Meridian 1

# Telephone and Attendant Console Installation

Document Number: 553-3001-215
Document Release: Standard 12.00
Date: January 2002



Printed in Canada

# Revision history

**January 2002**

Standard 12.00. This document is up-issued to include content changes for Meridian 1 Internet Enabled Release 25.40.

**April 2000**

Standard 11.00. This is a global document and is up-issued for X11 Release 25.0x.

**June 1999**

Standard, release 10.00. Issued for X11Release 24 changes.

**October 1997**

Standard, release 9.00. Issued for X11 Release 23 changes.

**August 1996**

Standard, release 8.00. Issued for X11 Release 22 changes.

**July 1995**

Standard, release 7.00. Issued for X11 Release 21 changes.

**December 1994**

Standard, release 6.00. Issued for X11 Release 20 to include editorial changes, indexing, and Global Console updates.

**December 1992**

Standard, release 5.00. Issued to include updates for X11 Release 18.

**December 1991**

Standard, release 3.00. Issued to updated attendant console connections and ASM installation.

Standard, release 4.00 was omitted.

**December 1990**

Standard, release 2.00. Updated to include Attendant Supervisory Module (ASM) installation and telephone acceptance tests.

**December 1989**

Standard, release 1.00. Reissued for compliance with Nortel Networks standard 164.0, and to incorporate corrections and updated information.

# Contents

# About this document

This document is a global document. Contact your system supplier or your Nortel Networks representative to verify that the hardware and software described is supported in your area.

This document applies to the Meridian 1 Internet Enabled system.

This document contains the installation procedures for attendant consoles, telephones, and add-on modules. See Figure 1 on page 4 for apparatus designations.

"Wiring installation" on page 5 includes information about the wiring for current Nortel Networks telephones and the M2250 Attendant Console.

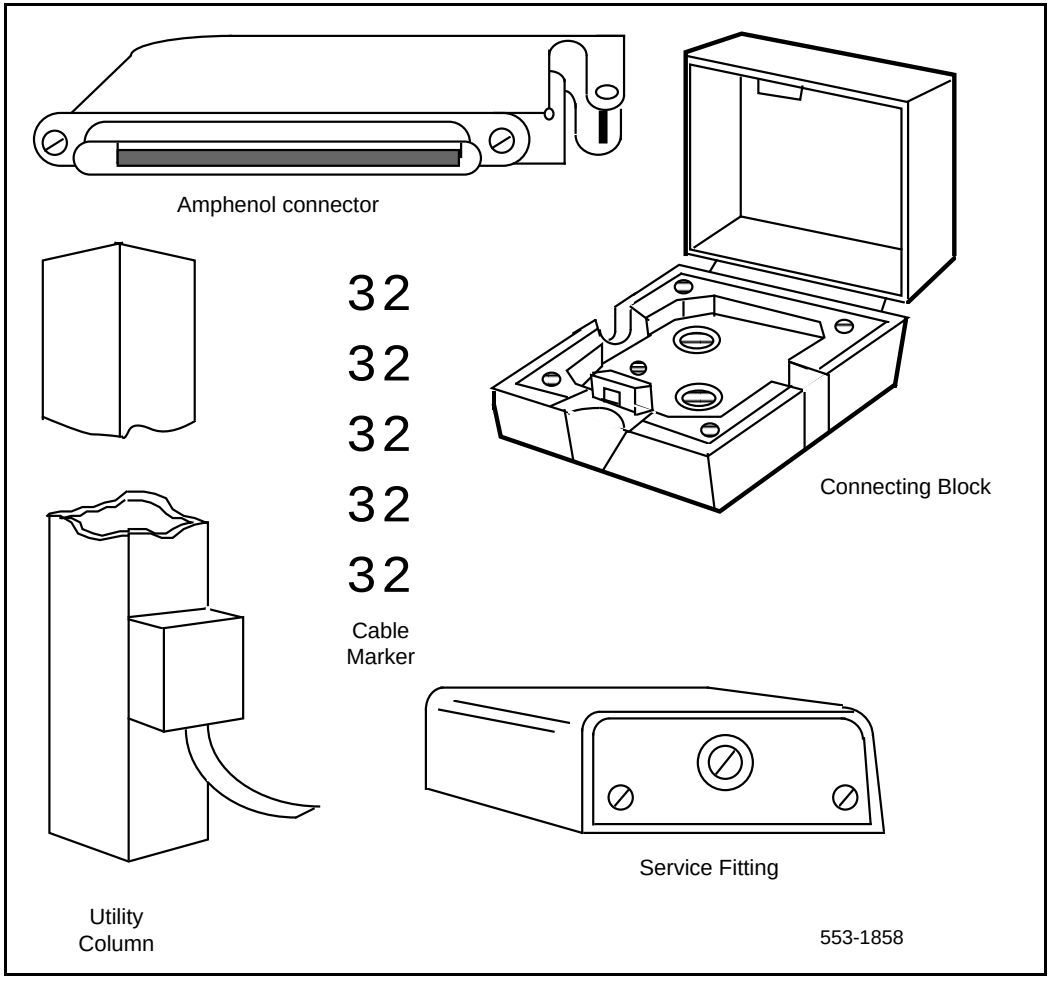
"Wiring installation" on page 5 describes the installation and removal process for QCW-type and M1250/M2250 attendant consoles.

"Telephones" on page 27 provides procedures for installing and removing the M1109, M2000, M2006/M2008, M2016S, M2216, M2616, and M3000 telephones.

"Add-on modules" on page 59 includes installation and removal information for all add-on modules and options for all telephones and attendant consoles.

> ***Note:*** There are two distinct versions of Modular telephone sets – both are supported. The versions can be clearly distinguished by the first four letters in the model identification label on the bottom of the set. The two types are the "NTZK" models and the "NT2K" models. When appropriate, differences are noted in this document.

**Figure 1**
**Apparatus designations**




***Note:*** See *M3900 Series Meridian Digital Telephones: Description, Installation, and Administration* (553-3001-216) for information on installation of the M3901, M3902, M3903, M3904, and M3905 telephones.

# Wiring installation

## Contents

This section contains information on the following topics:



## Wiring for telephones and attendant consoles

This chapter discusses the installation and removal procedures for wiring telephones and attendant consoles.

Each analog (500/2500-type) or digital telephone requires one pair of Z station wire or equivalent. Existing 16- or 25-pair connector cables can be used. Each attendant console requires a 16-pair cable terminated on an Amphenol connector.

When zone cabling and conduit are used, assign a block of numbers or letters to each zone. See Figure 2 on page 6. Allow for growth when assigning blocks of numbers.

Cable markers are normally an adhesive-backed cloth tape 1/2 inches wide by 3-1/2 inches long (15 mm by 65 mm) with preprinted numbers.

For limits and cabling for analog (500/2500-type) telephones, refer to Figure 3 on page 7.

For a list of terminal connections, see Table 1 on page 8.

**Figure 2**
**Zone cabling and conduit assignment**

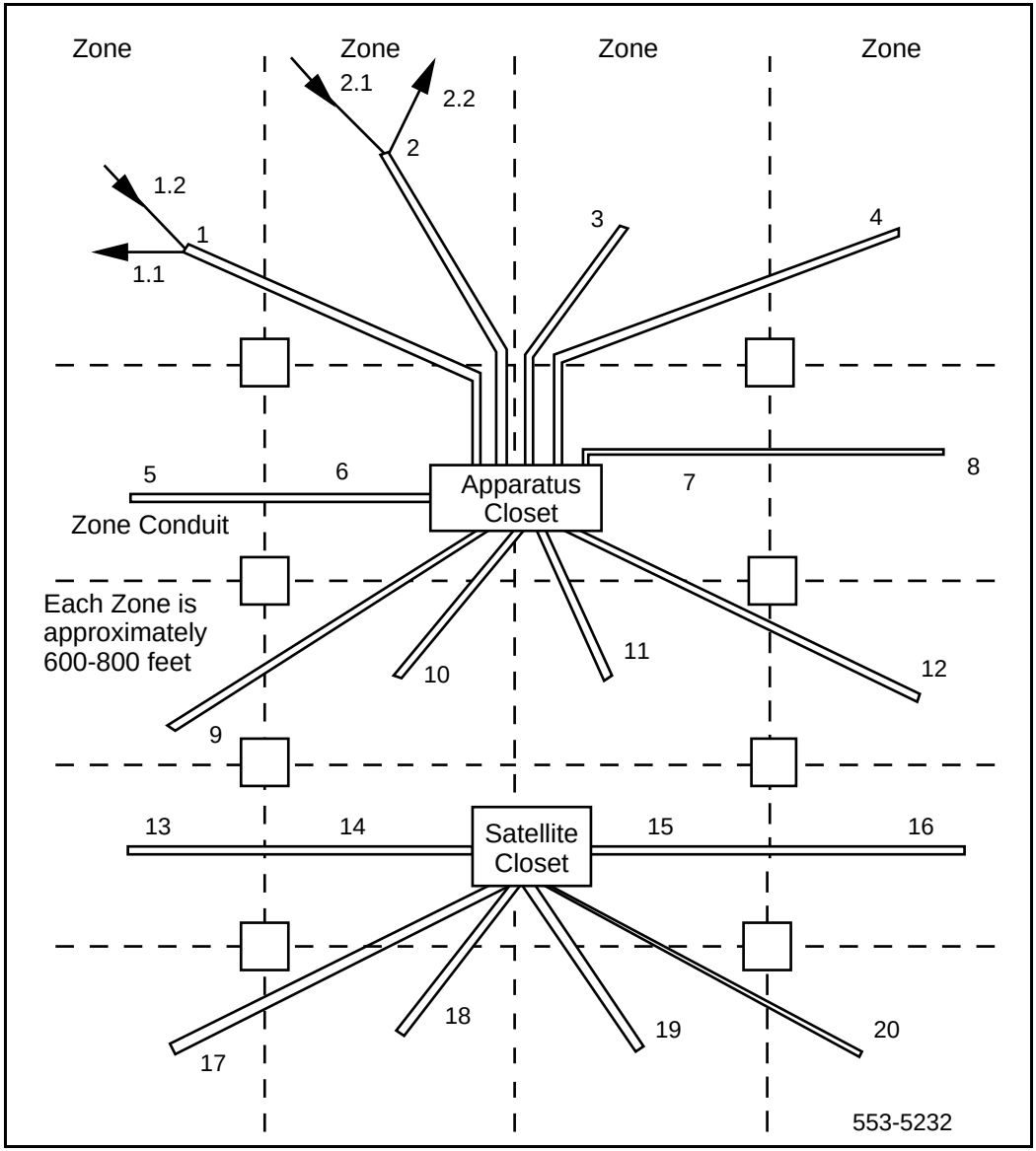
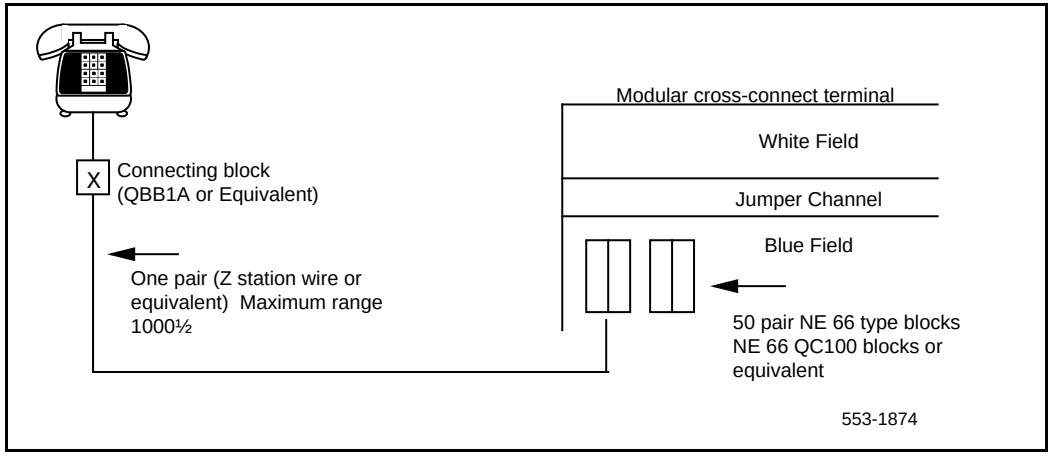


**Figure 3**
**NE-analog (500/2500-type) telephones – limits and cabling**




# Install Wiring

Follow this procedure to install the wiring.

**Procedure 1**
**Installing wiring**

**1** Assign a number to the wire or cable used.

**2** Attach the assigned number to the wire or cable at the end nearest the telephone, using a cable marker.

**3** Run the wire or cable between the telephone location and nearest cross-connect point (if not previously run).

**4** Connect the cable or wire to the telephone connecting block.

**5** Designate the telephone connecting block.

**6** Cross-connect the pairs at intermediate cross-connect points (if required) and terminate at the cross-connect terminal.

**7** Terminate leads at the cross-connect terminal and designate the blocks according to the house cable plan.

**Table 1**
**Terminal connections**

| Connecting block Designations | | | Inside wiring Colors | |
|---|---|---|---|---|
| **NE-47QA or QBB1B** | **NE-284-74-500 1 adapter** | **NE-625F TELADAPT plugs and jacks** | **Z station wire** | **16/25-pair cable** |
| G | 1T | T1 (G) | G | W-BL |
| R | 1R | R1 (R) | R | BL-W |
| BK | X1 | AUX (BK) | BK | W-O |
| Y | X2 | GND (Y) | Y | O-W |
| 5 | R | T2 (BL) | | W-SL |
| 6 | B | R2 (W) | | SL-W |

# Normal operating ranges

### *Telephones*

M2000 Series Meridian Digital Telephones have a maximum permissible loop length of 3500 ft (915 m), assuming 24 AWG (0.5 mm) wire with no bridge taps. A 15.5 dB loss at 256 kHz defines the loop length limit.

### *Attendant consoles*

The M2250 attendant console has a maximum permissible loop length of 3500 ft (915 m), assuming 24 AWG (0.5 mm) wire with no bridge taps. A 15.5 dB loss at 256 kHz defines the loop length limit.

# Attendant console

## Contents

This section contains information on the following topics:



## Reference list

The following are the references in this section:

- *Meridian 1 Attendant PC: Software Installation Guide*
- *Circuit Card: Installation and Testing* (553-3001-211)
- *Software Input/Output Guide Administration* (553-3001-311)

## Introduction

This section describes installation instructions for the M2250 attendant console. For Meridian 1 Attendant PC Software installation instructions, refer to *Meridian 1 Attendant PC: Software Installation Guide*.

## Packing and unpacking

Use proper care while unpacking any attendant console. Check for damaged containers so that appropriate claims can be made to the transport company for items damaged in transit.

If an attendant console must be returned to the factory, pack it in the appropriate container to avoid damage during transit. Remember to include all loose parts (cords, handset, power unit, labels, and lenses) in the shipment.

# Installation and removal

Use the following procedures to install and remove M2250 attendant consoles.

> ***Note:*** Although M2250 attendant consoles do not require a static discharge ground connection, the connection should be installed to protect any earlier vintage attendant consoles that may be used as replacements.

Choose a clean, level work surface and place several sheets of soft, clean paper between the attendant console and the work surface. This will prevent scratching or otherwise damaging the top cover, LCD indicators and screen, and the feature keys of the attendant console.

**Procedure 2**
**Installing the M2250 attendant console**

**1** Ensure that a 16-pair or 25-pair cable equipped with a 25-pair Amphenol connector is installed at the attendant console's location.

**2** Unpack and inspect the attendant console for damage. If the console is damaged, notify your supplier.

**3** Designate the console according to the features provided.

**4** Connect the Amphenol plug on the attendant console to the Amphenol jack coming from the Main Distribution Frame (MDF).

- Fasten the Amphenol connectors together and secure the captive screws on the cable.
- Ensure that the connectors are secured in a connector mounting, if provided, or to the wall. Do not leave connectors unprotected on the floor.

**5** Add a line circuit for the attendant console, if not already done. Refer to *Circuit Card: Installation and Testing* (553-3001-211).

**6** Cross-connect the attendant console at the cross-connect terminal. See Procedure 1 on page 18.

**7** Enter the related attendant console data in the Meridian 1 system. Refer to the *Software Input/Output Guide Administration* (553-3001-311).

**8** Test the console features using the attendant console user guide.

***Note:*** Refer to *Circuit Card: Installation and Testing* (553-3001-211) for circuit card installation procedures.

**Procedure 3**
**Removing the M2250 attendant console**

**1** Remove related attendant console data from the system memory. Refer to the *Software Input/Output Guide Administration* (553-3001-311).

**2** Locate and remove cross-connections from the attendant console cable at the cross-connect terminal. See Procedure 1 on page 18.

**3** Remove the circuit card if required. Refer to *Circuit Card: Installation and Testing* (553-3001-211).

***Note:*** Do not remove the circuit card if any of the remaining units on the card are assigned.

**4** Disconnect the Amphenol connector on the end of the cable that leads to the cross-connect terminal from the connector on the cable leading to the attendant console.

**5** Pack the attendant console, handset, and cords in a suitable container.

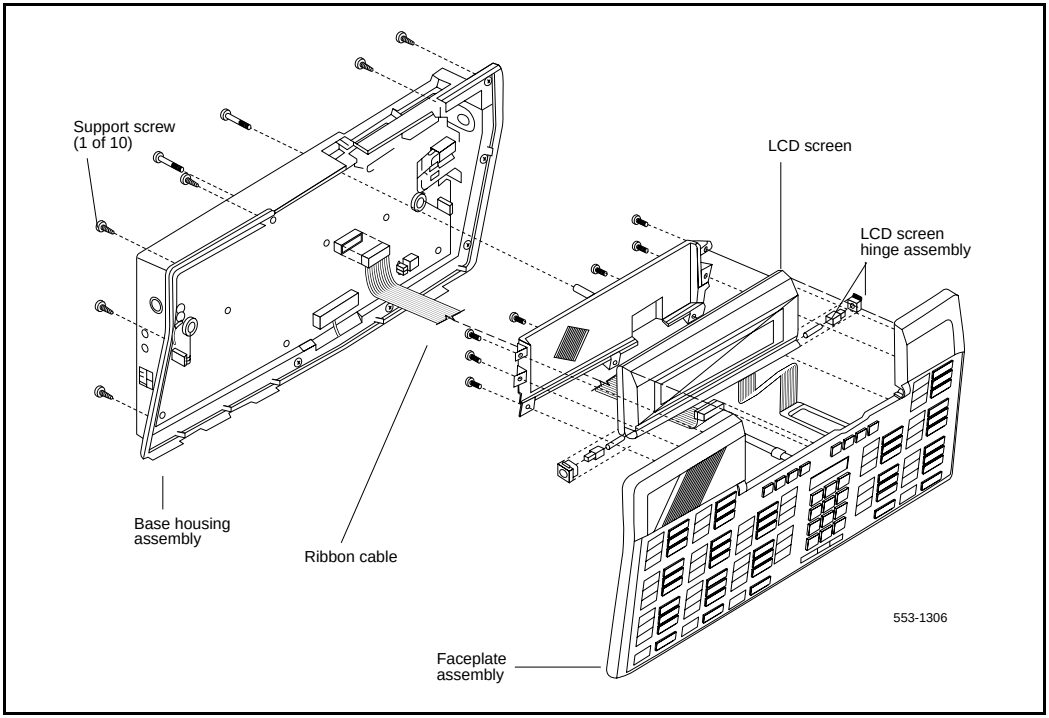
**Procedure 1**
**Removing theM2250 attendant console top cover**

**1** Disconnect any plugs and cords from the attendant console.

**2** Remove the ten 10-mm fastening screws in the flange of the attendant console, as well as one 10-mm and one 40-mm screw on the base of the attendant console. See Figure 4 on page 12 for the M2250 assembly drawing.

**3** Holding the top cover and the base together by hand, turn the attendant console right-side up and place it back on the work surface.

**Figure 4**
**M2250 assembly drawing (exploded view)**




**4** Carefully lift the faceplate straight up and disconnect the 20-pin plug ribbon cable located at J2.

***Note:*** On attendant consoles with a display attached to the top cover, do not connect or disconnect the cable to the display unless the attendant console line cord is disconnected.

**Procedure 2**
**Installing the M2250 attendant console top cover**

**1** Set the QMT2 dip switch. To locate the dip switch, look at the attendant console from the top. The QMT2 dip switch is the only dip switch on the topmost circuit board. Set the switch to ON (enable QMT2) or OFF (disable QMT2).

***Note:*** The QMT2 feature must be enabled in system software. Refer to LD 12 in the *Software Input/Output Guide Administration* (553-3001-311).

**2** Carefully lift the top cover straight up and connect the 20-pin plug ribbon cable to J2.

**3** Put the top cover back on the attendant console:

- Place the top cover onto the base housing, and turn the attendant console upside down.
- Reinsert and tighten the ten 10-mm fastening screws on the flange.
- Reinsert and tighten one 10-mm and one 40-mm fastening screw on the back.

**4** Return the attendant console to its working position, reconnect the plugs and cords, and test the features.

**Procedure 3**
**Loopback test on the M2250 attendant console**

**1** Make a loopback connector. Prepare a blank 25-way RS-232 plug by internally connecting pins 2 and 3 together with strapping wire.

**2** Press the Shift key. This accesses Level 1 mode.

**3** Press the F4 Function key to access the Diagnostics menu on the liquid crystal display (LCD) screen.

**4** Plug the loopback connector into the Data Port RS-232 jack in the back of the console.

5 Select the Data Port option from the Diagnostics menu by dialing “3”. The LCD screen displays OK when the test is successfully completed.

If there is a hardware fault on the M2250, A0H is displayed.

If the blank RS-232 connector is not plugged into the data port correctly (Step 4), the display reads 90H or A0H.

6 Press the Asterisk (*) key to repeat the test.

7 To exit the test mode press the octothorpe (#). This returns you to the main Diagnostics menu.

8 Press the octothorpe to return to normal operating mode.

9 Remove the loopback connector from the Data Port RS-232 jack.

# Designating attendant consoles

Refer to the work order to determine the features and key designations for each attendant console. Designate each key on the attendant console by placing its feature name (from the designation sheet) in the key cap that fits on the key.

The Directory Number (DN) designation window on the M2250 attendant console is located above the keypad.

**Procedure 4**
**Designating attendant consoles**

1 Remove the cap from each key requiring a designation by gently pulling upward on the cap.

2 Remove the appropriate designation from the sheet of designations.

3 Place the designation in the cap, place the cap over the corresponding key, and gently press down. Repeat this procedure for all keys requiring designations.

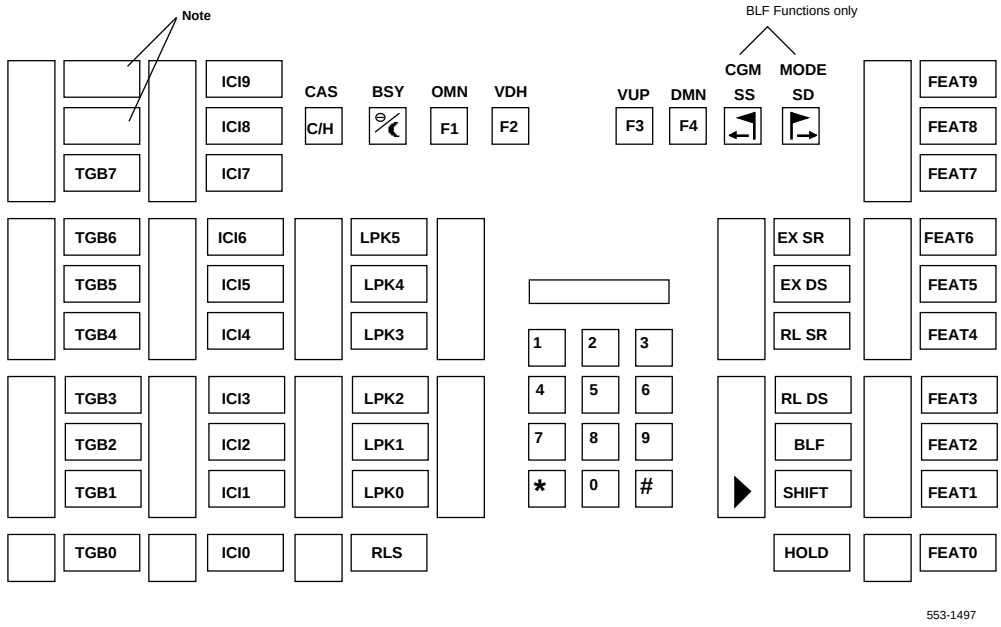
4 Insert a paper clip in the hole at the left or right end of the DN designation window. Pry the window open.

5 Insert the number tag, and replace the designation window.

The following figures show the typical key designations for the M2250 attendant console:

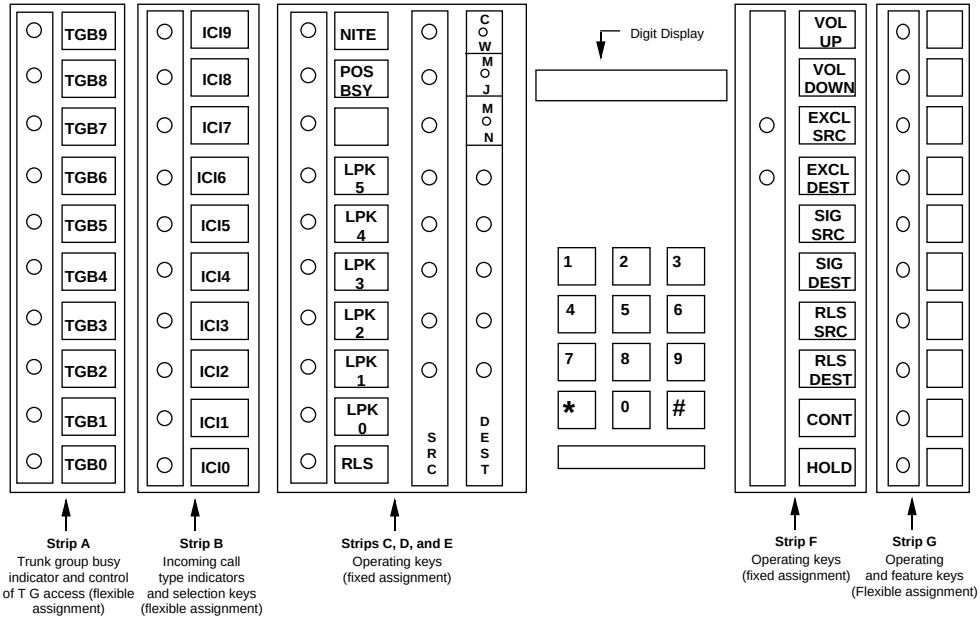
- Figures 5 and 6 show the key designations for the M2250 attendant console in Shift mode.
- Figure 7 on page 17 and Figure 8 on page 17 show the M2250 attendant console in Unshift mode.

