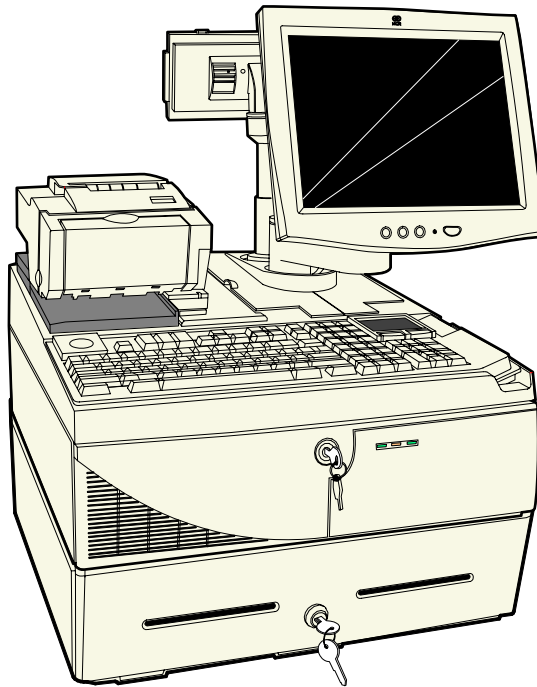


NCR RealPOS 80

Release 1.0

Hardware User's Guide



B005-0000-1440

Issue A

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To maintain the quality of our publications, we need your comments on the accuracy, clarity, organization, and value of this book.

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Preface

Audience

This book is written for hardware installer/service personnel, system integrators, and field engineers.

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Safety Warnings

Servicing

Caution: This product does not contain user serviceable parts. Servicing should only be performed by a qualified service technician.

Fuse Replacement

Caution: For continued protection against risk of fire, replace only with the same type and ratings of fuse.

Attention: Pour prévenir et vous protéger contre un risque de feu, remplacer la fusible avec une autre fusible de même type, seulement.

Power Supply Cord Used as Disconnect Means

Caution: The power supply cord is used as the main disconnect device. Ensure that the socket outlet is located/installed near the equipment and is easily accessible.

Attention: Le cordon d'alimentation est utilisé comme interrupteur général. La prise de courant doit être située ou installée à proximité du matériel et être facile d'accès.

Lithium Battery Warning

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. The battery is battery is recyclable. At the end of its useful life, under various state and local laws it may be illegal to dispose of this battery into the municipal waste. Contact officials for recycling options or proper disposal.

Attention: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Battery Disposal (Switzerland)

Refer to Annex 4.10 of SR814.013 for battery disposal.

IT Power System

This product is suitable for connection to an IT power system with a phase-to-phase voltage not exceeding 240 V.

Peripheral Usage

This terminal should only be used with peripheral devices that are certified by the appropriate safety agency for the country of installation (UL, CSA, TUV, VDE) or those which are recommended by NCR Corporation.

Caution: DO NOT connect or disconnect a printer, keyboard, or any other terminal-powered peripheral while the terminal is powered on. Doing so may result in peripheral or system damage.

Environmental Consciousness

NCR is demonstrating its concern for the environment by designing an intelligent power management system into this terminal that operates efficiently whether the system is in a stand-alone or network environment.

Grounding Instructions

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided – if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in a risk of electric shock.

The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor.

If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if you are in doubt as to whether the product is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the product's plug. **Repair or replace damaged or worn cords immediately.**

References

- *NCR RealPOS 80 Hardware Service Guide* (B005-0000-1358)
- *NCR RealPOS 80 Site Preparation* (B005-0000-1360)
- *NCR RealPOS 80 Parts Identification Manual* (B005-0000-1362)
- *NCR 5932 USB Keyboard User's Guide* (B005-0000-1395)
- *NCR 5932 Wedge Keyboard User's Guide* (BD20-1369-A)
- *NCR 5942 12.1-Inch LCD Monitor User's Guide* (B005-0000-1394)
- *NCR RealPOS 5953 PS/2 DynaKey User's Guide* (B005-0000-1161)
- *NCR RealPOS 5953 USB DynaKey User's Guide* (B005-0000-1457)
- *NCR 5952 Wedge DynaKey User's Guide* (BD20-1370-A)
- *NCR 5964 12.1-Inch Touch LCD User's Guide* (B005-0000-1324)
- *NCR 5972 2 x 20 Customer Display User's Guide* (B005-0000-1372)
- *NCR 5973 International VFD Customer Display User's Guide* (B005-0000-1162)
- *NCR 5982 5-Inch LCD Operator Display User's Guide* (BD20-1443-A)
- *NCR 7158 Thermal Receipt and Impact Printer Owner's Guide* (B005-0000-1112)
- *NCR 7167 Two-Station POS Printer Owner's Guide* (B005-0000-1406)
- *NCR 7162 Printer Setup & User's Guide* (BD20-1453-A)
- *NCR 7194 Thermal Receipt Printer Owner's Guide* (B005-0000-1097)
- *NCR 7197 Receipt Printer Owner's Guide* (B005-0000-1409)
- *NCR 5945 Electronic Payment Terminal User's Guide* (B005-0000-1104)
- *NCR 5992 Signature Capture User's Guide* (B005-0000-1108)

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Revision Record

Issue	Date	Remarks
A	Apr 2003	First issue

Radio Frequency Interference Statements

Federal Communications Commission (FCC)

Information to User

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. 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 interference in which case the user will be required to correct the interference at his own expense.

NCR is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by NCR. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user. The user is cautioned that changes or modifications not expressly approved by NCR may void the user's authority to operate the equipment.

Canadian Department of Communications

This Class A digital apparatus complies with Canadian ICES-003.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectriques édicté par le ministère des Communications du Canada.

Voluntary Control Council for Interference (VCCI)

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International Radio Frequency Interference Statement

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Declaration of Conformity

Manufacturer's Name	NCR Corporation
Manufacturer's Address	NCR Corporation Retail Solutions Division – Atlanta 2651 Satellite Boulevard Duluth, GA 30096-5810
Type of Equipment	Information Technology Equipment
Model Number	Class 7458
Electrical Ratings (Input)	100-120 V/200-240 V, 2.0 A/1.0 A, 50-60 Hz

NCR Corporation, 1700 South Patterson Boulevard, Dayton, OH 45459, USA, declares that the equipment specified above conforms to the referenced EU Directives and Harmonized Standards.

EU Directive	Harmonized Standard(s)
89/336/EEC (EMC)	EN 55022 EN 55024
73/23/EEC (Low Voltage)	EN 60 950

NCR Corporation
Retail Solutions Division – Atlanta
2651 Satellite Boulevard
Duluth, GA 30096-5810

European Contact:

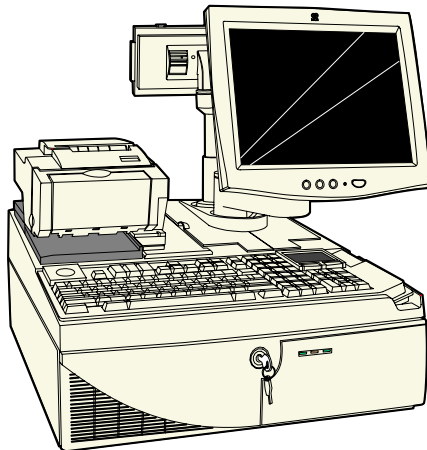
International IP Counsel
206 Marylebone Road
London, NW1 6LY, England

Chapter 1: Product Overview

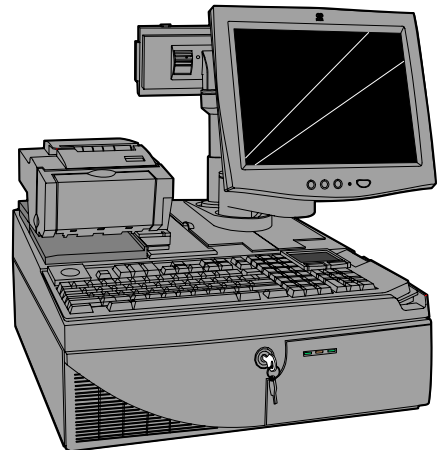
Introduction

The NCR RealPOS 80 (also referred to as NCR 7458) is a powerful, retail-hardened point-of-sale terminal targeted for general merchandise, food and convenience store environments. It provides exceptional scalability utilizing Intel Celeron and Pentium III processors to address a range of price/performance levels and operating system environments. The system offers superior connectivity for retail, with support for legacy peripheral interfaces (RS-232, PS/2, Parallel, and VGA), as well as emerging interface standards such as Powered USB and a DVI video interface.

There are two color schemes available; Beige (G11) and Charcoal Gray (CG1).



Beige (G11)



Charcoal Gray (CG1)

The 7458 is designed with serviceability in mind to reduce costly downtime. It incorporates the latest in serviceability features including tool free serviceability. Specifically, the 7458 incorporates:

- Removable hard drive – The terminal utilizes a front-side removable hard drive that slides easily out of the cabinetry without the use of any tools, which simplifies replacement.
- Slide out motherboard tray – All internal components are quickly accessed and replaced without the aid of tools, which significantly reduces repair times.
- The removable tray results in faster upgrading of memory, hard drive or other internal components.
- In integrated configurations, the slide out motherboard tray eliminates the need to remove peripherals from the top of the unit.
- Removable motherboard tray permits for easy upgrade to next generation motherboards.

Cabinet

The cabinet is optimized to accommodate either modular or integrated configurations while providing expandability for future needs. Outstanding flexibility has been designed into the optional integration tray for use with unified configurations. This integration tray supports a variety of NCR's most popular peripheral options.

Internally, the following features are supported:

- 3 PCI slots
- 2 DIMM memory sockets supporting up to 512MB of PC133 SDRAM
- Flex disk drive (standard)
- Dual hard disk drives
- CD ROM drive
- Compact flash memory
- Integrated battery back-up.

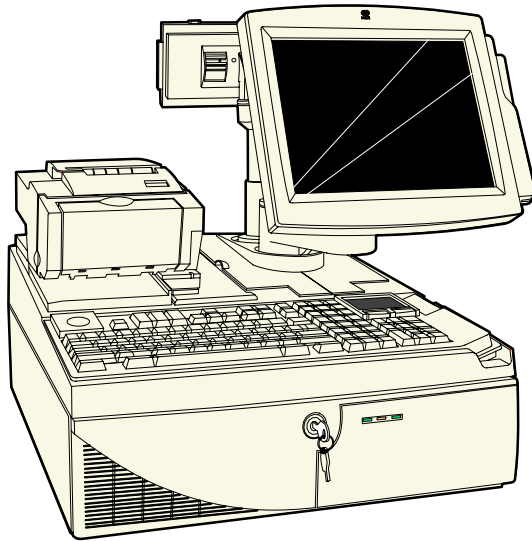
The following table highlights the standard features and options available with the RealPOS 80 base Models:

Major Model	CPU
7458-1110	Intel 850MHz Celeron, 128MB Memory, Flex Disk, 4 RS-232, 4 Powered USB, Audio/Mic. and US Power Cord. (G11)
7458-1200	Intel 850MHz Celeron, 128MB Memory, Flex Disk, Hard Disk, 4 RS-232, 4 Powered USB, Audio/Mic. and US Power Cords (G11)
7458-2200	Intel 1GHz Pentium III, 256MB Memory, Flex Disk, Hard Disk, 4 RS-232 4 Powered USB, Audio/Mic. And US Power Cords. (G11)
7458-2201	Intel 1GHz Pentium III, 256MB Memory, Flex Disk, Hard Disk, 4 RS-232 4 Powered USB, Audio/Mic. And US Power Cords. (CG1)

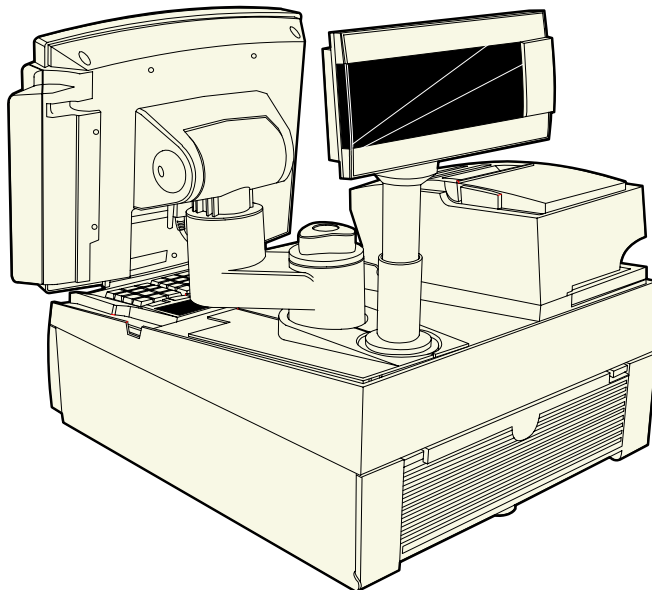
The 7458 supports a broad range of industry standard operating system environments including DOS, Windows NT, and Windows 2000 Professional. In addition, the 7458 is Linux certified using certain Linux distributions.

Configurations

Integrated Terminal

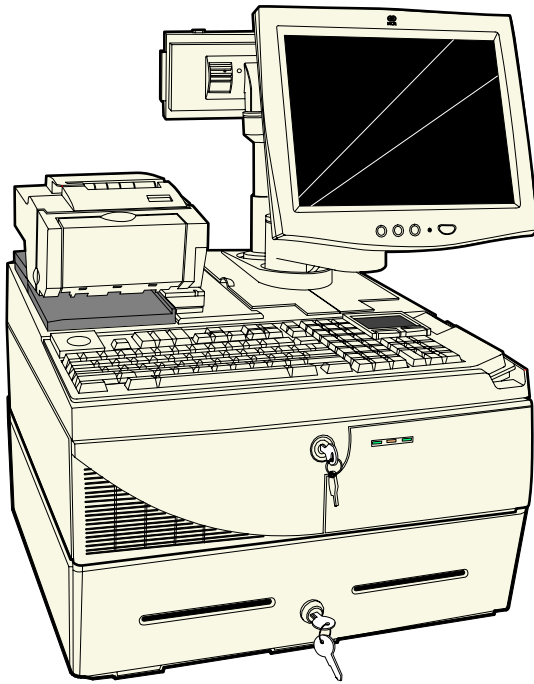


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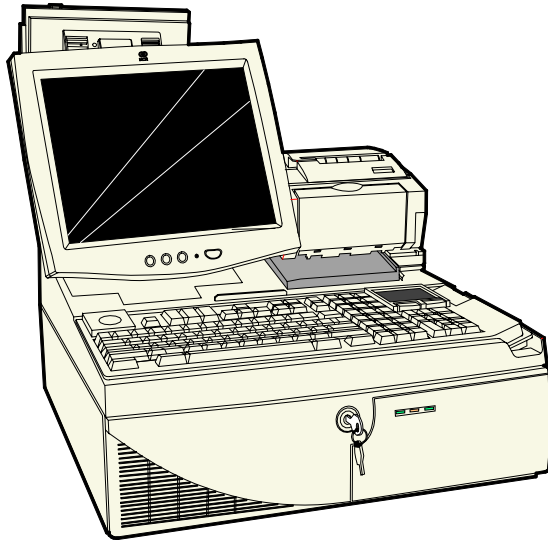
Integrated Terminal w/Cash Drawer



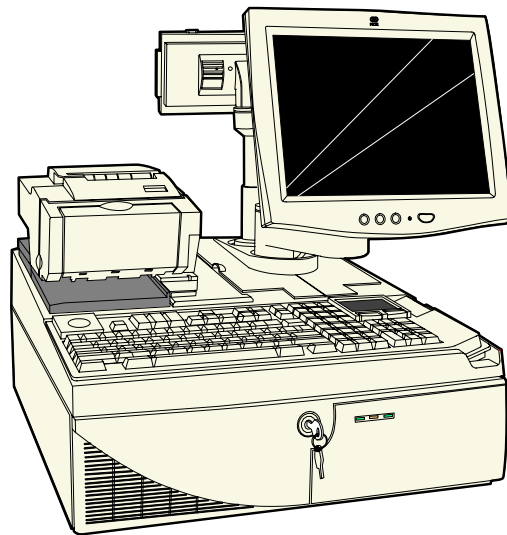
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Left/Right Configurability

The integrated displays and printers can be configured as desired.



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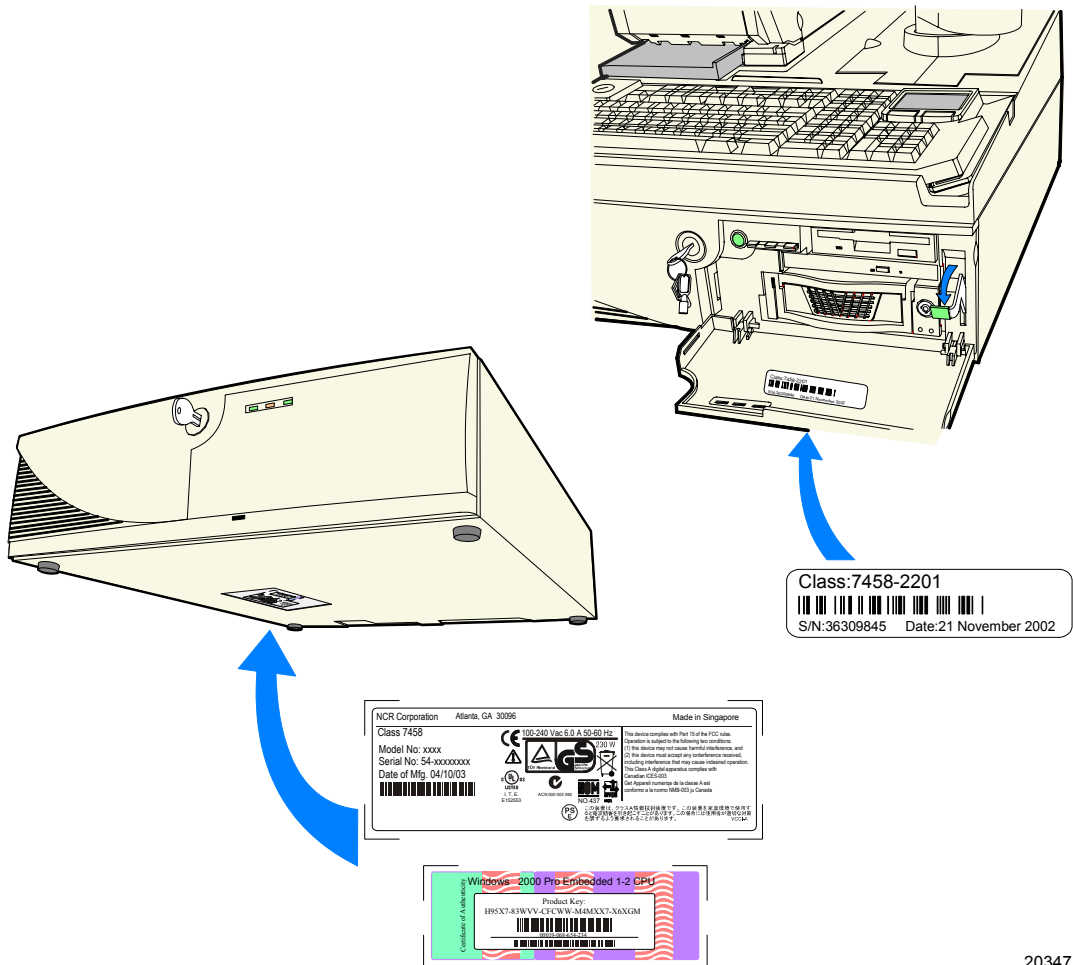


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Serial Number/Model Number Label

The serial number and model number are included on a label, which is located on the bottom of the Electronics Box Tray, which can be seen through a rectangular hole in the bottom of the cabinet. If the terminal was shipped with an Operating System pre-installed then there is also a Certificate of Authenticity label.

