NEC

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NEAX®2400 IPX

Installation Manual

OCTOBER, 2000

NEC America, Inc.

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SAFETY CONSIDERATIONS

IMPORTANT — SAVE THESE INSTRUCTIONS

- (1) Never install telephone wiring during a lightning storm.
- (2) Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- (3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- (4) Use caution when installing or moving telephone lines.

When using your telephone equipment, always follow basic safety precautions, such as the ones below, to reduce the risk of fire, electric shock, and injury:

- (5) Read and understand all instructions.
- (6) Follow all warnings and instructions marked on the product.
- (7) Disconnect this product from the power source before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- (8) Do not use this product near water; for example, under water pipes near a bath tub, sink, or laundry tub, in a wet basement, or near a swimming pool.
- (9) Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- (10) Slots and openings in the cabinet and the back or bottom are provided for ventilation, to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
- (11) This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power source available, consult with your local power company.
- (12) Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
- (13) Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

- (14) To reduce the risk of electric shock, do not disassemble this product, but take it to a qualified serviceman when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.
- (15) Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - (a) When the power supply cord or plug is damaged or frayed.
 - (b) If liquid has been spilled into the product.
 - (c) If the product has been exposed to rain or water.
 - (d) If the product does not operate normally by following the operating instructions. Adjust only those controls, that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - (e) If the product has been dropped or the cabinet has been damaged.
 - (f) If the product exhibits a distinct change in performance.
- (16) Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- (17) Do not use the telephone to report a gas leak in the vicinity of the leak.

REGULATORY INFORMATION

1. REGULATORY REQUIREMENTS

The Federal Communications Commission (FCC) has established rules that permit the NEAX2400 IPX to be directly connected to the telephone network. A jack is provided on party lines or coin lines.

The telephone company may make changes in its technical operations and procedures. If such changes affect the compatibility or use of the NEAX2400 IPX, the telephone company is required to give adequate notice of the changes.

This equipment complies with the requirements in Part 15 of FCC Rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps are necessary to correct this interference.

2. FCC PART 15 REQUIREMENTS

In compliance with FCC Part 15 Rules, the following statement is provided:

WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

3. FCC PART 68 REGISTRATION

3.1 Company Notification

Before installing the NEAX2400 IPX to the telephone network, the telephone company must be provided with the following:

- Your telephone number
- The FCC registration numbers:

		JAPAN	USA
•	PBX:	AY5JPN-74906-PF-E	AY5USA-74905-PF-E
•	Hybrid:	AY5JPN-74904-MF-E	AY5USA-74913-MF-E

The Ringer Equivalence Number is 2.1B; the required USOC jacks are RJ21X, RJ2EX, and RJ2GX.

3.2 Service Requirements

In the event of equipment malfunction, all repairs will be performed by NEC or an authorized distributor of NEC. It is the responsibility of users requiring service to report the need for service to NEC or to one of their authorized distributors.

If the equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact NEC America, Inc.'s Oregon plant at (503) 648-5000 for repair and/or warranty information. If the trouble is causing harm to the telephone network, the telephone company may request that you remove the equipment from the network until the problem is resolved.

NO REPAIRS CAN BE DONE BY THE CUSTOMER.

3.3 Location of FCC Compliance Labels

Labels stating the NEAX2400 IPX FCC registration number and compliance with FCC Parts 15 and 68 are attached to the Base Unit. If the unit is in a table-top configuration, the labels are located on the side of the enclosure. The appearance of the labels is as shown below:

NEAX2400 IMS-IP

Complies With Part 68 FCC Rules

FCC Registration Numbers: AY5USA-74905-PF-E

AY5USA-74913-MF-E

Ringer Equivalence: 2.1B

NEC NEC America Made In U.S.A.

4. DIRECT-INWARD DIALING (DID) CALLS

Allowing this equipment to be operated in such a manner as to not provide for proper answer supervision is a violation of Part 68 of the FCC's rules.

PROPER ANSWER SUPERVISION IS WHEN:

- (a) This equipment returns answer supervision to the PSTN when DID calls are:
 - Answered by the called station
 - Answered by the attendant

- Routed to a recorded announcement that can be administered by the CPE user
- Routed to a dial prompt
- (b) This equipment returns answer supervision on all DID calls forwarded to the PSTN. Permissible exceptions are:
 - · A call is unanswered
 - A busy tone is received
 - A reorder tone is received.

EQUAL ACCESS REQUIREMENTS

This equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

5. REGULATORY INFORMATION ON SINGLE-LINE ANALOG TELEPHONES

NEC single-line telephones comply with Part 68 of FCC Rules. On the bottom of the equipment is a label that states, among other information, the FCC registration number and ringer equivalence number (REN) for the equipment. If requested, this information should be provided to the telephone company.

The equipment uses the following USOC jacks: RJ11C.

The equipment should be used only behind a PBX or KTS. The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all, areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

6. HEARING AID COMPATIBILITY

The D^{term} terminals provided for the NEAX2400 IPX are hearing aid compatible. FCC rules prohibit the use of non-hearing aid compatible telephones.

NEC-type single-line telephone sets used in conjunction with the NEAX2400 IPX are hearing aid compatible. If other than NEC-type single-line telephone sets are to be used with this system, ensure that these are hearing aid compatible.

CAUTION: The act of monitoring or recording telephone conversations under certain circumstances may violate federal or state statutes. Consultation with your legal counsel prior to engaging in such practices would be advisable.

7. INDUSTRY CANADA CS-03

Certification number: 140 5452A

Ringer Equivalence Number: 2.1

NOTICE: The Industry Canada label identifies certified equipment. The certification means that the equipment meets certain telecommunications network protective operational and safety requirements. The department does not guarantee the equipment will operate to the user's satisfaction.

Before installing the equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or installations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request that the user disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This protection may be particularly important in rural areas.

CAUTION:Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The "Ringer Equivalence Number" assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

8. SAFETY LISTING/CERTIFICATIONS

This equipment has been listed by Underwriters Laboratories and found to comply with all the applicable requirements of the standard for telephone equipment U.L. 1459. This equipment complies with Canadian Standards Association standard C 22.2 No. 225.

8.1 Safety Considerations

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury, including the following:

- 1. Never install telephone wiring during a lightning storm.
- 2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- 3. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- 4. Use caution when installing or modifying telephone lines.

NOTICE: Also follow the precautionary items listed under "Safety Considerations" on the previous pages.

CHAPTER 1 INTRODUCTION

1. GENERAL

During the period from equipment carry-in of the NEAX2400 IPX until it is placed in service, installers must complete the following:

- 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 precautions. Before engaging in any phase of the installation, please read Section 2., "HOW TO FOLLOW THE MANUAL".

2. HOW TO FOLLOW THE MANUAL

2.1 Outline

The following chapters outline in order the work the installer will perform:

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 the installer will perform, 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 that the installer needs to follow in case a fault occurs pertaining to system startup and basic connections.

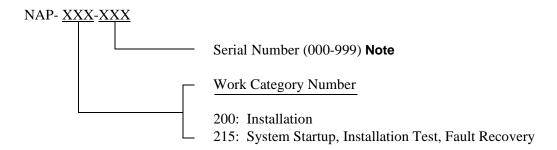
Chapter 7, "WORK AFTER INSTALLATION TESTS"

This chapter explains various kinds of work and site cleaning, etc. that the installer must perform after completing the installation tests so that the system can be cut over normally.

2.2 How to Follow NAPs

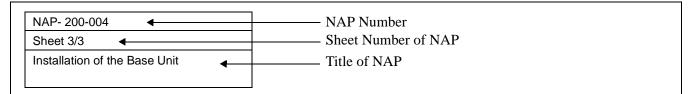
This manual categorizes the work contents of installation, system startup, and installation tests into detailed work items, and each work item is assigned an NEC Action Procedure (NAP) number.

The following shows how to interpret a NAP number.

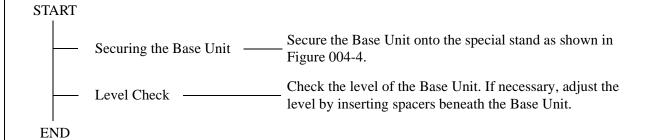


Note: *Installers should perform NAPs in sequential order by serial numbers.*

Figure 1-1 shows an example of an NAP.



1. INSTALLING THE BASE UNIT USING A SPECIAL STAND



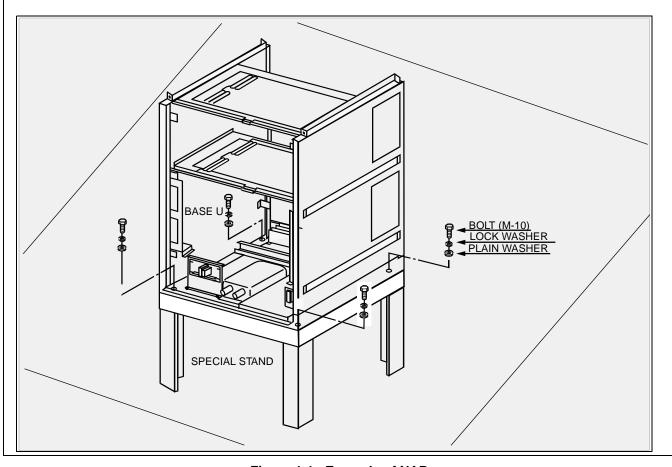


Figure 1-1 Example of NAP

2.3 How To Follow Trees

This manual explains how to perform a predetermined procedure (work contents covered in each NAP) in a "Tree" format as shown in Figure 1-2. Before engaging in the intended work, be sure to understand the work contents by tracing the given tree.

CTA DT		
START	On the MDF, make temporary cross connectand an LC.	tions between the Trunk for Direct-In Termination (DIT)
	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.
		Station "A" and "B" talk with each other.
	Release	Station "A" and "B" both go on-hook.
	Remove the temporary cross connections.	
END		

Figure 1-2 Example of a Tree



Figure 1-3 Static Caution Indication

This manual provides "Static Caution" indicators (see Figure 1-3) where necessary to indicate that installers will be working with static-sensitive components.

The 3M® Model 8012 Portable Field Service Kit, shown in Figure 1-4, is an effective countermeasure against static electricity.

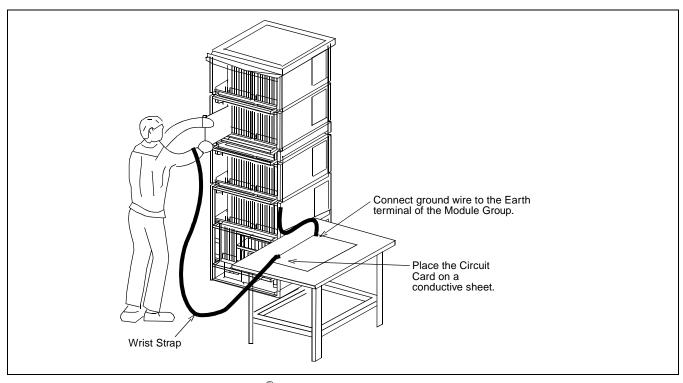


Figure 1-4 3M® Model 8012 Portable Field Service Kit

Note: $3M^{\otimes}$ is a registered trademark of Minnesota Mining and Manufacturing, Inc.

INTRODUCTION

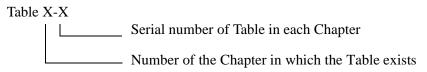
2.4 Figure and Table Numbers

Each Figure and Table within this manual follows the numbering pattern shown below.

1. Figure and table in NAP

Figure XX	XX-X	
	L	Serial number of Figures in each NAP
		Serial number (000-999) of the NAP in which the Figure exists

2. Other figure and table



Remember this numbering pattern to find the desired Figure or Table.

2.5 Essential/Critical Information

To prevent accidents or equipment damage from occurring during installing, each manual provides **WARNING**, **CAUTION**, and **Note**: indicators to draw the installer's attention to specific matters.

1. Meaning

WARNING: Personal injury may result.

CAUTION: Damage to the equipment and/or the system may result.

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

2. Locations of Indicators

WARNING and **CAUTION** indicators are at the top of the page. Notes are part of the work procedures on the page.

CHAPTER 2 INSTALLATION DESIGN

1. GENERAL

This chapter provides the following information on installation design and preparation of the required installation materials:

- 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. Depending on the installation environment, the PBX may require air conditioning. The following paragraphs address these 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 operates 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. Without equipment 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. Therefore, to enable the equipment to operate for the extent of its expected lifetime, carefully consider the location of the equipment, proper ventilation, and air conditioning.

.

Table 2-1 Temperature and Humidity

		TEMPERATURE	RELATIVE HUMIDITY	REMARKS
During	Normal Operations	5°C - 30°C (41°F -86°F)	15% - 65%	
Operations	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		Maximum 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.

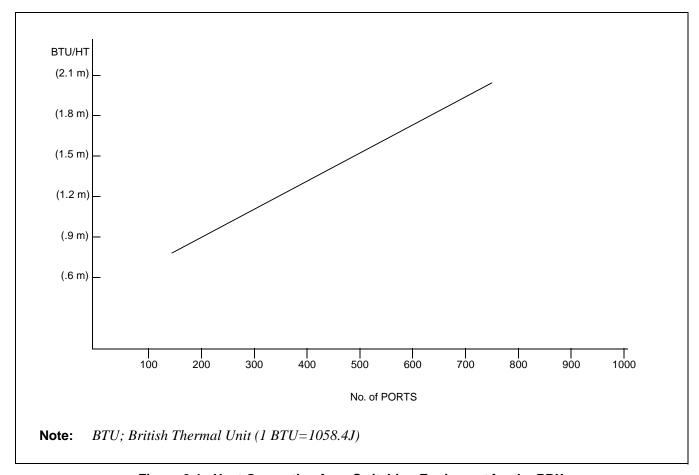


Figure 2-1 Heat Generation from Switching Equipment for the PBX

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

Make sure that the floor of each room meets the specified conditions:

5.1 Floor Surface

- 1. Switching Equipment Room
 - The maximum difference in floor level at each point within the room should be less than +5 mm (0.2 inch).
 - The floor should be an elevated-type floor such as a free access floor or computer room floor.
- 2. Battery Room
 - The floor should have a slope (1/1000) and drain at the end of the slope.
 - The floor surface should be acid-resistant.

INSTALLATION DESIGN

5.2 Wall

Switching Equipment Room

- Unless a free access floor is used, a concrete wall is necessary for installation of the cable racks.
- The walls should 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 ceiling height should be more than 2.3 meters (7.5 feet).

5.4 Lighting Facilities

- 1. Switching Equipment Room
 - Fluorescent lamps are recommended.
 - At least 200 lux at the floor level is necessary.
- 2. Operator Room
 - Fluorescent lamps are recommended.
 - At least 200 lux at the floor level is necessary.
- Battery Room
 - Anti-explosion lamps must be used.
 - At least 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 5 V DC. This DC operating power is supplied from the rectifier that receives AC power from the commercial AC power source. For greater system reliability, the PBX should have a backup supply of DC operating power for a predetermined duration from the batteries installed as the auxiliary power supply source.

The batteries for the PBX must be parallel to the -48 V DC output of the rectifier. Also, when installing batteries, place an EMF panel 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.

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

Float: 50.5 VDC

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

Note 2: With an EMF panel (Diode Drop), the equalize voltage is 1.5 to 2 V higher. Without an EMF panel, the float and equalize voltage are the same (50.5 V).

Note 3: *The main source power is AC input.*

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

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).

The DC-DC converter in each module provides the various DC voltages required within the system. 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.

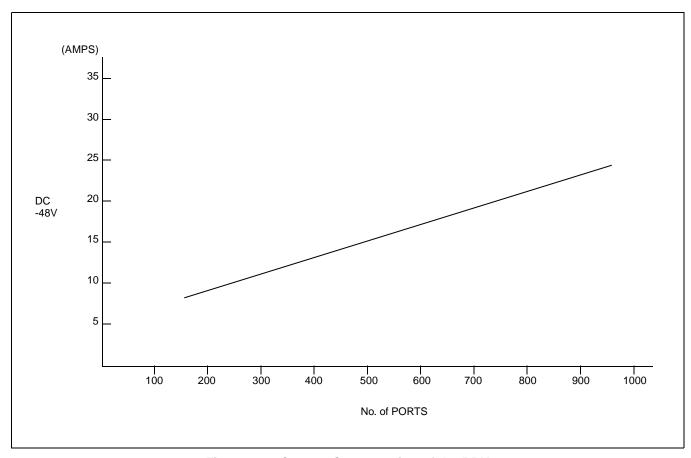


Figure 2-2 Current Consumption of the PBX

INSTALLATION DESIGN

6.3 Power Distribution Box Requirements

Consider the following when installing the Power Distribution Box (PDB):

- 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 be 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 should be connected to a predetermined terminal in the PBX.

Please refer to the standard grounding requirements 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 terminal blocks:

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

Determine the number of terminals 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 InstallationTools

FUNCTION		TOOLS	PURPOSE
Marking	Steel Tape MeasureL-SquareIron SquareIron Level	Center PunchStep LadderScriber	For Leveling and Marking Plumb Line
Drilling	 Electric Drill Electric Vibration Drill Hammer Point Drill Drill Bit for Concrete 	Concrete ChiselDrill Bit for MetalPower Cable DrumExtension Cable	Drilling
Module Group and Rack Installation	 Plump Bob Jigsaw Hacksaw Frame Hacksaw Blade Flat File Half Round File Set File Adjustable Angle Wrench 	 Frame Cart Cutter Set Wrench Socket Wrench Set Step Ladder Phillips Screwdriver Screwdriver Plastic Hammer 	Module Group and Rack Installation
Power Cable Installation	Clamping Tool (for End Terminal, Branch Terminal)	Phillips ScrewdriverScrewdriverCutter	Power Cable Installation See Note .
Miscellaneous	 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 	 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 Tweezer Portable Field Service Kit 	

9. SYSTEM ACCOMMODATION

9.1 Port Interface Module Configuration and Conditions for Configuration

Figure 2-3 shows the Port Interface Module (PIM) configuration of the PBX, and Table 2-3 shows the conditions for configuration.

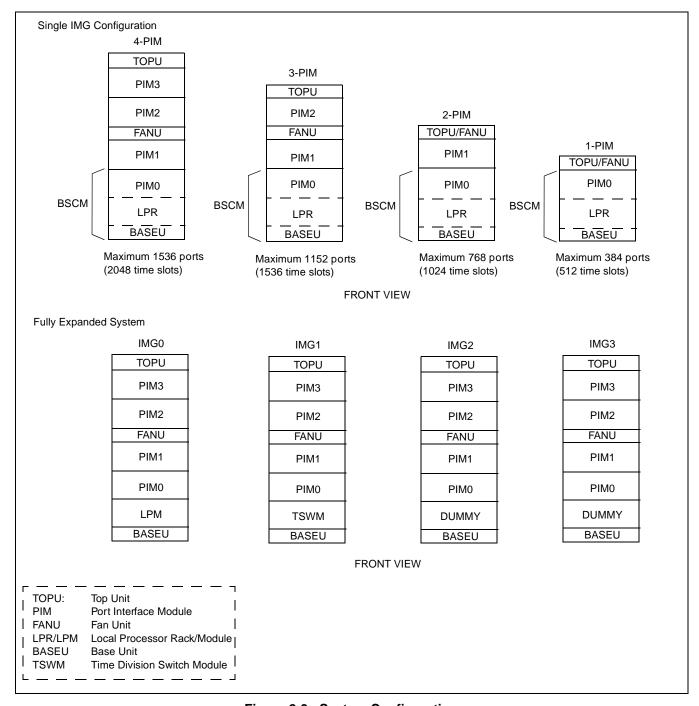


Figure 2-3 System Configuration

Table 2-3 Conditions for Configuration

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

Note: A NFILU is mounted in BASEU.

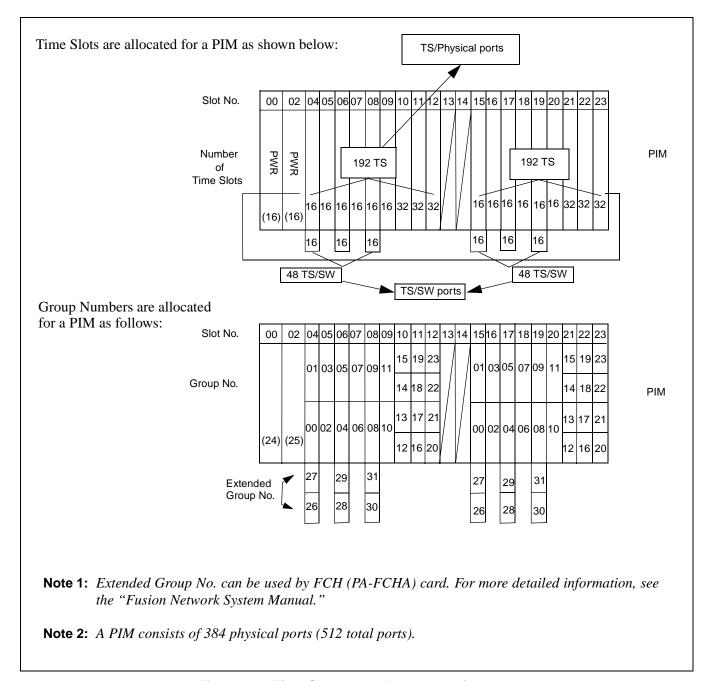


Figure 2-4 Time Slot, Group Number Assignment

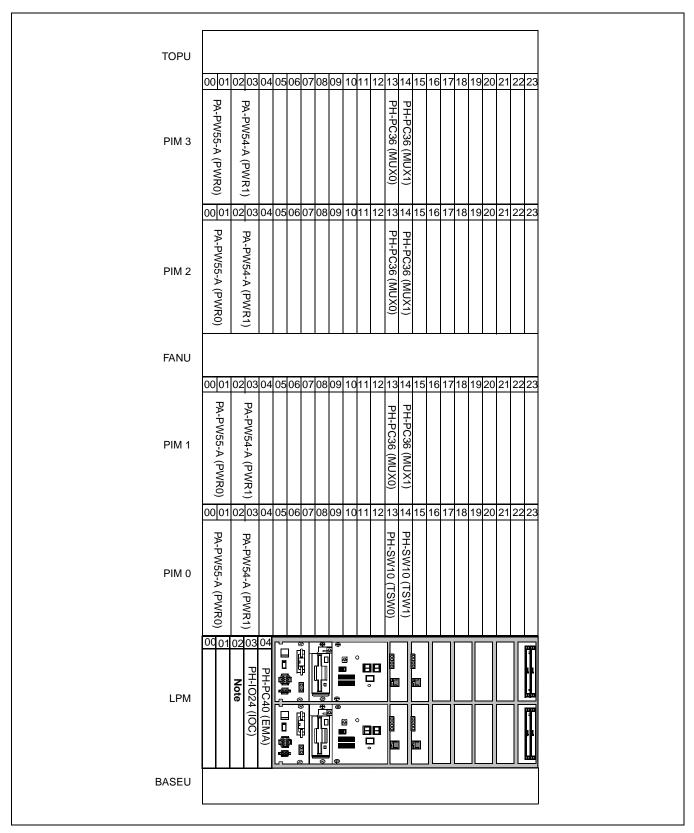


Figure 2-5 Face Layout (Single IMG Configuration)

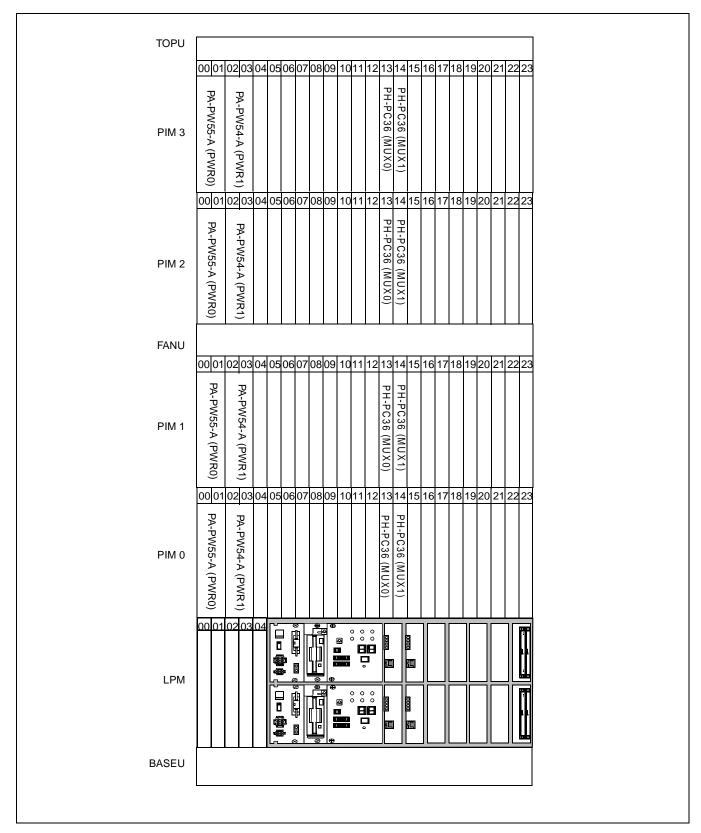


Figure 2-6 Face Layout of IMG0 (Multiple IMG Configuration)

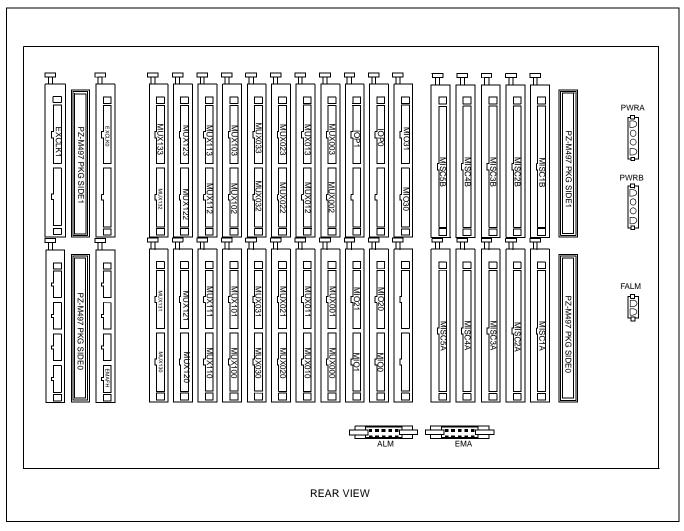


Figure 2-7 Location of Terminating Resistors on the TSWM Back Plane (Multiple IMG Configuration)

TOPU	
PIM 3	00 01 02 03 04 05 06 07 08 09 1011 12 13 14 15 16 17 18 19 20 21 22 23 PH-PC36 (MUX) PA-PW55-A (PWR0)
PIM 2	00 01 02 03 04 05 06 07 08 09 1011 12 1314 15 16 17 18 19 20 21 22 23 PH-PC36 (MUX) PA-PW55-A (PWR1)
FANU	
PIM 1	00 01 02 03 04 05 06 07 08 09 1011 12 13 14 15 16 17 18 19 20 21 22 23 PH-PC36 (MUX) PA-PW55-A (PWR0)
PIM 0	00 01 02 03 04 05 06 07 08 09 1011 12 13 14 15 16 17 18 19 20 21 22 23 PH-PC36 (MUX) PA-PW55-A (PWR0)
	00 01 02 03 04 05 06 07 08 09 1011 12 13 14 15 16 17 18 19 20 21 22 23 PLO1 TSW11 TSW11 TSW01 TSW02 TSW01 TSW02 TSW01 TSW02 TSW01 TSW00 MISC MISC MISC MISC MISC MISC MISC MISC
BASEU	
Note: No circuit card is acc	commodated in Slot No. 02 of TSWM.

Figure 2-8 Face Layout of IMG1 Front View (Multiple IMG Configuration)

	IMG2, 3
TOPU	
TOPU	
PIM 3	00 01 02 03 04 05 06 07 08 09 1011 12 1314 15 16 17 18 1920 21 22 23 PH-PC36 (MUX) PA-PW54-A (PWR1)
PIM 2	00 01 02 03 04 05 06 07 08 09 1011 12 13 14 15 16 17 18 19 20 21 22 23 PH-PC36 (MUX) PA-PW54-A (PWR1)
FANU	
PIM 1	22 22 22 22 21 22 21 22 21 22 21 22 21 22 21 22 22
PIM 0	00 01 02 03 04 05 06 07 08 09 1011 12 13 14 15 16 17 18 19 20 21 22 23 PH-PC36 (MUX) PA-PW55-A (PWR0)
DUMMY	
BASEU	

Figure 2-9 Face Layout of IMG2, 3 (Multiple IMG Configuration)

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.

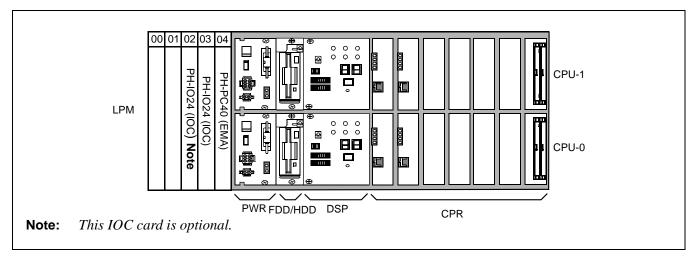


Figure 2-10 Controlling Circuit Cards in LPM

Table 2-4 Controlling Circuit Cards in LPM

Slot No.	Circuit Card	Symbol	Functions, Mounting Conditions
02, 03	PH-IO24	IOC (Input/ Output Controller)	This circuit card supplies the system with a serial interface, which conforms to RS-232C, between external equipment such as the MAT, SMDR, and MCI. One card is equipped with four I/O ports. The system maximum is eight ports (two cards).
04	PH-PC40	EMA (Emergency Alarm Controller)	This card detects alarms that might occur in the system and sends out the information of the detected alarms to the circuits concerned. In addition, this card has the following functions: • Music-On-Hold sending function (Single IMG configuration only) • active/stand-by changeover function
CPR (Cent	ral Processor Ra	ack)	 CPR consists of the following components. CPU Board: Includes the Main Processor Unit (MPU), flash ROM, 200 MHz clock, and 256 MB - Random Access Memory (RAM). (256 MB-RAM is used for a system using FCCS features.) In addition, the board is equipped with GT (PZ-GT16) (Single IMG Configuration)/GT (PZ-GT13) (Multiple IMG Configuration) card, and LANI (PZ-PC19) card. DSP: Equipped with switches and 7-seg LEDs on the panel. FDD/HDD: Floppy Disk Drive (FDD) and Hard Disk Drive (HDD) PWR: Supplies the operating power to the LPM.

05 06 0	02 03 04	0 01 02 03 04 05 06	08 09	10 11	12 13	14 15	16	17 18	8 19	20	21 2	2 23
	PA-PW54-A (PWR1)				PH-SW10 (TSW0)	PH-SW10 (TSW1)						

Figure 2-11 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-A	PWR	This circuit card supplies operating power to circuit cards accommodated in the PIM.
03	PA-PW54-A	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 of NEAX2400 IPX. This card is mounted within the PIMO only.

19 2	18	17	16	00 01
				PA-PW55-A (PWR0)
16 17 18	16 17	16		14 PH-PC36 (MUX1) 13 PH-PC36 (MUX0) 14 PH-PC36 (MUX0) 15 06 07 08 09 10 11 12 12 12 12 12 12 12 12 12 12 12 12
15 16 17 18	15 16 17	15 16	15	PH-PC36 (1
PH-PC36 (MUX1	PH-PC36 (MUX1	PH-PC36 (MUX1	PH-PC36 (MUX1	-PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	-PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	-PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	-PA-PW54-A
PH-PC36 (V	PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	-PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (N PH-PC36 (N	PH-PC36 (N PH-PC36 (N	-PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (V	PH-PC36 (V	-PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	-PA-PW54-A
PH-PC36 (V	PH-PC36 (N	PH-PC36 (N PH-PC36 (N	PH-PC36 (N PH-PC36 (N	PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (N	PH-PC36 (N PH-PC36 (N	-PA-PW54-A
PH-PC36 (N	PH-PC36 (N	PH-PC36 (V	PH-PC36 (V	7
PH-PC36 (1)	PH-PC36 (*) PH-PC36 (*)	PH-PC36 (1)	PH-PC36 (1)	

Figure 2-12 Controlling Circuit Cards in PIM

Table 2-6 Controlling Circuit Cards in PIM

Slot No.	Circuit Card	Symbol	Functions, Mounting Conditions
01	PA-PW55-A	PWR	This circuit card supplies operating power to circuit cards accommodated in the PIM.
03	PA-PW54-A	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/demultiplexing of voice PCM (Pulse Code Modulation) information and digital data information.

		I I	1			1		-1.	.1	1					1	1		-		
	00 01	02 03	04	05	06	07	08 0	9 10	11	12	13	14	15	16	17	18	19	20 2	1 2	2 23
TSWM	PH-PW14 (PWRSW0)	PH-PW14 (PWRSW1)					PC20 (DLKCC	PH-BC20 (B10)	GT09 (G	PH-SW12 (TSW0)	(TSW	PH-SW12 (TSW2)	PH-SW12 (TSW3)	12 (PH-SW12 (TSW1)	PH-SW12 (TSW2)	PH-SW12 (TSW3)	(PLO0)	CK16/17/16 0/17	PH-CK16/17/16-A/17-A (PLO1)

Figure 2-13 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 that 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 achieve 8192×8192 TS switching for 4 IMG configuration.
21, 23	PH-CK16/ 16-A	PLO	This circuit card, used together with a direct digital interface circuit card, sets up network synchronization with the network concerned. With this circuit card, the IPX 4IMG system can be a clock subordinate office of the digital network.
21, 23	PH-CK17/ 17-A	PLO	This circuit card, used together with a direct interface circuit card, sets up network synchronization with the network concerned. Since this circuit card provides a high precision base clock oscillator, the IPX 4 IMG system can be a clock source office of the digital network.

9.3 Preparation Of Trunking Diagram

Since there are different kinds of switching offices such as a single office and network offices involved, prepare the trunking diagram according to the customer's specifications.

9.4 Preparation Of Module Group Face Layout And Port Accommodation Diagram

After mounting various circuit cards in the PBX, the installation company concerned should prepare the module group face layout and port accommodation diagram.

9.5 Preparation Of Circuit Card Switch Setting Sheets

Prepare the circuit card switch setting sheets for the circuit cards to be mounted in the PBX. Some of the circuit cards may not properly operate by the initial switch settings arranged at the factory or may not meet the customer's specifications. Referring to the Circuit Card Manual, note the switch settings on the switch setting sheets provided in the explanations of each of the circuit cards. Make the switch setting entries with respect to all the circuit cards.

Remember that use of a circuit card varies with the switch setting on that card.

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

• Cables for C.O. lines and Tie Lines

• Others: For connections between Alarm Indicators and the MDF

the MDF

10.1 AC Input, DC Power, And Ground Cables

- 1. For AC input cable, use VCT (Polyvinyl Chloride Cabtyre Cable). 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 together (A side and B side). For two PIMs or less, the DC main power cable is connected only to A side terminals. For three PIMs or more, the cable is branched out. A side supplies power to LPM/TSWM, PIM0, and PIM1, and B side supplies power to PIM2 and PIM3.
- 3. For the main ground cable, use an IV or CV cable of more than 14 mm² (6 AWG). See Figure 2-14 through Figure 2-16.

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

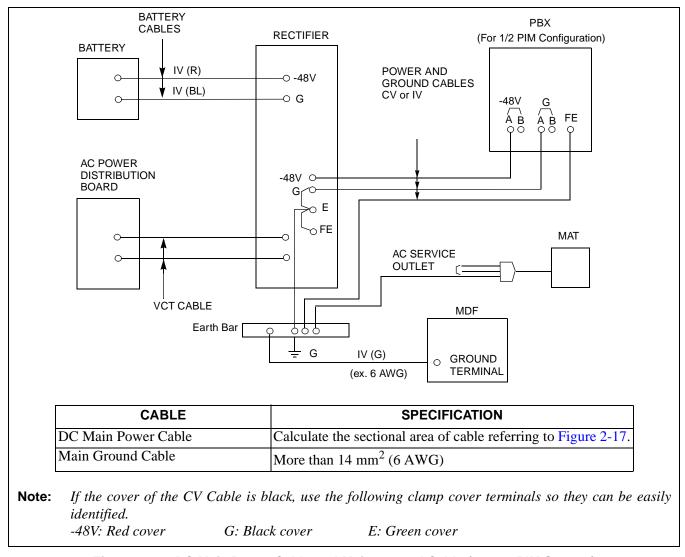
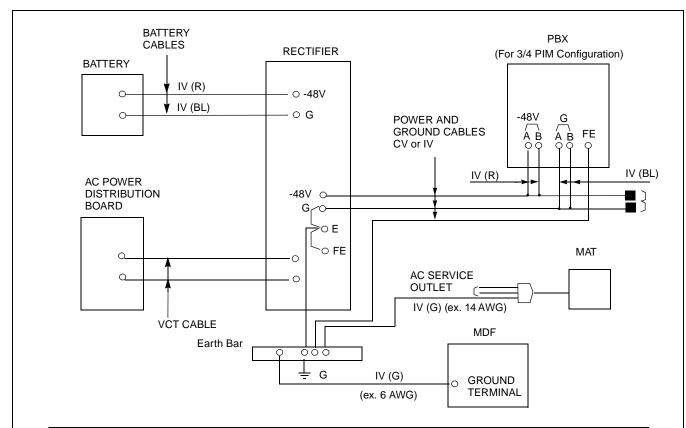


Figure 2-14 DC Main Power Cable and Main Ground Cable (1- or 2-PIM System) (Single IMG Configuration)



CAI	BLE	SPECIFICATION
DC Main Power Cable	Main Cable	Calculate the sectional area of cable referring to
		Figure 2-17.
	Branch Cable	IV cable: more than 14 mm ² (6 AWG)
Main Ground Cable		More than 14 mm ² (6 AWG)

Note 1: If the cover of CV Cable is black, use the following clamp cover terminals so they can be easily identified.

-48V: Red cover

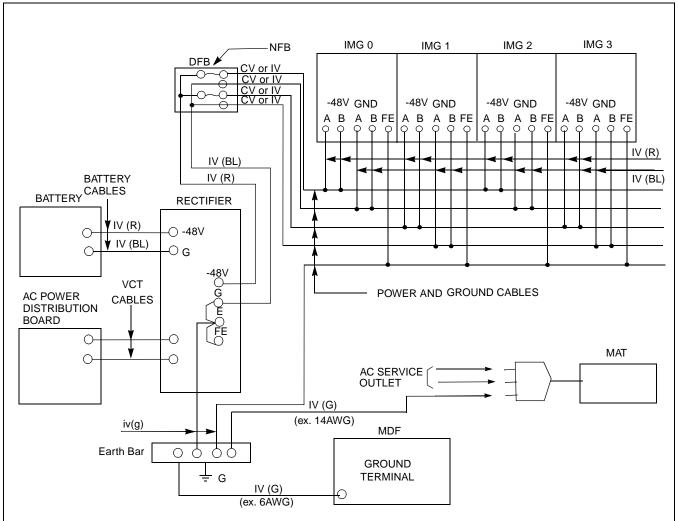
G: Black cover

E: Green cover

Note 2: For wires of the same size, perform extension jointing with a T-type terminal. Refer to Table 2-8 through Table 2-10.

Note 3: Connect the -48V leads of A and B to separate circuit breakers at the rectifier.

Figure 2-15 DC Main Power Cable and Main Ground Cable (3- or 4-PIM System) (Single IMG Configuration)



Note 1: Do not make a multiple connection across "A" terminal and "B" terminal of -48V. Likewise, do not make a multiple connection across "A" terminal and "B" terminal of GND.

Note 2: Connect each -48V lead from the PBX to a separate circuit breaker at the rectifier.

Figure 2-16 DC Main Power Cable and Main Ground Cable (Multiple IMG Configuration)

INSTALLATION DESIGN

Table 2-8 Clamp Terminal Shape and Purpose

TYPE	SHAPE	PURPOSE	REMARKS
A		End terminal	
Т		Branching or extension of power cable	

Table 2-9 Selection of T-type Clamp Terminal

BRANCH MAIN	ANCH 14 AWG/ 12 AWG/ 2 mm ² 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 asterisks (*) in Table 2-9 indicate that an auxiliary conductor and the specified clamp terminal are needed with the use of a main power wire and a branch power wire of a thinner diameter.

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	Handle type hydraulic tool for A, C, D,
No. 10	6.64 ~ 117.02	Convex die 4 Convex die 8	type terminal
No. 11	6.64 ~ 117.02	Convex die 4 Convex die 8	Pedal type hydraulic tool for all terminal types
No. 12	117.02 ~ 325	Convex die 4 Convex die 4	No. 11 and No. 12 tool are used with No. 13.
No. 13		Rubber hose	110. 13.
No. 15	14 ~ 122	Convex die 7 pairs	Handle type hydraulic tool for T type terminal
No. 16	123 ~ 365	Convex die 5 pairs	Use with No. 13 for T type terminal

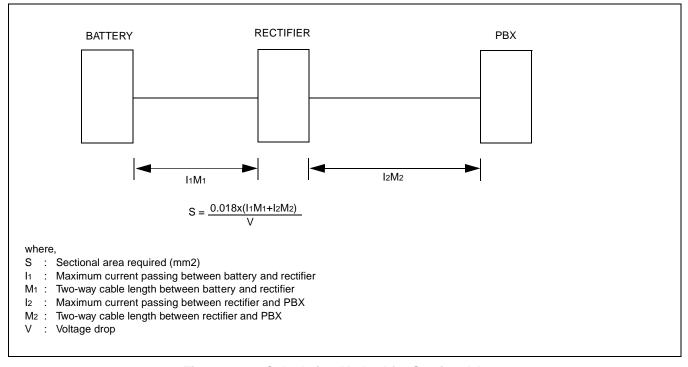


Figure 2-17 Calculation Method for Sectional Area

10.2 Cables Between The PBX And MDF

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

Table 2-11 shows the procedure for calculating the required number of cables. Figure 2-18 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 × 12	
NCU Cable	Number of PFT Circuit Cards × 2	
16 PH EXALM CA	One cable	
ODT Cable	Number of TLT circuit cards \times 1	
	TOTAL	

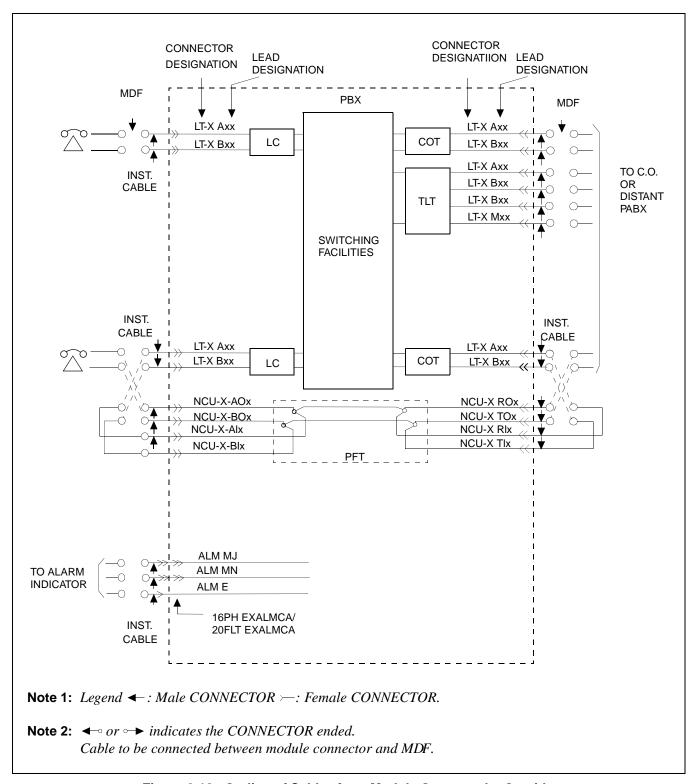


Figure 2-18 Outline of Cables from Module Group to the Outside

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, and Data Modules, etc.). Figure 3-1 shows the procedures explained in this chapter.

Before beginning the installation, thoroughly read Section 2., "PRECAUTIONS BEFORE BEGINNING INSTALLATION" and observe the precautions while performing the installation.

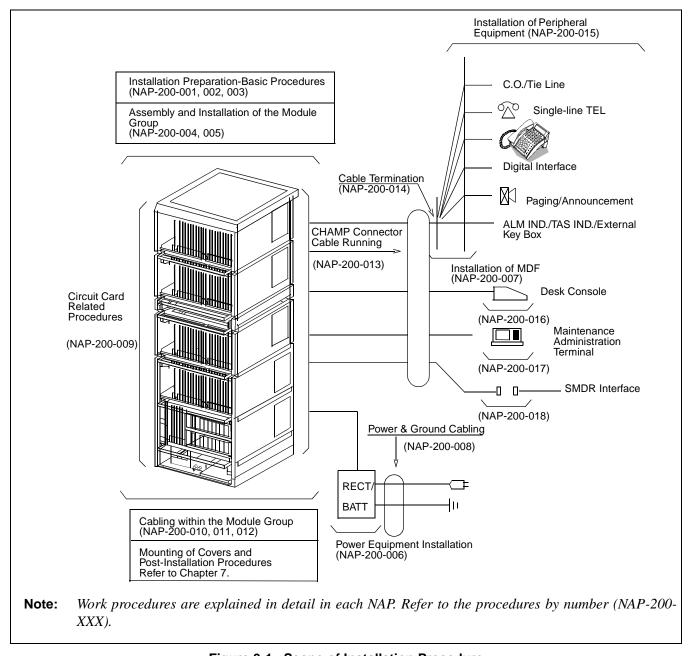
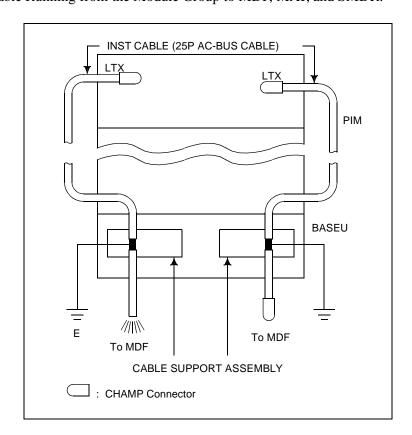


Figure 3-1 Scope of Installation Procedure

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 with 25P 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 procedures, refer to NAP-200-013: "Cable Running from the Module Group to MDF, MAT, and SMDR."



INSTALLATION PROCEDURE

4. For 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, this cable is suitable to run along the free-access floor where it is difficult to protect cables from damage. Also, to easily identify different cables, use cables of different colors as follows:

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

• E: Green

Note: The color shown in () is applicable to the UL Specification.

3. INSTALLATION PROCEDURE

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

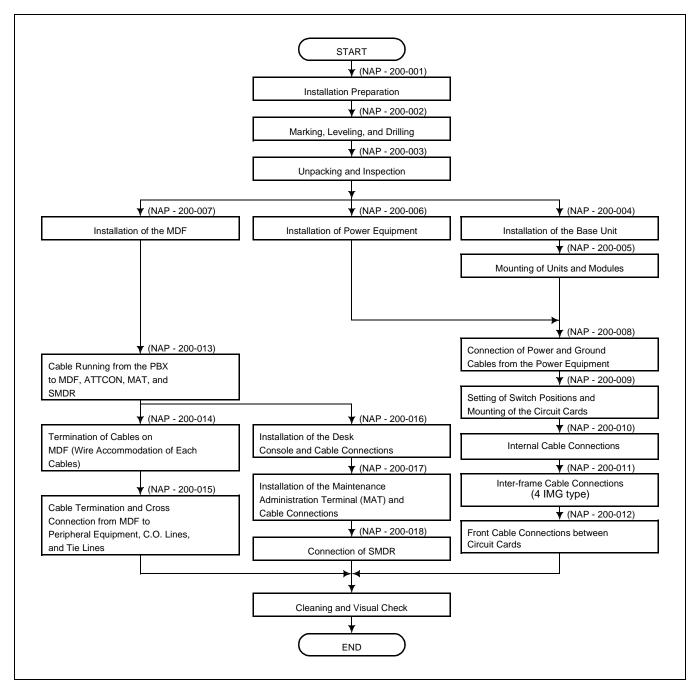


Figure 3-2 Installation Procedure

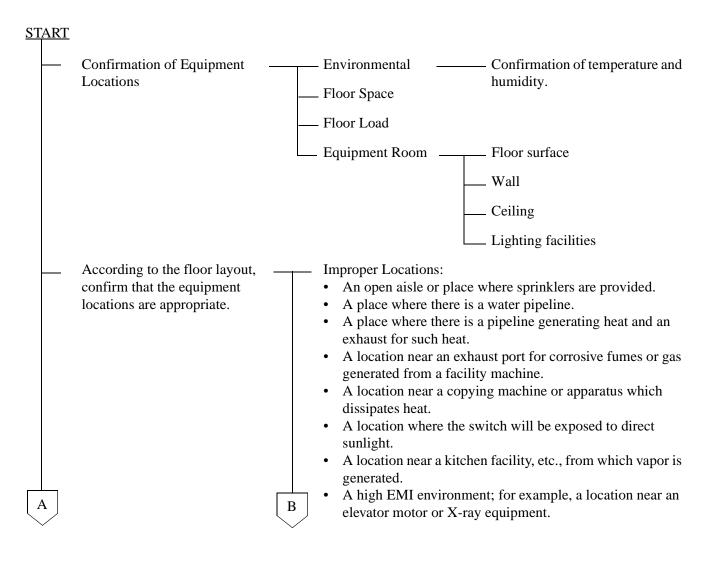
NAP-200-001
Sheet 1/2
Installation Preparation

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

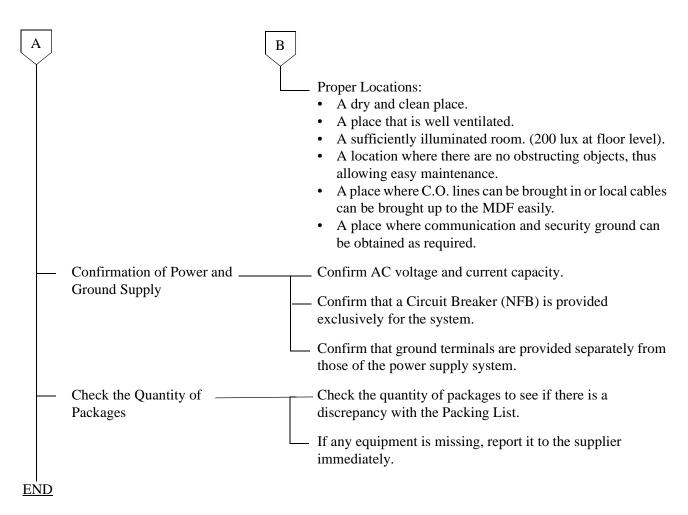
Note 1: Confirmation procedures are discussed in Chapter 2 of this manual.

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 installed on a free-access floor by 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 specifications.