**Figure 5**
**M2250 key designations in Shift mode (QMT2 not enabled)**




***Note:*** These two keys are used as Trunk Group Busy keys 08 and 09 on the M2250 attendant console.

**Figure 6**
**M2250 key designations in Shift mode (QMT2 enabled)**




***Note:*** The top two keys in these columns are used as Trunk Group Busy keys only on the M2250. Therefore, the numbering scheme is as follows:

| | **M2250** |
|---|---|
| TGB09 | TGB19 |
| TGB08 | TGB18 |
| TGB07 | TGB17 |
| TGB06 | TGB16 |
| TGB05 | TGB15 |
| TGB04 | TGB14 |
| TGB03 | TGB13 |
| TGB02 | TGB12 |
| TGB01 | TGB11 |
| TGB00 | TGB10 |

**Figure 7**
**M2250 key designations in Unshift mode (QMT2 enabled)**

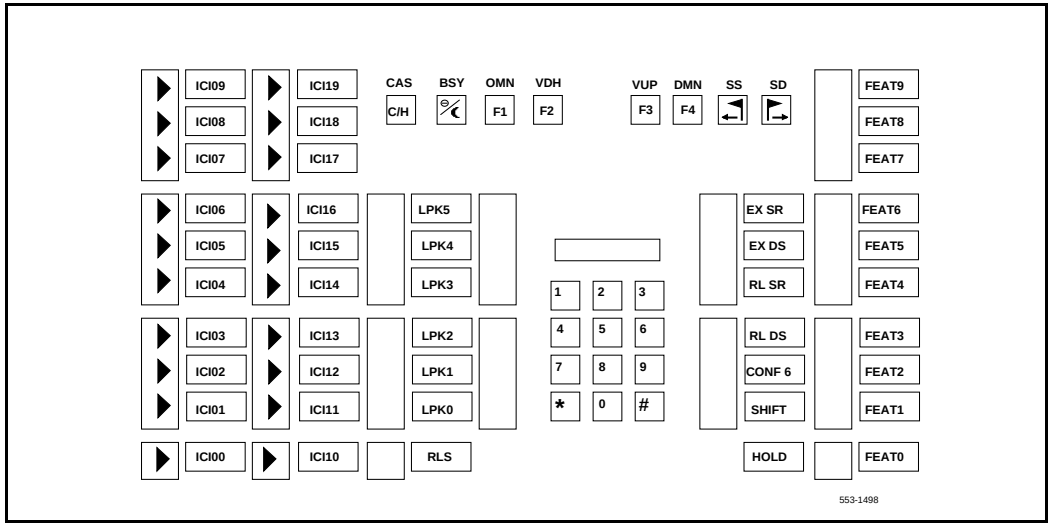
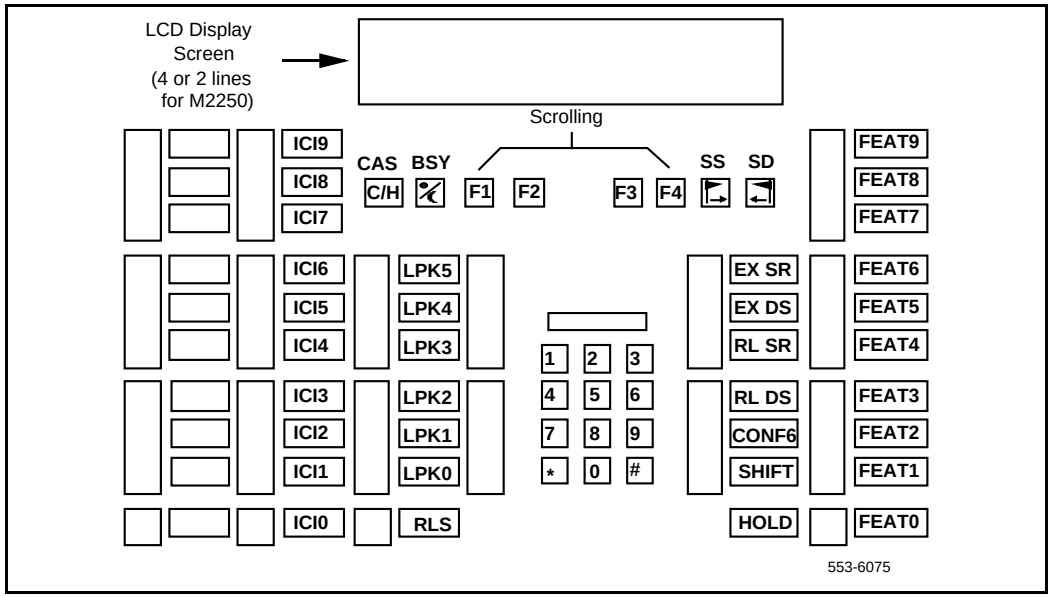



**Figure 8**
**M2250 designations in Unshift mode (QMT2 not enabled)**



# Cross-connecting attendant consoles

Terminations are located on the vertical side of the distributing frame when frame-mounted blocks are used and in the blue field when wall-mounted blocks are used.

Line circuit card (TN) terminations are located on the horizontal side of the distributing frame when frame-mounted blocks are used and in the white field when wall-mounted blocks are used.

**Procedure 1**
**Cross-connecting attendant consoles**

1. Locate the attendant console terminations at the cross-connect terminal.
2. Connect Z-type cross-connecting wire to the leads of the attendant console.
3. Locate the line circuit card (TN) terminations.
4. Run and connect the other end of the cross-connecting wire to the assigned TN terminal block.

See Table 2 for details on Z-type cross-connecting wire and Table 3 on page 19 for a list of inside wiring colors.

**Table 2**
**Z-type cross-connecting wire (Part 1 of 2)**

| Size | Gauge | Color | Designation |
|---|---|---|---|
| 1 pr | 24 | Y-BL | Tip |
| | | BL-Y | Ring |
| 3 pr | 24 | W-BL | Voice T |
| | | BL-W | Voice R |
| | | W-O | Signal T |
| | | O-W | Signal R |

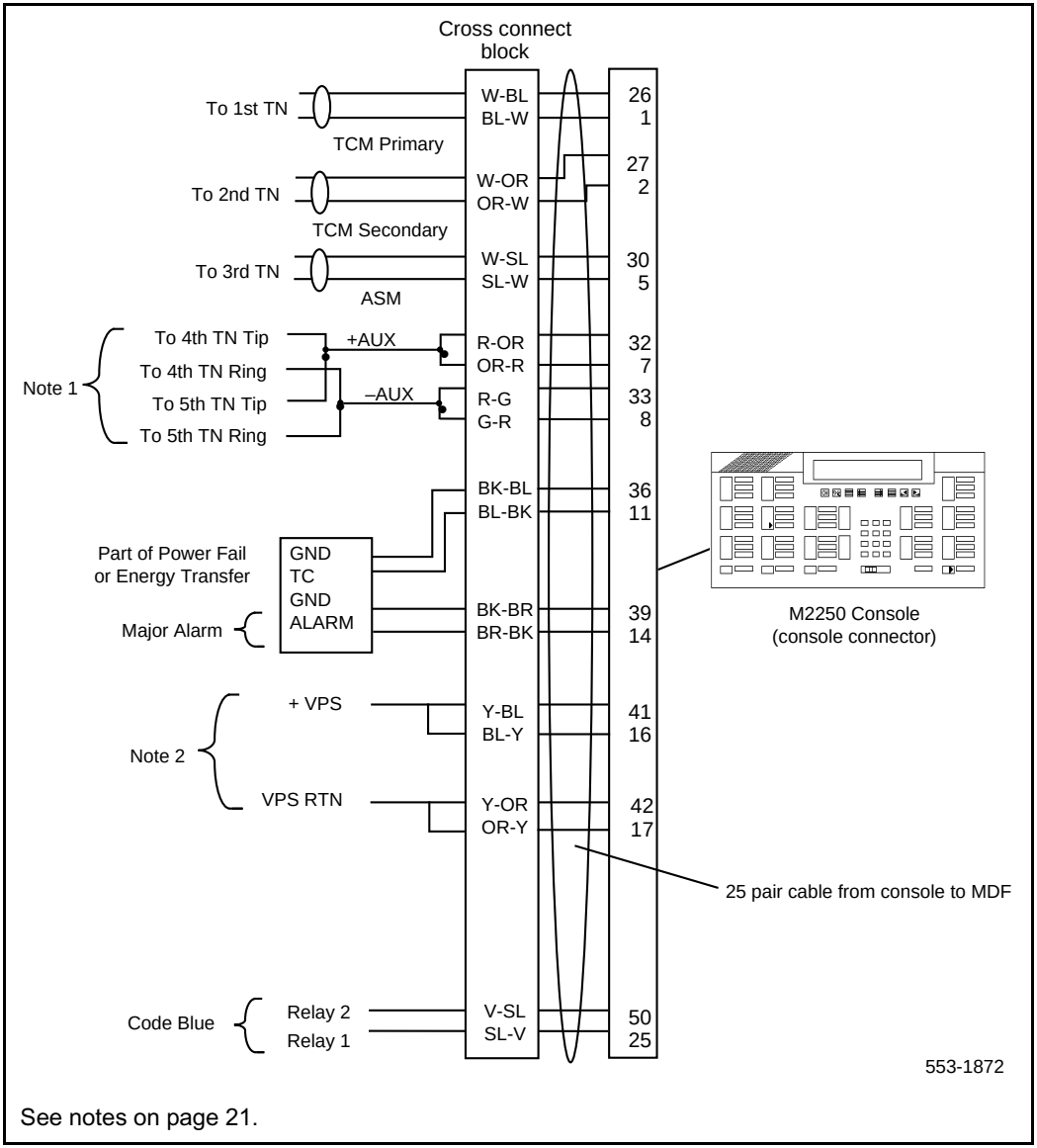
**Table 2**
**Z-type cross-connecting wire (Part 2 of 2)**

| Size | Gauge | Color | Designation |
|---|---|---|---|
| | | W-G | Power |
| | | G-W | Power |

**Table 3**
**Inside wiring colors**

| Z station wire | 16/25-pair cable | Connect to equipment TN |
|---|---|---|
| G | W-BL | First pair Tip |
| R | BL-W | First pair Ring |
| BK | W-O | Second pair Tip |
| Y | O-W | Second pair Ring |

**Figure 9**
**M2250 attendant console cross-connections**




See notes on page 21.

The following notes refer to Figure 9 on page 20, which illustrates the M2250 attendant console cross-connections.

***Note 1:*** The M2250 is powered by means of the line circuits. In addition to the primary TN, secondary TN, and ASM TN, two TNs are cabled to the M2250 using the +AUX and –AUX leads. The maximum loop length is 3000 ft of 24 AWG wire.

***Note 2:*** When additional options are used (BLF or display backlight option), an additional 16 V dc power supply is required. The 16 V dc source is cabled using +VPS and VPS RTN leads. The maximum distance from the console to the power source is 120 feet of 24 AWG wire. Please note if both options are installed, only one 16 V dc power supply is required.

***Note 3:*** It is recommended that five consecutive TNs on the line circuit be allocated for each console.

***Note 4:*** When used with the ISDLC, the M2250 requires QPC578 vintage D or later.

***Note 5:*** The third TN must be cross-connected to the console cable WH/SL pair whether or not an ASM (Attendant Supervisory Module) is installed. This third TN provides additional console power which is required.

Table 4 on page 22 explains where each M2250 cable pair is connected. Table 5 on page 24 lists the M2250 typical cross-connections.

**Table 4**
**M2250 attendant console connections (Part 1 of 2)**

| Mounting cord | 16/25-pair connector cable | | | |
|---|---|---|---|---|
| **Lead designation** | **Pin number** | **Pair number** | **Color** | **Connected to** |
| TCM primary | 26 | 1T | W-BL | TN #1 |
| | 1 | R | BL-W | |
| TCM secondary | 27 | 2T | W-O | TN #2 |
| | 2 | R | O-W | |
| Attendant Supervisory Module | 30 | 5T | W-SL | TN #3 |
| | 5 | R | SL-W | |
| Spare | 31 | 6T | R-BL | |
| | 6 | R | BL-R | |
| +AUX | 32 | 7T | R-O | TN #4 |
| | 7 | R | O-R | |
| –AUX | 33 | 8T | R-G | TN #5 |
| | 8 | R | G-R | |
| Spare | 34 | 9T | R-BR | |
| | 9 | R | BR-R | |
| Spare | 35 | 10T | R-SL | |
| | 10 | R | SL-R | |
| Power Fail or | 36 | 11T | BK-BL | GND (Note 1) |
| Energy Transfer | 11 | R | BL-BK | TC (Note 2) |
| Spare | 37 | 12T | BK-O | |
| Spare | 12 | R | O-BK | |
| Spare | 38 | 13T | BK-G | |
| Spare | 13 | R | G-BK | |

**Table 4**
**M2250 attendant console connections (Part 2 of 2)**

| Mounting cord | 16/25-pair connector cable | | | |
|---|---|---|---|---|
| **Lead designation** | **Pin number** | **Pair number** | **Color** | **Connected to** |
| GND | 39 | 14T | BK-BR | GND (Note 1) |
| Major Alarm | 14 | R | BR-BK | ALM (Note 2) |
| Spare | 40 | 15T | BK-SL | |
| | 15 | R | SL-BK | |
| VPS | 41 | 16T | Y-BL | |
| | 16 | R | BL-Y | |
| VPS RTN | 42 | 17T | Y-O | |
| | 17 | R | O-Y | |
| Spare | | | | |
| Code Blue | 50 | 25T | Y-SL | Relay 2 |
| | 25 | R | SL-Y | Relay 1 |

***Note 1:*** Connect to Pin 3 or 28 of the appropriate PFJ5 terminal block.

***Note 2:*** Connect TC to Pin 29 or 5 and ALM to Pin 4 or 31 of the appropriate PFJ5 terminal block.

**Table 5**
**M2250 typical cross-connections (Part 1 of 2)**

| Pair | Pins | Pair Color | DLC Connections | ISDLC Connections |
|---|---|---|---|---|
| 1T | 26 | W-BL | Unit | Unit |
| 1R | 1 | BL-W | 0 | 0 |
| 2T | 27 | W-O | Unit | Unit |
| 2R | 2 | O-W | 1 | 8 |
| 3T | 28 | W-G | Unit | Unit |
| 3R | 3 | G-W | 2 | 1 |
| 4T | 29 | W-BR | Unit | Unit |
| 4R | 4 | BR-W | 3 | 9 |
| 5T | 30 | W-S | Unit | Unit |
| 5R | 5 | S-W | 4 | 2 |
| 6T | 31 | R-BL | Unit | Unit |
| 6R | 6 | BL-R | 5 | 10 |
| 7T | 32 | R-O | Unit | Unit |
| 7R | 7 | O-R | 6 | 3 |
| 8T | 33 | R-G | Unit | Unit |
| 8R | 8 | G-R | 7 | 11 |
| 9T | 34 | R-BR | Unit | Unit |
| 9R | 9 | BR-R | 8 | 4 |
| 10T | 35 | R-S | Unit | Unit |
| 10R | 10 | S-R | 9 | 12 |
| 11T | 36 | BK-BL | Unit | Unit |
| 11R | 11 | BL-BK | 10 | 5 |
| 12T | 37 | BK-O | Unit | Unit |
| 12R | 12 | O-BK | 11 | 13 |

**Table 5**
**M2250 typical cross-connections (Part 2 of 2)**

| Pair | Pins | Pair Color | DLC Connections | ISDLC Connections |
|---|---|---|---|---|
| 13T | 38 | BK-G | Unit | Unit |
| 13R | 13 | G-BK | 12 | 6 |
| 14T | 39 | BK-BR | Unit | Unit |
| 14R | 14 | BR-BK | 13 | 14 |
| 15T | 40 | BK-S | Unit | Unit |
| 15R | 15 | S-BK | 14 | 7 |
| 16T | 41 | Y-BL | Unit | Unit |
| 16R | 16 | BL-Y | 15 | 15 |

# Telephones

## Contents

This section contains information on the following topics:



## Reference list

The following are the references in this section:

- *Meridian Internet Telephony Gateway: Installation and Operation* (553-3001-204)
- *Circuit Card: Installation and Testing* (553-3001-211)
- *M3900 Series Meridian Digital Telephones: Description, Installation, and Administration* (553-3001-216)
- *Software Input/Output Guide Administration* (553-3001-311)

# Packing and unpacking

Use proper care while unpacking any digital telephone. Check for damaged containers so that appropriate claims can be made to the transport company for items damaged in transit.

If a telephone must be returned to the factory, pack it in the appropriate container to avoid damage during transit. Remember to include all loose parts (cords, handset, power unit, labels, and lenses) in the shipment.

# Installation and removal

Do not remove the circuit card if any remaining units on the card are assigned.

**Procedure 1**
**Installing 500/2500 telephones**

1. Ensure that the wiring is installed at the telephone's location.
2. Unpack and inspect the telephone for damage. Assemble the handset and line cords if necessary.
3. Install the required designations on the telephone.
4. Connect the telephone to the connecting block or connector.
5. Cross-connect the telephone wiring at the cross-connect terminal.
6. Configure the telephone in the system. Refer to the *Software Input/Output Guide Administration* (553-3001-311).

**Procedure 2**
**Removing 500/2500 telephones**

1. Remove telephone data from the system. Refer to the *Software Input/Output Guide Administration* (553-3001-311).
2. Disconnect the telephone from the connecting block or connector.
3. Pack the telephone in a container.
4. If necessary, remove the cross-connections for the telephone at the cross-connect terminal.

**5** Remove the line circuit card if required. Refer to *Circuit Card: Installation and Testing* (553-3001-211).

**Procedure 3**
**Installing M2000 Series Meridian Digital Telephones (M2006/M2008/M2008HF/M2016S/M2616/M2216ACD)**

**1** Complete the wiring and cross-connections (loop power) before connecting the telephone to the connecting block. See Figure 10 on page 30 and Figure 11 on page 31.

**2** Place the telephone upside down on a number of sheets of soft, clean paper on a solid, level work surface to prevent damage to movable keys and the telephone's face.

**3** Connect the handset cord (5-conductor TELADAPT connectors) to the handset and snap it into place (not applicable to M2216ACD).

**4** Connect the other end of the handset cord to the connector in the bottom cover of the telephone. Turn the smooth side of the handset cord up (away from the telephone bottom cover) before tucking it under the restraining tab to ensure that the telephone will sit level on the desk after installation is complete (not applicable to M2216ACD).

**5** Connect the line cord to the telephone bottom cover. Route the cord through the channels.

**6** Turn the telephone right side up and place it in the normal operating position.

**7** Print the directory number on the designation card. Using a paper clip, remove the number lens from the telephone. Insert the designation card and snap the lens back into place.

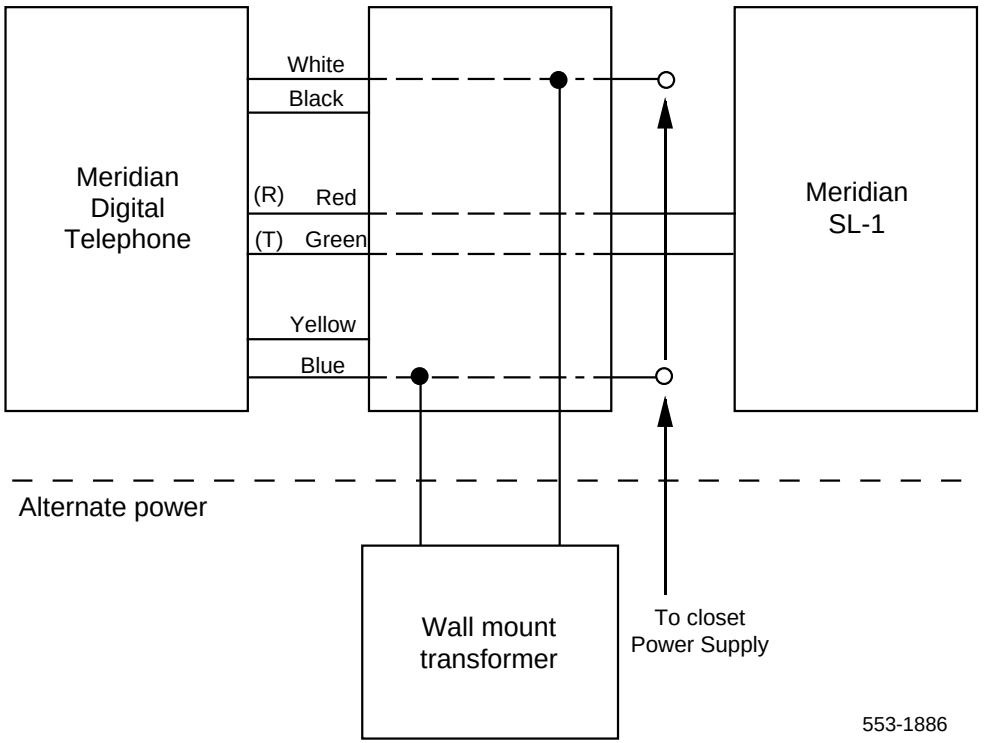
**8** Designate the feature keys.

**9** Insert the line cord TELADAPT connector into the connecting block and snap it into place.

**10** Perform the self-test (see Procedure 1) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311).

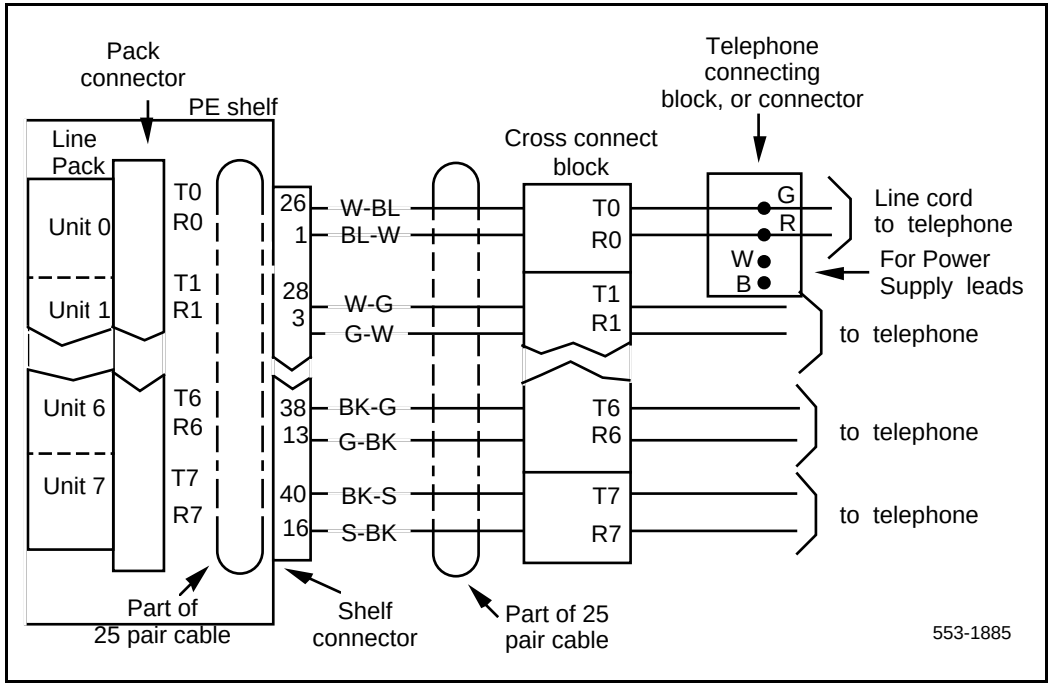
**11** Supply the user with a quick reference card and all user documentation. Make sure the SPRE number is printed on the quick reference card.

**Figure 10**
**M2000 Series Meridian Digital Telephone connections**




***Note:*** The optional power may be required only if the set has options such as the Meridian Programmable Data Adapter.

**Figure 11**
**M2000 Series Meridian Digital Telephone cross-connections**



## M2000 Series Meridian Digital Telephones self-test

M2000 Series Meridian Digital Telephones have a self-testing capability. Follow the steps in Procedure 1 to perform the self-test after installing an M2000 Series Meridian Digital Telephone or any of the hardware options to ensure proper operation.

**Procedure 1**
**M2000 Series Meridian Digital Telephones self-test**

1. Unplug the line cord from the telephone.
2. While holding down the RLS key, plug in the line cord to the telephone. Let go of the RLS key.
3. Use Table 6 to perform the necessary steps and check results.

**Table 6**
**Meridian Modular Telephones self-test steps and results (Part 1 of 2)**

| Step | Action | Result |
|---|---|---|
| 1 | Begin test (plug in line cord while holding down the RLS key).<br><br>The handset is on hook. | Speaker beeps once, all LCDs flash.<br>Message Waiting lamps light steadily.<br>Display reads: LOCAL DIAGNOSTIC MODE<br>PRESS RLS KEY TO EXIT |
| 2 | Press each Function key, from zero to fifteen (if you have Key Expansion Modules, continue pressing the Function keys, in any order). | Adjacent LCD goes off when a key is pressed. |
| 3 | Press the Hold key. | Speaker beeps. |
| 4 | Press each dial pad key. | Speaker beeps each time a key is pressed. |
| 5a | Lift the handset (if applicable).<br><br>Press the dial pad keys.<br><br>Replace the handset. | Speaker beeps.<br><br>Handset beeps. |

**Table 6**
**Meridian Modular Telephones self-test steps and results (Part 2 of 2)**

| Step | Action | Result |
|---|---|---|
| **5b** | Plug in the headset (if applicable). | Speaker beeps. |
| | Press the dial pad keys. | Headset beeps. |
| | Unplug the headset. | |
| **6** | Press the right side of the volume control key. | Speaker beeps.<br>Display is filled with dark squares. |
| | Press the right side of the volume control key. | Speaker beeps.<br>Display is blank. |
| | Press the right side of volume control key. | Speaker beeps.<br>Display shows symbols including digits 0–9 and uppercase alphabet |
| | Press the right side of the volume control key. | Speaker beeps.<br>Display shows symbols including upper- and lowercase alphabet. |
| | Press the right side of the volume control key. | Speaker beeps.<br>Display shows various symbols. |
| | Press the right side of the volume control key. | Speaker beeps.<br>Display shows symbols. |
| | Press the right side of the volume control key. | Speaker beeps.<br>Display is filled with dark squares. |
| **7** | Press the RLS key (end of test). | Message Waiting lamp goes off.<br>Display shows idle screen within 10 seconds. |

**Procedure 2**
**Installing the M2317 telephone**

**1** Complete the wiring and cross-connection according to Figure 12 before connecting the telephone to the TELADAPT connector block.

**2** Place the telephone upside down on a number of sheets of soft, clean paper and on a solid, level work surface to prevent damage to movable keys and the telephone's face.

**3** Connect the handset cord 4-conductor TELADAPT connectors to the handset and to the telephone and snap into place.

**4** Turn the smooth side of the cord away from the telephone base and secure it under the restraining tab. This ensures that the telephone sits level after the installation is complete.

**5** Connect the 6-conductor line cord to the telephone base, and place it under the restraining tabs.

**6** Turn the telephone face up, and place it in the normal operating position.

**7** Print the directory number (DN) on the designation card and place it in the designation card holder.

**8** Designate button labels for programmable keys, and place them under the button cover.

**9** Insert the line cord TELADAPT connector block and snap it into place. Place the line cord under the restraining tabs.

**10** Plug the 5 V power supply connector into the back of the telephone.

**11** Plug the power supply into an AC utility outlet.

**12** After the M2317 digital telephone is connected to a line that is both enabled and designated as an M2317 digital line, the startup screen displays INITIALIZATION V6.4. Within 5 seconds, the Idle state screen is displayed, and the M2317 is operational. The term V6.4 represents the firmware issue number, and may differ with some installations.

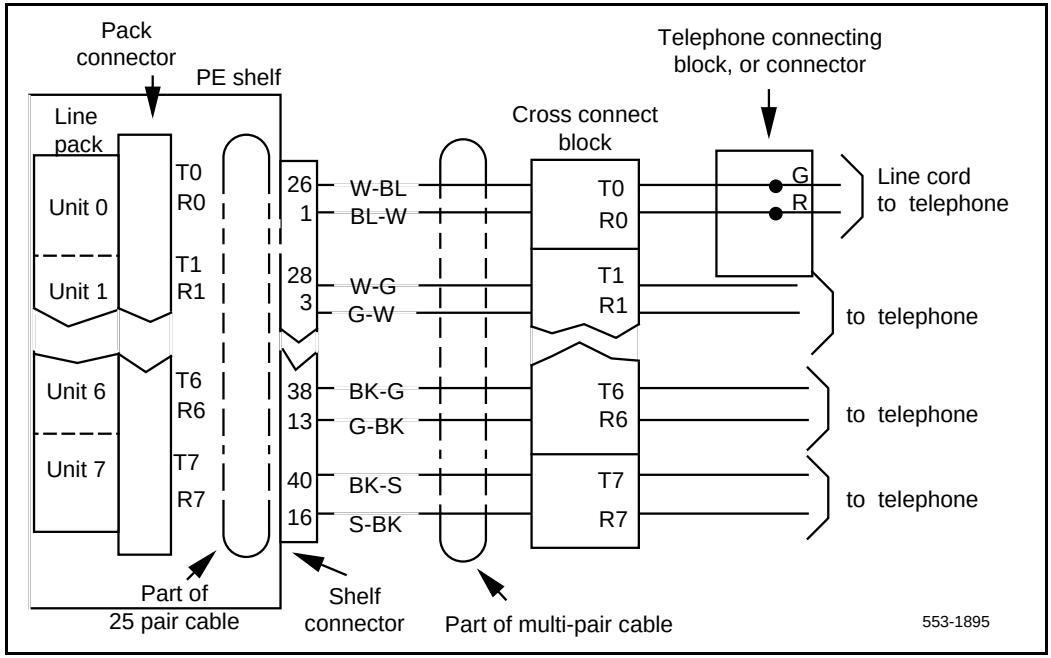
**13** If the M2317 has been connected to a line that is designated as a digital line, but is not enabled, the display will prompt CONTACT SYSTEM ADMINISTRATOR. The line must be enabled using LD 32 from the maintenance terminal, and by enabling the features outlined in the work order. Refer to the *Software Input/Output Guide Administration* (553-3001-311) for the required routines, prompts, and responses.

If the M2317 has been connected to a line that is neither defined as a digital line nor enabled, refer to the *Software Input/Output Guide Administration* (553-3001-311) for required routines, prompts, and responses.

**14** Verify that all the requested features are enabled by accessing them with the soft keys, or programmable keys, from the M2317 telephone and observing the display screen.

**15** Perform the self-test (see Procedure 1 on page 36) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311).

**Figure 12**
**M2317 digital telephone cross-connections**



## M2317 telephone self-test

The M2317 telephone has a self-testing capability. This test can be performed whether or not the telephone is connected to the system. The test checks the proper functioning of the keys and liquid crystal display (LCD) indicators on the set. Follow the steps listed in Procedure 1 and Table 7 to perform the M2317 self-test.

