2			ISSUE 3			ISSUE 4		
DATE	MAY, 2002		DATE	AUGUST, 2002		DATE			DATE		
ISSUE 5			ISSUE 6			ISSUE 7			ISSUE 8		
DATE			DATE			DATE			DATE		

NEAX2400 IPX Internet Protocol eXchange
Installation Manual

Revision Sheets 5/6

ND-71548(E)

PAGE No.	ISSUE No.								PAGE No.	ISSUE No.									
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		
369	1	2																	
370	1	2																	
371	1	2																	
372	1	2																	
373	1	2																	
374	1	2																	
375	1	2																	
376	1	2																	
377	1	2																	
378	1	2																	
379	1	2																	
380	1	2																	
381	1	2																	
382	1	2																	
383	1	2																	
384	1	2																	
385	1	2																	
386	1	2																	
387	1	2																	
388	1	2																	
389	1	2																	
390	1	2																	
391	1	2																	
392	1	2																	
393	1	2																	
394	1	2																	
395	1	2																	
396	1	2																	
397	1	2																	
398	1	2																	
399	1	2																	
400	1	2																	
401	1	2																	
402	1	2																	
403	1	2																	
404	1	2																	
405	1																		
406	1																		
ISSUE 1			ISSUE 2			ISSUE 3			ISSUE 4										
DATE	MAY, 2002		DATE	AUGUST, 2002		DATE			DATE										
ISSUE 5			ISSUE 6			ISSUE 7			ISSUE 8										
DATE			DATE			DATE			DATE										
NEAX2400 IPX Internet Protocol eXchange Installation Manual																		Revision Sheets 6/6	
																		ND-71548(E)	