DECpos 320sx Service Guide

EK-DCPOS-SG.A01
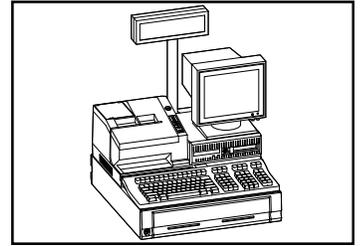
Introduction

This guide is a support and reference document for Digital Services and third-party service personnel who perform work on the DECpos 320sx system. In addition, it is for customers who have a self-maintenance agreement with Digital Equipment Corporation.

The serviceable system components include:

• system unit (sometimes called electronic module)
• station printer

Organization

The following table describes the sections in the service guide:

If you want to ...	Then go to the following section...	Page number
Review system unit specifications	System Unit Description	3
Review 2.5 station printer jumper settings and specifications	2.5 Station Printer Description	6
Replace system unit FRUs	System Unit FRU Removal	10
Replace station printer FRUs	Printer Operation and FRU Removal	19
Identify possible causes and apply corrective action for system unit, station printer, and other component problems	Troubleshooting	24
Identify BIOS error messages and their corrective actions	Troubleshooting	31
Review requirements before installing a system	Site Inspection Checklist	33
Identify part numbers and related documentation	Recommended Spares List	38
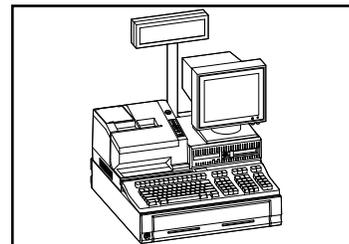
Related Documentation

The following document provides additional information about the
DECpos 320sx system:

Document Title	Part Number
DECpos 320sx User Guide	EK-DCPOS-UG
DECpos Servicing Video	EY-N835E-VH

Conventions

This guide uses the following conventions:

Convention	Description
Caution	Contains information to prevent damage to equipment.
Note	Contains general information.
UPPERCASE	Commands are shown in UPPERCASE to separate them from the text.
[Enter]	Square brackets surrounding text represent a key on the keyboard.
`<hex mode>`	Monospaced text indicates file names, screen names, or screen text.

EK-DCPOS-SG.A01
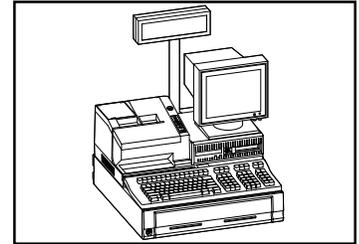
System Unit

Processor/Clock (MHz)	AMD 80386sx/20
RAM (minimum)	1 MB
(maximum)	16 MB
(access time)	70 or 80 ns
Power Requirements	88 - 132V
	176 - 264V
	47 - 63H
Video	VGA
Video RAM	512 KB

Mass Storage Interfaces

One floppy disk drive
One IDE hard disk drive

BUS

ISA
• Two 16-bit expansion slots for half-size cards
• No DMA/bus master mode supported

Peripheral Interface Ports

Two RS-232C serial ports with full modem control
Three RS232C serial ports with +5 V power in place of ring indicator (pin 9)
One customer display (serial port) with +24 V power
One parallel
One keyboard
One mouse
One VGA
Two cash drawers; ports 1 and 2

Printer Power Port

One printer power (+24 V)

SIMM Jumper Pin Settings
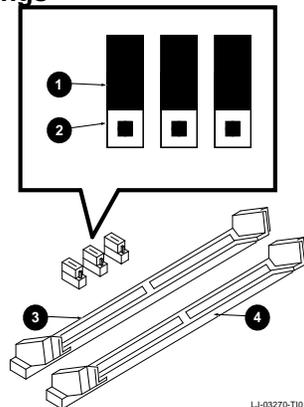
LJ-03270-TI0

Figure Legend	Description
1	Pins 1 and 2 set on all three jumpers
2	Pin 3 open on all three jumpers
3	SIMM socket 2
4	SIMM socket 1

Note
• 16 MB is the maximum memory amount that the system can addresss.
• Insert a single SIMM memory module in memory socket 1 (slot father away from jumper pins).
• If you use two SIMMs of unequal size, place the one with greater capacity in socket 1.
• SIMMs supplied by Digital have a one-bank organization which is correctly addressed with the jumper pins as shown in the SIMM jumper pin illustration (left).

If you use SIMMs with a two-bank organization, (2 MB and 8 MB), you may need to change the jumper settings. If a two-bank SIMM is used, it must be inserted in socket 1. Only one two-bank SIMM can be used at a time (socket 2 is unavailable).
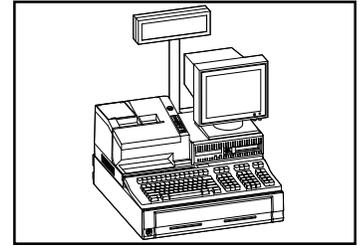
System Unit Cable Connections

> **Note**
> Before you disconnect any components, identify each cable
> and where the components are connected.
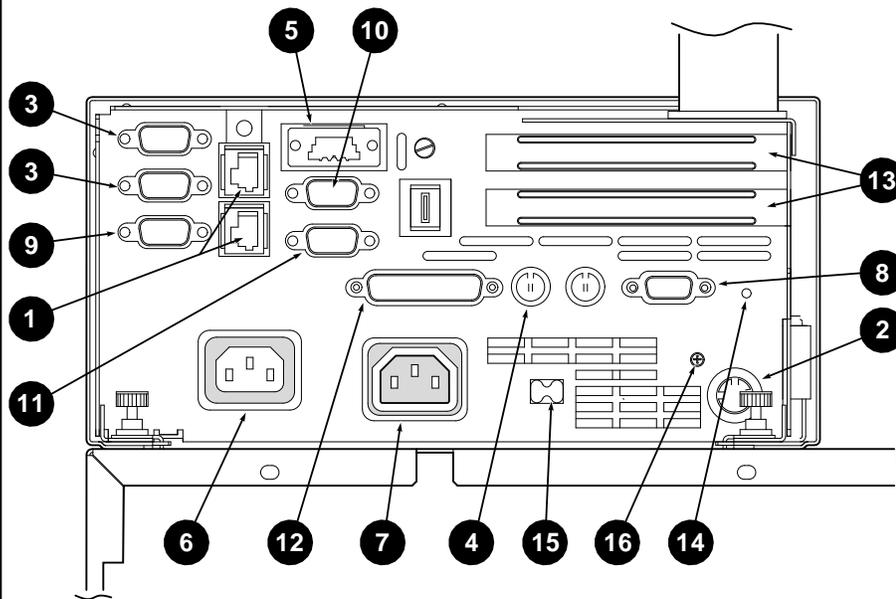
MA-0088-93C.DG

Figure Legend	Connector
1	Cash drawer
2	24 V printer power
3	RS-232C (COM1, COM2)
4	Keyboard
5	Customer display
6	System unit power
7	IEC monitor power
8	VGA monitor
9, 10, 11	RS232C with +5 V *
12	Parallel port (LPT1)
13	ISA XT-height option slot **
14	Reset switch
15	120 V/240 V switch
16	Power supply removal screw

* Ports 9, 10, and 11 can be used for PIN
 pad, scale, scanner, and so on.
** Option slot can be used for standard ISA card
 (modem or LAN card). For ease of installation,
 Digital recommends installing LAN card on
 bottom slot.
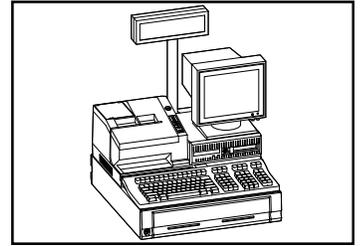
System Unit Jumper Settings

Jumper	Default	Description of Jumper
W1	Out	Manufacturing mode - disabled
W2	Out	IRQ 9 disabled
W3	Out	IRQ 14 disabled
W4	Out	IRQ 10 (hardwired)
W5	In	On-board VGA enabled
W6	Out	CMOS clear
W7, W8, W9	--	W7, W8, and W9 must all be set to the same setting (jumper pin 1 to pin 2 for a single SIMM; jumper pin 3 to pin 4 for two SIMMs)
W10	Out	PWROK
W11	Out	Resume1
W12	Out	Tristate CPU for ICE - disabled
W13	In	CMOS battery enabled
J11	Out	Slow clock - disabled