**Procedure 1**
**M2317 telephone self-test**

**1** Connect the telephone to the ac power supply.

The LCD screen displays “Initialization … vX.X” (note that you have only 3 to 5 seconds to begin step 2).

**2** Press softkey 5 twice, then press softkey 4 twice.

**3** Use Table 7 to perform the necessary steps and check results.

**4** Unplug the power supply to end the test.

**Table 7**
**M2317 telephone key/LCD indicator self-tests**

| Step | Key operated | Required response |
|---|---|---|
| **1** | Any programmable key | Toggles the corresponding indicator on/off |
| **2** | Any dial pad key | Displays the corresponding character in the top line of the display screen |
| **3** | Volume control | Displays characters “>” for volume up and “<” for volume down in the top line of the display screen |
| **4** | Softkey 1 | Both display lines are filled with characters as follows:<br>ABCDEFGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMN<br>OPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZAB |
| **5** | Softkey 2 | Both display lines are filled with characters as follows:<br>abcdefghijklmnopqrstuvwxyzabcdefghijklmn<br>opqrstuvwxyzabcdefghijklmnopqrstuvwxyzab |
| **6** | Softkey 3 | All LCD pixels are turned on |
| **7** | Softkey 4 | Display is blank |
| **8** | Softkey 5 | Both display lines are filled with characters as follows:<br>8888888888888888888888888888888888888888<br>8888888888888888888888888888888888888888 |

When the M2317 digital telephone or the data option fails to function properly, follow the steps listed in Table 8 in sequence to isolate the problem area.

**Table 8**
**M2317 trouble-locating procedures (Part 1 of 2)**

| Step | Action |
|---|---|
| | **Loop power failure** |
| **1** | Plug in the telephone. |
| **2** | The LCDs flash once to indicate the power is OK. |
| | **Data communication failure** |
| **1** | If voice communication is normal but data communication fails, check for DC output voltage at the power supply connector pins or replace the power supply plug-in transformer.<br><br>Attempt to make a data call from the terminal keyboard (refer to *Meridian 1 Telephones: Description and Specifications* (553-3001-108)). If not successful, proceed with step 2. |
| **2** | Make a call to the DN (voice or data) to verify that the port is enabled. |
| **3** | Use an EIA or RS-232 breakout box in conjunction with the terminal cable to verify lead states and replace or repair cable if pinouts are incorrect.<br><br>Attempt to make a data call from the terminal keyboard (refer to *Meridian 1 Telephones: Description and Specifications* (553-3001-108)). If still not successful, proceed with step 4. |
| **4** | Remove the transformer from the AC receptacle, unplug the 5-pin power supply connector at the back of the telephone, and replace the data option circuit board (see Procedure 1). Reconnect the data option power supply.<br><br>Make a new attempt to start a data call. If trouble persists, continue with the ISDLC failure procedure. |
| **5** | Use the self-test procedure to verify that the telephone electronics are operating correctly. |

**Table 8**
**M2317 trouble-locating procedures (Part 2 of 2)**

| | |
|---|---|
| | **ISDLC failure** |
| **1** | Go to the system maintenance terminal (TTY or CRT) and check for displayed error and location codes. An “NWS 401 L S C” or an “NWS 501 L S C U” code indicates that the automatic (routine) diagnostic test has detected a fault.<br><br>Check for the following indications:<br><br>L = faulty circuit card (ISDLC card) loop number<br><br>S = circuit card location (shelf number)<br><br>C = number of the faulty circuit card<br><br>U = unit number of a faulty telephone (appears only in conjunction with the NWS 501 code) |
| **2** | Replace the faulty components.<br><br>Try to establish a call. If unsuccessful, check the telephone. |
| | **Telephone (voice or dialing) failure** |
| **1** | Check the line cord and handset cord to determine if all TELADAPT connectors are firmly in place and reconnect the loose ones. Ensure that the polarity of the Tip and Ring leads is correct.<br><br>Lift the handset and listen for the dial tone and/or dial a directory number. If unsuccessful, proceed with step 2. |
| **2** | Wiggle the line cord and/or handset cord while listening for sounds from the handset. If crackling or ticking sounds are heard, replace the cords.<br><br>Try to establish a call. If unsuccessful, proceed with step 3. |
| **3** | Replace the telephone.<br><br>Try to establish a call. If unsuccessful, proceed with step 4. |
| **4** | Check the wiring between the line card, distribution panel, and telephone for breaks or loose connections. If necessary, rerun the wiring.<br><br>Operate the telephone. |

***Note:*** If no error codes are shown at the maintenance terminal, the Network and Signaling Diagnostic (LD 30) can be loaded and run manually from the system TTY. Refer to the *Software Input/Output Guide Administration* (553-3001-311).

**Procedure 2**
**M2616CT Installation**

**DANGER OF ELECTRIC SHOCK**
The M2616CT is not intended for direct connection to the public switched network or other exposed plant networks, because the exposed pins on the handset cradle (where the handset sits) creates a possible outlet for harmful voltage. The M2616CT is designed to be used with a Meridian PBX.

**WARNING**

**1** Complete the wiring and cross-connections (loop power) before connecting the telephone to the connection block.

**2** Place the telephone upside down on a padded level work surface to prevent damage to the telephone face.

**3** connect the line cord into the bottom of the telephone base. Route the cord through the channels.

**4** Plug the AC adapter (Class 2 power supply) output DIN connector into the bottom of the M2616CT set next to the line cord connection. Route the cord through the channels.

**5** Turn the telephone right side up and place it in the normal operating position.

**6** Insert the line cord TELEDAPT connector into the connecting block.

**7** Plug the AC adapter (Class 2 power supply) input into the commercial 11V electrical main outlet.

**8** Print the directory number on the designation card. Using a paper clip remove the number lens from the telephone. Insert the designation card and snap the lens back into place

**9** Designate the feature keys.

**Procedure 3**
**M2616CT Installing the battery**

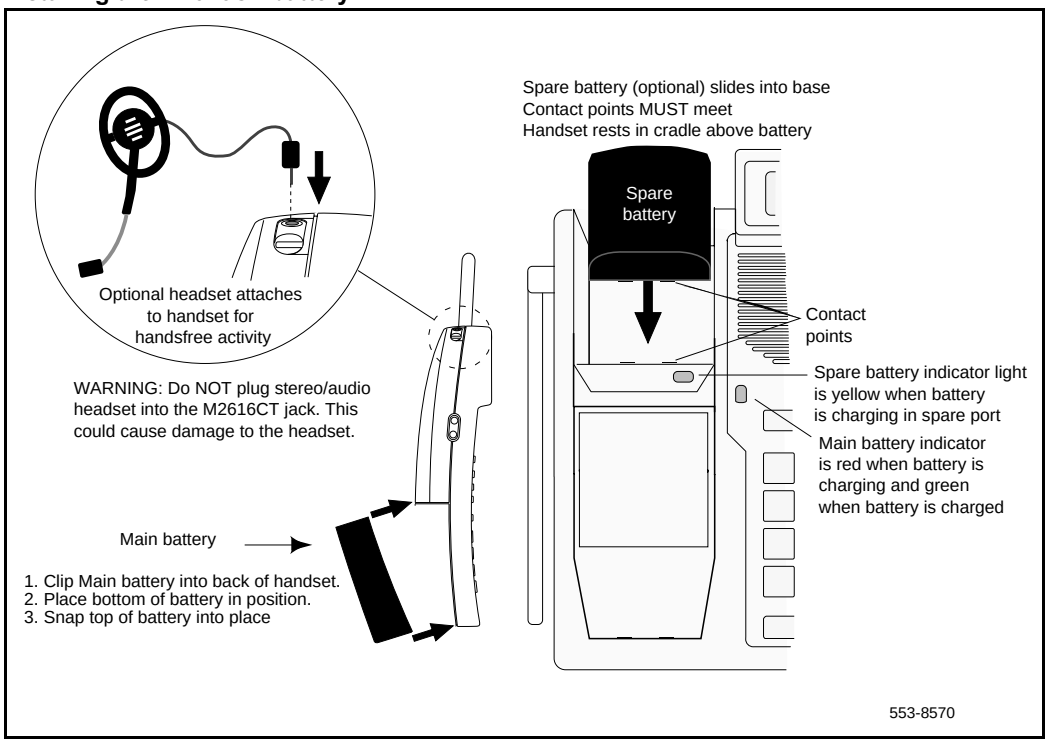
**1** Place the handset battery in the base of the handset so the battery engages with the contact points.

**2** Snap the battery into place.

**3** Slide the spare battery (optional purchase) into the spare battery compartment, located at the top of the handset cradle. The yellow indicator lights when the battery is properly connected.

The battery begins to charge as soon as the handset is placed in its cradle. The main handset battery 700 mAh fully recharges in approximately 2.25 hours, the 1000 mAh battery charges in approximately 2.50. It should be noted that the that the spare battery charging port on the base unit provides a “trickle charge” that charges the battery at a slower rate than through the handset.

**Figure 13**
**Installing the M2616CT battery**




**Procedure 1**
**M2616CT Wall mounting**

The M2616CT base is equipped with a reversible footstand that allows you to mount the telephone on the wall. The procedure is described as follows:

**1** Remove the handset and place the telephone upside down on a level work surface covered with soft material to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the set.

**3** Remove the two screws from the footstand assembly.

4 Unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base, and pulling upward.

5 Rotate the footstand 180 degrees and screw the footstand back into place to the set's bottom cover.

6 Tighten all screws and replace all cords.

7 Mount the telephone on the wall using the wall-mount holes provided on the bottom of the footstand.

### M2616CT configuration

To configure the M2616CT set refer to *Software Input/Output Guide Administration* (553-3001-311) for complete information and procedures on LD11 to configure the Meridian Digital Telephone. For the Locator key (key 14) to function, do not assign a feature to this key. Handsfree is required for the M2616CT to function properly.

### M2616CT Handset Registration to Base Unit

Each M2616CT handset is automatically registered to its respective base unit. In cases where a substitute handset is required for troubleshooting purposes, a different M2616CT handset can be reregistered by placing the handset on-hook, and unplugging, then re-plugging in the ac power adapter and telephone line cord.

### M2616CT Manual RF (Radio Frequency selection

The M2616CT uses 900 MHz narrowband signaling. Other products also use these channels. Due to interference from other products, there may be a time when the installer must confirm the user's M2616CT so that other 900 MHz products will not cause interference. The Manual RF Selection feature is a function available on Key 14 in addition to the Locator feature. Procedure 2 describes the steps to follow to implement the Manual RF Selection feature:

**Procedure 2**
**M2616CT Manual RF (Radio Frequency selection)**

1 Add a feature (any feature) on the system's Key 14.

2 Press Key 14 and AUTO appears on the display.

3 Toggle the volume key until the desired channel (CH00 through CH19) is reached. See Table 9.

**4** Press Key 14 again.

**5** Remove the feature from Key 14 to have access to the Locator feature. Selecting one channel instead of scanning provides quicker response to the voice channel and clears the interference in the area.

**Table 9**
**Frequency Ranges**

| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|---|---|
| CH00 | 902.6 | CHO5 | 910.6 | CH10 | 915.8 | CH15 | 921.4 |
| CH01 | 904.0 | CH06 | 912.0 | CH11 | 916.4 | CH16 | 923.0 |
| CH02 | 905.6 | CH07 | 914.2 | CH12 | 918.4 | CH17 | 924.8 |
| CH03 | 907.2 | CH08 | 914.8 | CH13 | 919.6 | CH18 | 926.4 |
| CH04 | 908.8 | CH09 | 915.2 | CH14 | 921.4 | CH19 | 927.6 |

## M3900 Series Meridian Digital Telephone

The M3900 Series Meridian Digital Telephones provide versatile functionality to the desktop environment. The M3900 Series Meridian Digital Telephones have five models:

- M3901 entry level telephone
- M3902 Basic Telephone
- M3903 Enhanced Telephone
- M3904 Professional Telephone
- M3905 Call Center Telephone

For more information on the M3900 Series Meridian Digital Telephone, refer to *M3900 Series Meridian Digital Telephones: Description, Installation, and Administration* (553-3001-216).

# i2004 Internet Telephone

This section explains how to install the i2004 Internet Telephone and how to perform manual and automatic configuration procedures, depending on site application.

The i2004 has no direct physical connection to the ITG Line 2.0 card. It communicates with the ITG Line 2.0 card through an Ethernet connection.

### Before beginning

Install and configure the Meridian Internet Telephony Gateway (ITG) Line 2.0 Line Card. Refer to *Meridian Internet Telephony Gateway: Installation and Operation* (553-3001-204).

Make sure there is one NTEX00BA i2004 Internet Telephone boxed package for each i2004 Internet Telephone required. The boxed package contains:

- NTEX00AA i2004 Internet Telephone
- A0648375 7 foot Ethernet cable, Category 5
- NTEX0080 i2004 Installation Guide
- A0619627 Power Transformer (117/120 Vac 50/60 Hz)
- A0788874 Telephone Handset (Ethergray)
- A0788682 Telephone Handset Cord (Ethergray)
- P0886045 Telephone footstand
- P0906640 “The i2004 Internet Telephone: Getting Started” installation guide
- PP0906641 “The i2004 Internet Telephone Quick Reference Configuration Guide”

Consult the installation guide for instructions on installing the power transformer, handset, handset cord, telephone footstand and Ethernet cable.

If using automatic configuration for the i2004 Internet Telephone, read the chapter “DHCP server engineering guidelines” of *Meridian Internet Telephony Gateway: Installation and Operation* (553-3001-204).

One data port and a power port is required for each i2004 Internet Telephone.

## Manual first-time i2004 Internet Telephone installation

Follow the steps in Procedure 3 to properly install an i2004 Internet Telephone.

**Procedure 3**
**Install and configure the i2004 Internet Telephone**

1. To install and configure an i2004 Internet Telephone, the ITG Line 2.0 cards must be installed on the host system. The i2004 Internet Telephone application must be running on the card.
2. Configure a virtual loop on the system using LD97.
3. Configure the i2004 Internet Telephone on the system using LD11.
4. Follow the instructions in the NTEX0080 i2004 Installation Guide to install the footstand, power transformer, handset, handset cord.
5. Power-up the i2004 Internet Telephone.
6. Press the soft keys on the i2004 Internet Telephone in sequence from left to right immediately after the "Nortel Networks" banner appears.
7. Enter the i2004 Internet Telephone IP address, netmask, router address as prompted. The i2004 Internet Telephone also requires the IP address, port number, action code and number of retries for the primary gateway and secondary gateways.
8. Enter No at the question "DHCP Yes/No?"
9. Connect the i2004 Internet Telephone to the LAN using the provided Ethernet cable. The i2004 Internet Telephone begins firmware download.
10. The i2004 Internet Telephone prompts you for a node number and TN. Enter the node number and TN on the keypad.
11. Manual i2004 Internet Telephone configuration is complete.

## Automatic first-time installation of an i2004 Internet Telephone

Automatic configuration of the i2004 Internet Telephone client requires an i2004 Internet Telephone-aware DHCP server. DHCP allows the dynamic allocation of IP addresses to different clients.

The Nortel Networks i2004 Internet Telephone can act as a DHCP client. As part of the startup routine, the i2004 Internet Telephone can request automatic network and local configuration parameters from a DHCP server. The DHCP server responds to the request and supplies information.

Network configuration parameter requests include:

- IP address of the i2004 Internet Telephone
- Subnet mask for the i2004 Internet Telephone IP address
- Default gateway for the i2004 Internet Telephone LAN segment

Local configuration parameter requests include:

- A command (UNIStim Hello)
- IP address of the ITG Line 2.0 node Active Leader. The ITG Line 2.0 card acts as a bootstrap server to download the most recent version of the i2004 Internet Telephone firmware, if required. The Active Leader gives the IP address of the Terminal Proxy Server (TPS) through which the i2004 Internet Telephone registers with the system.
- Number of retries for the primary and secondary bootstrap server.

***Note:*** Be sure to read "DHCP server engineering guidelines" of *Meridian Internet Telephony Gateway: Installation and Operation* (553-3001-204) before performing an automatic first-time installation.

Follow the steps in Procedure 4 to automatically configure the i2004 Internet telephone.

**Procedure 4**
**Automatically configure the i2004 Internet Telephone**

1. To install and configure an i2004 Internet Telephone, the host system must have the ITG cards installed, and the ITG cards must be running the i2004 Internet Telephone application. A DHCP server and DHCP relay agents, if necessary, must also have been installed, configured and running.
2. Configure a virtual loop on the system using LD97.
3. Configure the i2004 Internet Telephone on the system using LD11.

4. Follow the instructions in the NTEX0080 i2004 Installation Guide to install the footstand, Ethernet cable, power transformer, handset, handset cord.
5. Power-up the i2004 Internet Telephone.
6. Connect the i2004 Internet Telephone to the LAN using the supplied Ethernet cable. The i2004 Internet Telephone automatically proceeds through its DHCP sequence.
7. The i2004 Internet Telephone prompts for a node number and TN. Enter the node number and TN on the keypad.
8. Automatic i2004 Internet Telephone configuration is complete.
9. If the TN has not been previously configured on the system or an invalid TN is used, a message is displayed on the screen of the i2004 Internet Telephone indicating “Invalid TN.”

# Designating telephones

Before designating telephones, check the work order for features enabled and key designations. Designate each key by placing its feature name (from the designation sheet) in the key cap that fits on the key.

Follow the steps in Procedure 5 to designate 500-type telephones:

**Procedure 5**
**Designating 500-type telephones**

**1** Remove the finger wheel and number card from its envelope.

**2** Designate the number card with the appropriate directory number and station designator.

**3** Insert the number card into the finger wheel (making sure the number card is properly oriented).

**4** Place the telephone on a flat surface.

**5** Place the finger wheel over the clamp on the dial, with the “0” hole directly over the digit “9,” making sure the finger wheel depressions are properly positioned on the prongs of the clamp plate.

**6** Rotate the finger wheel counterclockwise until the clamp spring snaps into the notch on the underside of the finger wheel.

Follow the steps in Procedure 6 to remove the finger wheel from 500-type telephones.

**Procedure 6**
**Removing the finger wheel from 500-type telephones**

**1** Place the telephone on a flat surface.

**2** Rotate the finger wheel clockwise as far as possible.

**3** Insert a paper clip into the small hole between the digits “9” and “0” located on the edge of the grooved section of the finger wheel.

**4** Press down on the releaser to disengage the finger wheel clamp spring.

**5** Rotate the finger wheel further clockwise until the clamp spring releases.

**6** Remove the finger wheel when it becomes loose. The dial returns to normal position.

**Procedure 7**
**Designating 2500-type telephones**

**1** The designation window is located directly below the dial pad. Insert a paper clip into the hole at the left or right end of the designation window.

**2** Gently pry the window toward the center and remove.

**3** Insert number tag with the appropriate directory number and station designator, and replace the designation window.

**Procedure 8**
**Designating M2000 Series Meridian Digital Telephones**

**1** Remove the cap from each key requiring a designation.

**2** Place the designation in the cap, place the cap over the corresponding key, and gently press down. Repeat for all keys requiring designations.

**3** Insert a paper clip into the hole at the left or right end of the designation window.

**4** Gently pry the window toward the center and remove, and insert the number tag.

**5** Replace the designation window.

# Connecting telephones

Procedure 9 describes how to connect 500- and 2500-type telephones.

Table 10 lists the NE-500/2500 telephone connections.

**Procedure 9**
**Connecting 500/2500-type telephones**

**1** Ensure that the terminal connector is compatible with the telephone connector.

**2** Connect the telephone mounting cord.

TELADAPT cords (NE-625F connector) do not require terminations. Insert the plastic connector on the end of the telephone mounting cord into the NE-625F-type receptacle.

**3** Connect the mounting cord to an NE-284-74-5001 Amphenol adapter if reusing a 16- or 25-pair cable. Plug the adapter into the cable connector. Fasten the connector together with the screws provided at the end of each connector.

**Table 10**
**NE-500/2500 telephone connections**

| Mounting cord | NE-47QA or QBBIB block designation | NE-284-74-5001 designation | Cable color pairs (16 to 25 not used) | Connect to TN |
|---|---|---|---|---|
| TIP (green) | G | 1T | W-BL | TIP |
| RING (red) | R | 1R | BL-W | RING |
| GND (yellow) | BK | X2 | | |
| | Y | X1 | | |

# Cross-connecting telephones

Be sure to connect the telephones according to Figures 14 or 15. Figure 14 on page 53 provides the diagram for cross-connecting analog (500/2500-type) telephones on a peripheral equipment (PE) module. Tables 11, 12, and 13 show analog (500/2500-type) telephone cross-connections on an Intelligent Peripheral Equipment (IPE) module.

Cross-connections for the M2000 Series Meridian Digital Telephone are shown in Figure 15 on page 58.

**Procedure 10**
**Cross-connecting telephones**

**1** Locate the telephone terminations at the cross-connect terminal.

Telephone terminations are located on the vertical side of the frame when frame-mounted blocks are used and in the blue field when wall-mounted blocks are used.

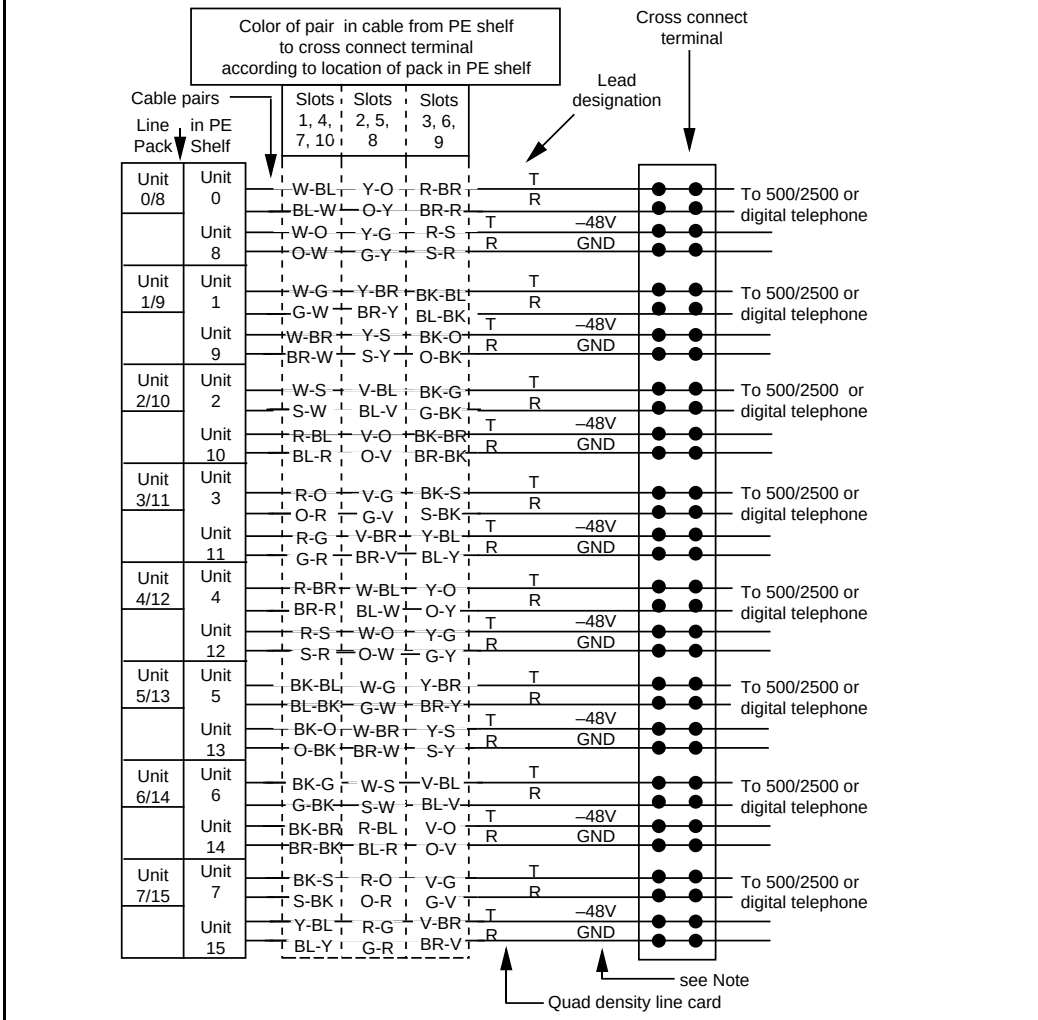
**2** Connect Z-type cross-connecting wire to the leads of the telephone. See Table 14 on page 57 and on page 57.

**3** Locate the line circuit card (TN) terminations.

Line circuit card (TN) terminations are located on the horizontal side of the distributing frame when frame-mounted blocks are used and in the white field when wall-mounted blocks are used.

**4** Run and connect the other end of the cross-connecting wire to the assigned TN terminal block.

**Figure 14**
**NE-500/2500-type telephone cross-connections for PE modules**




***Note:*** This connection applies only to line cards equipped with the Parallel Message Waiting Lamp feature. This connects to a second message waiting indication, a lamp bank for example. The maximum loop resistance is 2000½.