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

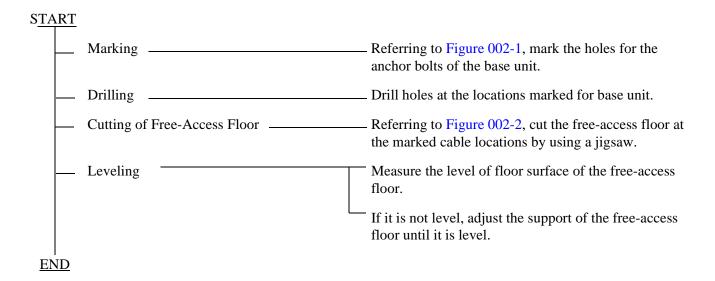
SCREW	SLEEVE	BC LEN	OLT GTH	_	EVE GTH	DRILL DIA.		LING PTH	Maximum THICKNESS OF ITEM TO BE	APPLICATION	COMPONENTS
		mm	inch	mm	inch	DIA.	mm	inch	FIXED		
M10	Ø17.3	50	2	38	1.5	Ø17.5	50	2	15 mm/0.6 in	For concrete	Bolts, Washers,
		70	2.8	58	2.3		70	2.8		Concrete + Mortar (20 mm/0.8 in thick)	Nuts
		80	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))

INSTALLATION PROCEDURE

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

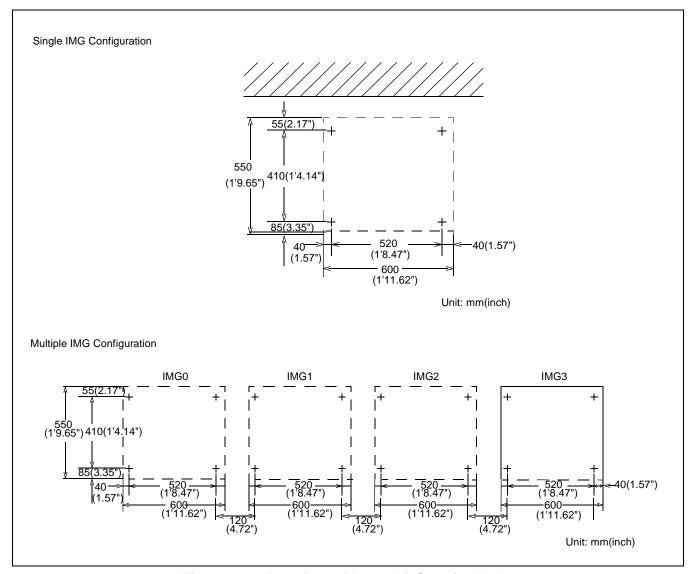


Figure 002-1 Locations of Base Unit Securing Holes

INSTALLATION PROCEDURE

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

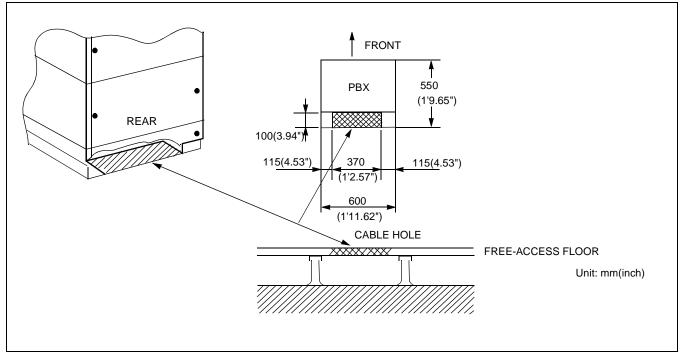
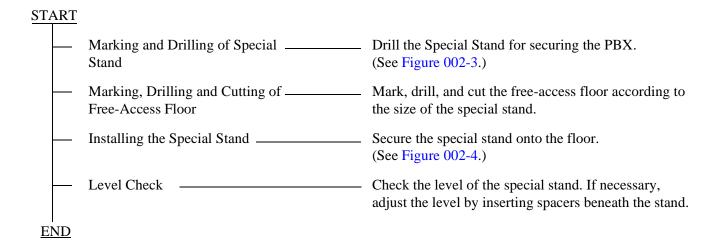


Figure 002-2 Cable Hole on a Free-Access or Computer Floor

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

2. WHEN SECURING THE PBX WITH THE SPECIAL STAND



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

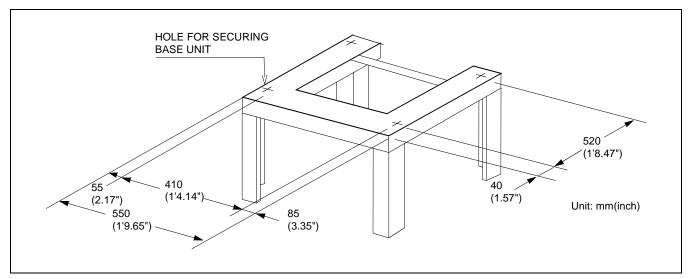


Figure 002-3 Example of Special Stand

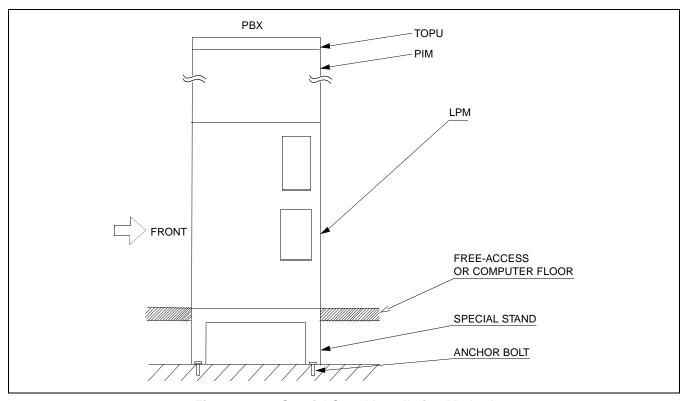
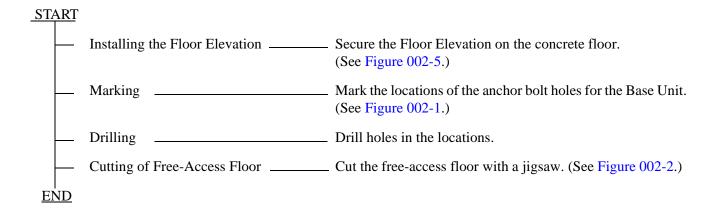


Figure 002-4 Special Stand Installation Method

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

3. WHEN SECURING PBX WITH FLOOR ELEVATIONS



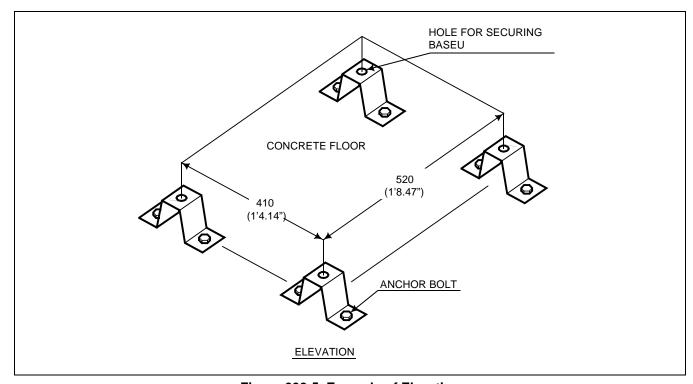
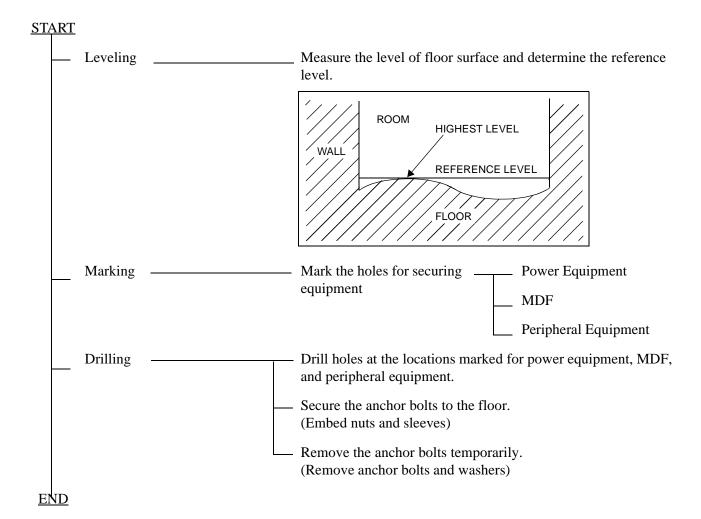


Figure 002-5 Example of Elevation

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.

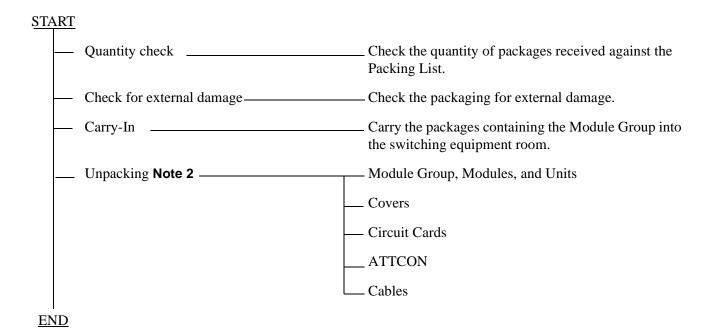


This NAP explains the procedure for unpacking and inspection.

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.



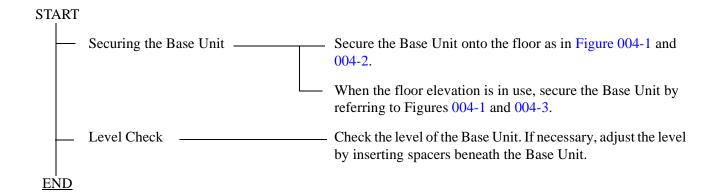
2. INSPECTION

<u>START</u>		
	Visually Inspect Modules and Units	Overall distortion.
		— Scratches or dents on the surface.
		— Distortion of shelves.
		Cracks to connectors on the backplane.
		Broken or bent pins on the backplane.
	Circuit Cards	Scratches and cracks.
	Provide protection from static electricity.	Loose wires and parts.
		Damage to card puller tabs.
	Desk Console and MAT————————————————————————————————————	Scratches and dents on the body.
		Damage to keys and lamps.
FND		

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

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

1. INSTALLING THE BASE UNIT DIRECTLY ONTO THE FLOOR



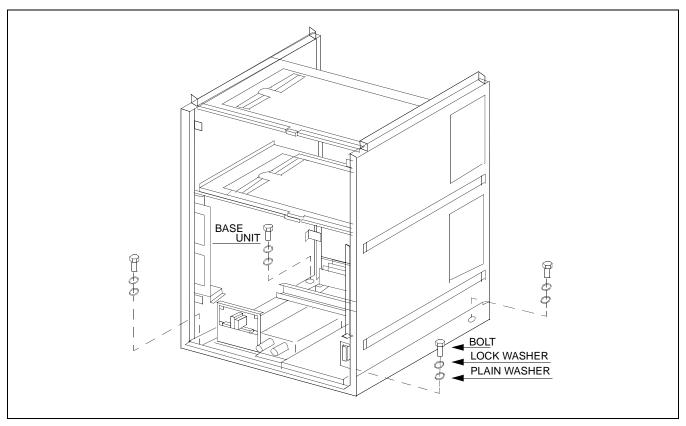


Figure 004-1 Mounting the Base Unit Directly onto the Floor

NAP-200-004
Sheet 2/3
Installation of the Base Unit

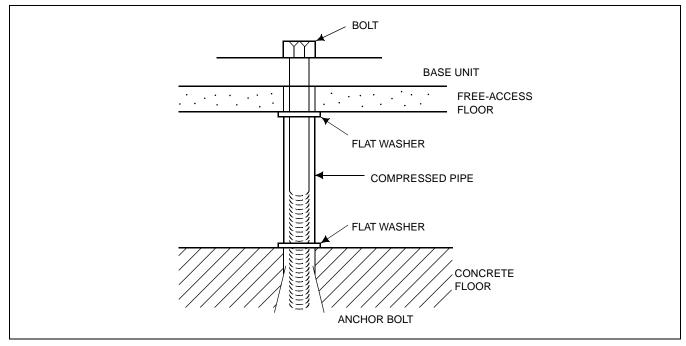


Figure 004-2 Mounting the Base Unit on a Free-Access or Computer Floor

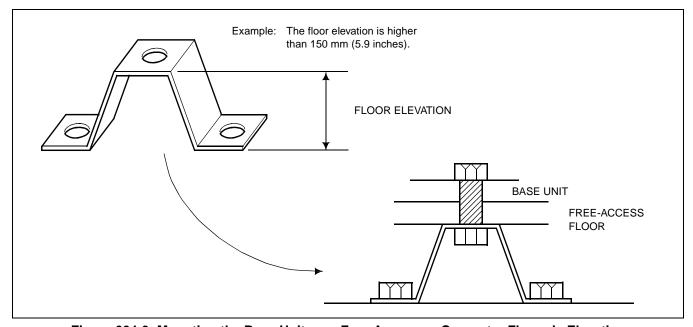
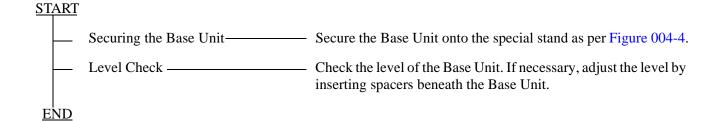


Figure 004-3 Mounting the Base Unit on a Free-Access or Computer Floor via Elevation

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

2. INSTALLING THE BASE UNIT USING A SPECIAL STAND



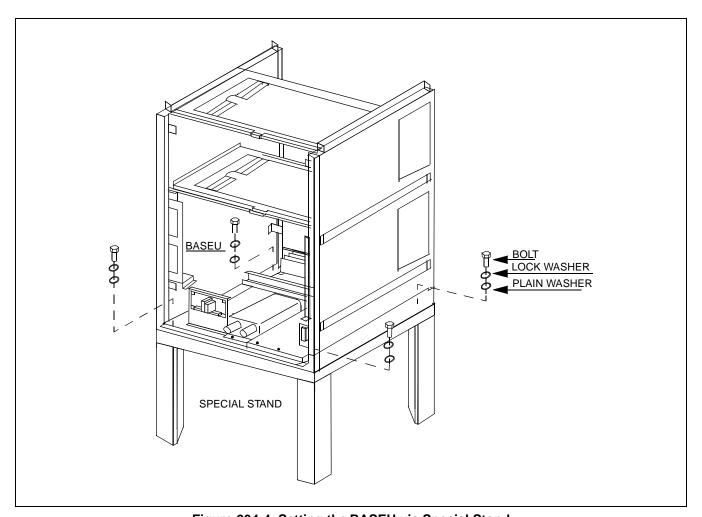
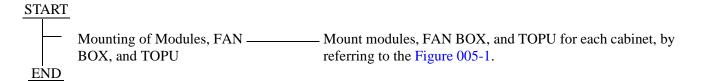


Figure 004-4 Setting the BASEU via Special Stand

NAP-200-005
Sheet 1/16
Mounting of Units and Modules

1. MOUNTING OF UNITS AND MODULES



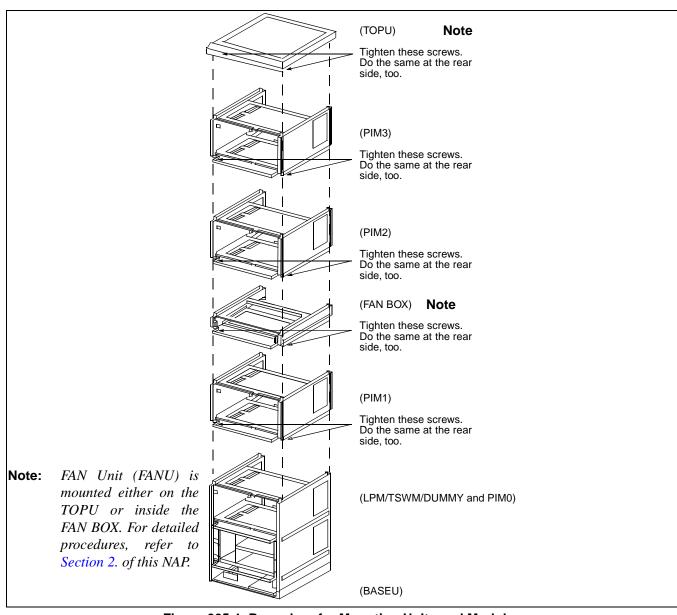


Figure 005-1 Procedure for Mounting Units and Modules

NAP-200-005
Sheet 2/16
Mounting of Units and Modules

2. INSTALLATION OF FANU

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

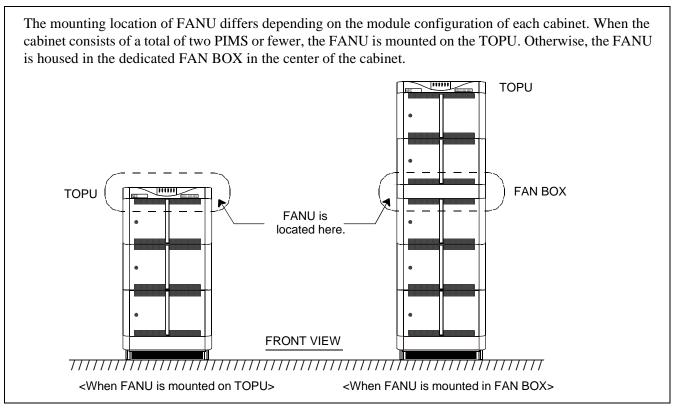


Figure 005-2 Locations of FANU

NAP-200-005
Sheet 3/16
Mounting of Units and Modules

3. PROCEDURE FOR FANU ON THE TOPU

When an IMG is configured by two PIMs or fewer, 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 6 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 (refer to Figure 005-3).

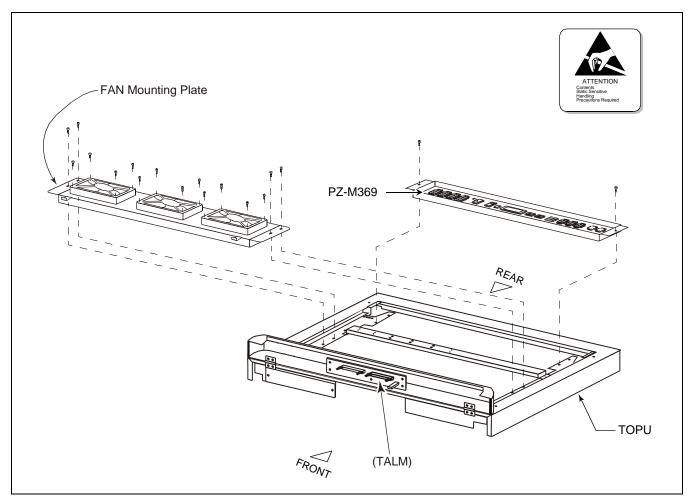


Figure 005-3 Mounting of FANU (on TOPU)

NAP-200-005
Sheet 4/16
Mounting of Units and Modules

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

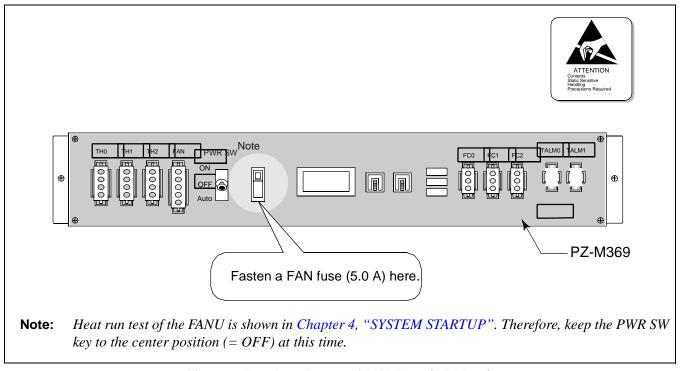


Figure 005-4 Attachment of FAN Fuse (PZ-M369)

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

NAP-200-005
Sheet 5/16
Mounting of Units and Modules

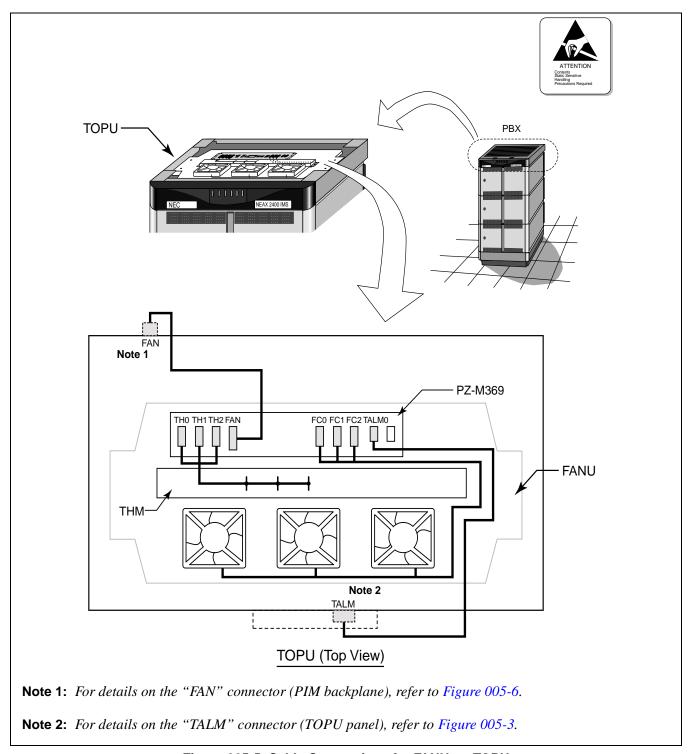


Figure 005-5 Cable Connections for FANU on TOPU

NAP-200-005
Sheet 6/16
Mounting of Units and Modules

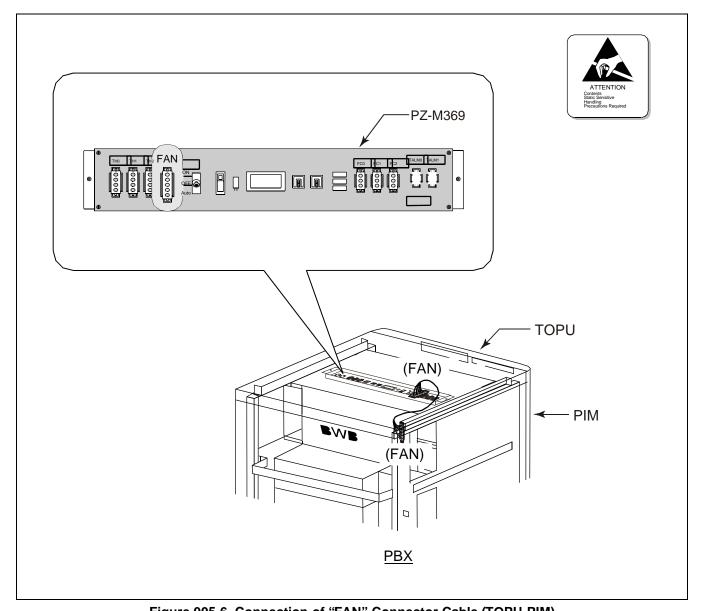


Figure 005-6 Connection of "FAN" Connector Cable (TOPU-PIM)

NAP-200-005
Sheet 7/16
Mounting of Units and Modules

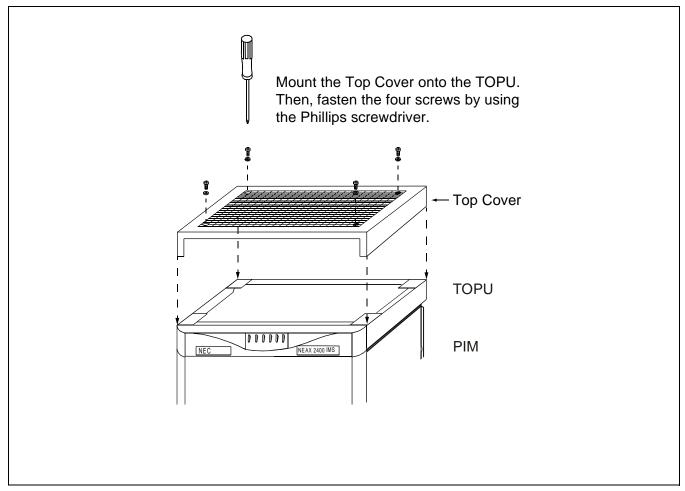


Figure 005-7 Attachment of the Top Cover

NAP-200-005	
Sheet 8/16	
Mounting of Units and Modules	

4. PROCEDURE FOR FANU IN THE FAN BOX

When an 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 according to 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).

NAP-200-005
Sheet 9/16
Mounting of Units and Modules

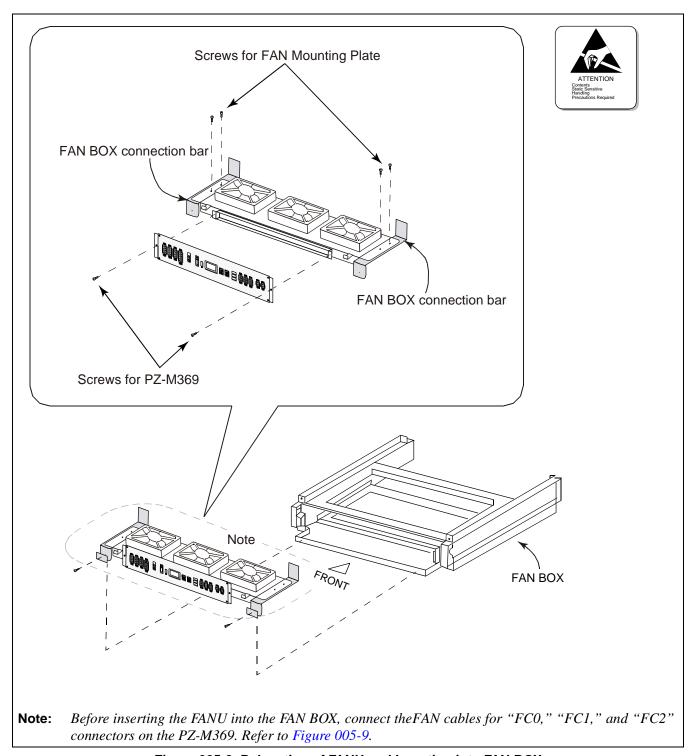


Figure 005-8 Relocation of FANU and Insertion into FAN BOX

NAP-200-005
Sheet 10/16
Mounting of Units and Modules

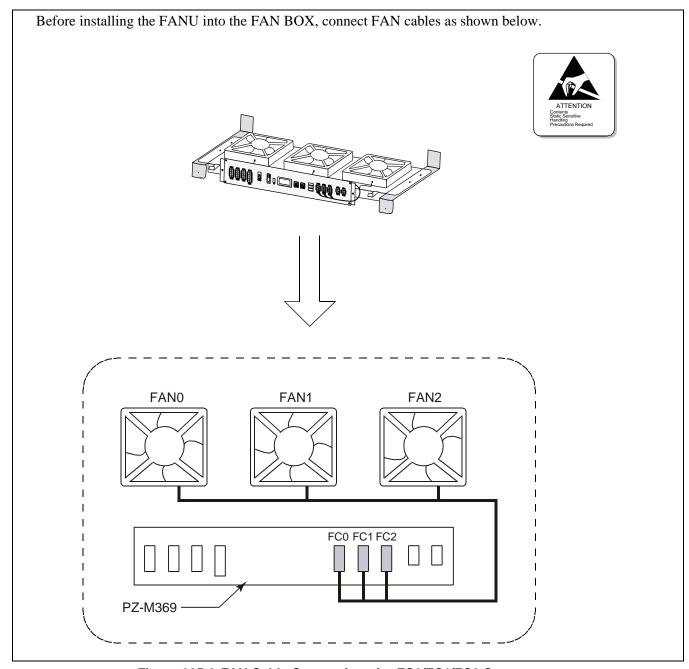


Figure 005-9 FAN Cable Connections for FC0/FC1/FC2 Connectors

NAP-200-005
Sheet 11/16
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 according to 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 12/16
Mounting of Units and Modules

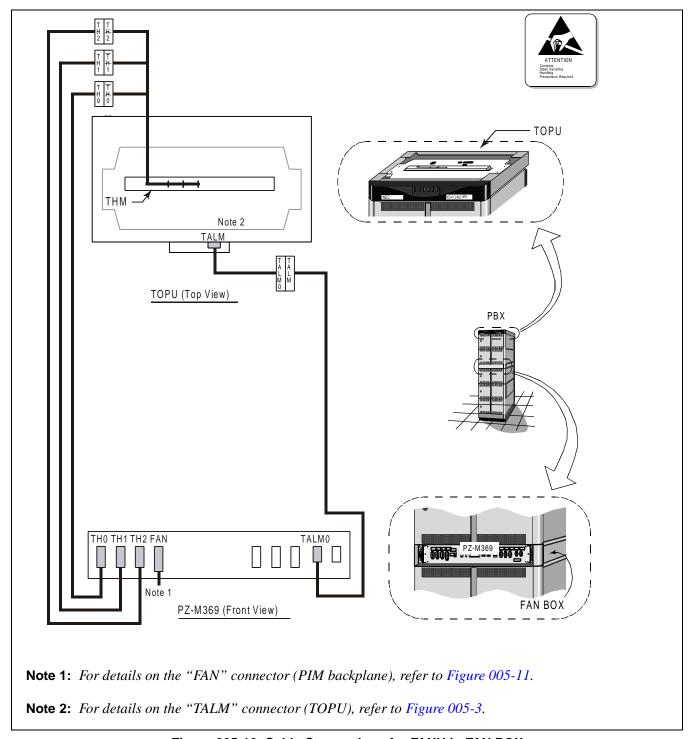


Figure 005-10 Cable Connections for FANU in FAN BOX

NAP-200-005
Sheet 13/16
Mounting of Units and Modules

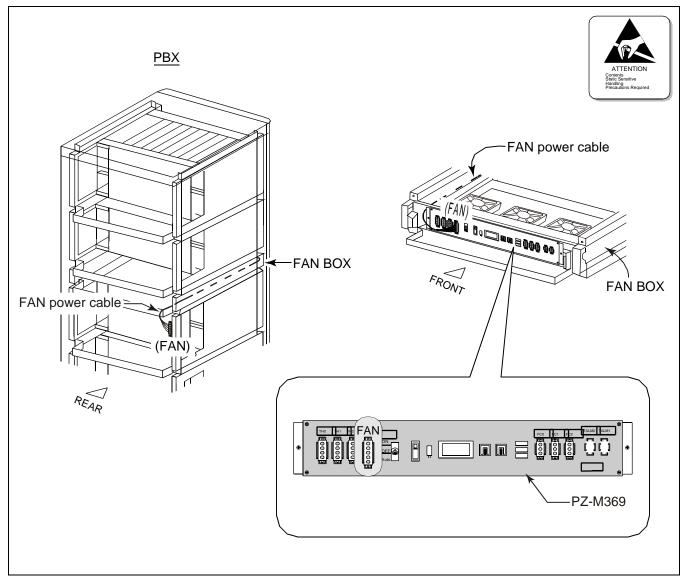
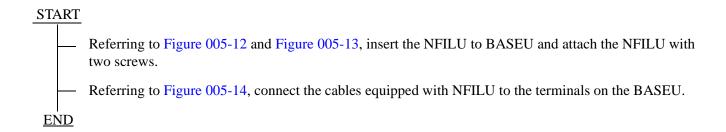


Figure 005-11 Connection of "FAN" Connector Cable (FAN BOX-PIM)

NAP-200-005
Sheet 14/16
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.



NAP-200-005
Sheet 15/16
Mounting of Units and Modules

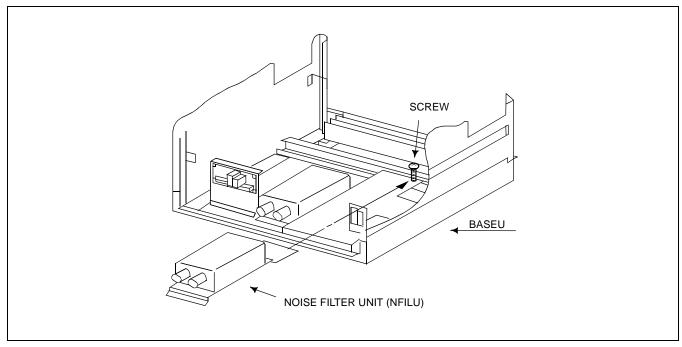


Figure 005-12 Insertion of NFILU

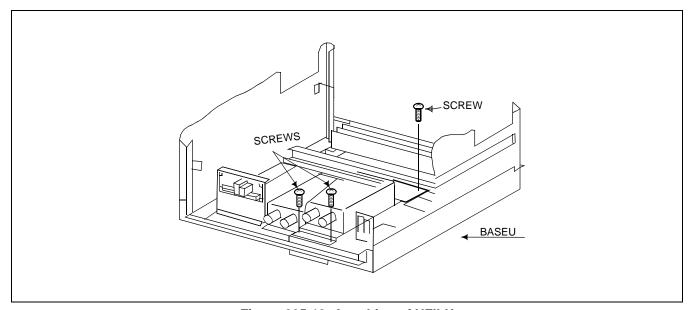


Figure 005-13 Attaching of NFILU

NAP-200-005
Sheet 16/16
Mounting of Units and Modules

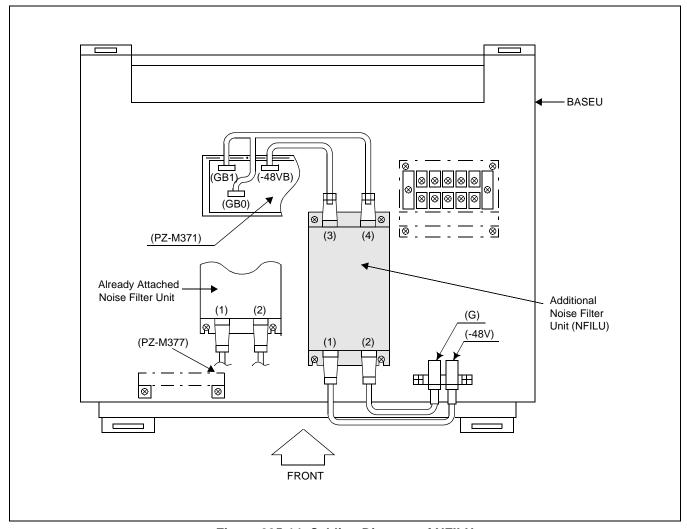


Figure 005-14 Cabling Diagram of NFILU

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.

STA	<u>RT</u>	
_		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 according to the specifications of the battery.
		Charge the batteries after verifying that the rectifier is operating normally.
EN	D	

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

This NAP explains the procedures for installing the MDF.

ST.	<u>ART</u>	
		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, considering 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.
E	ND	

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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.

<u>START</u>		
	Cable Running —	Run the power and ground cables according to Figure 008-1 and Figure 008-3.
	Running of power and ground cables to the – Power Receiving Terminals in the BASEU	An example of cable running on a free-access or computer floor is shown in Figure 008-1.
<u> </u>	Confirm that the Circuit Breaker (NFB) of the	e Rectifier is OFF.
	Connection of the power and ground cables	Connect the power and ground cables to the Power Receiving Terminals on the BASEU according to Figure 008-3. Connect the power and ground cables to the output terminals of the rectifier.
	Check after cable connections	Using a continuity tester, confirm that the -48 V power cable is not shorting to the G power cable or FE ground cable.
END		

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Connection of Power and Ground Cables from the Power Equipment

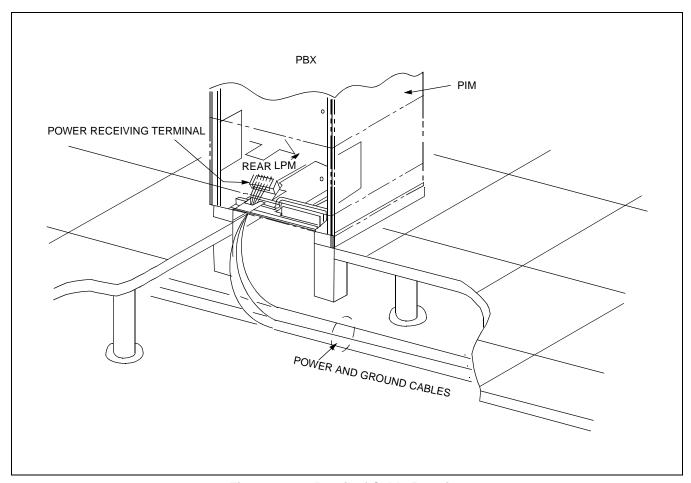


Figure 008-1 Detail of Cable Running

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Connection of Power and Ground Cables from the Power Equipment

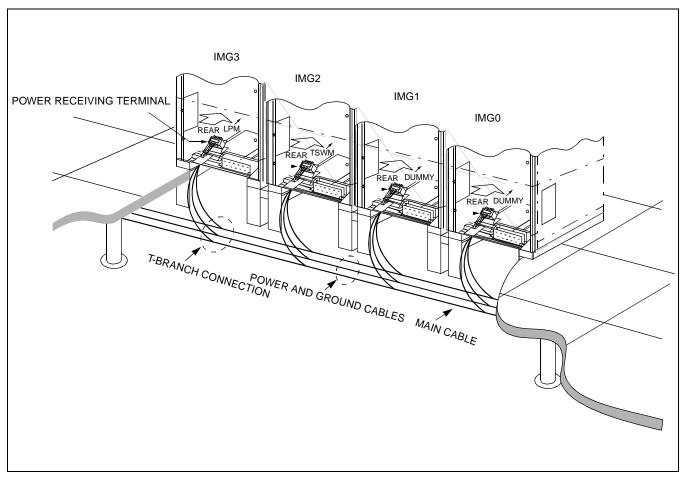


Figure 008-2 Detail of Cable Running (Multiple IMG Configuration)

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Connection of Power and Ground Cables from the Power Equipment

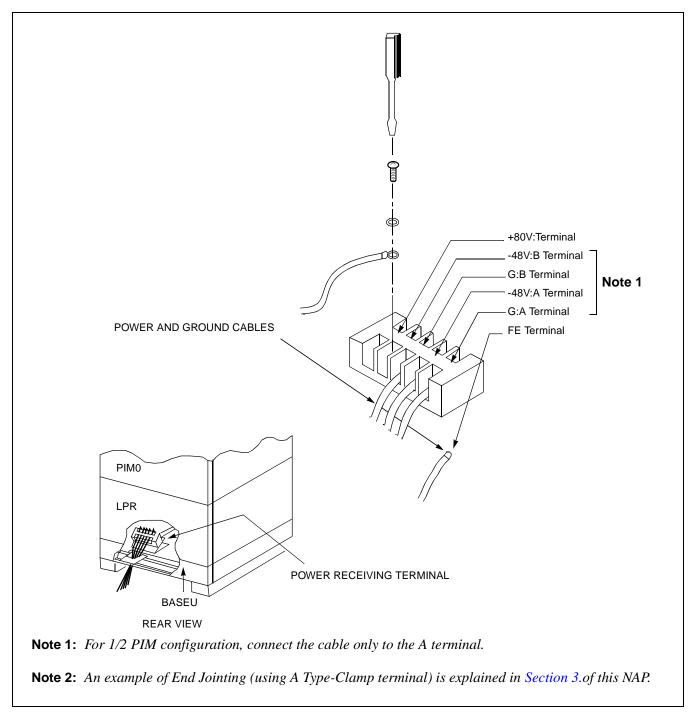


Figure 008-3 Connection of Power and Ground Cables to Power Receiving Terminal

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Connection of Power and Ground Cables from the Power Equipment

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

START		
_	Cable Running	Referring to Figure 008-4, run the power and ground cables.
_	Removal of shorting piece and cableconnection	Referring to Figure 008-5, remove the shorting piece from the +80 V connector of the PZ-M371 card, and then connect the cable provided on the +80 V Power Receiving Terminal Block to the +80 V connector.
	Confirm that the Circuit Breaker (NFB) of the Recti	ifier is OFF.
	Connection of Power and Ground Cables	Referring to Figure 008-4 and 008-5, connect the power and ground cable to each terminal of the equipment.
	Check after cable connections	- Using a continuity tester, confirm that the -48 V and +80 V power cable are not short-circuiting with the G power cable or FE ground cables.
 END		

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Connection of Power and Ground Cables from the Power Equipment

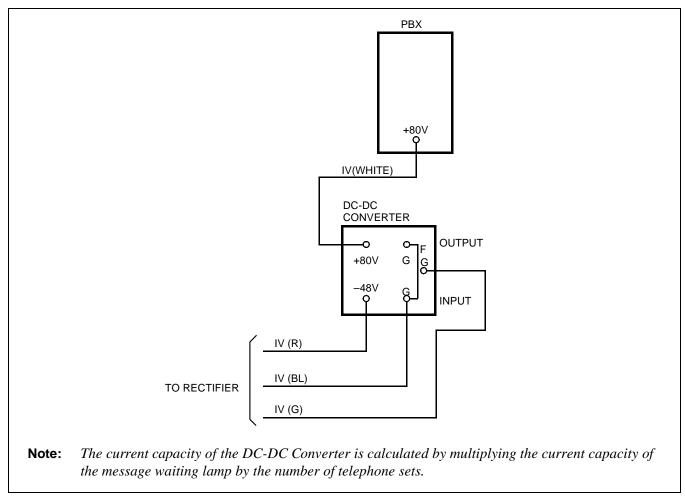


Figure 008-4 Example Connection Diagram-DC-DC Converter for Message Waiting Lamps

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Connection of Power and Ground Cables from the Power Equipment

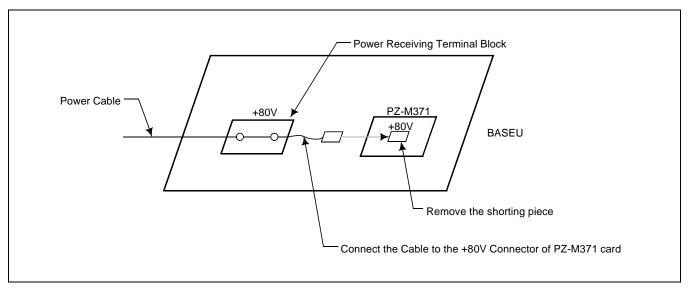
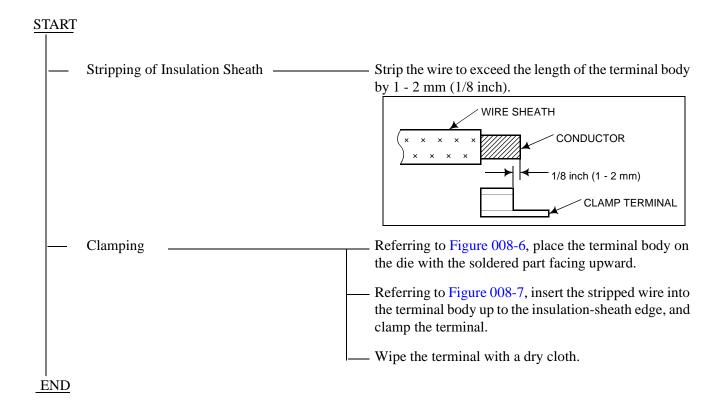


Figure 008-5 Removal of Shorting Piece and Cable Connection

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Connection of Power and Ground Cables from the Power Equipment	

3. END JOINTING OF POWER AND GROUND CABLES



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Connection of Power and Ground Cables from the Power Equipment

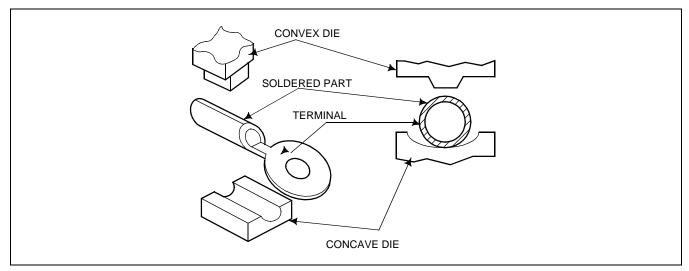


Figure 008-6 Placing the Clamp Terminal on the Die

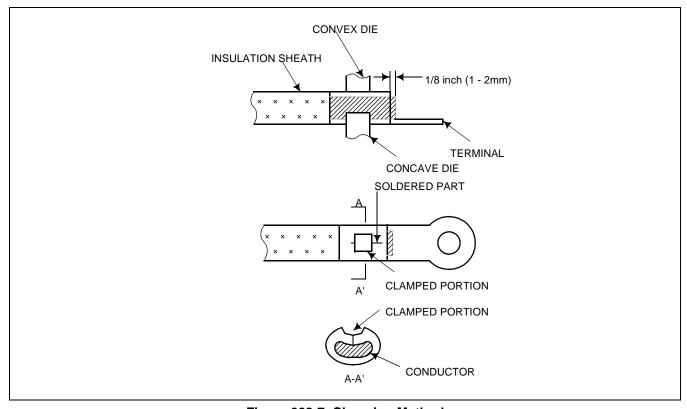


Figure 008-7 Clamping Method

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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. Place T-20 - T-44 terminals on the center of the die. Place T-60 - T-365 terminals on the die so that the terminal will be pressed on the part marked with the roulette. NO ROULLETTE T-20-T-44 3 ROULLETTES T-154-T-365 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 Figure 008-11 and Figure 008-12, put an installation cover over the clamped portion, after taping with installation tape.
END	

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Connection of Power and Ground Cables from the Power Equipment	

Table 008-1 Stripped Length

APPLICABLE TERMINAL	STRIPPED MAIN-WIRE LENGTH I ¹ [inch (mm)]	STRIPPED MAIN-WIRE LENGTH I 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)

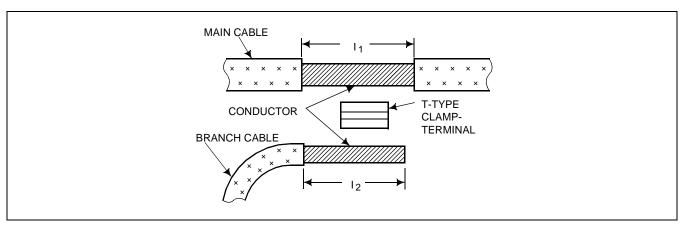


Figure 008-8 Stripped Length of Main and Branch Cable

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Connection of Power and Ground Cables from the Power Equipment

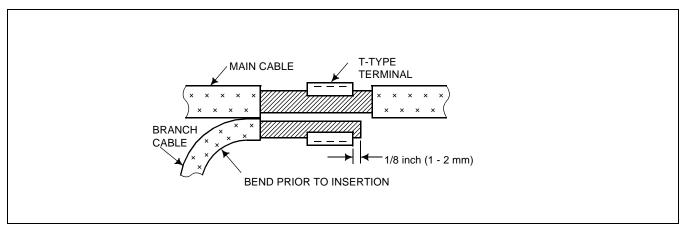


Figure 008-9 Inserting of Cables into Terminal

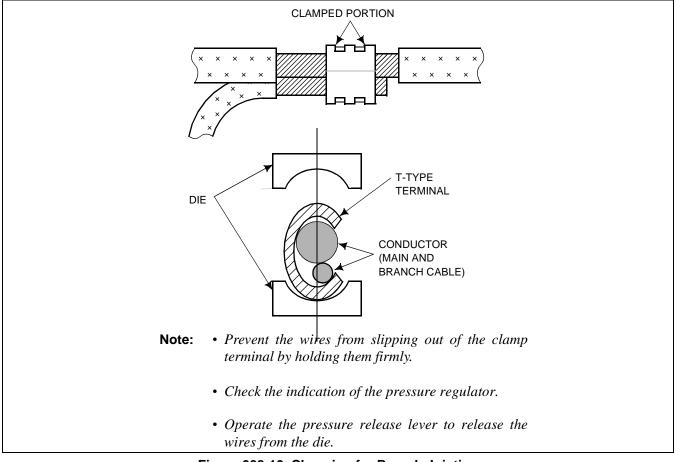


Figure 008-10 Clamping for Branch Jointing

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Connection of Power and Ground Cables from the Power Equipment

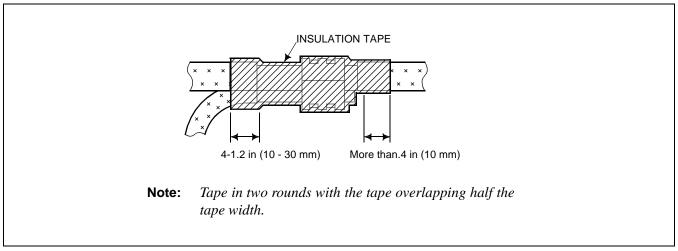


Figure 008-11 Taping

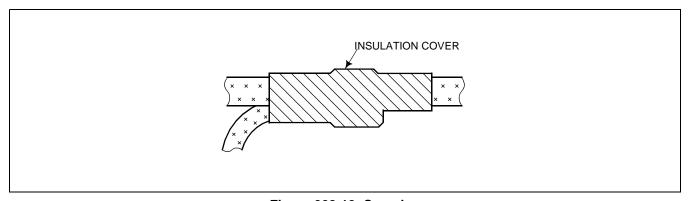


Figure 008-12 Covering

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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 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 using a CHARGE-GUARD wrist strap, connect the wrist strap to the frame or other ground with 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 with care. Never bang or drop them.

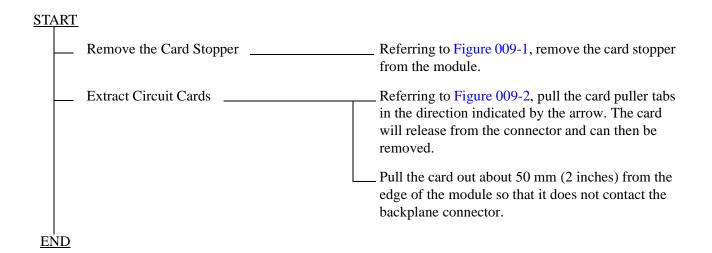
1.3. Mounting or Removing Circuit Cards when the System Is in Operation

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

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Setting of Switch Positions and Mounting of Circuit Cards



2. EXTRACTION OF MOUNTED CIRCUIT CARDS



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Setting of Switch Positions and Mounting of Circuit Cards



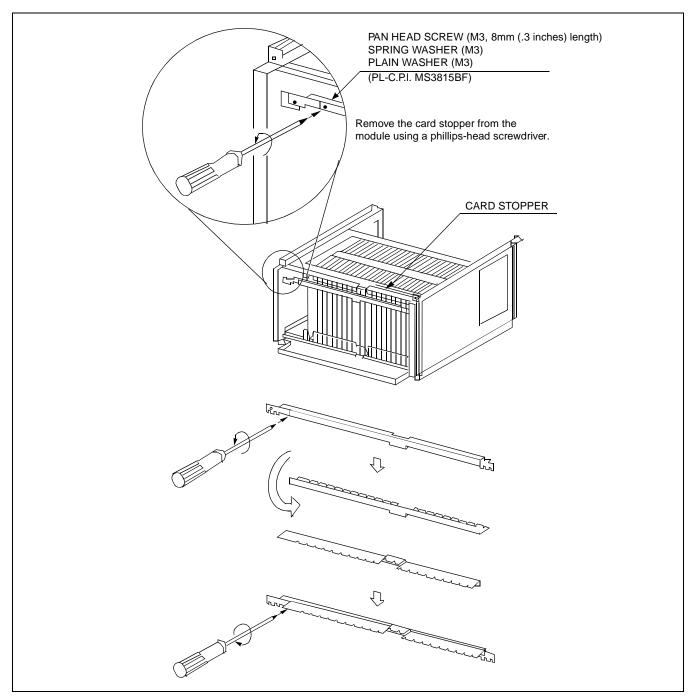


Figure 009-1 Removal of Card Stopper

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Setting of Switch Positions and Mounting of Circuit Cards



3. MOUNTING OF CIRCUIT CARDS

ST	<u>ART</u>		
		Unpacking the Circuit Cards	Unpack each circuit card and remove it from its polyethylene bag.
		Clean the connector portion of the Circuit Cards	 Wipe the connector portion clean using a soft cloth moistened with pure trichloroethylene or methanol (medical alcohol). Make sure that no lint or dust remains on the connector after cleaning.
			 Extract circuit cards that are already mounted and clean according to the above instructions.
		Confirm the mounting positions of the Circuit Cards	 Confirm the mounting position of each circuit card by referring to the Module Face Layout.
			 Confirm that the color code of the card puller tab coincides with that of the card mounting slot.
			Confirm the Slot No. on the Module. Slot numbers are at the bottom of each module and range from 00 to 23.
		Insert the cards into the Module	Partially insert the circuit card into the module, making sure that it is correctly aligned at the top and bottom. The card should extend about two inches from the module, and must not contact the backplane connector (see Figure 009-3).
El	ND		

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Setting of Switch Positions and Mounting of Circuit Cards



4. SETTING OF SWITCH POSITIONS ON CIRCUIT CARDS

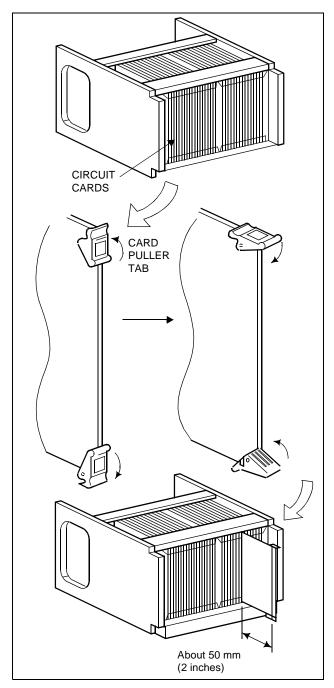
<u>S1</u> 2	<u> </u>		
=		Extracting the Circuit Cards from the Module	Extract one circuit card requiring switch setting from the module. Place the extracted card onto the anti-static sheet.
=		Perform switch setting	Set the required switches according to the Switch Setting Sheets in the Circuit Card Manual.
-		Mounting of Circuit Cards	After setting the switches, 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.
EN	ND		

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Setting of Switch Positions and Mounting of Circuit Cards





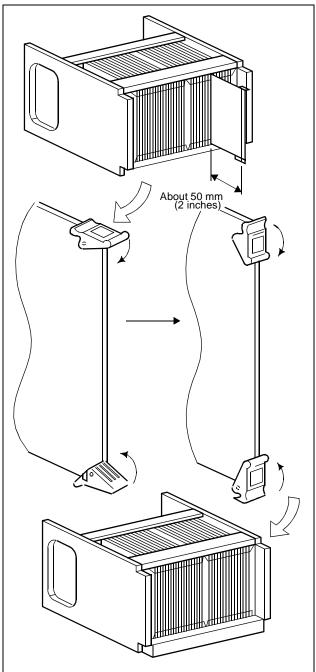


Figure 009-2 Extraction of Circuit Cards

Figure 009-3 Circuit Card Mounting (Partial Insertion)

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Setting of Switch Positions and Mounting of Circuit Cards



5. INSTALLATION OF CPR

This Section explains the procedure to install the CPR into the LPM. Perform the following STEPS for both CPR0 and CPR1.

STEP 1: Using the Phillips Screwdriver, remove the 4 + 8 screws. Then, detach the front panel and top cover from the CPR. (Refer to Figure 009-4.)