Caution
W3 and W4 should never have a jumper. They could fatally damage the board.
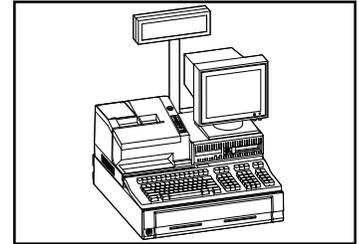
2.5 Station Printer

Note

Connect the printer to the system unit before powering up the printer.
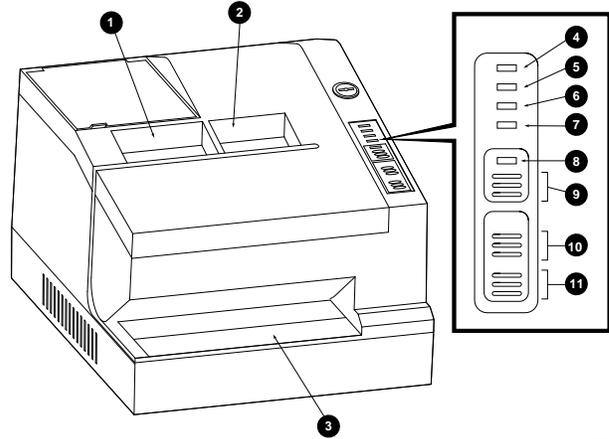
MA-0080-93.DG

Printing Stations

	Station	Prints
1	Customer receipt	Customer receipts (40 column)
2	Journal report	Copy or summary of receipt, exception reports, and copy of end-of-day reports Includes take-up spool with locking cover
3	Paper form (slip)	Forms such as check vouchers, or letter size slips (88 column)

Printer Indicators and Controls

	Indicator or Control	Function
Indicators (color)		
4	Power (green)	Indicates printer power on
5	Slip (green)	Flashes indicates a form should be inserted
6	Receipt Out (red)	Indicates receipt roll is low or not properly seated.
7	Journal Out (red)	Indicates journal roll is low or not properly seated.
8	On Line (green)	Indicates the printer is on line
Controls		
9	On Line	Sets alternately, On and Off line
10	Receipt Feed	Feeds the receipt paper
11	Journal Feed	Feeds the journal paper

d|i|g|i|t|a|l™
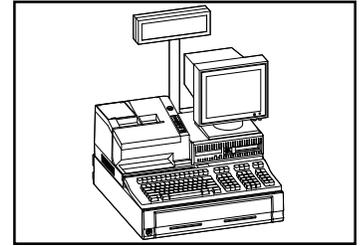
DIP Switch Overview

This section describes DIP switches DSW1, DSW2, and DSW3 located on the bottom of the station printer.

DSW1

Switch Number	Function	Switch On	Switch Off
1	Auto line feed	Always valid	Always invalid
2	Selects font (default)	9 x 9	7 x 9
3	On-line switch function (default)	Enable	Disable
4	Selects interface	Always On	
5, 6, 7, 8	Selects international character set (default) See the International Character Set Selection table		

International Character Set Selection

Country	SW 1-5	SW 1-6	SW 1-7	SW 1-8
United States	On	On	On	On
Denmark	On	On	Off	On
France	Off	On	On	On
Germany	On	Off	On	On
Norway	Off	On	On	Off
Spain	Off	Off	Off	On
Sweden	Off	On	Off	On
United Kingdom	Off	Off	On	On
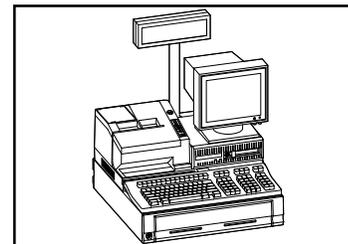
DSW2

Switch Number	Function	Switch On	Switch Off
1, 2	Selects the receive buffer capacity See the Switch 2- Receive Buffer Capacity table		
3, 4	Selects roll paper width. See the Switch 2-Roll Paper Width table		
5	Fixed	Always Off	
6, 7	Not Used		
8	Switches SLCT signal	Cover open	+5 V

Switch 2
Receive Buffer Capacity and Roll Paper Width

Receive Buffer Capacity	SW 2-1	SW 2-2
32 bytes (serial)	On	On
128 bytes	Off	On
256 bytes	On	Off
2048 bytes	Off	Off
Roll Paper Width	**SW 2-3**	**SW 2-4**
Invalid	On	On
58 mm	Off	On
70 mm	On	Off
70 mm	Off	Off
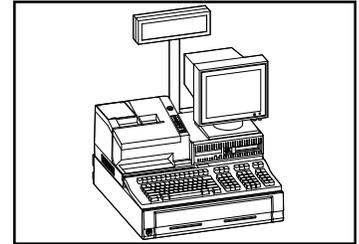
DSW3

Switch Number	Function	Switch On	Switch Off
1	Data word length	7 Bits	8 Bits
2	Parity	Valid	Invalid
3	Selects parity	Even	Odd
4, 5, 6	Selects transmitting speed See Switch 3-Transmission Speed table		
7	Data receive error	Ignored	Prints "?"
8	Handshaking	XON/XOFF	DTR/DSR
9, 10	Not used		

Switch 3 Transmission Speed

Transmission Speed (BPS)	SW 3-4	SW-3-5	SW 3-6
Invalid	On	On	On
150	On	On	Off
300	On	Off	On
600	Off	Off	On
1200	On	On	Off
2400	Off	On	Off
4800	On	Off	Off
9600	Off	Off	Off

Default Printer Jumper Settings

DSW1 DSW2 DSW3

1 8 1 8 1 10

MA-0166-93.DG

digital™

9
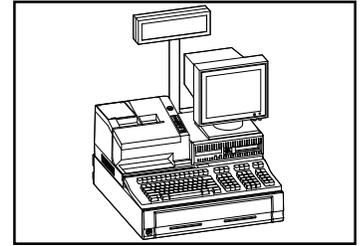
Caution

Static electricity can damage electronic parts. Before handling any electronic circuit cards or disk drives, be sure to discharge any built-up static electricity by touching a grounded metal object other than the DECpos chassis. Also wear an electro-static discharge (ESD) strap. Failure to do so may cause damage to system unit components.

Major Components

MA-0089-93A.DG
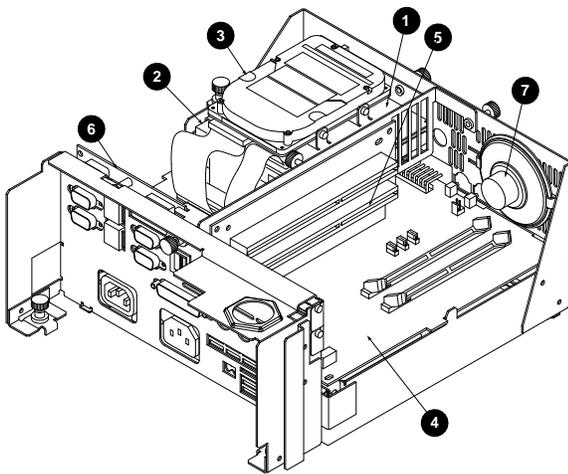
Figure Legend	Component
1	Disk drive bracket
2	Floppy drive
3	Hard drive
4	Logic board
5	ISA riser card
6	I/O riser card
7	Speaker
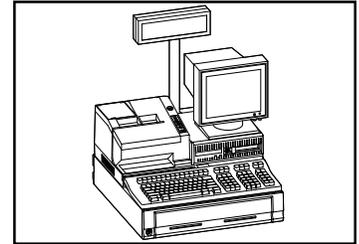
Logic Board

Caution

Disconnect the battery power supply and system power supply before you work on the logic board.