Note: The serial number is repeated on the inside of the Front Security Door.



Features

Processor Board

The processor board has the following features:

- Support for Intel Celeron processors with 66MHz or 100MHz front side bus speeds as well as Intel Pentium III processors with 133MHz front side bus speeds.
- Two DIMM memory sockets (up to 512 MB of PC133 SDRAM)
- Support for 3 PCI cards via Riser Card
- Video Controller with VGA, SVGA and XGA graphics capability
- Up to 8MB Video Memory - Unified Memory Architecture (UMA)
- Two IDE ports (Ultra DMA 33/66/100 Master Mode EIDE Controller)
- 1.44 MB Flex Disk interface
- DVI-I connector (Digital Video Interface)
- 15-pin D-shell connector for CRT or analog LCD
- Ethernet 10/100baseT LAN
- Four External RS-232 ports (two powered, one selectable, one non-powered)
- One internal TTL RS-232 port for integrated UPS interface
- 25-pin D-shell Parallel connector
- PS/2 keyboard/mouse connector (requires external Y-cable to use both)
- AC-97 Audio Interface
- APM 1.2
- Real-Time Clock/Calendar 256-byte CMOS
- Supports 4 Powered USB ports via daughter card
- Supports internal UPS battery back-up

4-Port USB Daughter Card

- Four Powered USB ports
 - 12V (3)
 - 24V (1)
- AC-97 CODEC
- Amplified stereo output jack (5W max. per channel)
- Microphone input
- Connector for accepting CD-ROM audio (music compact disc)
- Ports C & B are controlled by the USB controller at Bus 0, Device 7, Function 2
- Ports A & 24V are controlled by the USB controller at Bus 0, Device 7, Function 3

Note: The USB controller can be disabled in BIOS *Setup* under the *Advanced* menu, in the *OnChip Multi-function Device* menu. It is identified as **OnChip USB 2 Device:**

ATX Riser Card

- An ATX style PCI Riser Card provides three PCI expansion slots
 - 33 MHz, 5V, 32 bit

Note: Maximum length for PCI cards is 150mm (5.9 in.)

Front Control Panel

The control panel assembly includes the following features:

- ON/OFF switch
- Power On LED
 - *Steady Green*: All voltages good
 - *Flashing green*: Suspend mode
 - *Off*: Terminal off or bad voltages
- Hard Drive Activity LED
 - *Orange*: Lit indicates Hard drive activity
- LAN Link LED
 - *Green*: Lit indicates good LAN connection to hub.
- Cabinet Fan power connection
 - 12V and Ground
 - 3 position
- Speaker connection
 - 2 position
- Reset switch
 - Hidden momentary push button switch

Storage Media

- 3.5 in. Flex Disk Drive
- 3.5 in. Hard Disk Drives (2)
 - Front-Accessible Removable Drive
 - 2nd Internal Hard Drive
- Slimline CD-ROM (bootable)
- 256 MB Compact Flash (through IDE interface)

Power Supply

- 300 W Output power
- Support for optional Internal UPS Battery Back-up

Operating Systems

- DOS 6.22
- Windows NT Workstation
- Windows 2000 Professional
- Windows XPe
- Windows EP (certified)
- Linux (certified)

UPS

The Uninterrupted Power Supply (UPS) in the 7458 is designed to support the terminal in the event AC Power is lost. This permits sufficient time for the terminal to finish the current transaction and perform a logical shutdown of the Operating System, which helps to guard against disk corruption caused by an illogical power OFF.

The power supply senses the loss of AC voltage and switches to battery support.

The Power Supply provides limited filtering of low frequency noise and minor AC line variations, however, it does not protect the terminal from excessive AC Power line spikes such as some external UPS units provide.

Power Management

Power management is implemented on the 7458 using the ACPI 1.1 Specification 1.1. In order to accomplish this, the processor board is equipped with ACPI BIOS.

The BIOS supports the ACPI 1.1 specification. This permits the terminal to go to a low power state during some level of inactivity. With ACPI, the operating system has some control over the power management by going into *suspend*, *standby*, or *hibernate* (depending on the Operating System). The **S0**, **S1**, **S4**, and **S5** states are implemented. For the detail of the ACPI, refer to *ACPI Specification 2.0b*. Not all Entry and Exit points are available at all times. Availability is based on ACPI states.

Notes:

- When the LAN cable is connected a *WakeOnLink* notification is sent to the operating systems, causing the terminal to come out of a low power state such as hibernation under Windows 2000. This is similar to the *WakeOnLan* feature.
- On terminals running BIOS 3.0.0.0 or greater, *Wake on Alarm* is not supported from the "off" state. This because the ACPI power management in the BIOS does not allow the *Timer/Alarm* to wake the system. *Wake on LAN* is supported. Similar functionality can be implemented from the server by sending a LAN wakeup message.
- *Wake on Alarm* from Window NT is not supported.
- USB devices must be enabled in Windows for *Wake from Standby* to function. This is set in at:
Start → Control Panel → System → Hardware Tab → Device Manager → [USB device] → Properties.
There is a check box to enable the function under the USB tab.

Definitions of the states involved

Mechanical Off: System is not working. No AC power is connected to the system. Operational parameters are not saved. System resets and initializes when transitioning to the Full On State.

Entry: a) Remove power from unit.

b) Attempt to enter *Soft Off* while running off UPS.

Exit: Connect power to unit. (move to Soft Off or Full On or APM Enabled)

Soft Off: AC Power is connected to the system. Only the 5V standby and 3.3V standby voltages are present within the machine.

Note: Soft Off is not supported by the UPS. The UPS does not support the suspend voltages in this state. Therefore, the unit is really in Mechanical Off when there is no AC power and an attempt is made to enter Soft Off while running off the UPS.

Entry: a) Connect power to unit.

b) Turn off unit via power button. Power button can be configured for either instant off or for off after being pressed for longer than four seconds.

c) Unit turned off via software control

Exit: a) Press power button

b) Wake On LAN

c) Wake On Ring

d) Wake On Alarm

e) Remove AC

Full On: System is working and not power managed (APM Disabled)

Entry: a) Press power button.

- b) Wake On LAN
- c) Wake On Ring
- d) Wake On Alarm

Exit: a) Turn off unit via power button. Power button can be configured for either instant off or for off after being pressed for longer than four seconds.

- b) Unit turned off via software control
- c) Remove AC

APM Enabled: System is working and not power managed

Entry: a) Press power button

- b) Wake On LAN
- c) Wake On Ring
- d) Wake On Alarm
- e) Wake on keyboard, mouse, or touch activity
- f) Wake on USB activity

Exit: a) Turn off unit via power button. Power button can be configured for either instant off or for off after being pressed for longer than four seconds.

- b) Unit turned off via software control
- c) Disable APM
- c) Remove AC

APM Standby

- System is in a low power state with some power savings
- Most devices are in a low power mode.
- The CPU clock is slowed or stopped.
- Operational parameters are retained.
- System returns quickly to the APM Enabled State.
- The Resume Timer event must return the system to the APM Enabled state.
- User activity may be required to return the system to the APM Enabled State.
- The operating system is notified after the system transitions to the APM Enabled State.
- Prior operation resumes after returning to the APM Enabled state.
- Interrupts must still be processed normally. This may require waking up the CPU temporarily if it was stopped.
- The CPU may be stopped again when the APM Driver calls the CPU Idle function.

Some (not all) specific device states:

- Hard Drive: Standby (motor not spinning, interface buffer active)
- Display: CRT - Suspend (No image on screen, LCD - Off)
- Video Controller: Standby
- Chipset: Standby

Entry: a) Programmable timeout
b) Under software control

Exit: a) Wake On LAN
c) Wake ON Ring
d) Wake On Alarm
e) Wake on keyboard, mouse, or touch activity
f) Wake on USB activity
g) Remove AC

APM Suspend: System is in a low power state with maximum power savings. Most power managed devices are not powered. The CPU clock is stopped. The CPU core is in its minimum powered state. Operational parameters are saved to be restored later when resuming. System takes a relatively long time to return to the APM Enabled state. The Resume Timer event must be on of the wakeup events. The operating system is notified after the system transitions to the APM Enabled state. Prior operation resumes after returning the APM Enabled state.

Some (not all) specific device states:

- Hard Drive: Sleep (motor not spinning, interface buffer inactive)
- Display: CRT - Off, LCD - Off
- Video Controller: Suspend
- Chipset: Suspend

Entry: a) Programmable timeout
b) Under software control

Exit: a) Wake On LAN
c) Wake ON Ring
d) Wake On Alarm
e) Wake on keyboard, mouse, or touch activity
f) Wake on USB activity
g) Remove AC

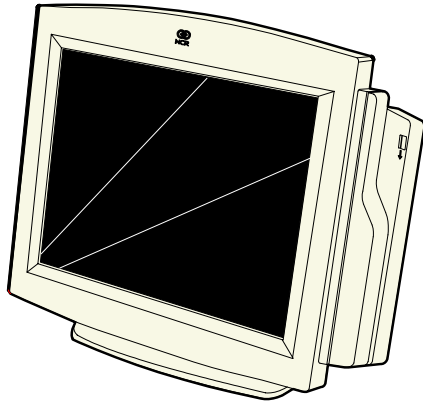
The APM BIOS provides some degree of power management functionality without any support from the operating system or application software.

An APM driver is better suited to make power management decisions for unique peripherals than the BIOS, and can override most BIOS requests to go into standby, suspend, and so on. APM device drivers provided by NCR with the RealPOS 80c are outlined in the Retail TAPS Programming Help File (BD90-0261-B).

Terminal power on/power off is controlled through a logic level power switch on the processor board. It can be disabled through software.

Operator Displays

5964 12.1-Inch Touch Screen



19429

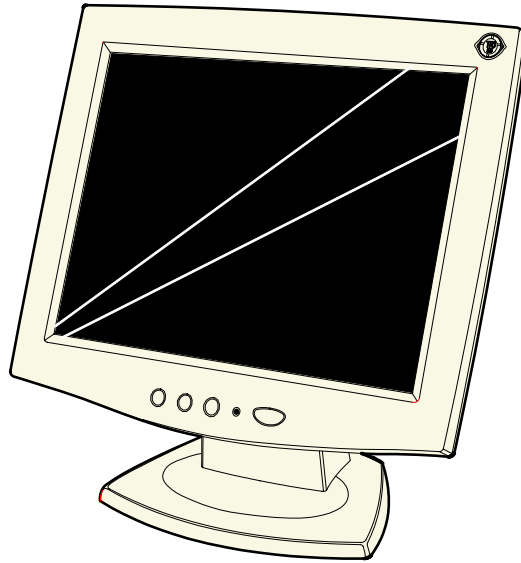
The 5964 is designed for touch-based applications and features a high-brightness 12.1-Inch Active Matrix Color LCD with SVGA resolution. The 5964 features a 5-wire Resistive Touch Screen, integrated MSR, Digital Video Interface (DVI), table top mount with tilt and swivel (or can be integrated on the terminal), and convenient connections for an external keyboard and hand held scanner.

Features

Resistive Touch Screen	Touch overlay uses 5-wire resistive technology for ease of use and long reliability. Resistive technology allows users to operate the touch screen with a gloved hand, stylus, etc.
Retail Hardened	Touch screen surface contains an anti-glare, spill-proof and hardening coating
12.1-Inch Active Matrix LCD	Dual backlight color LCD display offers exceptional brightness (300 nits max.) and viewability.

Brightness Control	The LCD is factory set to run at full brightness. Users can select reduced brightness through a user adjustable hardware switch below the right front bezel (high/low brightness).
Wide Viewing Angle	Horizontal viewing angle of -60° to $+60^{\circ}$ (right to left), vertical -50° to $+50^{\circ}$ (bottom to top)
SVGA Resolution	High resolution (800 x 600) supports the latest graphical and multimedia applications
PS/2 Keyboard Connector	A convenient PS/2 connector supports a non-wedge PC-style keyboard for alpha entry and diagnostics
Scanner Connector	RJ-45 interface provides 5 V power and communication for the NCR RS-232 hand-held scanner
Tone Speaker	Sounds error tones & audible feedback during operator input - controlled by TAPS/OPOS commands
DVI Video Interface	Industry standard DVI (Digital Video Interface) for connection to DVI-I connector on 7458
RS-232 Touch Interface	7458 Powered RS-232 connector provides power and touch interface for NCR 5964 display
Wedge Controller	Passes data (MSR, scanner, keyboard) to host terminal through PS/2 data stream via Y-cable
Terminal Powered	No additional power cord or power supply is required simplifying cable management
MSR Option	Integrated 3-track ISO MSR
Tilt / Swivel	The remote table top pedestal mount supports tilt and swivel to adjust display to optimum angle

5942 12.1-INCH Color LCD



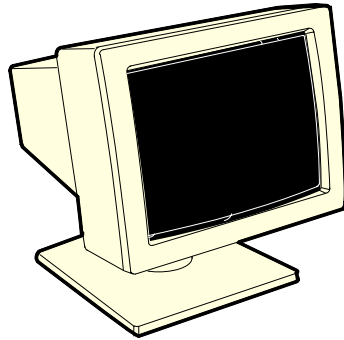
19809

The 5942 12.1-Inch LCD is designed for customers who desire a color display and prefer the small footprint and ergonomic packaging of LCD technology versus traditional CRT's. Depending on the customer's requirements, this LCD display can be used either as an operator display or a customer information display (CID). The 5942 Display features a 12.1-Inch Active Matrix Color LCD with support for SVGA and XGA resolution.

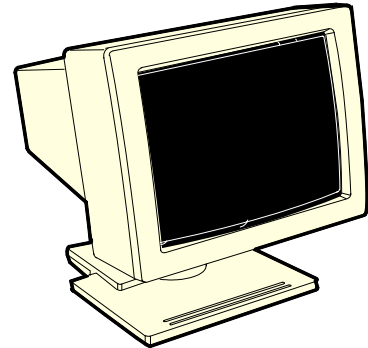
The 5942 can be integrated on the terminal or installed on a remote mount.

7452-K309/K404 9-Inch Monochrome CRT

The 9-Inch CRT can be integrated on the terminal or installed on a remote mount.



7452-K309



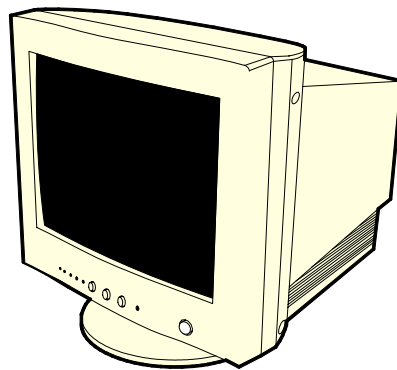
7452-K404

19742a

7452-K419 15-Inch Color CRT

The 15-Inch CRT can be integrated on the terminal or installed on a remote mount.

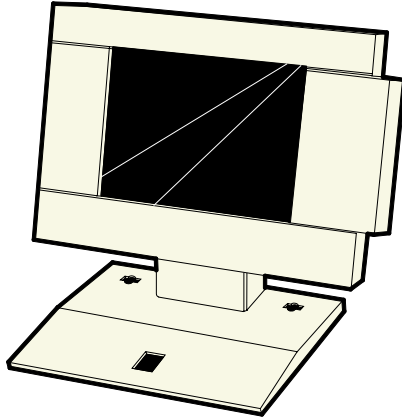
Note: The 15-Inch display is too large for the Swivel Arm. For integrated configurations it is placed on the Large Peripheral Extension Deck.



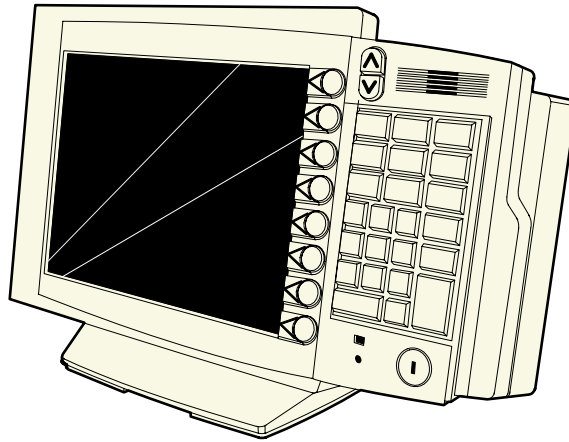
19743

NCR 5982 5-Inch LCD Display

The 5982 LCD Display is a terminal-powered monochrome 5-Inch VGA LCD.



NCR 5953 12.1-Inch DynaKey



17089

The 5953 DynaKey is a Point-of-Sale (POS) keyboard with a built-in 12.1-Inch SVGA flat panel Liquid Crystal Display (LCD). The 5953 features an active matrix (TFT) color LCD. A Touch Screen is also available as an option.

Unique to the 5953 DynaKey are a set of *DynaKeys* located beside the LCD. These keys change function depending on the software application appearing on the LCD. Also unique are two up/down scroll keys. The keypad module contains configurable key matrix, *DynaKeys*, and scroll keys.

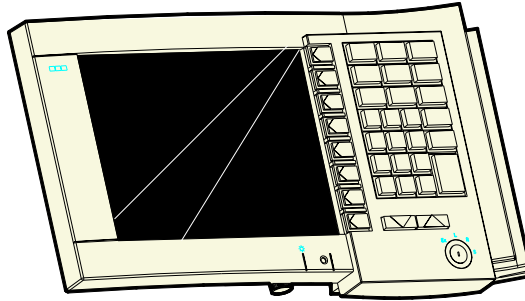
The 5953 can be integrated on the terminal or installed on a remote mount.

Note: The 5953 requires a PCI SVGA LCD card.

Additional features include:

- Keylock
- 3-track ISO Magnetic Stripe Reader (MSR) or JIS MSR (Japan)
- Speaker (separate from the PC speaker)
- Multi-color power status LED
- Connectors for a decoded RS-232 scanner and a PC keyboard

NCR 5952 10.4-Inch DynaKey



20447

The 5952 Wedge DynaKey is a point-of-sale keyboard with a VGA flat panel Liquid Crystal Display (LCD). Unique to the 5952 DynaKey is a set of *dynamic keys* located beside the LCD. These keys change function depending on the software application appearing on the LCD. Also unique are two up/down scroll keys. Additional features include:

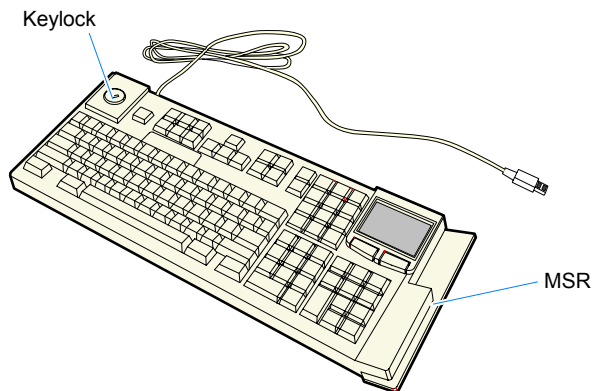
- Keylock
- 3-track ISO Magnetic Stripe Reader (MSR)
- Speaker
- Connectors for a PC keyboard
- Connector for RS-232 scanner
- Terminal-powered

NCR 5932 Keyboards

There are three models of the 5932 Keyboard:

- 109-Key USB Keyboard
- 115-Key Big Ticket Keyboard (PS/2 interface)
- 68-Key POS Keyboard (PS/2 interface)

109-Key USB Keyboard



19586

The 109-key USB keyboard is a multifunction keyboard that is two keyboards built into one.