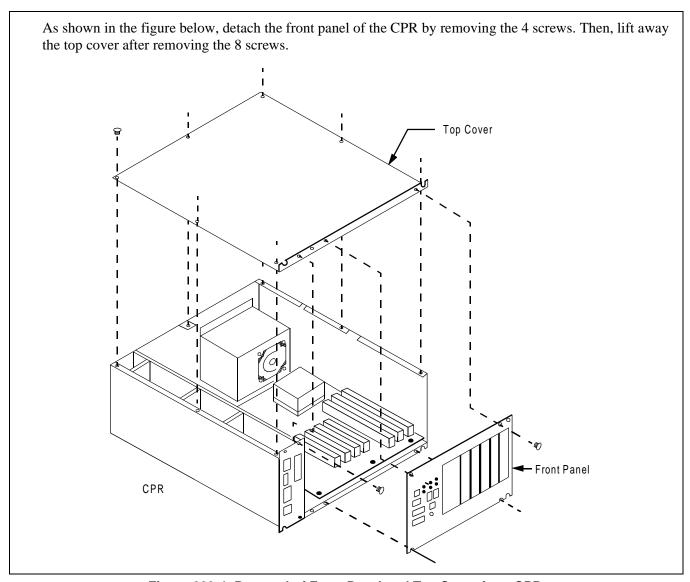


Figure 009-4 Removal of Front Panel and Top Cover from CPR

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Sheet 8/11
Setting of Switch Positions and Mounting of Circuit Cards



STEP 2: Depending on the system configuration, insert the ISAGT (PZ-GT13/16) and LANI (PZ-PC19) cards into the following slots of the CPR (refer to Figure 009-5):

ISAGT (PZ-GT13/16) \rightarrow Slot #6 (ISA) (Fixed)

LANI \rightarrow Slot #0 (PCI) (For FCCS Link)

LANI → Slot #1 (PCI) (When connecting MAT via 10-BASE T and PCI buses)

LANI → Slot #3 (PCI) (When LANI for Fusion Link is in dual configuration)

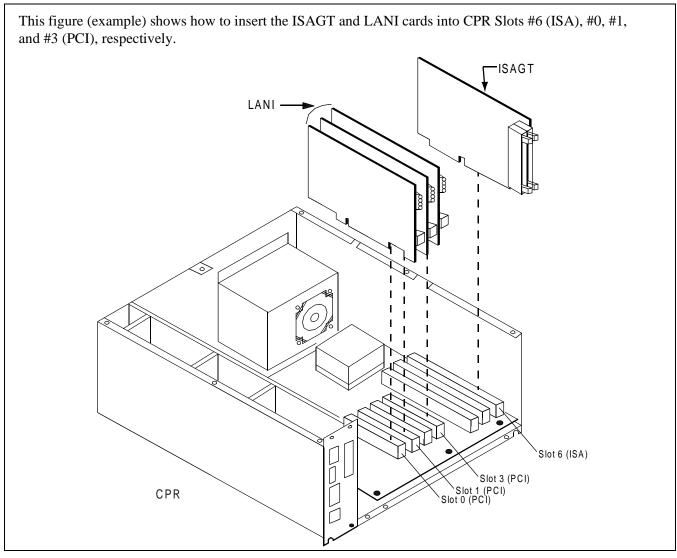


Figure 009-5 Insertion of ISAGT and LANI Cards into CPR Slots

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Setting of Switch Positions and Mounting of Circuit Cards



STEP 3: Attach the top cover and front panel again by fastening the removed screws. (Refer to Figure 009-6.)

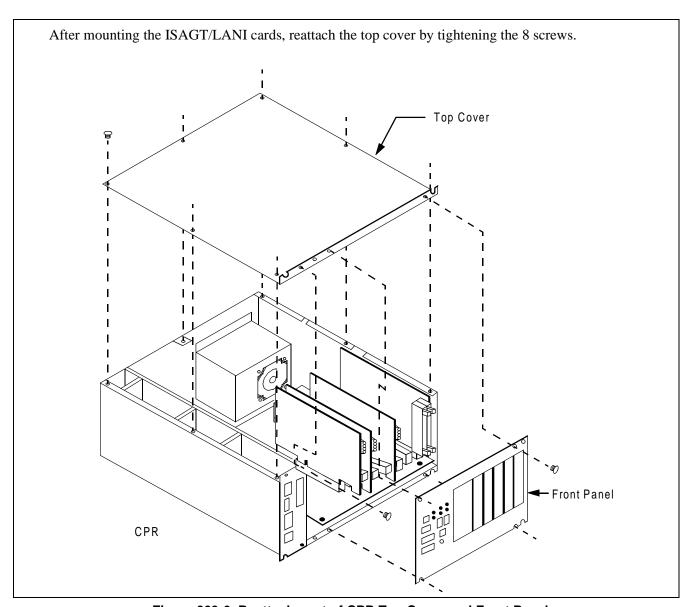


Figure 009-6 Reattachment of CPR Top Cover and Front Panel

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Setting of Switch Positions and Mounting of Circuit Cards



STEP 4: After turning "ON" the MBR key on the DSP of the CPR, insert the CPR into the LPM. Then, fasten the four screws. (Refer to Figure 009-7.)

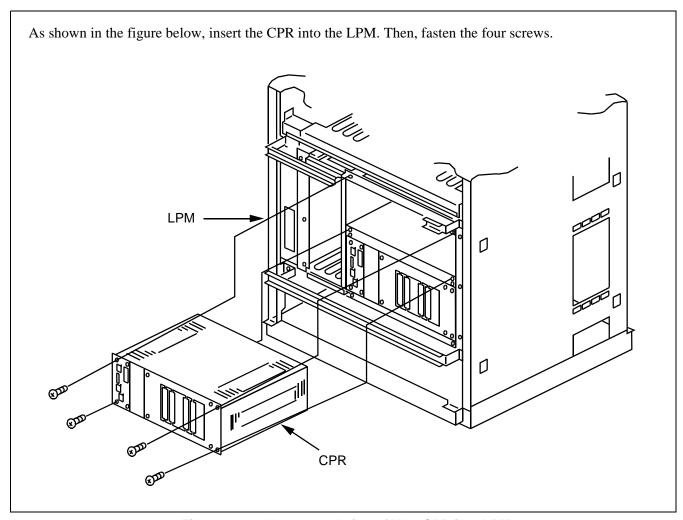


Figure 009-7 Accommodation of New CPR into LPM

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Setting of Switch Positions and Mounting of Circuit Cards



STEP 5: Finally, insert the HFD into the CPR. Then, fasten the two screws. (Refer to Figure 009-8.)

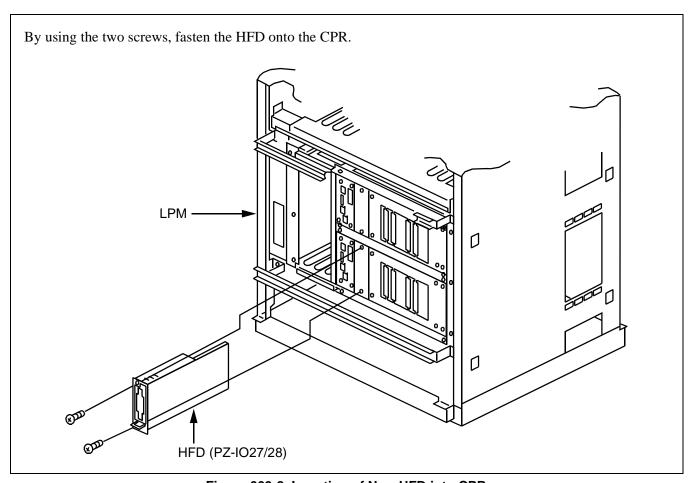
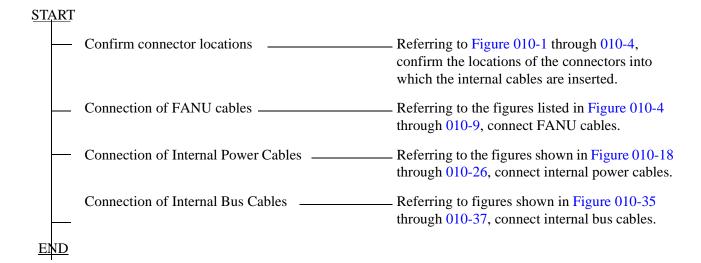


Figure 009-8 Insertion of New HFD into CPR

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Internal Cable Connections

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



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Internal Cable Connections

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 the Table 010-1 "Quick Reference Table." When you find your system in the table, open the related pages to find the necessary information, and then begin the cable connections.

Table 010-1 Quick Reference Table (1/6)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
Single IMG Configuration				
IMG TOPU PIM3 PIM2 FANU	Power Cable	IMG0	010-5 ~ 010-12	010-2 ~ 010-5
PIM1 PIM0 LPM BASEU	Internal Cable	IMG0	010-22 ~ 010-29	010-15 ~ 010-18
Multiple IMG Configuration				
	Power Cable	IMG0	010-13	010-6
IMG0 TOPU	rower Cable	IMG1	010-14	010-7
PIM3	Internal Cable	IMG0	010-30	010-19
PIM2	Internal Cable	IMG1	010-31	010-20
PIM1 IMG1 TOPU PIM0 PIM0	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
LPM TSWM		IIVIOU-IIVIO1	011-2	011-2
BASEU BASEU 5-PIM System	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
	Power Cable	IMG0	010-13	010-6
IMG0	rower Cable	IMG1	010-15	010-8
PIM3	Internal Cable	IMG0	010-30	010-19
PIM2 IMG1	internal Cable	IMG1	010-32	010-21
PIM1 PIM1 PIM0 PIM0	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
LPM TSWM	Inter-Praine Bus Cable	IIVIOU-IIVIO1	011-2	011-2
6-PIM System	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11

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Internal Cable Connections

Table 010-1 Quick Reference Table (2/6)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
	Power Cable	IMG0	010-13	010-6
IMG0	Power Cable	IMG1	010-16	010-9
PIM3 IMG1	1. 10.11	IMG0	010-30	010-19
PIM2 PIM2	Internal Cable	IMG1	010-33	010-22
PIM1 PIM1 PIM0 PIM0	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
LPM TSWM	Inter-rraine bus Cable	IIVIOU-IIVIOT	011-2	011-2
BASEU F BASEU 7-PIM System	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
	Power Cable	IMG0	010-13	010-6
IMG0 IMG1	rowei Cable	IMG1	010-17	010-10
PIM3 PIM3	Internal Cable	IMG0	010-30	010-19
PIM2 PIM2 FANU FANU		IMG1	010-34	010-23
PIM1 PIM1 PIM0 PIM0	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
LPM TSWM		IIVIOU-IIVIOI	011-2	011-2
8-PIM System	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
		IMG0	010-13	010-6
	Power Cable	IMG1	010-17	010-10
IMG0 IMG1		IMG2	010-18	010-11
PIM3 PIM3	Internal Cable	IMG0	010-30	010-19
PIM2 PIM2 FANU FANU	Internal Cable	IMG1	010-34	010-23
PIM1 PIM1 IMG2 TOPU		IMG0-IMG1	011-1	011-1
PIMO PIMO PIMO LPM TSWM DUMMY	Inter-Frame Bus Cable		011-2	011-2
9-PIM System		IMG1-IMG2	011-3	011-3
	Inter-Frame	IMG0-IMG1	011-11	011-11
	Alarm Bus Cable	IMG0-IMG2	011-12	011-12

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Internal Cable Connections

Table 010-1 Quick Reference Table (3/6)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-19	010-12
IMG0 IMG1		IMG0	010-30	010-19
PIM3 PIM3 PIM2 PIM2 IMC3	Internal Cable	IMG1	010-34	010-23
PIM1 PIM1 PIM1		IMG2	010-35	-
PIMO PIMO PIMO		IMG0-IMG1	011-1	011-1
LPM TSWM DUMMY BASEU BASEU BASEU	Inter-Frame Bus Cable	IIVIOO-IIVIO1	011-2	011-2
10-PIM System		IMG1-IMG2	011-4	011-4
	Inter-Frame	IMG0-IMG1	011-11	011-11
	Alarm Bus Cable	IMG0-IMG2	011-12	011-12
	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-20	010-13
IMG0 IMG1 TOPU TOPU PIM3 PIM3 IMG2 TOPU	Internal Cable	IMG0	010-30	010-19
PIM2 PIM2 PIM2		IMG1	010-34	010-23
PIM1 PIM1 PIM1		IMG2	010-36	-
PIMO PIMO PIMO	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
LPM TSWM DUMMY BASEU BASEU BASEU			011-2	011-2
11-PIM System		IMG1-IMG2	011-5	011-5
	Inter-Frame	IMG0-IMG1	011-11	011-11
	Alarm Bus Cable	IMG0-IMG2	011-12	011-12

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Internal Cable Connections

Table 010-1 Quick Reference Table (4/6)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-21	010-14
IMG0 IMG1 IMG2 TOPU TOPU TOPU PIM3 PIM3 PIM3		IMG0	010-30	010-19
PIM2 PIM2 PIM2	Internal Cable	IMG1	010-34	010-23
PIM1 PIM1 PIM1		IMG2	010-37	-
PIMO PIMO PIMO LPM TSWM DUMMY		IMG0-IMG1	011-1	011-1
BASEU BASEU BASEU 12-PIM System	Inter-Frame Bus Cable	IMG0-IMG1	011-2	011-2
		IMG1-IMG2	011-6	011-6
	Inter-Frame	IMG0-IMG1	011-11	011-11
	Alarm Bus Cable	IMG0-IMG2	011-12	011-12
	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
		IMG2	010-21	010-14
		IMG3	010-18	010-11
IMG0 IMG1 IMG2	Internal Cable	IMG0	010-30	010-19
PIM3 PIM3 PIM3		IMG1	010-34	010-23
PIM2 PIM2 PIM2 FANU FANU FANU PIM1 PIM1 PIM1 IMG3		IMG2	010-37	-
PIMO PIMO PIMO PIMO	Inter-Frame Bus Cable	IMG0-IMG1	011-1	011-1
LPM TSWM DUMMY DUMMY BASEU BASEU BASEU 13-PIM System			011-2	011-2
		IMG1-IMG2	011-6	011-6
		IMG1-IMG3	011-7	011-7
	Inter-Frame Alarm Bus Cable	IMG0-IMG1	011-11	011-11
		IMG0-IMG2	011-12	011-12
		IMG0-IMG3	011-13	011-13

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Internal Cable Connections

Table 010-1 Quick Reference Table (5/6)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
		IMG0	010-13	010-6
	Power Cable	IMG1	010-17	010-10
		IMG2	010-21	010-14
		IMG3	010-19	010-12
W00 W04 W00		IMG0	010-30	010-19
IMG0 IMG1 IMG2 TOPU TOPU PIM3 PIM3 PIM3	Internal Cable	IMG1	010-34	010-23
PIM2 PIM2 PIM2 IMG3	Internal Cable	IMG2	010-37	-
PIM1 PIM1 PIM1 PIM1		IMG3	010-35	-
PIMO PIMO PIMO PIMO		IMG0-IMG1	011-1	011-1
LPM TSWM DUMMY DUMMY BASEU BASEU BASEU BASEU 14-PIM System	Inter-Frame Bus Cable	IIVIOU-IIVIO1	011-2	011-2
14-F IIVI System	Inter-rame bus Cable	IMG1-IMG2	011-6	011-6
		IMG1-IMG3	011-8	011-8
	I. C	IMG0-IMG1	011-11	011-11
	Inter-Frame Alarm Bus Cable	IMG0-IMG2	011-12	011-12
		IMG0-IMG3	011-13	011-13
		IMG0	010-13	010-6
	Power Cable	IMG1	010-17	010-10
		IMG2	010-21	010-14
		IMG3	010-20	010-13
		IMG0	010-30	010-19
IMG0 IMG1 IMG2 TOPU TOPU TOPU PIM3 PIM3 PIM3 IMG3	Internal Cable	IMG1	010-34	010-23
PIM2 PIM2 PIM2 PIM2	internal Cable	IMG2	010-37	-
PIM1 PIM1 PIM1 PIM1		IMG3	010-36	-
PIMO PIMO PIMO PIMO		IMG0-IMG1	011-1	011-1
LPM TSWM DUMMY DUMMY BASEU BASEU BASEU BASEU 15-PIM System	Inter-Frame Bus Cable		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

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Internal Cable Connections

Table 010-1 Quick Reference Table (6/6)

SYSTEM TYPE	KIND OF CABLE	FRAME NAME	FIGURE	TABLE
	Power Cable	IMG0	010-13	010-6
		IMG1	010-17	010-10
	1 Ower Cable	IMG2	010-21	010-14
		IMG3	010-21	010-14
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		IMG0	010-30	010-19
IMG0 IMG1 IMG2 IMG3 TOPU TOPU TOPU PIM3 PIM3 PIM3 PIM3	Internal Cable	IMG1	010-34	010-23
PIM2 PIM2 PIM2 PIM2	Internal Cable	IMG2	010-37	-
PIM1 PIM1 PIM1 PIM1		IMG3	010-37	-
PIMO PIMO PIMO		IMG0-IMG1	011-1	011-1
LPM TSWM DUMMY DUMMY BASEU BASEU BASEU BASEU 16-PIM System	Inter-Frame Bus Cable	IWOO-IWIO1	011-2	011-2
To Till System	inter-raine bus cable	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

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Internal Cable Connections

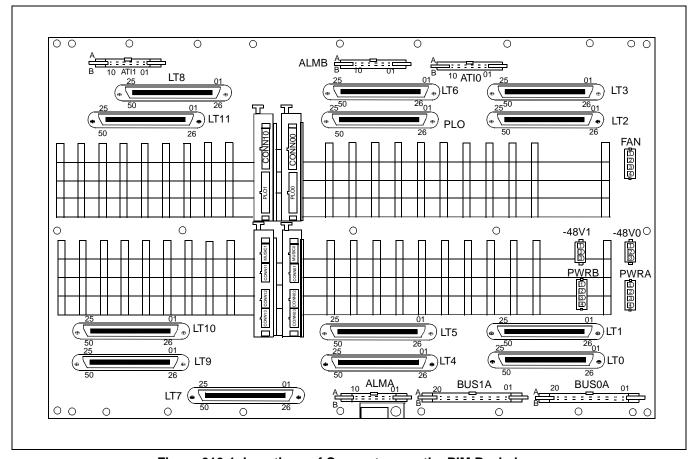


Figure 010-1 Locations of Connectors on the PIM Backplane

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Internal Cable Connections

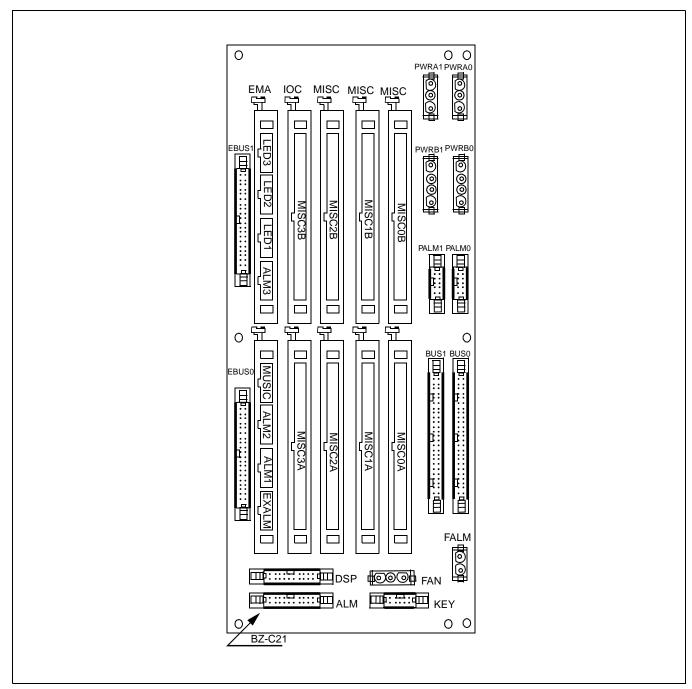


Figure 010-2 Locations of Connectors on the LPM Backplane

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Internal Cable Connections

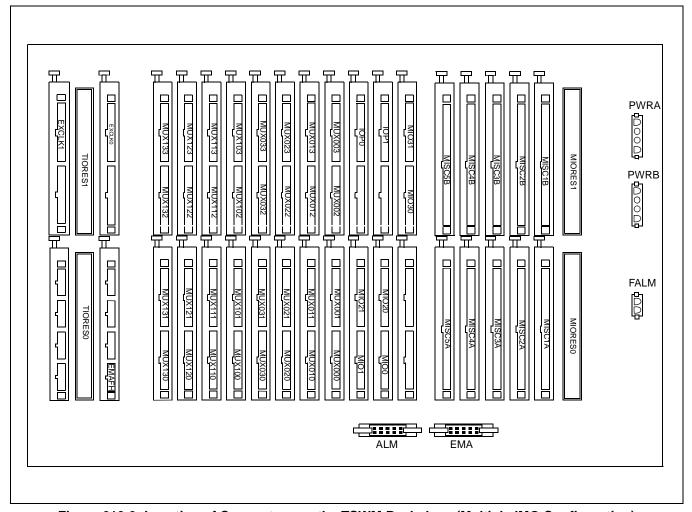


Figure 010-3 Location of Connectors on the TSWM Backplane (Multiple IMG Configuration)

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Internal Cable Connections

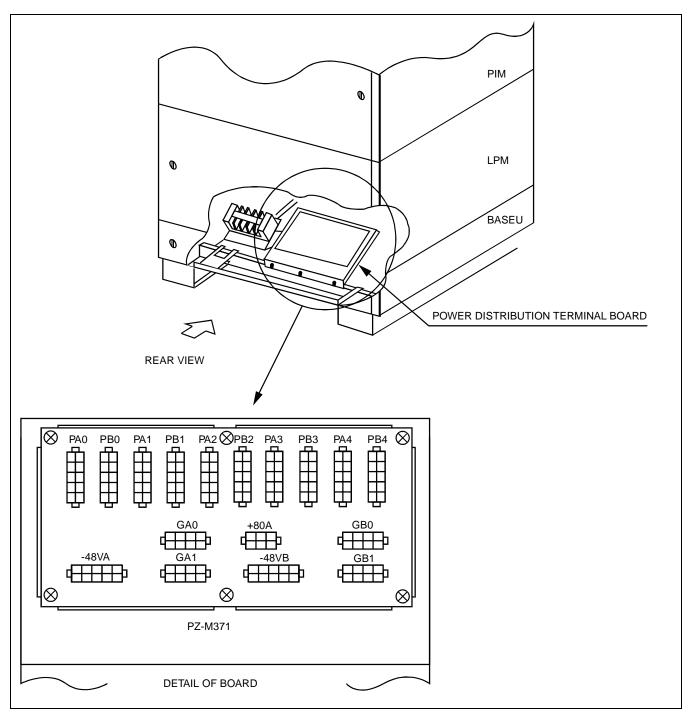


Figure 010-4 Locations of Connectors on the Power Distribution Terminal Board (PZ-M371)

NAP-200-010
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Internal Cable Connections

Referring to Figure 010-6, run the power cables. Then, fasten the cables to the cabinet, referring to Figure 010-5.

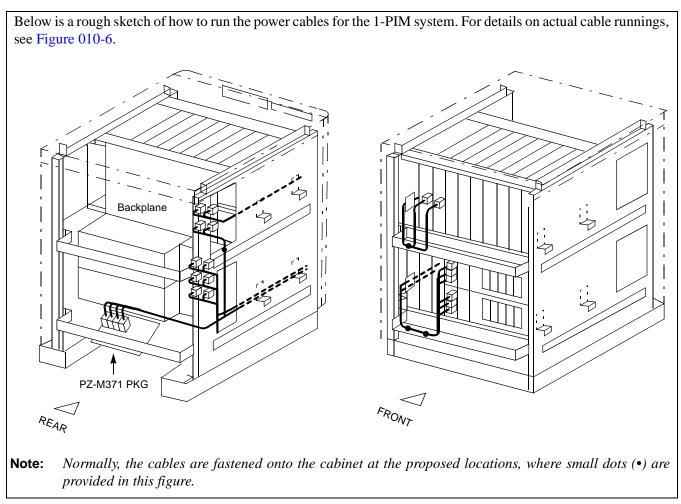


Figure 010-5 Power Cable Connections for 1-PIM System (Single IMG Configuration)

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Internal Cable Connections

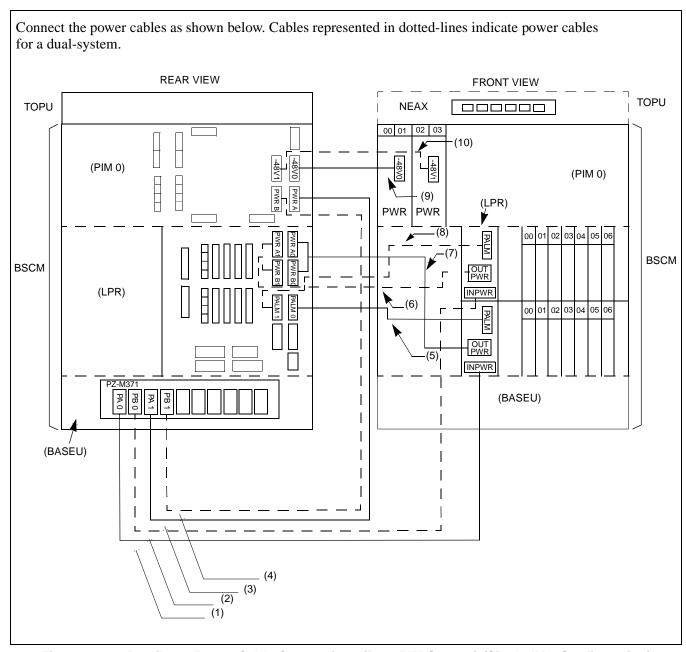


Figure 010-6 Details on Power Cable Connections (for 1-PIM System) (Single IMG Configuration)

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Internal Cable Connections

Table 010-2 Power Cable Connection for IMG0 (Single IMG Configuration)

	FROM		ТО			
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPR	INPWR	BASEU	PA0	4P-2P PWR CA-A	
2	LPR	INPWR	BASEU	PB0	4P-2P PWR CA-B	
3	BASEU	PA1	PIM0	PWR A	4P PWR CA-C	
4	BASEU	PB1	PIM0	PWR B	4P PWR CA-D	
5	LPR	PALM	LPR	PALM 0	10AL-(110) FLT CA	
6	LPR	OUT PWR	LPR	PWR A1/PWR B1	6P-(4P-3P) PWR CA-B	
7	LPR	OUT PWR	LPR	PWR A0/PWR B0	6P-(4P-3P) PWR CA-A	
8	LPR	PALM	LPR	PALM 1	10AL-(130) FLT CA	
9	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	-48V0
10	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1

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Internal Cable Connections

Referring to Figure 010-6, run the power cables. Then, fasten the cables to the cabinet, referring to Figure 010-7.

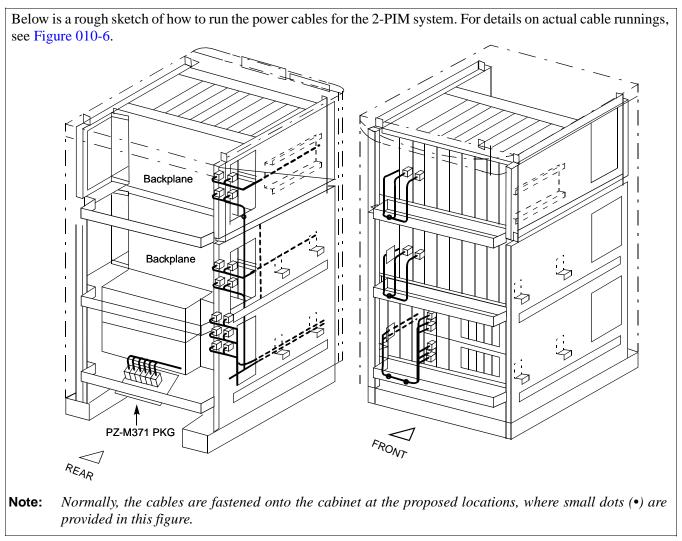


Figure 010-7 Power Cable Connections for 2-PIM System (Single IMG Configuration)

NAP-200-010
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Internal Cable Connections

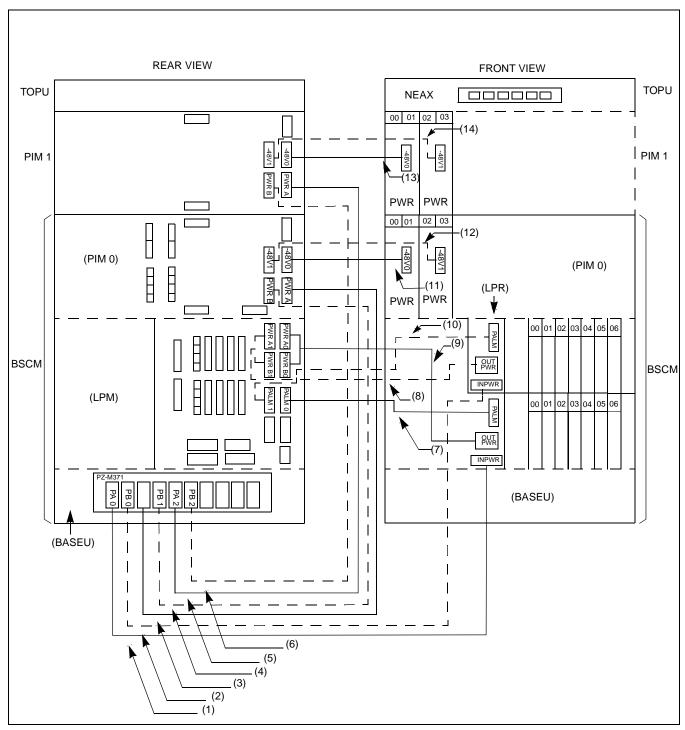


Figure 010-8 Details on Power Cable Connections (for 2-PIM System) (Single IMG Configuration)

NAP-200-0	10
Sheet 17/6	5
Internal Ca	ble Connections

Table 010-3 Power Cable Connections for 2-PIM System (Single IMG Configuration)

	FROM		то			
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPR	INPWR	BASEU	PA0	4P-2P PWR CA-A	
2	LPR	INPWR	BASEU	PB0	4P-2P 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	LPR	PALM	LPR	PALM 0	10AL-(110) FLT CA	
8	LPR	OUT PWR	LPR	PWR A1/PWR B1	6P-(4P-3P) PWR CA-B	
9	LPR	OUT PWR	LPR	PWR A0/PWR B0	6P-(4P-3P) PWR CA-A	
10	LPR	PALM	LPR	PALM 1	10AL-(130) FLT CA	
11	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	-48V0
12	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
13	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
14	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1

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Internal Cable Connections

Referring to Figure 010-10, run the power cables. Then, fasten the cables to the cabinet, referring to Figure 010-9.

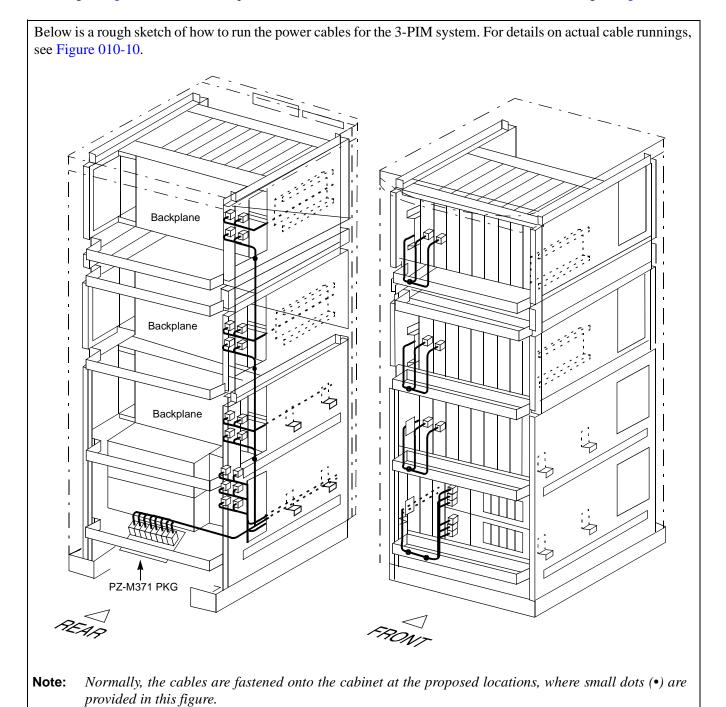


Figure 010-9 Power Cable Connections for 3-PIM System (Single IMG Configuration)

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Internal Cable Connections

Connect the power cables as shown below. Cables represented in dotted lines indicate power cables for a dualsystem. **REAR VIEW** FRONT VIEW TOPU NEAX **TOPU** 00 01 02 03 -48V0 PIM 2 PIM 2 _(17) PWR PWR **FANU FANU** 00 01 02 03 (16) PIM 1 PIM 1 **PWR PWR** 02 03 (14) (PIM 0) (PIM 0) 1 13) 1 PWR PWR (LPM) 1 OUT **BSCM BSCM** (10) (LPM) 00 01 02 03 04 05 06 (9) PB 0 BB PB ((BASEU) (BASEU)

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

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Internal Cable Connections

Table 010-4 Power Cable Connections for 3-PIM System (Single IMG Configuration)

	F	ROM		то		REMARKS
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	
1	LPR	INPWR	BASEU	PA0	4P-2P PWR CA-A	
2	LPR	INPWR	BASEU	PB0	4P-2P 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	LPR	PALM	LPR	PALM 0	10AL-(110) FLT CA	
10	LPR	OUT PWR	LPR	PWR A1/PWR B1	6P-(4P-3P) PWR CA-B	
11	LPR	OUT PWR	LPR	PWR A0/PWR B0	6P-(4P-3P) PWR CA-A	
12	LPR	PALM	LPR	PALM 1	10AL-(130) FLT CA	
13	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	-48V0
14	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
15	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
16	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1
17	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	-48V0
18	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	-48V1

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Internal Cable Connections

Referring to Figure 010-12, run the power cables. Then, fasten the cables to the cabinet, referring to Figure 010-11.

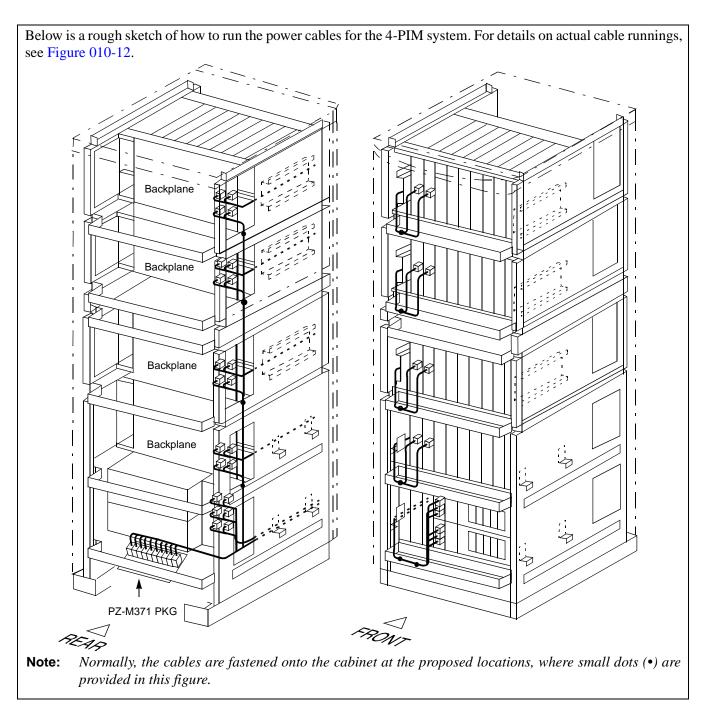


Figure 010-11 Power Cable Connections for 4-PIM System (Single IMG Configuration)

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Internal Cable Connections

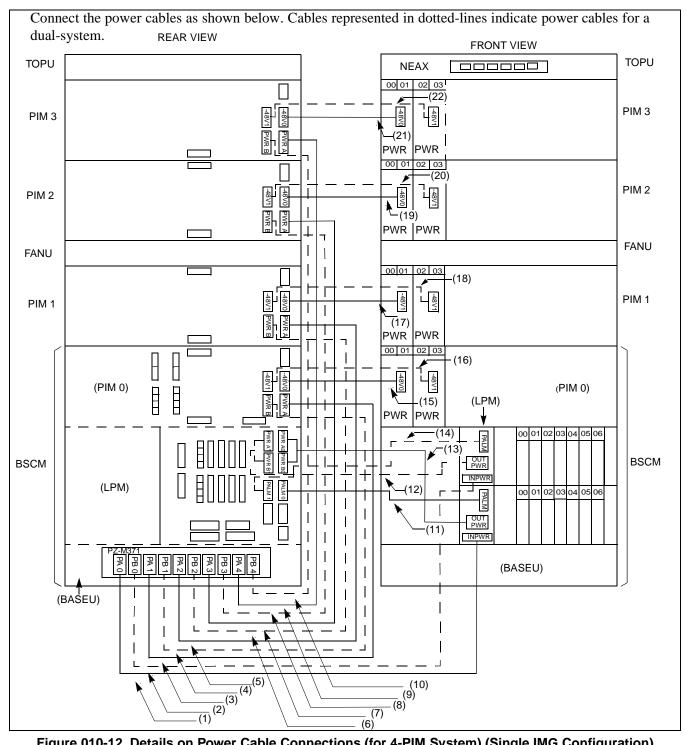


Figure 010-12 Details on Power Cable Connections (for 4-PIM System) (Single IMG Configuration)

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Internal Cable Connections	

Table 010-5 Power Cable Connections for 4-PIM System (Single IMG Configuration)

	FROM		то			
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPR	INPWR	BASEU	PA0	4P-2P PWR CA-A	
2	LPR	INPWR	BASEU	PB0	4P-2P 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	LPR	PALM	LPR	PALM 0	10AL-(110) FLT CA	
12	LPR	OUT PWR	LPR	PWR A1/PWR B1	6P-(4P-3P) PWR CA-B	
13	LPR	OUT PWR	LPR	PWR A0/PWR B0	6P-(4P-3P) PWR CA-A	
14	LPR	PALM	LPR	PALM 1	10AL-(130) FLT CA	
15	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	-48V0
16	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
17	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
18	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1
19	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	-48V0
20	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	-48V1
21	PIM3 (PWR)	-48V IN CONN	PIM3	-48V0	3P PWR CA-A	-48V0
22	PIM3 (PWR)	-48V IN CONN	PIM3	-48V1	3P PWR CA-B	-48V1

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Internal Cable Connections

Run the internal power cables, referring to Figure 010-13 through Figure 010-26.

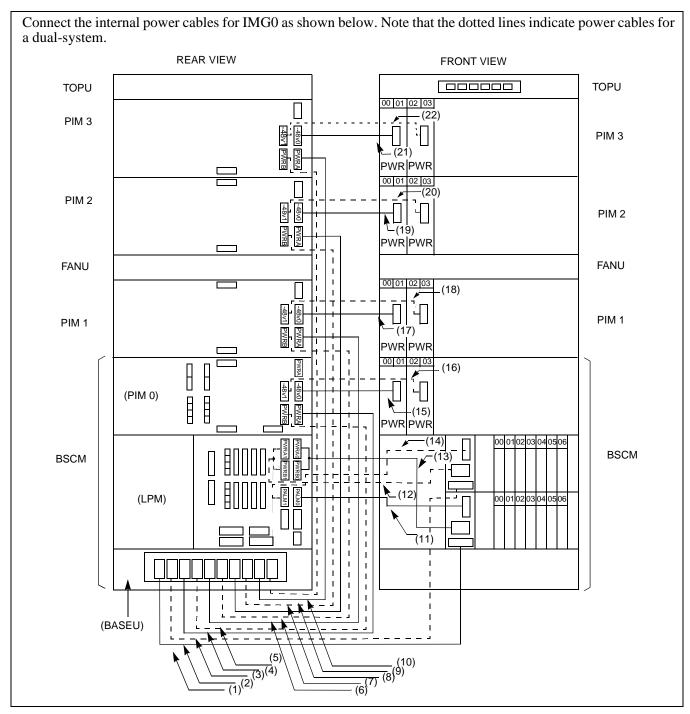


Figure 010-13 Power Cable Connection for IMG0 (Multiple IMG Configuration)

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Internal Cable Connections

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPM	INPWR	BASEU	PA0	4P-2P PWR CA-A	
2	LPM	INPWR	BASEU	PB0	4P-2P 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	LPM	PALM	LPM	PALM0	10AL-(110) FLT CA	
12	LPM	OUTPWR	LPM	PWR A1/PWR	6P-(4P-3P) PWR CA-B	
13	LPM	OUTPWR	LPM	PWR A0/PWR	6P-(4P-3P) PWR CA-A	
14	LPM	PALM	LPM	PALM1	10AL-(130) FLT CA	
15	PIM0 (PWR)	-48V IN CONN	PIM0	-48V0	3P PWR CA-A	-48V0
16	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
17	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
18	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1
19	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	-48V0
20	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	-48V1
21	PIM3 (PWR)	-48V IN CONN	PIM3	-48V0	3P PWR CA-A	-48V0
22	PIM3 (PWR)	-48V IN CONN	PIM3	-48V1	3P PWR CA-B	-48V1

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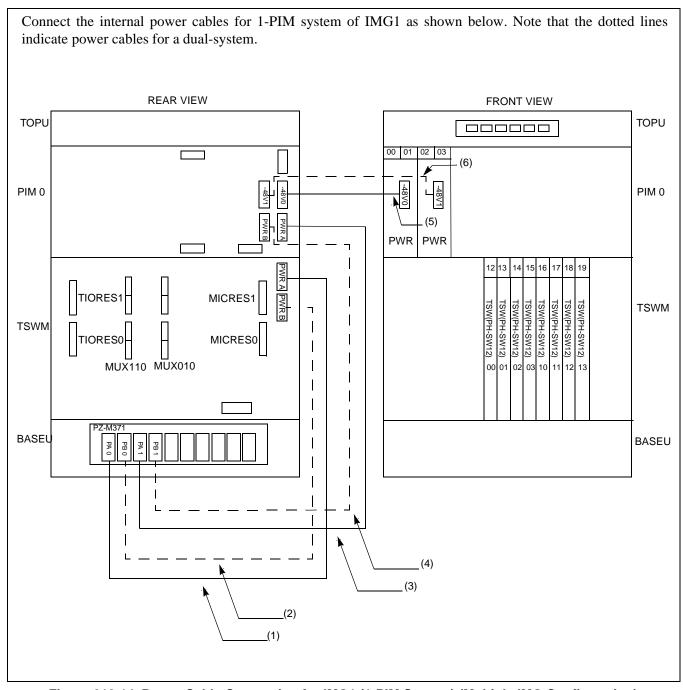


Figure 010-14 Power Cable Connection for IMG1 (1-PIM System) (Multiple IMG Configuration)

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	-48V0
6	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1

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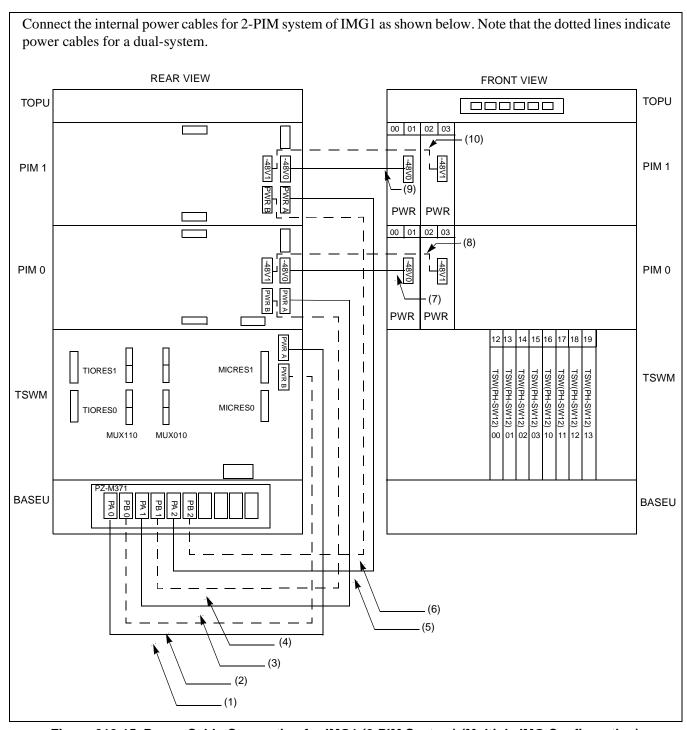


Figure 010-15 Power Cable Connection for IMG1 (2-PIM System) (Multiple IMG Configuration)

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	-48V0
8	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
9	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
10	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1

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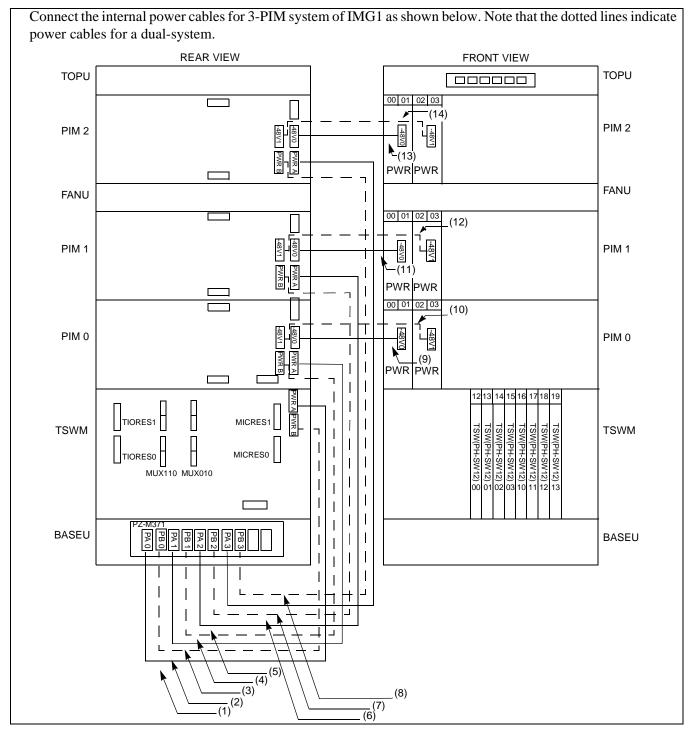


Figure 010-16 Power Cable Connection for IMG1 (3-PIM System) (Multiple IMG Configuration)

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

	FROM		ТО			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	-48V0
10	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
11	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
12	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1
13	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	-48V0
14	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	-48V1

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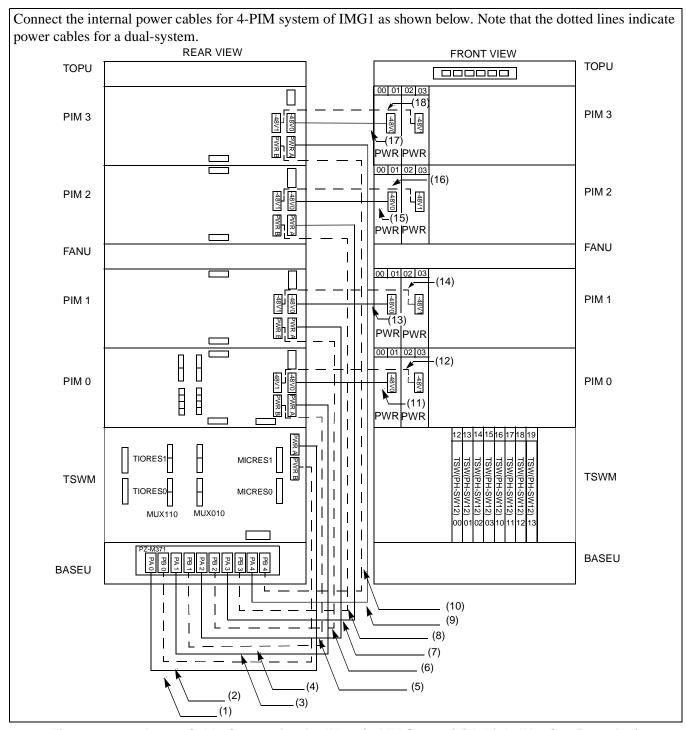


Figure 010-17 Power Cable Connection for IMG1 (4-PIM System) (Multiple IMG Configuration)

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Internal Cable Connections	

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	-48V0
12	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
13	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
14	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1
15	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	-48V0
16	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	-48V1
17	PIM3 (PWR)	-48V IN CONN	PIM3	-48V0	3P PWR CA-A	-48V0
18	PIM3 (PWR)	-48V IN CONN	PIM3	-48V1	3P PWR CA-B	-48V1

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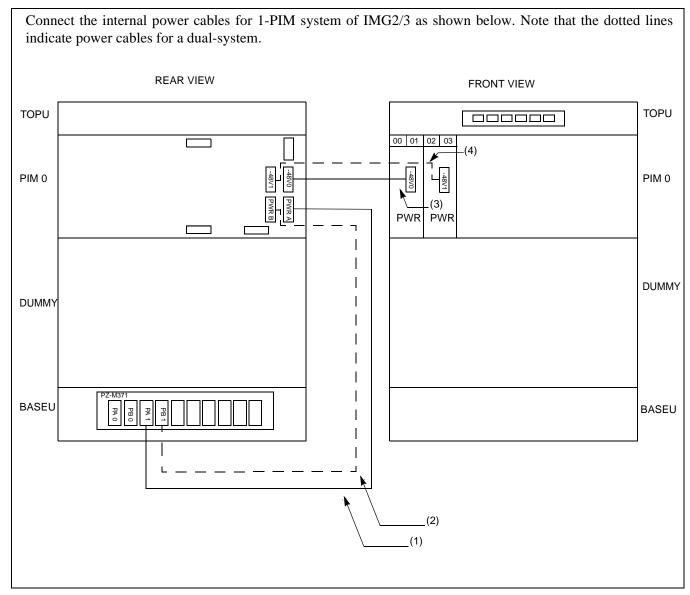


Figure 010-18 Power Cable Connection for IMG2/3 (1-PIM System) (Multiple IMG Configuration)

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Internal Cable Connections

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

No.	FROM		то			
	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME R	REMARKS
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	-48V0
4	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1

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Connect the internal power cables for 2-PIM system of IMG2/3 as shown below. Note that the dotted lines indicate power cables for a dual-system. **REAR VIEW** FRONT VIEW TOPU TOPU 00 01 02 03 PIM 1 PIM 1 PWR PWR 00 01 02 03 PIM 0 PIM 0 **DUMMY** DUMMY BASEU BASEU (4)(3) (2) (1)

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

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Internal Cable Connections

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

No.	FROM		ТО			
	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	-48V0
6	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
7	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
8	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1

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Internal Cable Connections

Connect the internal power cables for 3-PIM system of IMG2/3 as shown below. Note that the dotted lines indicate power cables for a dual-system. **REAR VIEW** FRONT VIEW TOPU TOPU 00 01 02 03 PIM 2 PIM 2 PWR PWR **FANU FANU** 00 01 02 03 (10)-48V0 (9) PIM 1 PIM 1 PWR PWR 00 01 02 03 .(8) PIM 0 PIM 0 PWR PWR DUMMY **DUMMY BASEU** BASEU ┙ (5) _ (4) (2) (3)

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

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Internal Cable Connections

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	-48V0
8	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
9	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
10	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1
11	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	-48V0
12	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	-48V1

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Internal Cable Connections

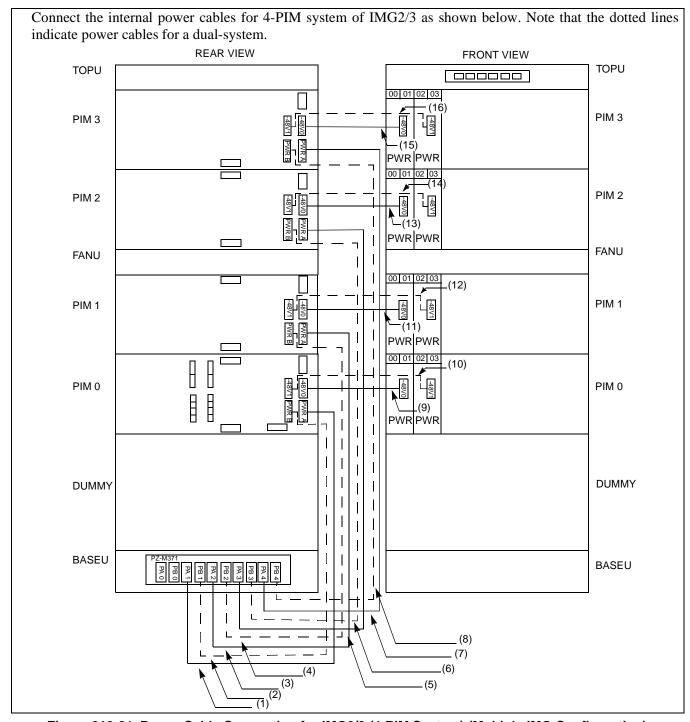


Figure 010-21 Power Cable Connection for IMG2/3 (4-PIM System) (Multiple IMG Configuration)

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Internal Cable Connections

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

	FROM		ТО			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	-48V0
10	PIM0 (PWR)	-48V IN CONN	PIM0	-48V1	3P PWR CA-B	-48V1
11	PIM1 (PWR)	-48V IN CONN	PIM1	-48V0	3P PWR CA-A	-48V0
12	PIM1 (PWR)	-48V IN CONN	PIM1	-48V1	3P PWR CA-B	-48V1
13	PIM2 (PWR)	-48V IN CONN	PIM2	-48V0	3P PWR CA-A	-48V0
14	PIM2 (PWR)	-48V IN CONN	PIM2	-48V1	3P PWR CA-B	-48V1
15	PIM3 (PWR)	-48V IN CONN	PIM3	-48V0	3P PWR CA-A	-48V0
16	PIM3 (PWR)	-48V IN CONN	PIM3	-48V1	3P PWR CA-B	-48V1

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Internal Cable Connections	

Run the bus cables, referring to Figure 010-23. Then, fasten the cables to the cabinet, referring to Figure 010-22.