MA-0090-93.DG
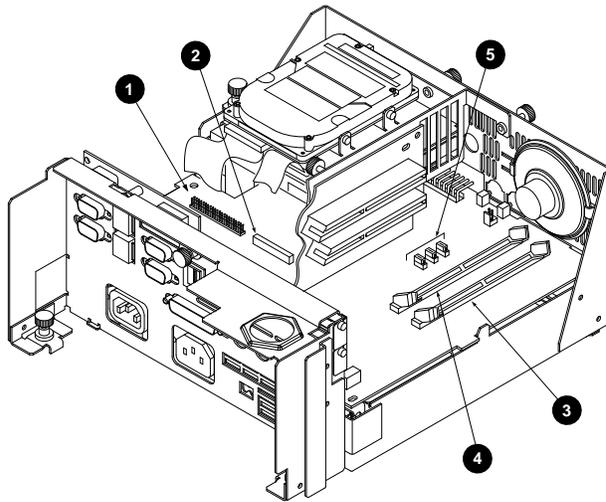
Figure Legend	Component
1	Hard drive connector
2	Floppy drive connector
3	SIMM memory socket 1
4	SIMM memory socket 2
5	SIMM memory jumper pins

Powering Down the System

Power down the system, before you upgrade memory or service the logic board, to avoid damaging the hardware or destroying data.

Memory Protection

Caution

The logic card must remain connected to the battery-attached power supply in order to protect RAM. RAM will be *lost* if the power supply is disconnected from the logic card, or if the battery is disconnected from the power supply.

Copy the RAM to disk before you work on the sytem to prevent loss of data. The 32 bytes of CMOS reserved for hard totals is protected by the battery on the logic card.

Procedure

To power down the system:
1. Make sure the customer manager has saved data to a known source before beginning service.
2. Perform backups if necessary.
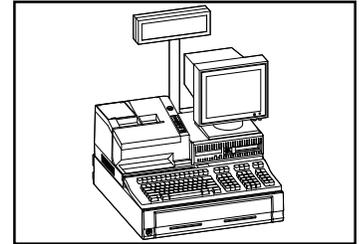
Powering Down the System, continued

3. Remove the rear cover of the system unit.

4. Before you disconnect any components, identify each cable and where the components are connected, including the ac power cord.

    Remove any components from the top of system unit.

5. Loosen the two captive screws on the bottom rear of the system unit and slide the top cover forward.
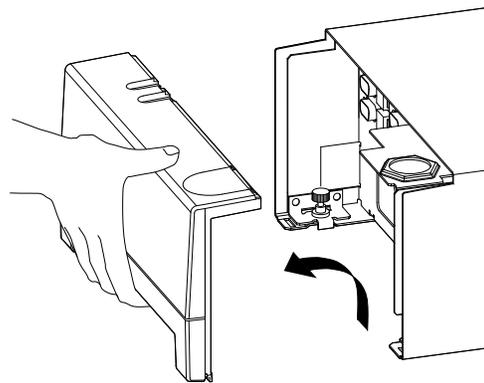
MA-0085-93.DG

6. Disconnect the battery (see Disconnecting the Battery Power Supply in this section). Observe if the battery is connected before beginning service. If it is disconnected, do not connect it at the end of service. Make a note to yourself as a reminder.

7. Disconnect the battery power supply cord from the unit.
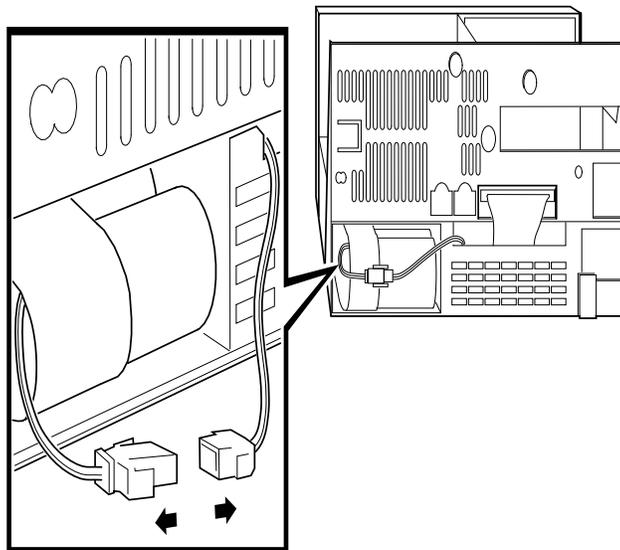
LJ-03273-ti0
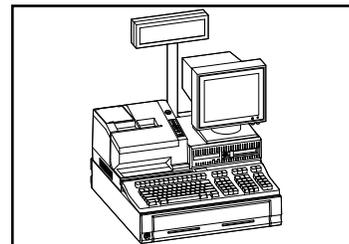
Powering Down the System, continued

8. Disconnect the multicolored power supply cable from the unit.
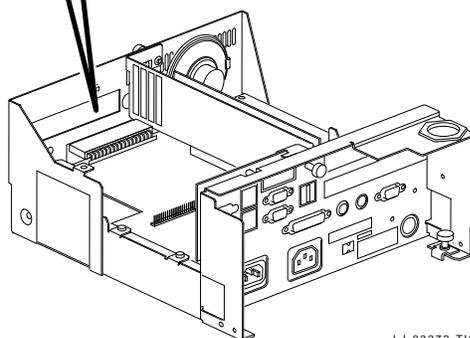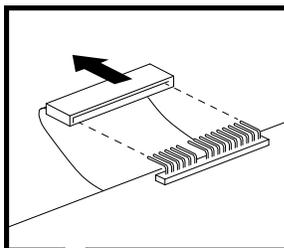
LJ-03272-TI0

Option Cards

Caution

Before removing or replacing system unit FRUs, wear an electro-static discharge (ESD) strap. Failure to do so may cause damage to system unit components.

1. Perform power down procedure.
2. Remove Phillips screws that attach the card to the chassis.
3. Remove cards out the side of the system unit.
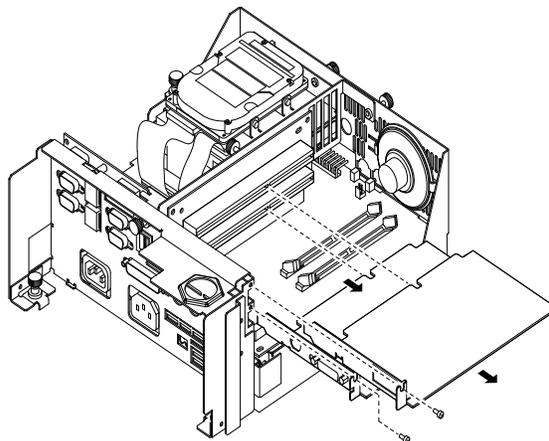
MA-0092-93.DG
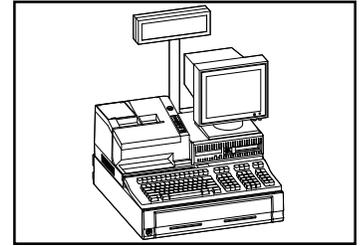
SIMMs

Caution

Static electricity can damage electronic parts. Before handling the SIMM kit or touching the DECpos logic cards, be sure to discharge any built-up static electricity by touching a grounded metal object other than the DECpos chassis. Use an ESD strap.

1. Perform the power down procedure.
2. Remove option cards if installed.
3. Carefully spread apart the retaining latches on the SIMM socket.
4. While holding the latches apart, tip the SIMM forward until it clears the retaining latches.
5. Pull the SIMM up and out of the socket.

Installation Hints

1. Firmly press SIMM connector into the socket and press down until each side clicks into place.
2. Check SIMM jumpers (see System Unit Description for jumper settings).
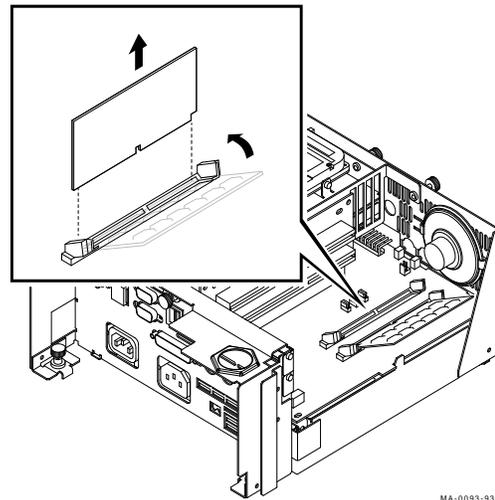
MA-0093-93.DG