The keyboard consists of two major sections:

- 38-key POS keyboard
- Industry-standard alphanumeric PC keyboard

The keyboard contains the key matrix and other POS-specific functions such as Keylock, speaker, system status indicator, and magnetic stripe reader (MSR). This 5932 keyboard also has a USB port to connect a Scanner or other USB device.

Features

The NCR 5932 USB Keyboard supports the following features:

- Keylock
- Speaker
- Magnetic Stripe Reader (MSR)
- Keyboard Status LEDs

Keylock

The USB keyboard has a four-position Keylock. You can rotate the Keylock between specific positions by use of three keys. The positions are explained in the following table.

Abbreviation	Position	Description
Ex	Exception	Used by the customer or service representative to perform low level programming such as workstation diagnostics, configuring the workstation, or loading the workstation.
L	Locked	Used to lock keyboard input to prohibit use of normal functions.
R	Register	Used when performing normal retail mode functions.
S	Supervisor	Used by the supervisor to provide highest level of workstation control in cases such as refunds and running totals.

Speaker

The programmable speaker is capable of generating key clicks and error tones.

MSR

The MSR is an optional feature that provides support for reading magnetically coded data cards. The keyboards support two different types of MSR:

- ISO Tracks 1, 2, and 3
- JIS-II and ISO Track 2

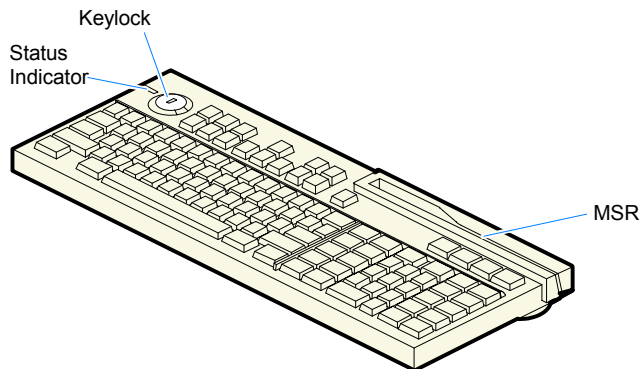
Keyboard Status LEDs

The keyboard has three status LED's:

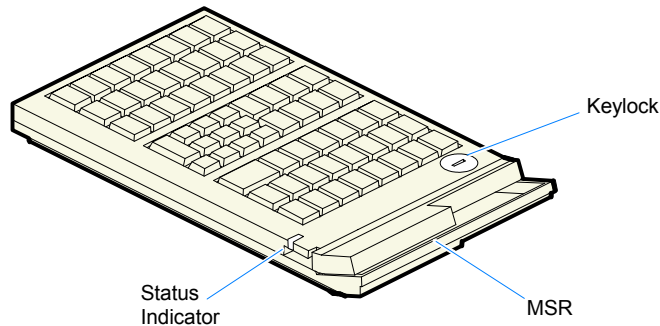
- Num Lock
- Caps Lock
- Scroll Lock

These features are used to provide the present state of the keyboard. The indicators are single color (Green) LED's. When the system is off, no LED's are illuminated.

115-Key PS/2 Big Ticket Keyboard



68-Key PS/2 POS Keyboard



19746

Features

The 5932 PS/2 Keyboards include the following features:

- Keylock
- Speaker
- System Status Indicator LED
- Magnetic Stripe Reader (MSR)
- External Decoded Scanner Connector
- Special *PC Setup* mode on the 68-key keyboard

The operations of the user-programmable speaker, Magnetic Stripe Reader (MSR), keylock, and scanner connector are handled by the Wedge controller. Please refer to the *Wedge Software User's Guide* (BD20-1368-A) for detailed information about interfacing and configuring these devices.

Keylock

The Big Ticket and 68-key keyboards have a four-position keylock switch. The positions are explained in the following table.

Abréviation	Position	Description
Ex	Exception	Used by the customer or service representative to perform low-level programming such as terminal diagnostics, configuring the terminal, or loading the terminal.
L	Locked	Used to lock keyboard input to prohibit use of normal functions.
R	Register	Used when performing normal retail mode functions.
S	Supervisor	Used by supervisor to provide highest level of terminal control in cases such as refunds and running totals.

Speaker

A programmable speaker generates key clicks and error tones.

Buzzer

The buzzer is an internal on board Buzzer.

System Status Indicator LED

The system status indicator is a two-color LED. The green color indicates the keyboard is powered. Red indicates an error condition. When the system is off, the LED is extinguished.

When the 68-key keyboard is in the special "PC setup" mode, the LED flashes red/green.

The status and condition indicated by the LED are shown as follows:

Status	Condition
Green	Power on
Red	Wedge controller reporting an error condition
Flashing red/green	Keypad of 68-key keyboard in "PC Setup" mode (See special keypad mode on next page)
Off	System off

Note: For more information about the Wedge controller, refer to *Wedge Software User's Guide* (BST0-1368-B).

MSR (Magnetic Stripe Reader)

The MSR is an optional feature that provides support for reading magnetically coded data cards. The keyboards support two different types of MSR:

- ISO Tracks 1, 2, and 3
- JIS-II and ISO Track 2 (Big Ticket and full-featured 68-key keyboards only)

Note: MSR signals are routed to the Wedge controller and passed into the system keyboard data stream. For more information about the Wedge controller, refer to *Wedge Software User's Guide* (BD20-1368-A)

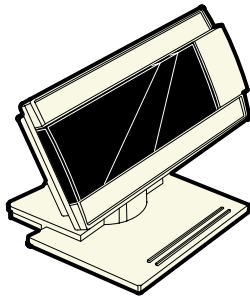
External Decoded Scanner Connector

A decoded RS-232 input device that only requires TXD, RXD, CTS and RTS, such as a bar-code scanner, can be connected to the keyboard. RS-232 signals are routed to the Wedge controller and passed into the system keyboard data stream. The connector provides +5V to power the scanner. For more information about the Wedge controller, refer to *Wedge Software User's Guide* (BD20-1368-A).

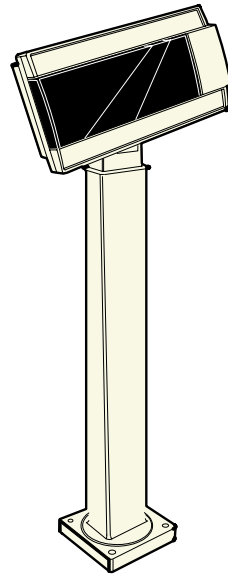
Special "PC Setup" Keypad Layout for 68-key Keyboard

On power-up, the operator can switch the 68-key keyboard into an alternate keypad layout that can be used with many PC BIOS setup and configuration routines. The alternate layout contains keys such as ESC, TAB, END, "+", "-" and arrow keys which are not available in the normal keypad layout. The alternate layout allows the operator to configure a PC with the 68-key keyboard.

NCR 5972 2x20 Remote Customer Display



Desktop Model



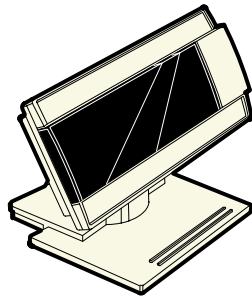
16-Inch Post

20448

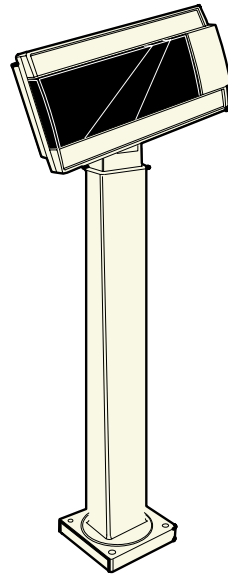
Features

- RS-23 Interface
- Socket for 32K of PROM for additional character sets (5972-1000 VFD).
- 7 x 9 pixel characters (5972-1000 VFD); 5 x 8 pixel characters on 5972-2000 LCD
- Diagnostics
- Character sets:
 - Code Page 850 (International)
 - Katakana (except 5972-2000)
 - Code Page 866 (Cyrillic) (except 5972-2000)

NCR 5973 2x20 International VFD Customer Display



Desktop Model



16-Inch Post

20448

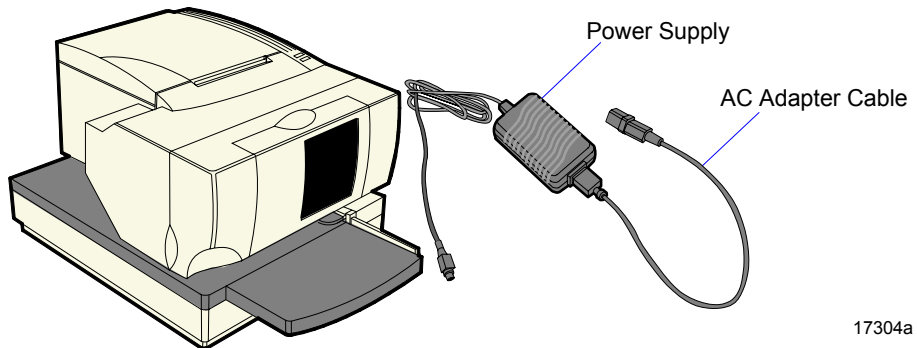
Features

- 256x64 dots graphic VFD
- Micro-controller
- Flash ROM
- Display driver circuitry
- Communication/power connector
- Power converter circuitry
- Communication drivers
- Bi-directional parallel interface support

Printers

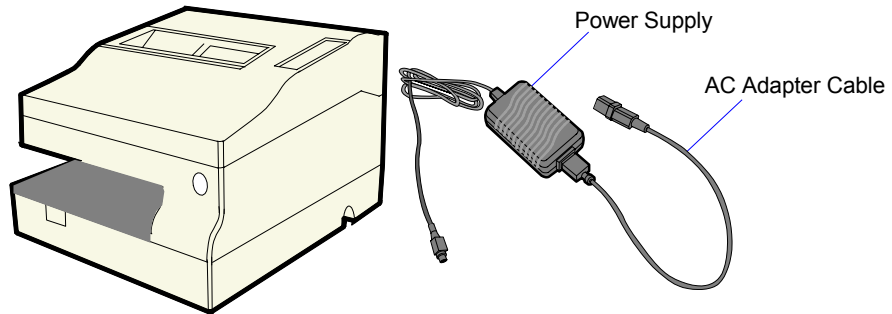
NCR 7158 Printer

The NCR 7158 Printer is extremely fast, quiet, and reliable point-of-sale device. It consists of two specialized printers in one compact package: a thermal printer on top that prints receipts, and an impact slip printer in front to print on forms and checks that you insert. The printer features a dual interface, so it can connect to the host terminal either through a USB interface or RS-232. It can receive its power from an external power supply or through the 24V Powered USB port on the terminal. It also has a connector for cash drawers.



NCR 7162 Printer

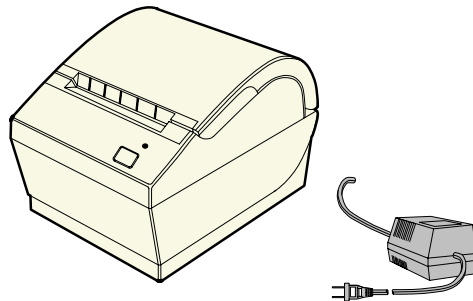
The NCR 7162 is a dot matrix printer that provides up to 40 columns receipt and journal, and up to 88 columns of slip print. The printer's features include paper low sensors, slip-out detectors, automatic paper cutting, and two cash drawer kick out connectors. It has an RS-232 data interface. It can receive its power from an external power supply or through the 24V Powered USB port on the terminal. It also has a connector for cash drawers.



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NCR 7194 Printer

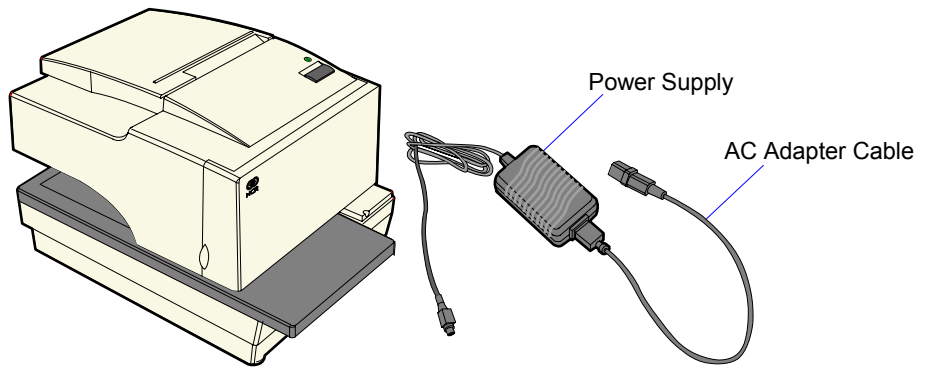
The NCR 7194 Printer is a high speed, high-resolution printer, capable of both text and graphics printing. It offers direct thermal printing in a receipt station. The printer features a dual interface, so it can connect to the host terminal either through a USB interface or RS-232. It can receive its power from an external power supply or through the 24V Powered USB port on the terminal. It also has a connector for cash drawers.



16437a

NCR 7167 Printer

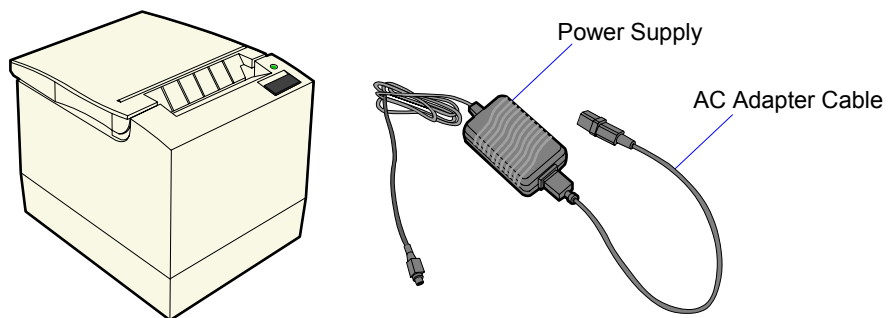
The NCR 7167 Printer is a fast, quiet, relatively small and very reliable multi-function printer. It prints receipts, validates and prints checks, and prints on a variety of single or multiple part forms. There is not journal as it is kept electronically by the host terminal. The printer can connect through a USB port or a serial port. It can receive power from a power supply or through a USB+ power cable.



19711a

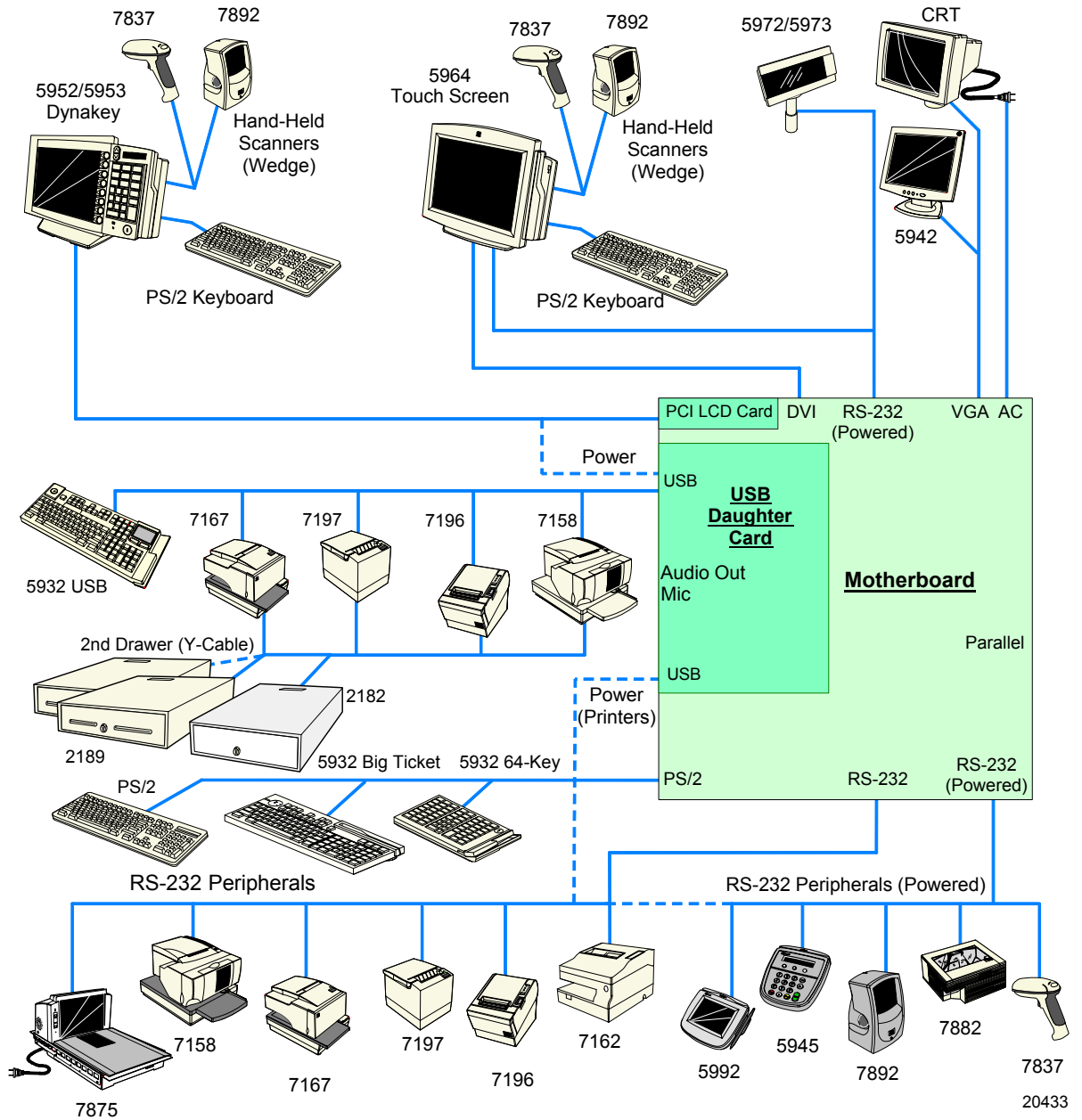
NCR 7197 Printer

The NCR 7197 Printer is a fast, quiet, relatively small and very reliable multi-function printer. It prints receipts and two-color printing. The printer can connect through a USB port or a serial port. It can receive power from a power supply or through a USB+ power cable.



19712a

System Configuration Diagrams



Chapter 2: Hardware Installation

Introduction

This chapter explains how to install the 7458 hardware, including out-of-box installation and how to install the optional peripheral devices.

The 7458 is designed with a great deal of flexibility of how to configure the integrated peripherals. The displays and printers can be located on either side of the Integration Tray. Filler plates are used where there are no peripherals present.

The 7458 is very flexible in how it can be installed. A *typical* configuration is discussed in this document. Your configuration may require adjustments to the procedures.