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

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

Figure 010-22 Bus Cable Connections for 1-PIM System (Single IMG Configuration)

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Internal Cable Connections

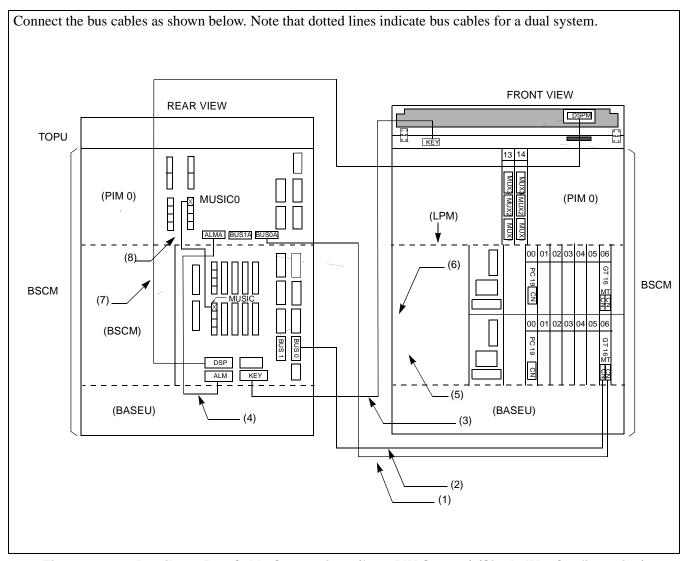


Figure 010-23 Details on Bus Cable Connections (for 1-PIM System) (Single IMG Configuration)

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

	FROM		Т	О		
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPR (GT 16)	CN-T (Front Connector)	PIM0	BUS0A	50-40 GT BUS CA-A	
2	LPR (GT 16)	CN-M (Front Connector)	LPR	BUS0	EXGT BUS CA-A	
3	LPR	KEY	TOPU	KEY	10AL-(260) FLT CA	
4	LPR	ALM	PIM0	ALMA	20AL-(60) FLT CA	
5	LPR (GT 16)	CN-M (Front Connector)	LPR	BUS1	EXGT BUS CA-A	
6	LPR (GT 16)	CN-T (Front Connector)	PIM0	BUS1A	50-40 GT BUS CA-A	
7	LPR	DSP	TOPU	DSPM	20AL-(270) FLT CA	
8	LPR	MUSIC	PIM0	MUSIC0	16PH MOH CA (1)	

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Internal Cable Connections

Referring to Figure 010-25, run the bus cables. Then, fasten the cables to the cabinet, referring to Figure 010-24.

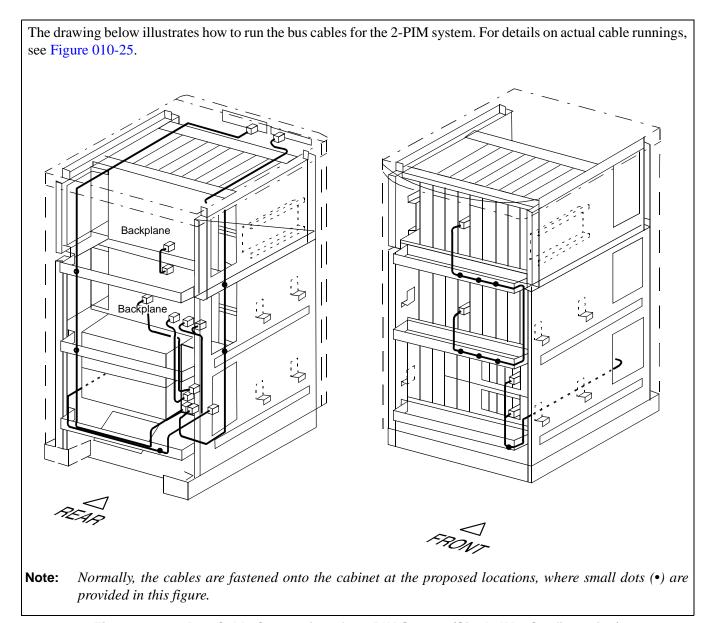


Figure 010-24 Bus Cable Connections for 2-PIM System (Single IMG Configuration)

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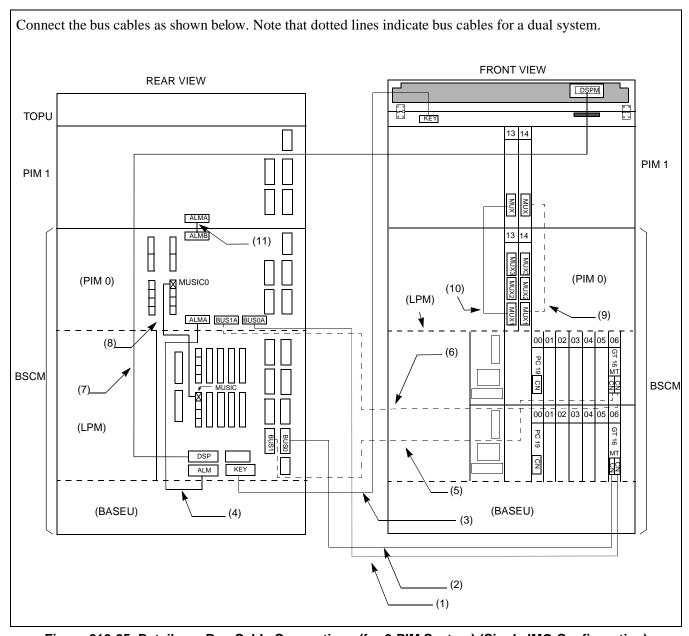


Figure 010-25 Details on Bus Cable Connections (for 2-PIM System) (Single IMG Configuration)

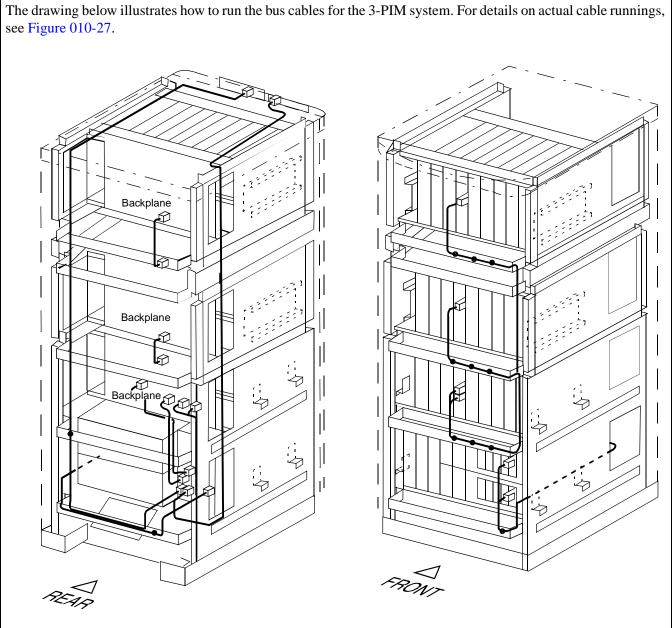
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Internal C	able Connections

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

	Fi	ROM	T	О		
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPR	CN-T (Front Connector)	PIM0	BUS0A	50-40 GT BUS CA-A	
2	LPR	CN-M (Front Connector)	LPR	BUS0	EXGT BUS CA-A	
3	LPR	KEY	TOPU	KEY	10AL-(260) FLT CA	
4	LPR	ALM	PIM0	ALMA	20AL-(60) FLT CA	
5	LPR (GT 16)	CN-M (Front Connector)	LPR	BUS1	EXGT BUS CA-A	
6	LPR (GT 16)	CN-T (Front Connector)	PIM0	BUS1A	50-40 GT BUS CA-A	
7	LPR	DSP	TOPU	DSPM	20AL-(270) FLT CA	
8	LPR	MUSIC	PIM0	MUSIC0	16PH MOH CA (1)	
9	PIM0	MUX1	PIM1	MUX	MT24 TSW CA-90	
10	PIM0	MUX1	PIM1	MUX	MT24 TSW CA-90	
11	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	

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Internal Cable Connections	

Referring to Figure 010-27, run the bus cables. Then, fasten the cables to the cabinet, referring to Figure 010-26.



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

Figure 010-26 Bus Cable Connections for 3-PIM System (Single IMG Configuration)

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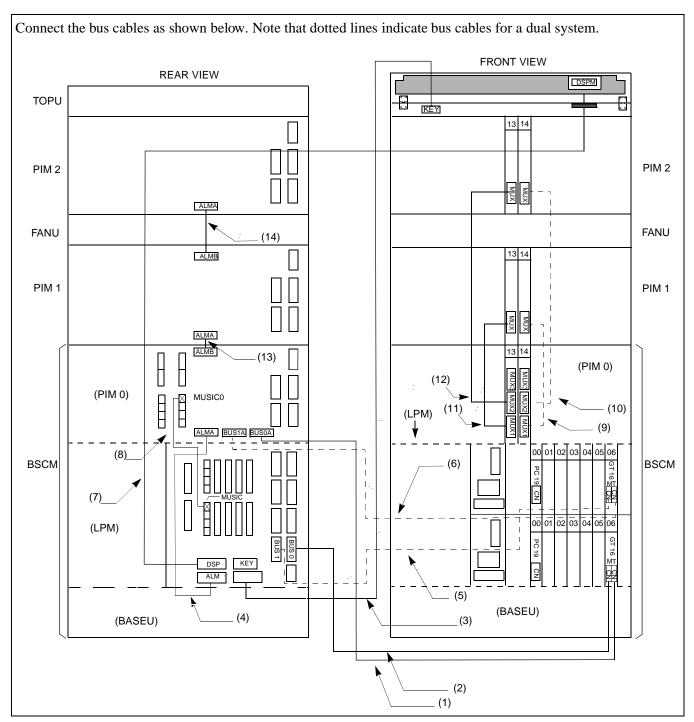


Figure 010-27 Details on Bus Cable Connections (for 3-PIM System) (Single IMG Configuration)

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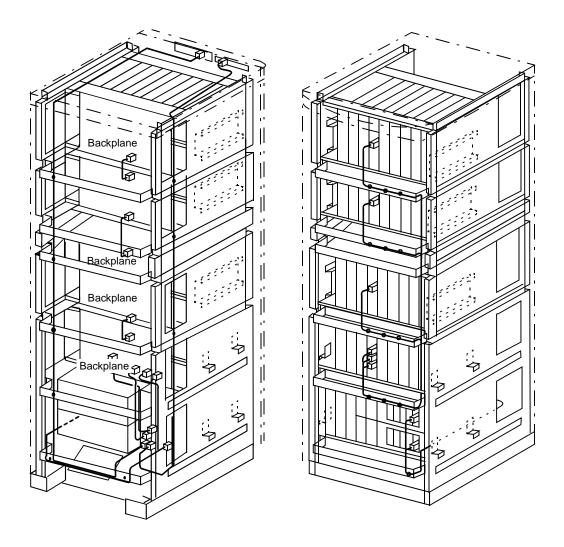
Table 010-17 Bus Cable Connections for 3-PIM System (Single IMG Configuration)

	FR	ROM	то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPR	CN-T (Front Connector)	PIM0	BUS0A	50-40 GT BUS CA-A	
2	LPR	CN-M (Front Connector)	LPR	BUS0	EXGT BUS CA-A	
3	LPR	KEY	TOPU	KEY	10AL-(260) FLT CA	
4	LPR	ALM	PIM0	ALMA	20AL-(60) FLT CA	
5	LPR (GT 16)	CN-M (Front Connector)	LPR	BUS1	EXGT BUS CA-A	
6	LPR (GT 16)	CN-T (Front Connector)	PIM0	BUS1A	50-40 GT BUS CA-A	
7	LPR	DSP	TOPU	DSPM	20AL-(270) FLT CA	
8	LPR	MUSIC	PIM0	MUSIC0	16PH MOH CA (1)	
9	PIM0	MUX1	PIM1	MUX	MT24 TSW CA-90	
10	PIM0	MUX2	PIM2	MUX	MT24 TSW CA-140	
11	PIM0	MUX1	PIM1	MUX	MT24 TSW CA-90	
12	PIM0	MUX2	PIM2	MUX	MT24 TSW CA-140	
13	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
14	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	

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Referring to Figure 010-29, run the bus cables. Then, fasten the cables to the cabinet, referring to Figure 010-28.

The drawing below illustrates how to run the bus cables for the 3-PIM system. For details on actual cable runnings, see Figure 010-29.



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

Figure 010-28 Bus Cable Connections for 4-PIM System (Single IMG Configuration)

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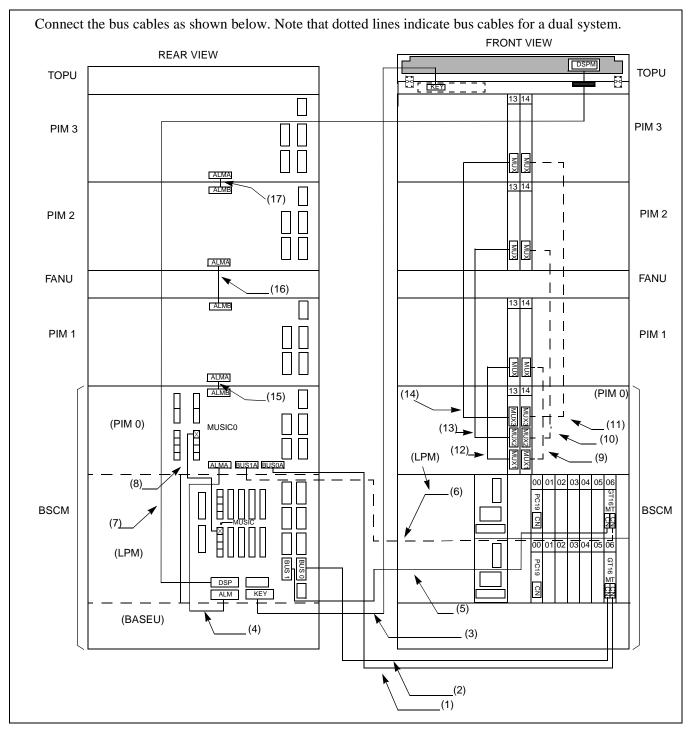


Figure 010-29 Details on Bus Cable Connections (for 4-PIM System) (Single IMG Configuration)

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Internal Cable Connections

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

	F	FROM	Т	О		
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPR	CN-T (Front Connector)	PIM0	BUS0A	50-40 GT BUS CA-A	
2	LPR	CN-M (Front Connector)	LPR	BUS0	EXGT BUS CA-A	
3	LPR	KEY	TOPU	KEY	10AL-(260) FLT CA	
4	LPR	ALM	PIM0	ALMA	20AL-(60) FLT CA	
5	LPR (GT 16)	CN-M (Front Connector)	LPR	BUS1	EXGT BUS CA-A	
6	LPR (GT 16)	CN-T (Front Connector)	PIM0	BUS1A	50-40 GT BUS CA-A	
7	LPR	DSP	TOPU	DSPM	20AL-(270) FLT CA	
8	LPR	MUSIC	PIM0	MUSIC0	16PH MOH CA (1)	
9	PIM0	MUX1	PIM1	MUX	MT24 TSW CA-90	
10	PIM0	MUX2	PIM2	MUX	MT24 TSW CA-140	
11	PIM0	MUX3	PIM3	MUX	MT24 TSW CA-180	
12	PIM0	MUX1	PIM1	MUX	MT24 TSW CA-90	
13	PIM0	MUX2	PIM2	MUX	MT24 TSW CA-140	
14	PIM0	MUX3	PIM3	MUX	MT24 TSW CA-180	
15	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
16	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	
17	PIM2	ALMB	PIM3	ALMA	20AL-(10) FLT CA	

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Internal Cable Connections

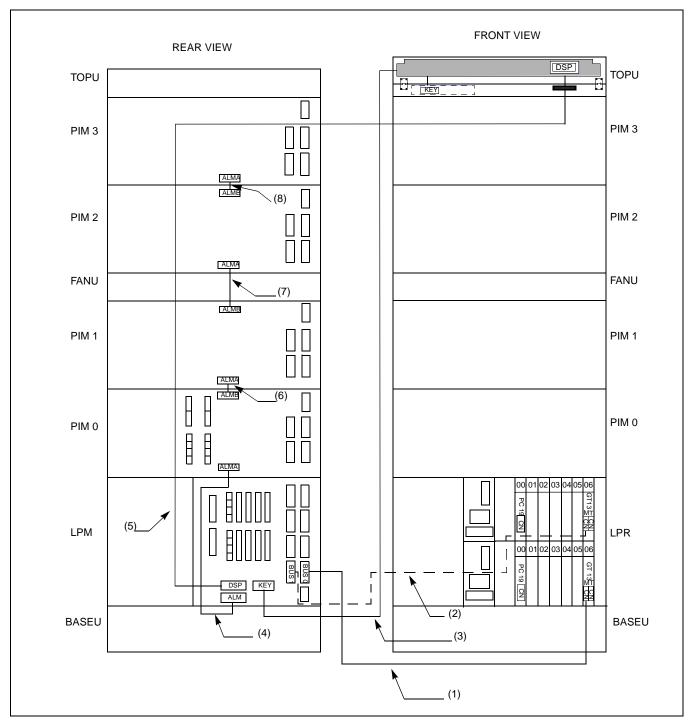


Figure 010-30 Internal Bus Cable Connection for IMG0 (Multiple IMG Configuration)

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Internal Cable Connections	

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

No.	FROM		то			
	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME I	REMARKS
1	LPM (CPU0)	CN-M	LPM	BUS0	EXGT BUS CA-A	
2	LPM (CPU1)	CN-M	LPM	BUS1	EXGT BUS CA-A	
3	LPM	KEY	TOPU	KEY	10AL-(260) FLT CA	
4	LPM	ALM	PIM0	ALMA	20AL-(60) FLT CA	
5	LPM	DSP	TOPU	DSPL	20AL-(270) FLT CA	
6	PIM0	ALMB	PIM1	ALMA	20AL-(10) FLT CA	
7	PIM1	ALMB	PIM2	ALMA	20AL-(20) FLT CA	
8	PIM2	ALMB	PIM3	ALMA	20AL-(10) FLT CA	

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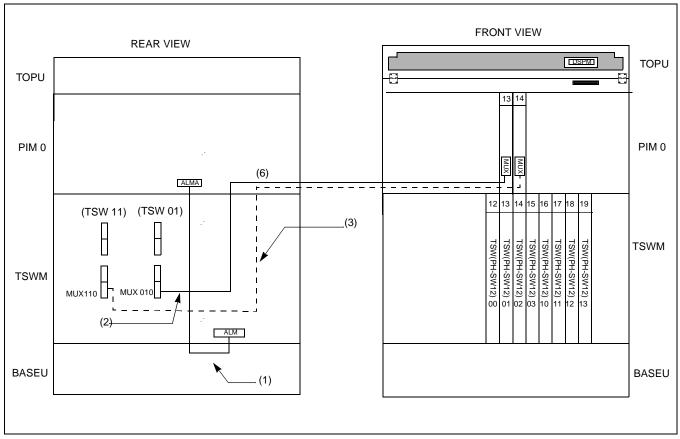


Figure 010-31 Internal Bus Cable Connection for IMG1 (1-PIM System)
(Multiple IMG Configuration)

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

No.	FROM		ТО			
	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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

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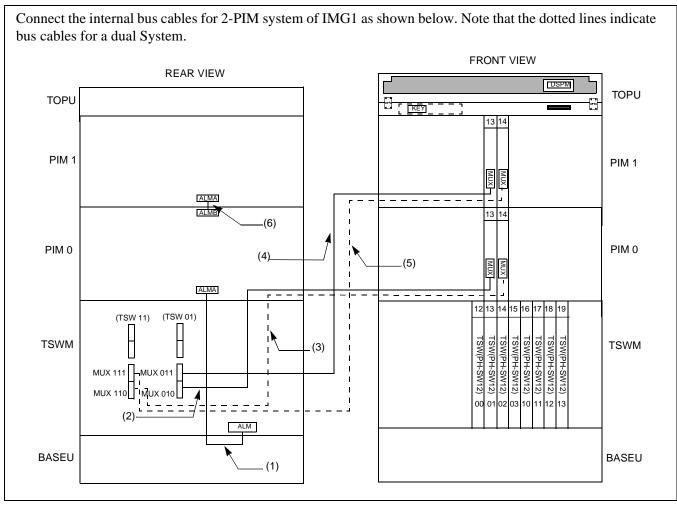


Figure 010-32 Internal Bus Cable Connection for IMG1 (2-PIM System)
(Multiple IMG Configuration)

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	

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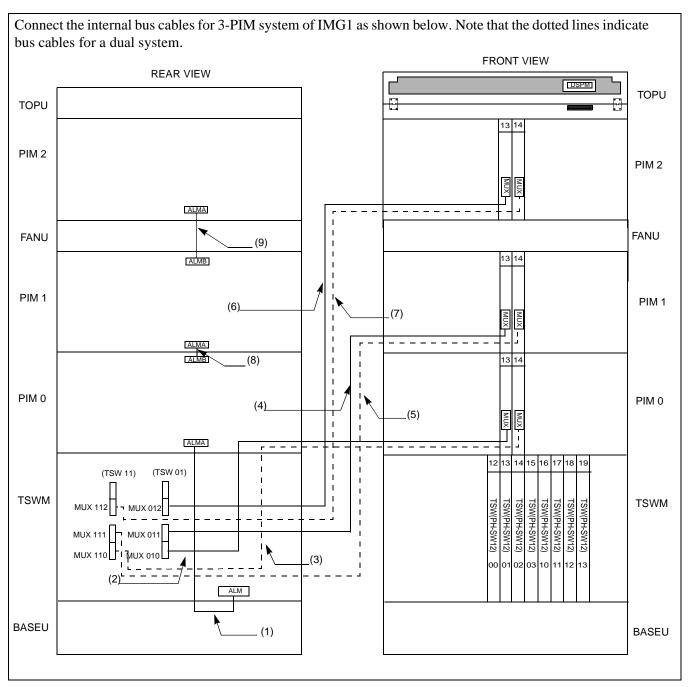


Figure 010-33 Internal Bus Cable Connection for IMG1 (3-PIM System) (Multiple IMG Configuration)

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Internal Cable Connections

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	

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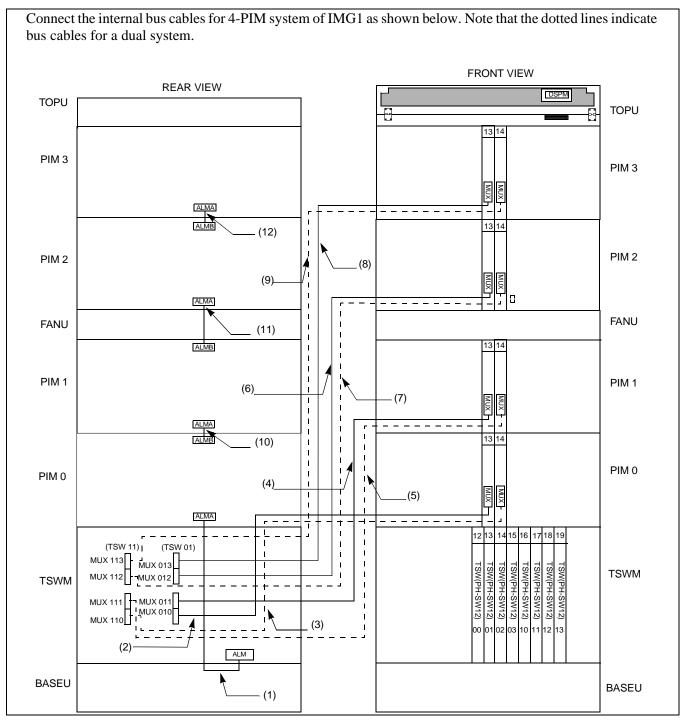


Figure 010-34 Internal Bus Cable Connection for IMG1 (4-PIM System) (Multiple IMG Configuration)

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Internal Cable Connections

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

	FROM		ТО			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	

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Internal Cable Connections

Figures 010-35 through 010-37 show how to run the internal bus cables for IMG2/3. Because bus cables for the 1-PIM system adopt inter-frame connections with other cabinets (IMG0 and 1), explanations are given here about the 2-PIM configuration or more.

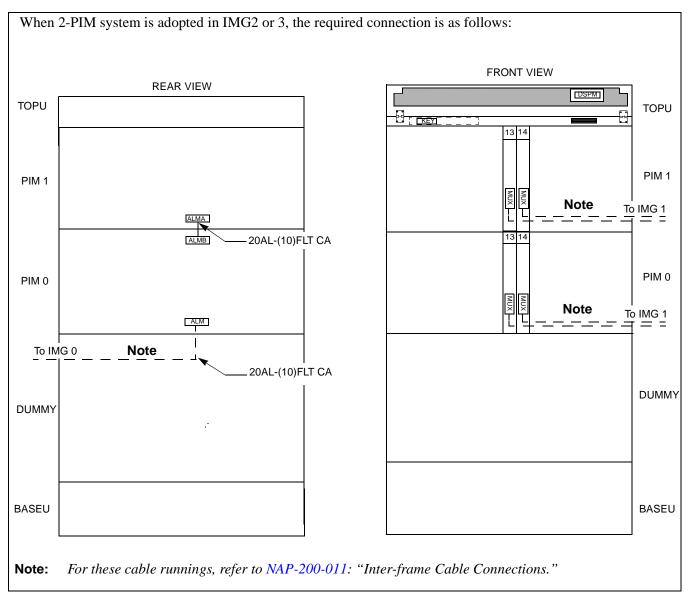


Figure 010-35 Internal Bus Cable Connection for IMG2/3 (2-PIM System)
(Multiple IMG Configuration)

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Internal Cable Connections

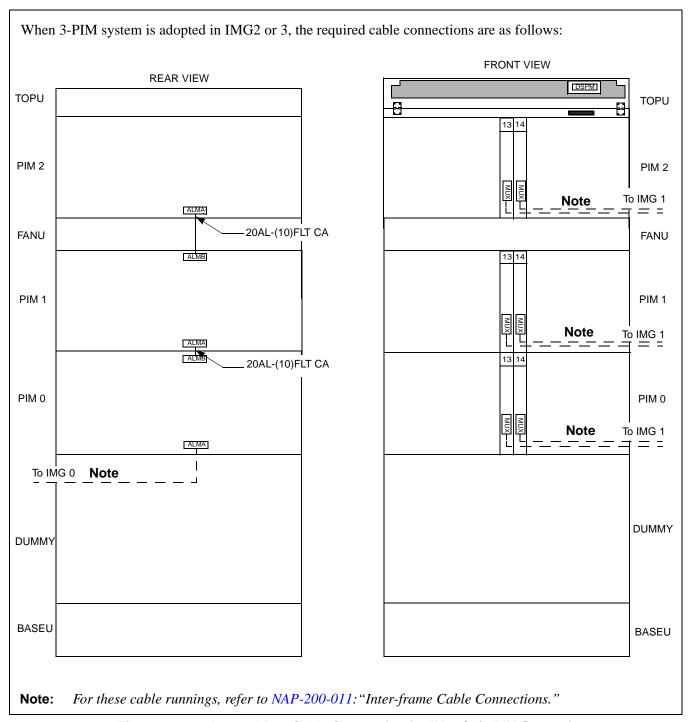


Figure 010-36 Internal Bus Cable Connection for IMG2/3 (3-PIM System)
(Multiple IMG Configuration)

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Internal Cable Connections

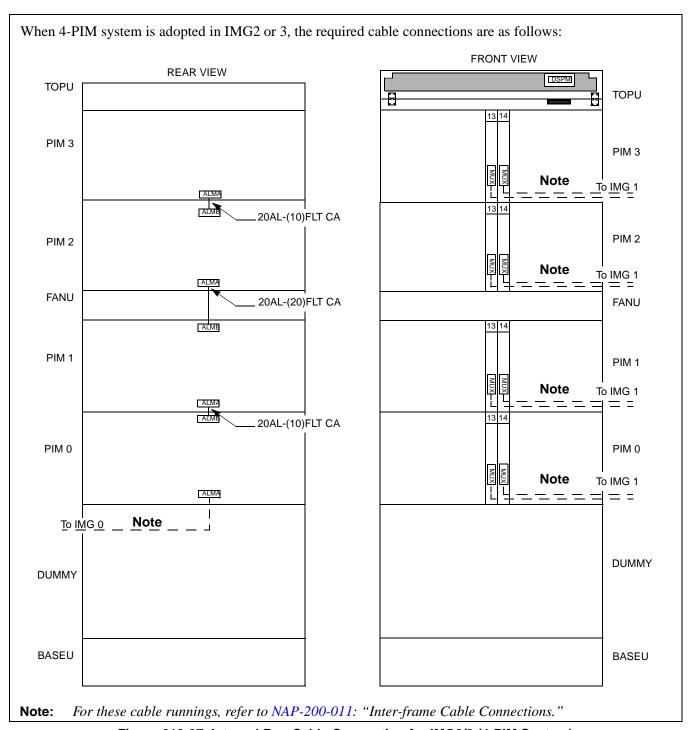


Figure 010-37 Internal Bus Cable Connection for IMG2/3 (4-PIM System) (Multiple IMG Configuration)

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Inter-Frame Cable Connections	Multiple IMG Configuration

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

ST	<u>ART</u>		
		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.
F	ND		

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Inter-Frame Cable Connections	Multiple IMG Configuration

Connect the inter-frame ISA bus cables as shown below. Note that the dotted line indicates the bus cable for a dual system. IMG 1 IMG 0 TOPU TOPU 06 (GT1) GT 13 PZ-PW02 IOP0 (2) м Т СИ Об **TSWM** - LPM GT 13 M T PZ-PW02 CPU0 (1) BASEU **BASEU REAR VIEW** FRONT VIEW

Figure 011-1 Inter-Frame ISA Bus Cable Connection for IMG0-IMG1

Table 011-1 Inter-Frame ISA Bus Cable Connection for IMG0-IMG1

	FR	ОМ		то		
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPM (CPU0)	CN-T	TSWM	IOP0 (Slot 11)	34PH 50AL CA-A	GT1
2	LPM (CPU1)	CN-T	TSWM	IOP1 (Slot 10)	34PH 50AL CA-A	GT0

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Inter-Frame Cable Connections	Multiple IMG Configuration

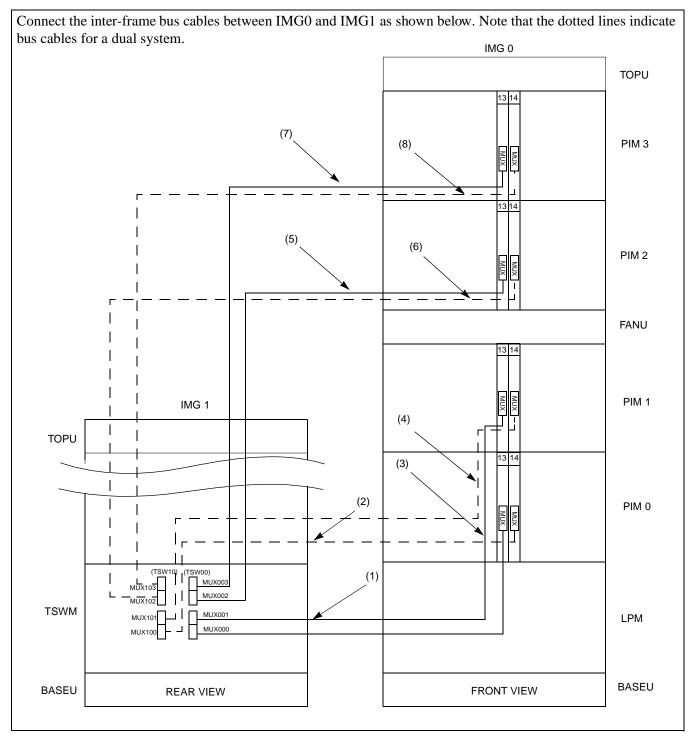


Figure 011-2 Inter-Frame Bus Cable Connection for IMG0-IMG1

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Inter-Frame Cable Connections	Multiple IMG Configuration

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

	FR	ОМ	7	го		
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/ MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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

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

Connect the inter-frame bus cables between IMG1 and IMG2 (1-PIM system) as shown below. Note that the dotted line indicates the bus cable for a dual system. IMG 1 IMG 2 TOPU TOPU (2) PIM 0 (TSW12) (TSW02) (1) **TSWM** DUMMY BASEU BASEU **REAR VIEW** FRONT VIEW

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

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

	FRO	OM	7	ТО			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS	
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	

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

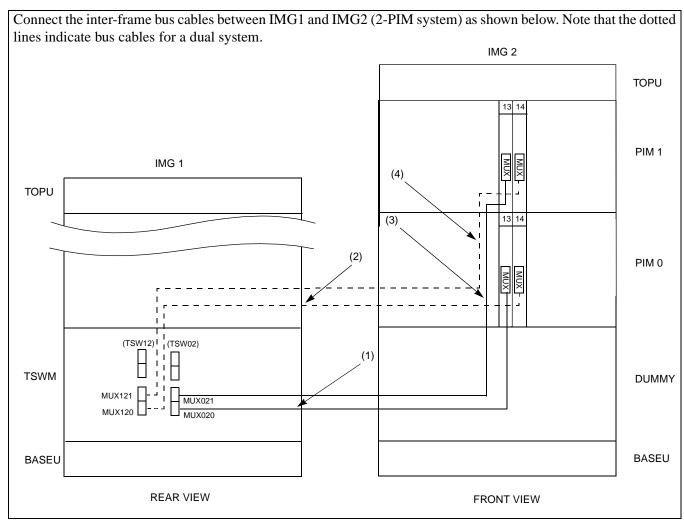


Figure 011-4 Inter-Frame Bus Cable Connection for IMG1-IMG2 (2-PIM System)

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

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

	FR	ОМ	7	ГО		
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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

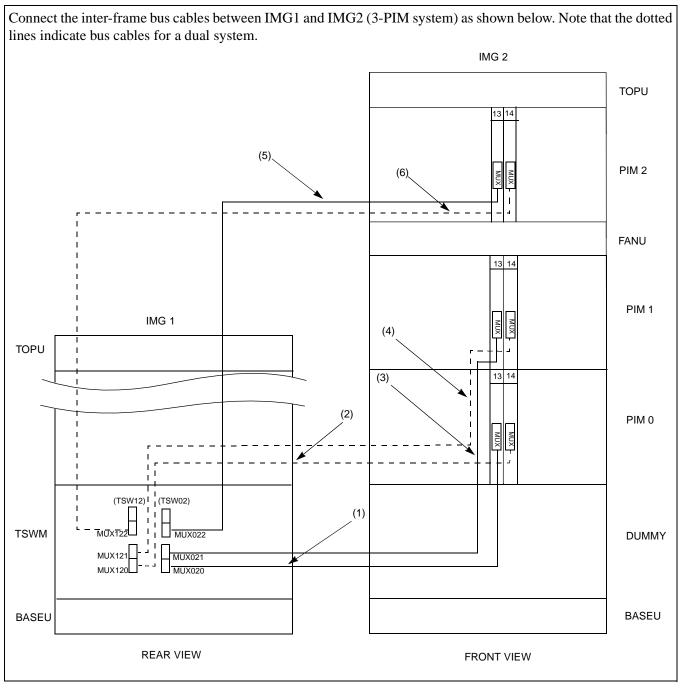


Figure 011-5 Inter-Frame Bus Cable Connection for IMG1-IMG2 (3-PIM System)

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

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

	FR	ОМ	7	го		
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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

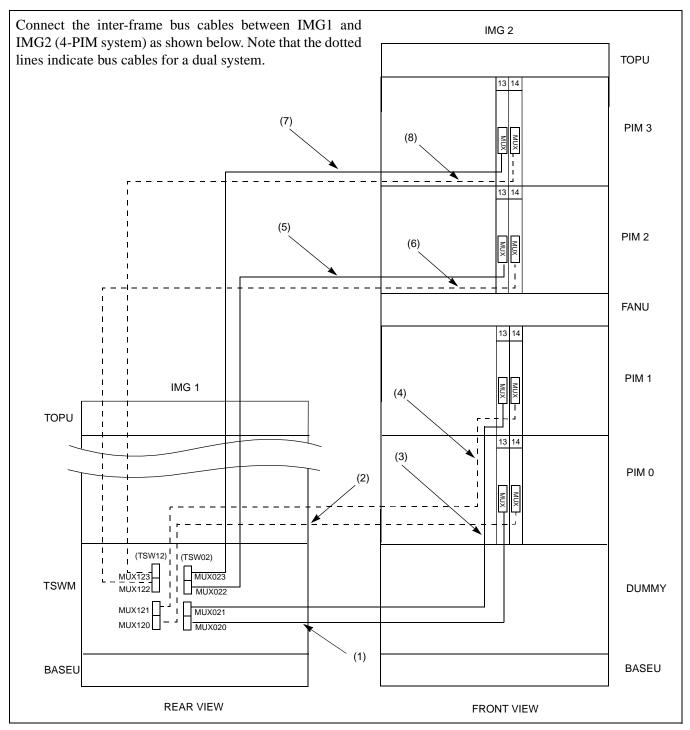


Figure 011-6 Inter-Frame Bus Cable Connection for IMG1-IMG2 (4-PIM System)

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

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

	FROM		ТО			
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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

Connect the inter-frame bus cables between IMG1 and IMG3 (1-PIM system) as shown below. Note that the dotted line indicates the bus cable for a dual system.

IMG 1

TOPU

(2)

(3)

(1)

TSWM

MUX130

MUX030

BASEU

REAR VIEW

FRONT VIEW

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

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

	FROM		7	го		
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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	
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Inter-Frame Cable Connections	Multiple IMG Configuration

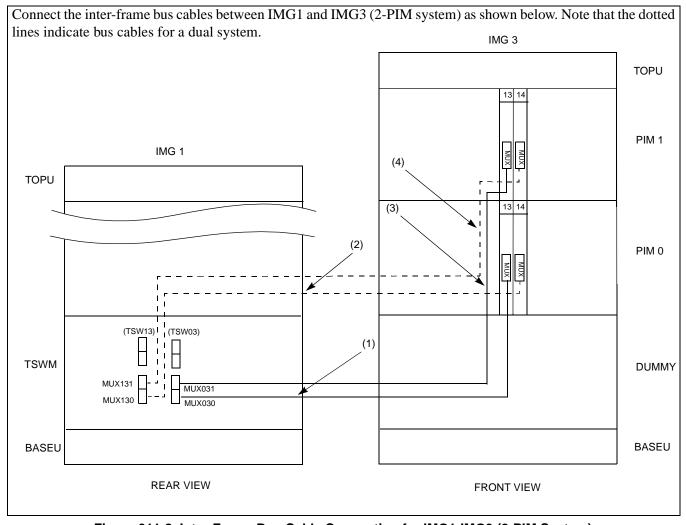


Figure 011-8 Inter-Frame Bus Cable Connection for IMG1-IMG3 (2-PIM System)

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

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

	FR	ОМ	1	то			
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS	
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	

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

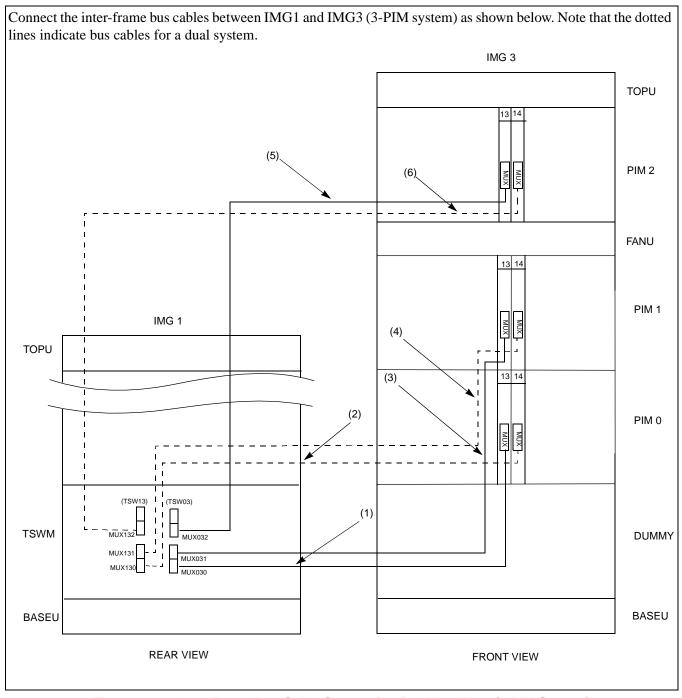


Figure 011-9 Inter-Frame Bus Cable Connection for IMG1-IMG3 (3-PIM System)

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

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

	FROM		ТО			
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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

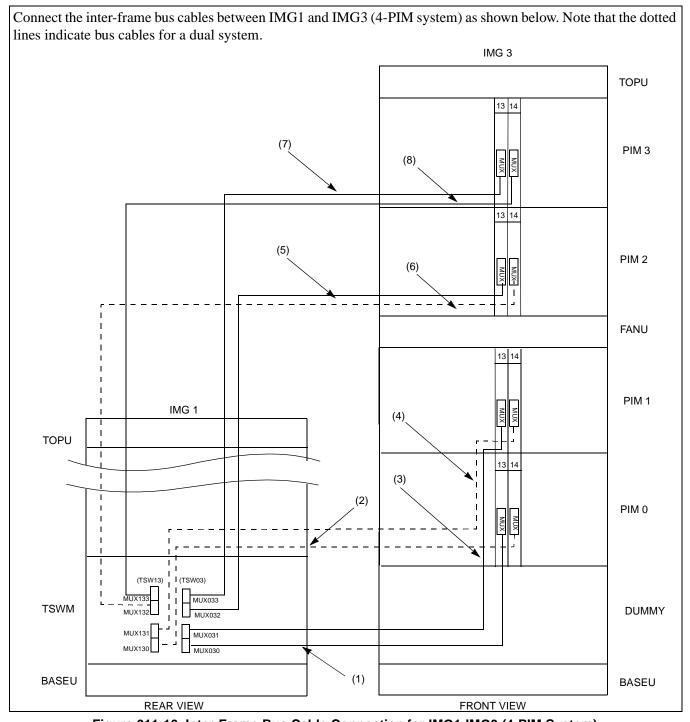


Figure 011-10 Inter-Frame Bus Cable Connection for IMG1-IMG3 (4-PIM System)

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

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

	FROM		ТО			
No.	UNIT/ MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
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

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

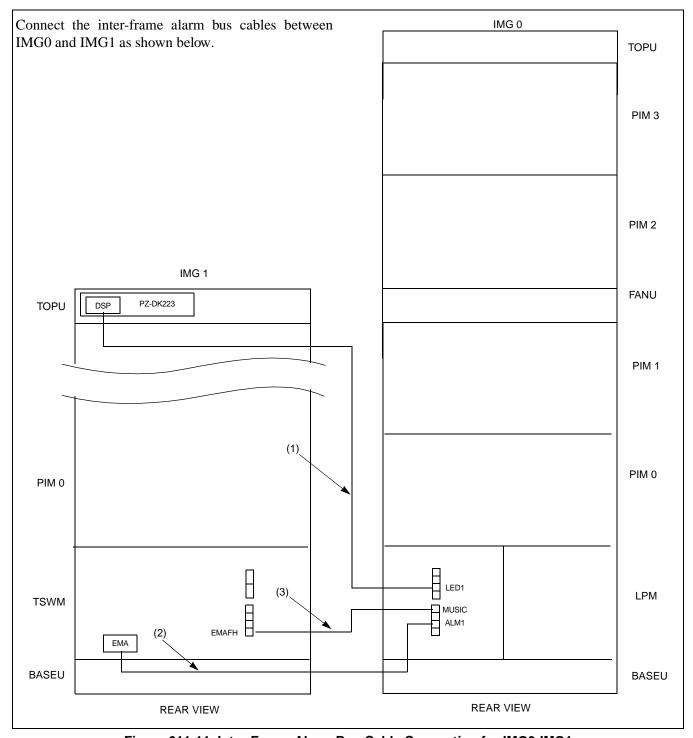


Figure 011-11 Inter-Frame Alarm Bus Cable Connection for IMG0-IMG1

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

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

	FROM		ТО			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPM	LED1	TOPU(IMG1)	DSPM	16PH LED CA-A	
2	LPM	ALM1	TSWM	EMA	16PH ALM CA-A	
3	LPM	MUSIC	TSWM	EMAFH	16PH STD CA-F	

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

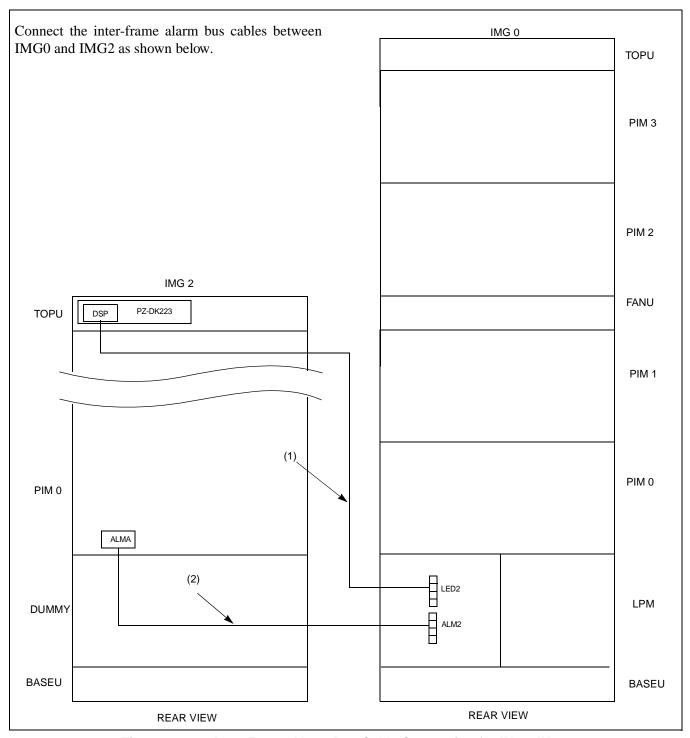


Figure 011-12 Inter-Frame Alarm Bus Cable Connection for IMG0-IMG2

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

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

	FROM		то			
No.	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPM	LED2	TOPU(IMG2)	DSPM	16PH LED CA-B	
2	LPM	ALM2	PIM0 (IMG2)	ALMA	16PH ALM CA-B	

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

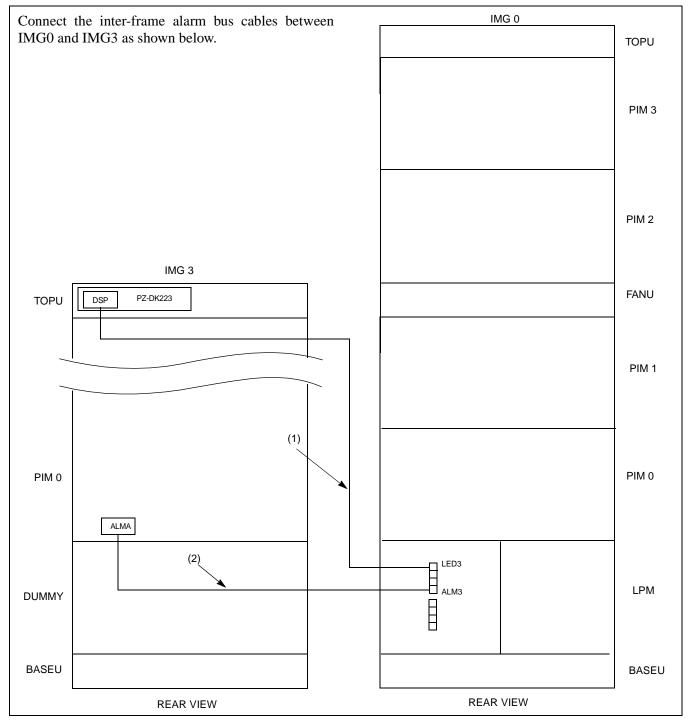


Figure 011-13 Inter-Frame Alarm Bus Cable Connection for IMG0-IMG3

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

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

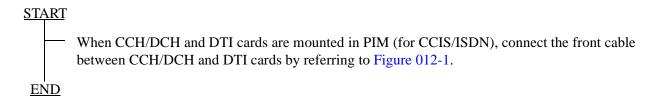
No.	FROM		то			
	UNIT/MODULE	CONNECTOR NAME	UNIT/MODULE	CONNECTOR NAME	CABLE NAME	REMARKS
1	LPM	LED3	TOPU(IMG3)	DSPM	16PH LED CA-C	
2	LPM	ALM3	PIM0 (IMG3)	ALMA	16PH ALM CA-C	

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.