Disk Drive Bracket

1. Perform the power down procedure.
2. Disconnect the FDD and HDD cables at the logic board. The FDD cable attaches to a white latch connector. Lift up on the ends of the latch to remove or insert the cable.
3. Loosen the three captive screws which secure the disk bracket to the system unit housing
4. Slide the unit to the back of the system so the FDD does not protrude beyond the FDD slot.
5. Lift up the unit and tilt it toward the back of the system.
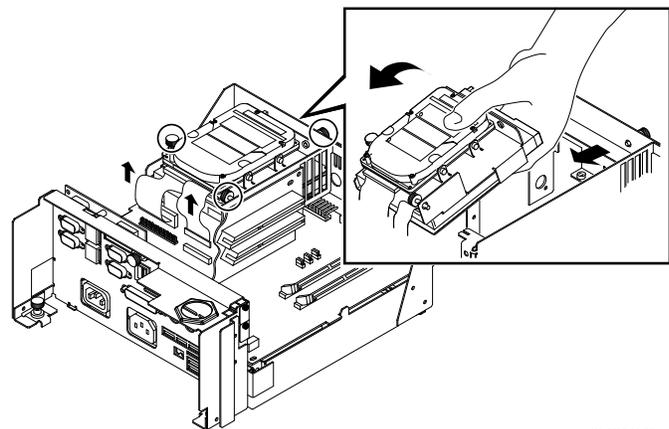
MA-0095-93.DG
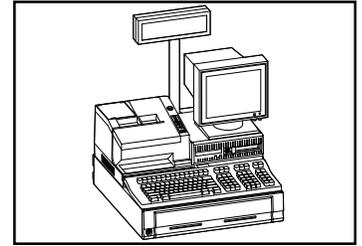
Floppy Disk Drive

1. Perform the power down procedure.
2. Remove the three screws securing the protective shield and floppy drive to the bracket.
3. Remove the protective shield and floppy drive from the bracket.

Installation Hints

1. Slide the FDD into the disk bracket.
2. Slide the protective shield up under the FDD and align the shield holes with the bracket holes.
3. Tighten the screws so that they secure the shield to the disk bracket.
4. Reconnect the FDD cables.
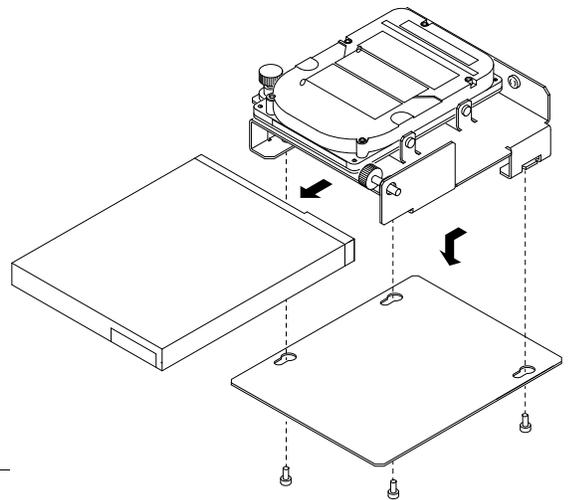
Note

Screws longer than 1/4 inch (6.3 mm) may interfere with FDD operation.

MA-0096.DG
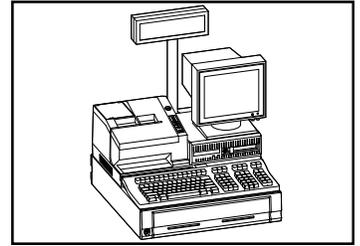
Hard Disk Drive

1. Perform the power down procedure.
2. Remove the four screws.
3. Remove the HDD from bracket.
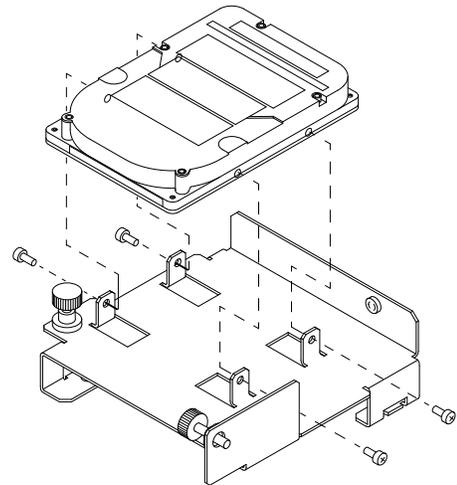
MA-0097-93.DG

Installation Hints

1. Select the end of the HDD cable that has the polarizing pin and orient the cable so it mates with the connector on the HDD and connect it to the main group of pins (leaving four pins unnconnected.)

2. Place the HDD on the disk bracket and align the tapped holes in the HDD with the mounting holes in the bracket.

3. Tighten the four screws.
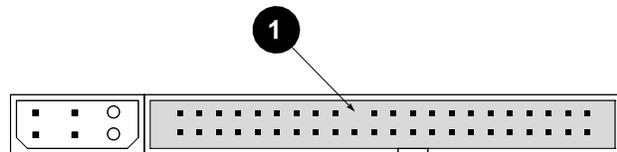
1

LJ-03388-TI0
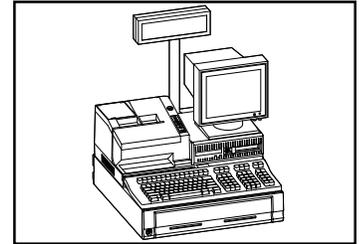
Power Supply

_____ **Note** _____
It is not necessary to remove any system unit components
to access the power supply.
_____

1. Perform the power down procedure.
2. Remove two screws. One screw is on the back of the
   system unit near the printer power jack. The other screw
   is located on the left front section of the system unit near
   the fan.
3. Hold the power unit from the front and slide it out of the
   chassis.
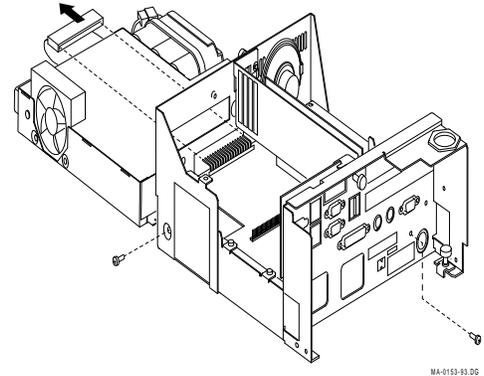
MA-0153-93.DG

ISA Riser Card, Logic Board, and I/O Riser Card

1. Perform the power down procedure.
2. Put on your ESD strap.
3. Remove the disk drive bracket.
4. Unplug the speaker and remove it by lifting it out.
5. Remove two captive screws holding the ISA riser
   support bracket on the front and rear.
6. Lift out the ISA riser support bracket.
7. Remove the three round head and two pan head
   screws head screws (callout 1) that secure the
   logic board to the unit chassis.
10. Pivot the logic board out towards you to clear the
    I/O riser card connectors, and then lift the
    assembly out.
11. Remove the screw (callout 2) securing the I/O
    riser card and lift the I/O riser card out.
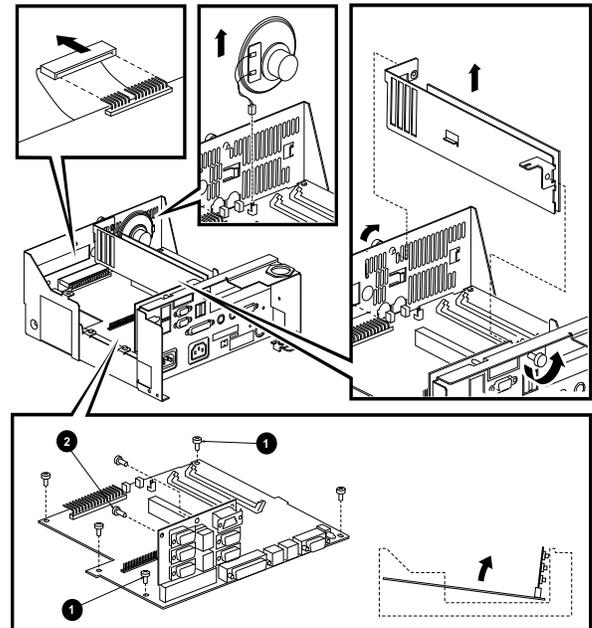
MA-0154-93A.DG
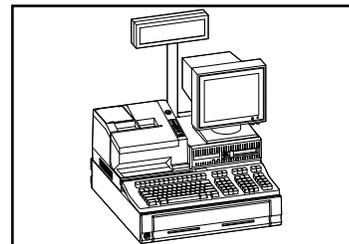
Connecting the Battery Supply

Caution

If the battery is disconnected prior to service, do not reconnect the battery.