Installation Restrictions

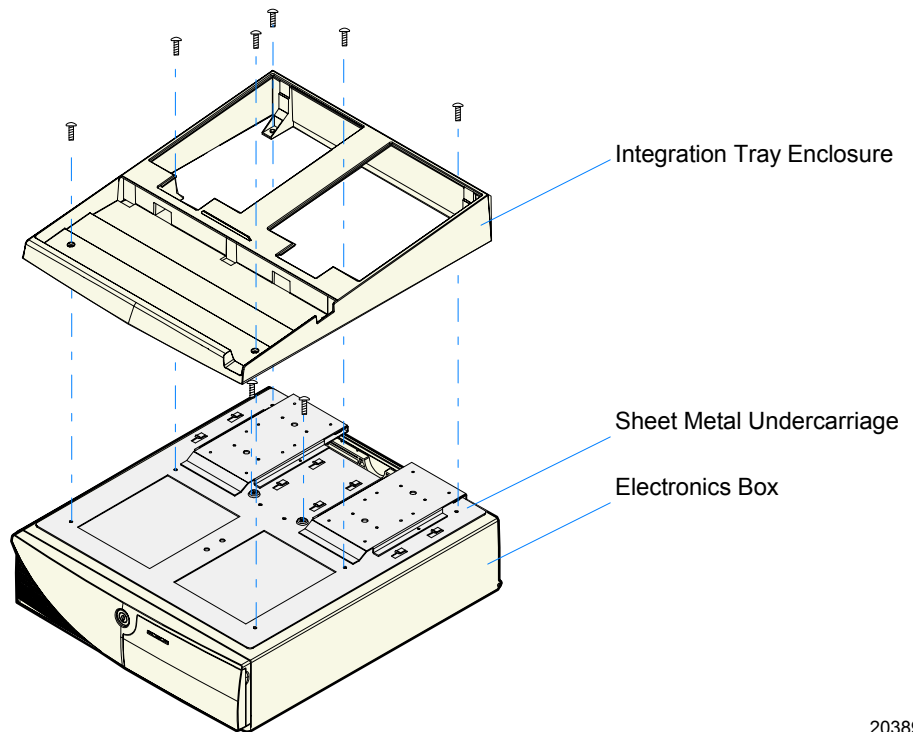
- Before installing the 7458, read and follow the guidelines in the *RealPOS 80 Site Preparation* (B005-0000-1360) and the *NCR Workstation and Peripheral AC Wiring Guide* (BST0-2115-53).
- Install the 7458 near an electrical outlet that is easily accessible. Use the power cord as a power disconnect device.
- Do not permit any object to rest on the power cord. Do not locate the 7458 where the power cord can be walked on.
- Use a grounding strap or touch a grounded metal object to discharge any static electricity from your body before servicing the 7458.

Caution: This unit contains hazardous voltages and should only be serviced by qualified service personnel.

Caution: Do not connect or disconnect the transaction printer while the terminal is on. This can result in system or printer damage.

Installing the Integration Tray

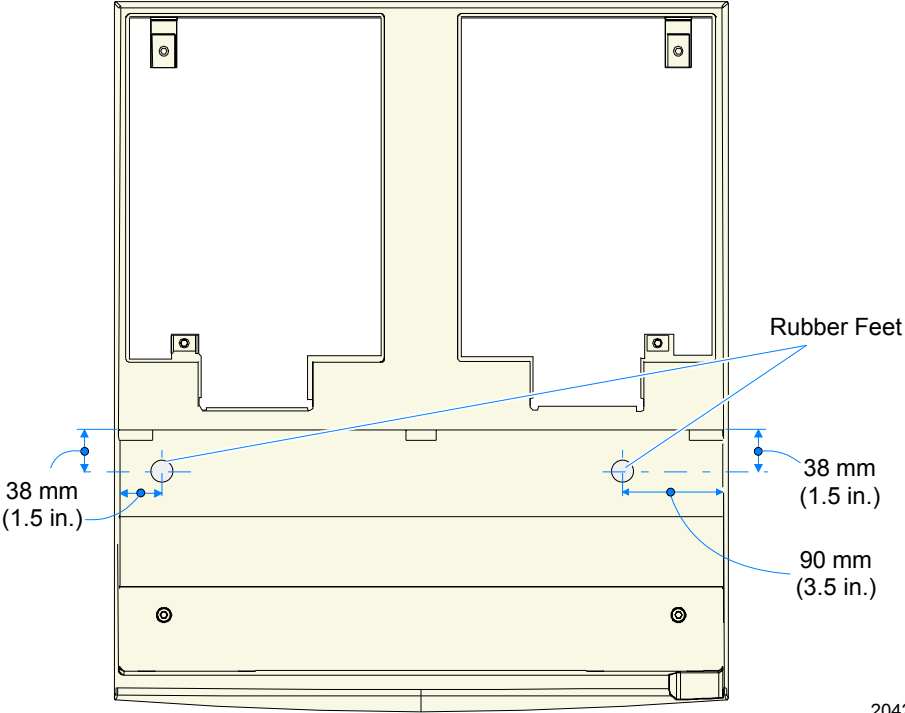
1. Unpack the terminal in the desired location.
2. Install the Integration Tray.
Note: The Integration Tray can be mounted on top of the 7458 terminal, on a 2189-8xxx Cash Drawer or on a counter top. When installing on a counter top use the appropriate screws.
3. Align the Sheet Metal Undercarriage screw holes with the screw holes in the top of the Electronics Box.
4. Align the Integration Tray Enclosure screw holes with the same.
5. Secure the assembly with screws (8).



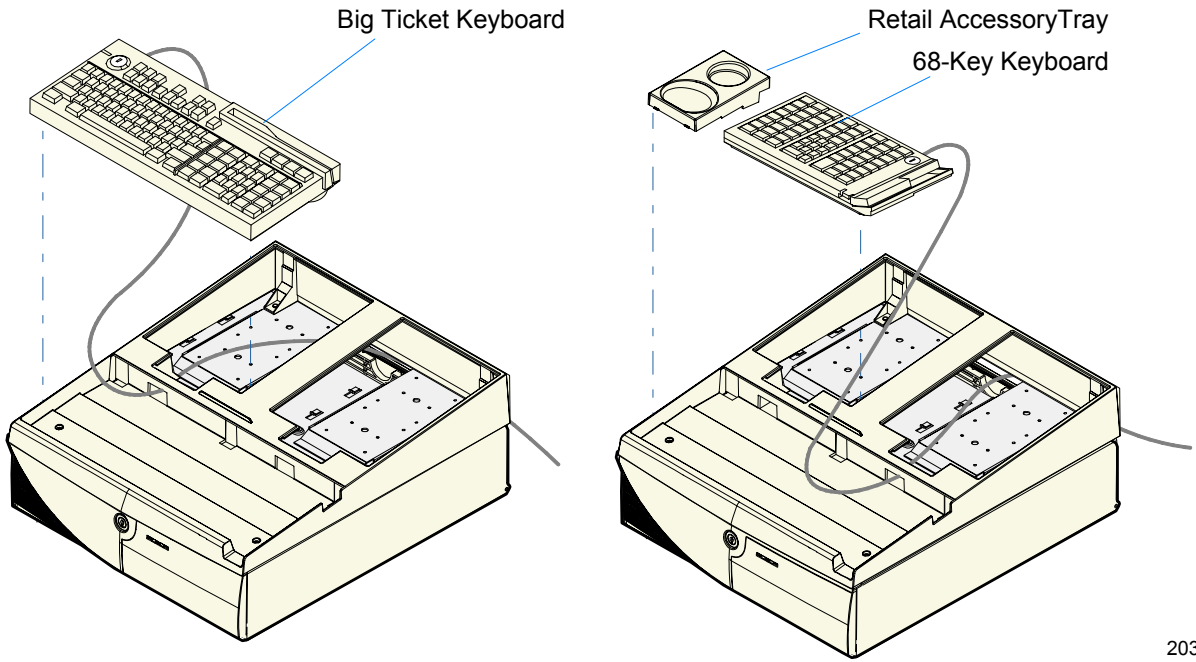
Installing the Keyboard

NCR 5932 Big Ticket Keyboard Only: The NCR Big Ticket Keyboards are slightly thinner than the other retail keyboards and require rubber feet below them to provide a flush cabinet fit.

1. Install the adhesive-backed Rubber Feet (2) in the Keyboard well in the Integrated Tray.



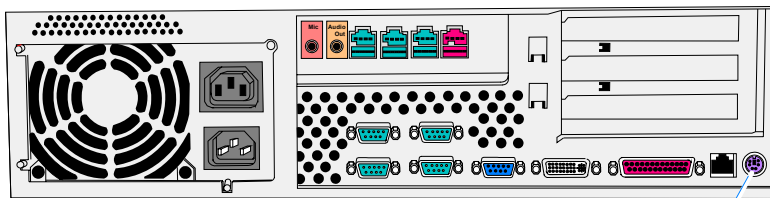
2. Route the Keyboard Cable as shown below
3. Install the keyboard in the Integration Tray
4. **NCR 5932 68-Key Keyboard Only:** Install the Retail Accessory Tray.



PS/2 Keyboard/Mouse Cable Connections

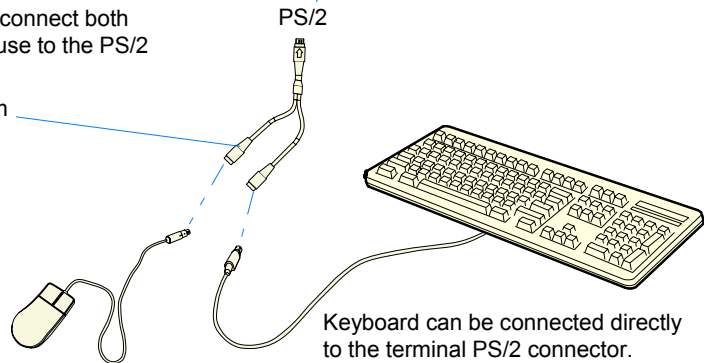
PS/2 keyboards and mice are supported through a single PS/2 connector. Keyboards can be plugged directly into the PS/2 connector. If PS/2 mouse is used it requires a Y-cable, whether or not a keyboard is used.

Note: PS/2 Retail keyboards cannot be used in configurations with *Wedge type* DynaKeys or Touchscreen displays. However, standard PC keyboards can be used with these devices.



Use the Y-Cable to connect both a keyboard and mouse to the PS/2 connector.

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(1416-C281-0018)



Mouse requires the Y-Cable whether or not a keyboard is installed.

20402

Dual Port Keyboard/Mouse Installation

The 7458 supports both PS/2 and dual port (PS/2 - USB) keyboards. A dual port keyboard or mouse can be connected to either the PS/2 connector or to a USB connector using an adapter cable.

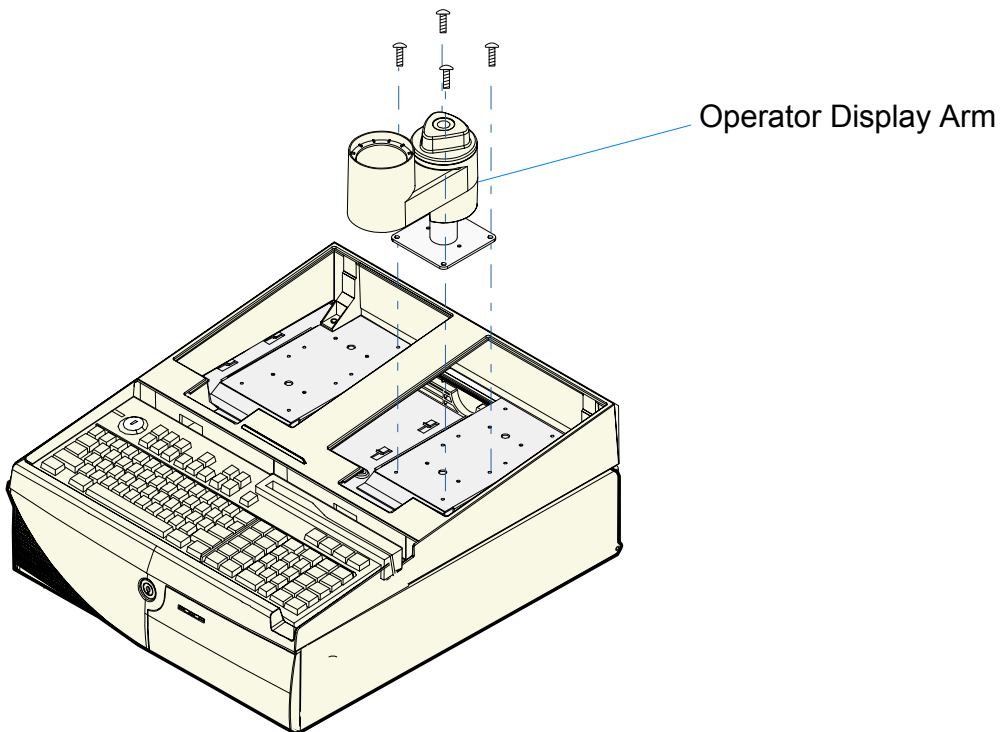
Mouse Installation Restriction

The mouse and UPS share the same IRQ. Therefore, if a mouse is installed, it must be enabled in the BIOS and the UPS must be moved to another available IRQ, or disabled if not being used.

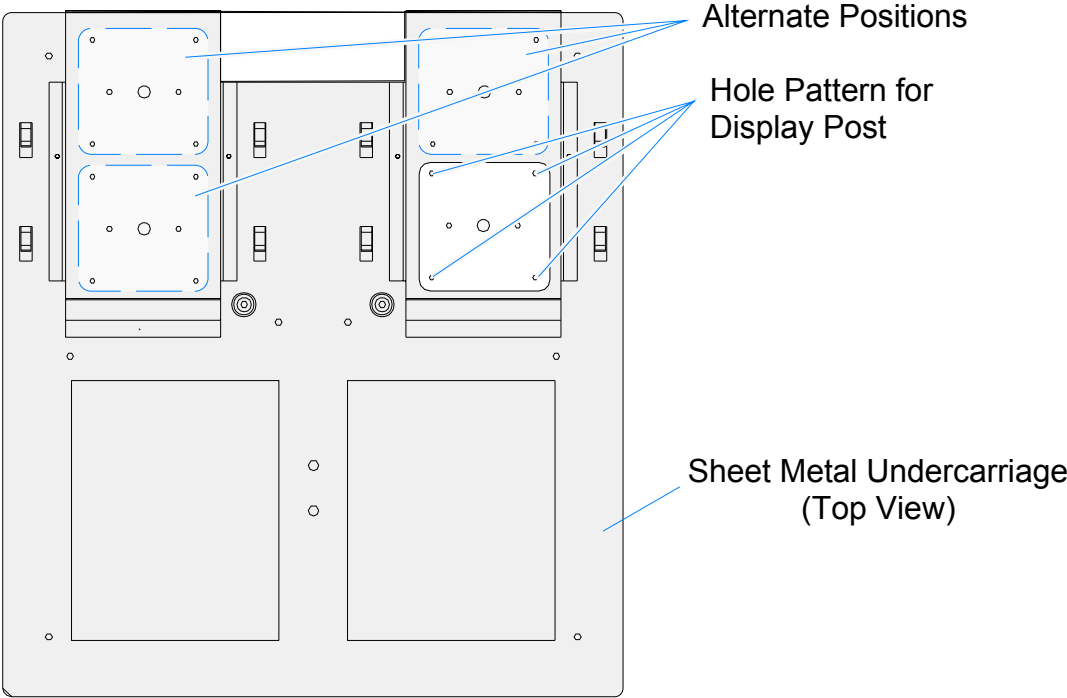
Installing the Integrated Operator Display

1. Install the Operator Display Arm on the Sheet Metal Undercarriage with screws (4).

Note: There are variations in the Operator Display Arm because of the different types of displays that are supported. Some have additional parts to mount the display and some include the display as well. The CRT mount is shown in this section but all are installed in a similar manner.



The Operator Display Arm can be installed in four possible locations

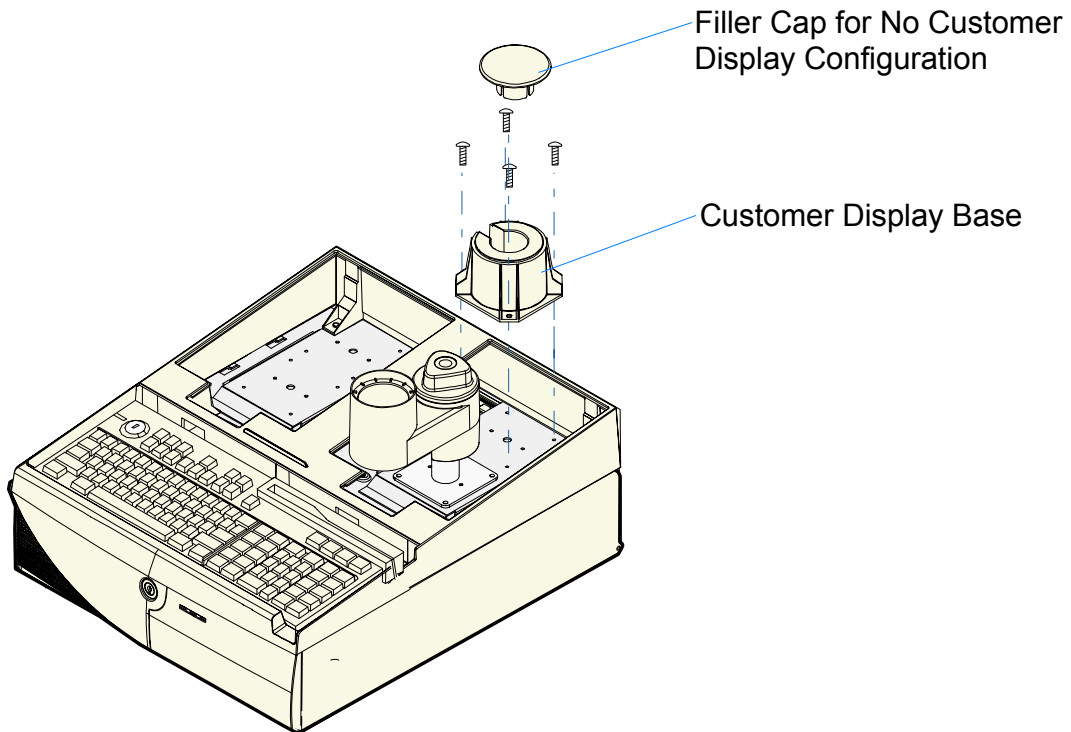


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Note: When there is no Customer Display the recommended location for the Operator Display is the back position, thus minimizing the overhang of the display.

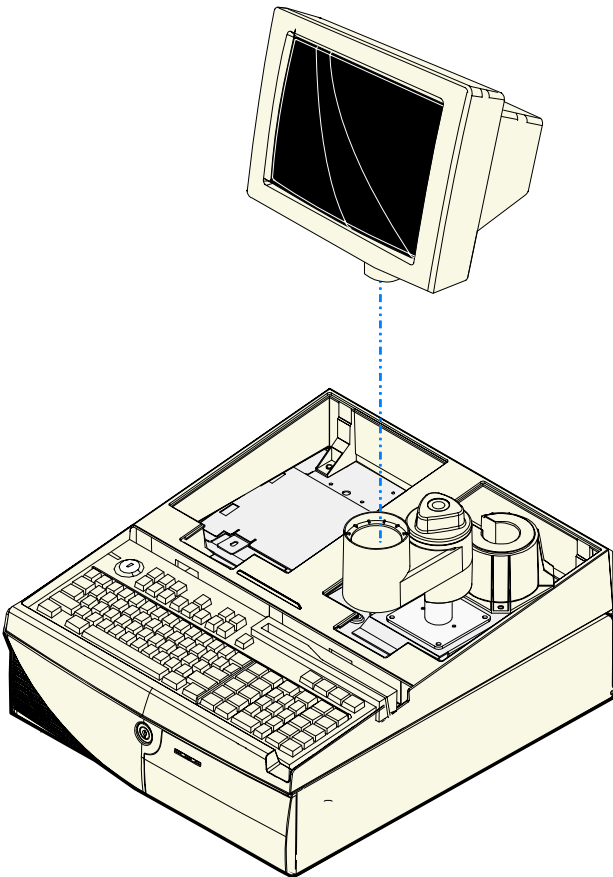
2. Install the Customer Display Base with screws (4). Install the post behind or in front of the Operator Display Arm.