553-1873

**Table 11**
**500/2500 line card pair-terminations for IPE module connectors A, E, K, R**

| Pair | Pins | Pair color | I/O panel connectors | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | A | E | K | R | 16/card |
| 1T/1R | 26/1 | W-BL/BL-W | slot 0 | slot 4 | slot 8 | slot 12 | 0 |
| 2T/2R | 27/2 | W-O/O-W | | | | | 1 |
| 3T/3R | 28/3 | W-G/G-W | | | | | 2 |
| 4T/4R | 29/4 | W-BR/BR-W | | | | | 3 |
| 5T/5R | 30/5 | W-S/S-W | | | | | 4 |
| 6T/6R | 31/6 | R-BL/BL-R | | | | | 5 |
| 7T/7R | 32/7 | R-O/O-R | | | | | 6 |
| 8T/8R | 33/8 | R-G/G-R | | | | | 7 |
| 9T/9R | 34/9 | R-BR/BR-R | | | | | 8 |
| 10T/10R | 35/10 | R-S/S-R | | | | | 9 |
| 11T/11R | 36/11 | BK-BL/BL-BK | | | | | 10 |
| 12T/12R | 37/12 | BK-O/O-BK | | | | | 11 |
| 13T/13R | 38/13 | BK-G/G-BK | | | | | 12 |
| 14T/14R | 39/14 | BK-BR/BR-BK | | | | | 13 |
| 15T/15R | 40/15 | BK-S/S-BK | | | | | 14 |
| 16T/16R | 41/16 | Y-BL/BL-Y | | | | | 15 |

**Table 12**
**500/2500 line card pair-terminations for IPE module connectors B, F, L, S**

| Pair | Pins | Pair color | I/O panel connectors | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | B | F | L | S | 16/card |
| 1T/1R | 26/1 | W-BL/BL-W | slot 1 | slot 5 | slot 9 | slot 13 | 0 |
| 2T/2R | 27/2 | W-O/O-W | | | | | 1 |
| 3T/3R | 28/3 | W-G/G-W | | | | | 2 |
| 4T/4R | 29/4 | W-BR/BR-W | | | | | 3 |
| 5T/5R | 30/5 | W-S/S-W | | | | | 4 |
| 6T/6R | 31/6 | R-BL/BL-R | | | | | 5 |
| 7T/7R | 32/7 | R-O/O-R | | | | | 6 |
| 8T/8R | 33/8 | R-G/G-R | | | | | 7 |
| 9T/9R | 34/9 | R-BR/BR-R | | | | | 8 |
| 10T/10R | 35/10 | R-S/S-R | | | | | 9 |
| 11T/11R | 36/11 | BK-BL/BL-BK | | | | | 10 |
| 12T/12R | 37/12 | BK-O/O-BK | | | | | 11 |
| 13T/13R | 38/13 | BK-G/G-BK | | | | | 12 |
| 14T/14R | 39/14 | BK-BR/BR-BK | | | | | 13 |
| 15T/15R | 40/15 | BK-S/S-BK | | | | | 14 |
| 16T/16R | 41/16 | Y-BL/BL-Y | | | | | 15 |
| 17T/17R | 42/17 | Y-O/O-Y | slot 2 | slot 6 | slot 10 | slot 14 | 0 |
| 18T/18R | 43/18 | Y-G/G-Y | | | | | 1 |
| 19T/19R | 44/19 | Y-BR/BR-Y | | | | | 2 |
| 20T/20R | 45/20 | Y-S/S-Y | | | | | 3 |
| 21T/21R | 46/21 | V-BL/BL-V | | | | | 4 |
| 22T/22R | 47/22 | V-O/O-V | | | | | 5 |
| 23T/23R | 48/23 | V-G/G-V | | | | | 6 |
| 24T/24R | 49/24 | V-BR/BR-V | | | | | 7 |
| 25T/25R | 50/25 | V-S/S-V | | | | | Spare |

**Table 13**
**500/2500 line card pair-terminations for IPE module connectors C, G, M, T**

| Pair | Pins | Pair color | I/O panel connectors | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | C | G | M | T | 16/card |
| 1T/1R | 26/1 | W-BL/BL-W | slot 2 | slot 6 | slot 10 | slot 14 | 8 |
| 2T/2R | 27/2 | W-O/O-W | | | | | 9 |
| 3T/3R | 28/3 | W-G/G-W | | | | | 10 |
| 4T/4R | 29/4 | W-BR/BR-W | | | | | 11 |
| 5T/5R | 30/5 | W-S/S-W | | | | | 12 |
| 6T/6R | 31/6 | R-BL/BL-R | | | | | 13 |
| 7T/7R | 32/7 | R-O/O-R | | | | | 14 |
| 8T/8R | 33/8 | R-G/G-R | | | | | 15 |
| 9T/9R | 34/9 | R-BR/BR-R | slot 2 | slot 6 | slot 11 | slot 15 | 0 |
| 10T/10R | 35/10 | R-S/S-R | | | | | 1 |
| 11T/11R | 36/11 | BK-BL/BL-BK | | | | | 2 |
| 12T/12R | 37/12 | BK-O/O-BK | | | | | 3 |
| 13T/13R | 38/13 | BK-G/G-BK | | | | | 4 |
| 14T/14R | 39/14 | BK-BR/BR-BK | | | | | 5 |
| 15T/15R | 40/15 | BK-S/S-BK | | | | | 6 |
| 16T/16R | 41/16 | Y-BL/BL-Y | | | | | 7 |
| 17T/17R | 42/17 | Y-O/O-Y | | | | | 8 |
| 18T/18R | 43/18 | Y-G/G-Y | | | | | 9 |
| 19T/19R | 44/19 | Y-BR/BR-Y | | | | | 10 |
| 20T/20R | 45/20 | Y-S/S-Y | | | | | 11 |
| 21T/21R | 46/21 | V-BL/BL-V | | | | | 12 |
| 22T/22R | 47/22 | V-O/O-V | | | | | 13 |
| 23T/23R | 48/23 | V-G/G-V | | | | | 14 |
| 24T/24R | 49/24 | V-BR/BR-V | | | | | 15 |
| 25T/25R | 50/25 | V-S/S-V | | | | | Spare |

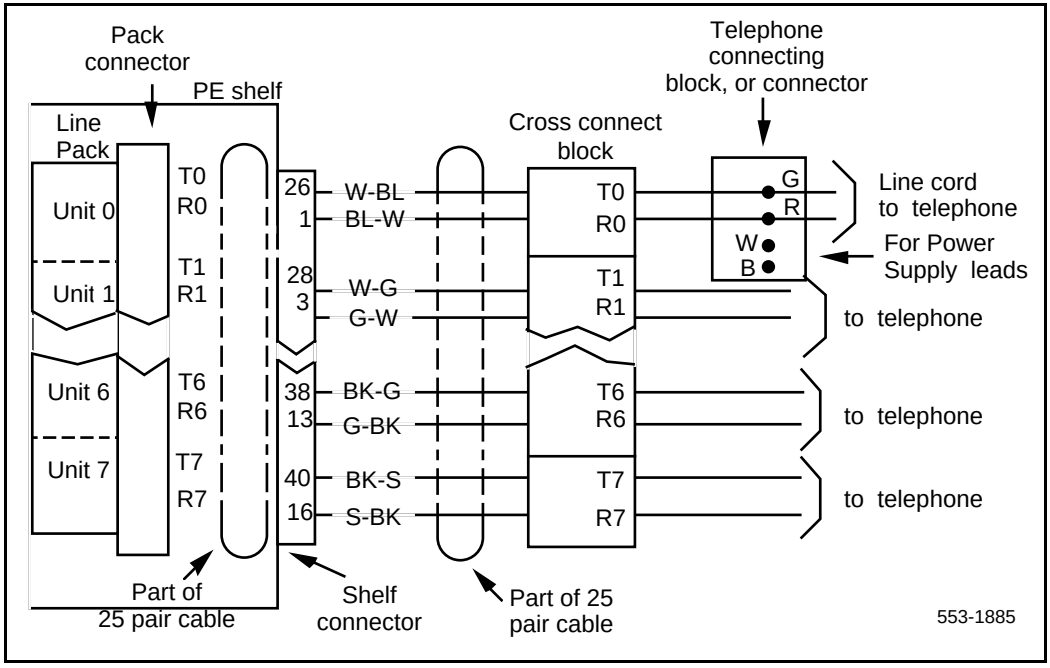
**Table 14**
**Z-typecross-connecting wire**

| Size | Gauge | Color | Designation |
|---|---|---|---|
| 1 pr | 22 | Y-BL | Tip |
| | | BL-Y | Ring |
| 3 pr | 24 | W-BL | Voice T |
| | | BL-W | Voice R |
| | | W-O | Signal T |
| | | O-W | Signal R |
| | | W-G | Power |
| | | G-W | Power |

**Table 15**
**Inside wiring colors**

| Inside wiring colors | | Connect to equipment TN |
|---|---|---|
| **Z station wire** | **16/25-pair cable** | |
| G | W-BL | First pair Tip |
| R | BL-W | First pair Ring |
| BK | W-O | Second pair Tip |
| | | |
| Y | O-W | Second pair Ring |

**Figure 15**
**M2000 Series Meridian Digital Telephone cross-connections**



# Add-on modules

## Contents

This section contains information on the following topics:



## Reference list

The following are the references in this section:

- *Analog Terminal Adapter Installation and Reference Card*

- *M1250/M2250 Attendant Console User Guide*
- *Busy Lamp Field/Console Graphics Module User Guide*
- *Attendant Consoles: Description* (553-2201-117)
- *Meridian 1 Telephones: Description and Specifications* (553-3001-108)
- *Features and Services* (553-3001-306)

## Packing and unpacking

Use proper care while unpacking any add-on module. Check for damaged containers so that appropriate claims can be made to the transport company for items damaged in transit.

If a module must be returned to the factory, pack it in the appropriate container to avoid damage during transit. Remember to include all loose parts in the shipment.

***Note:*** There are three distinct versions of M2000 Series Meridian Digital Telephones – all three are supported. The versions can be clearly distinguished by the first four letters in the upper left-hand corner of the model identification label on the bottom of the telephone.

The three versions are as follows:

- the “NTZK” models,
- the “NT2K” models with date code prior to April 24, 1998
- the third version includes both the “NT9K” models and the “NT2K” models with date code of April 24, 1998 and later

  In addition, the two jacks face in the same direction on “NT2K” and “NT9K” telephones, and in opposite directions on “NTZK” telephones. When appropriate, differences between the models are noted in this document.

## Busy Lamp Field/Console Graphics Module

The Busy Lamp Field/Console Graphics Module (BLF/CGM) obtains its power through the attendant console. See Figure 16. The requirements are as follows:

- a reference ground line (0 V)
- power source of 5 V for the CMOS electronics that control the Lamp Field Array module (c. 50 mA)
- power source of –12 V for the display of the Console Graphics Module (c. 10 mA)
- backlighting power

An external floating 16 V dc (300 mA) power supply is required to be cabled in at the local Main Distribution Frame (MDF) at a maximum of 120 ft (36 m) from the attendant console when the BLF/CGM is installed (A0367601 – Transformer). This provides all the power requirements for the M2250 applications.

The BLF/CGM has a battery that provides backup power to maintain the Supplementary Information when the console is powered down. The battery lifetime is 5 years. To replace the battery, return the BLF/CGM to your supplier.

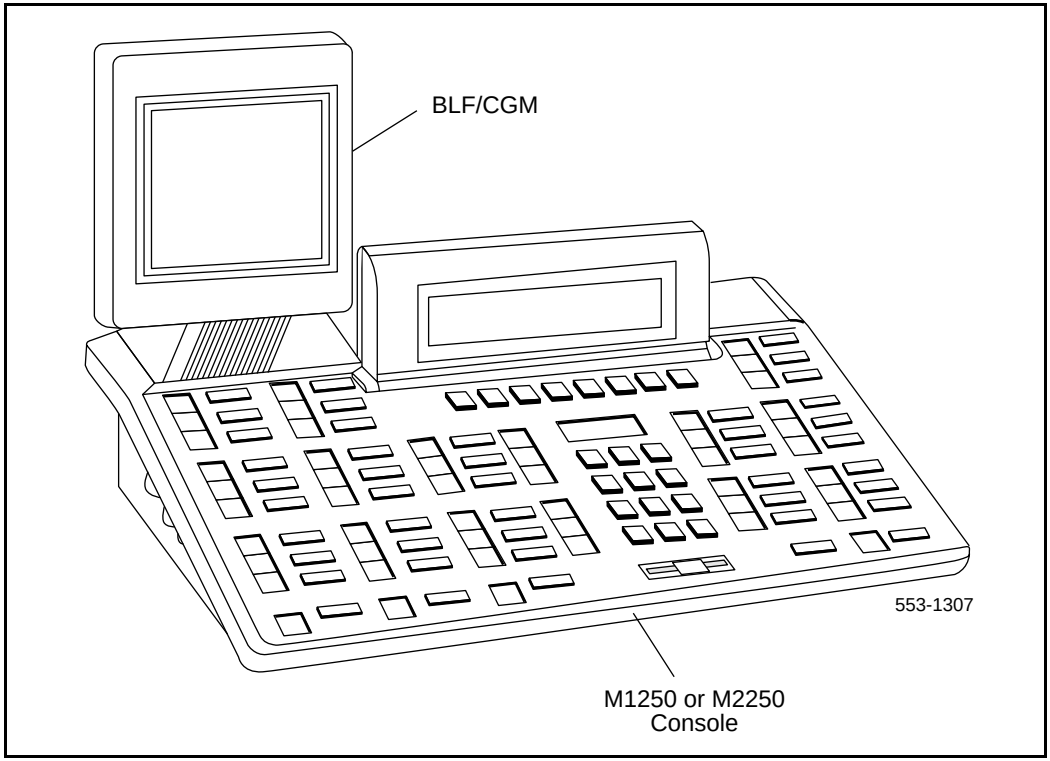
The BLF/CGM mounts on the back of the attendant console and is held on with snapfits and two screws.

The attendant console's top cover must be removed to install the BLF/CGM.

Refer to the *M1250/M2250 Attendant Console User Guide* or the *Busy Lamp Field/Console Graphics Module User Guide* for further information. Refer to *Attendant Consoles: Description* (553-2201-117) for a description of M2250 attendant consoles equipped with a BLF/CGM.

Follow normal anti-static precautions when installing the BLF/CGM onto the attendant console.

**Figure 16**
**The Busy Lamp Field/Console Graphics Module on the M2250 attendant console**

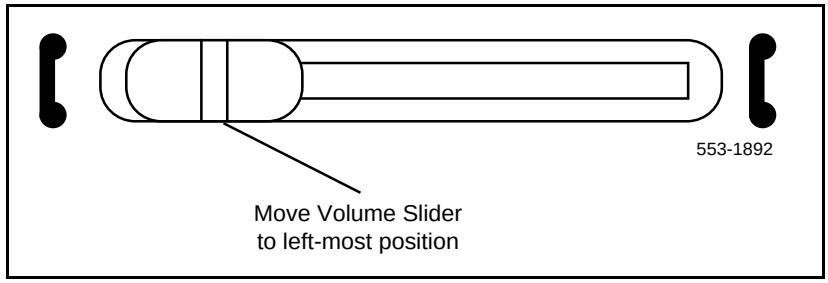


**Procedure 1**
**Connecting the BLF/CGM to M2250 attendant consoles**

**1** Disconnect the main power/system cable from the rear of the attendant console, and remove the handset jack plug from the side.

**2** Move the adjustable display to the down position to protect it from damage while installing the Busy Lamp Field/Console Graphics Module (BLF/CGM). Also move the volume slider switch to the far left (see Figure 17).

**Figure 17**
**Volume slider position**



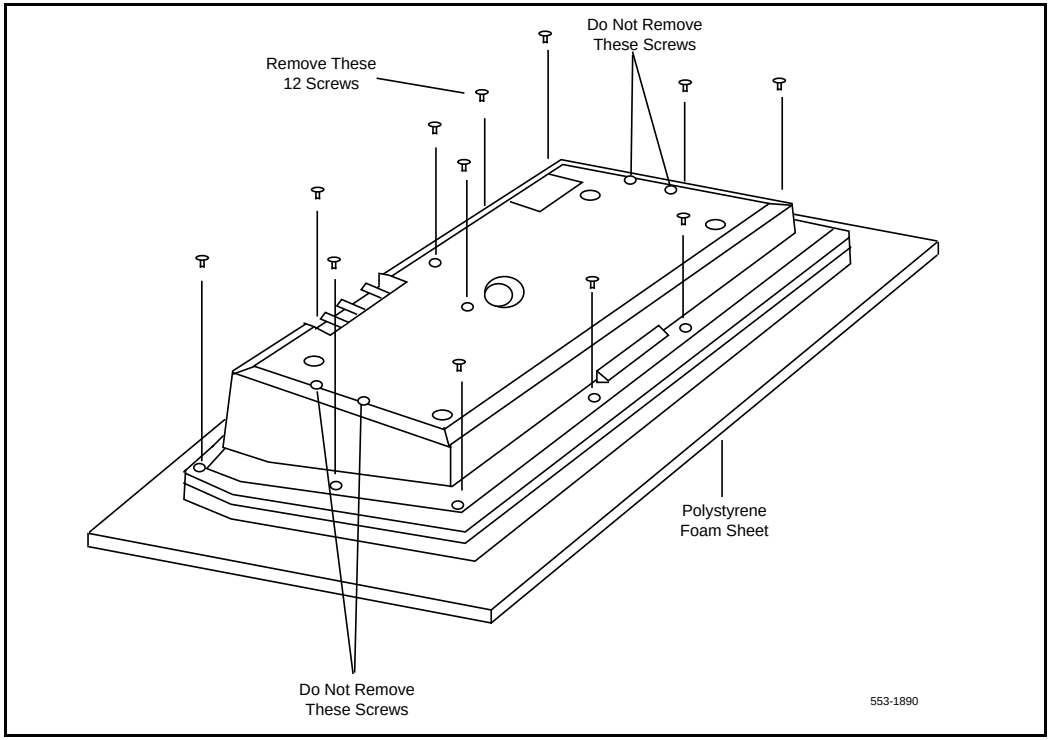

**3** Place the attendant console facedown on a properly prepared work surface, taking care to avoid scratching or damaging the top cover or display. Remove the adjustable stand, if required.

The stand is secured with four screws. Remove the stand as a complete assembly, and set aside.

**4** Remove the 12 fastening screws in the base of the attendant console that secure the top cover to the console base. See Figure 18 on page 64. Holding the console base and cover firmly, turn it over so that the top cover is on, facing up.

**5** Raise and hold the top cover to remove the single cable connector only. The alerter cable does not need to be removed. See Figure 19 on page 65.

**Figure 18**
**Removing the fastening screws**




**6** Remove the top cover and place it upside down to the left of the attendant console.

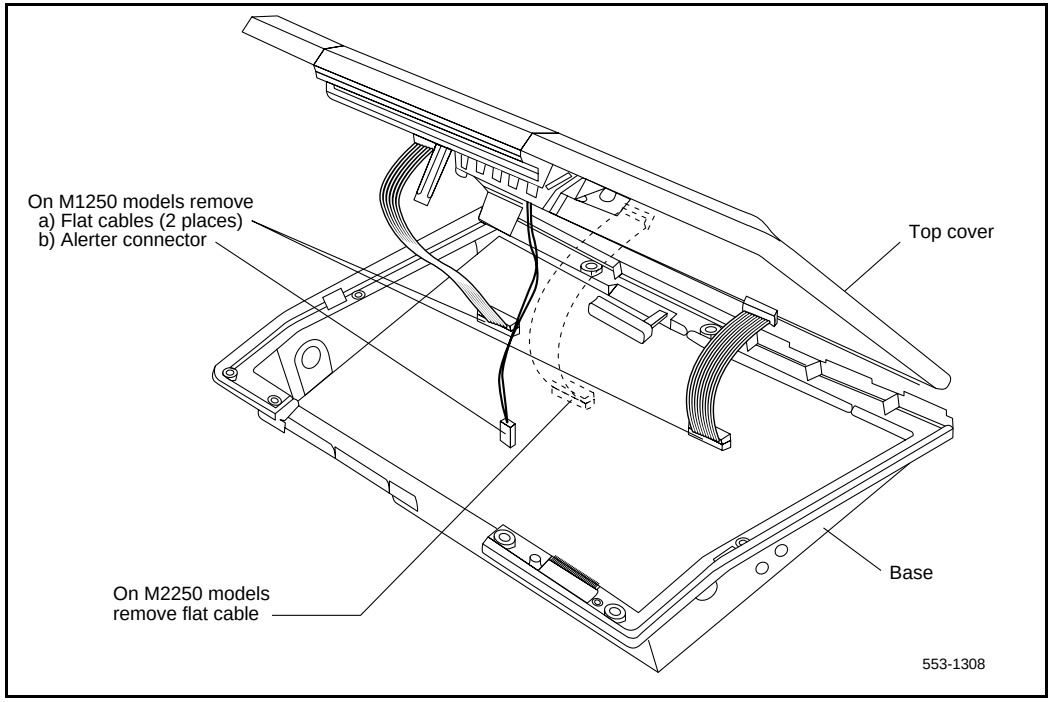
**7** Remove the knockout section on the back of the attendant console (see Figure 20 on page 66) with a small screwdriver or similar tool. Remove any remnants of the breakaway tags.

**8** Feed the flat ribbon cable for the Busy Lamp Field/Console Graphics Module (BLF/CGM) through the knockout hole in the base of the attendant console.

**9** Hold the BLF/CGM unit over the console in a vertical position, ensuring that the two locators on the bottom bracket of the BLF/CGM are located in the knockout hole.

**10** Push down on the attendant console, while holding the BLF/CGM unit, until the two locators snap into place. See Figure 21 on page 67.

**Figure 19**
**Removing the top cover**




**11** Fit the BLF/CGM ribbon cable onto the top cover circuit board, into the flexible strip connector J4 (so that the blue line on the cable faces away from the circuit board).

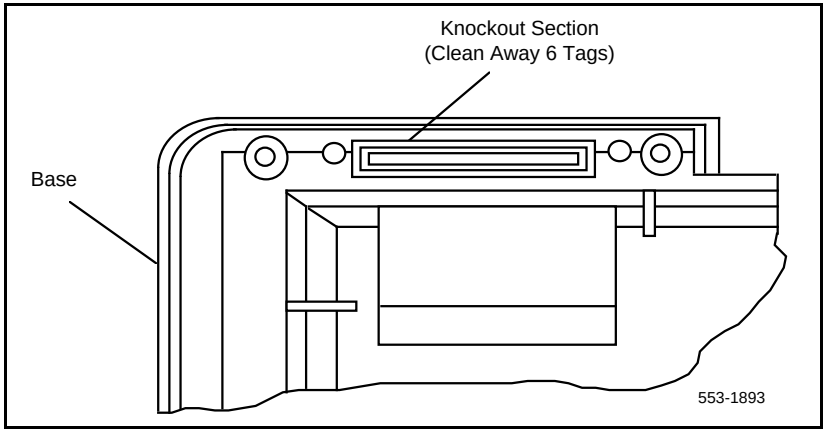
**12** Hold the top cover over the attendant console and reconnect the cable connector(s) onto the base of the attendant console.

**13** Place the top cover on the console. Slide it back and down into place. See Figure 23 on page 69. Check that all the cables are in the correct positions and that none are trapped.

**14** Push the BLF/CGM display into position by rotating it back (see Figure 23).

**15** Ensuring that the volume slider is fully engaged in the correct slider, hold the top cover and console base firmly together. Turn the assembly upside down. See Figure 24 on page 70.

**Figure 20**
**Attendant console knockout section**




**16** Reinsert the 12 screws that secure the top cover to the console base and tighten.

**17** Insert the two new screws supplied with the BLF/CGM that attach it to the base, and tighten. See Figure 24 on page 70.

**18** Cable in BLF power at the local Main Distribution Frame (MDF) as per M2250 cross-connections. See Procedure 1 on page 18.

**19** If required, replace the adjustable stand.

**20** Reconnect the main system cable to the rear of the console.

**21** If the BLF/CGM has been correctly installed, the main menu appears when power is supplied to the attendant console. Test the BLF/CGM by selecting a menu option. Refer to *Busy Lamp Field*/*Console Graphics Module User Guide* for programming information.

**22** Define the Busy Lamp Field in the system database. Refer to *Features and Services* (553-3001-306).

**23** Test the Busy Lamp Field features using *M1250*/*M2250 Attendant Console User Guide*.

**Figure 21**
**Connecting the BLF/CGM to the attendant console**

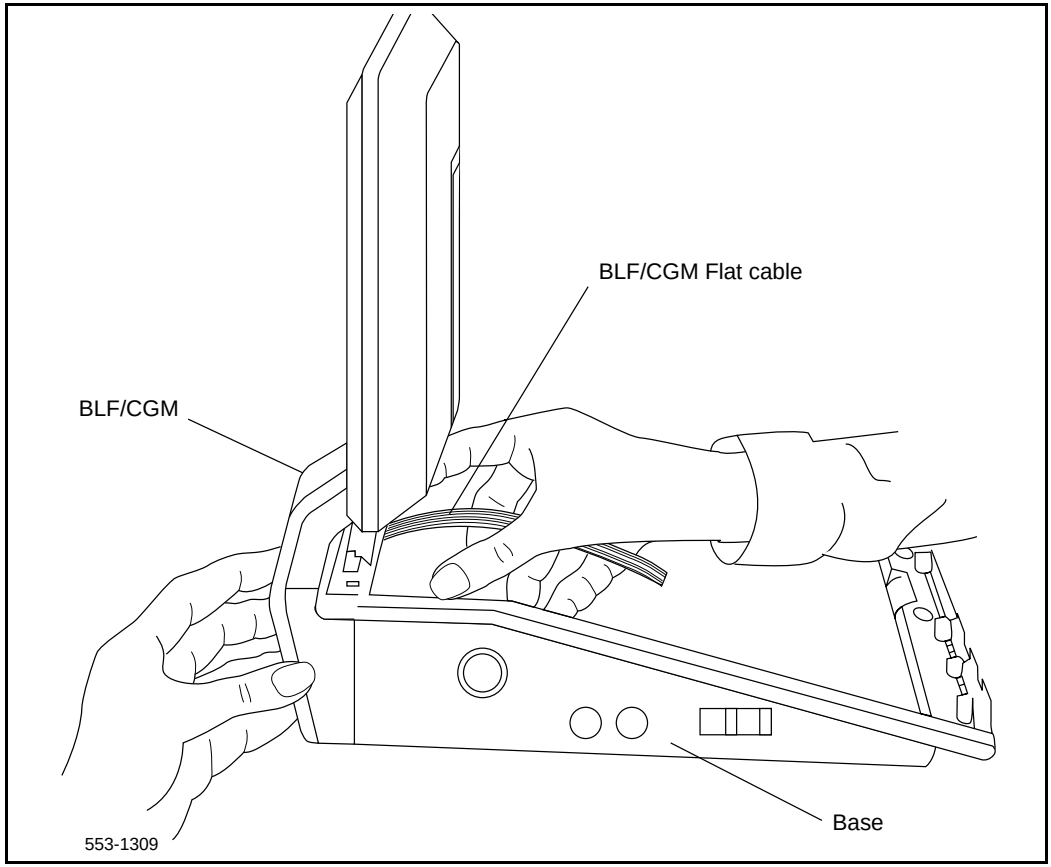


**Figure 22**
**Support spacer**

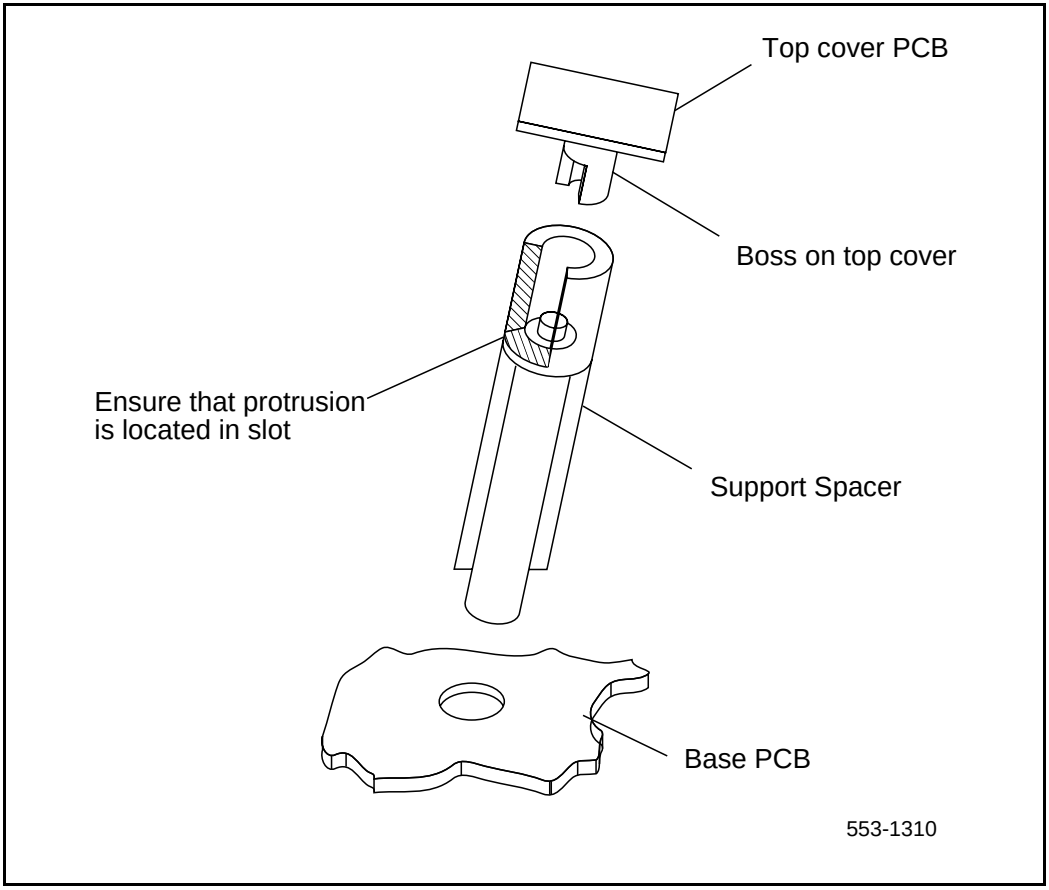


**Figure 23**
**Positioning the top cover and the BLF/CGM**

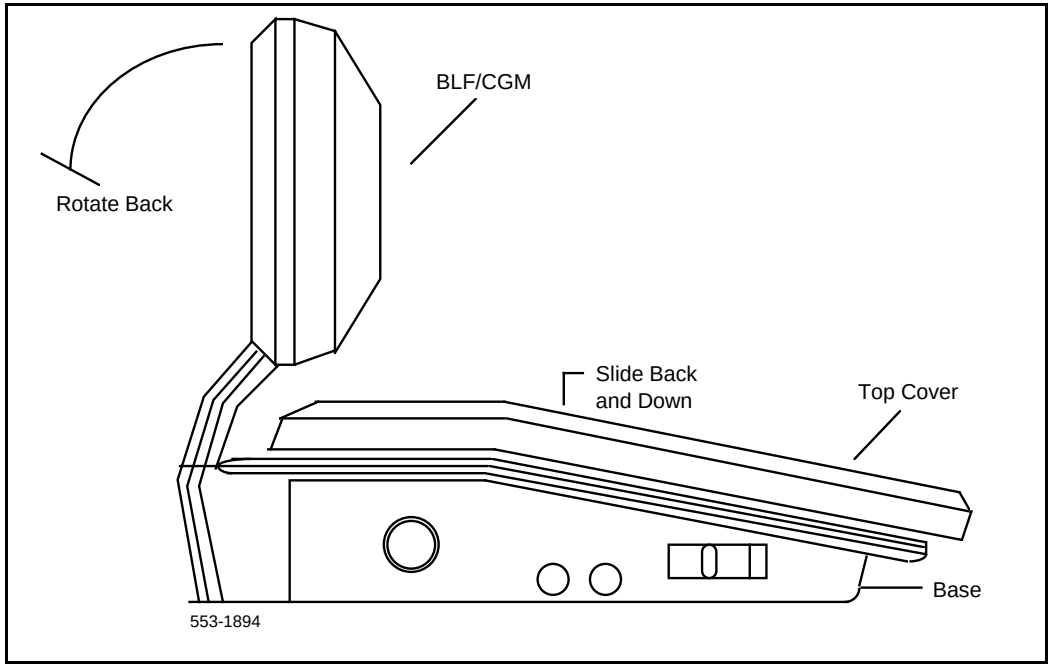
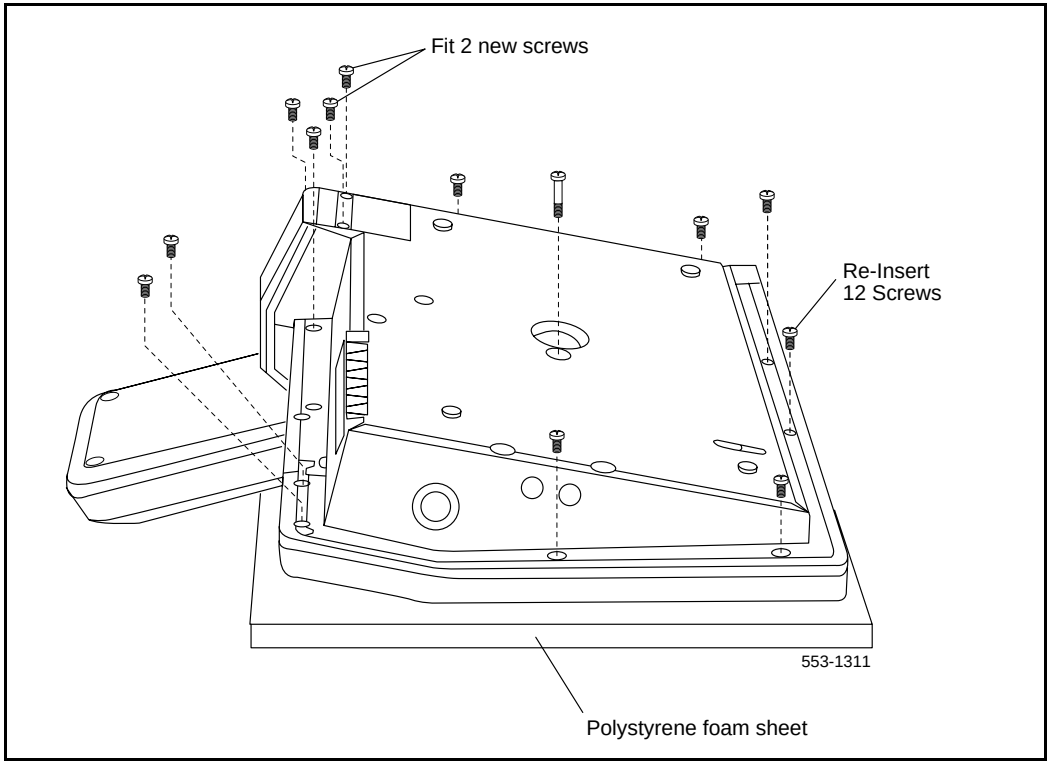


**Figure 24**
**Attaching the top cover to the attendant console base and BLF/CGM**



**Procedure 1**
**Removing the Busy Lamp Field/Console Graphics Module**

**1** Disconnect the main power/system cable from the rear of the attendant console, and remove the handset jack plug from the side.