Procedure

1. Remove the rear cover of the system unit.

2. Remove the system unit cover.

3. Plug in the ac power cord and turn on the ac power.

4. Connect the battery (on the front of the system unit) to the power supply connector.
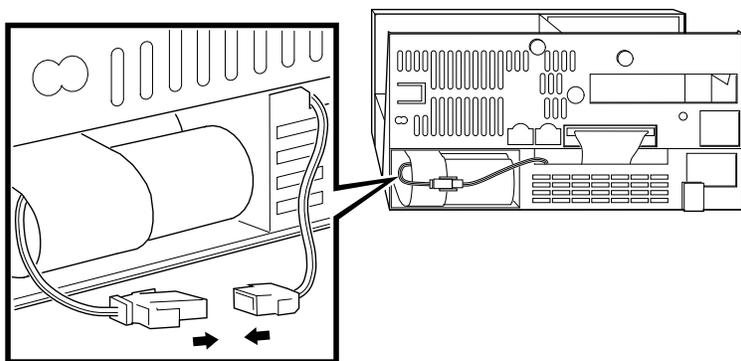
MA-0169-93.DG

Note

The battery contains lead-acid cells and must be disposed of in a lawful manner.
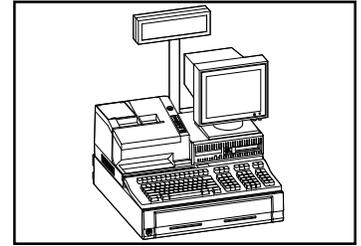
Note

In the event of a logic board malfunction, replace the printer rather than replace the logic board.

Removing the Ribbon Cassette

1. Turn on the power to the system unit and open the ribbon cover. The print head should move to the home position.
2. Remove the old ribbon cassette by grasping it on the tab and pulling upward.
3. Turn the ribbon knob in the direction of the arrow.
4. Align the taut ribbon with the platen slot and press the ribbon cassette into position.
5. Turn the ribbon feed knob 5 or 6 times in the direction of the arrow so that the ribbon is positioned between the head and the platen.
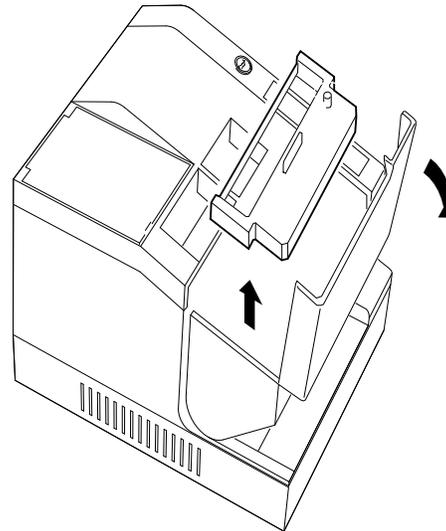
Note

Do not turn the ribbon knob in the direction opposite of the arrow.

6. Close the ribbon cover.

MA-0103-93A.DG

Removing the Receipt Paper Roll

1. Open the receipt cover on the left side of the printer.
2. Remove the paper roll and tear off the paper near to where it enters the printer.
3. Press Receipt Feed to eject the paper remaining in the mechanism.

Removing the Journal Paper Roll

1. Open the journal cover with the cover key.
2. Press Journal Feed to advance the paper and tear it off as it exits from the printer.
3. Remove the take-up spool and remove the journal tape from the take-up spool.
4. Lift the journal paper roll and tear off the paper near to where it enters the printer.
5. Press Journal Feed to eject the paper remaining in the mechanism.

Turning on the Printer

1. To turn on the printer, press the On-Line switch.

digital™
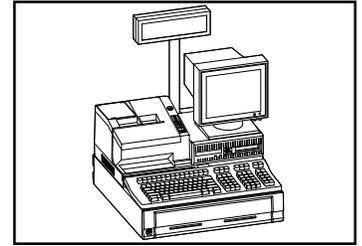
Testing the Printer

1. Turn off the system unit.
2. Press and hold down the Receipt Feed switch on the printer while you turn on the system unit. The printer runs through its self-tests.

   Running Form Printer Self-Tests

   Insert a slip of paper, hold the Journal feed button, and power on the printer.

Removing the Printer Head

To remove the printer head, you need the following tools:

- Short Phillips screwdriver
- Long Phillips screwdriver
- 6/10 mm (24/1000-inch) feeler gauge

1. Turn off the system unit.
2. Open the printer covers.

   Remove the ribbon cassette by pulling the tab protruding from the top.
3. Remove the two screws on the printer guard and then lift off the printer guard.
4. Push the printer head to the right and unplug the ribbon cable attached to the head.
5. Unsnap the two retainer clips around the needle casing of the printer head.
6. Pull the printer head out.

   Clean any paper dust away from the sensor which is located under the paper guide on the left-hand side.
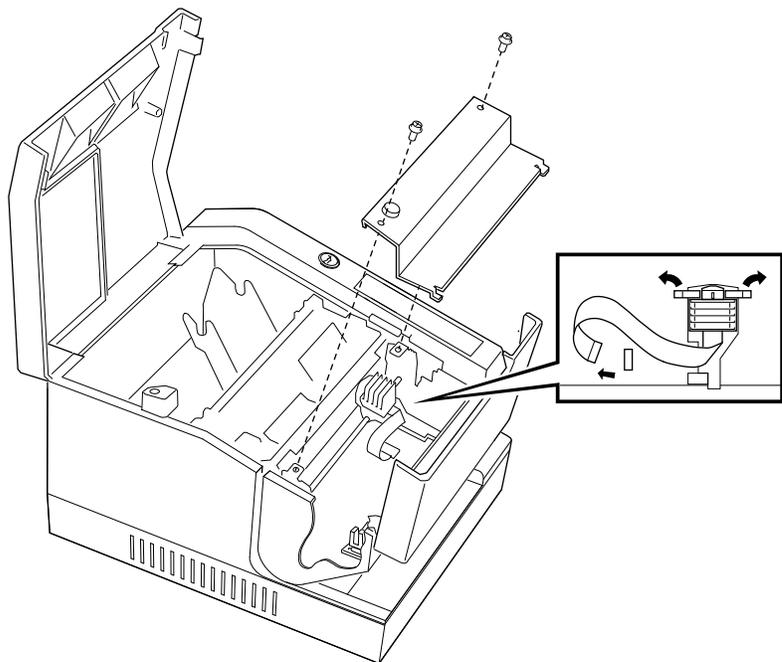
MA-0158-93.DG
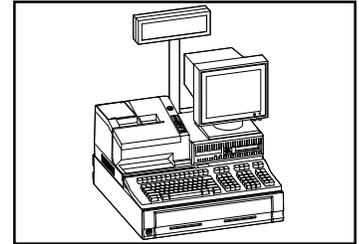
Adjusting the Printer Head

1. Move the printer head assembly one inch to the left before reconnecting the cable and securing the two retainer clips.

2. To ensure print quality, you may need to adjust the gap of the printer head.

   Unlock the cutter mechanism by pushing the levers back on each side.

3. Slide the feeler gauge between the printer head and the platen assembly on both the left and right sides of the platen. If the gap is either too loose or tight, you can regap the head by adjusting the screws on the far left and right of the platen assembly.