Note: A Filler Cap is available when there is no Customer Display.



6. Install the Operator Display.
 - a. Route the display cables down through the Operator Display Arm and out the back of the cabinet.
 - b. Insert the display into the Operator Display Arm.

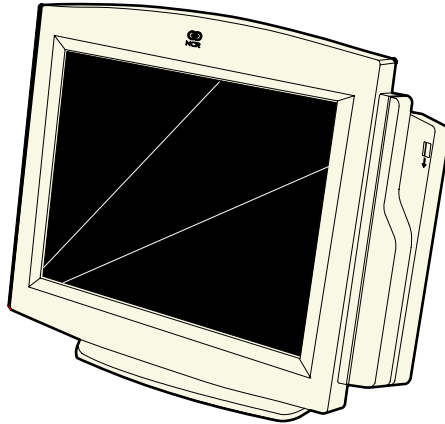
Note: The NCR 5953 DynaKey, NCR 5942 LCD Display, and NCR 5964 Touch LCD are pre-installed on the Display Arm.



Operator Display Cable Connections

Installing an NCR 5964 12.1-inch Touch LCD

The NCR 5964 can be integrated in the terminal or it can be connected as a remote device.



19429

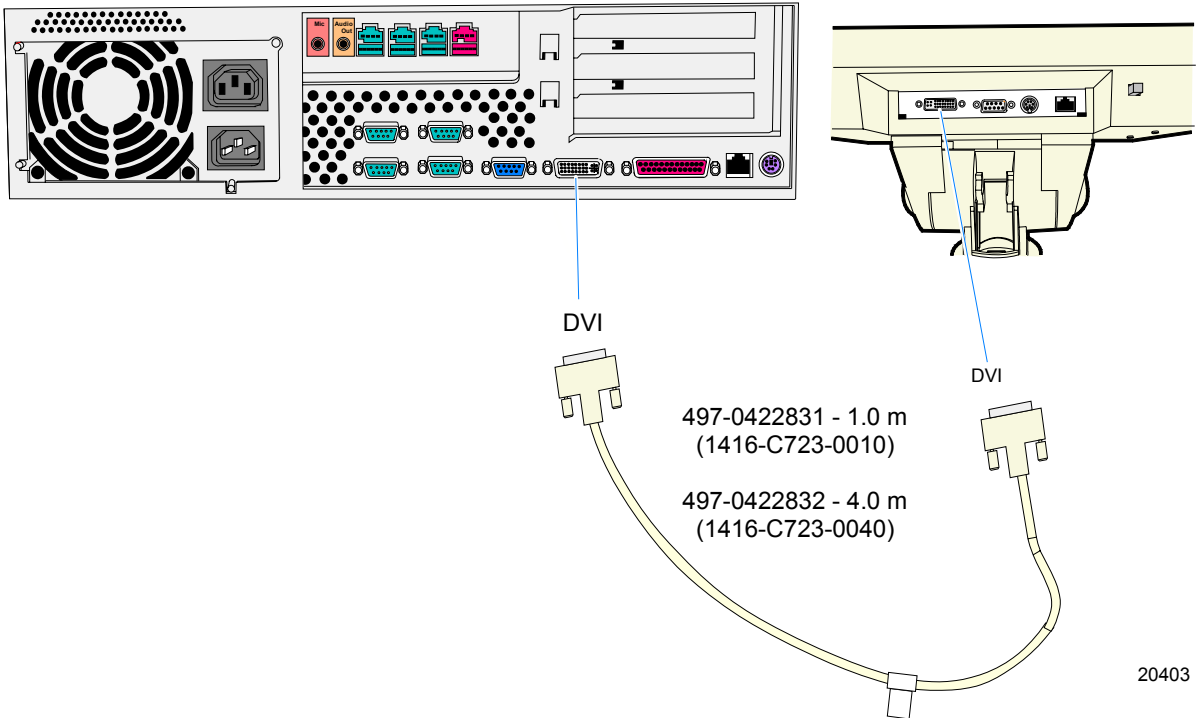
Note: A PC keyboard is required to configure a 5964 12.1-inch Touch LCD.

The following illustrations show the cable connections for the 5964 and the 7458. There are two cables required.

- DVI Cable - provides the video interface to the 5964
- RS-232 Y-Cable - provides a serial interface and power to the 5964. It also connects the 5964 PS/2 keyboard connector to the terminal, which provides an interface for the wedge controller (MSR, PS/2 Keyboard, Scanner, Tone Speaker).

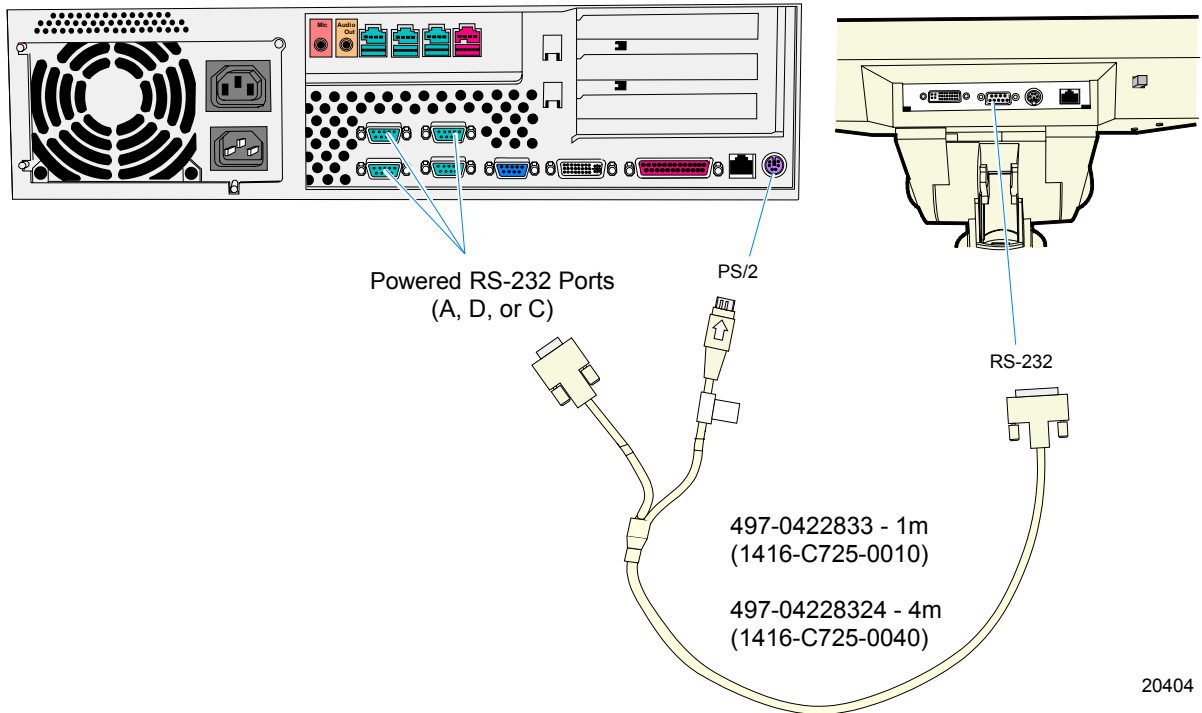
DVI Cable Connections

Connect the cable to the *DVI Connector* on the 5964 display and 7458 terminal.



RS-232 Cable Connections

1. Connect the Y-cable to one of the *Powered RS-232* ports and to the *PS/2* connector on the 7458 terminal.
2. Connect the other end of the Y-Cable to the *RS-232* connector on the 5964 display.

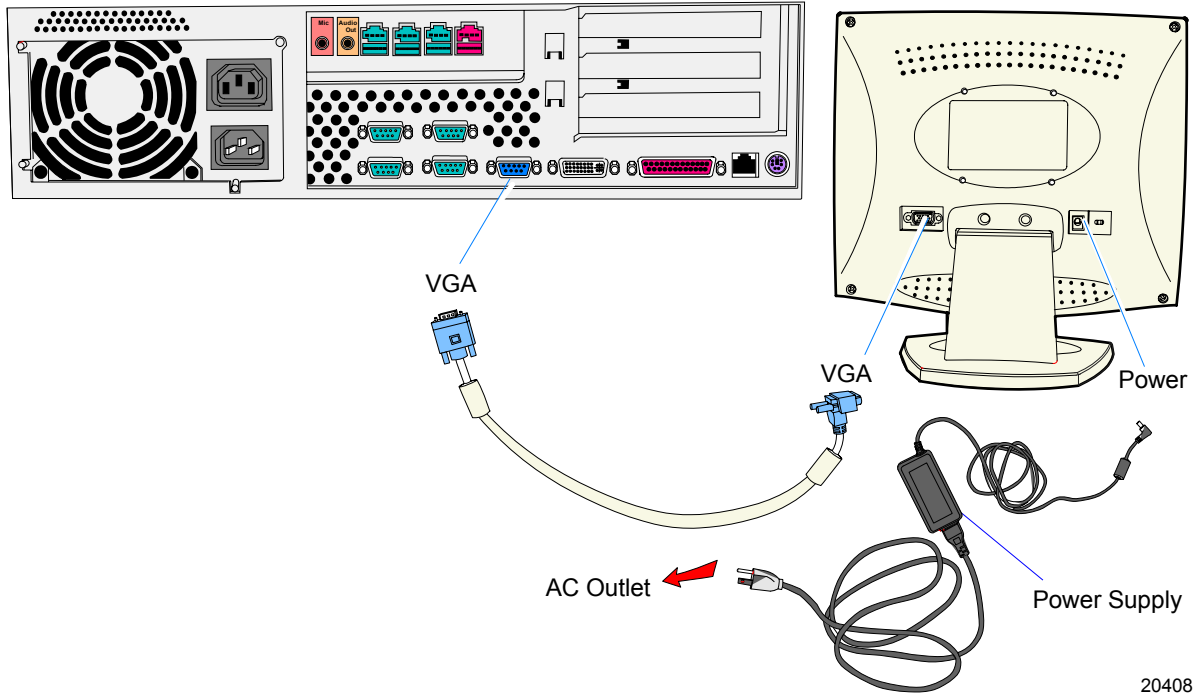


20404

For more information refer to the *NCR 5964 12.1-Inch Touch LCD User's Guide* (B005-0000-1324)

Installing a 5942 12.1-Inch LCD Monitor

The NCR 5942 can be integrated in the terminal or it can be connected as a remote device. It is connected through the VGA connector and receives power from a DC power supply.



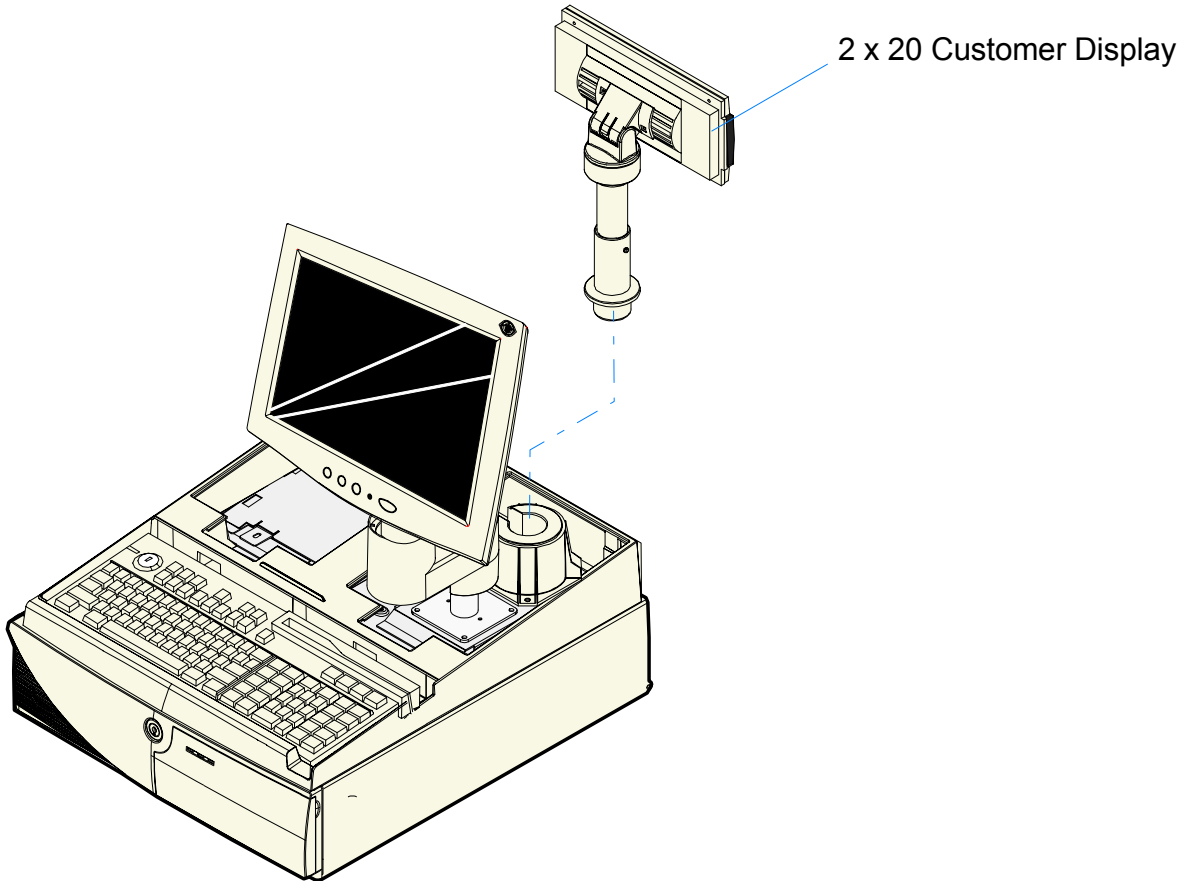
20408

1. Connect the LCD Cable to the VGA connectors on both the 5942 monitor and 7458 terminal.
2. Connect the DC Power Supply to the *DC Power* connector on the 5942 and to a standard AC outlet.

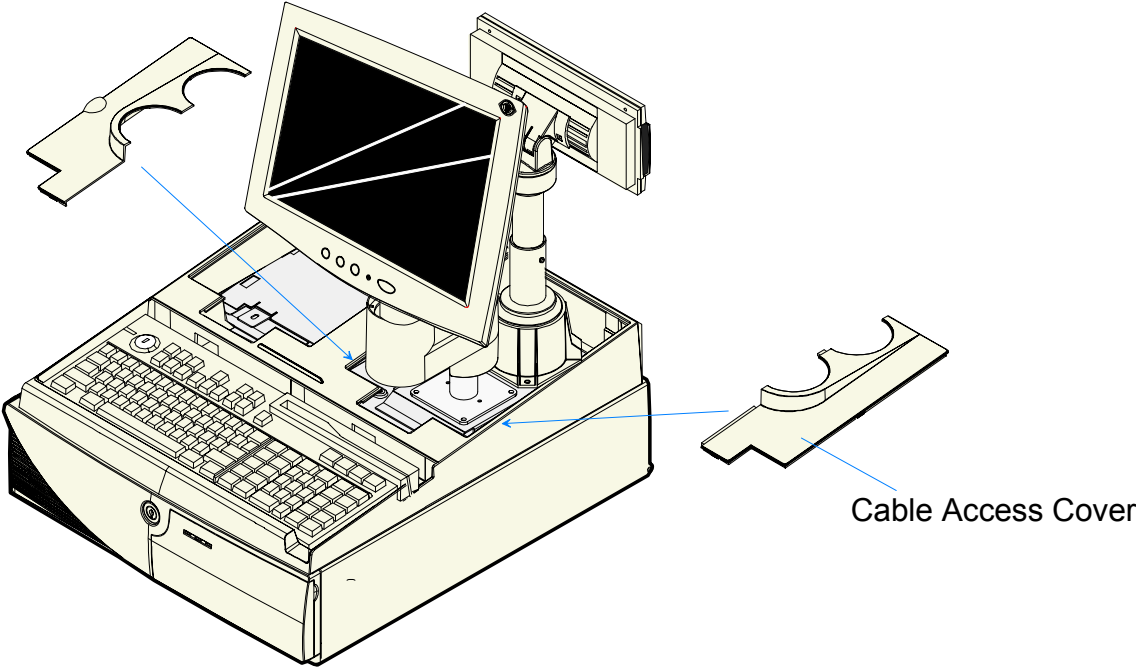
For more information refer to the *NCR 5942 12.1-Inch LCD Monitor User's Guide* (B005-0000-1394)

Installing the Integrated Customer Display

1. Route the display cables down through the Customer Display Base and out the back of the cabinet.
2. Insert the display into the Customer Display Base.



3. Install the Cable Access Covers.



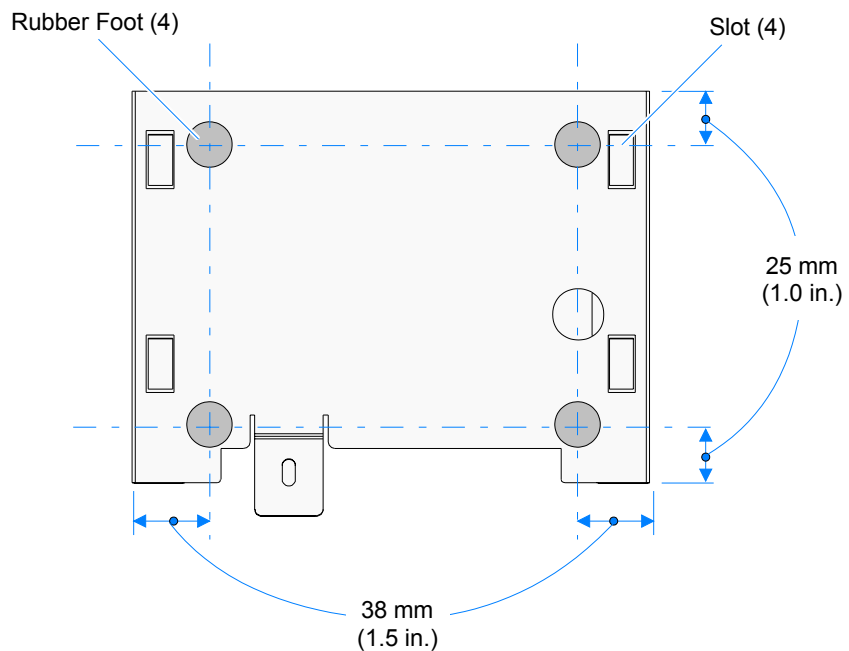
Installing the Transaction Printer

The NCR 7167 and NCR 7197 printers can be integrated in the terminal or they can be connected as remote devices. Other printers are available as remote devices only.