**2** Move the adjustable display to the down position to protect it from damage while removing the BLF/CGM. Also move the volume slider switch to the far left (see Figure 17).

**3** Place the attendant console facedown on a properly prepared work surface, taking care to avoid scratching or damaging the top cover or display. Remove the adjustable stand, if required.

The stand is secured with four screws. Remove the stand as a complete assembly, and set it aside.

**4** Remove the 12 fastening screws in the base of the attendant console that secure the top cover to the console base. See Figure 18 on page 64.

Remove the two screws securing the BLF/CGM to the base of the attendant console.

**5** Holding the console base and cover firmly, turn it back over so that the top cover is on, facing up.

**6** Raise and hold the top cover to remove the single cable connector only. The alerter cable does not need to be removed (see Figure 19).

**7** Unplug the BLF/CGM ribbon cable from the attendant console.

**8** Remove the top cover and place it upside down to the left of the attendant console.

**9** Pull back the snap-fits on the BLF/CGM to disengage the BLF/CGM from the attendant console.

**10** Place the top cover on the console. Slide it back and down into place (see Figure 23 on page 69). Reconnect all cables in the correct positions, and make sure that none are trapped.

**11** Ensuring that the volume slider is fully engaged in the correct slider, hold the top cover and console base firmly together. Turn the assembly upside down (see Figure 24 page 70).

**12** Reinsert the 12 screws that secure the top cover to the console base and tighten.

**13** If required, replace the adjustable stand.

**14** Reconnect the main system cable to the rear of the console.

# Attendant Supervisory Module (M2250 console)

The M2250 digital attendant console needs the Attendant Supervisory Module (ASM) to allow supervision. The M2250 cannot be connected to a QPC297 Attendant Console Monitor circuit card. With the ASM installed, the M2250 attendant console can be supervised just like any other attendant console. An M2250 attendant console configured as a supervisor does not need the ASM installed.

To accept the ASM, the minimum vintage M2250 attendant console is M2250AD. To fully support the ASM, the minimum vintage BLF/CGM is AB. The third PWR TN must be programmed and wired out to support the ASM. See Figure 9 on page 20.

**Procedure 2**
**Installing an Attendant Supervisory Module in an M2250 attendant console**

**CAUTION WITH ESDS DEVICES**
**Damage to Equipment**

Before handling internal set components, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** Disconnect the main power/system cable from the rear of the attendant console, and remove the handset jack plug from the side.

**2** Move the adjustable display to the down position to protect it from damage while installing the ASM. Move the volume slider switch to the left-most position.

**3** Place the attendant console facedown on a properly prepared work surface, taking care to avoid scratching or damaging the top cover or display. Remove the adjustable stand, if equipped.

The stand is secured with four screws. Loosen the screws and remove the stand as a complete assembly, and set aside.

**4** Remove the 12 fastening screws in the base of the attendant console that secure the top cover to the console base (see Figure 18 on page 64). Holding the console base and cover firmly, turn it back over so that the top cover is on, facing up.

**5** Raise and hold the top cover to remove the single cable connector. The alerter cable does not need to be removed (see Figure 19 on page 65). Remove the top cover and place it upside down to the left of the attendant console.

**6** The attendant console's main PCB has holes located in the upper right-hand side, near grid positions D1, D5, and A5. See Figure 25 on page 74. Insert one standoff in each of the holes, twisting it until it is secure.

**CAUTION**
**Damage to Equipment**

Once a standoff is inserted, it cannot be removed. Be sure to place each standoff in the correct hole on the main PCB, as shown in Figure 25 on page 74.

**7** Position the ASM board over the J3 connector on the console's main PCB. Align the holes on the ASM board with the standoffs and carefully work the ASM pin connector onto connector J3 until firmly seated. See Figure 25 on page 74.

**8** Hold the top cover over the attendant console and reconnect the cable connector onto the base of the console.

**9** Place the top cover on the console. Slide it back and down into place. Check that all the cables are in the correct positions, and that none are trapped.

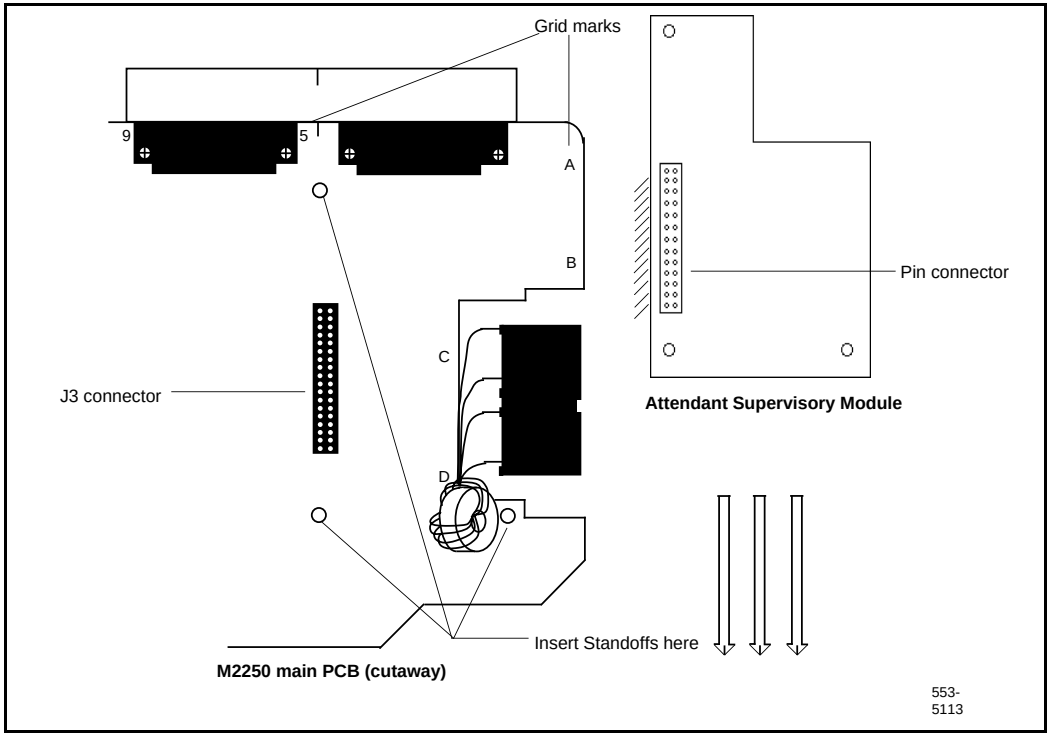
**10** Ensure that the volume switch is fully engaged in the correct slider. Hold the top cover and console base firmly together. Turn the assembly upside down.

**11** Reinsert the 12 screws that secure the top cover to the console base and tighten.

**12** If required, replace the adjustable stand.

**13** Reconnect the main system cable to the rear of the console.

**Figure 25**
**Identifying the correct grid positions on the main PCB and attaching the ASM**




**14** Test the supervisory console feature to make sure you can now properly supervise the M2250 attendant console. Refer to *M1250*/*M2250 Attendant Console User Guide*.

## M2317 Data Option

If an existing digital telephone was not originally equipped with the Data Option, or if the existing Data Option has become defective, that option can be added or replaced. The following procedure explains how to install the Data Option for the M2317 telephone.

**CAUTION WITH ESDS DEVICES**
CMOS devices inside the telephone can be damaged by electrostatic discharge. Before opening any M2317 telephone, discharge your hands and tools by touching any grounded metal surface or conductor.

**1** Remove the handset, and place the telephone upside down on a level workplace (a desktop, for example).

**2** Disconnect all cords from the telephone.

**3** Loosen and remove five screws in the base of the telephone, lifting the base upward.

**4** If the telephone is not equipped with the ADO, proceed with step 5.

If the telephone is equipped with a defective ADO, carefully disconnect the ribbon cable connector from the header connector in the digital printed circuit board. Loosen and remove the two self-tapping screws that fasten the ADO to the telephone base and remove the defective ADO. Proceed with step 6. See Figure 26 on page 77.

**5** Remove the breakout section in the rear of the telephone base by tapping it with the handle of a small screwdriver.

**6** Place the black plastic connector shroud over the RS-232-C interface connector.

***Note:*** It is not possible to install the shroud after the board has been inserted in the telephone base.

**7** Tip the circuit board up and insert it, connector end first, under the tabs in the base. Position it over the molded locating pins; then lower the board completely into position in the telephone base. Use the three slotted, self-tapping screws supplied with the board and install them through the mounting holes. Tighten the screws.

**8** Plug the ribbon cable connector into the header connector, located on the existing circuit board of the telephone (mounted on the faceplate assembly). There is only one such connector on the telephone's circuit board. Make sure the connector is snug.

**9** Reassemble the telephone by placing the base section on the faceplate section. Reinstall the five screws.

**10** Tighten the screws, reconnect all cords, and place the telephone in its former position.

**11** Refer to Procedure 1 to connect the power supply and data terminal to the ADO.

**Procedure 1**
**Installing the M2317 data terminal**

**1** Connect the RS-232-C interface connector from the data terminal to the matching header connector in the back of the telephone. See Figure 26 on page 77.

**2** Insert the two captive screws in the connector body into the threaded holes in the header connector. Secure them tightly to prevent accidental disconnection during data terminal operation.

**3** Insert the keyed power supply plug securely into the 5-pin power connector located to the right of the RS-232-C connector.

**4** Plug the wall transformer into the nearest ac outlet. The data terminal is now operational.

***Note 1:*** If an ADM3, ADM5, or ADM11 terminal is used in conjunction with the RS-232-C connector in the Asynchronous Data Option, pin 22 in the RS-232-C cable must be disconnected. These ADM terminals will go into test mode if this pin is not disconnected.

***Note 2:*** A special 9-pin connector is required to connect the Apple Macintosh to the RS-232-C connector in the M2000 Asynchronous Data Option. The connections are shown in Table 16 on page 77.

**Figure 26**
**M2317 data terminal and Data Option power supply connection**

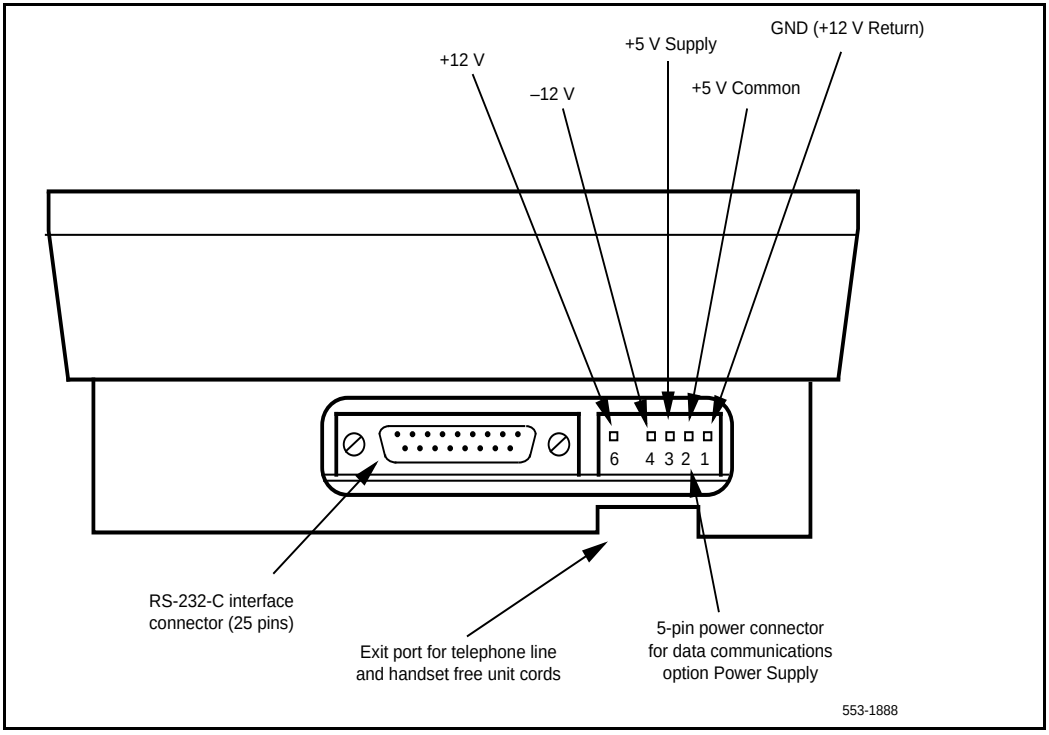



**Table 16**
**Connections for the Apple Macintosh to the M2317 Asynchronous Data Option (ADO)**

| 9-pin connector (from terminal) | | 25-pin (RS-232-C) connector (at ADO port) |
|---|---|---|
| Pin 3 | to | Pin 7 |
| Pin 5 | to | Pin 2 |
| Pin 9 | to | Pin 3 |
| ***Note:*** Strap pins 4 and 5 and pins 6, 8, and 20 together. | | |

**Table 17**
**RS-232-C signals and associated pin numbers for M2317 telephones**

| Circuit designation | | | Pin number | Signal source | | |
|---|---|---|---|---|---|---|
| EIA | Common | CCITT | | DTE | DCE | Name |
| AA | | 101 | 1 | | X | Frame ground |
| BA | TXD | 103 | 2 | X | | Transmit data |
| BB | RXD | 104 | 3 | | X | Receive data |
| CA | RTS | 105 | 4 | X | | Request to send |
| CB | CTS | 106 | 5 | | X | Clear to send |
| CC | DSR | 107 | 6 | | X | Data set ready |
| AB | GND | 102 | 7 | X | | Signal ground |
| CD | DTR | 108.2 | 20 | X | | Data terminal ready |
| CE | RI | 125 | 22 | | X | Ring indicator |

# M2000 Series Meridian Digital Telephones

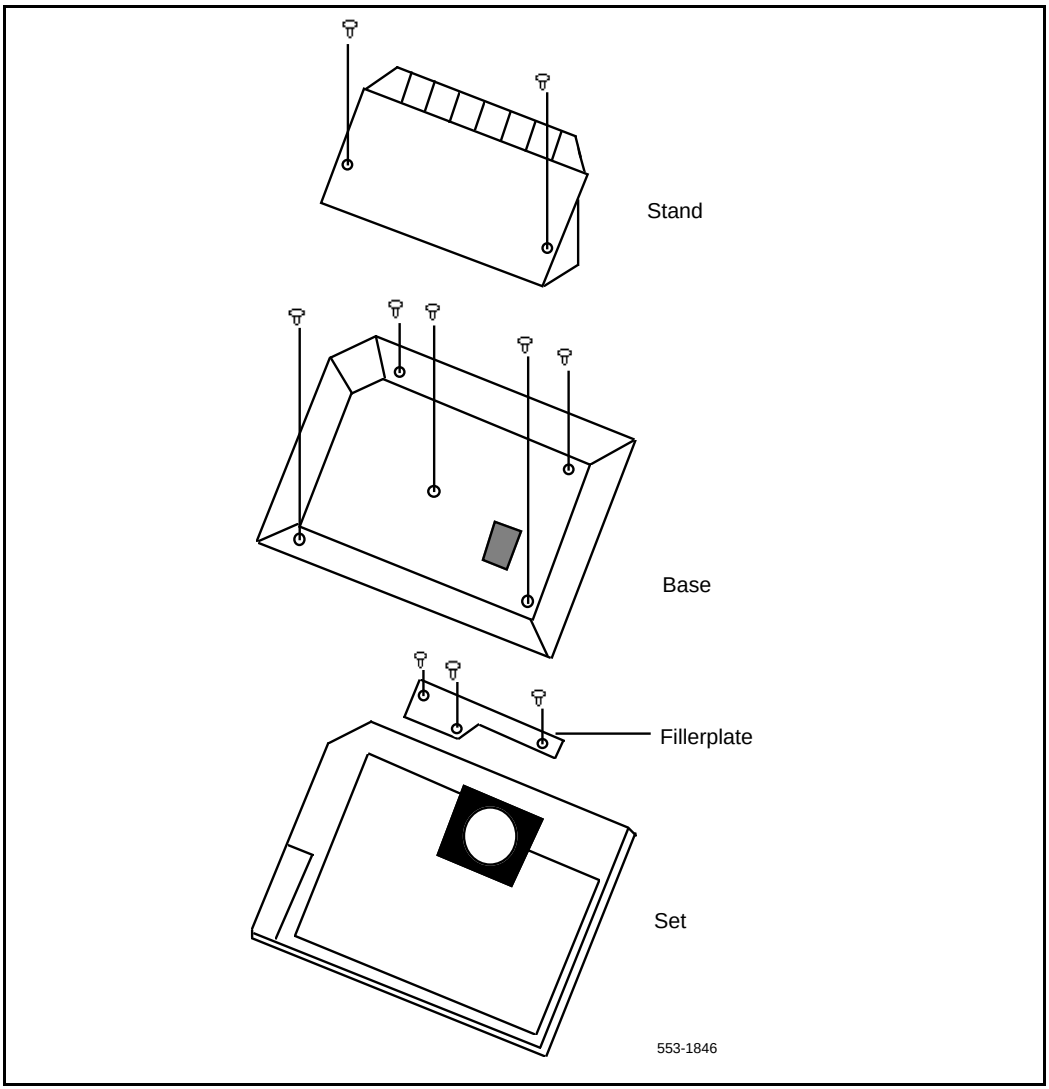
Use the procedures in this section for adding hardware options to the M2006, M2008/M2008HF, M2016S, M2616, and M2216ACD sets only.

**CAUTION**
**Damage to Equipment**
Use only the line cord provided with the M2000 Series Meridian Digital Telephone when installing and removing options. The acceptable line cord is A0346862.

Figure 27 on page 79 shows an exploded view for reference when dismantling the telephone to get to its internal components. Some telephone types are slightly smaller than the M2616 and do not have the center screw in the base, but otherwise they are the same. The center screw may not be required.

Refer to Figure 31 on page 95 to locate the various components of the M2006 and M2008/M2008HF telephones. Refer to Figure 32 on page 96 to locate components on the M2616, M2016S, and M2216ACD telephones.

**Figure 27**
**Exploded view of the M2616/M2016S/M2216ACD telephone**



# Analog Terminal Adapter

The Analog Terminal Adapter (ATA) allows the use of an off-the-shelf analog device (FAX, Modem, Telephone) to operate simultaneously with a Meridian Digital Telephone. The Analog Terminal Adapter board fits into the footstand space of the Meridian Digital Telephone.

## Functional description

The Analog Terminal Adapter is compatible with the M2000 Series Meridian Digital Telephone set. It is mounted in the redesigned footstand of the M2000 Series Meridian Digital Telephone. The M2000 Series Meridian Digital Telephone's (M2006/8 and M22/2616) footstand is modified to accommodate the ATA. The ATA requires a separate ac adapter which provides a 24 volt ac external power source. The ATA does not draw power from the M2000 Series Meridian Digital Telephone.

The Analog Terminal Adapter (ATA) provides a RJ11 connection for analog equipment to operate on the same line as the M2000 Series Meridian Digital Telephone set. The Analog Terminal Adapter allows data to be transmitted and received using the Public Switched Telephone Network (PSTN). The ATA supports an analog device link to the desktop or laptop computer users (with modems) in the digital telephone environment. Currently, it is necessary to install a separate analog phone line to be able to interface with the PSTN.

The ATA can be used for the following analog devices:

- FAX machine
- modem
- analog (500/2500-type) telephone

### ATA operating parameters

The ATA data parameters are stored locally although the configuration is set in the system. Data parameters must be set in the system after installing the ATA in the telephone. If the parameters are set before the telephone is installed, the configuration information will be lost.

Simultaneous voice, FAX/modem calls require the Flexible Voice/Data Terminal Number feature. LD 11 is configured in the system when implementing the Flexible Voice and Data Feature. See the *Software Input/Output Guide Administration* (553-3001-311) for prompt and response details.

The Analog Terminal Adapter (ATA) is capable of receiving dial pulse or DTMF address signaling from the analog equipment.

The ATA uses the 2nd channel of the TCM loop to add an analog port to the digital terminal. It has an RJ11 type jack accessible from the back of the telset.

The analog interface of the ATA is a 2-wire source, providing A and B leads (tip and ring) across which analog equipment (modem/fax) is connected. The loop length will be >100 feet. The analog interface of the ATA is compatible with the port types listed in Table 18.

**Table 18**
**Port types compatible with ATA**

| County | Port Type(s) | Defining Standard(s) |
|---|---|---|
| United States | ONS Station Interface<br>Class A OPS Station Interface | EIA/Tia-464A<br>FCC Rules Part 68 |
| Canada | ONS Station Interface<br>Class 1300 OPS Station Interface | CAN3-T512.1<br>CS-03 Part I |

Refer to *Analog Terminal Adapter Installation and Reference Card* for detailed information on this feature.

Follow the steps in Procedure 1 on page 82 to add the Analog Terminal Adapter (ATA) to the telephone and to connect it to a FAX or modem. The ATA is supported on Meridian Digital Telephones only.

**Procedure 1**
**Installing and removing the Analog Terminal Adapter**

**CAUTION WITH ESDS DEVICES**
Before handling internal telephone components, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** When the ATA is installed, the System Administrator must activate the Flexible Voice and Data Feature by configuring LD 11.

**2** To Activate the Flexible Voice and Data Feature, use the following chart to configure LD 11 (for more detailed information, refer to *Software Input/Output Guide Administration* (553-3001-311)).

**Table 19:**
**Flexible Voice and Data feature configuration**

| Prompt | Response | Description |
|---|---|---|
| REQ: | NEW/CHG | New, or change |
| TYPE: | aaaa | Telephone type, whereaaaa=2006,2008, 2016, or 2616 |
| TN | lscu | Terminal Number where u=16-31 |
| CLS | FLXA | Flexible voice/data allowed. This Class of service can only be assigned to 2006, 2008, 2016, 2216 or 2617 sets. When configured to CLS=FLXA |
| | VCE | (FLXD) = Flexible voice/data denied. Voice Class of Service (VCE) can be assigned to the upper TN unit (16-31) and Data class of Service (DTA) can be assigned to the lower TN (0-15). A Single Call Ringing (SCR) key can be designated a Data Mode (DTNK) key. |
| KEY | | Prime Directory Number Key, SCR, SCN, MCR or MCN and xxx. |
| -Key | xxSCRyyyy | Single Call Ringing |
| | xxSCNyyyy | Single Call Non Ringing Data Mode Key, where xx=key number and yyy=Data Directory Number. |

**3** Disconnect and remove all cords (including the handset cord) from the telephone.

**4** Place the telephone, face-down, on a padded level surface.

**5** Using a #1 Phillips screw driver, remove both screws and separate the footstand from the phone base.

**6** If using the NT9K ATA ready set or the NT2K with date code of April 24, 1998 or later:

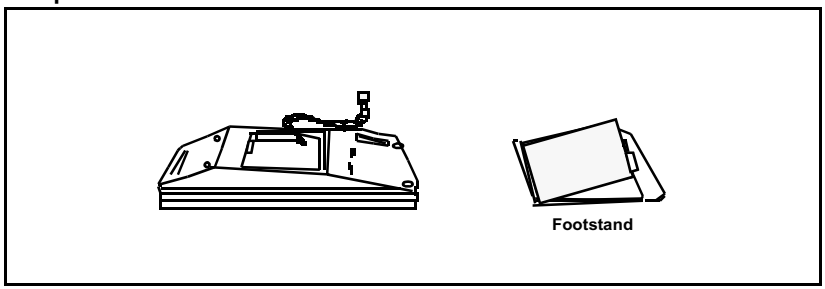
- Remove and retain the footstand (this footstand will be reattached back onto the set base after ATA installation is complete.
- Skip to the ATA Installation Procedure 13 on page 86.

**7** If using the NT2K or the NTZK phone set, remove and discard the footstand. Use the redesigned footstand required for the installation of the ATA.

**8** If an MCA or MPDA installed is installed, unplug it from the data line jack in the phone base.

**9** Remove the back covering of the phone base by removing the four screws.

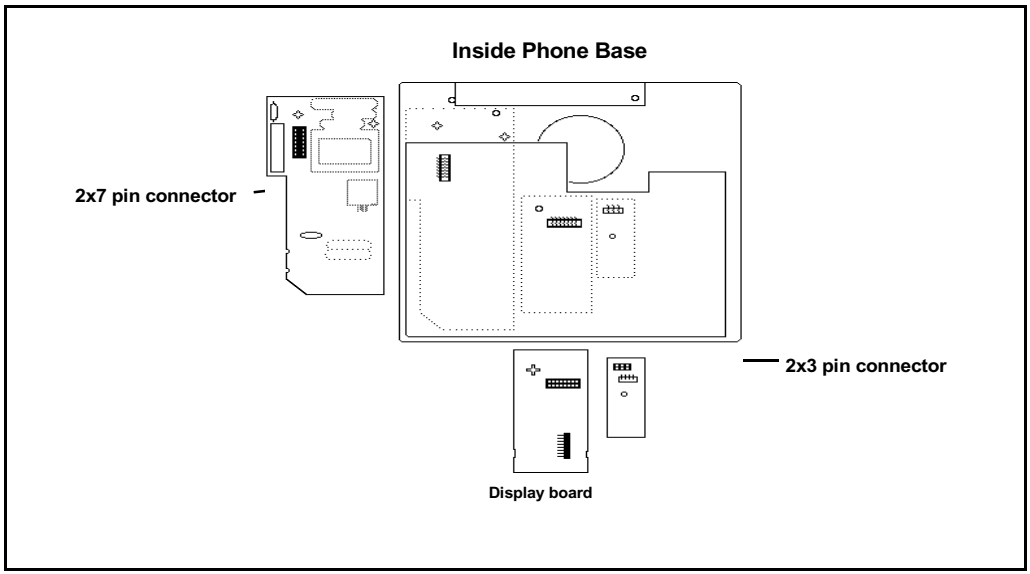
**Figure 28**
**Telephone base and footstand**



**10** If the phone is equipped with a Power Option board and/or cable, you must remove it before installing the ATA. The Power Option board is located on the left side of the telephone:

- Remove the two small screws from the Power Option board (near the top) and set them aside.
- To disconnect the Power Option board from the **NTZK** telephone, grasp the board firmly on each side and slowly rock the Power Option board while applying upward pressure until it is released form the 2X7 pin connector.
- To disconnect the **NT2K** Power Option board from the set simply remove the screws from the Power Option board and base and lift the board out of the set.
- If the Power Option board has a ribbon cable, disconnect the cable from the 2X7pin connector on the main board and remove the cable

**Figure 29**
**Connector view**




**11** If the phone is equipped with the External Alerter Option, remove it before installing the ATA. The External Alerter Option board is located at the right center of the telephone:

- Remove the screws from the External Alerter Option board.
- Grasp the board firmly on each end and pull upward to remove from the 2X3 pin connector

**12** Install the Jumper board on the 2X7 pin connector inside the phone set base.

- There are 2 Jumper boards provided. Use the brown Jumper board for the NTZKxxxx phone set and the black Jumper board for the NT2Kxxxx phone set with a date code prior to April 24, 1998.
- If a Power Option board was not installed on the NT2Kxxxx and the NTZKxxxx there will be 2 Jumper plugs on the 2X7 pin connector that must be removed before installing the Jumper board.