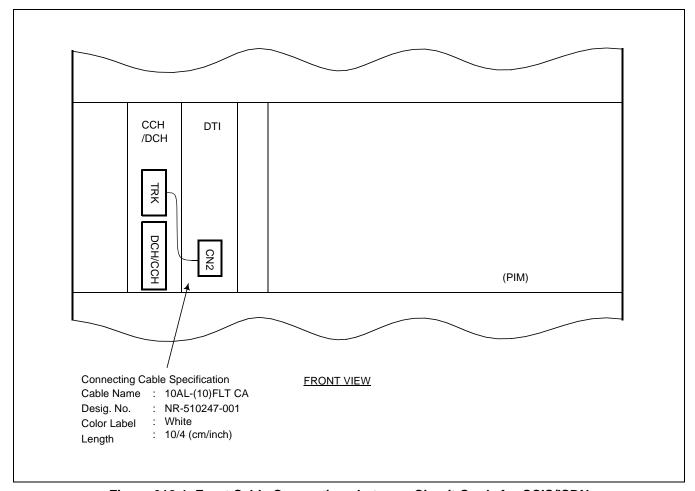


Figure 012-1 Front Cable Connections between Circuit Cards for CCIS/ISDN

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, use Shielded cables with CHAMP connector for the following installation cables:

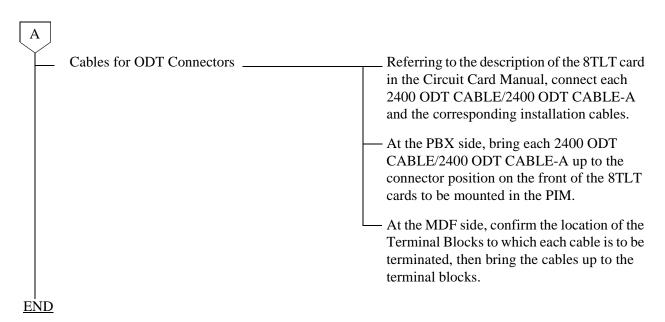
- Cable from the PBX to the MDF
- Cable from the PBX to Attendant Console
- Cable from the PBX to alarm indicating equipment
- Cable from the PBX to the external music-on-hold source
- Cable for line test (connected to TEST connection)

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

<u>START</u>	
Cables (25P) for LT Connectors	— At the PBX side, verify the names of the connectors on the PIM backplane, then bring each LT cable up to the corresponding connector position.
	Refer to Figure 013-1.
— Cables for Desk Console Connectors —	— Referring to NAP-200-016, run the installation cables for the Desk Console to the relevant connector positions.
Cables (25P) for 16PH EX ALM Connector	— At the PBX side, confirm the name of the connectors on the LPR backplane, then bring the 16PH EX ALM CA and installation cable up to the connector position.
— Cables (25P) for NCU Connectors	 At the PBX side, bring each NCU cable up to the connector on the front of the PFT cards to be mounted in the PIM. Refer to Figure 015-4. At the MDF side, confirm the location of the Terminal Block to which the cable is to be terminated, then bring the cable up to the terminal block.
A	

NAP-200-013
Sheet 3/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR



NAP-200-013

Sheet 4/13

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

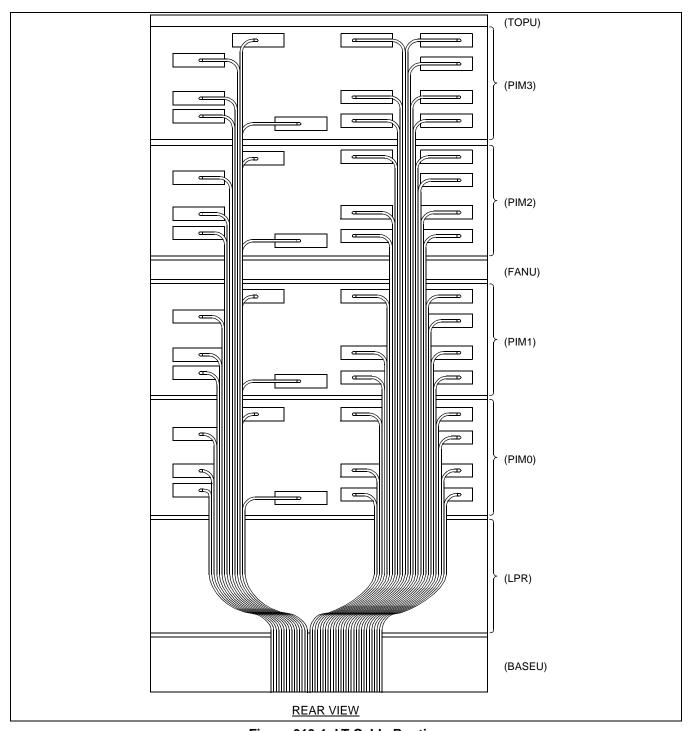


Figure 013-1 LT Cable Routing

NAP-200-013	
Sheet 5/13	
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR	

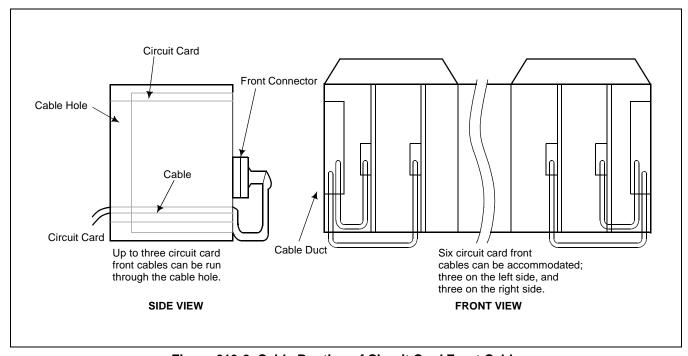
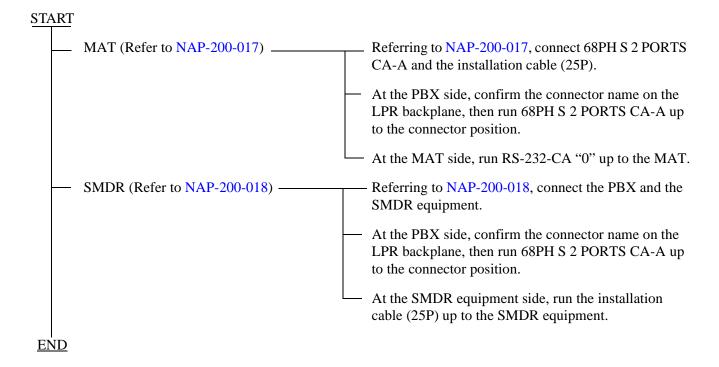


Figure 013-2 Cable Routing of Circuit Card Front Cable

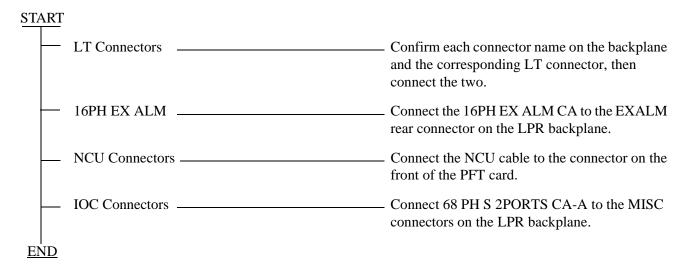
NAP-200-013
Sheet 6/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

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

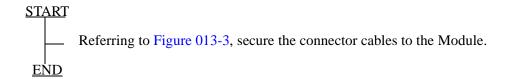


NAP-200-013
Sheet 7/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

3. CONNECTIONS AT THE PBX SIDE



4. CABLE TYING AT THE PBX



NAP-200-013

Sheet 8/13

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

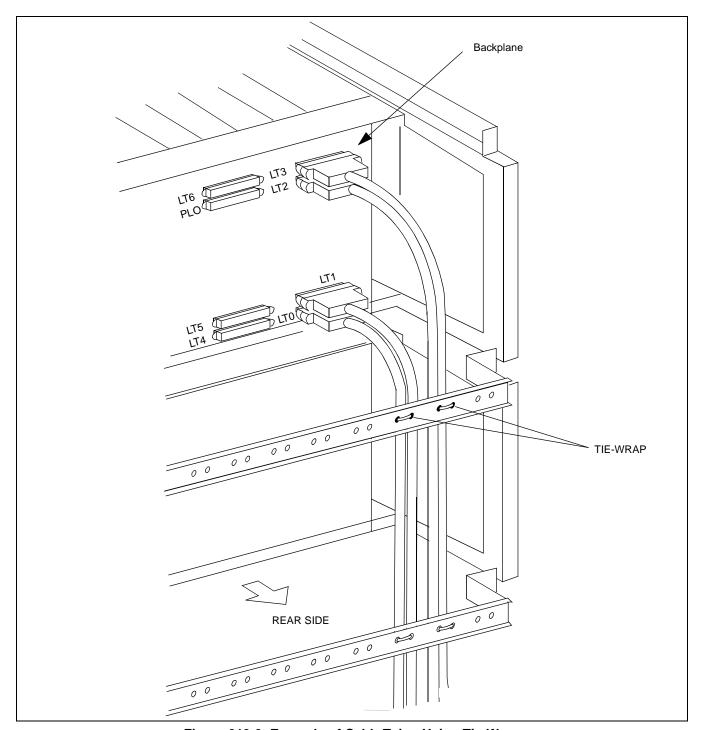


Figure 013-3 Example of Cable Tying Using Tie-Wrap

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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

STA	<u>kri</u>		
		Remove of the Cable Support Assembly.	Remove the Cable Support Assembly from the BASEU. (See Figure 013-4.)
		Peel the cable cover	Referring to Table 13-1, confirm the cable terminating locations on the Cable Support Assembly.
			Per the cable terminating locations, peel the cable cover as shown on Figure 013-5.
		Terminate the cable	Referring to Figure 013-5, wind the M-clamp onto the cable portion from which the cover has been peeled off.
			Referring to Figure 013-6, terminate the cable onto the Cable Support Assembly.
		When all the cables have been terminated to the Cable Support Assembly B, C, D, and E in the	• • • • • • • • • • • • • • • • • • • •
FN	ID		

NAP-200-013
Sheet 10/13
Cable Running from the PBX to MDF, ATTCON, MAT, and SMDR

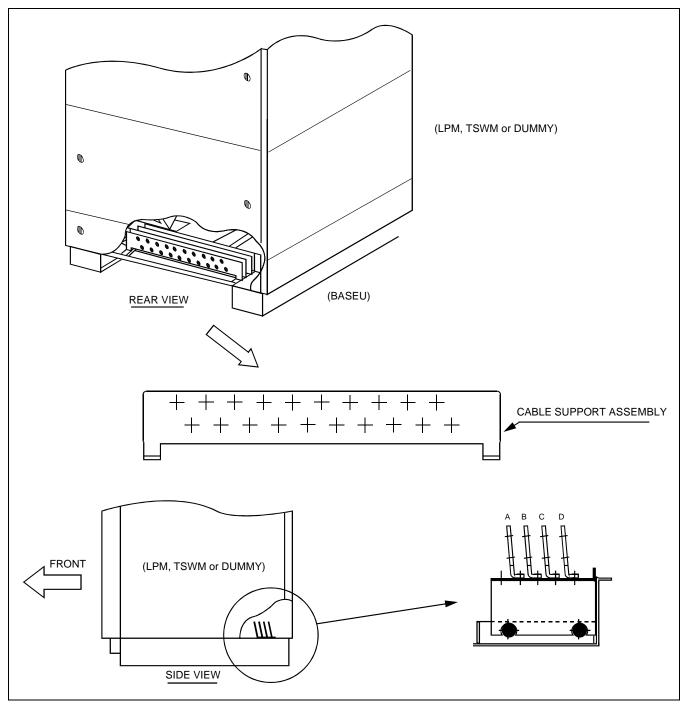


Figure 013-4 Cable Support Assembly

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	USE	REMARKS	
MODULE	CONNECTOR NAME	SUPPORT No.	USE	REWARKS	
	MISCnA, MISCnB	A	for I/O Equipment (MAT, Printer, etc.)	Spare cable (15 cables) are to be used as Cable Support Assembly extra cables. The number of cables for the whole system is limited to	
LPR	EXALM Note	A	for Alarm Indicating Panel, etc.		
		A (Extra)	Spare (15 cables)	maximum 100.	
PIM0	Front of Circuit Card	В	The number of cables is limited to three for one side, and six for both sides.	In case the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.	
	LT0 - LT11	В	LT cable		
PIM1	Front of Circuit Card	С	The number of cables is limited to three for one side, and six for both sides.	In case the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.	
	LT0 - LT11	С	LT cable		
PIM2	Front of Circuit Card	D	The number of cables is limited to three for one side, and six for both sides.	In case the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.	
	LT0 - LT11	D	LT cable		
PIM3	Front of Circuit Card	Е	The number of cables is limited to three for one side, and six for both sides.	In case the required number of cables exceeds 20, the Cable Support Assembly extra cables should be used.	
	LT0 - LT11	Е	LT cable		

Note: For LPM only.

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

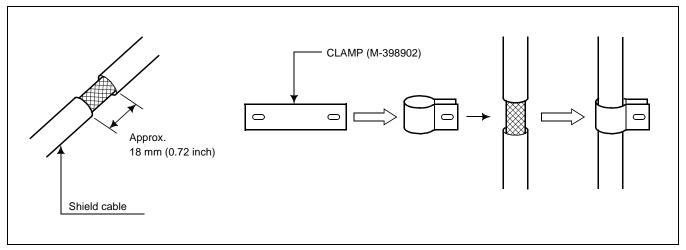


Figure 013-5 Clamp Winding

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

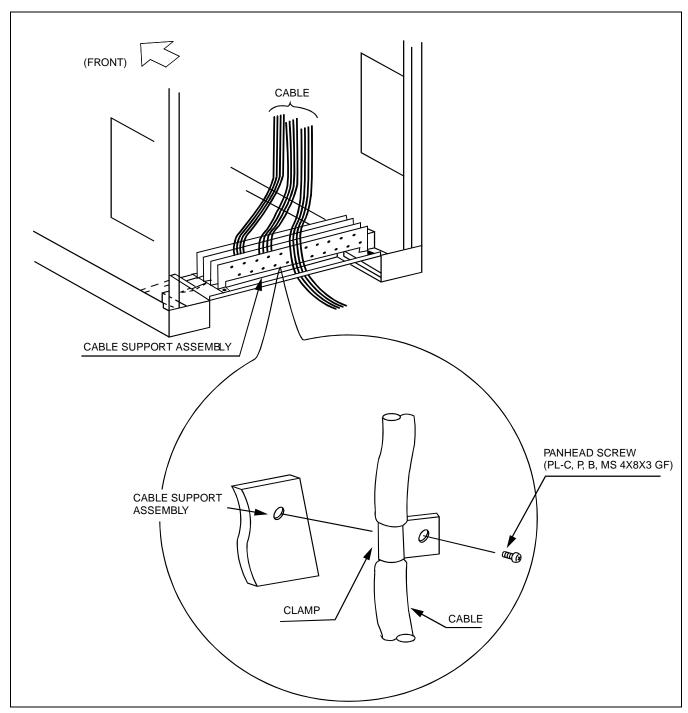


Figure 013-6 Termination of Installation Cables

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

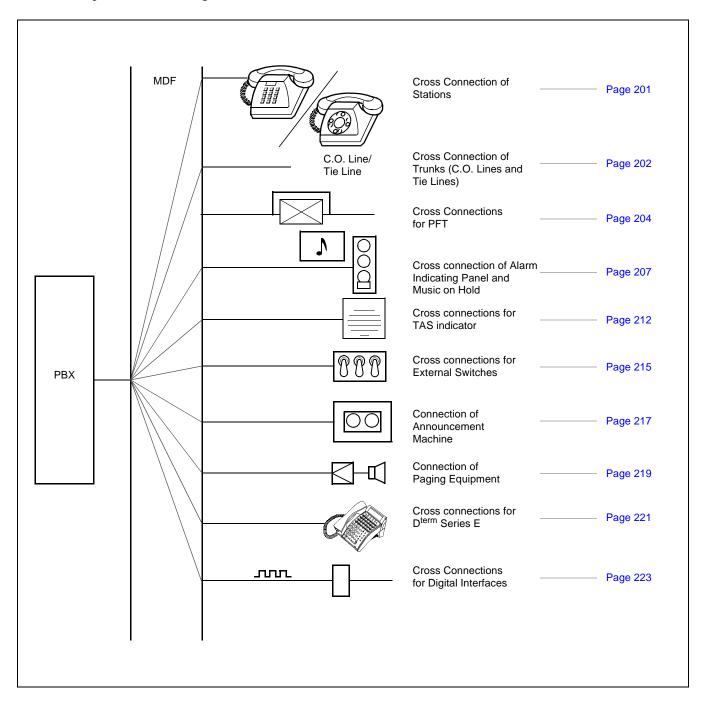
This NAP explains the procedures for terminating cables at the MDF.

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.

START		
	Cable trying at the MDF	- Secure the CHAMP Connector cables, which have been extended to the MDF according to NAP-200-012, to the cable supports on the MDF after confirming their positions on the terminal block.
	Cutting of excess cable —	- Shorten each CHAMP connector cable, leaving enough length so that they can be neatly terminated to the terminal block.
	Cable termination to the MDF	- Referring to the Circuit Card Manual, punch down the CHAMP connector cables to the MDF.
	Confirmation of connections	- After confirming that no erroneous connections have been made on the Module Group side, use an IC buzzer on similar device to verify the connections at the MDF.
<u>END</u>		

NAP-200-015	
Sheet 1/30	
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines	

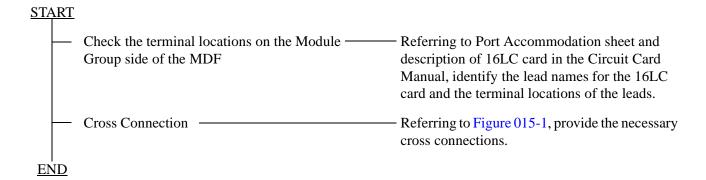
This NAP explains the following work items:



NAP-200-015
Sheet 2/30
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should 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".



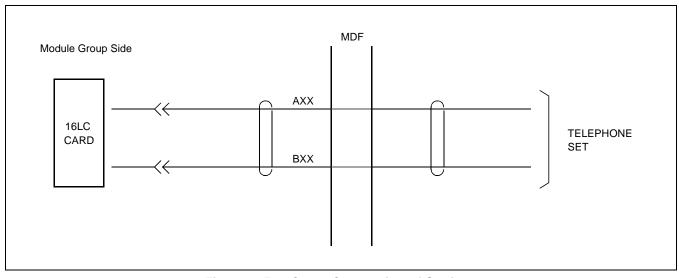
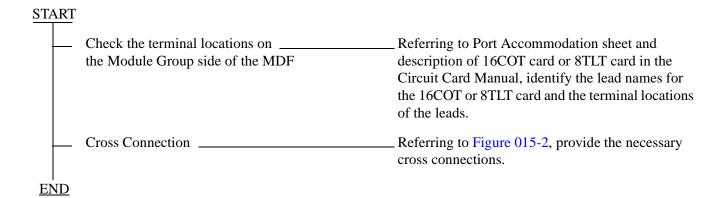


Figure 015-1 Cross Connection of Stations

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Sheet 3/30	
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should 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.



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Sheet 4/30	
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines	

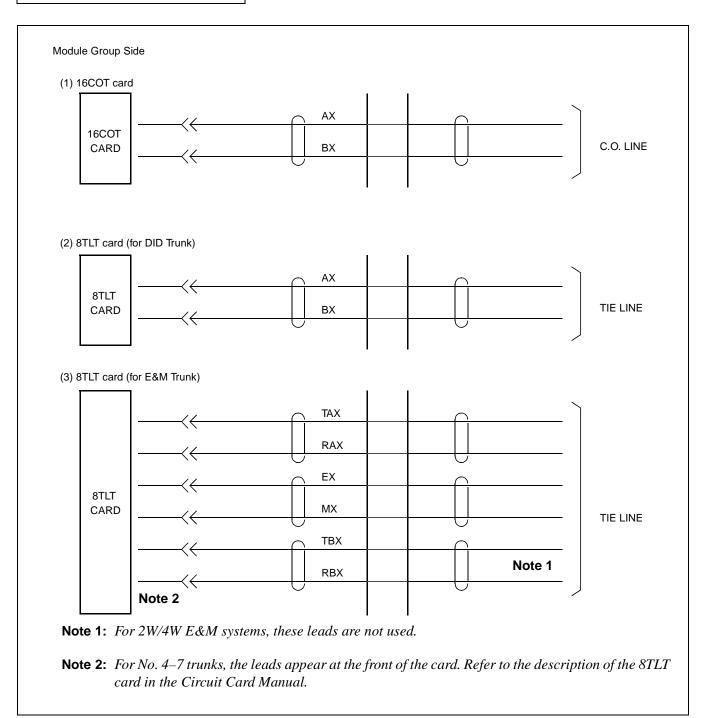


Figure 015-2 Cross Connection of Trunks (C.O. Lines and Tie Lines)

NAP-200-015	
Sheet 5/30	
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

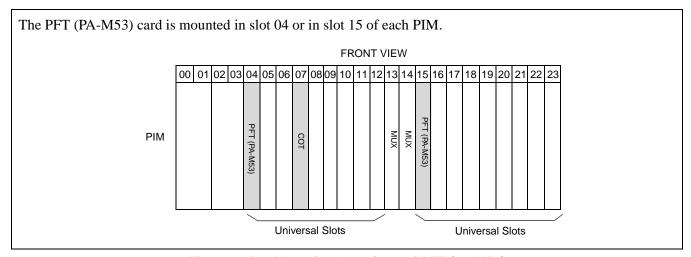


Figure 015-3 Mounting Locations of PFT (PA-M53)

NAP-200-015
Sheet 6/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

START Check the terminal locations on Referring to Section 1., "CROSS CONNECTION OF the Module Group side of the MDF STATIONS" and Section 2., "CROSS CONNECTION OF TRUNKS (C.O. LINES AND TIE LINES)" in this NAP, identify the lead names of the stations and trunks to be connected to the PFT (NCU) card and the terminal locations of the leads. Referring to the description of PFT card in the "NEAX 2400 IPX Circuit Card Manual," identify the lead names for the "NCU" connector, "LT" connector, and the terminal locations of the leads. Cross Connection Referring to Figure 015-4, provide the necessary cross connections. **END**

NAP-200-015
Sheet 7/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

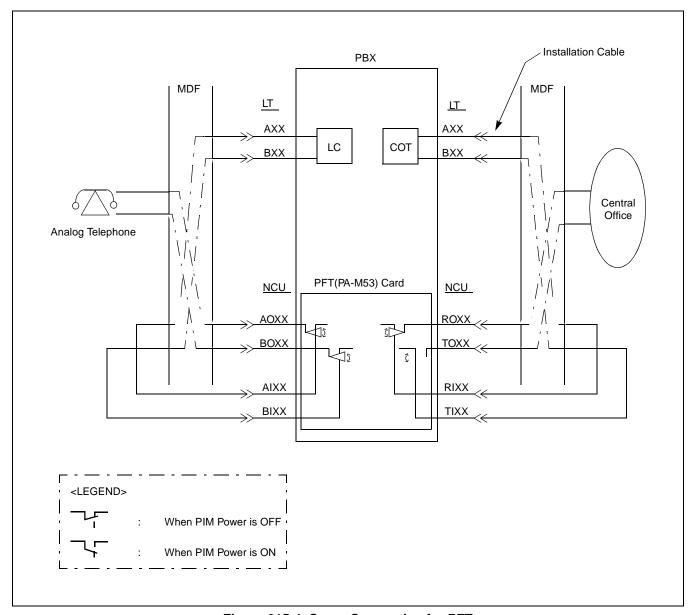


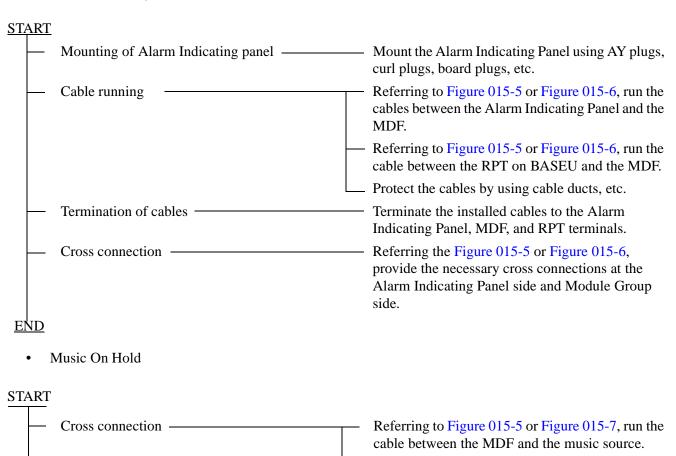
Figure 015-4 Cross Connection for PFT

NAP-200-015	
Sheet 8/30	
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

• Alarm Indicating Panel



END

Note:

Connect the music source to the FM0 and E

FM1 is not used at this time.

connections.

NAP	2-200-015
Shee	et 9/30
Con	le Termination and Cross nections from MDF to Peripheral ipment, C. O. Lines, and Tie Lines

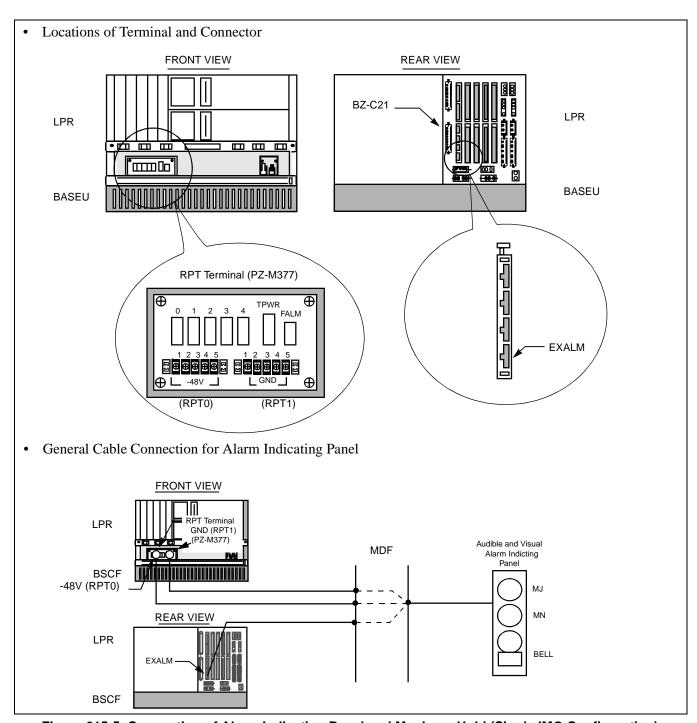


Figure 015-5 Connection of Alarm Indicating Panel and Music on Hold (Single IMG Configuration)

NAP-200-015
Sheet 10/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

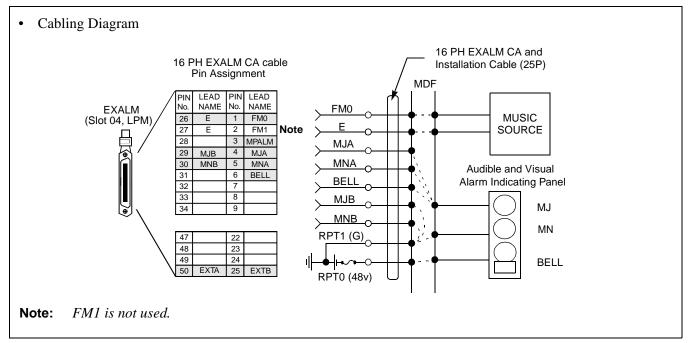


Figure 015-5 Connection of Alarm Indicating Panel and Music on Hold (Single IMG Configuration) (2/2)

NAP-200-015	
Sheet 11/30	
	n and Cross MDF to Peripheral Lines, and Tie Lines

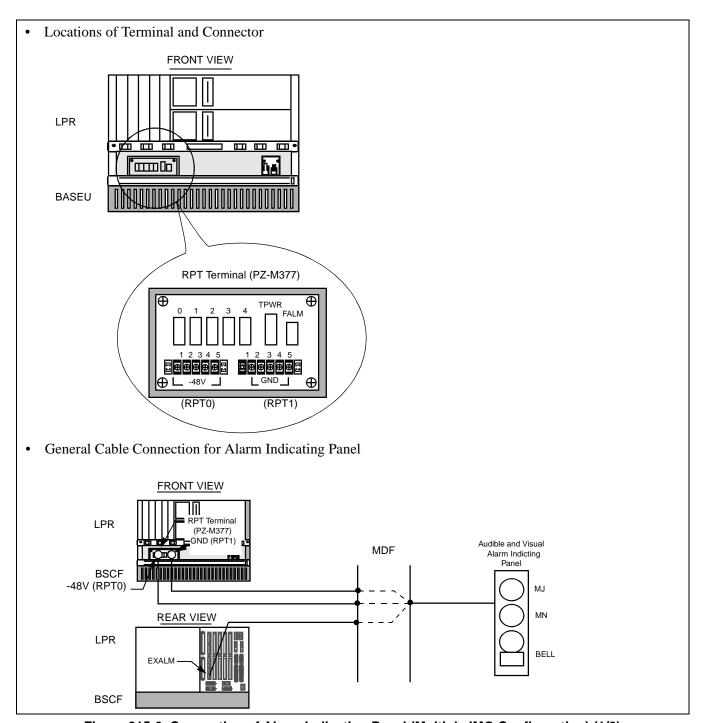


Figure 015-6 Connection of Alarm Indicating Panel (Multiple IMG Configuration) (1/2)

NAP-200-015
Sheet 12/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

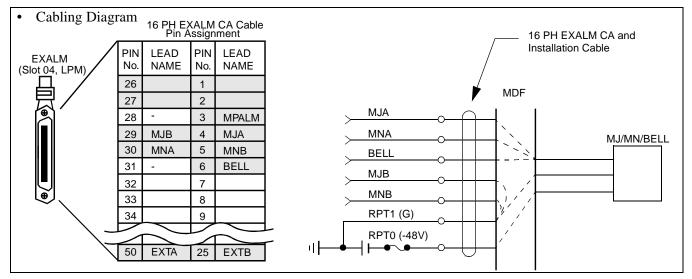


Figure 015-6 Connection of Alarm Indicating Panel (Multiple IMG Configuration) (2/2)

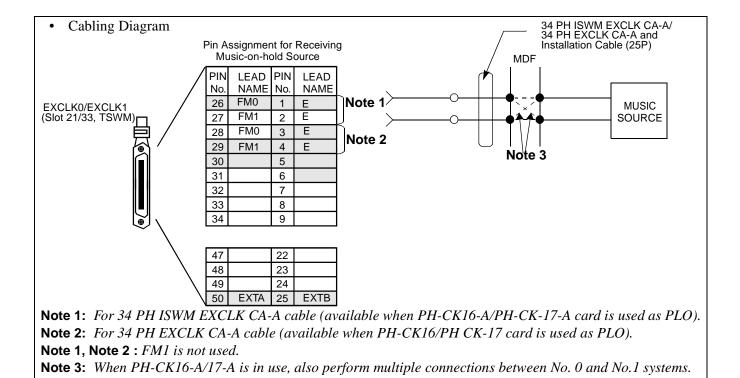
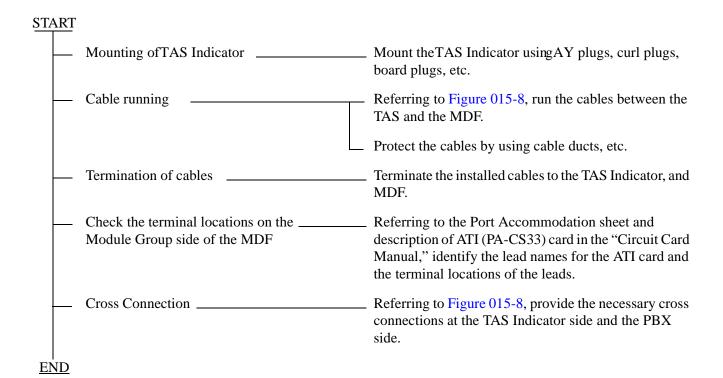


Figure 015-7 Connection of Music on Hold (Multiple IMG Configuration)

NAP-200-015
Sheet 13/30
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

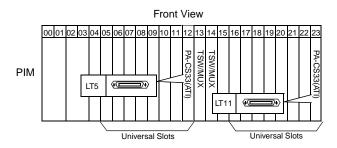


NAP-200-015
Sheet 14/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment C. O. Lines, and Tie Lines

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.

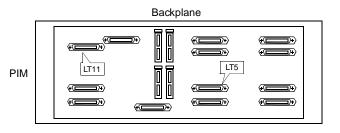
• PA-CS33 (ATI) mounting slots

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.

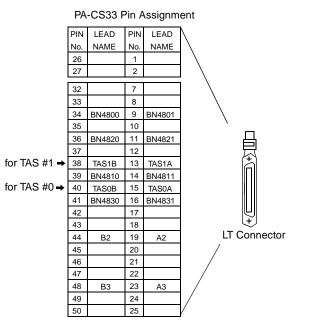


Figure 015-8 Cable Connection Diagram for TAS (1 of 2)

NAP-200-015
Sheet 15/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

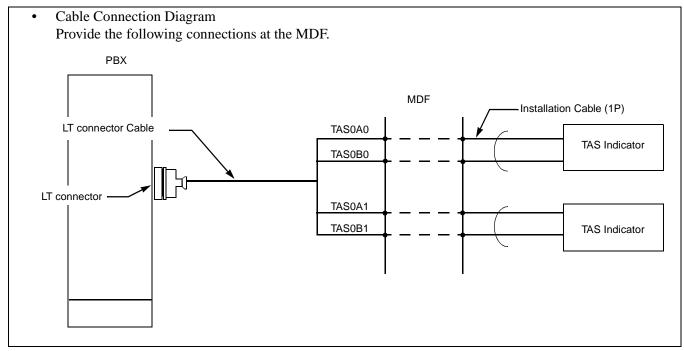


Figure 015-8 Cable Connection Diagram for TAS (2 of 2)

NAP-200-015	
Sheet 16/30	
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

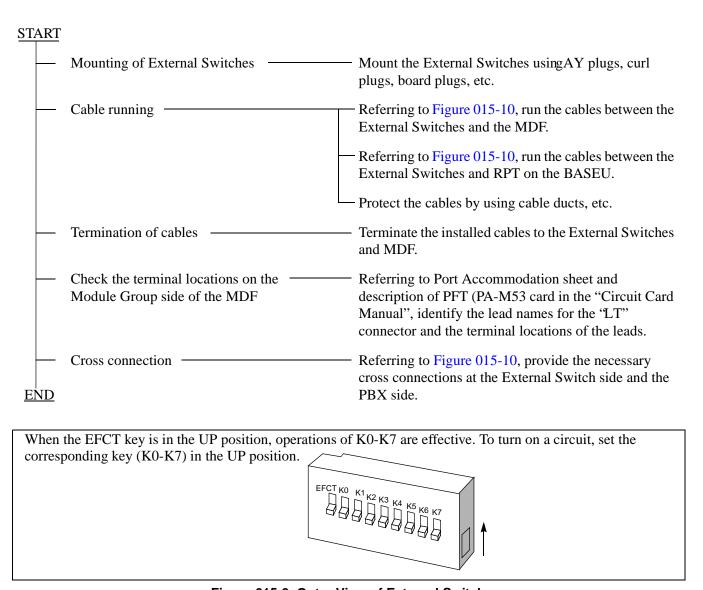


Figure 015-9 Outer View of External Switch

NAP-200-015	
Sheet 17/30	
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines	

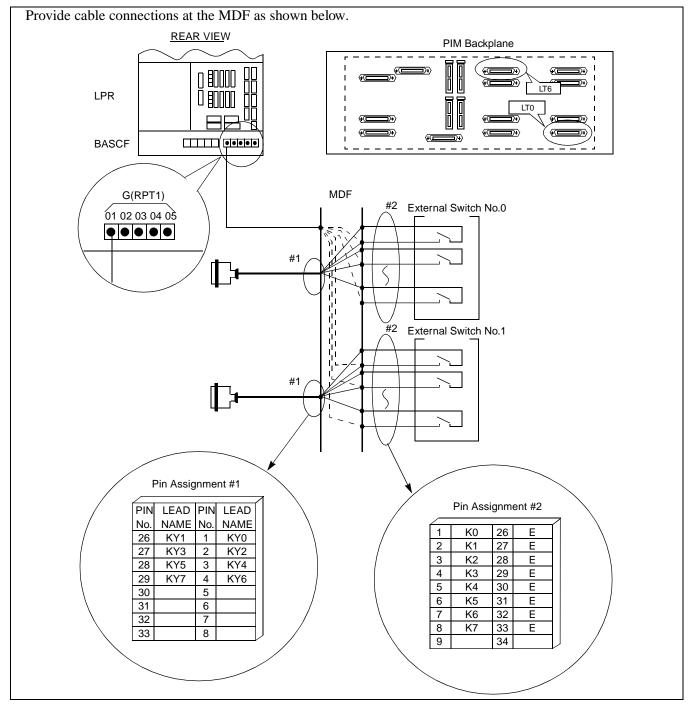


Figure 015-10 Connection of External Switches

NAP-200-015
Sheet 18/30
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.

<u>START</u>		
	Mounting of Announcement Machine	Mount the Announcement Machine using AY plugs, curl plugs, board plugs, etc.
_	Cable running	 Referring to Figure 015-11, run the cable between the Announcement Machine and the MDF. Protect the cables by using cable ducts, etc.
	Termination of cables	Terminate the installed cables to the Announcement Machine and MDF.
_	Check the terminal locations on theModule Group side of the MDF	Referring to Port Accommodation sheet and description of 16COT card in the Circuit Card Manual and Figure 015-11, identify the lead names of the Announcement Trunk (ANTK) and the terminal locations of the leads.
	Cross connections	Referring to Figure 015-11, provide the necessary cross connections at the Announcement Machine side and the PBX side.
END		

NAP-200-015	_
Sheet 19/30	_
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines	

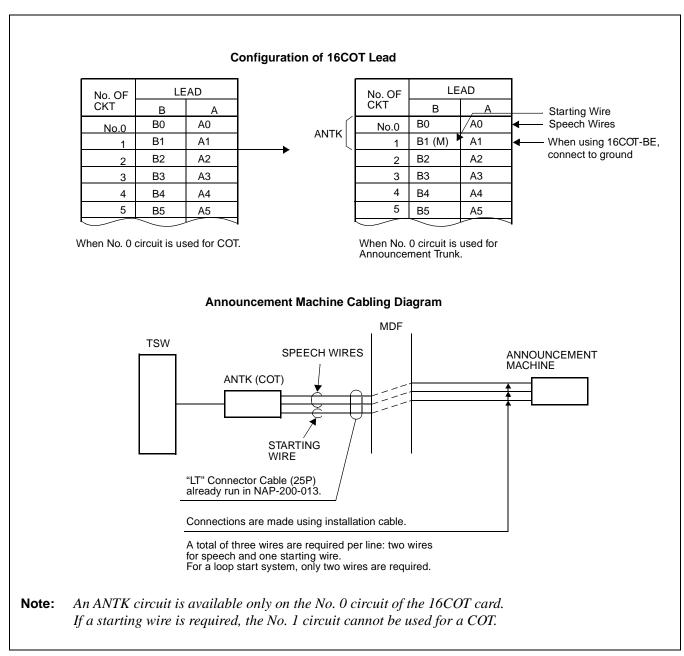
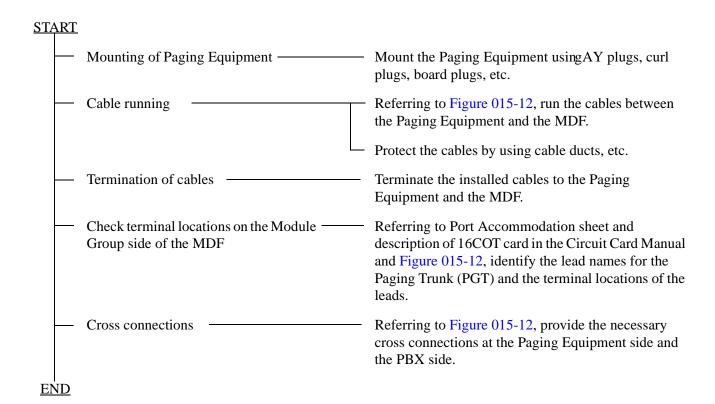


Figure 015-11 Connection of Announcement Machine

NAP-200-015	
Sheet 20/30	
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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.



NAP-200-015
Sheet 21/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

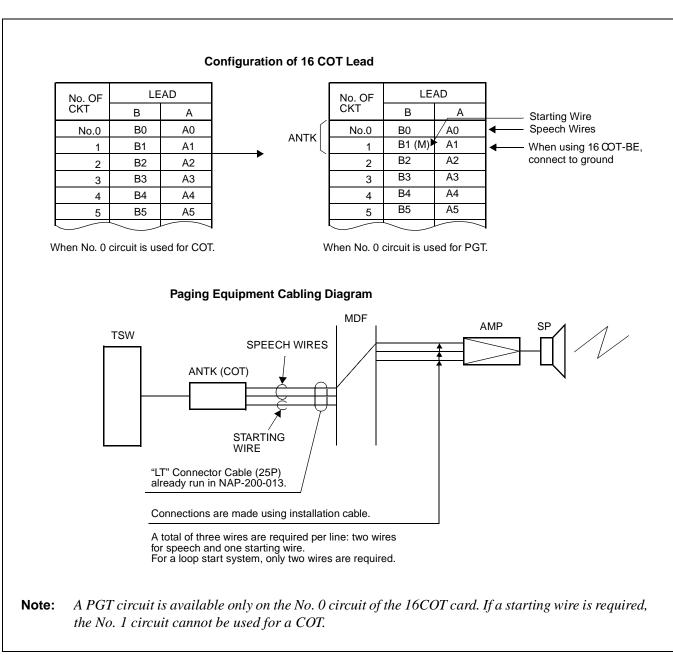


Figure 015-12 Connection of Paging Equipment

NAP-200-015
Sheet 22/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

9. CROSS CONNECTIONS FOR D^{term} Series E

- **Note 1:** Provide the necessary cross connections at the MDF 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. Wires of different colors should be used for trunks, station lines, PFT, etc., so that they can easily be distinguished.
- **Note 2:** The maximum distance between the Module Group and D^{term} is 850 meters (2459 feet). The installation cable must be 24 AWG (0.5 mm dia.) or larger.

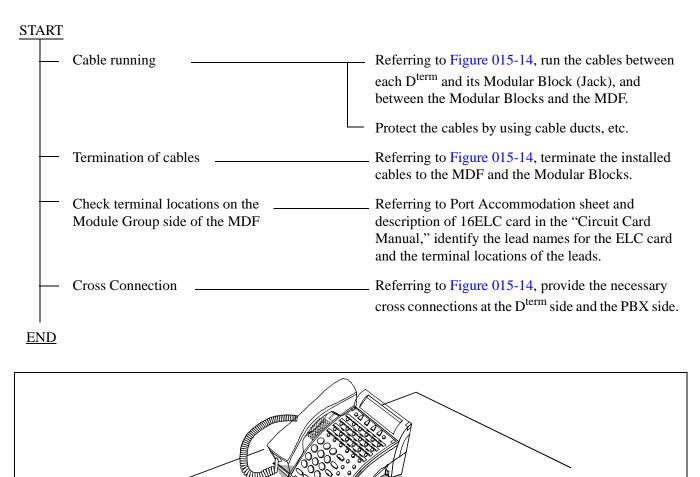


Figure 015-13 Outer View of D^{term} Series E

NAP-200-015
Sheet 23/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

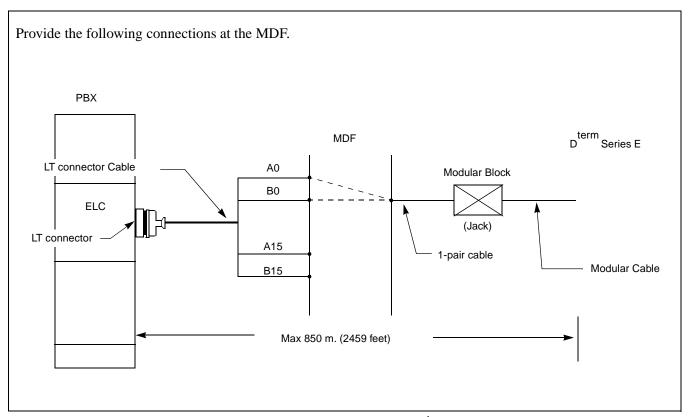


Figure 015-14 Cable Connection for $\, D^{term} \,$ Series E

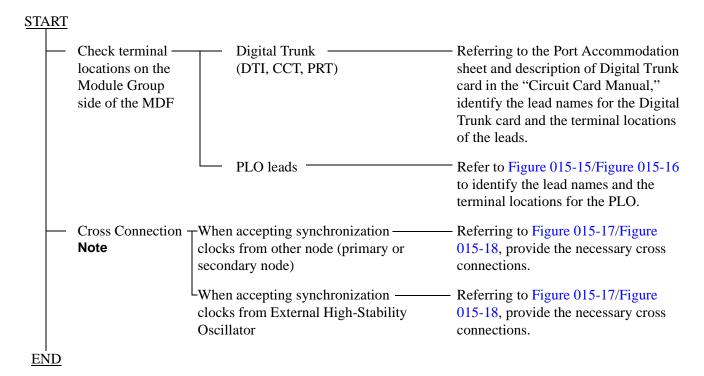
NAP-200-015
Sheet 24/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

10. CROSS CONNECTIONS FOR DIGITAL INTERFACES

Perform the cross connections for digital interfaces as shown below:

- Note 1: When your system is a single IMG configuration, time division switch (TSW) card is equipped with Phase Lock Oscillator (PLO). Therefore, no dedicated PLO card is required to use 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 PIMO. 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 (24AWG). 2-core twisted wire is used for speech path, and single-core wire is used for control wire. Wires of different colors should 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.

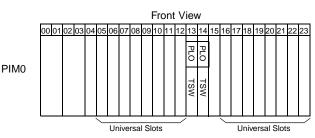


NAP-200-015	
Sheet 25/30	
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines	

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" leads.

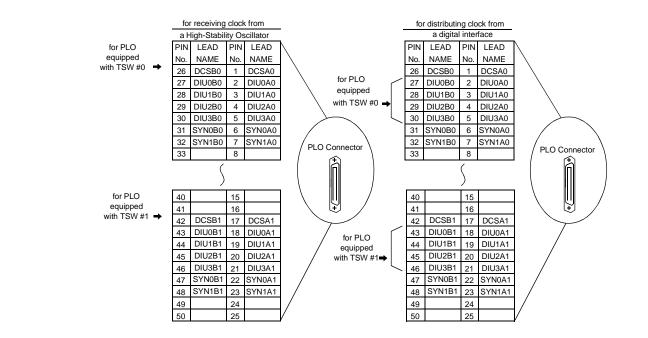


Figure 015-15 PLO Pin Assignments for Receiving Clock (Single IMG Configuration)

NAP-200-015
Sheet 26/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

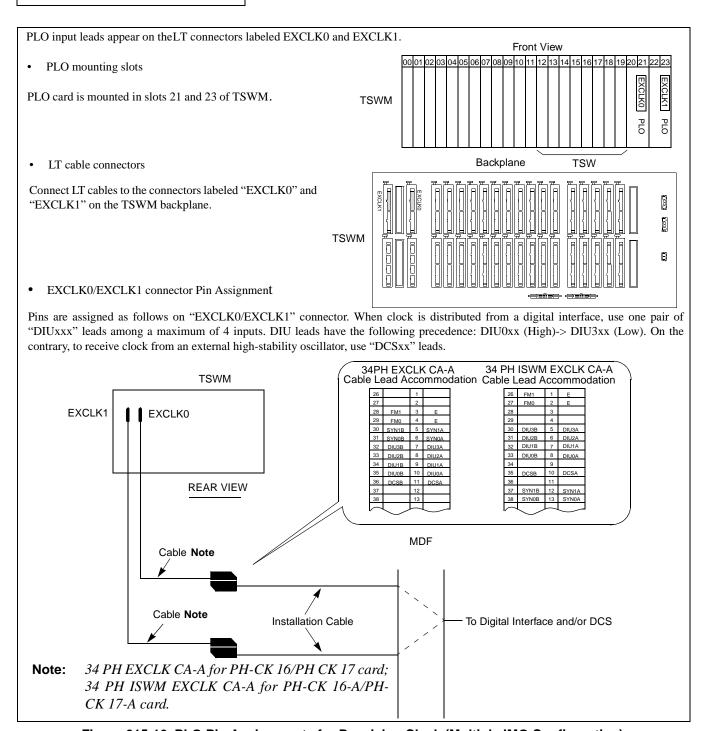
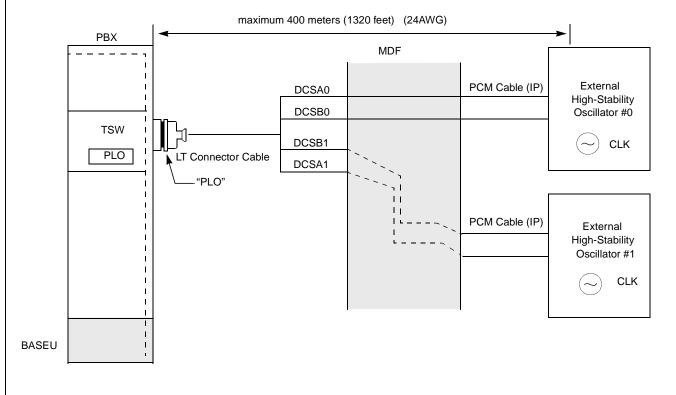


Figure 015-16 PLO Pin Assignments for Receiving Clock (Multiple IMG Configuration)

NAP-200-015
Sheet 27/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

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.



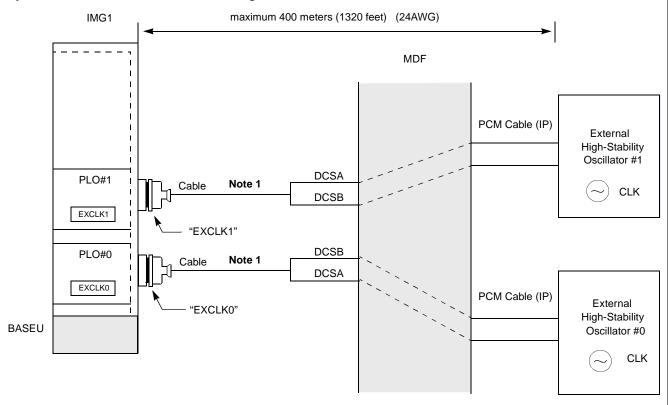
Note: This diagram shows connections for a system having dual TSWs.

Figure 015-17 Cable Connection Diagram for Accepting Synchronization Clocks from an External High-Stability Oscillator (Single IMG Configuration)

NAP-200-015
Sheet 28/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

• 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.



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

Note 1: "34PH EXCLK CA-A" for PH-CK16/PH-CK17;

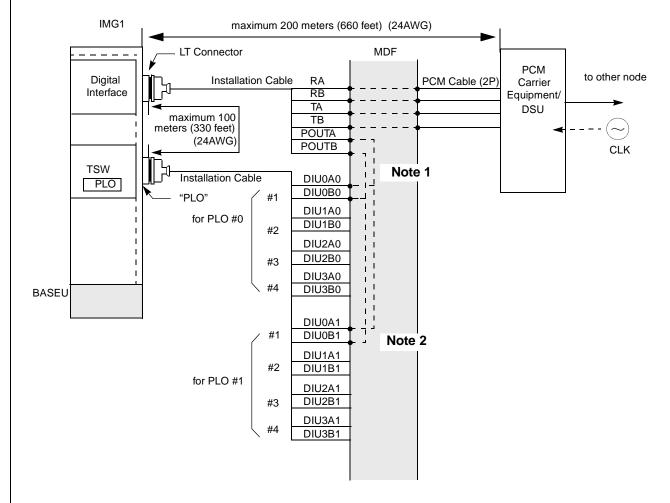
"34PH ISWM EXCLK CA-A" for PH-CK16-A/PH-CK17-A card.

Figure 015-18 Cable Connection Diagram for Accepting Synchronization Clocks from an External High-Stability Oscillator (Multiple IMG Configuration)

NAP-200-015
Sheet 29/30
Cable Termination and Cross Connections from MDF to Peripheral Equipment, C. O. Lines, and Tie Lines

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.*

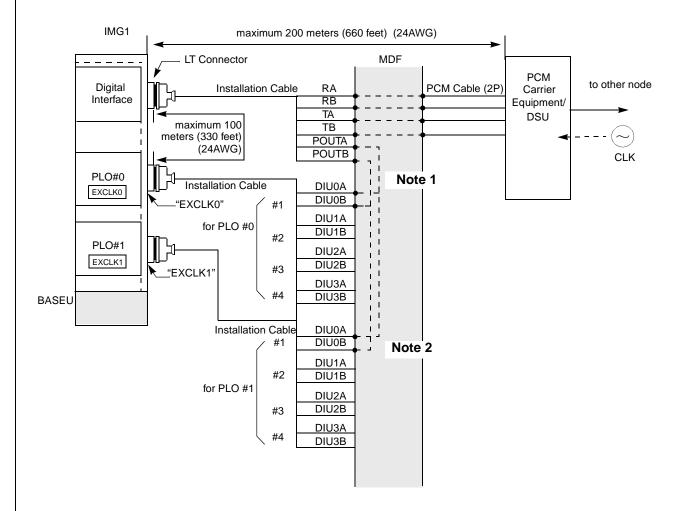
Note 2: This connection is required for a dual-TSW system.

Figure 015-19 Cable Connection Diagram for Distributing Clock from a Digital Interface (Single IMG Configuration)

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

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.

Figure 015-20 Cable Connection Diagram for Distributing Clock from a Digital Interface (Multiple IMG Configuration)

NAP-200-016
Sheet 1/42
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.

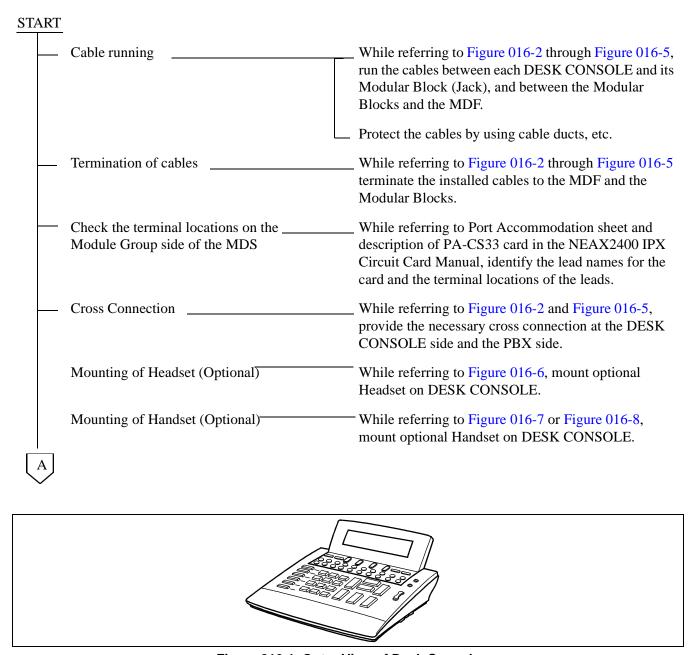


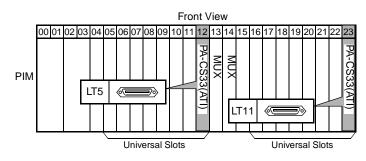
Figure 016-1 Outer View of Desk Console

NAP-200-016
Sheet 2/42
Installation of the Desk Console and Cable Connection

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).

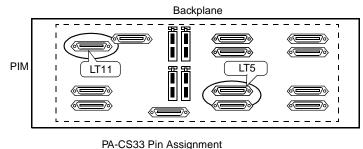
• PA-CS33 (ATI) mounting slots

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.



PIN

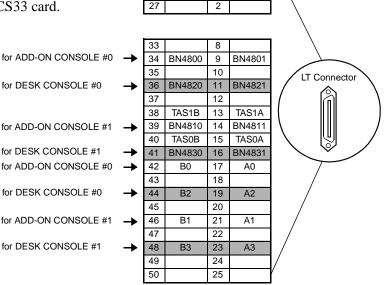
No.

LEAD

NAME

• LT cable Pin Assignment

Pins are assigned as follows for PA-CS33 card.



PIN

No.

26

LEAD

NAME

Figure 016-2 Cable Connection Diagram for Desk Console (1 of 2)

NAP-200-016
Sheet 3/42
Installation of the Desk Console and Cable Connection

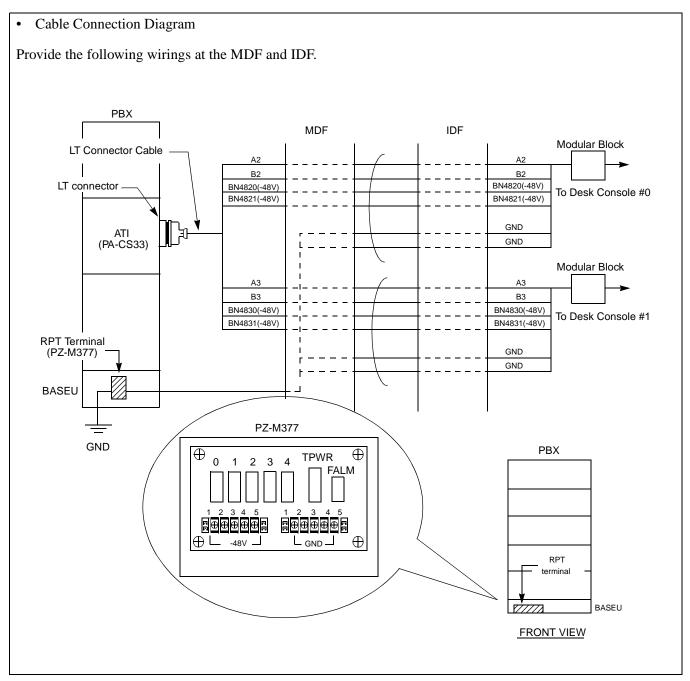


Figure 016-2 Cable Connection Diagram for Desk Console (2 of 2)

NAP-200-016
Sheet 4/42
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.
- *Remove installation cables connected to the following connectors:*
 - RLT connector on the ATT TERM
 - ATIO and LT5, ATI1 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 5/42
Installation of the DESK CONSOLE and Cable Connection

1. CABLE CONNECTION DIAGRAM

(a) When the power is supplied from the PBX

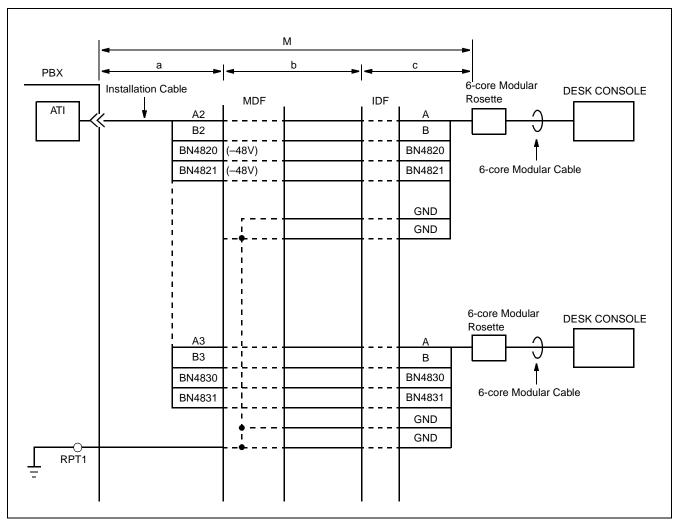


Figure 016-3 Cable Connection Diagram (When the Power Is Supplied from the PBX)

The maximum distance between the ATI 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.