Integrated Printer Only:

1. Install the Printer Support Wedge.

Install the adhesive-backed Rubber Feet (4) on the Printer Support Wedge.



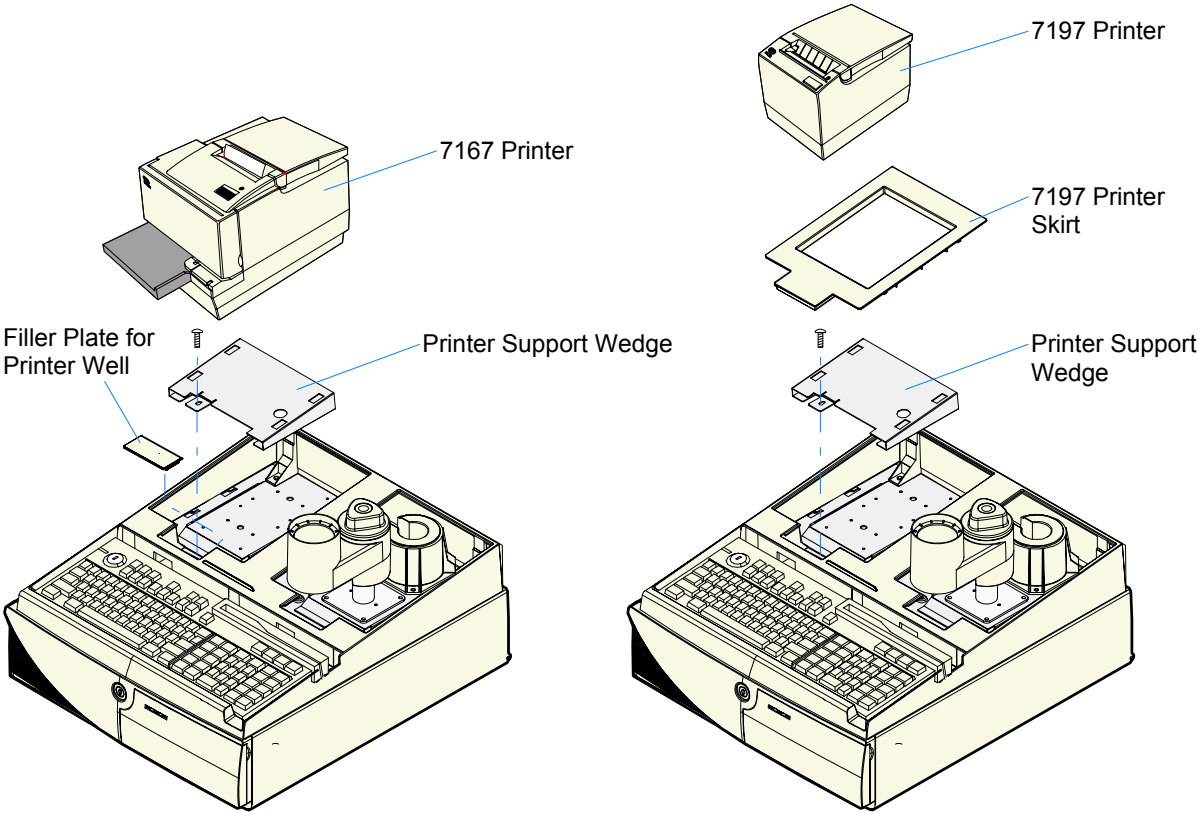
20426

Install the Wedge on the Sheet Metal Undercarriage. There are slots (4) on the bottom of the Wedge that hook into hooks on the Sheet Metal Undercarriage. Secure the Wedge with a screw.

- 2. Route the printer cable out the back of the terminal and set the printer on the Printer Support Wedge.

NCR 7167 Only: Install the Filler Plate for the Printer Well (if the printer does not have a Slip Tray), route the cable out the back of the terminal, and set the printer in the cabinet.

NCR 7197 Only: Install the 7197 Printer Skirt, route the cable out the back of the terminal, and set the printer in the cabinet.



Printer Cable Connections

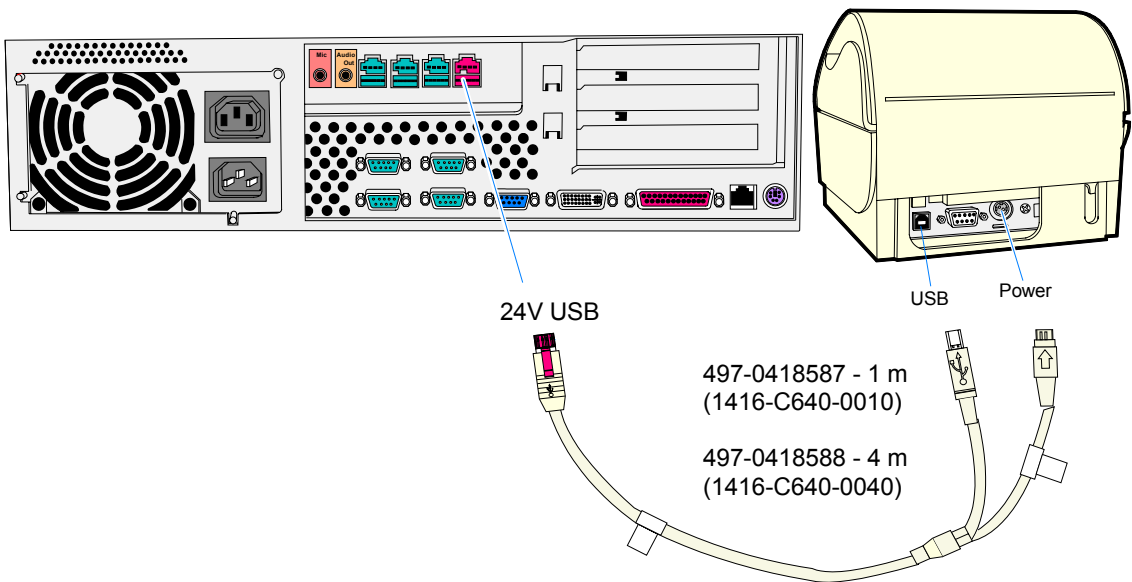
The printers can connect through a USB connector or an RS-232 connector. It receives power through a Powered USB power cable.

Interfaces Supported

Printer	USB	RS-232
7158	√	√
7162		√
7167	√	√
7194	√	√
7197	√	√

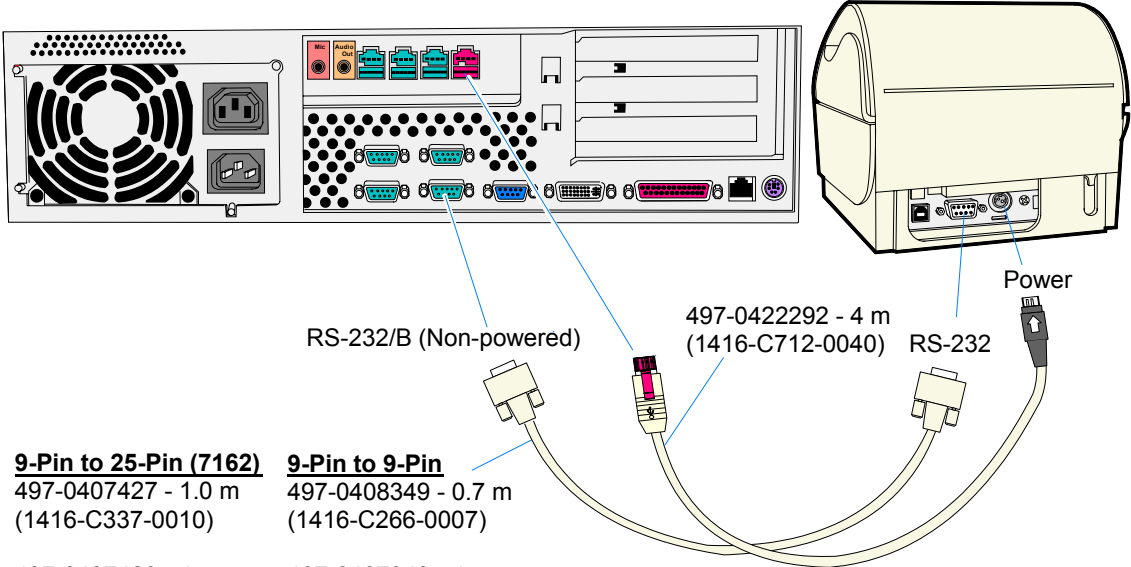
USB Installation

Connect the Powered USB Printer Interface Cable to the *USB Connector* and *Power Connector* on the printer and to the *24 V Powered USB Connector* on the terminal.



RS-232 Installation w/Power from Powered USB

- 1. Connect the RS-232 Printer Interface Cable to the *RS-232 Connector* on the printer and to an *RS-232 Connector* on the terminal.
- 2. Connect the Printer Power Cable to the *Power Connector* on the printer and to the *24 V Powered USB Connector* on the terminal.



9-Pin to 25-Pin (7162)
497-0407427 - 1.0 m
(1416-C337-0010)

9-Pin to 9-Pin
497-0408349 - 0.7 m
(1416-C266-0007)

497-0407429 - 4 m
(1416-C337-0040)

497-0407943 - 4 m
(1416-C266-0040)

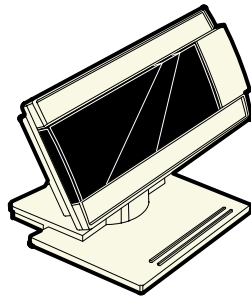
497-0407430 - 15.2 m
(1416-C337-0152)

497-0409379 - 15 m
(1416-C266-0150)

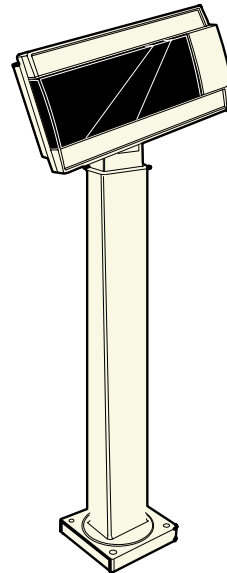
Installing an NCR 5972 Remote Customer Display

There are two models of the NCR 5972 Remote Customer Display:

- 5972-1000 Vacuum Fluorescent Display (VFD)
- 5972-2000 Liquid Crystal Display (LCD)



Desktop Model

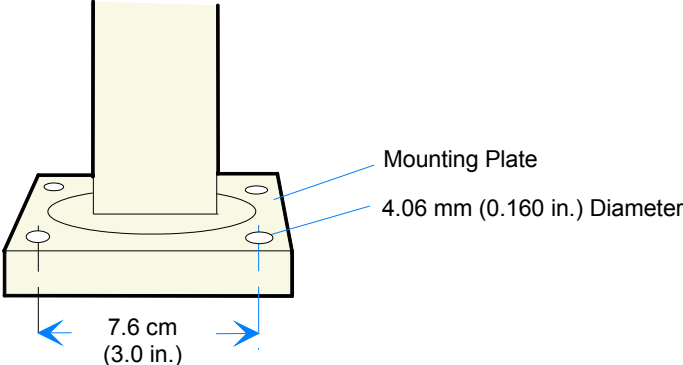


16-Inch Post

20448

1. Locate the Display Mount within 4 meters (13 ft.) of the host terminal.
2. Determine if the cable should be routed down through the mounting surface or if it should be run on top of the surface. Drill a hole if necessary.

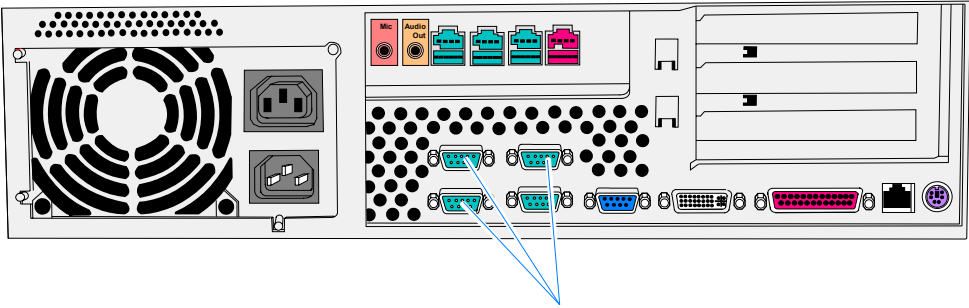
- 3. **High-Post Mount:** If you are installing High-Post model secure the Mounting Plate with screws (4) that are provided.



14622

Customer Display Cable Connections

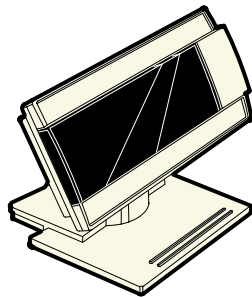
- 1. Connect the Display Cable to a powered RS-232 connector on the terminal.



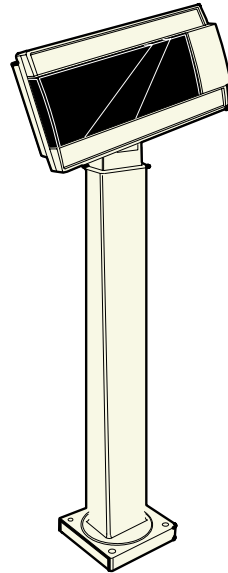
Powered RS-232 Ports
(A, D, or C)

20405

Installing an NCR 5973 Remote Customer Display



Desktop Model

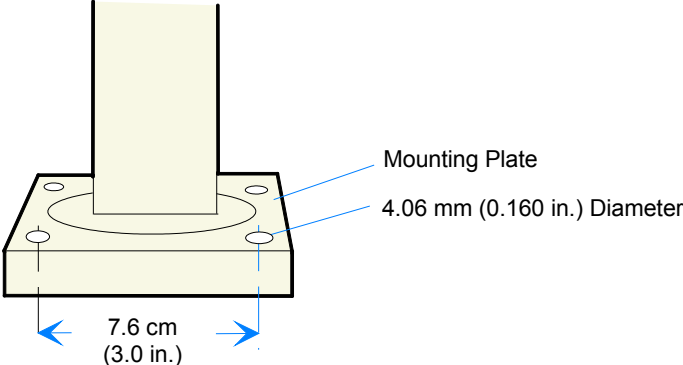


16-Inch Post

20448

1. Locate the Display Mount within 4 meters (13 ft.) of the host terminal.
2. Determine if the cable should be routed down through the mounting surface or if it should be run on top of the surface. Drill a hole if necessary.

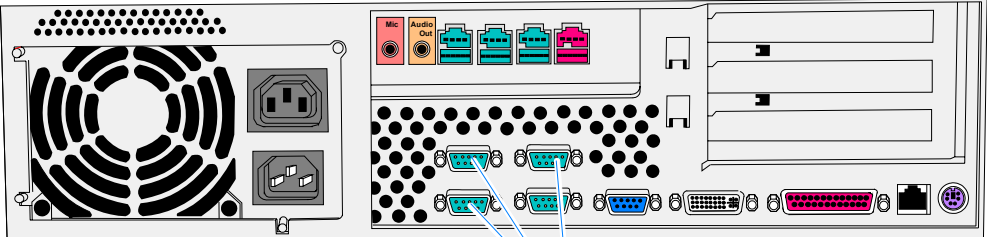
- 3. **High-Post Mount:** If you are installing High-Post model secure the Mounting Plate with screws (4) that are provided.



14622

Customer Display Cable Connections

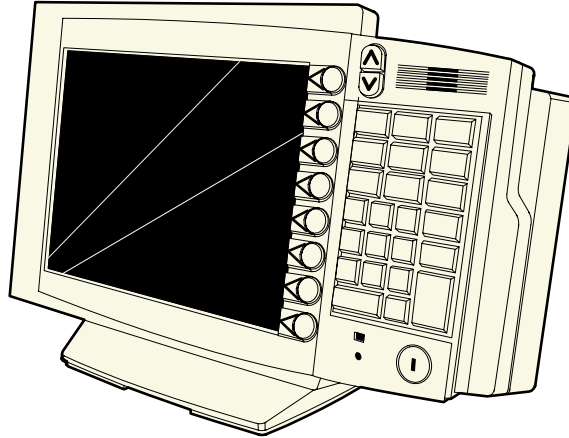
Connect the Display Cable to the Parallel connector on the terminal.



Powered RS-232 Ports
(A, D, or C)

20405

Installing a 5953 DynaKey



17089

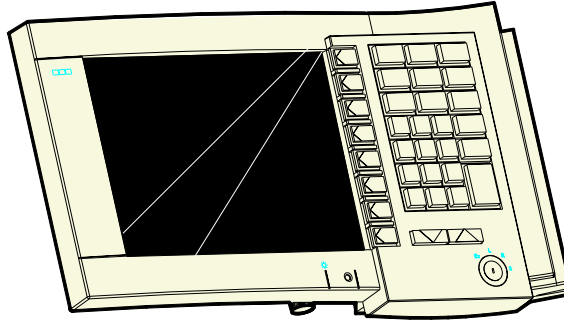
The 5953 DynaKey is a combined display and keyboard device. It can be installed in the following configurations:

- Integrated in the 7458
- 5953-F022 Remote Table Top Mount
- 7401-K533 Wall Mount
- 5952-K024 Checkstand Mount w/Base
- 5953-K023 Checkstand Mount

There are two types of interface models of the 5953 DynaKey. For installation information for each, refer to their respective User Guides.

- *NCR RealPOS 5953 USB DynaKey User's Guide* (B005-0000-1457)
- *NCR RealPOS 5953 PS/2 DynaKey User's Guide* (B005-0000-1161)

Installing a 5952 DynaKey



14135

The 5952 Wedge DynaKey is a combined display and keyboard device. It can be installed in the following configurations:

- Integrated in the 7458
- 5953-K032 Remote Table Top Mount
- 5964-K032 Checkstand Mount

For installation information refer to the *NCR 5953 Wedge DynaKey User's Guide* (BD20-1370-A)

Installing a Secondary CRT Display (Dual Display)

The 7458 supports a dual display configuration, consisting of any combination of the following display devices:

- NCR 5953 DynaKey
- NCR 5942 LCD Monitor
- NCR 5964 Touch LCD
- 7452-K419 15-Inch Color CRT
- 7452-K404 9-Inch Mono CRT
- 7452-K309 9-Inch Mono CRT

Installing the Hardware

The NCR 7456 requires either an ATI or C&T PCI card to support dual display/multi-monitor.

Supported Configurations

Configuration ID	Operator Display	Customer Display
A	K593-K152 SVGA PCI LCD Adapter card (69000 chip)	VIA SVGA LCD/CRT or DVI LCD (Motherboard) (VIA VT8601)
B	5952-K052 VGA LCD Adapter card (65550 chip)	VIA SVGA LCD/CRT or DVI LCD (Motherboard) (VIA VT8601)
C	VIA SVGA LCD/CRT or DVI LCD (Mother board) (VIA VT8601)	7456-K350 PCI VGA Adapter Card (ATI Rage XL)

Supported Configurations by Operating System

Operating System	Dual Display Configuration Supported
DOS	A, B
Windows 98	Not supported
Win NT 4.0	Not supported
Windows 2000	A, B, C
Windows XPe	A, B, C
Linux	C
Windows CE	Not supported

Supported Hardware Configurations

The following dual display combinations are supported (based on the Configuration IDs in the above tables).