**13** Remove the knockout located on the back panel of the footstand in order to install the ATA. It is the smaller knockout, located inside the large knockout. The small ATA knockout can be remove by pressing it in with thumb presser.

**14** Install the ATA Printed Circuit board into the footstand.

**15** Plug the ATA 8-conductor line cord, included in the package, into the data jack in the base of the telephone. Plug the other end of this cord into the data jack of the ATA located in the footstand.

**16** Reassemble the footstand on the base and screw it into position using a #1 Phillips screwdriver.

**17** Plug the 24v AC Power Transformer into the circular mini DIN connector on the backpanel of the footstand.

**18** Plug the transformer end of the AC Power Transformer into the AC commercial electrical outlet.

**19** The analog device can now be connected to the RJ11 connector on the back of the footstand. Refer to the manufacturer's documentation for installation instructions for the FAX, modem, or telephone to be used.

## Meridian Communications Adapter and Meridian Programmable Data Adapter

The Meridian Communications Adapter (MCA) mounts within the telephone and allows asynchronous and synchronous ASCII terminals, and personal computers to be connected to the telephone using an RS-232C or V.35 interface on a DB-25 connector. The MCA replaces the Meridian Programmable Data Adapter (MPDA). Data programming can be implemented on the MCA through a service change (LD11) as well as the keypad.

Use the following procedures to add the Meridian Communications Adapter (MCA) or Meridian Programmable Data Adapter (MPDA) to the telephone and to connect it to a terminal or personal computer.

When using the MCA for synchronous data connections, configure the telephone with a display option to view the data parameters. The MPDA and MCA are supported on M2000 Series Meridian Digital Telephones only.

Installing an MCA or MPDA to NTZK or NT2K phone sets with date code prior to April 24, 1998 requires the installation of a Power Option board along with an additional power source.

When installing an MCA in an NT9K phone set, or an NT2K with date code of April 24, 1998 and later, install only the MCA (an additional Power Option board and Jumper board is not required).

- See Procedure 2 on page 93 for M2006/M2008 NTZK sets.
- See Procedure 13 on page 95 for M2616/M2216ACD NTZK sets.
- See Procedure 1 on page 101 for M2006/M2008/M2008HF NT2K sets.
- See Procedure 1 on page 82 for installing an MCA onto an NT9K or NT2K with date code of April 24, 1998 and later.

The MCA can be placed as far from its associated data terminal or computer port as is consistent with EIA RS-232 or V.35.

When the MCA is used as a V.35 interface, an additional cable is required to convert the DB-25 into a 34-pin rectangular connector. This does not apply to asynchronous configurations. If the pins are left in V.35 mode, asynchronous operation is not supported, and the MCA looks as though it is locked up.

Remove the two 14-pin jumper plugs or one 20-pin jumper plug inside the MCA from the RS-232 socket(s) and install the V.35 socket.

> ***Note:*** The female cable ordering code is A0408927. The male cable ordering code is A0408928. The A0300752 and A0300753 cables are still supported, unless used with applications similar to IBM front-end.

Modem pooling is not supported on the MCA.

When a call is connected between two MCAs, and power is removed from one, the MCA does not release until the power is restored.

The MCA always remembers the most recent data parameters. In the case of power failure, data settings do not have to be reset.

See Table 20 on page 88 for a listing of the V.35 CCITT signals supported by the MCA.

**Table 20**
**V.35 CCITT signals supported by the MCA (Part 1 of 2)**

| V.35 CCITT | MCA DB-25 pin no. | Abbr. | Adaptor cable | | Signal Source | | Description |
|---|---|---|---|---|---|---|---|
| | | | DB-25 Pin No. | V.35 Pin No. | DTE | MCA | |
| 101 | 1 | DG | 1 | A | | | Protective ground* |
| 103A | 2 | SDA | 2 | P | X | | Transmit data A |
| 104A | 3 | RDA | 3 | R | | X | Receive data A |
| 105 | 4 | RTS | 4 | C | X | | Request to send |
| 106 | 5 | CTS | 5 | D | | X | Clear to send |
| 107 | 6 | DSR | 6 | E | | X | Data set ready |
| 102 | 7 | S | 7 | B | | | Signal ground |
| 109 | 8 | CD | 8 | F | | X | Carrier detect |
| — | 9/10 | — | 9/10 | CC/L | | | No connection |
| — | 11 | — | 11 | K | X | | ** |
| 115B | 12 | SCRB | 12 | X | | X | Serial clock receive B |
| 103B | 13 | SDB | 13 | S | X | | Transmit data B |
| 114B | 14 | SCTB | 14 | AA | | X | Serial clock transmit B |
| 114A | 15 | SCTA | 15 | Y | | X | Serial clock transmit A |
| 104B | 16 | RDB | 16 | T | | X | Receive data B |
| 115A | 17 | SCRA | 17 | V | | X | Serial clock receive A |
| — | 18/19 | — | 18/19 | M/HH | | | No connection |
| 108.2 | 20 | DTR | 20 | H | X | | Data terminal ready |

***Note:*** * Pin 1 is connected to the MCDS shelf frame.
** These leads are ignored by the MCA controller.

**Table 20**
**V.35 CCITT signals supported by the MCA (Part 2 of 2)**

| V.35 CCITT | MCA DB-25 pin no. | Abbr. | Adaptor cable | | Signal Source | | Description |
|---|---|---|---|---|---|---|---|
| | | | DB-25 Pin No. | V.35 Pin No. | DTE | MCA | |
| — | 21 | — | 21 | EE | | | No connection |
| 125 | 22 | RI | 22 | J | | X | Ring indicator |
| 113B | 23 | SCTEB | 23 | W | X | | Tran sign elemt time B |
| 113A | 24 | SCTEA | 24 | U | X | | Tran sign elemt time A |
| — | 25 | — | 25 | MM | X | | ** |

***Note:*** * Pin 1 is connected to the MCDS shelf frame.
** These leads are ignored by the MCA controller.

**Procedure 1**
**Installing and removing the Meridian Communications Adapter or Meridian Programmable Data Adapter**

**CAUTION WITH ESDS DEVICES**
Before handling internal telephone components, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

If using a NT9K phone or the NT2K with date code of April 24, 1998 and later, it is not necessary to install a Power Option board to operate the MCA.

**1** Remove the handset and place the telephone upside down on top of a level, solid work surface (a desktop, for example) covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the footstand.

- For NT2K and NTZK with date code prior to April 24, 1998 remove the two screws from the footstand assembly and unsnap the footstand by pressing inward at the back of the footstand where it meets the base and pull upward. Discard the footstand. The redesigned footstand ordered with the ATA is used instead.
- For NT9K and NT2K with a date code of April 24, 1998 and later, retain the footstand and skip to Procedure 10 on page 91.

**4** If the telephone is not equipped with the Meridian Programmable Data Adapter (MPDA) or Meridian Communications Adapter (MCA), go to Procedure 6 on page 90. If replacing an existing MPDA or MCA, carefully disconnect the end of the 8-pin TELADAPT jack plugged into the telephone by pressing firmly on the latch-tab and slowly lifting up.

**5** Turn the telephone footstand assembly over and put it in the normal use position. Remove the two self-tapping screws that fasten the MPDA or MCA to the telephone footstand assembly and remove the MPDA or MCA by pulling outward and up. Go to Procedure 11 on page 92 to replace the MPDA or MCA.

**6** Remove the back covering of the phone base by removing the four screws.

**7** If the NTZK or the NT2K (with date code prior to April 24, 1998) phone set is equipped with a Power Option board and/or cable, the Power Option board and/or cable must be removed before installing the MCA.

- Remove the two small screws from the Power board (near the top) and set them aside.
- To disconnect the Power Option board from the NTZK telephone, grasp the board firmly on each side and slowly rock the board while applying upward pressure, until it is released from the 2X7 pin connector.
- To disconnect the NT2K Power Option board from the set, simply remove the screws from the base and lift the board out of the set.
- If the Power Option board has a ribbon cable disconnect the cable from the 2X7 pin connector on the main board and remove the cable.

**8** If the phone is equipped with the External Alerter board, it must be removed before installing the MCA with redesigned footstand.

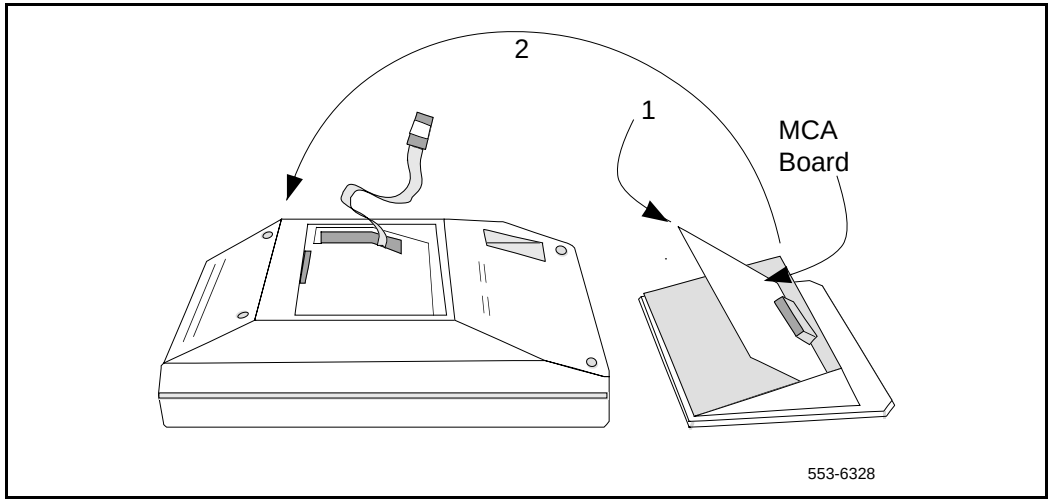
- The External Alerter board is located at the right center of the telephone.
- Remove the screws form the board, grasp the board firmly on each end and pull upward to remove it from the 2X3 pin connector.

**9** Install the Jumper board onto the 2X7 pin connector inside the phone base.

- If the phone set did not have a Power Option board installed on the NT2K or the NTZK then there will be 2 Jumper plugs on the 2X7 connector. Remove them before installing the Jumper board.
- The redesigned footstand will have 2 jumpers. Use the black one for the NT2K phone and the brown one for the NTZK phone.

**10** Remove the large MCA knockout section in the rear of the telephone footstand assembly, and remove the small tabs. See Figure 30. It is best to remove this knockout with a screwdriver.

**Figure 30**
**Installing the MCA**



**11** For MCA, set option plugs to the required configuration, RS-232 or V.35. The factory default is RS-232.

**12** Tilt the MPDA or MCA circuit board up and insert the DB-25 connector socket into the breakout section. Then slide the board connector end-first under the tabs in the footstand assembly and position it over the locating pins. Position and lower it completely onto the telephone footstand assembly. Insert the two self-tapping Phillips-head screws supplied with the MPDA or MCA into the mounting holes and tighten them with a #1 Phillips screwdriver.

**13** Plug one end of an 8-conductor line cord supplied with a TELADAPT adapter in the jack J1 of the MPDA or MCA (latch tab facing down) and plug the other end of the line cord into the data jack in the base of the telephone. Make certain the latch tab of each cable end is firmly snapped into place.

**14** Carefully route the excess cable so that it will not become pinched between the footstand and base.

**15** Reassemble the base and footstand assembly sections, ensuring that the footstand is firmly seated on the base.

**16** Tighten the screws

- Reconnect all cords, connect the new 24v AC transformer to the set.
- Plug in the new transformer into the 110v AC commercial electrical outlet.
- Place the telephone in the normal operating position.

***Note 1:*** Place the label supplied with the MPDA or MCA on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

***Note 2:*** If an ADM3, ADM5, or ADM11 terminal is used in conjunction with the DB-25 connector-C interface connector in the Asynchronous Programmable Data Adapter, pin 22 in the DB-25 connector cable must be disconnected. These ADM terminals will go into test mode if this pin is not disconnected.

**Procedure 1**
**Connecting the data terminal**

1 Connect the DB-25 connector-C interface connector from the data terminal to the matching header connector in the back of the telephone.

2 Insert the two captive screws in the connector body into the threaded holes in the header connector and secure tightly to prevent accidental disconnection during data terminal operation.

## Power Supply Board (NTZK models)

Use the following procedures to add a Power Supply Board to the telephone for connection to a transformer or closet power supply. Use Procedure 2 for the M2006 and M2008. USE Procedure 13 for the M2616, and M2216ACD.

**Procedure 2**
**Installing and removing the M2006/M2008 Power Supply Board on NTZK sets**

**CAUTION**
**Damage to Equipment**
Connect the optional Power Supply to the M2000 Series Meridian Digital Telephone only. Equipment damage may result from incorrect connections. Both the closet power supply and the transformer are for use with the M2000 Series Meridian Digital Telephone only.

**CAUTION WITH ESDS DEVICES**
Before handling internal telephone components, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

1 Remove the handset and place the telephone upside down on top of a level, solid work surface (such as a desktop) covered with soft material or paper to prevent damage to movable keys and the telephone face.

2 Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base and pulling upward.

**4** If the telephone is equipped with a Meridian Programmable Data Adapter (MPDA) or Meridian Communications Adapter (MCA), unplug the data cable from telephone's base jack.

**5** Remove the four screws securing the base of the telephone to the top cover. Remove the base and set it aside.

**6** If the telephone is equipped with a display, disconnect the display ribbon cable from the display board and move it out of the way.

**7** If the telephone is not equipped with the power supply board, remove the jumpers from P1 connector pins on the main board. Go to step 9.

If the telephone is equipped with a power supply board, go to step 8.

**8** The power supply board is located on the left side of the telephone. Remove two small screws from the power supply board (near the top) and set them aside. Grasp the board firmly on each side. Work the board loose from the connector by slowly applying upward pressure to alternate sides until released.

If the power supply board is not being replaced, place the jumpers (A0288529) connecting the bottom two sets of pins on the P1 connector.

**9** Place the power supply board so that the alignment pin on the telephone fits into Slot A on the board. See Figure 31 on page 95 and Figure 32 on page 96. Align the mounting holes in the board (near the top) over the mounting holes in the telephone and carefully press down so that the H1 connector on the board slides onto the P1 pins.

**10** Take the self-tapping Phillips-head screws supplied with the power supply board and install them into the mounting holes. Tighten firmly with a #1 Phillips screwdriver.

**11** If the telephone has a display, reconnect the display ribbon cable, routing the cable as described in Procedure 1 on page 105.

***Note:*** Do not allow R5 on the power supply board to become bent during this procedure.

**12** Replace the base. If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack and replace the footstand (ensuring that the MPDA or MCA cable does not get pinched between the base and footstand). Make sure the footstand is firmly seated to the base.

***Note:*** Place the label supplied with the power supply board on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

**13** Tighten all screws, reconnect the line cord, and place the telephone in the normal operating position.

**Figure 31**
**M2006/M2008 telephone and option boards**

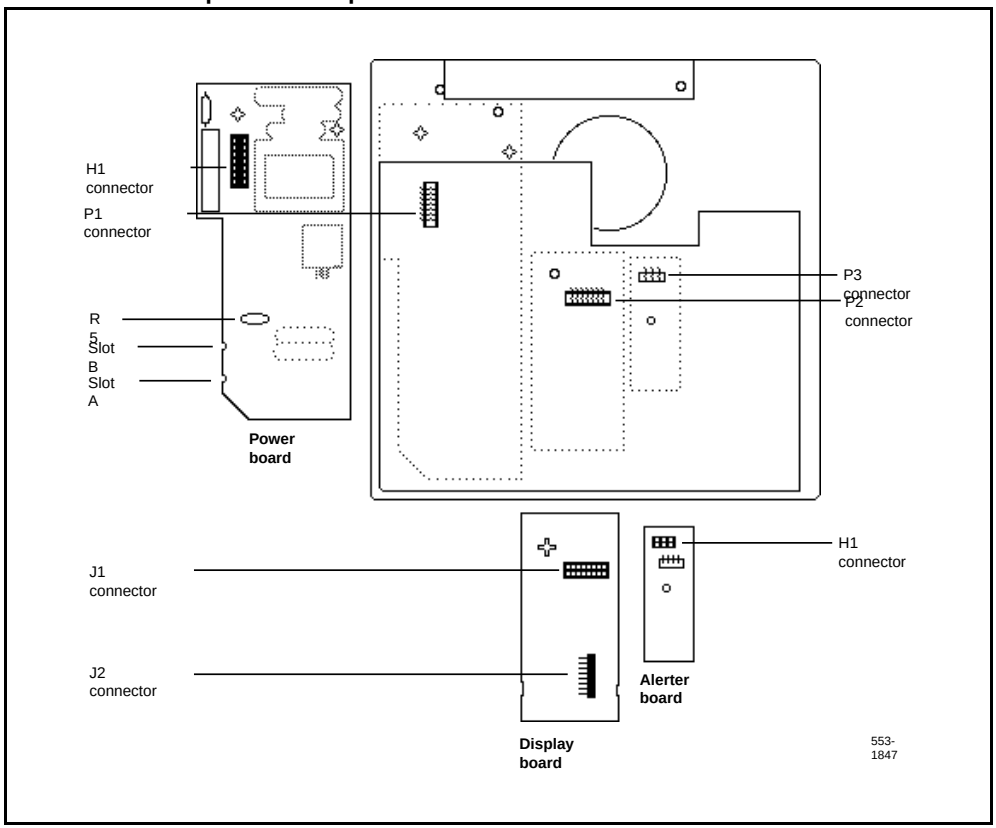
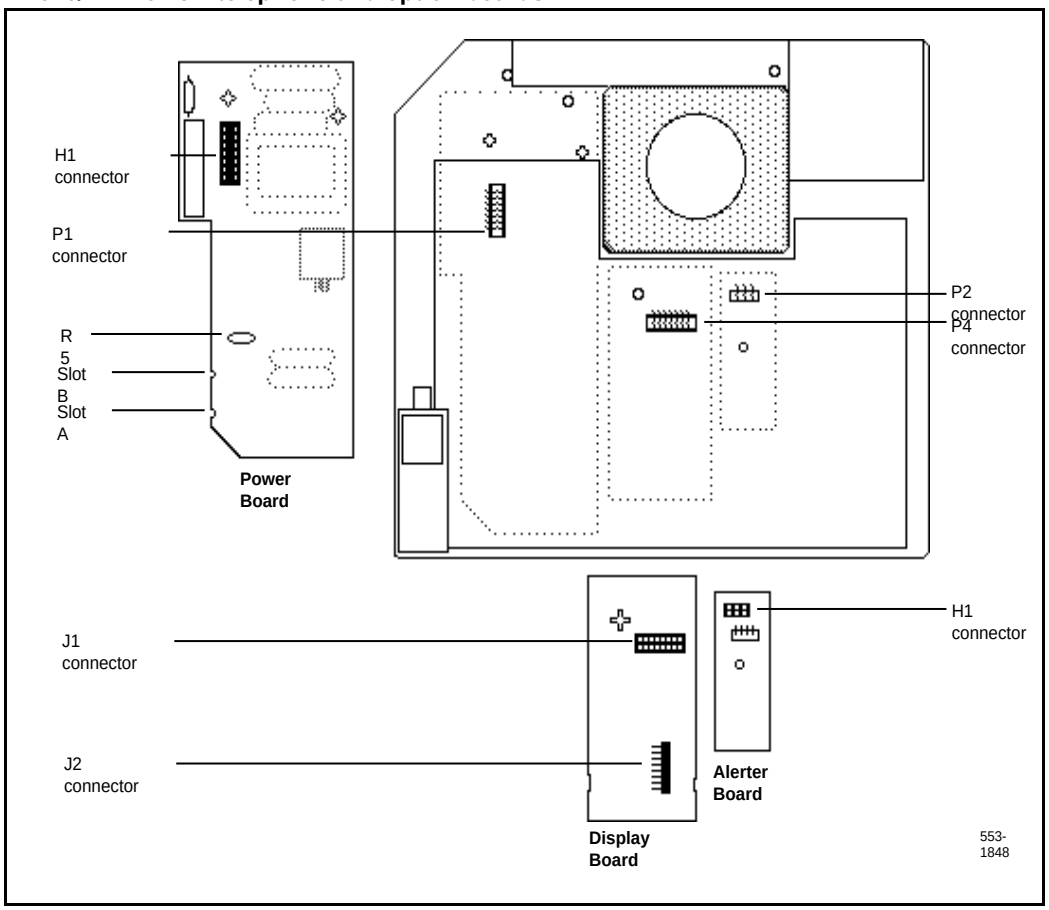


**Figure 32**
**M2616/M2216ACD telephone and option boards**



**Procedure 1**
**Installing and removing the M2616/M2216ACD Power Supply Board on NTZK sets**

**CAUTION WITH ESDS DEVICES**
Before handling internal telephone components, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** Remove the handset and place the telephone upside down on top of a level, solid work surface (such as a desktop) covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base and pulling upward.

**4** If the telephone is equipped with an MPDA or MCA, unplug the data cable from the base telephone jack.

**5** Remove the four or five screws securing the base to the top cover. Remove the base and set it aside.

**6** If the telephone is equipped with display, disconnect the Display ribbon cable from the display board and move it out of the way.

**7** If the telephone is not equipped with a power supply board, remove jumpers from the P1 connector pins on the main board. Go to step 9.

If the telephone is equipped with a power supply board, go to step 8.

**8** The power supply board is located on the left side of the telephone. Remove two small screws from the power supply board (near the top) and set them aside. Grasp the board firmly on each side. Work the board loose slowly until it is released.

If not replacing the power supply board, place the jumpers (A0288529) connecting the bottom two sets of the pins on the P1 connector.

**9** Place the power supply board so that Slot B fits into the alignment pin on the telephone. See Figure 30 on page 91. Align the mounting holes in the board (near the top) over mounting holes in the telephone and carefully press down so that the H1 connector on the board slides onto the pins of the header (P1 on the M2616 or J2 on the M2006/M2008).

**10** Take the self-tapping Phillips-head screws supplied with the power supply board and install them into the mounting holes. Tighten firmly with a #1 Phillips screwdriver.

**11** If the telephone has a display, reconnect the display ribbon cable, routing the cable as described in Procedure 1 on page 108.

***Note:*** Do not allow R5 on the power supply board to become bent during this procedure.

**12** Replace the base. If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack and replace the footstand (ensuring the MPDA or MCA cable does not get pinched between the base and footstand). Make sure the footstand is firmly seated to the base.

***Note:*** Place the label supplied with the power supply board on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

**13** Connect the telephone to a local transformer (see Figure 33 on page 99) or closet power supply (see Figure 34 on page 100). Refer to *Meridian 1 Telephones: Description and Specifications* (553-3001-108) for requirements.

**Figure 33**
**Configuration of a local plug-in transformer**

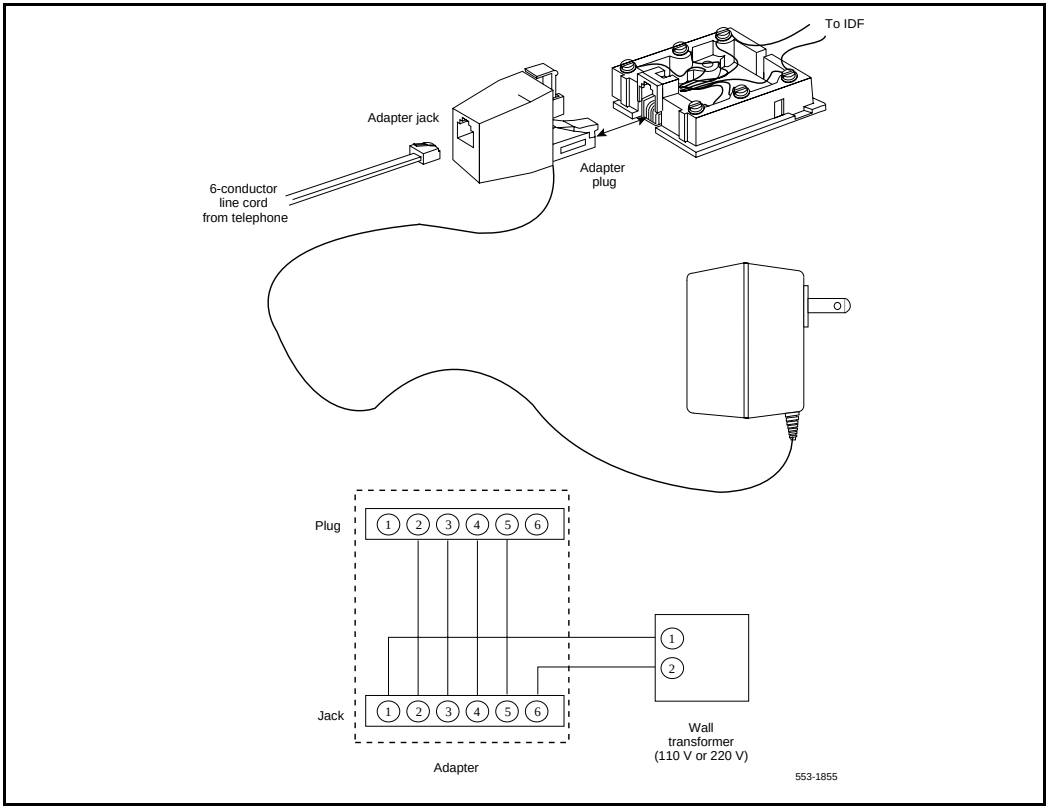
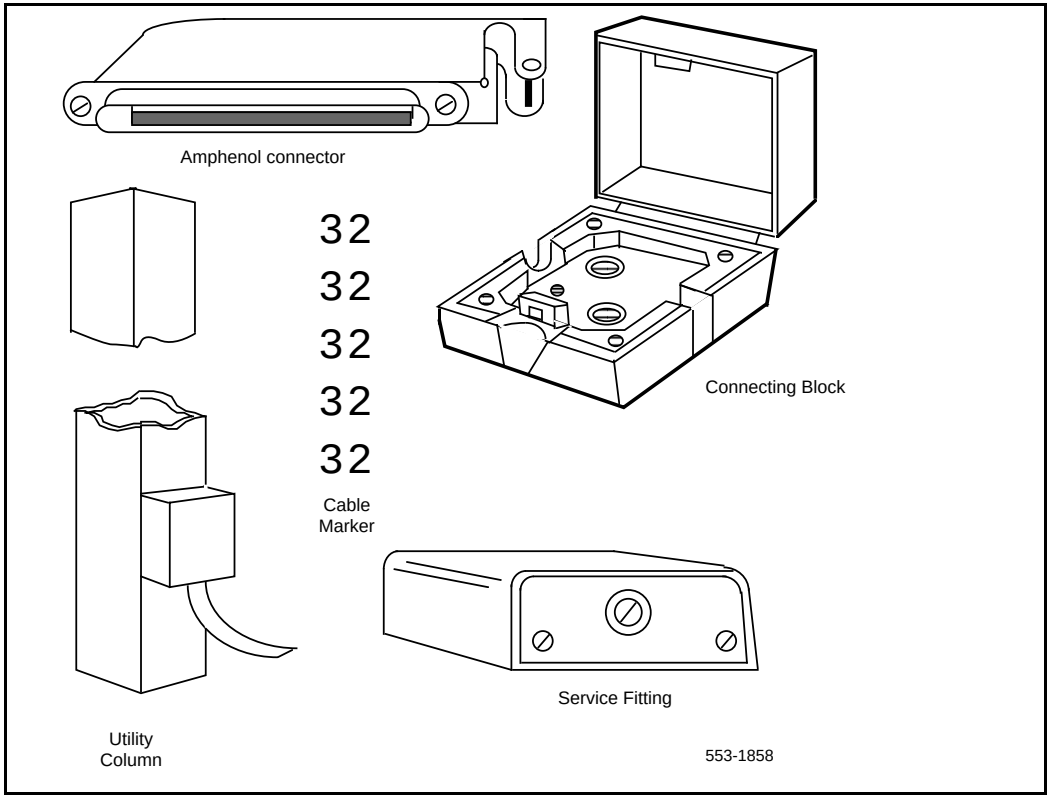


**Figure 34**
**Closet power supply configuration**



## Power Supply Board (NT2K models)

Follow the steps in Procedure 1 to add a Power Supply Board to the telephone for connection to a transformer or closet power supply. This procedure applies to the M2006, M2008/M2008HF, M2216ACD and M2616 Meridian Digital telephones, NT2K models.