I	NAP-200-016
	Sheet 6/42
	Installation of the DESK CONSOLE and Cable Connection

2. CALCULATION OF THE DISTANCE BETWEEN THEATI 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 26Ω as shown in the following formula:

$$M = a + b + c \le 26 \ \Omega$$

- 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 formulae. 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 = \begin{array}{c} & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ &$$

$$b = \begin{array}{c|c} & & & \\ \hline & & \\ \hline$$

- 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

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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.

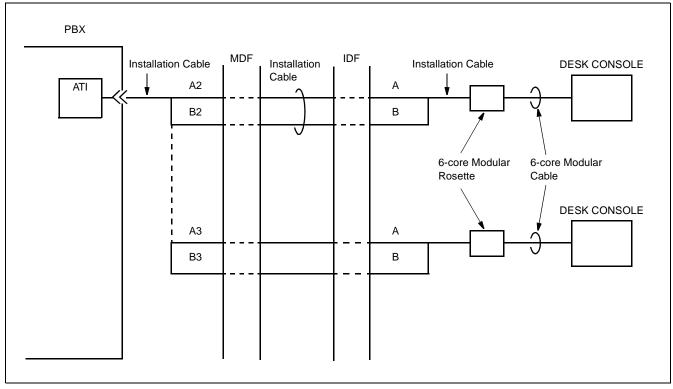
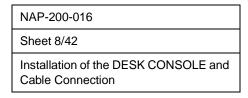


Figure 016-4 Cable Connection Diagram (When Using Local Power Supply)

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.)



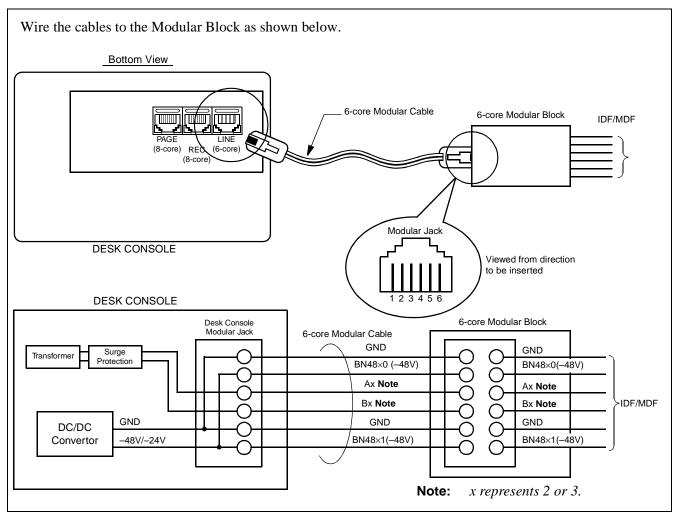


Figure 016-5 Cable Connection Diagram for DESK CONSOLE Modular Block

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Installation of the DESK CONSOLE and Cable Connection

3. MOUNTING OF HEADSET (OPTIONAL)

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

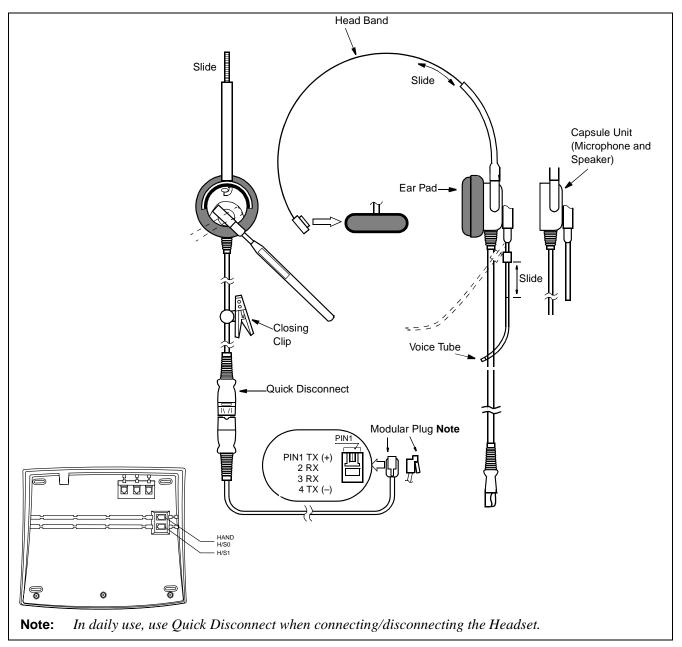


Figure 016-6 Headset

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Installation of the DESK CONSOLE and Cable Connection

4. MOUNTING OF HANDSET (OPTIONAL)

The Handset cable is connected 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)

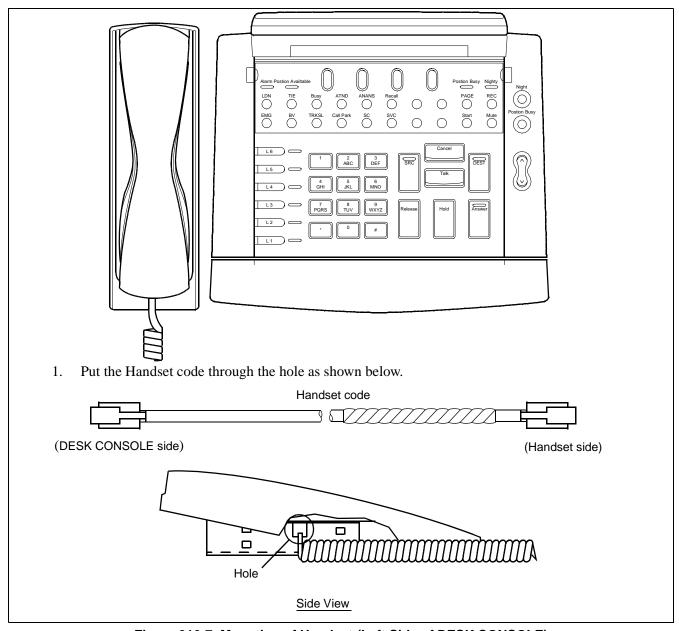


Figure 016-7 Mounting of Handset (Left Side of DESK CONSOLE)

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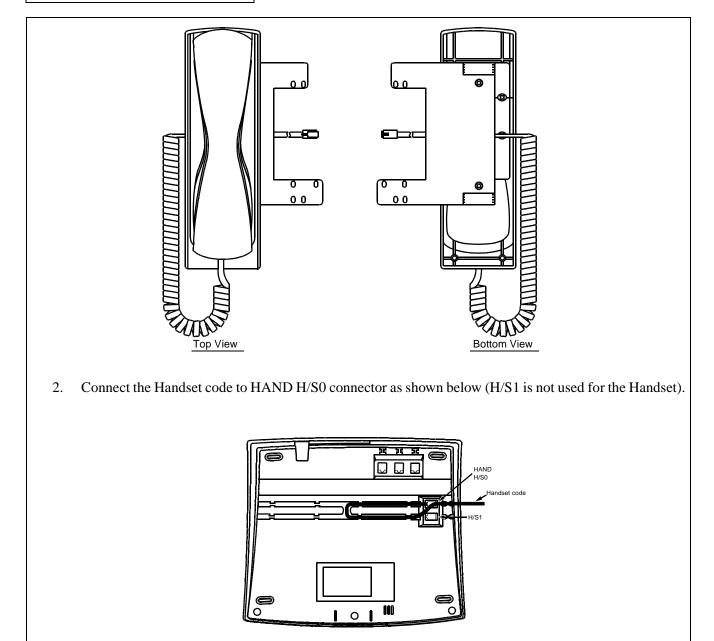


Figure 016-7 Mounting of Handset (Left Side of DESK CONSOLE) (Continued)

Bottom View of DESK CONSOLE

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Installation of the DESK CONSOLE and Cable Connection

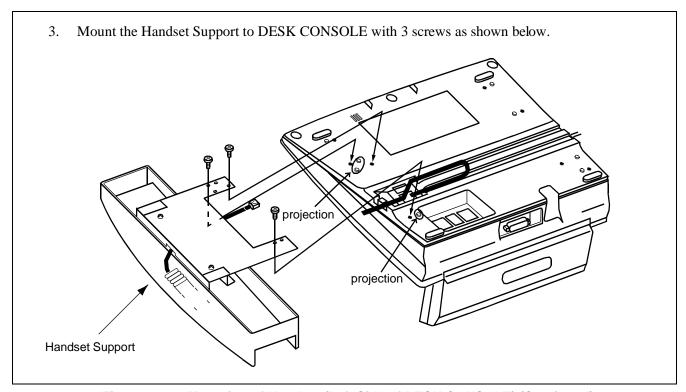


Figure 016-7 Mounting of Handset (Left Side of DESK CONSOLE) (Continued)

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Installation of the DESK CONSOLE and Cable Connection

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

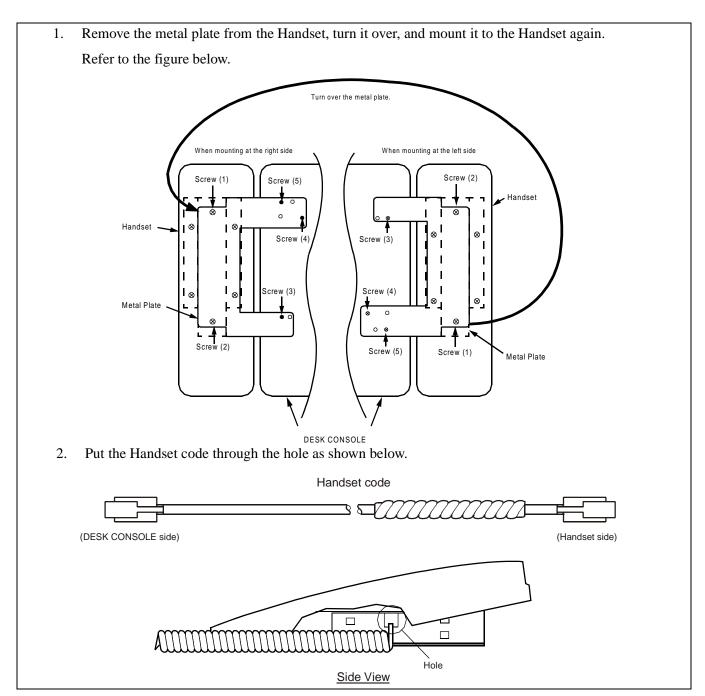
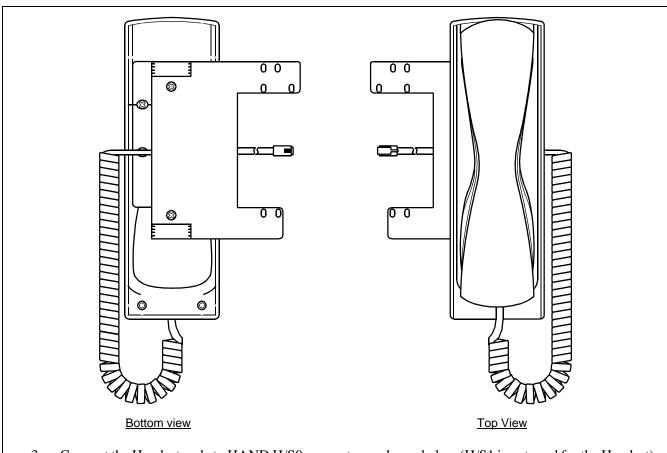


Figure 016-8 Mounting of Handset (Right Side of DESK CONSOLE)

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

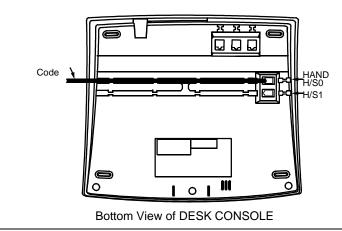


Figure 016-8 Mounting of Handset (Right Side of DESK CONSOLE) (Continued)

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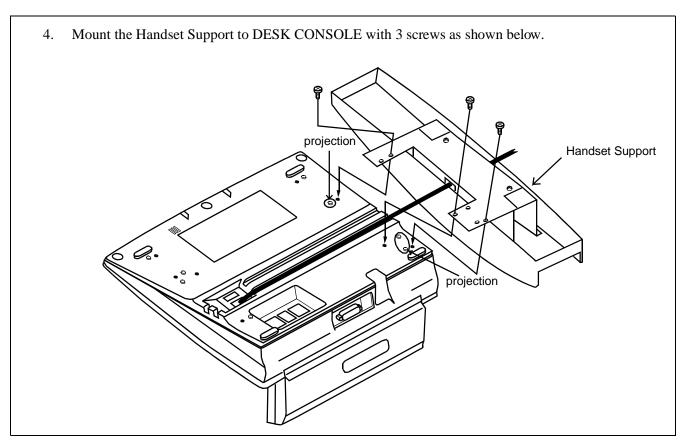


Figure 016-8 Mounting of Handset (Right Side of DESK CONSOLE) (Continued)

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Installation of the DESK CONSOLE and Cable Connection

5. CONNECTION OF RECORDING EQUIPMENT

The following are required for use of the 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 $\times 2$ set

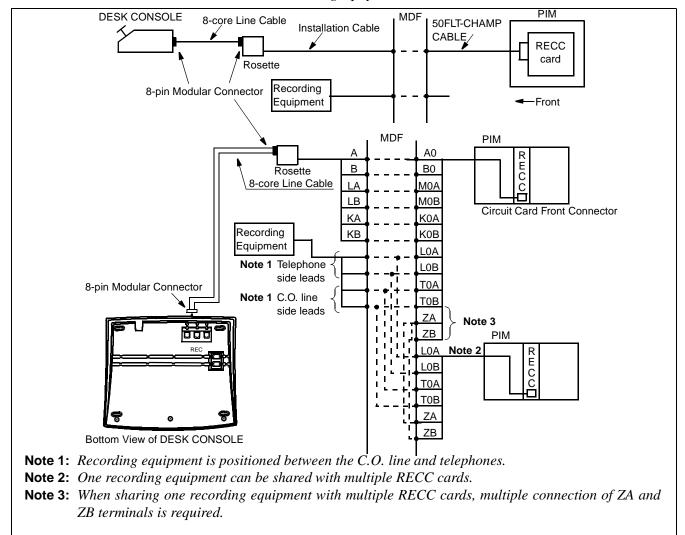


Figure 016-9 RECC Card Cable Connection Diagram

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(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.

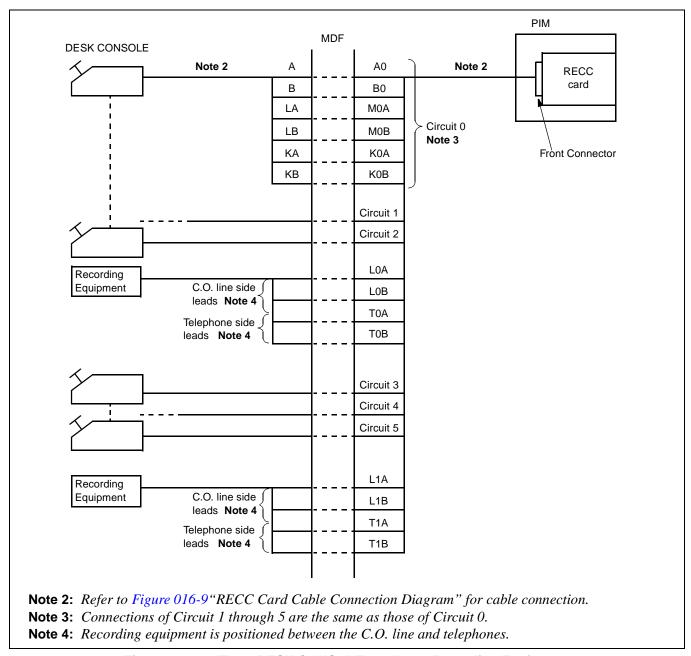


Figure 016-10 Three DESK CONSOLEs and One Recording Equipment

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(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.

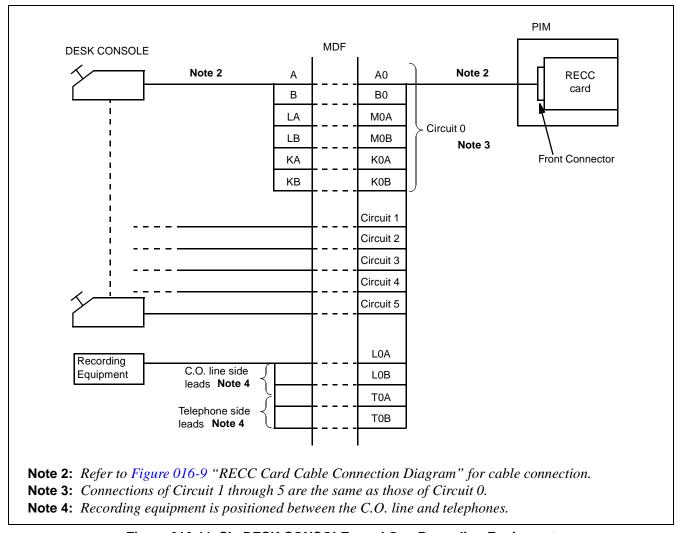


Figure 016-11 Six DESK CONSOLEs and One Recording Equipment

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Installation of the DESK CONSOLE and Cable Connection

6. 8-CORE LINE CABLE (INSTALLATION CABLE)

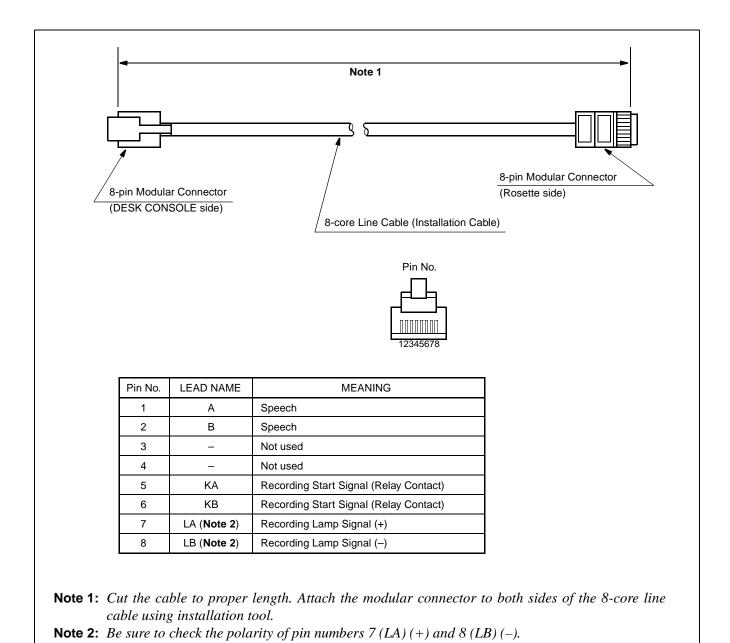


Figure 016-12 8-core Line Cable

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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.

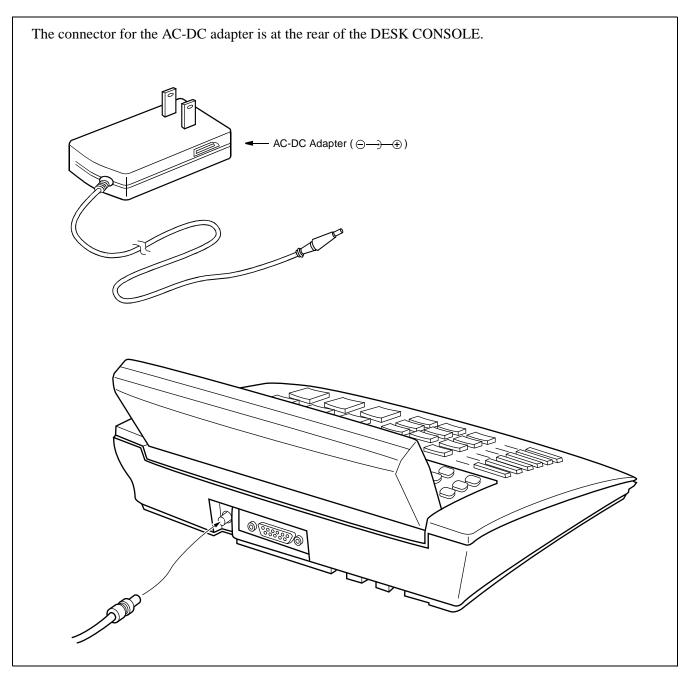


Figure 016-13 Connection of AC-DC Adapter

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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)

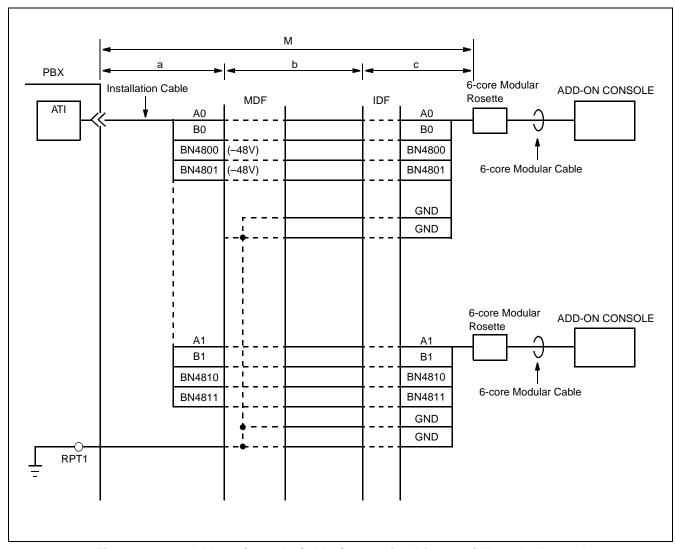


Figure 016-14 Add-On Console Cable Connection Diagram (When the Power Is Supplied from the PBX)

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(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.

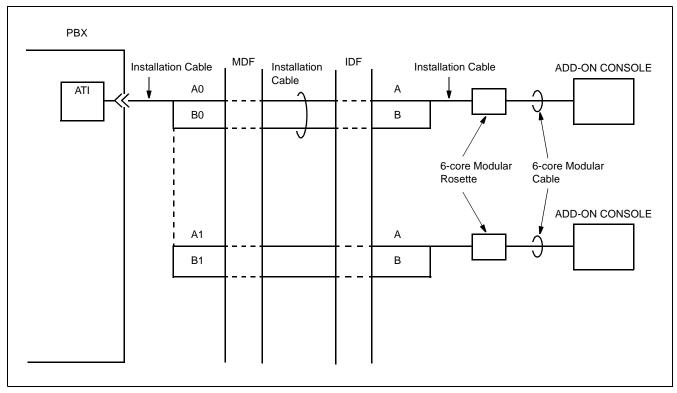
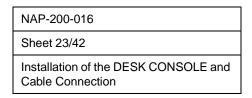


Figure 016-15 Add-On Console Cable Connection Diagram (When Using Local Power Supply)



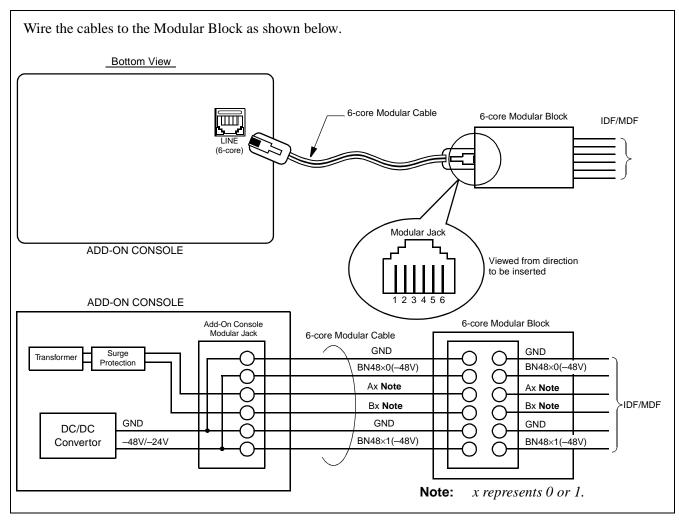


Figure 016-16 Cable Connection Diagram for Add-On Console Modular Block

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9. MOUNTING OF ADD-ON CONSOLE

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

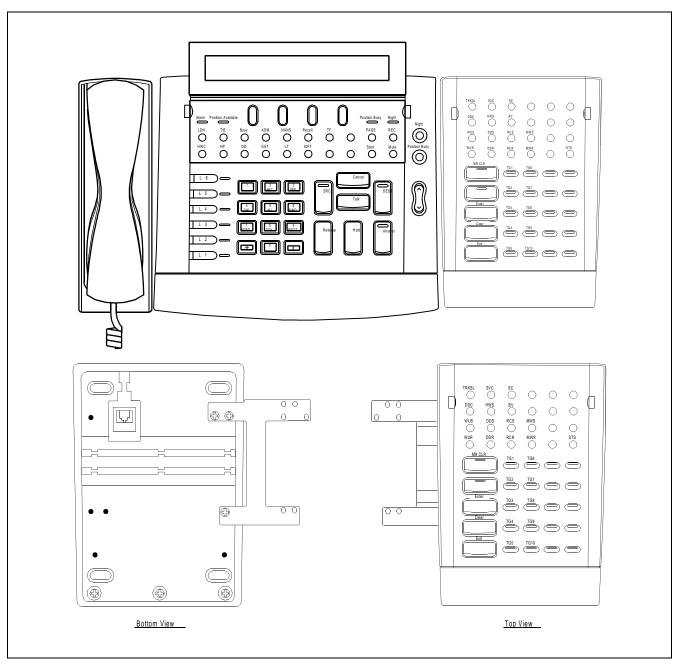


Figure 016-17 Mounting of Add-On Console (Right Side of DESK CONSOLE)

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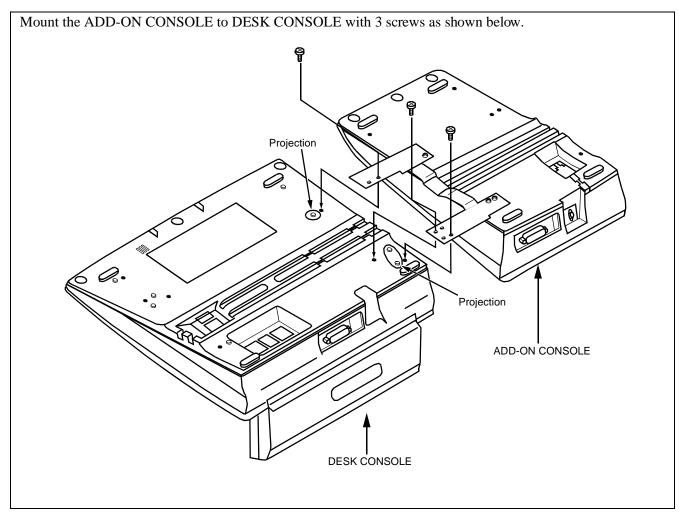


Figure 016-17 Mounting of Add-On Console (Right Side of DESK CONSOLE) (Continued)

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

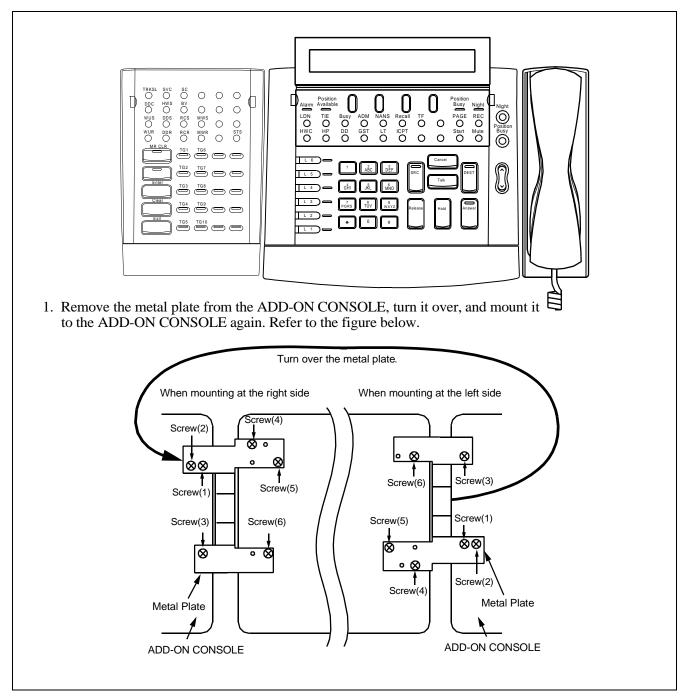


Figure 016-18 Mounting of Add-On Console (Left Side of DESK CONSOLE)

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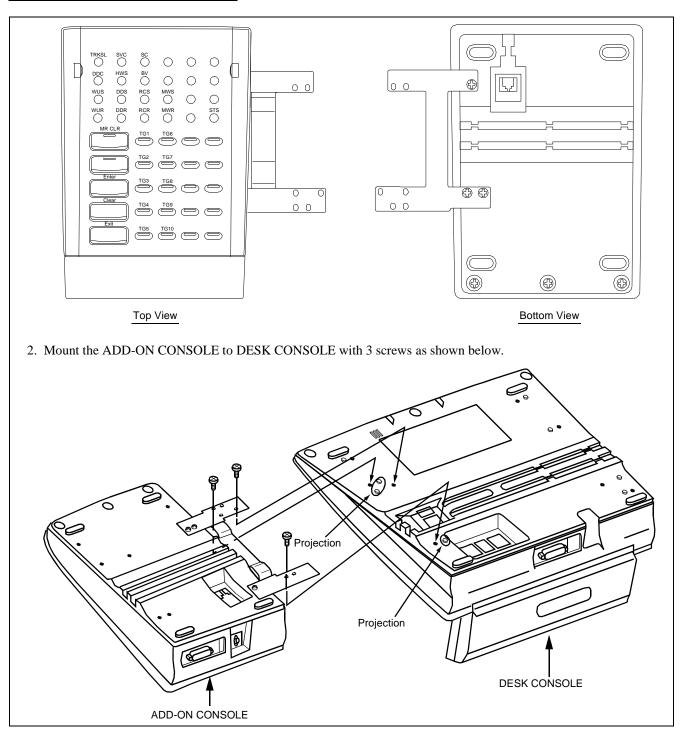


Figure 016-18 Mounting of Add-On Console (Left Side of DESK CONSOLE) (Continued)

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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.

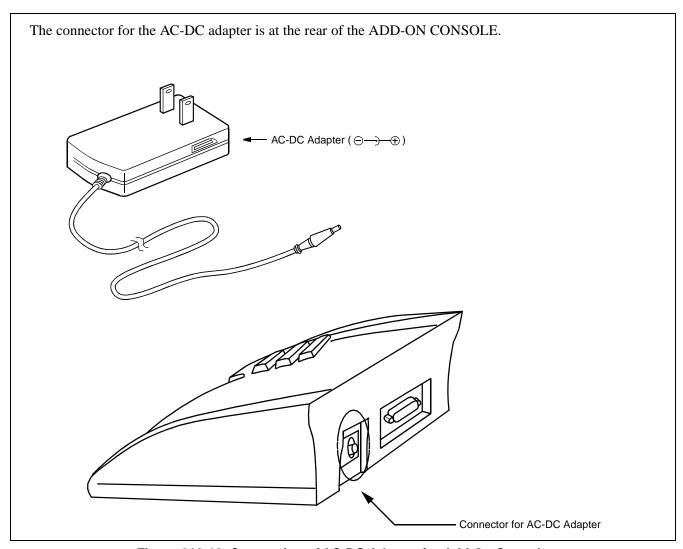


Figure 016-19 Connection of AC-DC Adapter for Add-On Console

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Installation of the DESK CONSOLE and Cable Connection

11. CONFIGURATION MENU

11.1 General

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

- 1. HEADSET/HANDSET
- 2. HEADSET TYPE
- 3. MUTE
- 4. REC CONTROL
- 5. PAGE CONTROL
- 6. SUP CONNECTION
- 7. REC VOLUME
- 8. BLF
- 9. HOLD/START/RELEASE/SWAP

11.2 Selection of Configuration Item

1. Displaying Configuration Menu

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Installation of the DESK CONSOLE and Cable Connection

(a) While pressing the L3 and L6 keys simultaneously, turn on the power.

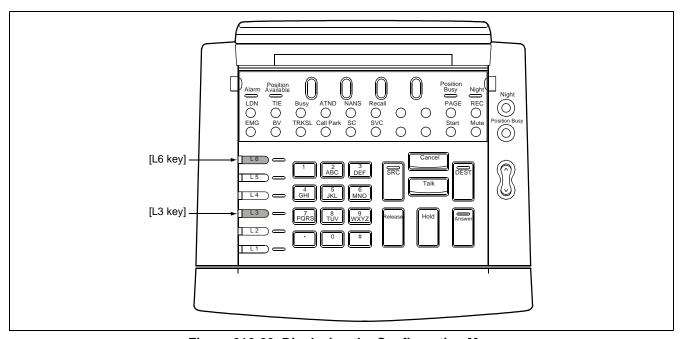


Figure 016-20 Displaying the Configuration Menu

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The first page of Configuration Menu appears on the LCD. Configuration Menu has a total of three 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	Release: exit
2: BLF	Answer: update
3: HOLD/START/RELEASE/SWAP	

- (b) When the DEST key is pressed, the display changes to the next page. When returning to the previous page, press the SRC key.
- (c) When the Release key is pressed, Configuration Menu disappears and the DESK CONSOLE returns to normal operation.

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12. SELECTION OF CONFIGURATION ITEM

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.

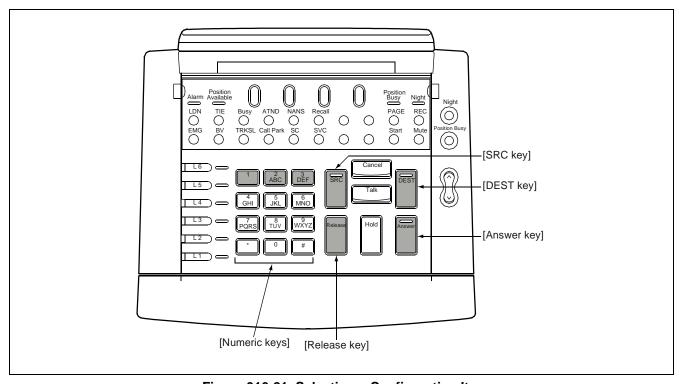


Figure 016-21 Selecting a Configuration Item

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13. ASSIGNMENT OF CONFIGURATION DATA

This section explains how to assign each configuration data. When assigning configuration data, the following shaded keys are used.

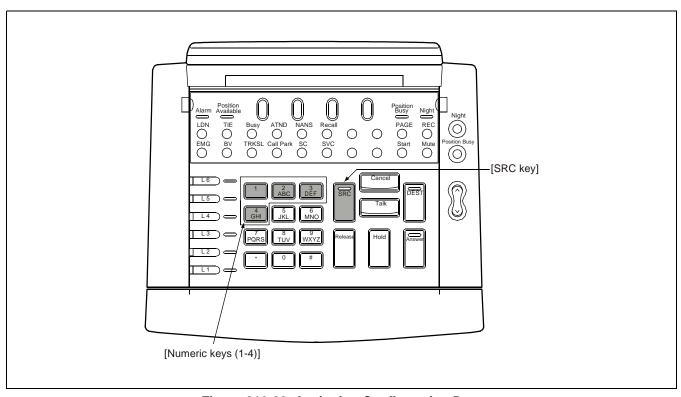


Figure 016-22 Assigning Configuration Data

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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.

(d) 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	

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15. HEADSET TYPE

This item specifies the type of Headset connected to the H/S1 connector.

(d) Press the desired number. An asterisk shows the selected number.

[HEADSET TYPE] SRC: menu
*1: SUPRA
2: COROLLE

- 1. The type of Headset is "SUPRA"
- 2. The type of Headset is "COROLLE"

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	

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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	

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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.*

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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 connected
- 2. Supervisory Console is not 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.*

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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 VOLU	ME 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	

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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	

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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

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22. UPDATING CONFIGURATION DATA

When configuration data assignment is complete, update configuration data according to the procedure below.

- (a) Press the RELEASE key to cancel update.
- (b) While one of the Configuration Menus is displayed on the LCD, press the ANSWER key.

Configuration data is updated, and the DESK CONSOLE is automatically restarted.

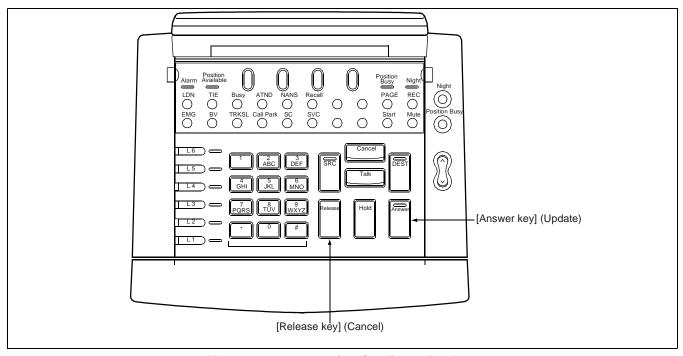
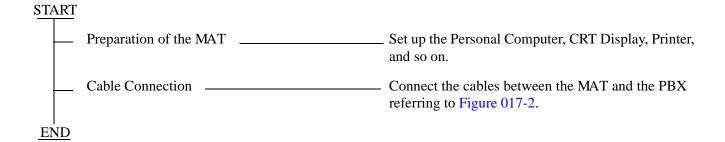


Figure 016-23 Updating Configuration Data

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Installation of Maintenance Administration Terminal (MAT) and Cable Connections	

This NAP explains the installation of the Maintenance Administration Terminal (MAT) and the System Message Printer focusing on their cable connections.

1. INSTALLATION OF MAT AND CABLE CONNECTIONS



NAP-200-017
Sheet 2/9
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

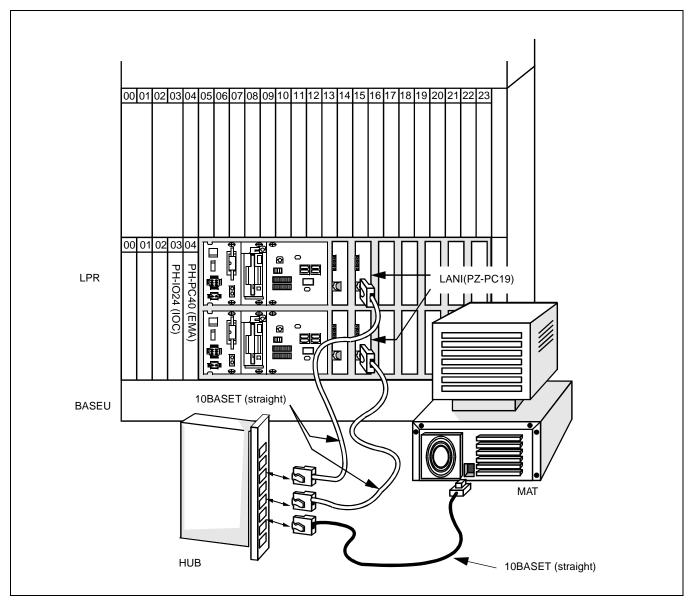


Figure 017-1 Cabling of MAT when Using Ethernet

NAP-200-017
Sheet 3/9
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

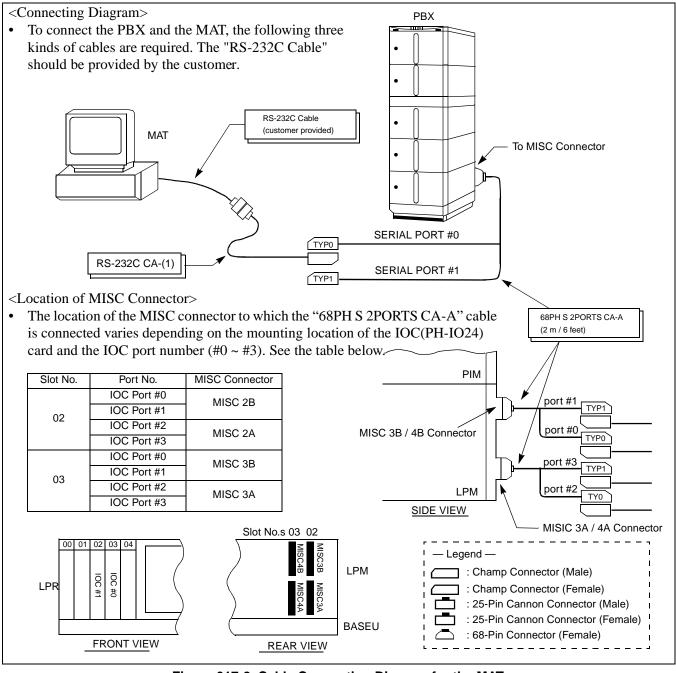


Figure 017-2 Cable Connection Diagram for the MAT

NAP-200-017
Sheet 4/9
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 the PBX and the MAT (Maintenance Administration Terminal) exceeds 15 meters (50 feet), connect them with Modems as shown in Figure 017-3.

ST	<u>ART</u>		
		Preparation of the MAT	Set up the Personal Computer, CRT Display, Printer, and so on.
	_	Preparation of the modems	Set up the modems referring to their instruction book
	_	Cable connection	Connect the cables referring to Figure 017-3.
El	ND		

NAP-200-017
Sheet 5/9
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

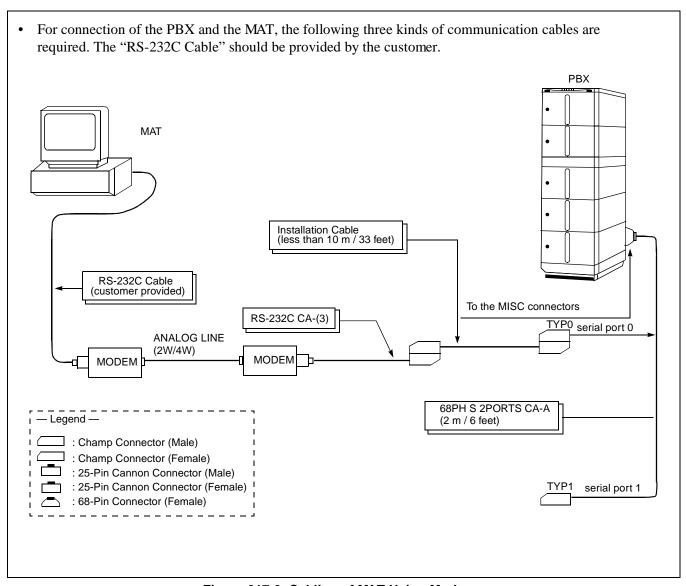
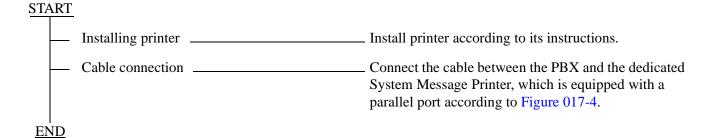


Figure 017-3 Cabling of MAT Using Modems

NAP-200-017
Sheet 6/9
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

3. INSTALLATION OF SYSTEM MESSAGE PRINTER AND CABLE CONNECTIONS



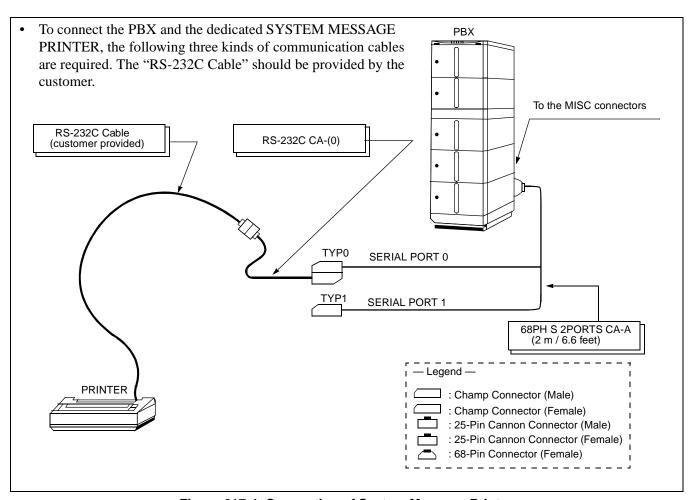


Figure 017-4 Connection of System Message Printer

NAP-200-017
Sheet 7/9
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

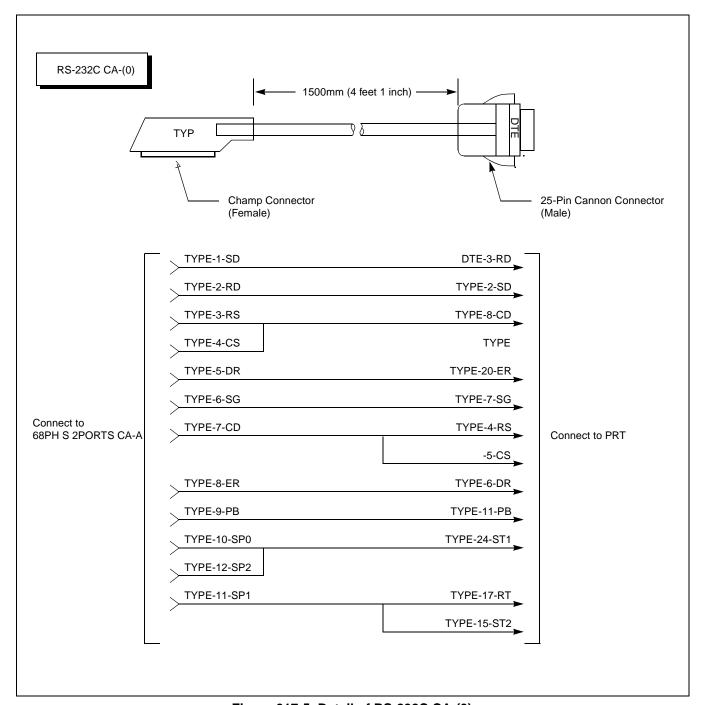


Figure 017-5 Detail of RS-232C CA-(0)

NAP-200-017
Sheet 8/9
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections

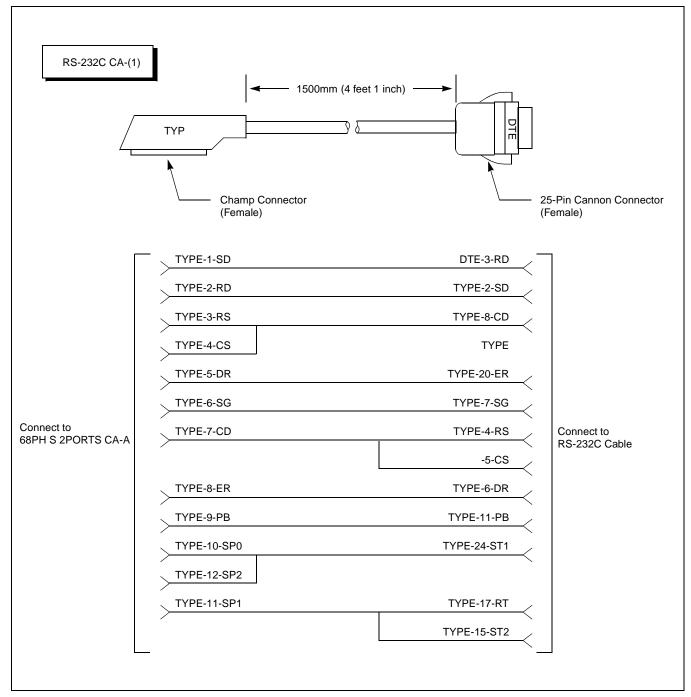


Figure 017-6 Detail of RS-232C CA-(1)

NAP-200-017	_
Sheet 9/9	
Installation of the Maintenance Administration Terminal (MAT) and Cable Connections	;

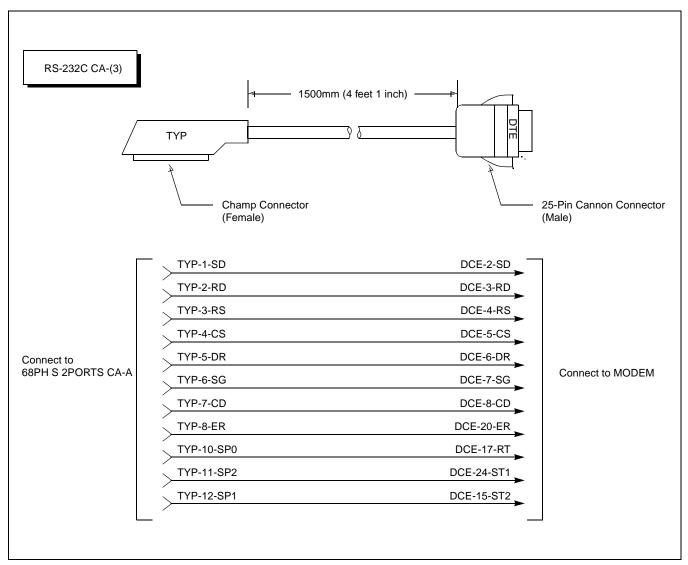


Figure 017-7 Detail of RS-232C CA-(3)

NAP-200-018
Sheet 1/3
Connections of SMDR

This NAP explains the cable connection of SMDR equipment.

Note: The IOC circuit card (PH-IO24), which has four RS-232C interfaces, can be mounted in slot Number 3 and/or 2 of the LPR. Consequently, the system can have a maximum of eight ports for the RS232C terminals.

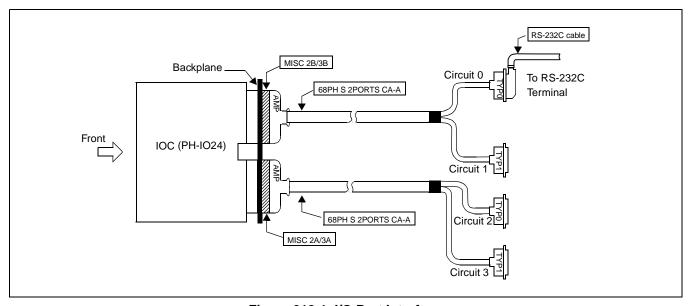
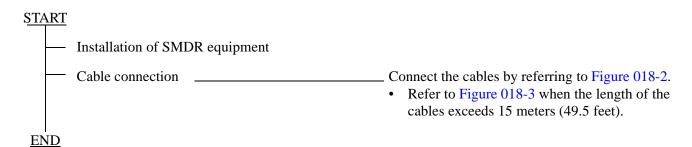


Figure 018-1 I/O Port Interface

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.



NAP-200-018
Sheet 2/3
Connections of SMDR

The location of MISC connector to which "68PH S 2PORTS CA-A" cable is connected varies depending on the mounting location of the IOC (PH-IO24) card and the designated IOC port number (#0~#3). PBX PIM Slot Number 03 02 loc S LPM LPM FRONT VIEW BASEU PBX FRONT VIEW RS 232C Cable (customer provided) SMDR MISC 3B/4B Connector IOC 68PH S 2PORTS CA-A Port 1 Port 0 PIM Port 3 2400 RS 232C CA-1 Port 2 -- Legend --SIDE VIEW : Champ Connector (Male) MISC 3A/4A Connector : Champ Connector (Female) : 25-Pin Cannon Connector (Male) : 25-Pin Cannon Connector (Female) : 68-Pin Connector (Female)

Figure 018-2 Cable Connection Diagram for the SMDR Equipment

NAP-200-018
Sheet 3/3
Connections of SMDR

The location of MISC connector to which "68PH S 2 PORTS CA-A" cable is connected varies depending on the mounting location of the IOC (PH-IO24) card and the designated IOC number (#0~#3). PBX PIM Slot Number 03 02 MISC2B 8 LPM 8 LPM FRONT VIEW **BASEU REAR VIEW** PBX MISC 3B/4B Connector 68PH S 2PORTS CA-A Analog Line (2W/4W) MODEM RS 232C Cable (customer provided) MODEM SMDR Port 1 Port 0 IOC 2400 RS 232C CA-(3) Port 3 Port 2 -- Legend --MISC 3A/4A Connector : Champ Connector (Male) : Champ Connector (Female) : 25-Pin Cannon Connector (Male) : 68-Pin Connector (Female)

Figure 018-3 Connection of SMDR by Using MODEM

This page is for your notes.