Configuration ID	Operator Display		Customer Display	
	Display Model	Connected to	Display Model	Connected to
A	5953 12.1-In. DynaKey (PS/2)	5953-K152 SVGA Adapter (69000 chip)	5942 12.1-In. Color LCD or 15-In. Color CRT (7452-K419)	VGA connector on Motherboard
B	5952 10.4-In. DynaKey (PS/2)	5952-K052 VGA Adapter (65550 chip)	5942 12.1-In. Color LCD or 15-In. Color CRT (7452-K419)	VGA connector on Motherboard
C	15-In. Color CRT (7452-K419) Or 9-In. Mono CRT (7452-K404/K309)	VGA connector on Motherboard	15-In. Color CRT (7452-K419) or 9-In. Mono CRT (7452-K404/K309)	7456-K350 VGA Adapter (ATI Rage XL)

Configuration ID	Operator Display		Customer Display	
	Display Model	Connected to	Display Model	Connected to
C	5942 12.1-In. Color LCD	VGA connector on Motherboard	15-In. Color CRT (7452-K419) or 9-In. Mono CRT (7452-K404/K309)	7456-K350 VGA Adapter (ATI Rage XL)
C	5964 12.1-In. Touchscreen LCD	DVI connector on Motherboard	15-In. Color CRT (7452-K419) or 9-In. Mono CRT (7452-K404/K309)	7456-K350 VGA Adapter (ATI Rage XL)
C	5953 12.1-In. USB/DVI DynaKey	DVI connector on Motherboard	15-In. Color CRT (7452-K419) or 9-In. Mono CRT (7452-K404/K309)	7456-K350 VGA Adapter (ATI Rage XL)

Installing the Displays

1. Install the proper Adapter Card and connect the cables according to the previous hardware configuration table.

Note: The CRTs can receive power from either the Accessory AC connector on the terminal or from a standard AC outlet (which requires an AC adapter cable; 1416-C508-0040).

2. Verify the Video Display settings are correct in the BIOS.

Dual Display configurations require that the plug-in card be defined as the Secondary Display. The Primary video setting in the BIOS must be set to AGP. (PCI is the Primary video default setting.)

Configuring the Software for Dual Display

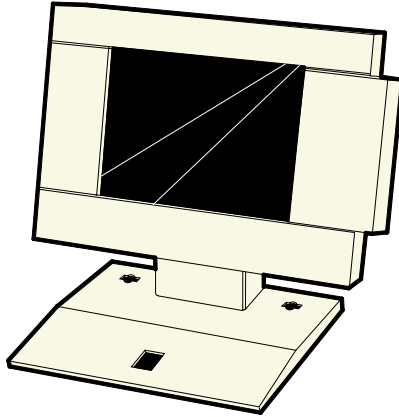
Verify that the appropriate drivers are installed and that the Operating System is configured to run dual displays (multi-monitor).

For dual display on DOS systems, custom *Dual Display Drivers* are required to permit the application to switch output from one display to the other. These drivers are found on the *Customer Information Display (CID) Driver for DOS, WIN 3.1, Win95 LPIN (G370-0828-0000)*.

For additional software installation information, see the *Customer Information Display (Dual Display) User's Guide, (BD20-1431-B)*.

Installing an NCR 5982 5-Inch Operator Display

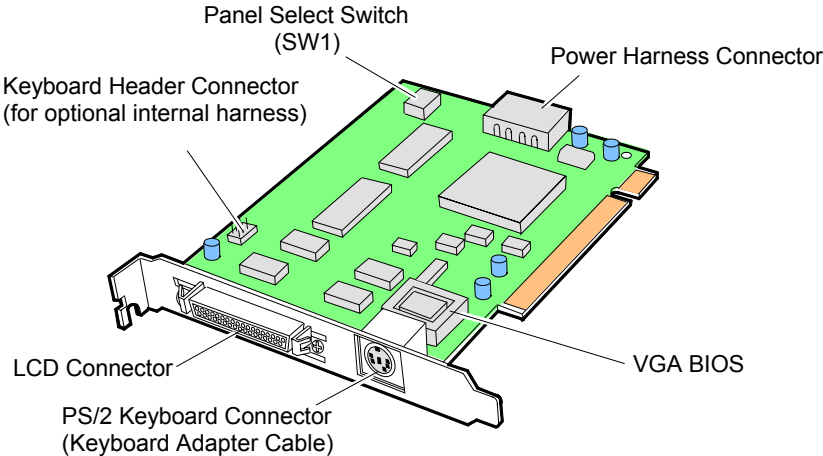
The 5982 5-Inch Operator Display is a 640 x 480 LCD with a back-light (not adjustable), contrast control knob, and keyboard mount.



Installing the PCI LCD Board (5952-K052)

Before the 5982 Display can be connected, the PCI LCD board must be installed in the terminal.

1. Power the system OFF.
2. Set SW1 to select Panel 4 (see chart on next page).



15376

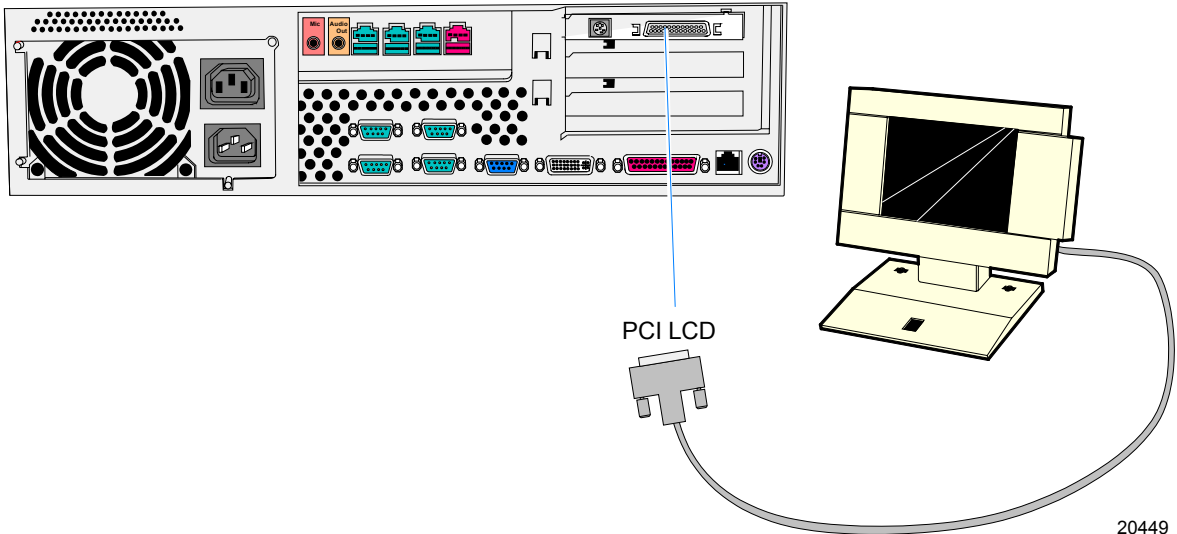
P1	P2	P3	Function
OFF	OFF	OFF	Panel 8 (Color DSTN)
OFF	OFF	ON	Panel 7 (Mono STN)
OFF	ON	OFF	Panel 6 (Color TFT)
OFF	ON	ON	Panel 5 (Unused)
ON	OFF	OFF	Panel 4 (5-in. Mono)
ON	OFF	ON	Panel 3 (Unused)
ON	ON	OFF	Panel 2 (Unused)
ON	ON	ON	Panel 1 (Unused)

3. Install the PCI LCD Board into one of the PCI slots in the terminal.

Caution: Use care to not damage the Speaker or Keyboard Header connectors on the Motherboard during card installation.

Connecting the 5982 Display to the Terminal

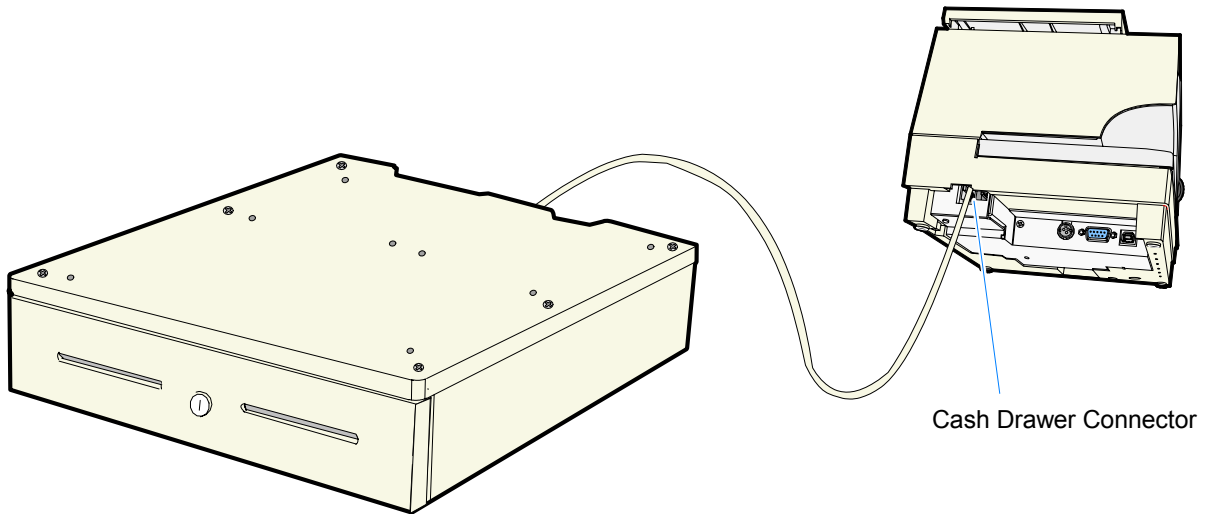
1. Unplug AC power.
2. Locate the Display Mount within 4 meters of the host terminal.
3. Connect the Display Cable to the PCI LCD.



For additional installation information refer to the *NCR 5982 5-Inch LCD Operator Display User's Guide (BD20-1443-A)*.

Installing a Cash Drawer

The Cash Drawer is connected to the transaction printer in all configurations. There is no Cash Drawer connector on the 7458.



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Installing a Second Cash Drawer

The terminal supports a 2-drawer configuration with a Y-cable (1416-C372-0006).

1. Place the cash drawer in the desired location, within cable's length of the printer.
2. Connect the Y-cable to the transaction printer cash drawer connector.

Chapter 3: Setup

Introduction

This chapter describes how to configure the BIOS options.

An external alphanumeric keyboard is not required to run the BIOS CMOS Setup Utility, but a keyboard makes the setup easier.

The Setup Menus in this chapter reference NCR RealPOS 7456/7458 BIOS, Version 3.0.2.2.

Entering Setup Using a Keyboard

1. Apply power to the terminal.
2. Press the F2 key when you see the NCR logo displayed.

Note: Setup can also be entered from the Boot Menu that is displayed when you press **ESC** during POST.

How to Select Menu Options

The following keyboard controls are used to select the various menu options and to make changes to their values.

- Use the arrow keys to select (highlight) options and menu screens.
- Use the + and - (or F5 and F6) keys to change field values.
- To view help information on the possible selections for the highlighted item, press F1.
- To save the changes, move the cursor to the *Exit Menu*, select either *Save Changes & Exit* or *Save Changes*, and press **[Enter]**.

Restoring Factory Settings

To reset all values to their default settings for the **current screen**, press F9. The terminal automatically loads the BIOS default values.

To reset **all** BIOS settings to their default settings go to the *Exit* menu, press F9, select either *Save Changes & Exit* or *Save Changes*, and press **[Enter]**.

See the BIOS Default Settings section later in this chapter for the pre-installed Setup defaults.

Special DynaKey Keypad Mode

If your Terminal is configured with a DynaKey or Touch Screen module refer to the following sections that discuss special keypad considerations. Otherwise, proceed to the **Configuration Setup Procedures** section.

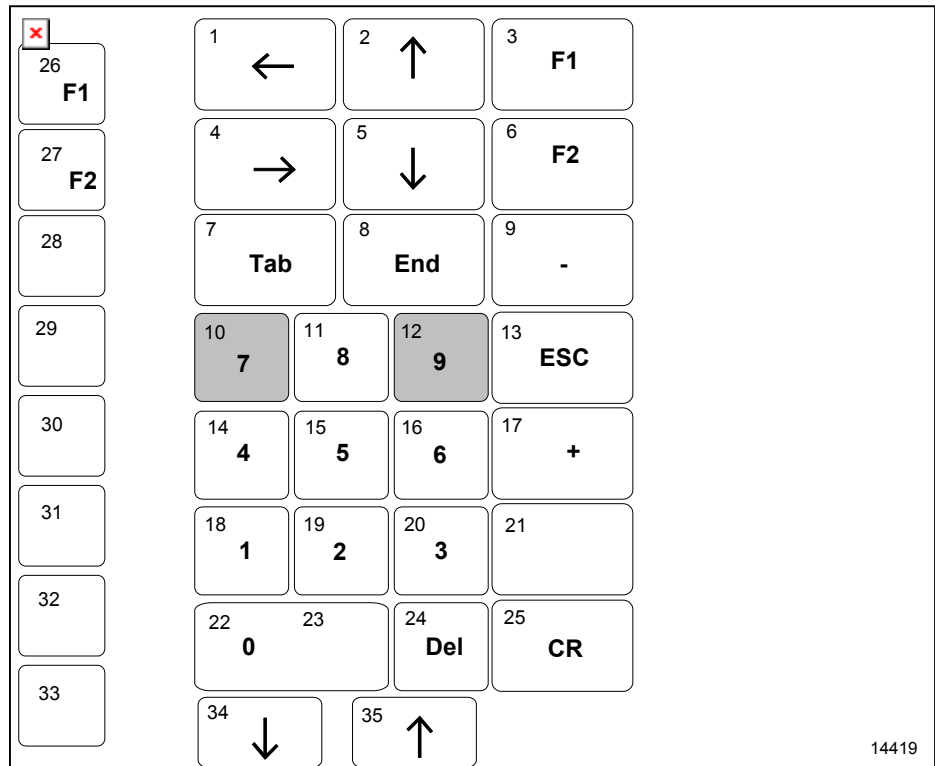
Many of the Terminal setup routines require keys that are not present in the regular DynaKey keypad layout (such as the ESC and .0END keys). Although the DynaKey has a PC keyboard connector, a PC keyboard may not be readily available to the operator.

Note: No setup is required for the DynaKey module itself at installation unless the factory default configuration needs changing. The operational parameters can be changed using the *Wedge Configuration Utility* (G370-0701-0000) diskette or the *7452 Diagnostics and BIOS Images* (497-0406703) diskette.

To use the DynaKey without a PC keyboard attached to run the Terminal setup routines, you must place it in the Special DynaKey Keypad Mode. This mode replaces the normal keypad layout and function keys with special key assignments that are required to run setup. To enter the special mode, press the **7** and **9** keys simultaneously during POST diagnostics.

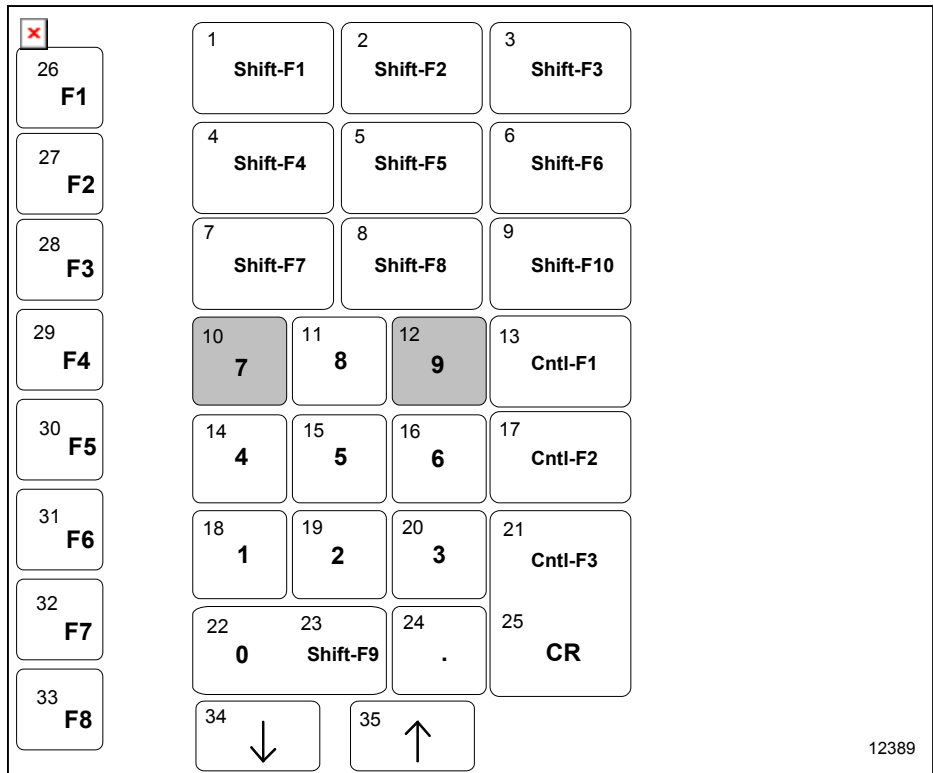
Note: The 7 and 9 keys must be the FIRST keys pressed during/after a power up, otherwise the keypad enters the normal layout.

The following key layout is active in the special mode.



Normal DynaKey Keypad Operating Mode

After running setup the DynaKey can be reset to the normal mode by rebooting or by pressing the 7 and 9 keys simultaneously. The normal keypad layout is shown below.



Disabling Resources

Resources that are disabled in the BIOS (IRQs for COM ports/on-board LAN/secondary IDE) are still detected and installed (sometimes partially) in Windows. The resources are actually available.