   The gap is correct when the feeler gauge fits snugly in between the head and the platen.
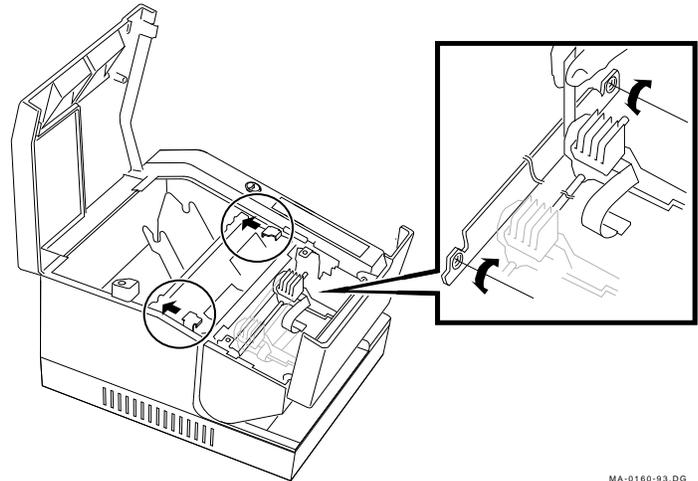
MA-0160-93.DG

Removing the Printer Cabinet Cover

To remove the printer cabinet cover and printer logic board, you need the following tools:

- Magnetized Philips screwdriver
- Pair of long nose pliers

1. Remove the printer cabinet cover.

2. Remove two screws at the rear of the printer.

3. Open the ribbon cover and remove the ribbon cassette by pulling the tab protruding from the top.

4. Open the paper cover and remove the paper rolls and the journal take up spool.

5. Remove the screw near the paper door sensing switch located on the rear left side of the printer.

6. Unplug the wire from this switch.

7. Remove the two screws to the left of the ribbon mechanism.

8. Remove the last screw to the right of the ribbon mechanism.

9. Lift the printer cabinet up and to the right.
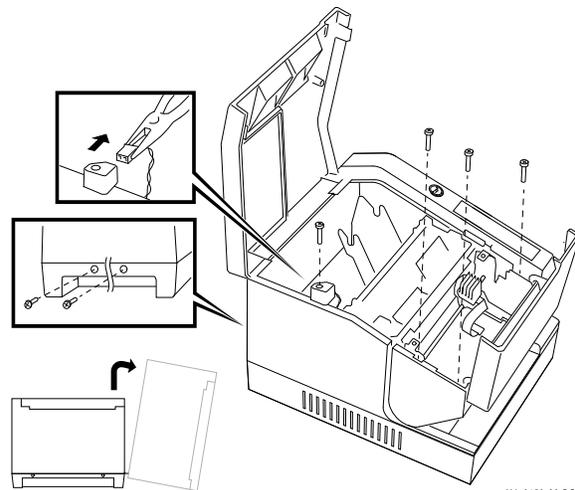
MA-0159-93.DG
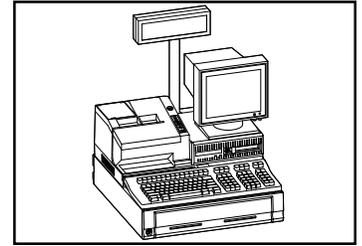
Note

In the event of a logic board malfunction, you should replace the printer rather than replace the logic board.

Removing the Printer Logic Board

1. Remove the printer cabinet cover.
2. Put on your ESD strap.
3. Release the flat cable connector which connects the logic board to the printer mechanism. This connector is located immediately in front of the slip paper throat.
4. Tip the left side of the printer up so the bottom is facing you.
5. Write down the settings of the dip switches. Be certain to set the replacement board with the same settings.
6. Remove the five screws on the bottom of the printer holding the bottom cover to the base.
7. Tip the logic board towards you.
8. Remove the CN1 connector at the bottom.
9. Remove the two screws that secure the logic board from the bottom cover of the printer.
10. Using your pliers, squeeze the two nylon insulated standoffs to release the logic board.
11. Replace the printer cabinet cover.

MA-0161-93.DG
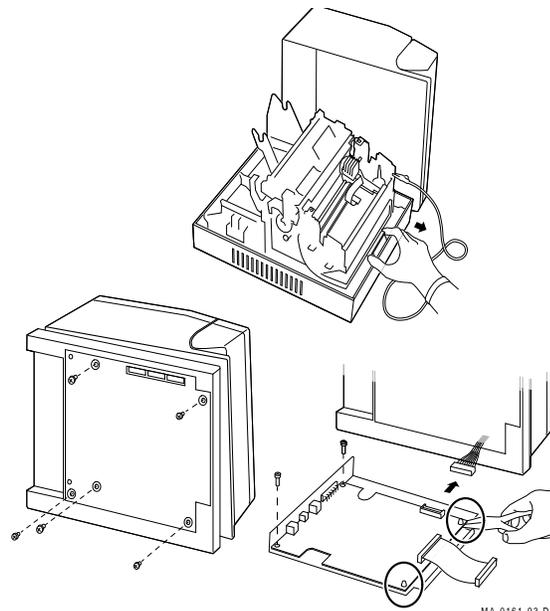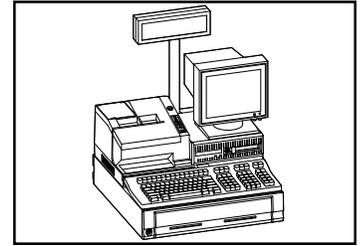
Installing the Receipt Paper Roll

1. Open the paper cover.

2. Place the roll into the paper holder located in the left rear section. Be certain that the paper feeds from underneath.

    The edge of the roll must be cut straight. If it is not, use a pair of scissors to cut the roll. If scissors are not available, fold the paper over once, crease it, and tear it on the crease.

3. Insert the end of the roll into the paper inlet. The paper will automatically feed into the printer and the receipt light will go off.

4. Tear off any excess paper on the tear-off edge.
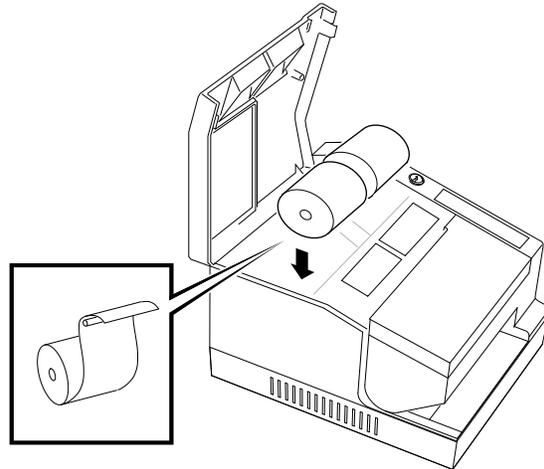
MA-0104-93.DG

Installing the Journal Paper Roll

1. Repeat the same steps you used to install the receipt paper, this time using the right hand paper holder.

    After the journal paper is automatically fed into the printer, the journal light will go off. Since the journal paper has a take-up spool, more paper needs to be fed from the roll.

2. Press the Journal Feed switch.

3. Fold the end of the journal paper and insert it into the groove on the take-up spool. Turn the spool two or three times to secure the paper.

4. Install the take-up spool into the printer by resting it in its slots.

5. Close the printer cover.

EK-DCPOS-SG.A01
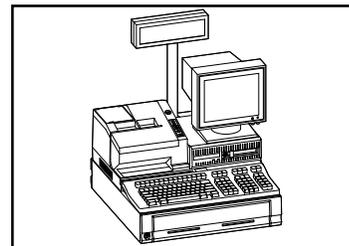
The Troubleshooting section describes problem areas, probable causes, and corrective action for the following components:

• System

• Keyboard

• Customer Display

• Monitor

• Cash drawer

• Printer

• LAN Configuration

Caution
When servicing the system, save all data before you power off the system.

Obtain approval from the customer manager on duty before you power down the system.

If you encounter alien cards while servicing the system, contact the VAR before continuing with the troubleshooting procedures.

Digital does not support third-party applications.