CHAPTER 4 SYSTEM STARTUP

1. GENERAL

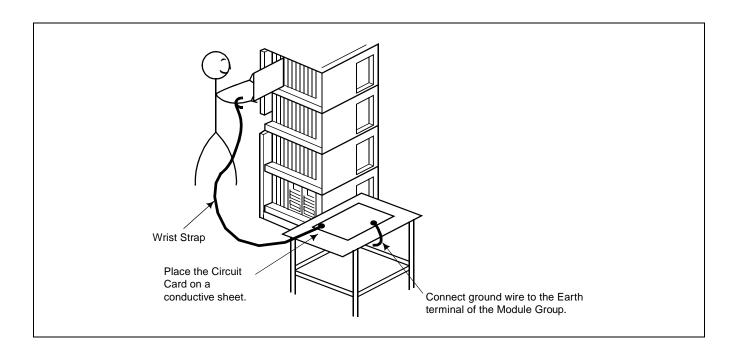
This Chapter describes the method to start up the system initially after completion of the installation of the PBX and the method to check if the system has started up normally. Before beginning the system startup, thoroughly read Section 2., "PRECAUTIONS BEFORE BEGINNING SYSTEM STARTUP" of this Chapter, and observe the precautions while performing the system startup. Failure to so may delay the system cutover or may result in damage to the system equipment.

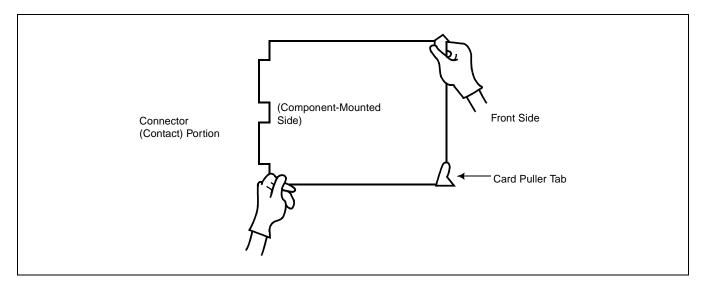
2. PRECAUTIONS BEFORE BEGINNING SYSTEM STARTUP

- 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 begun:
 - 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 a backup is not made, and the contents of the Data Memory are accidentally altered or destroyed, all the Office Data will have to be programmed again.

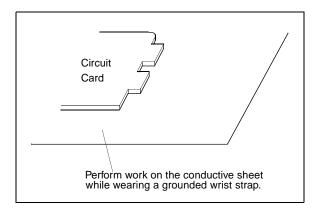
SYSTEM STARTUP

- 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 tests involving the changed data must be performed.
- 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 in Day Mode. To change over to Night Mode, press the NITE key on the Attendant Console.
 - If no Attendant Console is equipped, the system begins operating in 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 will blow out. (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 first consulting with 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 performed (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 the power to the Module Group (LPM / PIM etc.).
 - Before connecting or disconnecting a CHAMP connector, turn OFF the power to the Module Group. This will prevent an accident from occurring if 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.





• 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 the color of the label showing the Slot Number.

3. SYSTEM STARTUP PROCEDURE

The NAPs indicated in the following flowchart describe the procedures for powering on, starting up the system, assigning Office Data, and checking the startup conditions.

<u>START</u>	
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



Power ON	Contents Static Sensitive Handling
<u>START</u>	Precautions Required
Visual Inspection	Check whether any pins are shorting on the backplane of each Module.
	 Check whether any foreign matter such as a cleaning fluid residue is present on the connector portion of the circuit cards.
	- On each circuit card equipped with ROM (CPU, etc.), check whether any pins of the ROM are bent or improperly seated.
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	Check insulation across the -48 V and G terminals on the power receiving terminal of the Base Unit.
	Turn power to the rectifier ON and check the voltage (DC $-48V \pm 5V$) and its polarity on the power receiving terminal of the Base Unit.
Turn ON Fan Units	Turn FAN UNIT ON. Verify that air blows upwards. If the Fuse blows, the input polarity is reversed. Turn OFF the FAN UNIT. Correct polarity, replace the fuse and turn FAN UNIT ON. Verify that the FAN blows air upwards.
Check PWR Supply	 Check the Power Supplies for each Module one at a time. Check Steps: Turn circuit breaker OFF and insert the PWR Supply. Turn circuit breaker ON (See Note). Various lamps (Green) illuminate. Observe the PWR Supply for a while and confirm that nothing abnormal (unusual smell, smoke, etc.) occurs. Turn the circuit breaker ON/OFF a few times and observe the condition. Turn the circuit breaker OFF and remove the PWR Supply.
	Note: If a Module is equipped with dual PWR Supplies,

NDA-24295

A

they must be turned ON/OFF simultaneously.

NAP-200-019	
Sheet 2/2	
Power ON	



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- 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 simultaneously.*

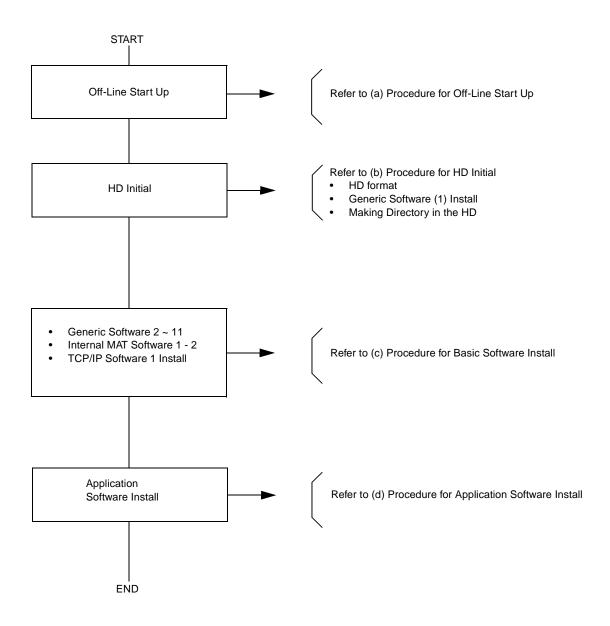
Power ON Procedure	$IMG3 \rightarrow$	$IMG2 \rightarrow$	$IMG1 \rightarrow$	IMG0			
	IMG3:	$PIM0 \rightarrow$	$PIM1 \rightarrow$	$\text{PIM2} \rightarrow$	PIM3		
	IMG2:	$TSWM1 \rightarrow$	$\text{PIM0} \rightarrow$	$PIM1 \rightarrow$	$\text{PIM2} \rightarrow$	PIM3	
	IMG1:	$TSWM0 \rightarrow$	$PIM0 \rightarrow$	$PIM1 \rightarrow$	$PIM2 \rightarrow$	PIM3	
	IMG0:	$\text{CPR0} \rightarrow$	$\text{CPR1} \rightarrow$	$\text{PIM0} \rightarrow$	$PIM1 \rightarrow$	$\text{PIM2} \rightarrow$	PIM3
Power OFF Procedure:	IMG3 →	IMG2 →	IMG1 →	IMG0			
Power OFF Procedure:	IMG3 → IMG3:	IMG2 → PIM3 \rightarrow	$IMG1 \rightarrow PIM2 \rightarrow$	IMG0 PIM1 \rightarrow	PIM0		
Power OFF Procedure:				$PIM1 \rightarrow$	$\begin{array}{c} \text{PIM0} \\ \text{PIM0} \rightarrow \end{array}$	TSWM1	
Power OFF Procedure:	IMG3:	$PIM3 \rightarrow$	$PIM2 \rightarrow$	$\begin{array}{c} \text{PIM1} \rightarrow \\ \text{PIM1} \rightarrow \end{array}$		TSWM1 TSWM0	

END

NAP-200-020
Sheet 1/6
Program Install and Load



Procedure for Program Install consists of the following items.



Note: The control of 7-seg LED is the next page. (Case of program install and restart processing)

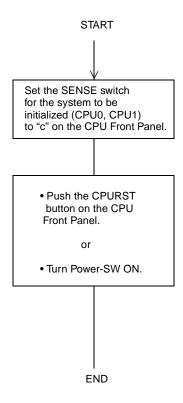
SYSTEM STARTUP

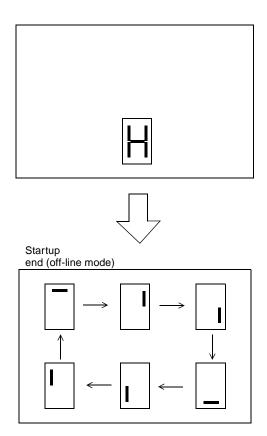
NAP-200-020
Sheet 2/6
Program Install and Load

(a) Procedure for off-line start-up



Status change of 7 Segment LED on the EMA card



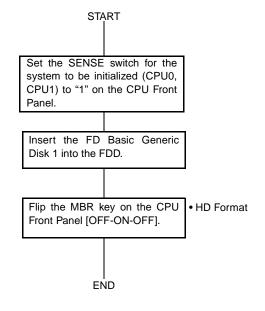


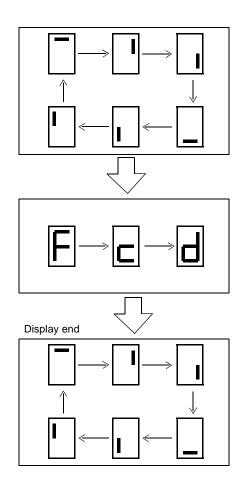
NAP-200-020
Sheet 3/6
Program Install and Load

(b) Procedure for HD Initial



Status change of 7 Segment LED on the CPU Front Panel.





Note:

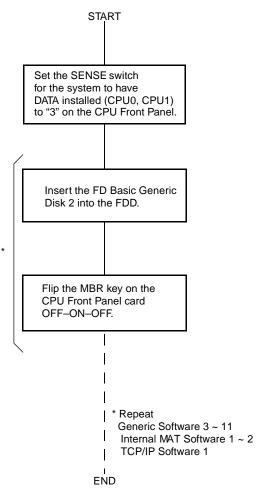
SENS SW	7SEG LED	FUNCTION
1	F → c → d	FORMAT $ ightarrow$ COPY $ ightarrow$ MAKING DIRECTORY

NAP-200-020
Sheet 4/6
Program Install and Load

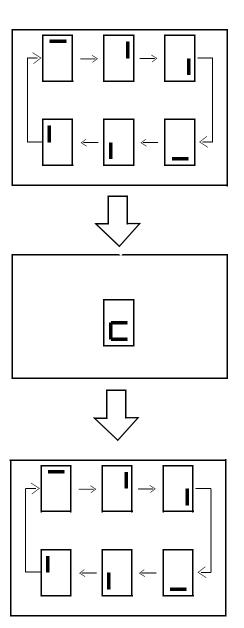


(c) Procedure for Generic Software (#2 ~ #11) Internal MAT Software (1 ~ 2), TCP/ IP Software (1) Install

Status change of 7 Segment LED on the CPU Front Panel.



WARNING: Removal or Make Busy of the HFD card is not allowed while the Floppy Disk or Hard Disk is being accessed.

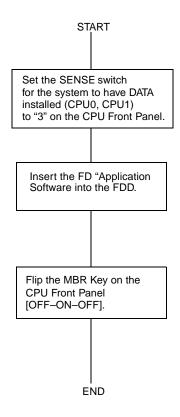


NAP-200-020
Sheet 5/6
Program Install and Load

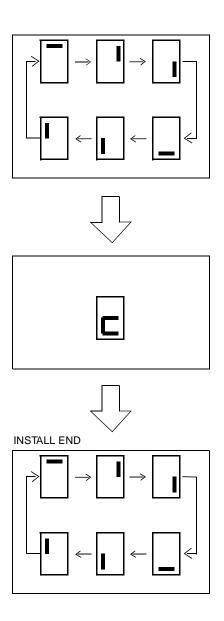


(d) Procedure for Application Software Install

Status change of 7 Segment LED on the CPU Front Panel.



WARNING: Removal or Make Busy of the HFD card is not allowed while the Floppy Disk or Hard Disk is being accessed.

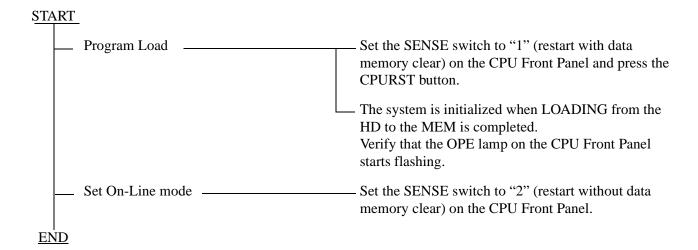


SYSTEM STARTUP

NAP-200-020
Sheet 6/6
Program Install and Load



Procedure for Program Load
 This section describes system start-up procedure in which a program is loaded from the HD to the MEM and the data memory is cleared.



NAP-200-021
Sheet 1/2
Assignment of Office Data

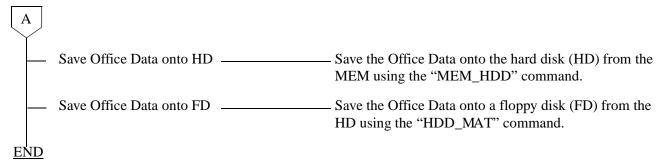


<u>START</u>		
	Start up the MAT	
	Enter basic data	- Assign the following data via the MAT per the office data programming sheet.
		— "ATIM": Assignment of Date and Time
		"ASYD" (SYS 1, 2, & 3) /ASYDL (SYS 1 & 2): System Data assignment
		"AUNT": Unit Data assignment
_	Save basic data	- Save the above data onto the hard disk (HD) using the "MEM_HDD" Command.
	Initialize	- Make sure that the SENSE switch on the CPU Front Panel has been set to "2".
		- Press the CPURST button on the CPU Front Panel.
		Clear the alarm by pressing the ALM RST button on the TOPU.
	Assign Office Data	- Assign data according to the office data programming sheet.
A		

SYSTEM STARTUP

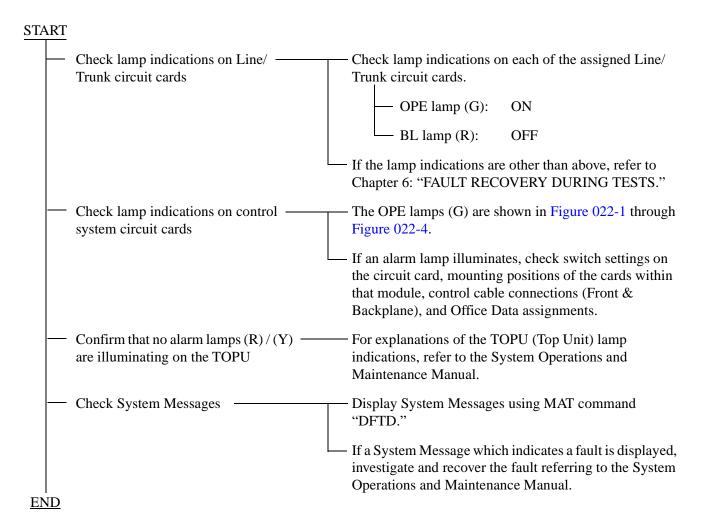
NAP-200-021
Sheet 2/2
Assignment of Office Data





NAP-200-022
Sheet 1/5
Check of Lamp Indications and System Messages





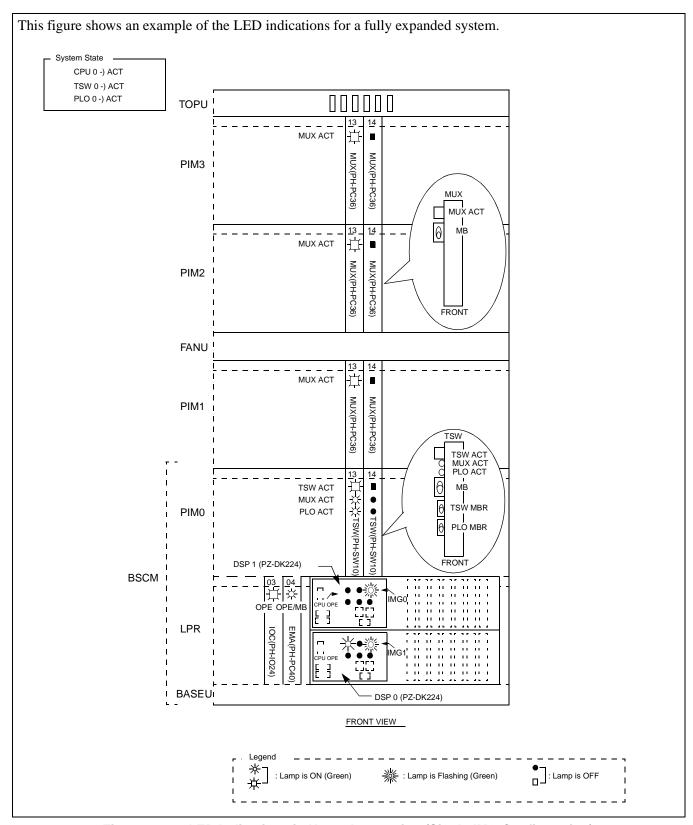


Figure 022-1 LED Indications in Normal Operation (Single IMG Configuration)

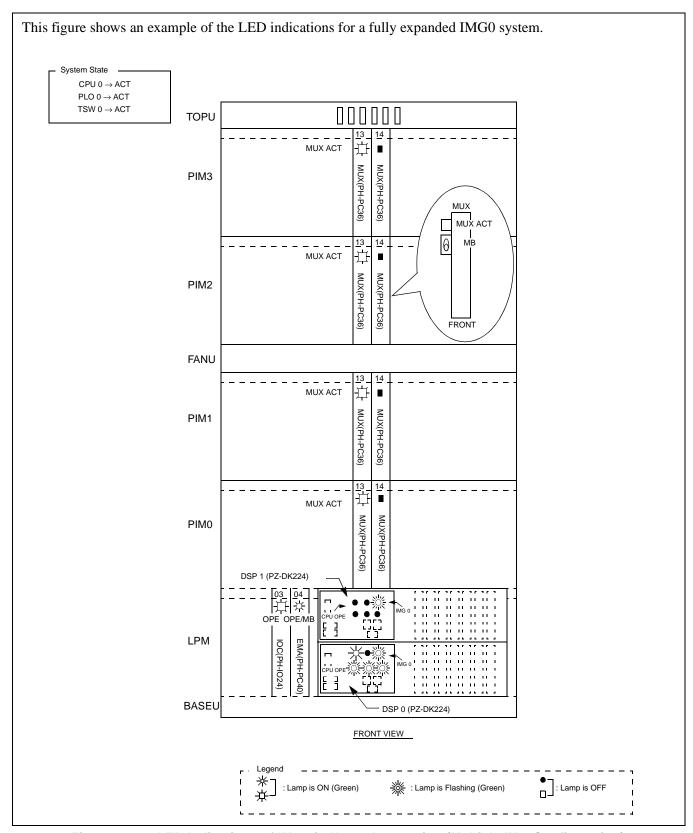


Figure 022-2 LED Indications of IMG0 in Normal Operation (Multiple IMG Configuration)

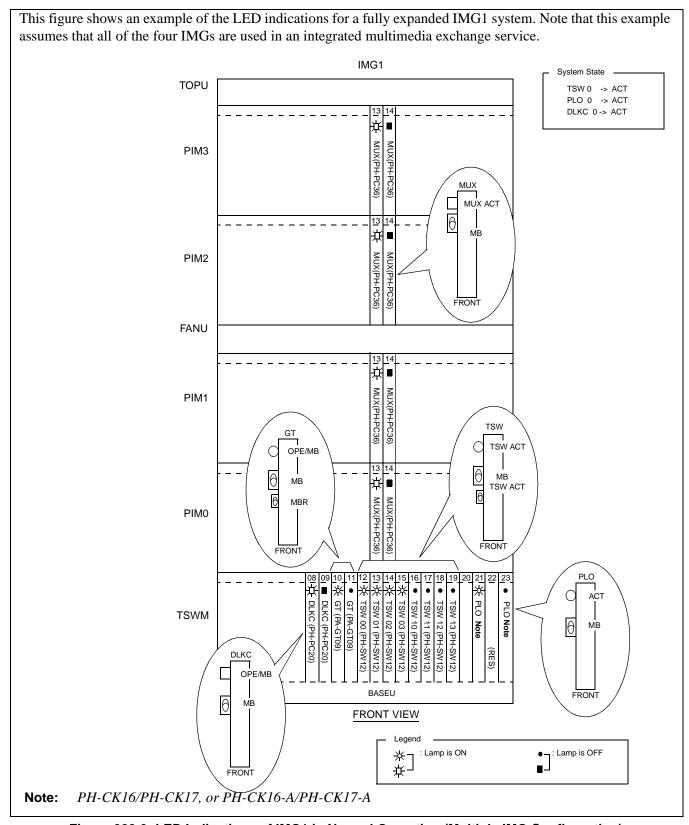


Figure 022-3 LED Indications of IMG1 in Normal Operation (Multiple IMG Configuration)

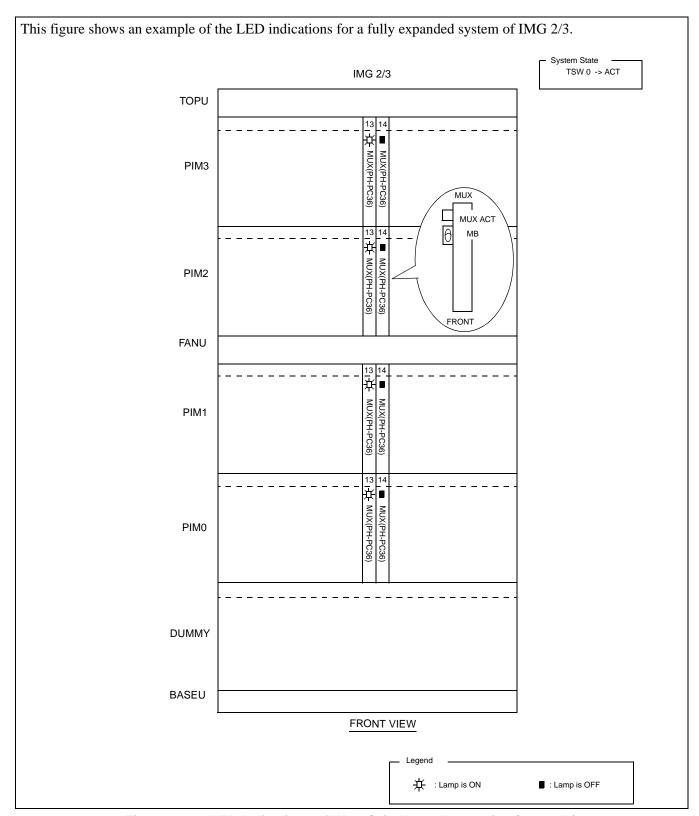


Figure 022-4 LED Indications of IMG 2/3 in Normal Operation (example) (Multiple IMG Configuration)

SYSTEM STARTUP

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.

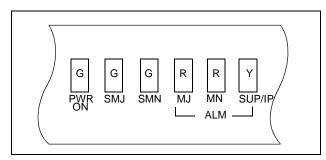


Figure 023-1 Alarm Lamps on the TOPU

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) back ON. Confirm that the MJ lamp (red) on the TOPU turns ON. Cancel the alarm indicating by pressing the ALM RST button on the TOPU. Take an act side RGU Fuse out of the PWR card. Test of MN (MINOR) Lamp _ - Confirm that the MN lamp (red) on the TOPU turns ON. Cancel the alarm indication by pressing the ALM RST button on the TOPU. Test of SUP/IP (SUPERVISORY)___ On the EMA Circuit card, flip the MB switch DOWN-**UP-DOWN** Lamp Confirm that the SUP lamp (yellow) on the TOPU turns Cancel the alarm indication by pressing the ALM RST button on the TOPU. **END**

SYSTEM STARTUP

This page is for your notes.

CHAPTER 5 INSTALLATION TEST PROCEDURE

1. HOW TO ENTER DATA IN THE TEST CHECK COLUMN

Each NAP in this Chapter has a check column for test result entry for each test item (see Figure 5-1). This paragraph explains the method for entering test results into the appropriate check column using Figure 5-1 as an example.

1. Method of Entry

Each check column consists of two sections of "PROVIDED" and "CHECK". If the equipment or service feature pertaining to the test item is provided in the system, enter "*" in the PROVIDED section. During installation testing, the test item with "*" marked 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: "OK"
- When the test result is not good: "x"

2. Fault Recovery

If a fault is discovered as a result of an installation test, enter " $\sqrt{}$ " into the related check sheet. After finishing all tests in the same category, be sure to repair the detected fault before proceeding to the next test.

3. Entry into Check Column after Fault Recovery

After fault recovery work has been completed, a test must be performed to confirm that the fault has been completely corrected. If the result of this confirmation test indicates that the fault has been corrected, enter "OK" next to the "×" entered previously. This entry should appear as: "× OK".

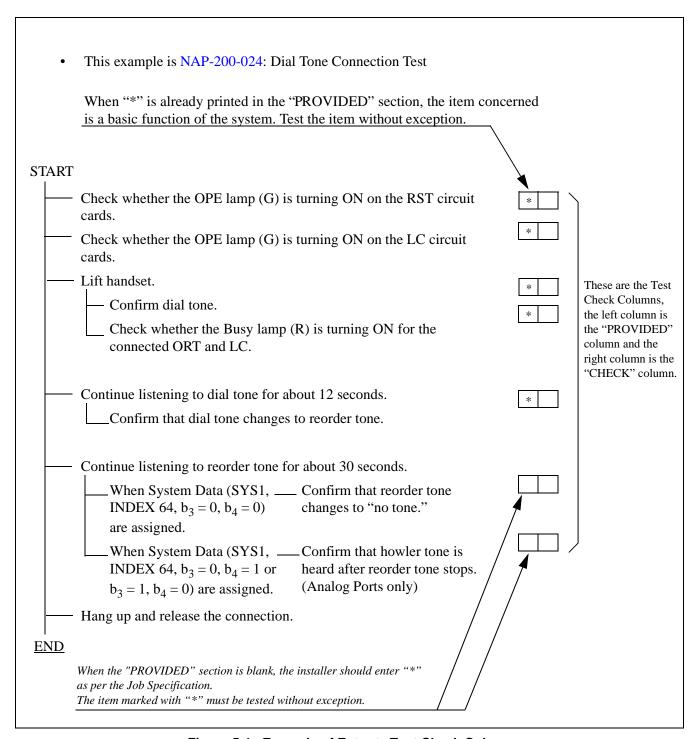


Figure 5-1 Example of Entry to Test Check Column

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".

START

Dial Tone Connection Test:

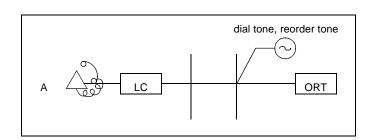
NAP-200-024

Station-to-Station Connection Test:

NAP-200-025

END

NAP-200-024
Sheet 1/1
Dial Tone Connection Test



ST	ГΑ	R ₁	Γ
\sim 1	L / 1		L

Check whether the OPE lamp (G) is turning ON on the RST circuit cards.	*	
·		

Check whether the OPE lamp (G) is turning ON on the LC circuit cards.

Lift handset.

— Confirm dial tone.	_		
Confirm diai tone.		*	

— Check whether the Busy lamp (R) is turning ON for the connected ORT and LC.

Continue listening to dial tone for about 12 seconds.

Confirm that dial tone changes to reorder tone.

Continue listening to reorder tone for about 30 seconds.

When System Data (SYS1, Confirm that reorder tone changes to "no INDEX 64, $b_3 = 0$, $b_4 = 0$) are tone". assigned.

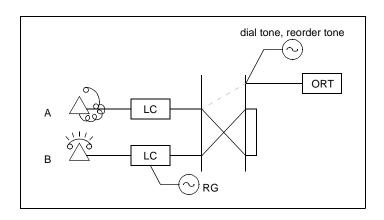
When System Data (SYS1, INDEX 64, $b_3 = 0$, $b_4 = 1$ or $b_3 = 1$, $b_4 = 0$) are assigned.

Confirm that howler tone is heard after reorder tone stops. (Analog Ports only)

Hang up and release the connection.

END

NAP-200-025
Sheet 1/1
Station to Station Connection Test



<u> </u>	KI		
		Confirm that a connection can be established between Station "A" and Station "B."	
_		Station "A" goes off-hook.	
		Station "A" hears dial tone.	*
		Station "A" dials the station number of Station "B."	
		Station "A" confirms that dial tone stops when the first digit has been dialed.	*
		Station "A" confirms that ringback 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.	
EN	D		

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.

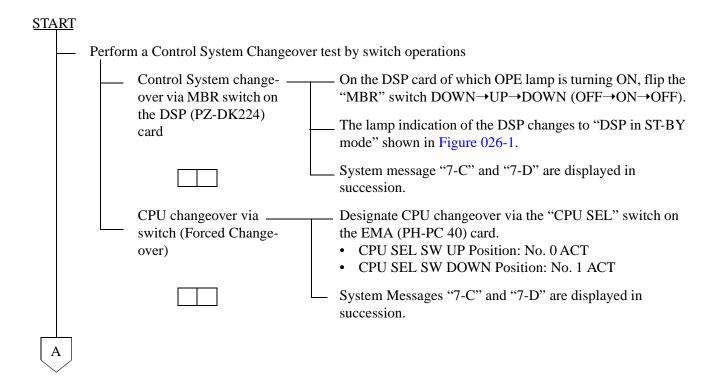
STA	<u>RT</u>		
-		System Changeover Test:	NAP-200-026
-		System Initialization Test:	NAP-200-027
-		Circuit Card Initialization Test:	NAP-200-028
EN	ID		

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.



NAP-200-026	
Sheet 2/8	
System Changeover Test	Single IMG and Multiple IMG Configuration



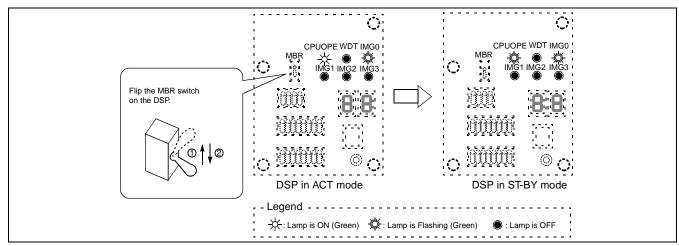


Figure 026-1 How to Perform a Control System Changeover (Single IMG Configuration)

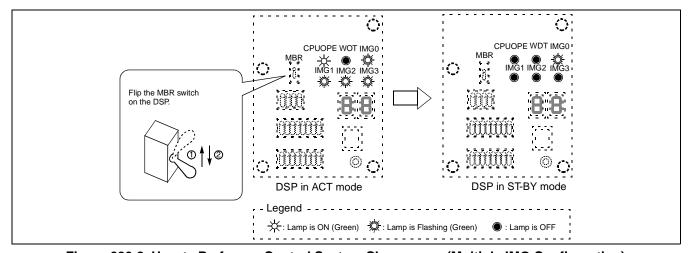
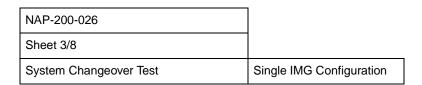


Figure 026-2 How to Perform a Control System Changeover (Multiple IMG Configuration)





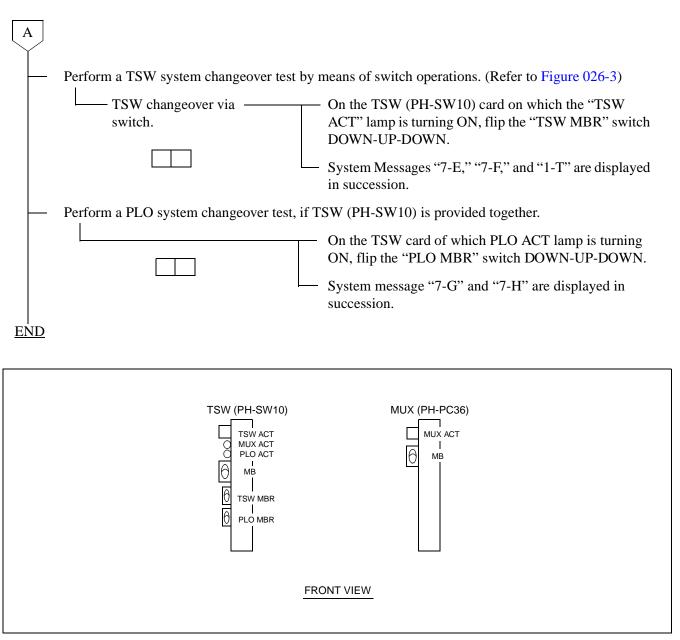


Figure 026-3 LEDs and Switches on TSW/MUX

NAP-200-026	
Sheet 4/8	
System Changeover Test	Multiple IMG Configuration



A			
_	Perform a Speech Path system changeover	er test by s	witch operations. (Refer to Figure 026-4)
	TSW changeover via switch		active GT (PA-GT09) card on which the "OPE/MB" illuminating, flip the "MBR" switch DOWN-UP-
		changed circuit	ure that the active Speech Path system has been d over to the ST-BY mode. (Check that all the related cards, which were formerly active, have been totally d over to the ST-BY mode.)
		• 7	uit Cards to be affected TSW (PH-SW12) DLKC (PH-PC20) MUX (PH-PC36) P: Refer to Figure 026-4.
		display	e the system messages "7-E," "7-F," and "1-T" to be ed automatically.
	Perform a PLO system changeover test by PLO changeover via switch.	— On the	PLO card on which the "ACT/OPE" lamp is ating, flip the "MB" switch DOWN-UP-DOWN.
			ure that the active PLO system has been changed over T-BY mode ("ACT/OPE" lamp goes OFF).
			e the system messages "7-U" and "7-V" to be ed automatically.
		Note:	As the PLO, any of the following cards can be used:
			• PH-CK16
			• PH-CK17
END			• PH-CK16-A
			• <i>PH-CK17-A</i>

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NDA-24295

NAP-200-026	
Sheet 5/8	
System Changeover Test	Multiple IMG Configuration



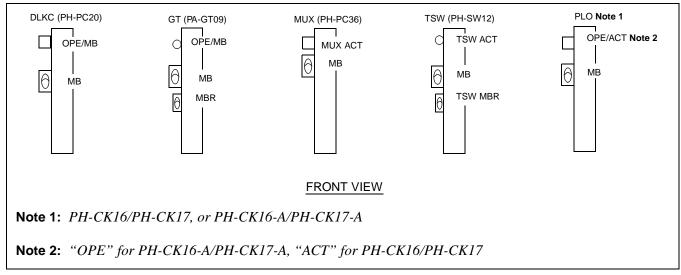


Figure 026-4 LEDs and Switches for System Changeover (Multiple IMG Configuration)

NAP-200-026	
Sheet 6/8	
System Changeover Test	Single IMG Configuration

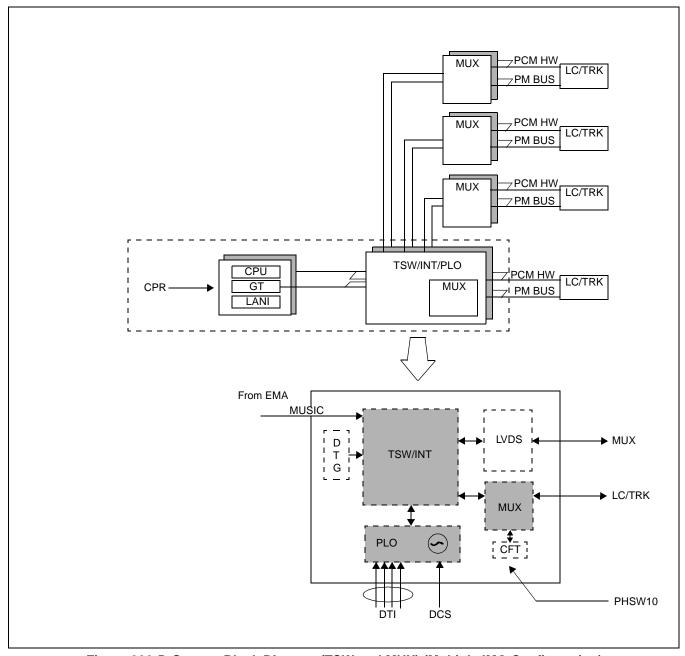


Figure 026-5 System Block Diagram (TSW and MUX) (Multiple IMG Configuration)

NAP-200-026	
Sheet 7/8	
System Changeover Test	Multiple IMG Configuration

This figure shows a system block diagram centering on the CPU and its controlling GT. Although each side appears to have complicated connections, the controlling route of CPU 0 goes directly to GT 0, and that of CPU 1 to GT 1. Therefore, if the system of CPU is once changed over, the ACT/ST-BY of GT is also changed over. IMG 0 IMG 3 IMG 1 MUXI **TSW 10 TSW 11 TSW 12** TSW 13 TSW 00 TSW 01 TSW 02 TSW 03 TSW I/O BUS DLKC 1 TSW I/O BUS DLKC 0 PLO 1 PLO 0 As shown below, though an external cable is physically connected between ISAGT #0 GT 1 and GT #1, the actual control GT 0 signal is sent/received only between ISAGT 0 and GT 0 via CPR 1 **ISAGT** the backboard bus. CPR 0 ISAGT CPU 1 CPU 0 GT 1 LANI LANI TIOP0 ₹ LANI LANI Backboard Bus Backboard MISC BUS ISAGT0 EMA IOC/ External Cable MISC ISAGT: PZ-GT13 LANI: PZ-PC19 GT: PH-GT09 TSW: PH-SW12 MUX: PH-PC36 DLKC: PH-PC20 EMA: PH-PC40 IOC: PH-IO24 PLO: PH-CK16/17, or PH-CK16-A/17A Because the ACT/ST-BY changeover of CPU also affects the GT status, the MBR key on the GT card is Note: not used for GT system changeover. The key is used to switch over the Speech Path System, involving the TSW, DLKC, and MUX circuit cards. (See the next page.)

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

This figure shows a system block diagram centering on the GT and its controlling Speech Path System. By changing over the ACT/ST-BY 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. IMG 0 IMG 1 IMG 2 IMG 3 Line/Trunk PM Line/Trunk PM Line/Trunk PM Line/Trunk PM PM BUS PCM HW \ PM BUS PM BUS PCM HW PCM HW PCM HW PM BUS PCM HW PCM HW PCM HW PCM HW√ PCM HW PCM HW PCM HW PCM HW PM BUS PCM HW\ PM BUS PCM HW PM BUS **TSW 10** TSW 11 TSW 12 TSW 13 TSW 00 TSW 01 TSW 02 TSW 03 TSW I/O BUS DLKC 1 TSW I/O BUS DLKC 0 PLO 1 PLO 0 GT 1 GT 0 CPR 1 ISAGT CPR 0 CPU 1 **ISAGT** CPU 0 LANI LANI LANI LANI ISAGT: PZ-GT13 LANI: PZ-PC19 GT: PH-GT09 TSW: PH-SW12 MUX: PH-PC36 DLKC: PH-PC20 PLO: PH-CK16/17, or PH-CK16-A/17A 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, the ACT/ST of GT and PLO is not affected.

Figure 026-7 System Block Diagram (Speech Path) (Multiple IMG Configuration)

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 Power ON/OFF.

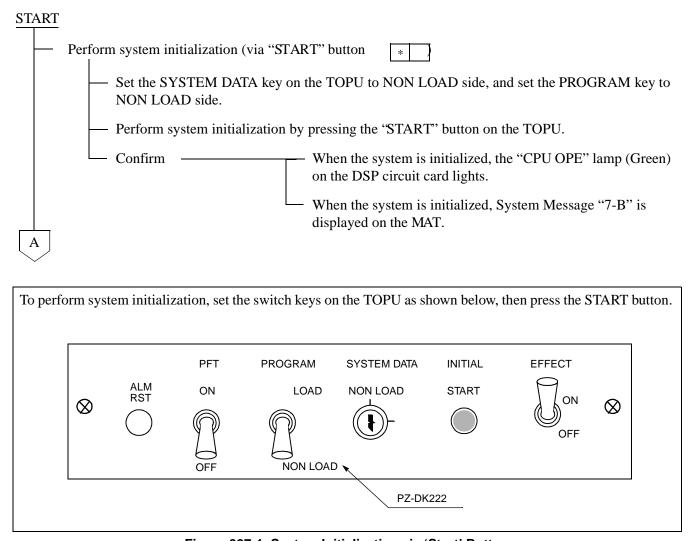


Figure 027-1 System Initialization via 'Start' Button

NAP-200-027
Sheet 2/2
System Initialization Test



A		
	Perform system initialization (by po	owering ON/OFF) *
	Initialization by powering ON/OFF.	On all PWR Supplies, set the circuit breaker OFF (Down). If a module contains two PWR Supplies, they must be turned ON/OFF simultaneously.
		 Turn ON the PWR Supplies in each module in the following order. If a module contains two PWR Supplies, they must be turned ON/OFF simultaneously. LPM→PIM0→PIM1→PIM2→PIM3
	Confirm	When the system is initialized, the CPU OPE lamp (Green) on the DSP turns ON.
		When the system is initialized, System Message "7-B" is displayed on the MAT.
	Assignment of Date and Time	Upon completion of all the initialization tests, assign data and time via MAT command "ATIM."
END		

NAP-200-028
Sheet 1/1
Circuit Card Initialization Test

START		
	Make the No. 0 CPU the ACT system.	
	In each PIM, initialize any Line/Trunk circuit card.	On the selected Line/Trunk circuit card, set the MB switch UP. The OPE lamp goes out. System Message "7-K" is displayed.
		Set the MB switch DOWN. — The OPE lamp turns ON. — System Message "7-L" is displayed.
	Clear the alarm	Clear the alarm indication by pressing the "ALM RST" button on the TOPU.
	Make the No. 1 CUP the ACT system.	
	In each PIM, initialize any Line/Trunk circuit card.	On the selected Line/Trunk circuit card, set the MB switch UP. The OPE lamp goes out. System Message "7-K" is displayed.
		Set the MB switch DOWN.
		The OPE lamp turns ON.
		System Message "7-L" is displayed.
_	Clear the alarm	Clear the alarm indication by pressing the "ALM RST" button on the TOPU.
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 with respect to their operations and speech path conditions. PWR Supplies are tested with respect to howler tone and ringing signal.

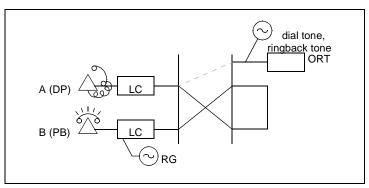
While tests are in progress, the No. 0 CPU and TSW systems must be ACT (active).

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.

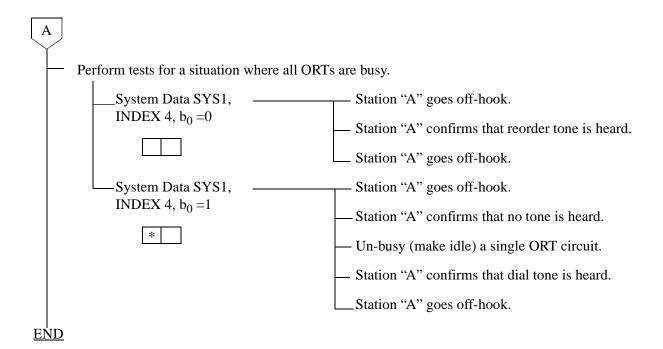
<u>START</u>	
— ORT (RST Card) Connection Test:	NAP-200-029
— ATTCON (ATI Card) Connection Test:	NAP-200-030
Line (LC, ELC Card) Connection Test:	NAP-200-031
Outgoing Trunk (COT, TLT, DTI Card) Connection Test:	NAP-200-032
Incoming Trunk (COT, TLT, DTI Card) Connection Test:	NAP-200-033
— Direct-In Termination 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	

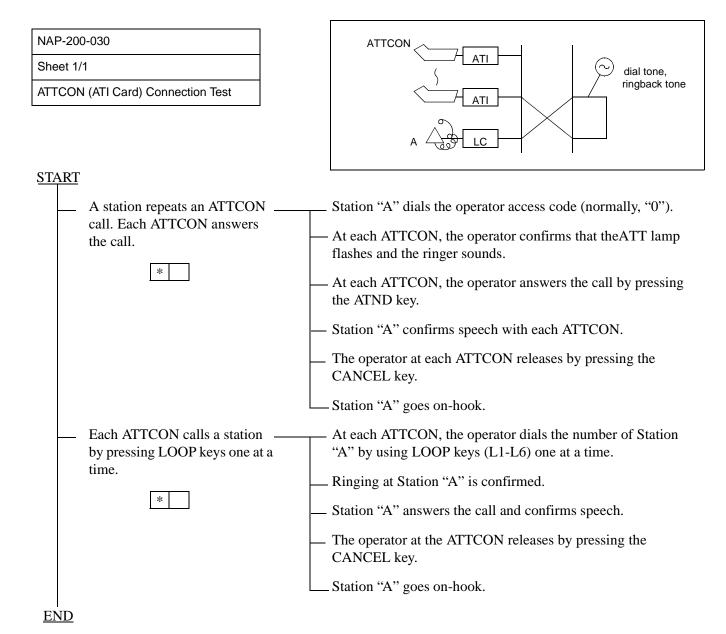
NAP-200-029
Sheet 1/2
ORT (RST Card) Connection Test



START On the front of the RST card, set all MBR switches (0-7) to Make busy all ORTs the OFF position, making all ORTs busy. From Station "A" (DP), test-Un-busy (make idle) only the ORT to be tested. ORTs one circuit at a time. Station "A" goes off-hook and after hearing dial tone, dials the station number of Station "B." Station "A" confirms ringing to Station "B," and Station "B" Stations "A" and "B" go on-hook. From Station "B" (PB), test— Un-busy only the ORT to be tested. ORTs on circuit at a time. Station "B" goes off-hook and after hearing dial tone, dials the station number of Station "A." Station "B" confirms ringing to Station "A," and Station "A" answers. Stations "A" and "B" go on-hook.

NAP-200-029
Sheet 2/2
ORT (RST Card) Connection Test





NAP-200-031 LC/ELC Sheet 1/1 Line being tested (XXXX) Line (LC, ELC, DLC, Card) Connection ATI/ELC dial tone, ringback tone On the MDF, a telephone set is connected to the line circuit An ATTCON or D^{term} is called to be tested. from each station. The called party confirms the station The station (XXXX) to be tested goes off-hook and number. confirms 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} dials the station number of the The ATTCON or D^{term} calls a station being tested. station being tested. The called station answers and confirms speech. The ATTCON or D^{term} confirms that the number dialed and the number of the station being tested are the same. The call is released. The test conducted when the The station being tested goes off-hook and confirms station involved is assigned as a ringback tone. Hot Line/House Phone. 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

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 with use of the sequence of Routes and Trunk Numbers assigned at each office

START When a C. O. Line or Tie Line is -Referring to Figures 032-1 through 032-3, make temporary not connected with a trunk circuit, cross connections on the MDF for a loop-back circuit. temporary cross connections Temporarily assign Office Data from the MAT so that a loopbetween the Outgoing Trunk back connection from the trunk can be established. being tested and the terminating trunk should be set up on the MDF as a loop-back circuit. 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 Un-busy (make idle) only the trunk to be tested. time by establishing access from a The station dials the Access Code of the trunk being tested station. 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 the original. **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.

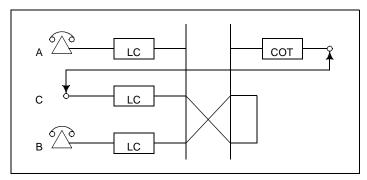


Figure 032-1 COT Test Configuration

• The trunk route must be assigned for Loop Start.

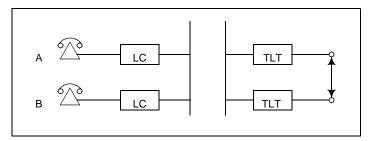


Figure 032-2 TLT Test Configuration

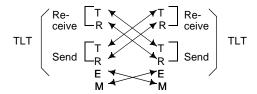
- Set up a loop-back connection between the TLT (Tie Line Trunk) to be tested and another EMT.
- If the TLT is a DID (Direct Inward Dialing) Trunk, connect the related leads as shown below.

TLT
$$\begin{pmatrix} T & & & T \\ R & & & R \end{pmatrix}$$
 TLT

• If the TLT is a 2W E&M System, connect the related leads as shown below.

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:

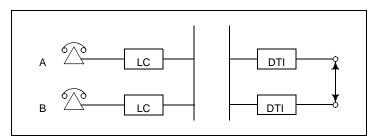
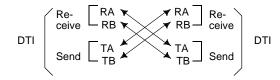


Figure 032-3 DTI Test Configuration

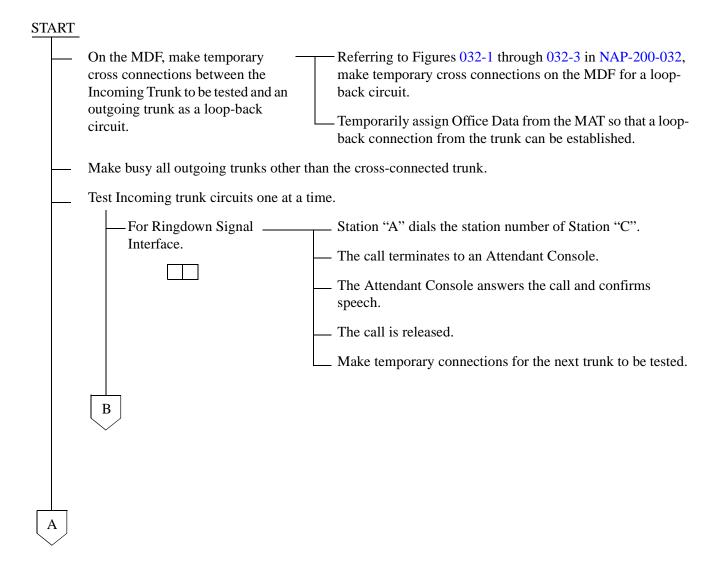


• If the office is the primary office (Clock-Source-Office), perform the tests by disconnecting the PLO and the M-OSC. (The mode of the PLO becomes "Self Operation Mode.")

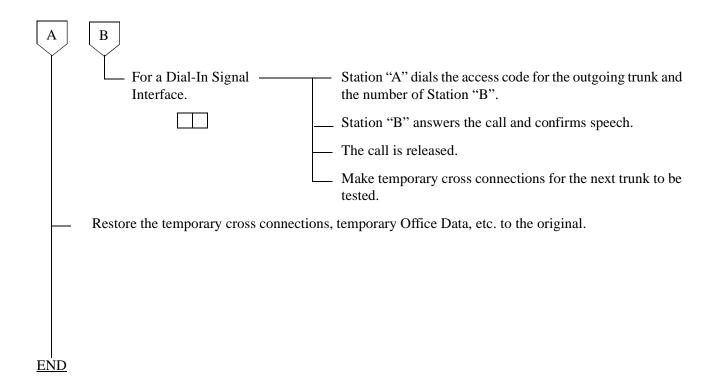
NAP-200-033
Sheet 1/2
Incoming Trunk (COT, TLT, DTI Card) Connection Test

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 the 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.



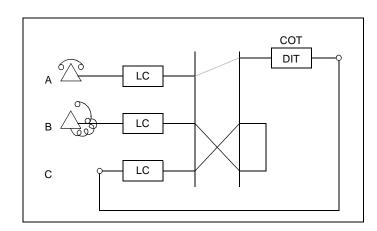
NAP-200-033
Sheet 2/2
Incoming Trunk (COT, TLT, DTI Card) Connection Test



NAP-200-034

Sheet 1/1

Direct-In Termination Trunk (COT Card)
Connection Test



START

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 intraoffice 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.

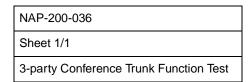
Stations "A" and "B" talk with each other.

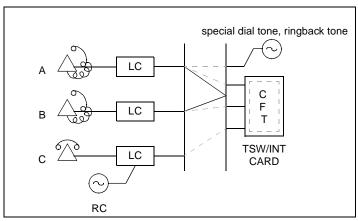
Release _____Station "A" and "B" both go on-hook.

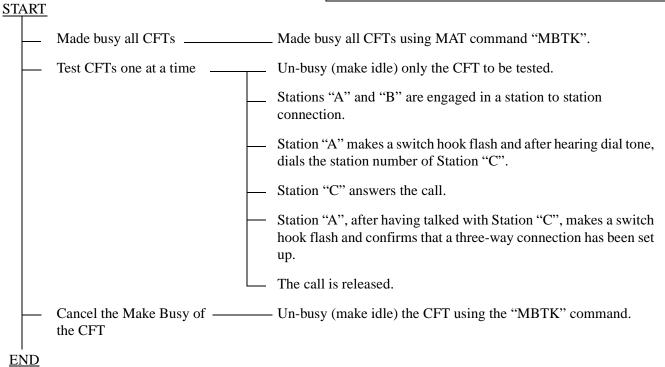
Remove the temporary cross connections.