**CAUTION**
**Damage to Equipment**
Connect the optional Power Supply to the M2000 Series Meridian Digital Telephone only. Equipment damage may result from incorrect connections. Both the closet power supply and the transformer are for use with the M2000 Series Meridian Digital Telephone only.

**Procedure 1**
**Installing and removing the M2006 or M2008 Power Supply Board on NT2K sets**

**CAUTION WITH ESDS DEVICES**
Before handling internal components of telephones, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

### Opening the Telephone

**1** Disconnect and remove all cords (including the handset) from the telephone.

**2** Place the telephone, upside-down, on a padded, level surface.

**3** If the telephone does not have an MCA or MPDA adapter, go to step 7.

**4** Using a #1 Phillips screwdriver, remove both screws from the footstand.

**5** Remove the footstand from the base by pressing in the back of the footstand as it is lifted from the base.

**6** Unplug the MCA or MPDA from the data line jack on the base, and set the footstand aside.

**7** Remove all screws on the base of the telephone.

**8** Remove the base from the telephone.

### Attaching the Power Module

**9** Lay the Power Module assembly into position on the left side of the telephone. Be careful not to bend R5 (the big disk) on the Power Module during installation.

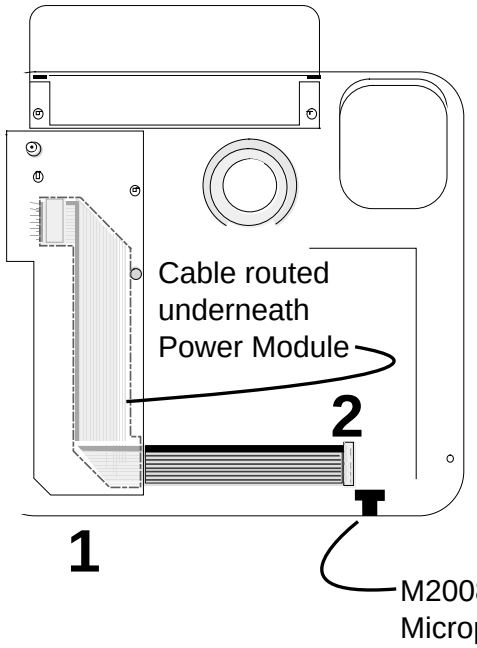
**10** If you are adding a Power Module to the set for the first time (not replacing an existing Power Module), the connector (J2 on the M2006 and M2008/M2008HF, P1 on the M2616) on the main board should have jumpers which must be removed at this point.

**11** Connect the Power Module to the main board with the ribbon cable, keeping the red edge of the ribbon cable from the front of the telephone as show in Figure 35.

**CAUTION**
**Damage to Equipment**
This is a polarity-sensitive connection. The cable and the connector on the main board (J2 on the M2006 and M2008/M2008HF, and P1 on the M2616) are keyed.

**12** Screw the Power Module into position on the left side of the telephone.

**Figure 35**
**Ribbon cable placement**




## Reattaching the Base

**13** Make sure that all ribbon cables are lying flat and not caught on any posts on the telephone cover or base.

**CAUTION**

For the M2616 and M2008HF, make sure that the microphone has not been moved from its black rubber holder. The holder should be seated in the main board near the ribbon cable that was just attached.

**14** Replace the base.

**15** Insert all screws and tighten them.

**16** If the telephone has an MCA or MPDA, plug its cable into the jack on the telephone base.

**17** Install the footstand, and secure it with two screws.

**18** Reconnect all cords, including the handset.

***Note:*** Place the label supplied with the power supply board on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

## Installing Displays

The following procedures cover installation of the various displays on the various sets.

- Installing NT2K24WA or NT2K25YL displays on NTZK sets:
  - M2008 – Use Procedure 1 on page 105.
  - M2616 or M2216ACD – Use Procedure 1 on page 108.
- Installing NT2K28AA displays on NTZK or NT2K sets:
  - Use Procedure 1 on page 111.
- Installing NT2K24WA or NT2K25YL displays on NT2K sets:
  - M2008 – Use Procedure 1 on page 116.

# Installing NT2K24WA or NT2K25YL displays on NTZK sets

To install the display on an M2008 set, use Procedure 1. To install the display on an M2616 or M2216ACD set, use Procedure 1 on page 108.

**Procedure 1**
**Installing and removing the M2008 Display on NTZK sets**

**CAUTION WITH ESDS DEVICES**
Before handling internal components of telephones, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** Remove the handset and place the telephone upside down on top of a level, solid work surface covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base and pulling upward.

**4** If the telephone is equipped with an MPDA or MCA, unplug the data cable from the base telephone jack. Remove the four screws securing the base to the telephone. Remove the base and set it aside.

**5** The power supply board (if equipped) is located on the left side of the telephone. Remove the two small screws from the power supply board (near the top) and set aside. Grasp the board firmly on each side. Carefully work the board loose until it is released.

**6** If the telephone is not equipped with a display, go to step 9. If the telephone is equipped with a display, go to step 7.

## Removing the display board

**7** The display board is located at the left center of the telephone. Disconnect the display ribbon cable from the display board. Remove the small screw from the board. Grasp the board firmly on each end and pull upward to remove. To replace, go to step 9.

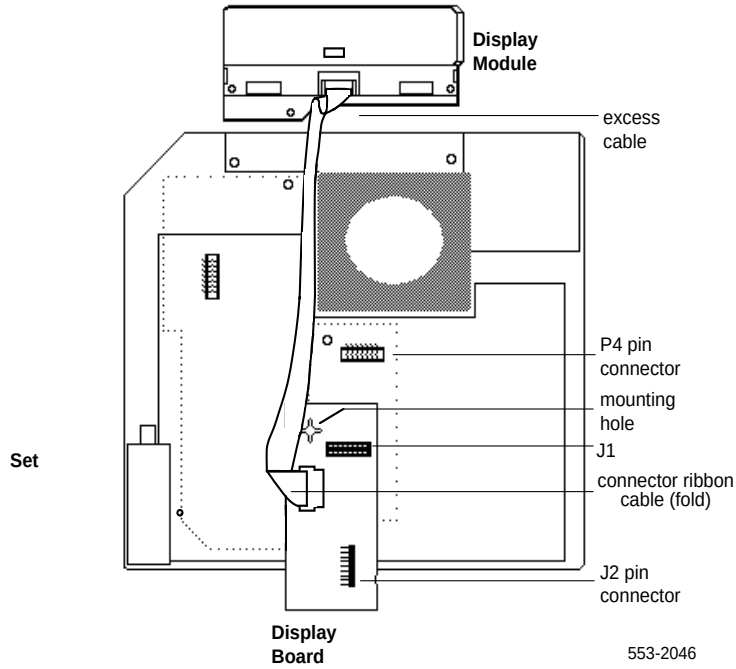
### Removing the display

**8** Remove the two or three screws from the display module. Remove the display from the telephone. To install the display option, go to step 11.

### Installing the display board

**9** Place the J1 connector of the display board over the P2 pins of the telephone. See Figure 37 on page 110. Press down slowly until J1 slides onto the P2 pins and is firmly seated.

**Figure 36**
**Display cable routing**




**10** Insert the self-tapping Phillips-head screw supplied with the display into the mounting hole (near the top). Tighten it firmly with a #1 Phillips screwdriver.

### Installing the display

**11** Place the display facedown near the top of telephone and align the two mounting holes of the display with the two mounting holes of the telephone.

**12** Insert two self-tapping Phillips-head screws from the faceplate into the mounting holes; tighten them firmly with a #1 Phillips screwdriver.

***Note:*** Do not allow R5 on the power supply board to become bent during this procedure.

**13** Install the power supply board. See Procedure 2 on page 93.

**14** Fold the ribbon cable near the connector to align with the J2 pins on the display board, ensuring that the notch on the ribbon cable is facing toward the display board. Carefully work the ribbon cable connector onto the J2 pins until it is firmly seated. Route the cable flat beside the power supply board, gathering excess cable under the display. Be careful not to press the cable beneath the alignment posts or studs of the base. See Figure 37 on page 110.

**15** Replace the base. If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack and replace the footstand (ensuring that the MPDA or MCA cable does not get pinched between the base and footstand). Make sure the footstand is firmly seated to the base.

**16** Tighten all the screws, reconnect all cords, and place the telephone in the normal operating position.

***Note:*** Place the label supplied with the display on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

**17** Perform the self-test (see Procedure 1 on page 32) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311).

**Procedure 1**
**Installing and removing the M2616/M2216ACD Display on NTZK sets**

**CAUTION WITH ESDS DEVICES**
Before handling internal components of telephones, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** Remove the handset and place the telephone upside down on top of a level, solid work surface covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base and pulling upward.

**4** If the telephone is equipped with an MPDA or MCA, unplug the data cable from the base telephone jack. Remove the five screws securing the base to the telephone. Remove the base and set it aside.

**5** If the telephone is not equipped with a display, go to step 9. If the telephone is equipped with a display, go to step 6.

### Removing the display board

**6** The display board is located at the left center of the telephone. Disconnect the display ribbon cable from the display board. Remove the small mounting screw from the board. Grasp the board firmly on each end and pull upward to remove it. To replace it, go to step 9.

### Removing the display

**7** The power supply board is located on the left side of the telephone. Remove the two small screws from the power supply board (near the top) and set them aside. Grasp the board firmly on each side. Carefully work the board loose until released.

**8** Remove the two or three screws from the display Module. Remove the display from the telephone. To install the display, go to step 11.

### Installing the display board

**9** Place the J1 connector of the display board over the P2 pins of the telephone (see Figure 37 on page 110). Press down slowly until J1 slides onto the P2 pins and is firmly seated.

***Note:*** If the center screw is included, do not perform step 10.

**10** Insert the self-tapping Phillips-head screw supplied with the display into the mounting hole (near the top). Tighten firmly with a #1 Phillips screwdriver.

### Installing the display

**11** Place the display face-down near the top of the telephone and align the two mounting holes of the display with the mounting holes in the telephone.

**12** Insert two self-tapping Phillips-head screws from the faceplate into the mounting holes; tighten them firmly with a #1 Phillips screwdriver.

**13** Install the power supply board (see Procedure 13 on page 95). This step is not necessary on M2616 unless there are other hardware options.

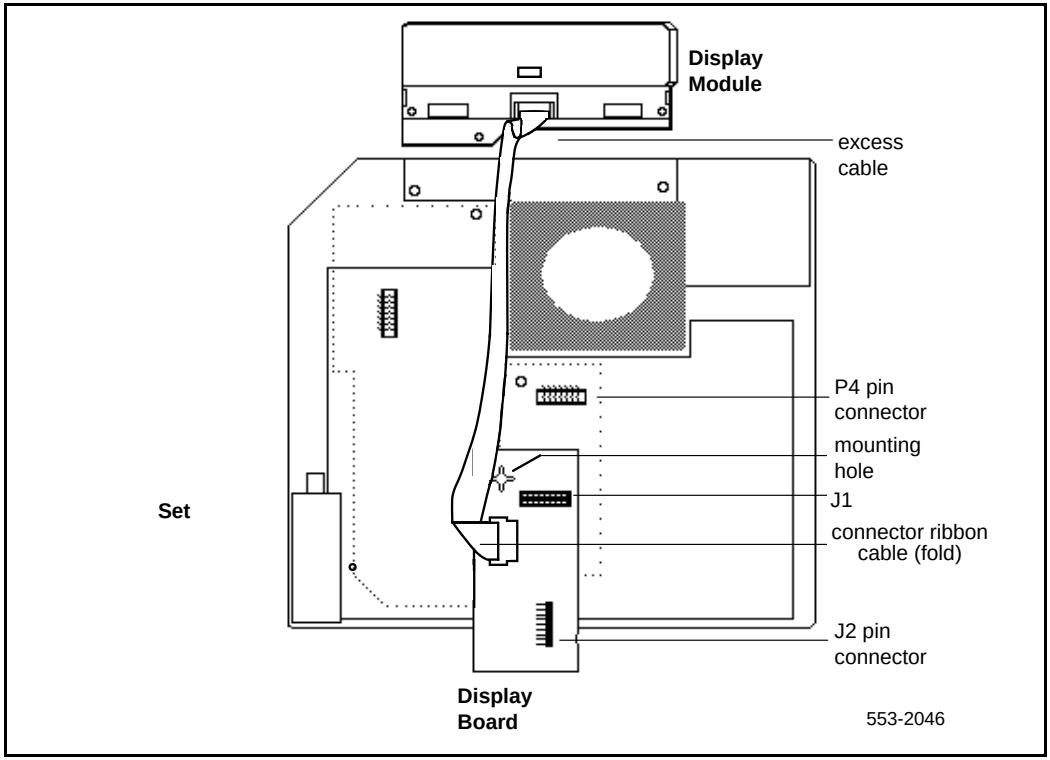
**14** Fold the ribbon cable near the connector to align it with the J2 pins on the display board, ensuring that the notch on the ribbon cable is facing toward the display board. Carefully work the ribbon cable connector onto the J2 pins until firmly seated. Route the cable flat beside the power supply board, gathering excess cable under the display. Be careful not to press the cable beneath the alignment posts or studs of the base. See Figure 37 on page 110.

***Note:*** Do not allow R5 on the power supply board to become bent during this procedure.

**15** Replace the base. If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack and replace the footstand (ensuring that the MPDA or MCA cable does not get pinched between the base and the footstand). Make sure the footstand is firmly seated in the base.

***Note:*** Place the label supplied with the display on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

**Figure 37**
**Display cable routing**




**16** Tighten all screws, reconnect all cords, and place the telephone in the normal operating position.

**17** Perform the self-test (see Procedure 1 on page 32) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311).

## Installing NT2K28AA displays on NTZK or NT2K sets

Follow the steps in Procedure 1 to add an NT2K28AA display to M2008 and M2616 telephones.

**Procedure 1**
**Installing NT2K28AA displays on NTZK or NT2K sets**

**CAUTION WITH ESDS DEVICES**
Before handling internal components of telephones, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

### Opening the Telephone

**1** Disconnect and remove all cords (including the handset) from the telephone.

**2** Place the telephone, upside-down, on a padded, level surface.

**3** Using a #1 Phillips screwdriver, remove the two screws from the footstand.

**4** Carefully remove the footstand from the base. Press inward at the back of the footstand where it meets the base and pull upward.

**5** If the telephone has a Meridian Communications Adapter, unplug its cable from the base telephone jack.

**6** Loosen all screws on the base of the telephone.

**7** Remove the base from the telephone.

### Removing the Fillerplate

**8** Loosen the screws that hold the fillerplate.

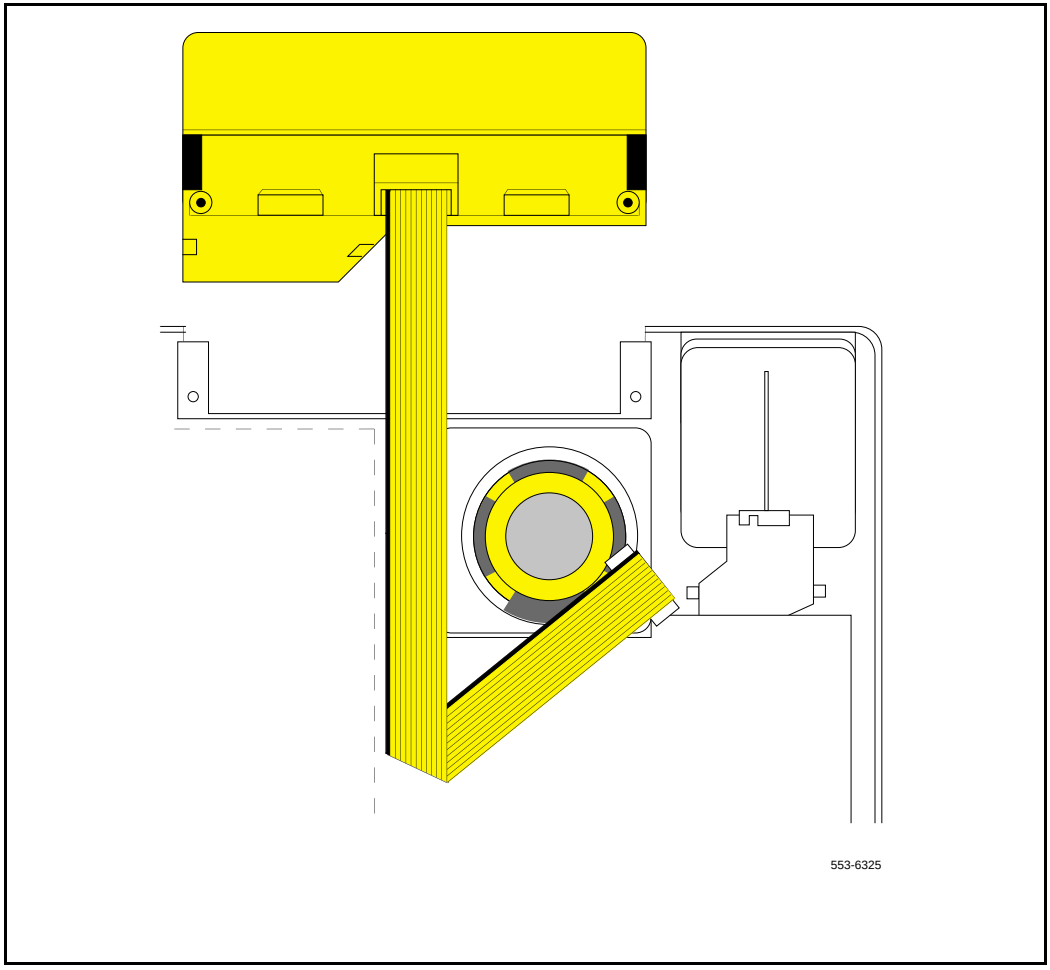
**9** Remove the fillerplate, being careful not to touch the foam in the speaker housing.

### Attaching the Display Module

**10** Position the Display Module as shown in Figure 38 on page 112.

**11** Lower the Display Module into place.

**Figure 38**
**Positioning the display module**




**12** Insert the fillerplate screws in the Display Module screw holes

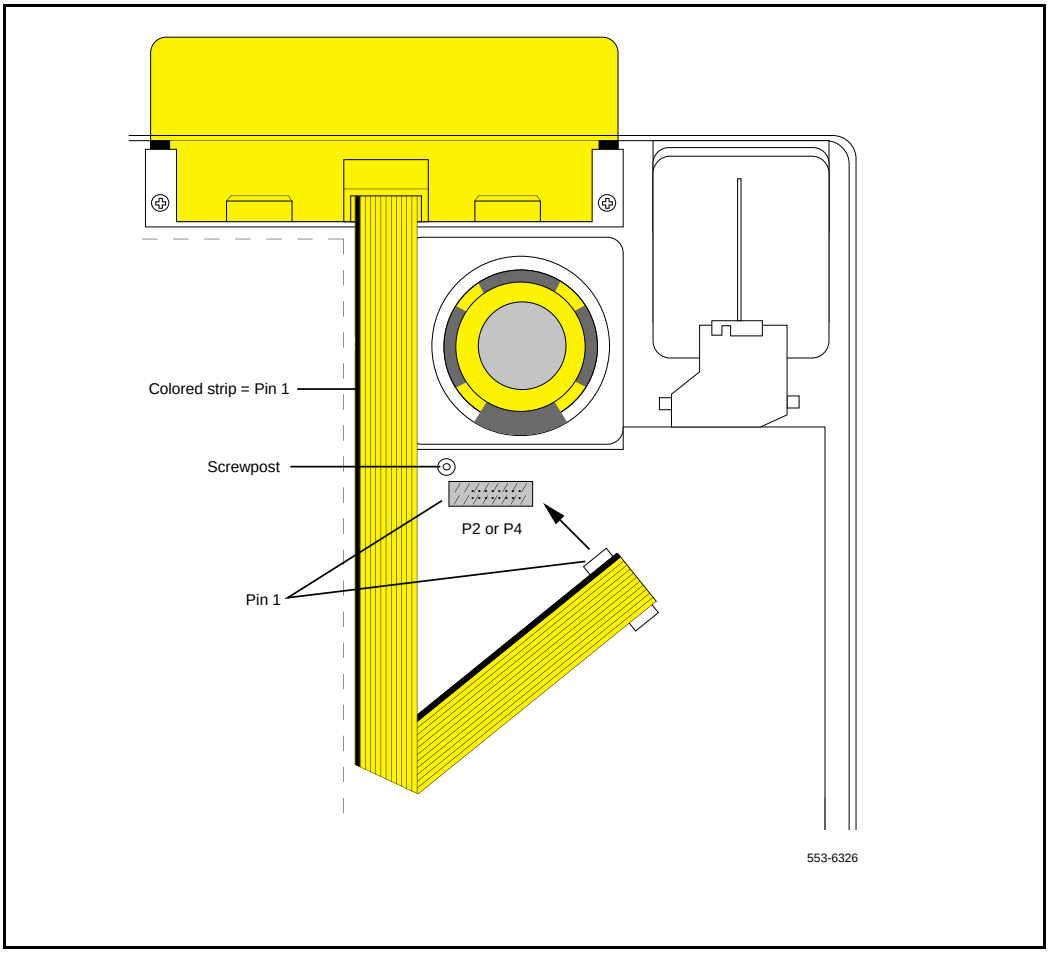
**13** Tighten the fillerplate screws.

***Note:*** Place the label supplied with the display on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

## Connecting the Display Module Ribbon Cable

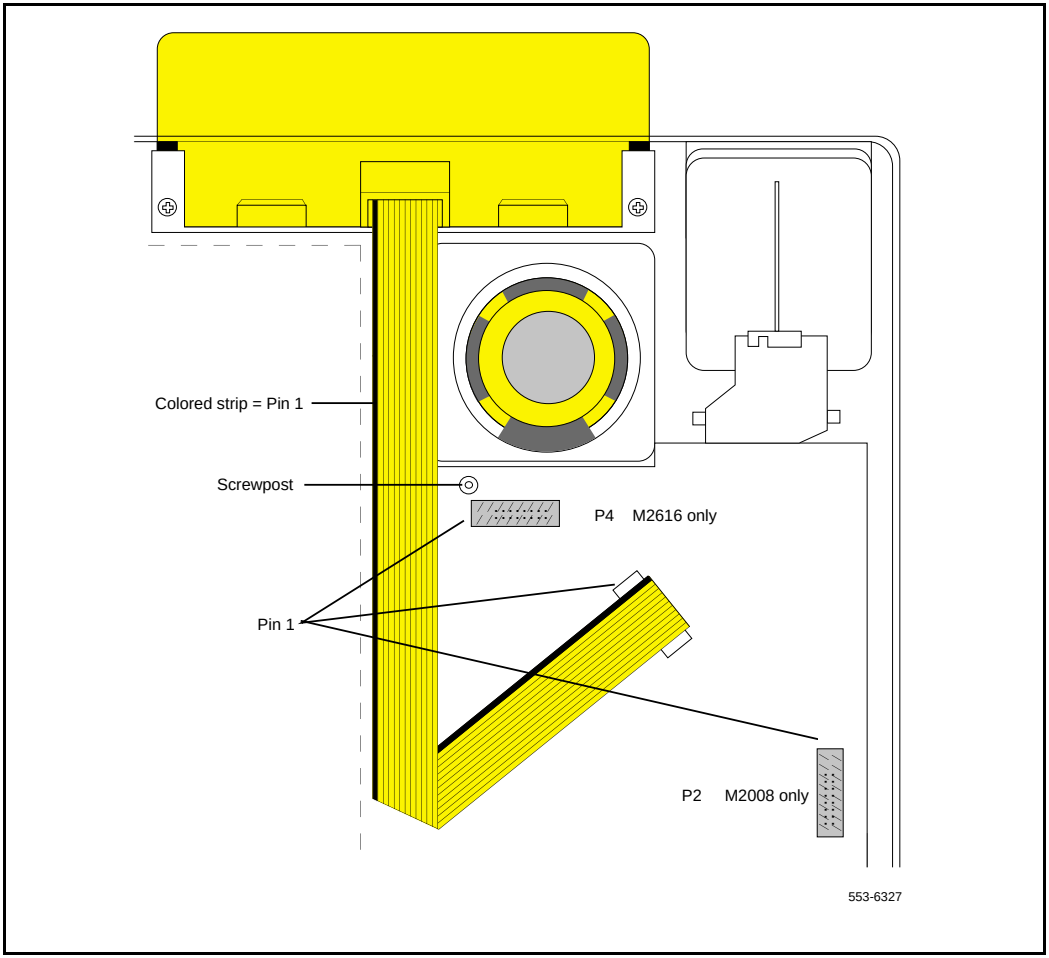
**14** **NTZK models**: Make sure that the ribbon cable is folded as shown in Figure 39.

**Figure 39**
**Connecting the Display Module Ribbon Cable, NTZK model**




**15** **NT2K models**: Make sure that the ribbon cable is folded as shown in Figure 40 on page 114.

**Figure 40**
**Connecting the Display Module Ribbon Cable, NT2K model**




**16** Make sure the red line on the ribbon cable lines up with the white dot beside the connector pins (P2 on an NTZK M2008, J3 on an NT2K M2008, and P4 on an M2616) on the motherboard.

**17** Slide the ribbon cable connector onto the connector pins (P2 on an NTZK M2008, J3 on an NT2K M2008, and P4 on an M2616) on the mother board.

**CAUTION**

This connection is polarity sensitive.

**18** Ensure that the pins line up with the connector correctly and carefully work the connector on until it is firmly seated.

### Reattaching the Base

**19** Make sure the ribbon cable is lying flat and not caught over or under any alignment posts or studs on the telephone base. (For the M2616, allow it to cover the screwpost and do not replace the screw on re-assembly.)

**20** Replace the base.

**21** Insert all screws (except the center screw on the M2616) and tighten them.

### Reattaching the Footstand

**22** If the telephone has a Meridian Programmable Data Adapter (MPDA) or Meridian Communications Adapter (MCA), plug its cable into the jack on the telephone base.

**23** Replace the footstand, positioning it firmly on the base.

**24** Insert and tighten all screws.

***Note:*** Place the label supplied with the display on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

### Reconnecting the Telephone

**25** Reconnect all cords.

**26** Turn the telephone right-side-up and place it in a normal operating position.

**27** Reconnect the handset.

## Installing NT2K24WA or NT2K25YL displays on NT2K sets

Use Procedure 1 to install the display on the M2008 set. Use Procedure 1 on page 119 to install the display on the M2616 set.

**Procedure 1**
**Installing and removing the M2008 Display on NT2K sets**

**CAUTION WITH ESDS DEVICES**
Before handling internal telephone components, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** Remove the handset and place the telephone upside down on top of a level, solid work surface covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base and pulling upward.

**4** If the telephone is equipped with an MPDA or MCA, unplug the data cable from the base telephone jack. Remove the four screws securing the base to the telephone. Remove the base and set it aside.

**5** The power supply board (if equipped) is located on the left side of the telephone. Remove the two small screws from the power supply board (near the top) and set aside. Grasp the board firmly on each side. Carefully work the board loose until it is released.

**6** If the telephone is not equipped with a display, go to step 9. If the telephone is equipped with a display, go to step 7.

### Removing the display board

**7** The display board is located at the left center of the telephone. Disconnect the display ribbon cable from the display board. Remove the small screw from the board. Disconnect the P0738600 cable from connector J3 on the M2008. Remove the board and cable from the set. To replace, go to step 9.

### Removing the display

**8** Remove the two or three screws from the display module. Remove the display from the telephone. To install the display option, go to step 11.

### Installing the display board

**9** Connect the P0738600 cable to the J1 connector of the display board. Place the board on the mounting post (see Figure 41 on page 118).

**10** Insert the self-tapping Phillips-head screw supplied with the display into the mounting hole (near the top). Tighten it firmly with a #1 Phillips screwdriver.

**11** Connect the loose end of the P0738600 cable to the J3 pins of the telephone. Press down until the connector slides onto the J3 pins and is firmly seated.