EK-DCPOS-SG.A01
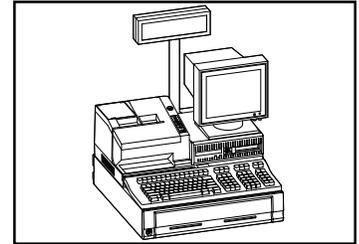
Problem Area	Possible Cause	Corrective Action
System		
No response when the system is turned on.	System not plugged in.	Power off the system, plug it in, power on again.
	No AC power.	Check fuse or circuit breaker.
	Voltage selector switch set incorrectly.	Use 115 V for North America. Use 230 V elsewhere.
	Battery is fully discharged.	Turn off ac switch, allow the battery to charge, and try again in a few minutes.
System does not start up from the hard disk.	Operating system software is not on the HDD.	Install operating system software on HDD.
	Requested partition does not exist, or is not formatted.	Check HDD partitions. Format the partition. Repartition HDD if necessary.
	No software on the requested partition.	Install software on partition.
	BIOS not set correctly.	See BIOS setup section.
System does not start from FDD.	Diskette does not contain operating system start-up files.	Insert operating system diskette.
	FDD is empty.	Insert operating system diskette.
	BIOS not set correctly.	See BIOS setup section.
Keyboard		
No response to keyboard commands.	Keyboard is password protected.	Enter keyboard pasword.
	DECpos ID card not passed through the magnetic stripe reader.	Pass DECpos ID card through the magnetic card reader.
	Keyboard not connected.	Plug keyboard cable into keyboard port on system unit.

digital™

EK-DCPOS-SG.A01
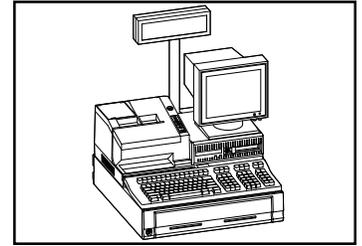
Problem Area	Possible Cause	Corrective Action
Keyboard, continued		
No response to keyboard commands	Keyboard is plugged into mouse port.	Connect keyboard cable to keyboard port.
	Numeric keypad does not enter digits.	Press [Num Lock]. Change BIOS setup if keyboard does not start up with Num Lock set.
	Extra keys are not recognized.	Install DEC-KEY.COM driver.
Some keys do not respond.	Software driver not installed.	Install DEC-KEY.COM, or other appropriate driver.
	BIOS not set correctly.	See BIOS setup section.
Magstripe reader does not respond.	Software driver not installed.	Install DEC-MCR.COM.
	Magstripe reader dirty.	Clean magstripe reader.
Customer Display		
Customer display does not work.	Cable not connected.	Check monitor to system unit cable connection.
	No software driver, or the application program is incorrectly configured.	Check self test when system is powered on. If self test works, check that driver and application are correctly installed. Install DEC-COM.COM and DEC-DSP.COM.
Monitor		
Power is on, but no monitor display.	Incorrect brightness and contrast settings.	Adjust brightness and contrast controls.
	Monitor power is off.	Power on monitor.
	Monitor signal cable is not plugged into system unit VGA conector.	Check monitor signal cable connection.
	Monitor power cable not plugged into system unit AC connector.	Check monitor power cord connection.
	BIOS not set correctly.	See BIOS setup section.

digital™

EK-DCPOS-SG.A01
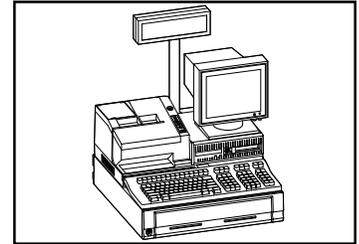
Problem Area	Possible Cause	Action
Cash Drawer		
Cash drawer does not open.	Cash drawer cable not connected properly.	Check cash drawer to system unit $1 connection.
	Cash drawer is locked.	Check that notch on the center of the drawer lock is in the center position.
	Cas drawer driver is not loaded.	Install DEC-CDR.COM.
Printer		
POS printer does not work.	Printer power indicator is not lit.	Check power cable connections. Connect another power cable.
	Printer signal cable not connected, or not working.	Check signal cable connections. Connect another signal cable.
	Printer on-line indicator is not lit.	Depress the on-line control switch on the printer.
	Receipt out or journal out indicators are lit.	Check paper roll position. Replace paper roll.
	Form indicator is blinking.	Insert form in printer.
	DIP switches (located under printer) incorrectly set.	See Station Printer Description section for switch settings. Execute the printer self test (depress the receipt feed switch as the system is powered.)
	Printer connected to incorrect serial port.	Check that printer signal cable is connected to serial port C (unless a software application specifies a different serial port).
	Defective printer.	Replace printer if printer has power, but self test does not execute.
	Printer driver is not loaded	Install DEC-COM.COM and DEC-PRT.COM.
Printer makes printing sound, but no characters appear on the paper.	Ribbon not installed or improperly installed.	Install ribbon cassette.
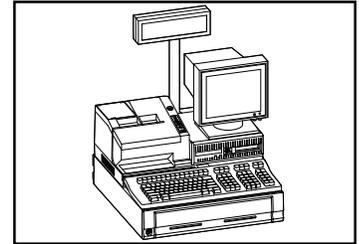
Problem Area	Possible Cause	Action
Printer, continued		
Light printing	Ribbon is worn out.	Replace ribbon cassette.
	Ribbon not correctly installed.	Remove ribbon cassette and re-install.
Paper does nor feed through the receipt or journal stations.	Paper path jammed.	Open printer and examine paper path. Remove jammed paper or paper segments.
Journal paper does not take-up.	Paper not inserted in take-up spool slot, or spool not fully seated in holder.	Check that paper is in the slot, and spool is correctly installed.
	No software driver installed	Install DEC-PRT.COM
LAN Configuration		
Power is on, but the system is hung, or a RAM error message is displayed (LAN card is installed.)	LAN card is set to the incorrect memory address space.	Remove LAN card to check if the system works without the card. Check LAN jumper configuration.
Only one system does not boot up from the server.	LAN cable not correctly connected at the system unit or the wall box.	Check LAN cable connections.
No systems boot up from the server.	Server is not powered on.	Power on the server and start the server program.
	Server program is not executing.	Start the server program.
	LAN cable is not connected to the server or to the wall box.	Check LAN cable connections.
No response from the server to only one client system when items are scanned, a cashier tries to log on, or payment authorization is requested.	LAN cable is not connected to the client system unit or to the wall box.	Check LAN cable connections.
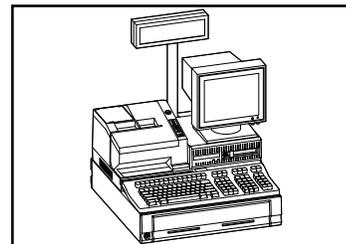
Problem Area	Possible Cause	Corrective Action
LAN Configuration, continued		
No response from the server to any client system when items are scanned, a cashier tries to log on, or payment authorization is requested.	Server is not turned on.	Check server AC power connection and that server is powered on.
	LAN cable is not connected to the server or to the wall box.	Check LAN cable connections.
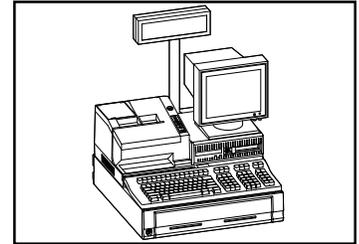
POST Tests

When a POST test fails an error occurs.
POST uses hexadecimal numbers, beep codes and text messages to report errors.

• DIAGNP OUTPUT codes (hexadecimal), placed at the diagnostic status port (80h), require hardware to detect the output.

• Beep codes and DIAGNP OUTPUT codes are only used prior to screen initialization.

• Text messages display following screen initialization unless a loop is set on POST through the manufacturing jumper setting and the MANLOOP EQU TRUE diagnostic setting.