END

NAP-200-035 SND Sheet 1/1 COT SND (RST Card) Connection Test LC ORT LC LC **START** When a C.O. Line or Tie Line is -On the MDF, make temporary cross connections for a not connected with the trunk, loop back circuit. make an arrangement for trunk Temporarily assign Office Data from the MAT so that a loop-back as illustrated above. connection can be set up with Station "B" via a SND. On the front of the RST circuit card, set all MBS switches Make busy all SNDs (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 the original. **END**



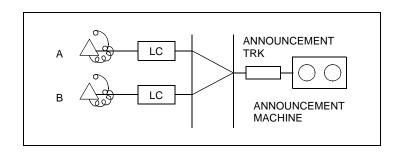




NAP-200-037

Sheet 1/1

Connection Test-Announcement Trunk for Announcement Service

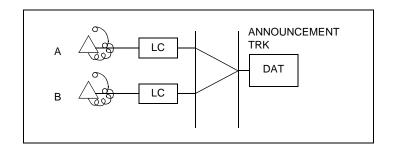


<u>STA</u>	<u>ART</u>		
		Dial the announcement servicecode	Station "A" dials the announcement service code.
		Check the contents of the announcement	Station "A" is connected to the announcement machine and hears the announcement.
		Dial the announcement servicecode	- Station "B" dials the announcement service code.
		Check the contents of the announcement	Station "B" is connected to the announcement machine and hears the announcement.
		Release	Confirm that the announcement machine stops when both Stations "A" and "B" go on-hook.
Fl	ND		

NAP-200-038

Sheet 1/1

Connection Test-Digital Announcement Trunk for Announcement Service

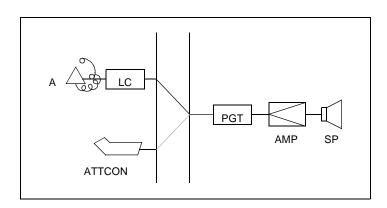


START		
	Dial the announcement service code	Station "A" dials the announcement service code.
	Check the contents of theannouncement	Station "A" is connected to the announcement trunk and hears the announcement.
	Dial the announcement service code	Station "B" dials the announcement service code.
	Check the contents of theannouncement	Station "B" is connected to the announcement trunk and hears the announcement.
	Release	Confirm that the announcement stops when both Stations "A" and "B" go on-hook.
END		

NAP-200-039

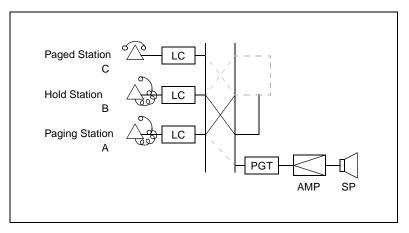
Sheet 1/1

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 presses the CANCEL key.
END		

NAP-200-040 Sheet 1/2 Connection Test-Paging Trunk for Paging Transfer Service

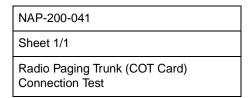


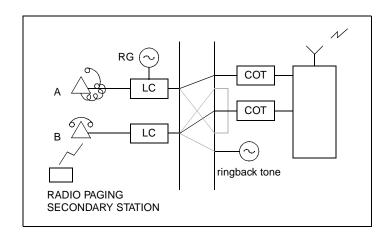
- Paging Transfer Service can be selected according to System Data (SYS1, INDEX 73).
 - 1. Non-Delay System
 - 2. Delay and Non-Delay System
 - 3. Paging Transfer Supervision

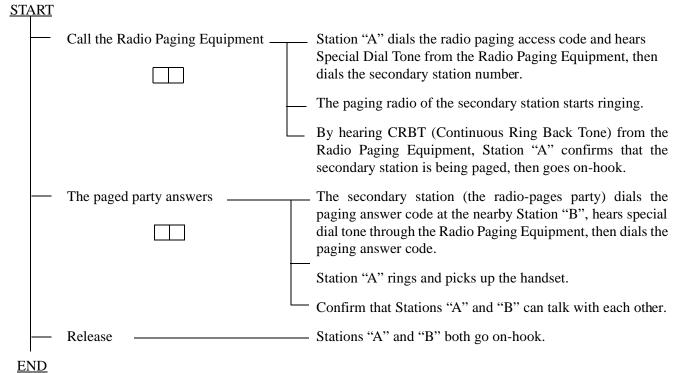
<u>START</u>		
	Call the Paging Trunk	Stations "A" and "B" are engaged in a station to station connection. — Station "A" makes a switch hook flash and hears special dial tone. Station "B" is held on the line.
		Lackstation "A" dials the paging access code and hears CRBT. In about 1 second, CRBT is no longer heard and Station "A" is able to page through the loudspeaker.
	The paging party	For a Non-Delay System: Station "A" remains on hold For a Delay System with Paging Transfer Supervision: Station "A" hangs up.
	The paged party answers	Station "C" (the paged party) dials the paging access code (answer).
(A)		

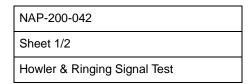
NAP-200-040
Sheet 2/2
Connection Test-Paging Trunk for Paging Transfer Service

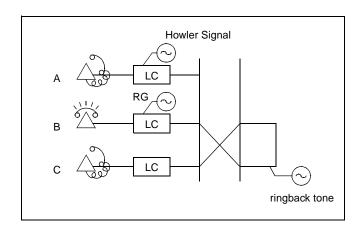
A
— Connection
— For Non-Delay-System — Station "C" is connected to Station "A". When Station "A" hangs up, Stations "B" and "C" are automatically connected.
with each other.
For a Delay-System
— Station "A" rings and picks up handset.
— Station "A" is connected to Station "C".
When Station "A" hangs up, Stations "B" and "C" are automatically connected with each other.
For Paging Transfer Supervision
Station "C" is connected to Station "B".
Release
END







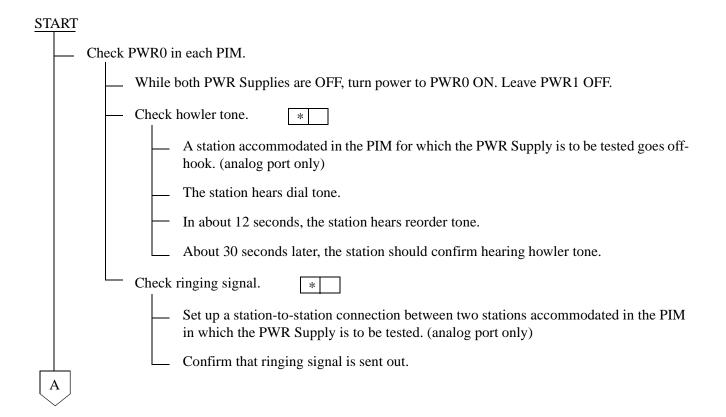




Test Outline:

The Howler Tone Generator and the Ringing Generator are equipped on the PWR Supply.

The purpose of the test is to confirm a ringing signal by setting up a station to station connection and a howler tone connection from a station accommodated in any PIM.



NAP-200-042
Sheet 2/2
Howler & Ringing Signal Test

A
— Check PWR1 in each PIM.
While both PWR Supplies are OFF, turn power to PWR1 ON. Leave PWR0 OFF.
Check howler tone. *
A station accommodated in the PIM for which the PWR Supply is to be tested goes off-hook. (analog port only)
— The station hears dial tone.
In about 12 seconds, the station hears reorder tone.
About 30 seconds later, the station should confirm hearing howler tone.
Check ringing signal. *
 Set up a station-to-station connection between two stations accommodated in the PIM in which the PWR Supply is to be tested. (analog port only)
Confirm that ringing signal is sent out.
<u>END</u>

5. OVERALL TEST

5.1 Outline

CTA DT

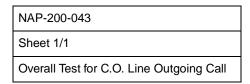
Tests are to be performed to check C.O. Lines and/or Tie Lines by connecting them to a trunk on an individual basis.

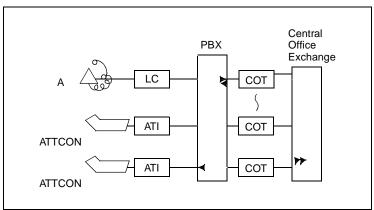
The speech path conditions (speech level, presence of noise, one-way speech, no speech, etc.) over the connection to the distant office will be checked. Release of the trunk used will also be checked.

5.2 Overall Test Procedure

The procedure for performing the Overall Test is described in the NAPs indicated to the right of each item in the following flowchart.

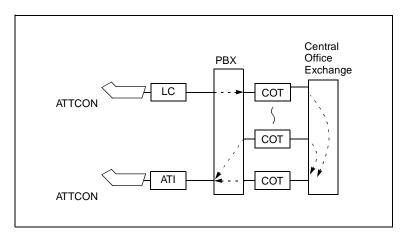
START	
Overall Test of C.O. Line Outgoing Call:	NAP-200-043
— Overall Test of C.O. Line Incoming Call:	NAP-200-044
— Overall Test of CCIS Tie Line Outgoing Call:	NAP-200-045
— Overall Test of CCIS Tie Line Incoming Call:	NAP-200-046
Test of Connection Alternate Routing to All Tie	e Lines: NAP-200-047
— Test of Tandem Connection to Tie Line:	NAP-200-048
— PAD Setting:	NAP-200-049
I <u>END</u>	





START Seizure of trunk to be tested When seizing from a Place the trunk to be tested into idle state, and make all other station trunks busy. Station "A" dials the trunk access number. Station "A", after hearing dial tone from the C.O., dials the pilot number for the local office and allows the call to be terminated to that office via loop-back at the C.O. When seizing from an_ An ATTCON sets up the connection with a specific trunk designated via Individual Trunk Access service. **ATTCON** The ATTCON, after hearing dial tone from the C.O., dials the pilot number for the local office and allows the call to be terminated to that office via loop-back at the C.O. Call termination to ATTCON _ The call looped back at the C.O. terminates to the ATTCON. Check of speech conditions _ After the call has been answered at the ATTCON, check the speech conditions including speech level, presence of noise, and one-way speech state. Release When all COTs have been Perform a trunk loop-back test at the C.O., and determine checked and a fault is detected. whether the trunk side or the C.O. Line side is faulty. If the C.O. Line is faulty, make a request to the C.O. for repair. **END**

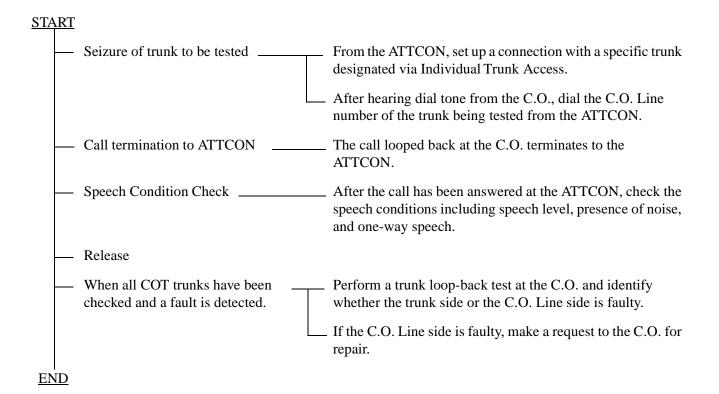
NAP-200-044
Sheet 1/1
Overall Test for C.O. Line Incoming Call

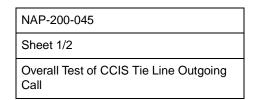


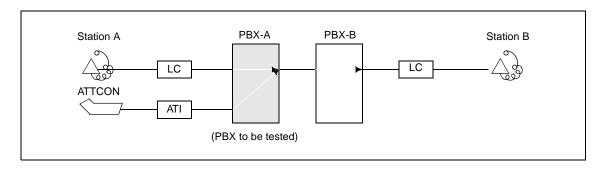
Test Outline:

The tests constituting 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, the C.O. must be asked to perform an incoming test.



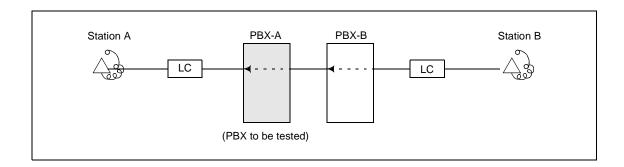


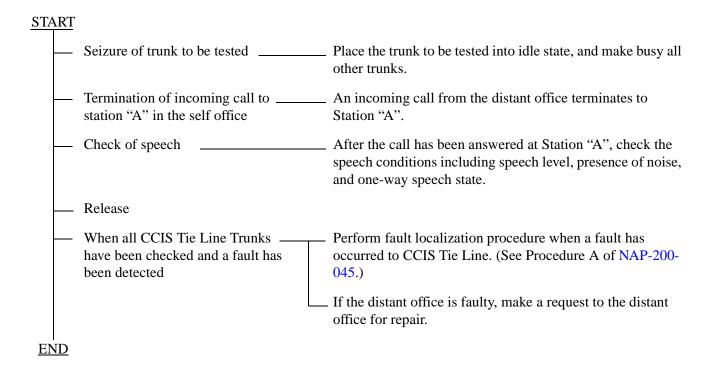


START Seizure of trunk to be tested When seizing from a _____ Place the trunk to be tested into idle state, and make busy all station other trunks. Station "A" dials the number for station "B" in the PBX-B When seizing from an _____ An ATTCON sets up the connection with a specific trunk designated by Individual Trunk Access for CCIS TRK **ATTCON** service and dials the number for Station "B" in the PBX-B. - Call termination to Station "B" _____ The call terminates to Station "B" via a CCIS Tie Line. in the PBX-B After the call has been answered at the ATTCON, check the Check of speech conditions _____ speech conditions including speech level, presence of noise and one-way speech state. Release When all CCIS Tie Line Trunks ____ Perform fault localization procedure when a fault has have been checked and a fault occurred to CCIS Tie Line (See Procedure A). has been detected If the distant office is faulty, make a request to the distant office for repair. **END**

NAP-200-045	
Sheet 2/2	
Overall Test of CCIS Tie Line Outgoing Call	
(Procedure A)	
<u>START</u>	
— On the DTI/CCT card, set its MB	switch UP.
In any office other than the Primar connector at the DTI/CCT side (B	ry Office (Clock-Source-Office), disconnect the DTI/CCT cable backplane of PIM)
PLO alarm is generated, bu	at ignore it.
The PLO starts running by	itself.
Make the following connection at	the MDF using a paired wire.
DTI/CCT MDF LEADS TA TB RA RB	CROSS CONNECTION
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.
 <u>END</u>	

NAP-200-046
Sheet 1/1
Overall Test of CCIS Tie Line Incoming Call





NAP-200-047	
Sheet 1/2	
Test of Connection and Alternate Routing to All Tie Lines	
<u>START</u>	
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

NDA-24295

NAP-200-047
Sheet 2/2
Test of Connection and Alternate Routing to All Tie Lines

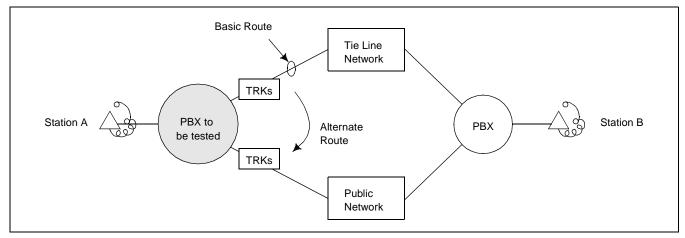


Figure 047-1 Combination of Tie Line Network and Public Network

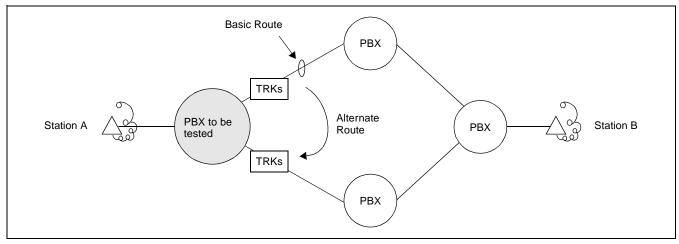


Figure 047-2 Tie Line Network

NAP-200-048
Sheet 1/2
Test of Tandem Connection to Tie Line

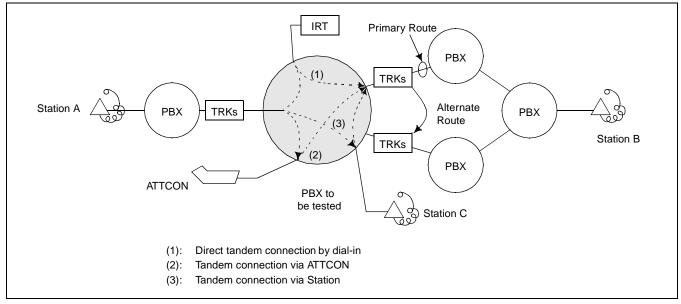
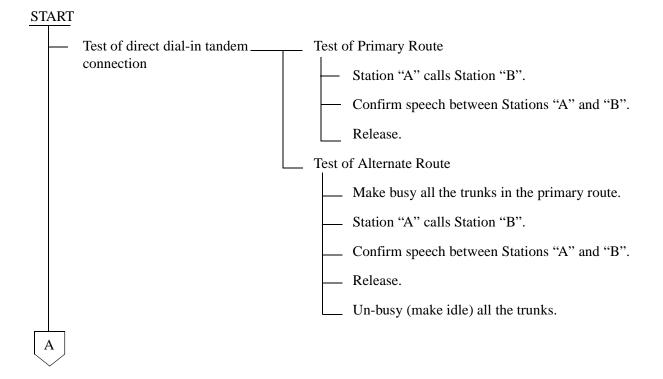
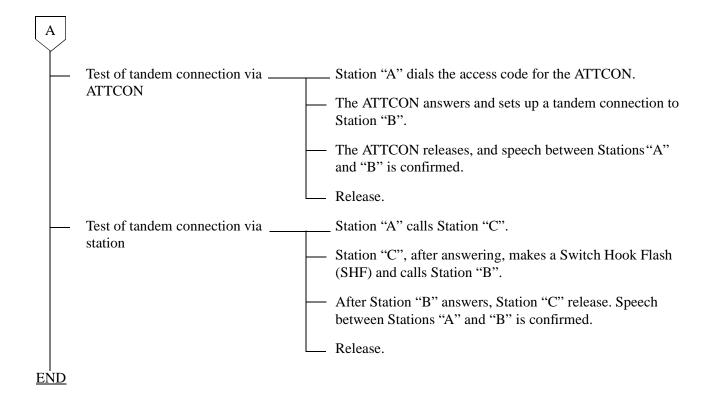


Figure 048-1 Test of Tandem Connection to Tie Line



NAP-200-048
Sheet 2/2
Test of Tandem Connection to Tie Line



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 the "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). Figure 049-1 shows this arrangement.

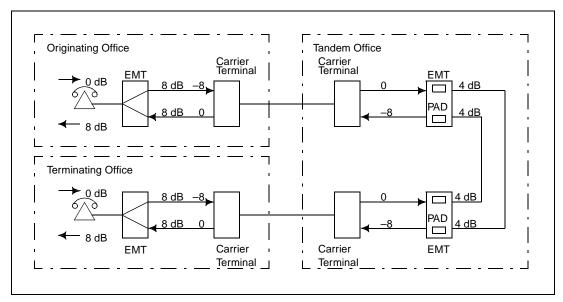


Figure 049-1 Example of PAD Setting

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. Figure 049-2 shows this arrangement.

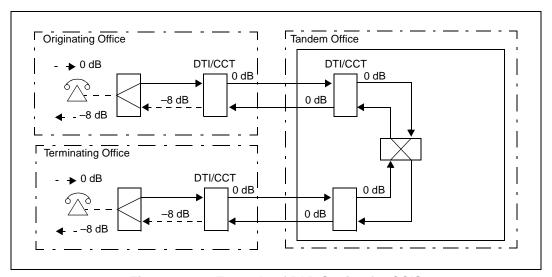


Figure 049-2 Example of PAD Setting for CCIS

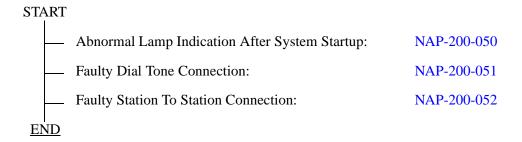
CHAPTER 6 FAULT RECOVERY DURING TESTS

1. GENERAL

The fault recovery procedures described 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 designated 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.



FAULT RECOVERY DURING TESTS

NAP-200-050
Sheet 1/2
Abnormal Lamp Indications After System Startup



START

17 110.	_	
	Check	conducted when the OPE lamp (Green) does not turn ON on any circuit cards mounted in a PIN
		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 mounted 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.
-	Check	conducted 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.
		conducted when OPE lamp of a Line Circuit card illuminates, but the BL lamp (Red) for an ual 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-200-050
Sheet 2/2
Abnormal Lamp Indications After System Startup



Α		
_	Check	conducted 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.
-		conducted when the OPE lamp of a Trunk circuit card turns ON, but the BL lamp (Red) for an ual 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.
	<u> </u>	Using command "ATRK", check whether trunk data has been assigned for the trunk circuit.
		Replace the circuit card with a spare.
	Perform	n the following check before replacing a circuit card which is considered defective with a spare.
	<u> </u>	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		

FAULT RECOVERY DURING TESTS

NAP-200-051
Sheet 1/1
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 the LT cable is securely connected to the PIM.
	Replace the LC card with a spare.
	Dial tone cannot be heard from one or more lines of the same circuit card.
	Replace the LC card with a spare.
_	Dial tone cannot be heard from the lines accommodated by a specific PIM.
	Check the switch settings on the TSW/MUX circuit card.

Check whether the "MT24 TSW" cable is securely inserted into the connectors on the front

Replace the TSW/MUX card with a spare.

Replace the TSW card with a spare.

edge of TSW and MUX cards.

- Check the switch settings on the TSW circuit card.

CHAPTER 6 Page 360 Revision 1.0

END

NAP-200-052
Sheet 1/2
Station to Station Connection Fault



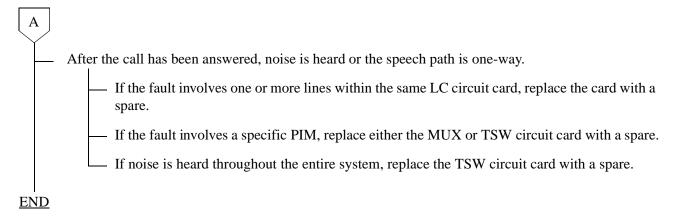
 Using command "ASPA/ASPAL/ASPAN," check "Special Number" data. Using command "ASDT," check "Station" data. Using command "ATNR," check "Tenant Restriction Class" data. Ringback tone is heard, but the bell at the called station remains silent. Check whether the called station is assigned the correct LENS data in command "ASDT." When all the stations accommodated in a specific PIM do not ring, replace the PWR circuit of with a spare. 	IAKI		
A specific LC card is involved. — A specific UNIT card is involved. — Entire System is involved. — Reorder tone is heard after a station number is dialed. — Using MAT command "ANPD/ANPDL/ANPDN," check "Necessary Number of Digits" of the Using command "ASPA/ASPAL/ASPAN," check "Special Number" data. — Using command "ASDT," check "Station" data. — Using command "ATNR," check "Tenant Restriction Class" data. — Ringback tone 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 the PWR circuit of with a spare. — If the fault involves one or more lines within the same LC circuit card, replace the LC card very content of the fault involves one or more lines within the same LC circuit card, replace the LC card very care and the correct card, replace the LC card very care and the card of the ca		Dial to	ne is still heard after a digit is dialed (cannot break dial tone).
A specific UNIT card is involved. Entire System is involved. Reorder tone is heard after a station number is dialed. Using MAT command "ANPD/ANPDL/ANPDN," check "Necessary Number of Digits" of Using command "ASPA/ASPAL/ASPAN," check "Special Number" data. Using command "ASDT," check "Station" data. Using command "ATNR," check "Tenant Restriction Class" data. Ringback tone 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 the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card very specific place.			A specific RST card is involved.
Entire System is involved. Reorder tone is heard after a station number is dialed. Using MAT command "ANPD/ANPDL/ANPDN," check "Necessary Number of Digits" of Using command "ASPA/ASPAL/ASPAN," check "Special Number" data. Using command "ASDT," check "Station" data. Using command "ATNR," check "Tenant Restriction Class" data. Ringback tone 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 the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card very common to the command to the correct card, replace the LC card very card to the correct card, replace the LC card very card to the card very card to the correct card, replace the LC card very card to the card very card to t			A specific LC card is involved.
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 Using MAT command "ANPD/ANPDL/ANPDN," check "Necessary Number of Digits" of Using command "ASPA/ASPAL/ASPAN," check "Special Number" data. Using command "ASDT," check "Station" data. Using command "ATNR," check "Tenant Restriction Class" data. Ringback tone 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 the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card very command the command the correct card, replace the LC card very card to the correct card, replace the LC card very card to the correct card, replace the LC card very card to the correct card, replace the LC card very card to the correct card, replace the LC card very card to the card to th			Entire System is involved.
 Using command "ASPA/ASPAL/ASPAN," check "Special Number" data. Using command "ASDT," check "Station" data. Using command "ATNR," check "Tenant Restriction Class" data. Ringback tone 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 the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card very common to the command to the command to the common to the common to the command to the common to the comm		Reorde	r tone is heard after a station number is dialed.
 Using command "ASDT," check "Station" data. Using command "ATNR," check "Tenant Restriction Class" data. Ringback tone 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 the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card version. 			Using MAT command "ANPD/ANPDL/ANPDN," check "Necessary Number of Digits" data.
Using command "ATNR," check "Tenant Restriction Class" data. — Ringback tone 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 the PWR circuit of with a spare. — If the fault involves one or more lines within the same LC circuit card, replace the LC card versions.			Using command "ASPA/ASPAL/ASPAN," check "Special Number" data.
 Ringback tone 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 the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card version. 			Using command "ASDT," check "Station" data.
 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 the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card versions. 			Using command "ATNR," check "Tenant Restriction Class" data.
 When all the stations accommodated in a specific PIM do not ring, replace the PWR circuit of with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card versions. 		Ringba	ck tone is heard, but the bell at the called station remains silent.
with a spare. If the fault involves one or more lines within the same LC circuit card, replace the LC card v			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 the PWR circuit card with a spare.
			If the fault involves one or more lines within the same LC circuit card, replace the LC card with a spare.

A

FAULT RECOVERY DURING TESTS

Ν	JAP-200-052
S	Sheet 2/2
S	Station to Station Connection Fault





CHAPTER 7 WORK AFTER INSTALLATION TESTS

This Chapter explains various kinds of work and site cleaning, etc. that the installer must perform after completion of 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 shut down. If any part of the Office Data has been illegally changed, it may also cause similar problems as in the case of a fault occurrence to the Data Memory.

Thus, upon completion of the installation tests, make sure 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 most up-to-date data at all times, entries into the office data programming sheets must be made in pencil.

2. Floppy Disks for Storing Data

If a major change is made to the office data, especially a change involving System Data (command "ASYD/ASYDL"), the system may not function as expected. To prepare for such an occurrence, keep an FD containing the office data before the change and one containing the data after the change. The FD containing the data before the change allows the technician to restore the previous (running) condition if the system will not operate properly with the new data.

WORK AFTER INSTALLATION TESTS

Note: Cautions pertaining to Floppy Disks.

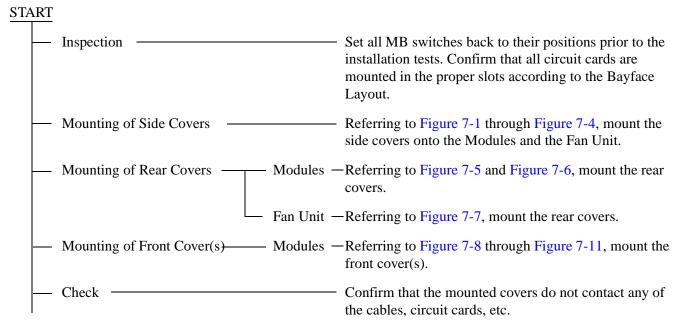
- (1) Do not place a heavy object on an FD, or the FD will be damaged.
- (2) When taking an FD out of its protective envelope, hold the top edge of the disk and gently pull it out.
- (3) Do not expose the FD to direct sunlight or to a high temperature (above $65^{\circ}C$ ($150^{\circ}F$)).
- (4) Do not pinch the FD with a clip.
- (5) Do not touch the recorded surface of the floppy disk with bare hands; fingerprints left by bare hands will attract dust.
- (6) Avoid cleaning the floppy disk.
- (7) Do not place the floppy disk near a magnet, etc. If an FD is exposed to a magnetic field of more than 50 Oe, the data on the disk is likely to be altered or destroyed.
- (8) Do not bend the floppy disk.
- (9) Do not apply force to the outer edge of the floppy disk.

2. PREPARATION OF TEST RESULT REPORT

When submitting a report of test results to the end user or when performing tests with customer's representatives attending, prepare a Test Result Report and record the test results.

3. MOUNTING OF THE FRONT, SIDE, AND REAR COVERS

When mounting the front, side, and rear covers of the PBX, follow the procedure below.



END

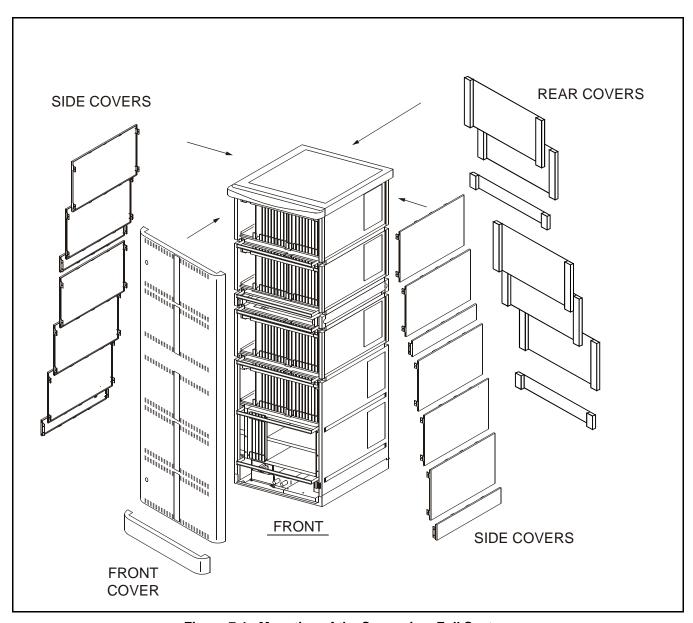


Figure 7-1 Mounting of the Covers in a Full System

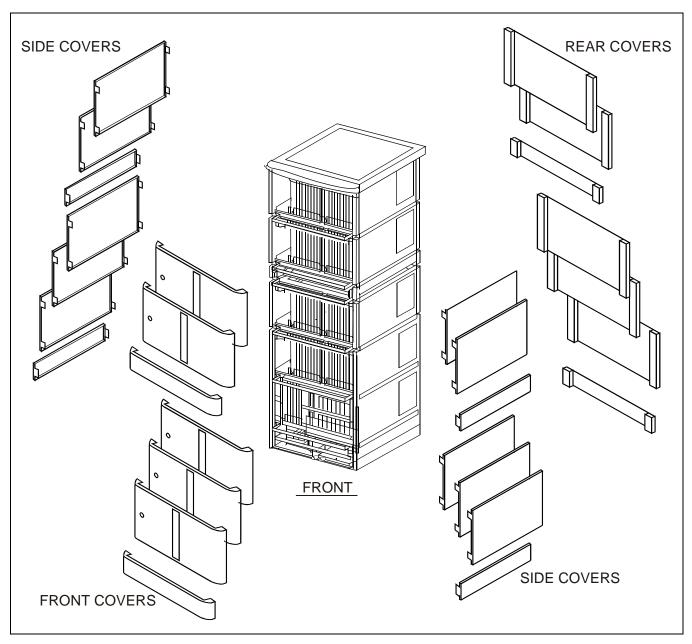


Figure 7-2 Mounting of the Covers

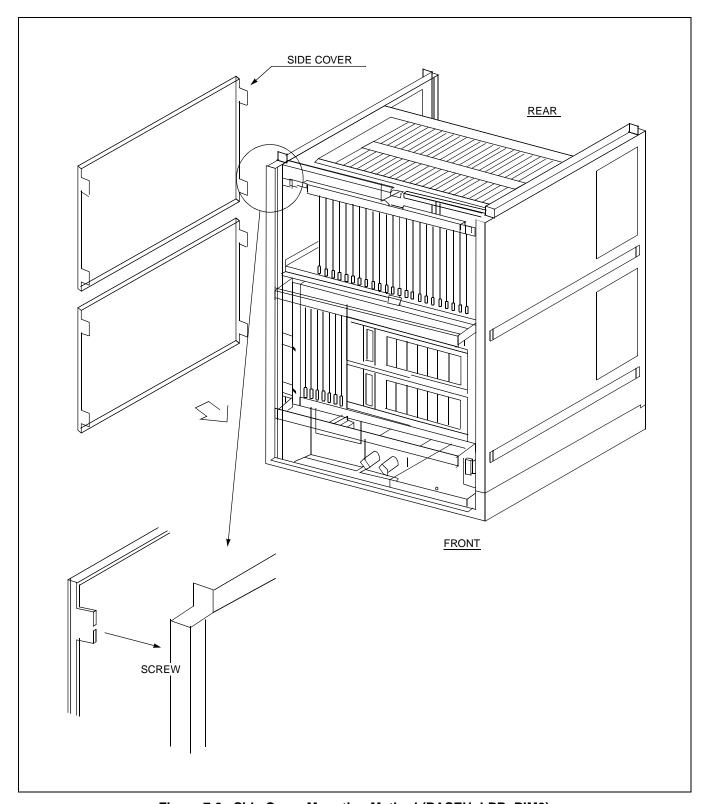


Figure 7-3 Side Cover Mounting Method (BASEU+LPR+PIM0)

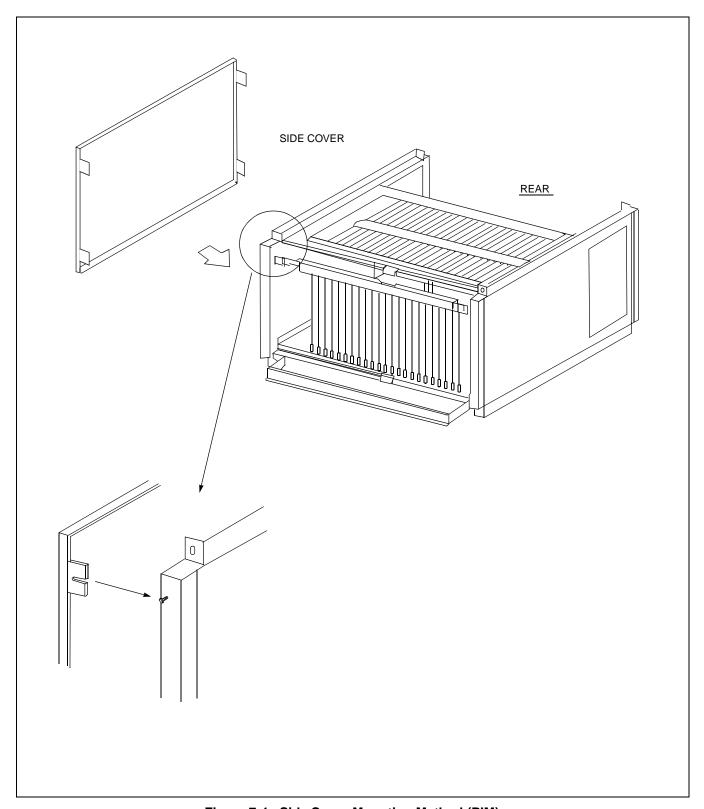


Figure 7-4 Side Cover Mounting Method (PIM)

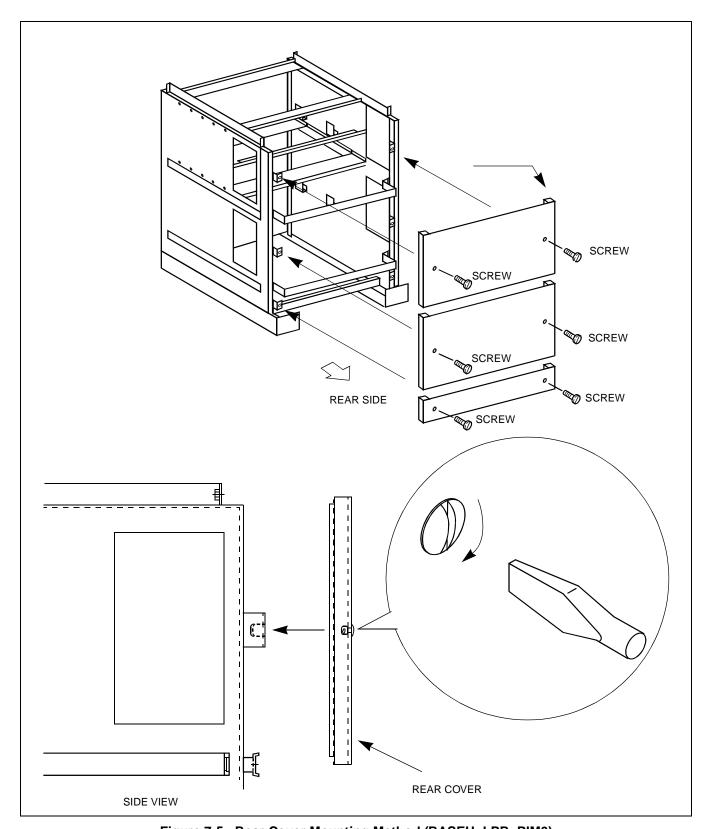


Figure 7-5 Rear Cover Mounting Method (BASEU+LPR+PIM0)

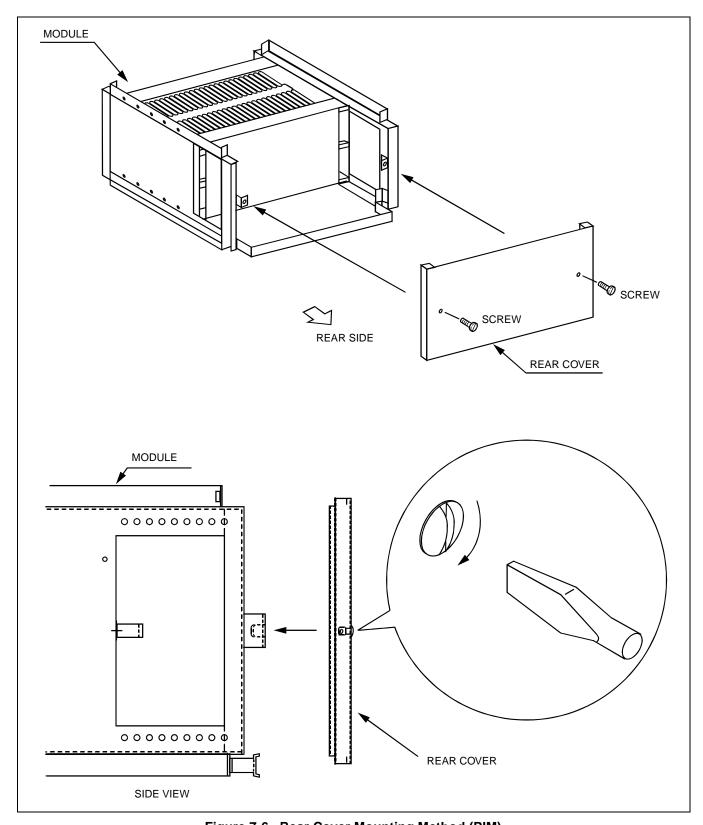


Figure 7-6 Rear Cover Mounting Method (PIM)

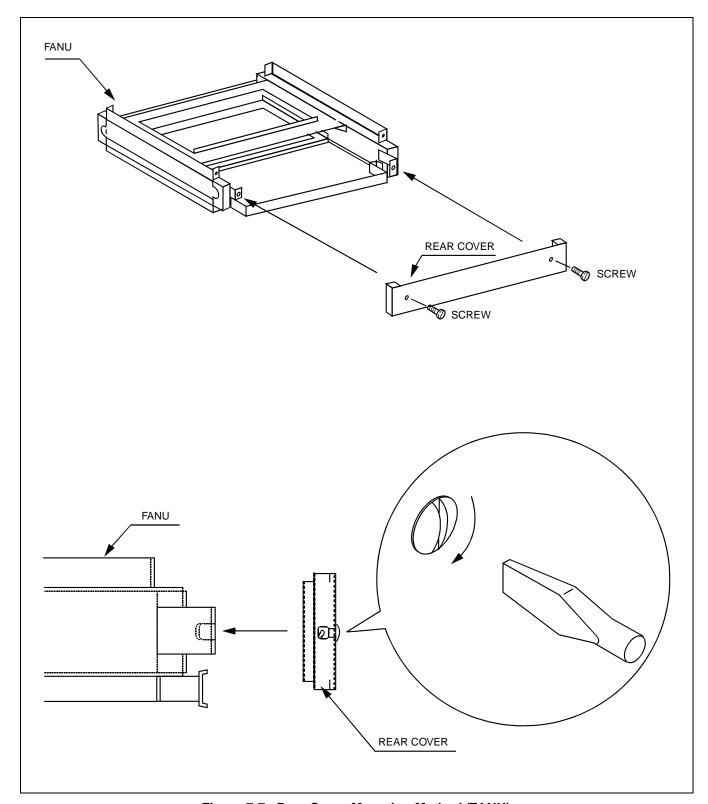


Figure 7-7 Rear Cover Mounting Method (FANU)

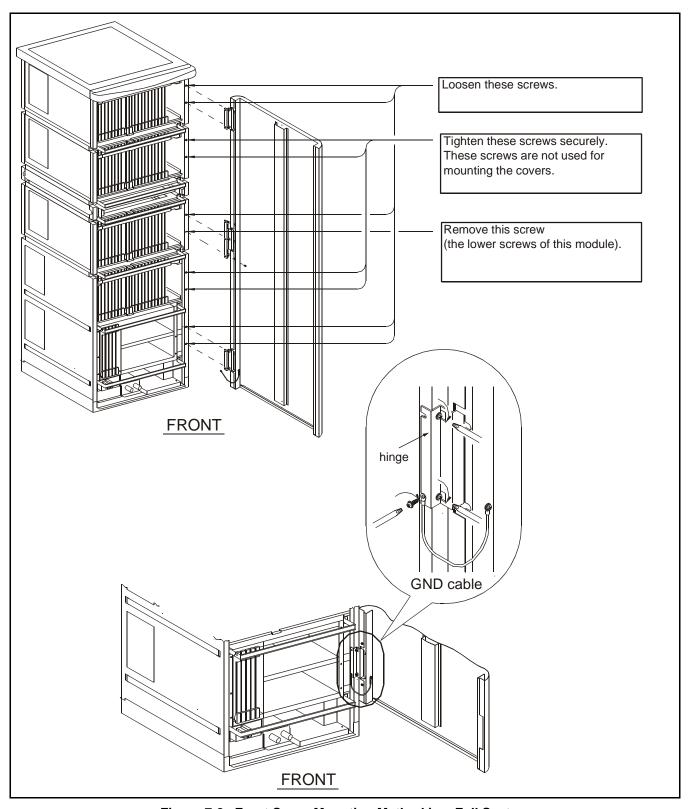


Figure 7-8 Front Cover Mounting Method in a Full System

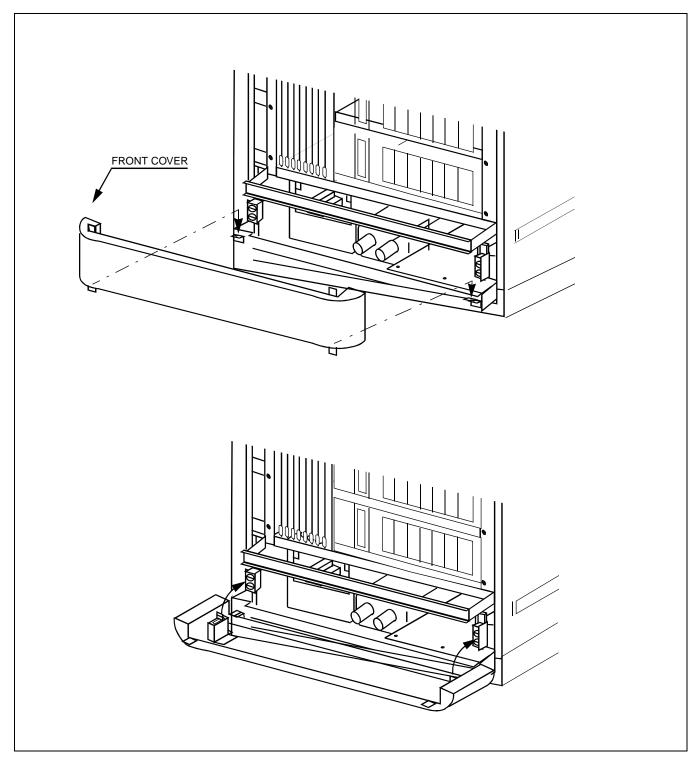


Figure 7-9 Front Cover Mounting Method (BASEU+LPR+PIM0)

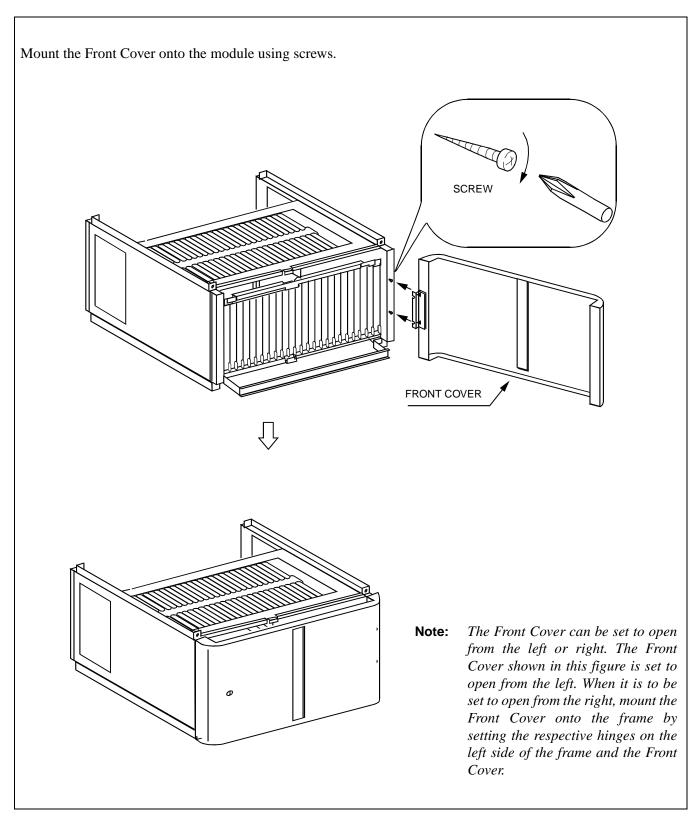


Figure 7-10 Front Cover Mounting Method (PIM)

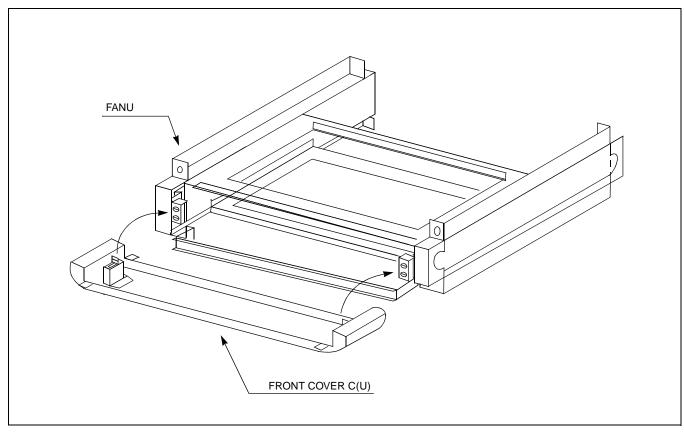


Figure 7-11 Front Cover Mounting Method (FANU)

4. ATTACHMENT OF INTER-FRAME BRACKETS

This section covers how to attach inter-frame brackets between the cabinets.

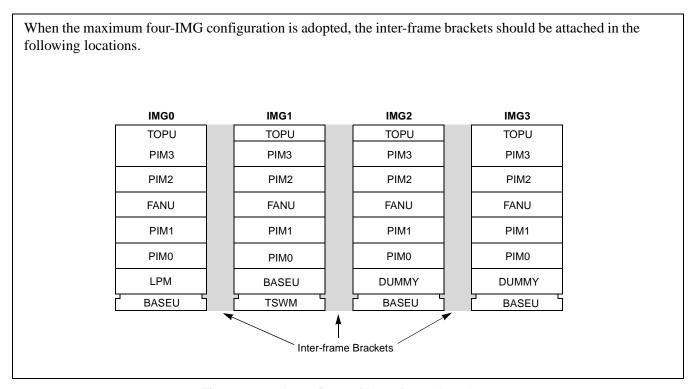


Figure 7-12 Locations of Inter-frame Brackets

STEP 1: Referring to the Figure 7-13, fix the brackets (E) between the modules.

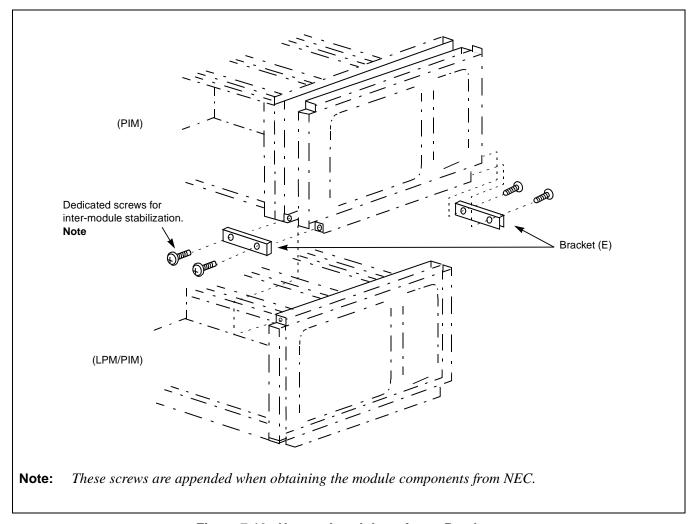


Figure 7-13 How to Attach Inter-frame Brackets

- STEP 2: Referring to Figure 7-13, fix the brackets (A) with the screws.
- STEP 3: Referring to Figure 7-13, fix the brackets (B) with the screws.

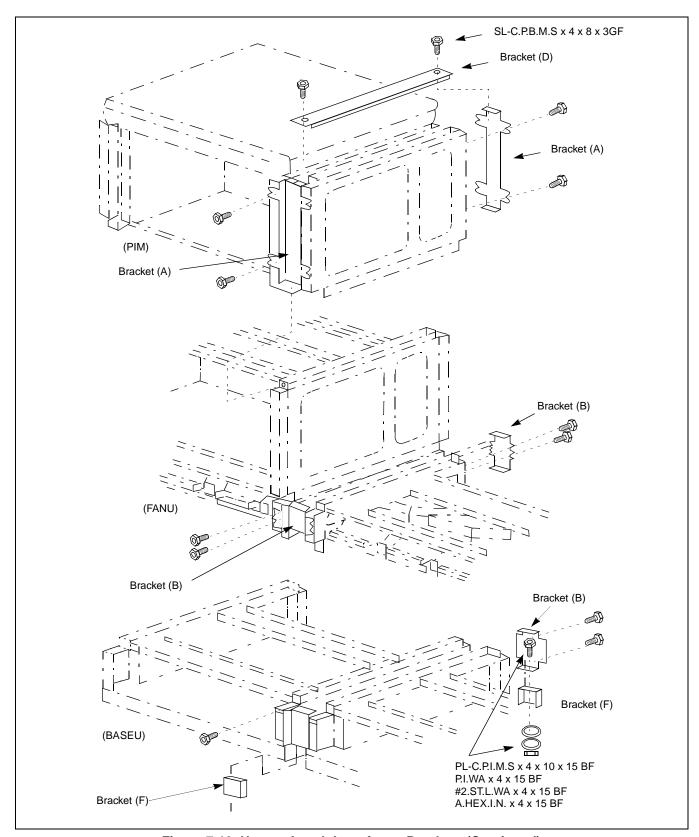


Figure 7-13 How to Attach Inter-frame Brackets (Continued)

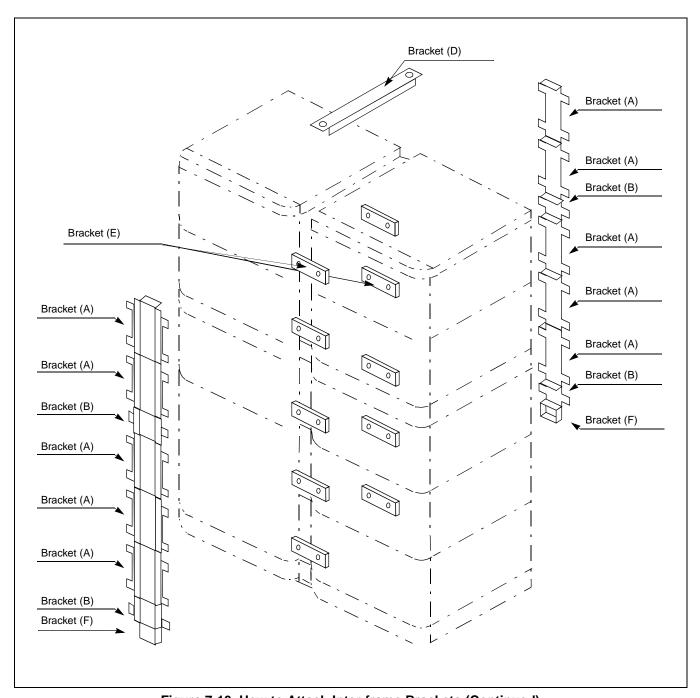


Figure 7-13 How to Attach Inter-frame Brackets (Continued)

STEP 4: Referring to Figure 7-13, fix the brackets (D) with the screws.

STEP 5: Referring to Figure 7-13, fix the brackets (F) with the screws.

5. SITE CLEANING

Upon completion of the work 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.

WORK AFTER INSTALLATION TESTS

This page is for your notes.

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