### Installing the display

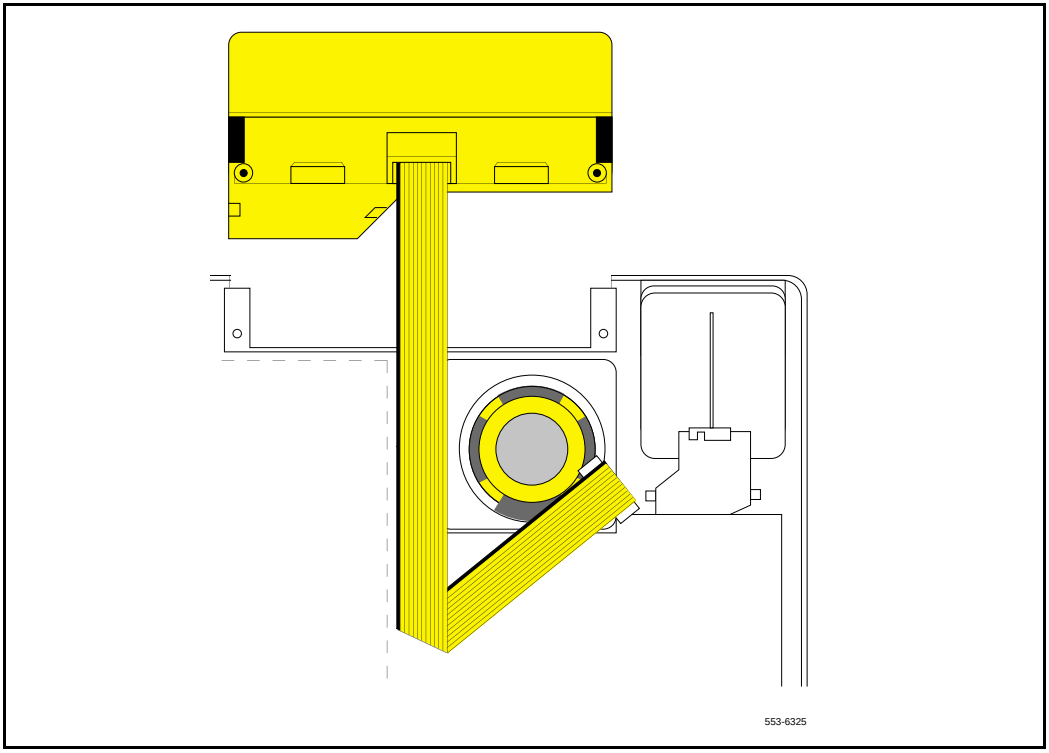
**12** Place the display facedown near the top of telephone and align the two mounting holes of the display with the two mounting holes of the telephone.

**13** Insert two self-tapping Phillips-head screws from the faceplate into the mounting holes; tighten them firmly with a #1 Phillips screwdriver.

***Note:*** Do not allow R5 on the power supply board to become bent during this procedure.

**14** If the MPDA or MCA option is installed, install the power supply board (see Procedure 1 on page 101).

**Figure 41**
**Connecting the cable to the display board**




**15** Fold the ribbon cable near the connector to align with the J2 pins on the display board, ensuring that the notch on the ribbon cable is facing toward the display board. Carefully work the ribbon cable connector onto the J2 pins until it is firmly seated. Route the cable flat beside the power supply board, gathering excess cable under the display. Be careful not to press the cable beneath the alignment posts or studs of the base. See Figure 41 on page 118.

**16** Replace the base. If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack and replace the footstand (ensuring that the MPDA or MCA cable does not get pinched between the base and footstand). Make sure the footstand is firmly seated to the base.

***Note:*** Place the label supplied with the display on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

**17** Tighten all the screws, reconnect all cords, and place the telephone in the normal operating position.

**18** Perform the self-test (Procedure 1) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311).

**Procedure 1**
**Installing and removing the M2616 Display on NT2K sets**

**CAUTION WITH ESDS DEVICES**
Before handling internal components of telephones, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** Remove the handset and place the telephone upside down on top of a level, solid work surface covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base and pulling upward.

**4** If the telephone is equipped with an MPDA or MCA, unplug the data cable from the base telephone jack. Remove the five screws securing the base to the telephone. Remove the base and set it aside.

**5** If the telephone is not equipped with a display, go to step 9. If the telephone is equipped with a display, go to step 6.

### Removing the display board

**6** The display board is located at the left center of the telephone. Disconnect the display ribbon cable from the display board. Remove the small mounting screw from the board. Grasp the board firmly on each end and pull upward to remove it. To replace it, go to step 9.

### Removing the display

**7** The power supply board is located on the left side of the telephone. Remove the two small screws from the power supply board (near the top) and set them aside. Grasp the board firmly on each side. Carefully work the board loose until released.

**8** Remove the two or three screws from the display Module. Remove the display from the telephone. To install the display, go to step 11.

### Installing the display board

**9** Place the J1 connector of the display board over the P4 pins of the telephone (see Figure 41 on page 118). Press down slowly until J1 slides onto the P4 pins and is firmly seated.

**10** Insert the self-tapping Phillips-head screw supplied with the display into the mounting hole (near the top). Tighten firmly with a #1 Phillips screwdriver.

### Installing the display

**11** Place the display face-down near the top of the telephone and align the two mounting holes of the display with the mounting holes in the telephone.

**12** Insert two self-tapping Phillips-head screws from the faceplate into the mounting holes; tighten them firmly with a #1 Phillips screwdriver.

**13** Install the power supply board (see Procedure 13 on page 95). This step is not necessary on the M2616 unless there are other hardware options.

**14** Fold the ribbon cable near the connector to align it with the J2 pins on the display board, ensuring that the notch on the ribbon cable is facing toward the display board. Carefully work the ribbon cable connector onto the J2 pins until firmly seated. Route the cable flat beside the power supply board, gathering excess cable under the display. Be careful not to press the cable beneath the alignment posts or studs of the base. See Figure 41 on page 118.

***Note:*** Do not allow R5 on the power supply board to become bent during this procedure.

**15** Replace the base. If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack and replace the footstand (ensuring that the MPDA or MCA cable does not get pinched between the base and the footstand). Make sure the footstand is firmly seated in the base.

***Note:*** Place the label supplied with the display on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

**16** Tighten all screws, reconnect all cords, and place the telephone in the normal operating position.

**17** Perform the self-test (see) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311)

## External Alerter Board

Use this procedure to add an External Alerter Board to the M2006, M2008, M2216ACD, or M2616 telephone. See Figure 42 on page 124 for information on hooking up the third-party External Alerter device.

**Procedure 2**
**Installing and removing the External Alerter Board**

**CAUTION WITH ESDS DEVICES**
Before handling internal components of telephones, discharge static electricity from hands and tools by touching any grounded metal surface or conductor.

**1** Remove the handset and place the telephone upside down on a level, solid work surface covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of the footstand where it meets the base and pulling upward.

**4** If the telephone is equipped with an MPDA or MCA, unplug the data cable from the base telephone jack.

**5** Remove the four screws securing the base of the telephone to the top cover. Remove the base and set aside.

**6** If the telephone is not equipped with an External Alerter Board, go to step 8. If replacing an existing External Alerter Board, go to step 7.

### Removing the External Alerter Board

**7** The External Alerter Board is located at the right center of the telephone. Remove the screws from the board. Grasp the board firmly on each end and pull upward to remove.

### Installing the External Alerter Board

**8** Place the H1 connector of the External Alerter Board over the P3 pins of the telephone (see Figure 31 on page 95 for M2006/M2008; see Figure 32 on page 96 for M2616/M2216ACD). Align the mounting hole over the mounting post. Carefully work H1 onto the P3 pins until firmly seated. Place the self-tapping Phillips-head screw supplied with the External Alerter Board into the mounting hole and tighten it with a #1 Phillips screwdriver.

**9** To signal the External Alerter when the telephone's handset or speaker is active, place the jumpers (AO288529) connecting the two right-most pins on the alerter board.

To signal the External Alerter when the telephone is ringing or buzzing, place the jumpers connecting the two left-most pins on the External Alerter Board.

**10** If the telephone is not yet equipped with the power supply board, install it (see Procedure 13 for M2006/M2008; see Procedure 1 on page 101 for M2616/M2016S/M2216ACD).

***Note:*** Do not allow R5 on the power supply board to become bent during this procedure.

**11** Replace the base. If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack and replace the footstand (ensuring that the MPDA or MCA cable does not get pinched between the base and the footstand). Make sure the footstand is firmly seated in the base.

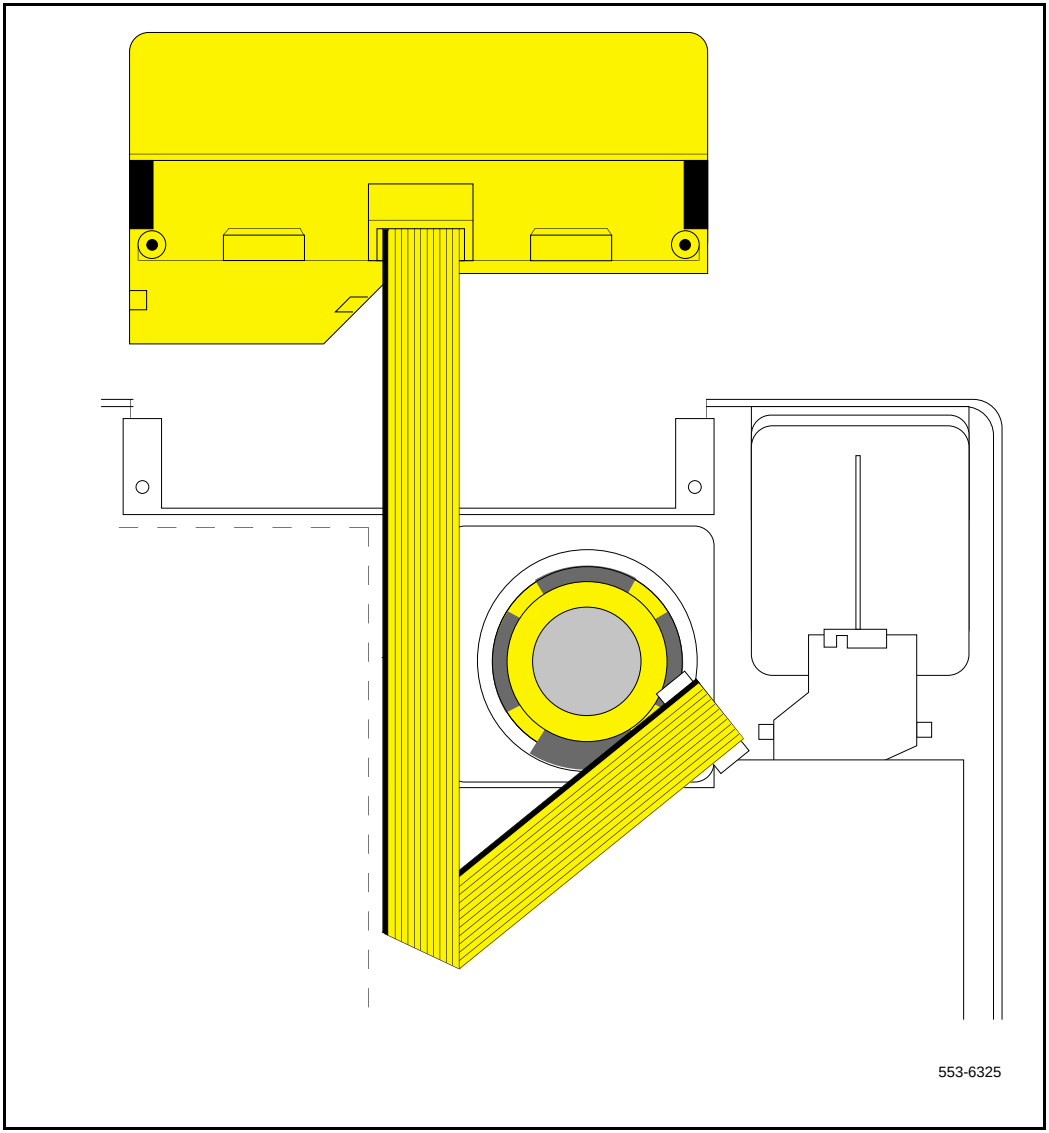
**12** Tighten all screws, reconnect the line cord, and place the telephone in the normal operating position.

***Note:*** Place the label supplied with the External Alerter on the outside of the bottom cover of the telephone. This allows proper identification and tracking of the option level of the set.

**13** For the connecting block configuration, see Figure 42.

**14** Perform the self-test (see Procedure 1 on page 32) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311).

**Figure 42**
**External Alerter connecting block configuration**



## Key Expansion Modules

Follow the steps in Procedure 1 to add one (single) or two (double) Key Expansion Modules to the M2616 or M2216ACD telephones.

***Note 1:*** Have the associated footstand on hand before installing the Key Expansion Modules.

***Note 2:*** Adding a Key Expansion Module to a telephone requires a power supply board along with an additional power source (see Procedure 2 on page 93 for the M2006/M2008; see Procedure 13 on page 95 for the M2616/M2216ACD).

**Procedure 1**
**Installing and removing Key Expansion Module(s) on the M2616 and M2216ACD telephones**

**1** Remove the handset and place the telephone upside down on top of a level, solid work surface covered with soft material or paper to prevent damage to movable keys and the telephone face.

**2** Disconnect all cords from the telephone.

**3** Remove the two screws from the footstand assembly and unsnap the footstand assembly from the telephone by pressing inward at the back of the footstand where it meets the base and pulling upward.

***Note:*** If the M2616/M2216ACD is equipped with a Meridian Programmable Data Adapter (MPDA) or Meridian Communications Adapter (MCA), it must be removed and installed into the Key Expansion Module footstand. Use Procedure 1 on page 89.

**4** If the telephone is not equipped with a Key Expansion Module(s), go to step 7. If replacing the Key Expansion Module(s), go to step 5.

### Removing the Key Expansion Module(s)

**5** Remove the screws from the footstand assembly (where it meets the Key Expansion Module), and unsnap the footstand assembly from the Key Expansion Module and telephone by pressing inward at the back of the footstand where it meets the base and pulling upward.

**6** Remove the interface cable from the telephone by pressing down on the locking tab. If equipped, remove the interface cable from the first Key Expansion Module (closest to the telephone).

### Installing the Key Expansion Module(s)

**7** If the telephone is not yet equipped with the power supply board, install the Power Board (see Procedure 1 on page 97).

**8** Align the bottom of the Key Expansion Module(s) to the bottom of the telephone (see Figure 43 on page 127).

**9** Snap the ribbon cable connector into the bottom interface jack on the Key Expansion Module.

***Note:*** Use the cable supplied with the module. This is a special cable required for EMI compliance.

Snap the other end of the ribbon cable into the interface jack in the telephone (left side). Gather the excess cable in the base of the Key Expansion Module.

**10** To add a second Key Expansion Module, snap a second ribbon cable connector into the bottom interface jack on the second Key Expansion Module. Snap the other end of the ribbon cable into the top interface jack on the first Key Expansion Module (see Figure 43). Gather the excess cable in the base of the second Key Expansion Module.

**11** If the telephone is equipped with an MPDA or MCA, reconnect the data cable to the base telephone jack. Make sure the MPDA or MCA cable (and interface cable) do not get pinched between the base and footstand.

**12** Secure the footstand to the Key Expansion Module(s) and telephone by placing the tabs of the footstand into the slots provided on the base of the Key Expansion Module and telephone and pressing down. Make sure the footstand is firmly seated on the base.

***Note:*** Use the cable supplied with the module. This is a special cable required for EMI compliance. Newer versions of the Key Expansion Module use a longer modified cable than was used on earlier versions.

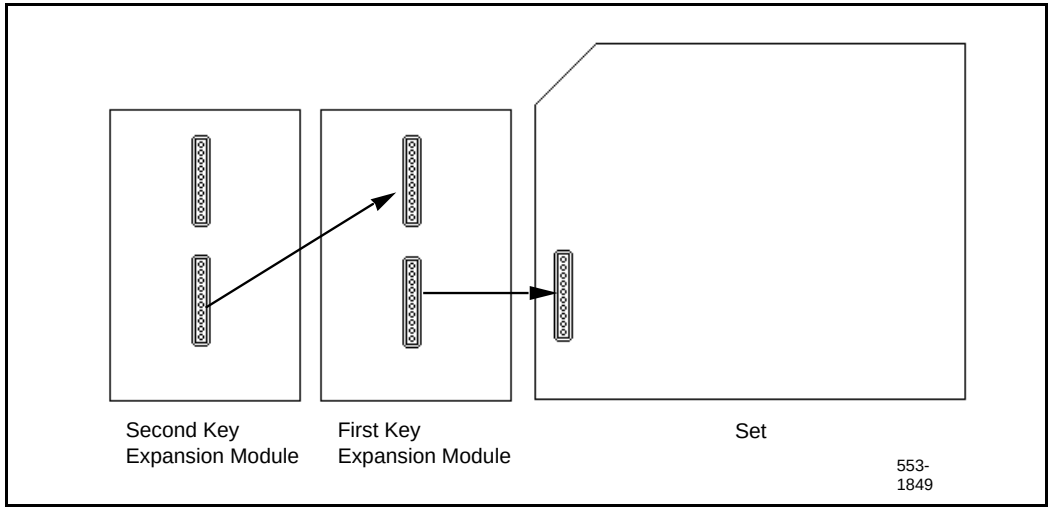
Ensure that the ribbon cable(s) are not pinched between the footstand and mounting posts.

**13** Insert the three (four if there are two modules) self-tapping, Phillips-head screws supplied with the Key Expansion Module into the mounting holes in the bottom of the footstand. Tighten firmly with a #1 Phillips screwdriver.

***Note:*** Place the label supplied with the Key Expansion Module(s) on the outside of the bottom cover or footstand of the telephone. This allows proper identification and tracking of the option level of the set.

**14** Perform the self-test (see Procedure 1 on page 32) and acceptance test procedures. See LD 31 in the *Software Input/Output Guide Administration* (553-3001-311).

**Figure 43**
**Key Expansion Module connections (bottom view)**



## Wall mounting

The M2006, M2008, M2616, and M2016S telephones are equipped with a reversible footstand that allows for wall mounting. The wall mount clip should be purchased and inserted in the handset well to hold the handset securely in place on wall-mounted telephones. M2000 Series Meridian Digital Telephones can be hung on the wall with an installed display or Key Expansion Module.

> ***Note:*** The footstand cannot be reversed when the Meridian Programmable Data Adapter or Meridian Communications Adapter is equipped, so telephones with data cannot be wall-mounted. Additionally, some wall plates are too deep to allow for wall mounting on top of the plate. In these cases, mount the telephone on the wall next to the plate.

An additional clip is provided for wall mounting the telephone. This clip is attached to the switchhook rest to prevent the handset from slipping when mounted on the wall.

**Procedure 1**
**Wall mounting instructions for M2000 Series Meridian Digital Telephones**

1. Remove the handset and place the telephone upside down on top of a level, solid work surface covered with soft material or paper to prevent damage to movable keys and the telephone face.
2. Disconnect all cords from the telephone.
3. Remove the two screws from the footstand assembly and unsnap the footstand assembly by pressing inward at the back of footstand where it meets the base, and pulling upward.
4. Rotate the footstand 180° and snap the footstand back into place on the telephone bottom cover. Make sure the footstand is firmly seated on the base of the telephone.
5. Tighten all screws and replace all cords.
6. Insert the wall mounting clip in the switchhook rest.
7. Mount the telephone on the wall using the wall mount holes provided on the bottom of the footstand.

## Troubleshooting

Use Table 21 to check problems encountered when installing M2000 Series Meridian Digital Telephones and their options.

**Table 21**
**Troubleshooting M2000 Series Meridian Digital Telephones (Part 1 of 4)**

| Symptom | Solution | |
|---|---|---|
| Telephone does not work. | 1 | Unplug the line cord from the telephone and plug it back in. |
| | 2 | If the telephone uses external power, make sure the transformer or closet power supply is properly connected and that the power supply board is properly installed.<br><br>If the telephone does not use external power, make sure that jumpers are placed connecting the bottom two sets of pins on the P1 connector on the main circuit board. |
| All LCDs flash and telephone does not function. | 1 | Press the Release (Rls) key. |
| | 2 | Unplug the line cord from the telephone and plug it back in. |
| Telephone wobbles. | 1 | Ensure that all cords are properly routed through channels in the footstand. |
| | 2 | Check that the footstand is firmly seated on the telephone. |
| | 3 | Ensure that all feet are firmly seated in the footstand. |
| Display does not work. | 1 | Unplug the line cord from the telephone and plug it in again. |
| | 2 | Ensure that the transformer is plugged in or the closet power is connected (M2008 only). |
| | 3 | Ensure that the power supply board is installed properly (M2008 only). |

**Table 21**
**Troubleshooting M2000 Series Meridian Digital Telephones (Part 2 of 4)**

| Symptom | Solution | |
|---|---|---|
| Display does not work. (cont.) | 4 | Check that the display ribbon cable is properly connected to the display board and has not been pinched. |
| | 5 | Ensure that the display board is installed correctly and held securely with a mounting screw. |
| | 6 | M2006, M2008, M2616 – ensure that ADD class of service is configured in LD 11. See the *Software Input/Output Guide Administration* (553-3001-311). |
| There is no response when you type <CR> or AT at the terminal. | 1 | Press the P key and dial 28 to make sure you are in terminal mode. |
| | 2 | Make sure the PC or terminal's has power and is online. |
| | 3 | If the equipment connected to the MCA is not configured as Data Terminal Equipment, it is necessary to connect using a null modem cable. |
| | 4 | Make sure the MCA is receiving external power. Check to see that the power cables are connected properly and the external power supply is running. |
| | 5 | If there is a display on the telephone, press the P key and dial 63 to get into EIA Monitor mode. Be sure the MCA is receiving signals from the terminal by watching the display while entering carriage returns on the keyboard. If the indicator flashes, the connection is correct. If not, check the cable to make sure it is the standard RS-232 and is properly connected. |
| | 6 | Press the P key and dial 62 to ensure that the MCA is in the asynchronous mode. Press the P key and dial 20 to change to the asynchronous mode. |
| | 7 | Press the P key and dial * to ensure that the MCA is in the idle mode. |

**Table 21**
**Troubleshooting M2000 Series Meridian Digital Telephones (Part 3 of 4)**

| Symptom | Solution | |
|---|---|---|
| The prompt CALL CONNECTED. SESSION STARTS is followed by RELEASE. | Check the configuration parameters of the far end data device. If they do not match those of the MCA, the call will be dropped. Change the parameters of your MCA to match. | |
| Garbled prompts are sent to your terminal when you type <CR>. | Enter a period ( . ) followed by <CR> to perform an autoparity. | |
| You are connected to a host computer, but get no response when you try to log on. | First, release the call. Turn on Remote Loopback and make the call again. Type some characters at the terminal. If the characters echo back and appear on the terminal, the problem is with the far end data device. If the characters do not appear on the terminal, the problem is with the MCA. Contact the telephone system administrator. | |
| You try to make a data call from the initial prompt (or Main menu) in keyboard dialing. You see the prompt CALLING. | First, hold down the break key(s) for two seconds, enter <CR>, and try again to make the data call. If the problem persists, the MCA is probably disabled. Contact the telephone system administrator. | |
| MCA does not operate at all. | 1 | Check the LED in the back of the telephone to see if it is flashing. If the LED is steadily lit, the MCA needs to be configured in the system, or it may be bad. If the LED is not lit, the MCA requires external power. |
| | 2 | Make sure the cable from the terminal or PC is connected to the MCA. |
| | 3 | Check the data parameters for the display. |
| | 4 | Be sure the transformer is plugged in, or the closet power is connected. |
| | 5 | Be sure the cable between the MCA and the telephone is connected and has not been pinched. |
| | 6 | Be sure the power card is installed correctly. Verify that the jumper settings are correct for either RS-232 or V.35 (whichever you are using). |

**Table 21**
**Troubleshooting M2000 Series Meridian Digital Telephones (Part 4 of 4)**

| Symptom | Solution | |
|---|---|---|
| Key Expansion Module does not work. | 1 | Unplug and plug in the line cord. |
| | 2 | Ensure that the transformer is plugged in or that the closet power supply is connected. |
| | 3 | Ensure that the power supply board is installed properly. |
| | 4 | Make sure that the ribbon cable connecting the telephone and the Key Expansion Module is routed properly and is not pinched. |
| External Alerter does not work. | 1 | Ensure that the External Alerter Board is installed properly. |
| | 2 | Check that connections between the alerting device and the telephone connecting block are correct. |
| | 3 | Make sure that the jumpers are placed on the pins on the External Alerter Board as described in Procedure 2 on page 122. |
| | 4 | Ensure that the transformer is plugged in or the closet power is connected. |
| | 5 | Ensure that the power supply board is installed properly. |

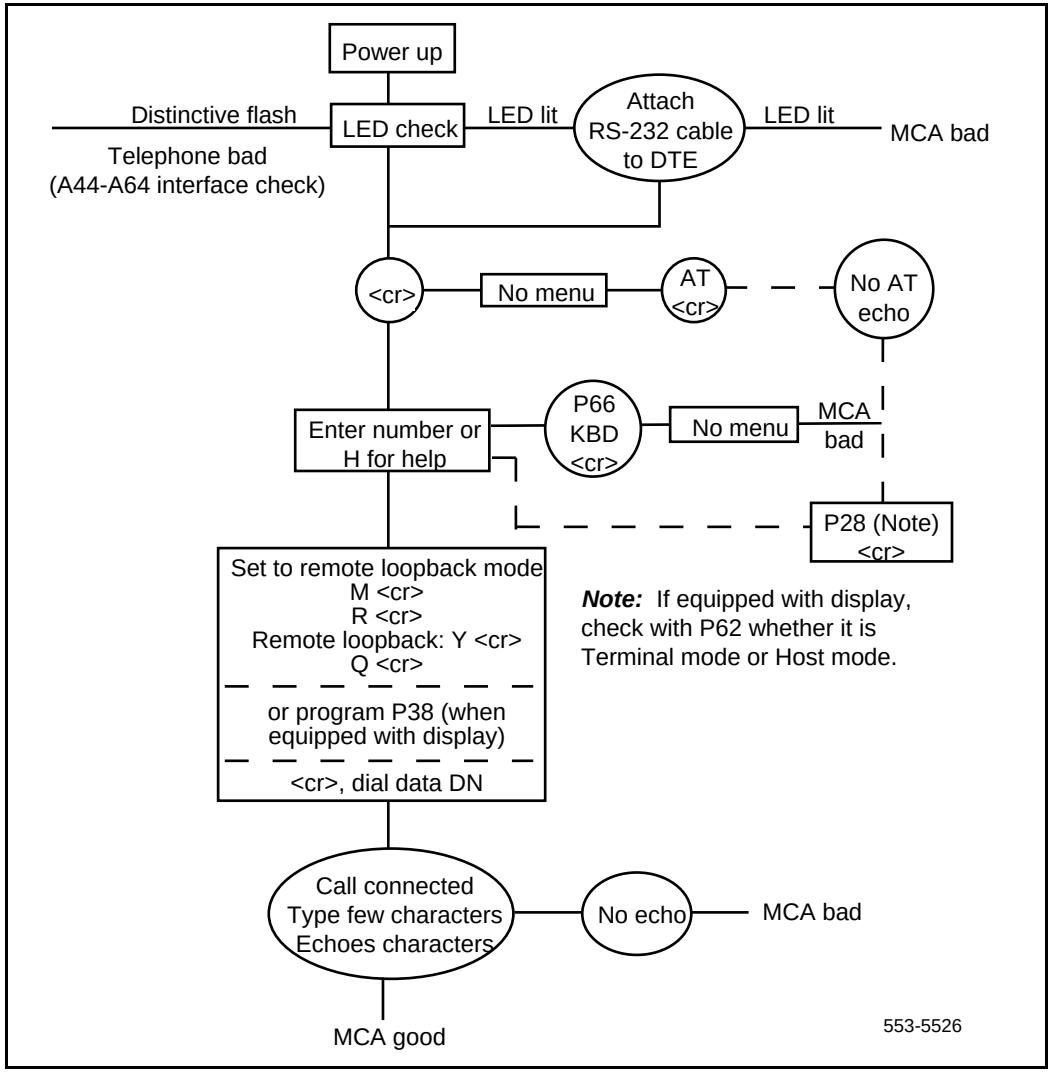
***Note 1:*** If the pseudorandom pattern 511 data is idle, the telephone keypad dialing is inoperative. Use the release key to clear this condition.

***Note 2:*** If using an RS-232 cable to connect the MCA to an ADM3/5 terminal, be sure that pin 22 is disconnected.

***Note 3:*** Change the baud rate before changing the mode from synchronous to asynchronous.

***Note 4:*** Some terminals may drop DTR with the break. If this happens, RELEASE is not displayed.

**Figure 44**
**Flowchart for troubleshooting MCA**



Meridian 1

# Telephone and Attendant Console Installation


Information is subject to change without notice. Nortel Networks reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules, and the radio interference regulations of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Publication number: 553-3001-215
Document release: Standard 12.00
Date: January 2002
Printed in Canada

NORTEL NETWORKS™