Beep Codes and DIAGNP OUTPUT Codes

Error Number (in hexadecimal)	Beep Codes	Failure Description
02	1-1-3	CMOS write/read test in progress or failure
03	1-1-4	BIOS ROM checksum in progress or failure
04	1-2-1	Programmable Interval Timer test in progress or failure
05	1-2-2	DMA initialization in progress or failure
06	1-2-3	DMA page register test in progress or failure
08	1-3-1	RAM refresh verification in progress or failure
0A	1-3-3	1st 64 KB RAM chip or data line failure - multi-bit
0B	1-3-4	1st 64 KB RAM odd/even logic failure
0C	1-4-1	1st 64 KB RAM address line failure
0D	1-4-2	1st 64 RAM parity test in progress or failure
10	2-1-1	1st 64 RAM chip or data line failure. - bit 0
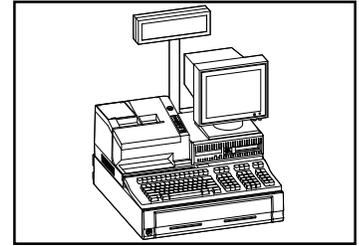
Error Number (in hexadecimal)	Beep Codes	Failure Description
11	2-1-2	1st 64 RAM chip or data line failure. - bit 1
12	2-1-3	1st 64 RAM chip or data line failure. - bit 2
13	2-1-4	1st 64 RAM chip or data line failure. - bit 3
14	2-2-1	1st 64 RAM chip or data line failure. - bit 4
15	2-2-2	1st 64 RAM chip or data line failure. - bit 5
16	2-2-3	1st 64 RAM chip or data line failure. - bit 6
17	2-2-4	1st 64 RAM chip or data line failure. - bit 7
18	2-3-1	1st 64 RAM chip or data line failure. - bit 8
19	2-3-2	1st 64 RAM chip or data line failure. - bit 9
1A	2-3-3	1st 64 RAM chip or data line failure. - bit A
1B	2-3-4	1st 64 RAM chip or data line failure. - bit B
1C	2-4-1	1st 64 RAM chip or data line failure. - bit C
1D	2-4-2	1st 64 RAM chip or data line failure. - bit D
1E	2-4-3	1st 64 RAM chip or data line failure. - bit E
1F	2-4-4	1st 64 RAM chip or data line failure. -bit F
20	3-1-1	Slave DMA register test in progress or failure
21	3-1-2	Master DMA register test in progress or failure
22	3-1-3	Master interrupt mask register test in progress or failure
23	3-1-4	Slave interrupt mask register test in progress or failure
27	3-2-4	Keyboard controller test in progress or failure
2B	3-3-4	Screen memory test in progress or failure
2C	3-4-1	Screen initialization in progress or failure
2D	3-4-2	Screen retrace tests in progress or failure
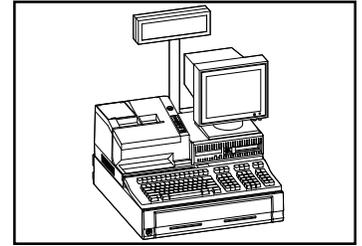
The following DIAGNP and beep codes are recorded only when the MANLOOP EQU TRUE setting and the manufacturing jumper setting indicates a loop in POST.

Error Number (in hexadecimal)	Beep Codes	Failure Description
34	4-2-1	Timer tick interrupt test in progress or failure
35	4-2-2	Shutdown test in progress or fialure
36	4-2-3	Gate A20 failure
37	4-2-4	Unexpected interrupt in protected mode
38	4-3-1	RAM test in progress or failure above 0FFFF
3A	4-3-3	Interval timer channel 2 test in progress or failure
3B	4-3-4	Time -of Day test in progress or failure
3C	4-4-1	Serial port test in progress or failure
3D	4-4-2	Parallel port test in progress or failure
3E	4-4-3	Math coprocessor test in progress or failure

Note
DECpos service diagnostics will be distributed through the CSCs as they become available.
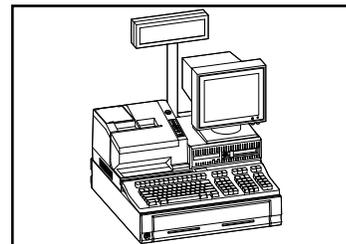
Interrupts

Interrupt Indicator (IRQ)	Name
0	Timer tick
1	Keyboard
2	Second interrupt controller
3	Serial port (COM 2, 4)
4	Serial port (COM 1, 3)
5	Free
6	Floppy disk
7	Parallel port 1
8	Real-time clock
9	Free (redirected IRQ 2)
10	Quart (ports A - D)
11	Free
12	Free
13	Free
14	Hard drive
15	Power management
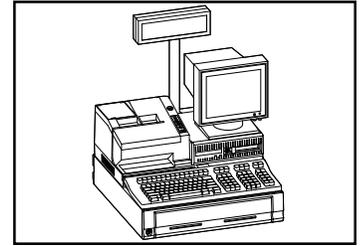
Memory Map

Address		Size in Bytes
FE0000:FFFFFF	Ghost of System BIOS	131,072
100000:FE0000	Extended System RAM	15,597,569
0FE000:0FFFFF	Shadow RAM of System BIOS: ROM XT-compatibility region	8,192
0F5800:0FE000	Shadow RAM of System BIOS: ROM POST and Drivers	34,817
0F0000:0F4A00	Shadow RAM of System BIOS: ROM SETUP	18,945
0E9000:0EFFFF		28,672
0E0000:0E8FFF	Mapped to 32K of unprogrammed ROM at boot; after POST, mapped to I/O channel	36,864
0E0000:0E7FFF	Mapped to ROM VGA BIOS at boot and shadowed at C0000; after POST, mapped to I/O channel	32,768
0D0000:0DFFFF	Mapped to I/O channel (also EMS)	65,536
0C8000-0CFFFF	Shadow RAM for DEC-PWR.SYS driver (code and data)	32,768
0C0000:0C8FFF	Shadow RAM for shadowing VGA BIOS (from ROM)	36,864
0B8000:0BFFFF	Page frame for VGA text modes	32,768
0B0000:0B7FFF		32,768
0A0000:0AFFFF	Page frame for VGA advanced graphics modes	65,536
000500:09FFFF	Base System RAM	654,080
000400:0004FF	ROM BIOS data area	256
000000:0003FF	Interrupt Vector table	1024
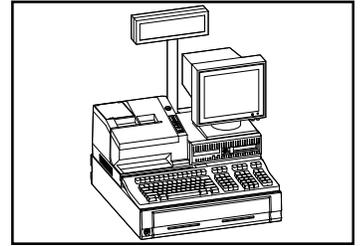
BIOS Configuration information will be supplied in future releases of this guide.
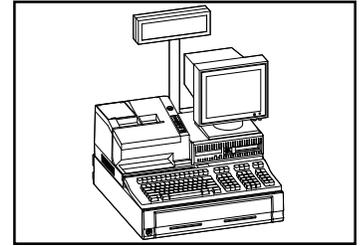
Overview

Refer to the following checklist before installing DECpos systems.

Integrated Configuration

With an integrated configuration, the cash drawer sits on top of the counter and the DECpos system components rest on top of the drawer.

• Is the work surface large enough to accommodate the DECpos system which is 20 inches wide by 21 inches deep?
• Is the height of the keyboard between 36 and 38 inches from the floor?
• Will the customer display mount on the system unit or on the counter top?

Dispersed Configuration

With a dispersed configuration, the cash drawer is mounted beneath the counter or recessed in a well. Other components may be dispersed within the work area.

• How will the system components be positioned throughout the work area?
• How will cables be routed?
• Where will the cash drawer be mounted? Where should the holes be drilled to mount the cash drawer? Give the locations to the retailer.
• Will counter cut-outs for cables be necessary?

  Be certain to inform the retailer of the dimensions and locations. The largest cable connector is 2 1/2 inches.
• Will any component require longer cables? All cables are six feet in length.
• Is the height of the keyboard between 36 and 38 inches from the floor?
• Will the scale and presentation scanner be placed in a position that can be easily reached by the cashier?
• Will the customer display mount on the system unit or on the counter top?

Power Wiring

• Is there a separate power circuit for the equipment?
• Is the breaker switch clearly marked to be left on at all times?
• Is the outlet for the DECpos system within six cable feet?
• Is the system going to share the telephone line with other systems?

   If this is true, then some type of multiplexing unit may need to be installed.
• Who is responsible for installing the application and configuring it?

Power Wiring

- Is there a separate power circuit for the equipment?
- Is the breaker switch clearly marked to be left on at all times?
- Is the outlet for the DECpos system within six cable feet?
- Is the system going to share the telephone line with other systems?

    If this is true, then some type of multiplexing unit may need to be installed.
- Who is responsible for installing the application and configuring it?

LAN Communications

- Is a LAN currently installed? What type?
- Is it possible to connect to the LAN?
- Will thickwire, ThinWire, or twisted pair be used?
- If there is no LAN and one is required, who is going to do the network planning and design?
- If permanent site wiring is to be used, is the junction box within six feet of the system unit?
- If there is a central wiring panel, are the total cable lengths within specification?
- If multiple terminals are to be daisy-chained together, what cable lengths are needed and how will the wires be routed?

Software Installation

- What operating system is going to be used?
- Who is responsible for installing the operating system?
- What software application is going to be used?
- Who is responsible for installing the application and configuring it?
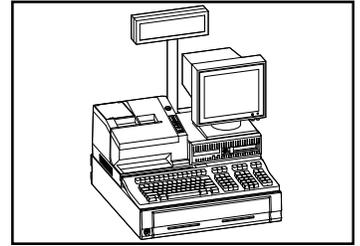
Refer to the online database LOGPICK for a list of recommended spares and part numbers.

The following are trademarks of Digital Equipment Corporation: DEC, DECpos, ThinWire, and the Digital logo.