BIOS Default Values

Main Menu

System Time	(variable)
System Date	(variable)
Legacy Diskette A:	1.44/1.25 MB 3 ½
IDE Primary Master	[Auto]
Total Sectors:	<i>(variable)</i>
Maximum Capacity:	<i>(variable)</i>
Multi-Sector Transfers:	<i>(variable)</i>
LBA Mode Control:	[Enabled]
32 Bit I/O:	[Disabled]
Transfer Mode:	FPIO 4 / DMA 21
Ultra DMA Mode:	[Mode 5]
Smart Monitoring:	Disabled

IDE Primary Slave	[Auto]
Type:	[Auto]
Multi-Sector Transfers:	[Disabled]
LBA Mode Control:	[Disabled]
32 Bit I/O:	[Disabled]
Transfer Mode:	[Standard]
Ultra DMA Mode:	[Disabled]
Smart Monitoring:	Disabled
IDE Secondary Master	[Auto]
Type:	[Auto]
Multi-Sector Transfers:	[Disabled]
LBA Mode Control:	[Disabled]
32 Bit I/O:	[Disabled]
Transfer Mode:	[Standard]
Ultra DMA Mode:	[Disabled]
Smart Monitoring:	Disabled
IDE Secondary Slave	[Auto]
Type:	[Auto]
Multi-Sector Transfers:	[Disabled]
LBA Mode Control:	[Disabled]
32 Bit I/O:	[Disabled]
Transfer Mode:	[Standard]
Ultra DMA Mode:	[Disabled]
Smart Monitoring:	Disabled

Memory Shadow

System Shadow:	[Enabled]
----------------	-----------

Video Shadow:	[Enabled]
---------------	-----------

Memory Cache

Memory Cache	[Enabled]
--------------	-----------

Cache System BIOS area	[Write Protect]
------------------------	-----------------

Cache Video BIOS area	[Write Protect]
-----------------------	-----------------

Cache Base (0-512k)	[Write Back]
---------------------	--------------

Cache Base (512-640k)	[Write Back]
-----------------------	--------------

Cache Extended Memory Area:	[Write Back]
-----------------------------	--------------

Cache A000 - AFFF:	[Disabled]
--------------------	------------

Cache B000 - BFFF:	[Disabled]
--------------------	------------

Cache C800 - CBFF:	[Disabled]
--------------------	------------

Cache CC00 - CFFF:	[Disabled]
--------------------	------------

Cache D000 - D3FF:	[Write Protect]
--------------------	-----------------

Cache D400 - D7FF:	[Write Protect]
--------------------	-----------------

Cache D800 - DBFF:	[Write Protect]
--------------------	-----------------

Cache DC00 - DFFF:	[Write Protect]
--------------------	-----------------

Cache E000 - E3FF:	[Write Protect]
--------------------	-----------------

Cache E400 - EBFF:	[Write Protect]
--------------------	-----------------

Cache EC00 - EFFF:	[Write Protect]
--------------------	-----------------

System Memory	640 KB
---------------	--------

Extended Memory	<i>(variable)</i>
-----------------	-------------------

Advanced Menu

PCI Configuration

PCI Device, Slot #1 (Upper)

Option ROM Scan	[Enabled]
-----------------	-----------

Enable Master	[Enabled]
---------------	-----------

Latency Timer	[0040h]
---------------	---------

PCI Device, Slot #2 (Medium)

Option ROM Scan	[Enabled]
-----------------	------------------

Enable Master	[Enabled]
---------------	-----------

Latency Timer	[0040h]
---------------	----------------

PCI Device, Slot #3 (Lower)

Option ROM Scan	[Enabled]
-----------------	-----------

Enable Master	[Enabled]
---------------	-----------

Latency Timer	[0040h]
---------------	---------

PCI Device, Slot #4 (on Motherboard)

Option ROM Scan	[Enabled]
-----------------	------------------

Enable Master	[Enabled]
---------------	-----------

Latency Timer	[0040h]
---------------	----------------

Advanced Chipset Control

AGP Rate:	[2X]
Aperture Size:	[16M]
Frame Buffer Size:	[4 M]
PCI Delay Transaction:	[Enabled]
Read-around-Write	[Enabled]
Concurrent PCI master/Host Operation:	[Enabled]
Default Primary Video Adapter:	[PCI]

I/O Device Configuration

Serial port A:	[Enabled]
Base I/O address:	[3F8]
Interrupt:	[IRQ 4]
Serial port B:	[Enabled]
Base I/O address:	[2F8]
Interrupt:	[IRQ 3]
Parallel port:	[Auto]
Mode	[ECP]
Floppy disk controller:	[Enabled]
Serial port C (Powered):	[Enabled]
Base I/O address:	[3E8]
Interrupt:	[IRQ 10]

Serial port D (Powered):	[Enabled]
Base I/O address:	[2E8]
Interrupt:	[IRQ 11]
UPS Serial:	[Enabled]
Base I/O address:	[238]
Interrupt:	[IRQ 12]
On Chip Multi-function Device	
OnChip USB 2 Device:	[Enabled]
Onboard Legacy Audio:	[Enabled]
Sound Blaster:	[Disabled]
MPU-401:	[Disabled]
Joystick:	[Disabled]
Modem Device:	[Disabled]
Hardware Monitor	
Vcore	1.7 V (Celeron); 1.75 V (PIII) (+ 0.04 V, - 0.8 V)
V (2.5)	2.5 V +/- 5%
V (3.3)	3.22 V
V (5)	4.94 V
V (12)	11.52 V
CPU Temp.	37 °C/98 °F
System Temp.	27 °C/80 °F
CPU Fan Speed	6241 (Varies)

Multiple ROM	
MS-DOS Memory Dump	[Disabled]
On-board PXE LAN	[Enabled]
Parallel CD-ROM Boot	[Disabled]
On-board LAN UNDI	[Enabled]
On-board SLP LAN	[Disabled]
Selectable ROM 6	[Disabled]
Selectable ROM 7	[Disabled]
Selectable ROM 8	[Disabled]
PS/2 Mouse	[Disabled]
Local Bus IDE adapter:	[Both]
Legacy USB Support:	[Enabled]
	If Disabled, this remains Enabled during POST to permit keyboard usage. Then returns to Disabled.
Large Disk Access Mode:	[DOS]
Installed OS:	[Other]
Reset Configuration Data:	[Yes]
Power up Display:	[Logo]
QuickBoot Mode:	[Enabled]
Floppy check:	[Disabled]
Summary screen:	[Enabled]
Beep Error Codes:	[Off]
Continuous Post:	[Disabled]
Boot Menu Retry	[Keyboard]

Security Menu

Supervisor Password Is:	Clear
User Password Is:	Clear
Set Supervisor Password	[Enter]
Set User Password	[Enter]
Diskette access:	[Supervisor]
Password on boot:	[Disabled]

Power Menu

Power Savings:	[Disabled]
Idle Mode:	[Off]
Standby Timeout:	[Off]
Auto Suspend Timeout:	[Off]
Suspend Mode:	[Suspend]
Resume On Modem Ring:	[Off]
Resume on Time:	[Off]
Power Button:	[Immediate off]
Reset Switch:	[Reset]
AC Power Default On:	[Auto]
Warm Boot:	[Disabled]
Throttling Duty Cycle:	[50%]

Boot Sequence

Removable Drives
Hard Drive
CD ROM Drive
MBA UNDI (Bus 0 Slot13)

Chapter 4: Operating System Recovery

Introduction

This chapter discusses procedures on how to recover the Operating System by using the CD-ROM drive. The software is distributed on bootable CD-ROM media. The drivers that are necessary to run the CD-ROM are temporarily installed during boot.

Note: It is possible to perform a BIOS update using a network connection. Refer to the *NCR FitClient Software User's Guide*, (B005-0000-1235) for information about that procedure.

Caution: When performing an OS recovery from a larger source image (larger disk) to a smaller destination disk, you must use a special procedure (see the *OS Recovery from a Larger Disk Image* section).

Prerequisites

The following are required in order to perform an OS recovery from a CD.

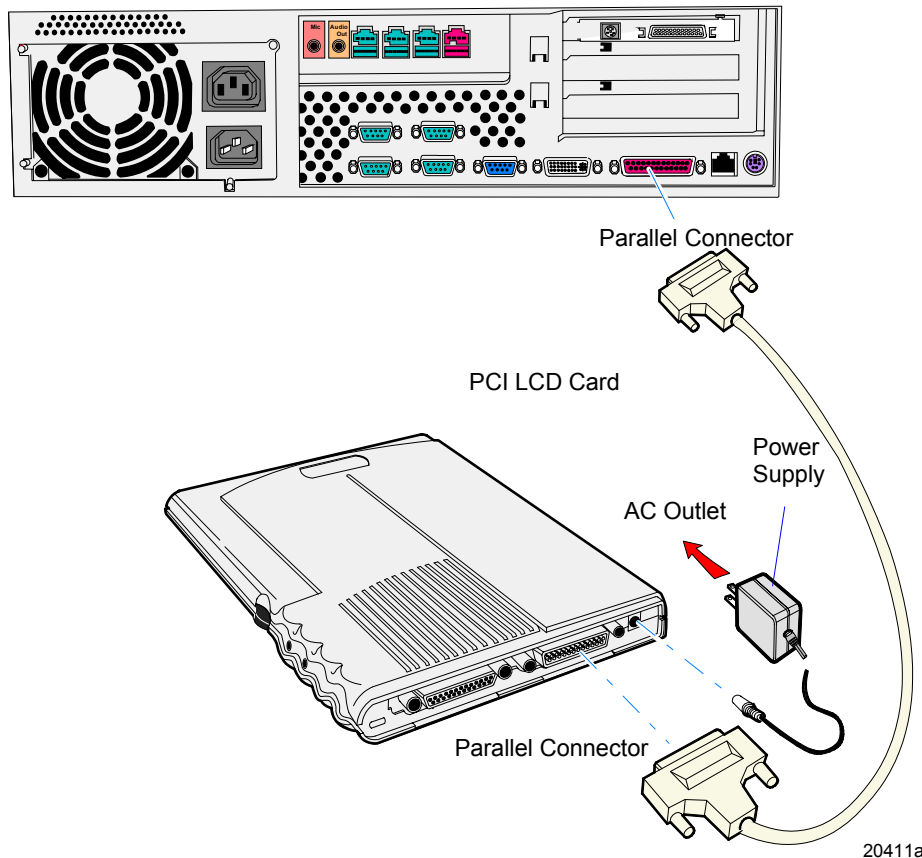
- Bootable CD-ROM drive (internal or external)
- Keyboard

Connecting an External Backpack CD-ROM Drive

If your terminal contains an integrated CD-ROM, skip this section and go to *Updating Procedures*.

Note: The MicroSolutions BackPack CD-ROM Series 5 or later is required.

1. Connect the external CD-ROM (2336-K024) drive to the *Parallel* connector on the terminal.



2. Connect the Power Supply to the CD-ROM and to an AC outlet.

Updating Procedures

1. Apply power to the terminal.
2. Press **F2** at the screen prompt to enter Setup.
3. In the *Advanced* menu, select **I/O Device Configuration**.
4. Verify that the **LPT 1 Mode** is set to **ECP**.
5. Go back to the *Advanced* menu, select **Multiple ROM Menu**.
6. Set the **Parallel CD-ROM Boot** to **Enabled**.
7. In the **Boot** menu, set the boot sequence to boot from **CD-ROM** first.
8. In the **Exit** menu, select **Save Changes** and reboot.
9. Open the CD-ROM drawer and snap the CD containing the operating system image onto the spindle.

Windows 2000	D370-0536-0100
Windows XPe	D370-0570-0100
Windows NT	D370-0564-0100
DOS	D370-0534-0100

Close the drawer.

As the terminal reboots, you should see a message during boot indicating that the CD-ROM has been recognized:

Follow the DOS screen prompts. After each entry you are asked to confirm your input. You can use 1 or y for Yes, 2 or n for No.

10. Enter whether or not you want to perform disk verification.
(Answering Yes takes twice as long, but is recommended.)
11. If Yes is selected:
 - The Ghost software verifies write operations and handles bad FAT clusters.

- The Ghost error file (GHOST.ERR) is displayed before rebooting.

12. If No is selected:

- The Ghost error file is displayed before rebooting only if Ghost aborts.

Caution: If the error file is displayed, the batch file pauses for user input before rebooting. You may use Ctrl-C to cancel out of the batch file if you want to see the error file again, but **nothing** should be done that writes to the hard disk before rebooting. GHOST.ERR is on the RAM disk and is lost on reboot.

13. Select which type of recovery you want to perform from the next menu and press [ENTER] (normally option #1).

- 1) Redo entire disk with the first partition the same size.
- 2) Redo the first OS partition.
- 3) Redo the second OS partition.

The Ghost software then begins the disk recovery from the CD. It displays a progress bar and gives you an estimate how long the process should take.

Note: Some Operating Systems occupy more than one CD. You are asked to insert the next CD at the proper time.

When the recovery process is completed, the hard disk has been restored to its preinstalled condition, as originally received from the factory.

14. Remove the CD from the drive.

15. Enter Setup when the terminal reboots and reset the **Parallel CD-ROM Boot** to **Disabled**.

16. Exit Setup and **Save Changes**.

Completing the OS Installation (Windows 2000)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. Accept the license agreement.
2. Enter the *User Name* and *Organization*.
3. Enter the *Computer Name* for the client.
4. Enter the *Administrator's Account Password* (optional)
5. Login when prompted after the reboot.
6. Run the TouchWare calibration from the Desktop icon (if using a touch screen).

Completing the OS Installation (Windows NT 4.0)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image.

Note: The mouse port is disabled. You must use the keyboard to complete the installation. The mouse can be enabled later.

Complete the installation as follows.

1. Press [ENTER] to start Windows NT Setup.
2. Enter the *User Name* and *Organization*.
3. Enter the *Computer Name* for the client.
4. Enter the *Administrator's Account Password* (optional)
5. Press [ENTER] to reboot.
6. Login when prompted.
7. Run the TouchWare calibration from the Desktop icon (if using a touch screen).

Completing the OS Installation (Windows EXe)

The system automatically reboots when the image recovery is complete and opens at the Welcome screen.

Completing the OS Installation (DOS)

The system automatically reboots when the image recovery is complete and opens at the DOS C:\ prompt.

Gold Disk Contents

This section describes the contents of each of the Gold Disk Images, including all the additions and changes that were installed on top of the generic operating system.

NCR 7456/58 Windows 2000 Operating System Recovery Software

(LPIN: D370-0536-0100)

The NCR 7456/58 Windows 2000 Operating System Recovery Software provides the means of restoring the operating system to the terminal hard disk to the preinstalled state as shipped from the factory.

Installed Software:

- Microsoft Windows 2000 Professional w/ SP3
- Microsoft Internet Explorer 6.0 SP1 (6.0.2800.1106 SP1)
- VIA Tech Video (6.13.10.3137)
- VIA AC'97 Audio (5.12.01.3811)
- National Semiconductor LAN (5.00.135.21)
- NCRSYSM (3.0.4.12)
- Windows Installer (2.0)
- UDMA 4-in-1 (4.43)
- Backpack CD-Rom available (3.02)
- MicroTouch available (5.64)
- Edgeport USB available (2.20)
- C&T Video available

Software Drivers

The following drivers are not installed automatically, but can be installed from their respective locations (Readme files exist in these locations, as well):

- Backpack CD-ROM C:\Install\Drivers\CDROM
- MicroTouch C:\Install\Drivers\Touch
- Edgeport USB C:\Install\Drivers\USB
- C&T Video C:\Install\Drivers\Video

Special Settings

Furthermore, the following settings/revisions are configured:

- Preinstalled W2K to include the Product ID Number (PID)
- Placed the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:
HKey-Local_Machine\Software\NCR\Gold Drive
- Ran Sysprep, using sysprep.inf and sysprep.bat, so that the mini installation runs on initial boot with the following parameters:
 - Automatically include PID
- Established a FAT32 primary system partition that fills the entire drive
- Included necessary OS cab files in C:\Install
- Made SP3 folder available in C:\Install (installed)
- Enabled DMA
- Set color to **16 bit**
- Set monitor shutoff to *Never*
- Added SNMP, set to manual

- Added registry value for Orinoco PCMCIA driver:

```
HKLM\System\CurrentControlSet\Services\PCMCIA\  
Parameters\DisableIsaToPciRouting  
DWORD Value = 0
```

Note: This product should only be used on NCR 7458 terminals with a Microsoft Windows 2000 license.

Recommendation

For each operating system, NCR strongly recommends that any drivers placed in the `C:\Install` directory be left intact for the purposes of servicing and maintaining the system. If you are using this information in order to build your own operating system image and not using NCR's provided OS Recovery image as a base image, we recommend that all drivers that are installed be placed in a similar `C:\Install` directory for support.

NCR 7456/58 Windows NT 4.0 Operating System Recovery Software (LPIN: D370-0564-0100)

The NCR 7456/58 Windows NT 4.0 Operating System Recovery Software provides the means of restoring the operating system to the terminal hard disk to the preinstalled state as shipped from the factory.

Installed Software:

- Microsoft Windows NT Workstation 4.0 w/ SP6a
- Microsoft Internet Explorer 6.0 SP1 (6.0.2800.1106 SP1)
- VIA Tech Video (4.0.00.3125)
- VIA AC'97 Audio (4.03.00.3140)
- National Semiconductor LAN (4.00.135.21)
- NCRSYSM (3.0.4.12)
- Windows Installer (2.0)
- UDMA 4-in-1 (4.43)
- Backpack CD-Rom available (2.04)
- MicroTouch available (5.64)
- Edgeport USB available (2.20)
- C&T Video available

Software Drivers

The following drivers are not installed automatically, but can be installed from their respective locations (Readme files exist in these locations, as well):

- Backpack CD-ROM C:\Install\Drivers\CDRom
- MicroTouch C:\Install\Drivers\Touch
- Edgeport USB C:\Install\Drivers\USB
- C&T Video C:\Install\Drivers\Video

Special Settings

Furthermore, the following settings/revisions are configured:

- Preinstalled NT to include the Product ID Number (PID)
- Placed the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:
`HKey-Local_Machine\Software\NCR\Gold Drive`
- Ran Sysprep, so that the mini installation runs on initial boot with the following parameters:
 - Automatically include PID
- Established a 2GB FAT16 primary system partition
- Established a secondary NTFS partition that fills the remainder of the drive
- Included necessary OS cab files in `C:\Install`
- Made SP6a folder available in `C:\Install` (installed)
- Made I386 folder available in `C:\Install`
- Installed MS SNMP, set to Manual
- Replaced the standard EULA with the NCR-specific EULA.
- TerminalCheck.exe in Run registry to determine correct hardware platform (otherwise it will shut down)
- Hide MS splash screen by adding `/noguiboot` parameter to `boot.ini`
- SerMouse device disabled
- Added `/noserialmice` to `boot.ini`
- Set resolution to **800x600**
- Set colors to **65536**
- Disabled MouClass service

Note: This product should only be used on NCR 7458 terminals with a Microsoft Windows NT 4.0 license.

Recommendation

For each operating system, NCR strongly recommends that any drivers placed in the `C:\Install` directory be left in tack for the purposes of servicing and maintaining the system. If you are using this information in order to build your own operating system image and not using NCR's provided OS Recovery image as a base image, we recommend that all drivers that are installed be placed in a similar `C:\Install` directory for support.

NCR RealPOS 80/80c Windows XPe Operating System Recovery Software (LPIN: D370-0570-0100)

The NCR RealPOS Windows XPe Operating System Recovery Software provides the means of restoring the operating system to the terminal hard disk of a NCR RealPOS 7456 terminal. The bootstrap program (`di_nat1.bsd`) and disk recovery boot image (`di_nat1.bid`) are downloaded to the target terminal over the network and restores the hard disk to the preinstalled state as shipped from the factory.

Installed Software:

- Microsoft Windows XPe w/ SP1
- VIA Tech Video driver installed (6.13.10.3137)
- National Semiconductor LAN drivers installed (5.1.135.21)
- NCRSYSM driver installed (3.0.4.12)

Software Drivers

The following drivers are not installed automatically, but can be installed from their respective locations (Readme files exist in these locations, as well):

- Backpack CD-ROM C:\Install\Drivers\CDRom
- MicroTouch C:\Install\Drivers\Touch
- Edgeport USB C:\Install\Drivers\USB
- Watchport/V Camera C:\Install\Drivers\Camera

Special Settings

Furthermore, the following settings/revisions are configured:

- Preinstalled XPe to include the Product ID Number (PID)
- Placed the Gold Drive Part Number, Date Created, LPIN, and Release in Registry under:
`HKey-Local_Machine\Software\NCR\Gold Drive`
- Established a NTFS primary system partition that fills the entire drive
- Installed Via 4in1 Driver set (4.43)
- Installed Via Video Driver (6.13.10.3137)
- Set virtual memory to 128
- Added NetSetUp.exe to RunOnce registry
- Added NCR-specific EULA

Note: This product should only be used on NCR RealPOS 80/80c terminals with a Microsoft Windows XPe license.

Recommendation

For each operating system, NCR strongly recommends that any drivers placed in the `C:\Install` directory be left intact for the purposes of servicing and maintaining the system. If you are using this information in order to build your own operating system image and not using NCR's provided OS Recovery image as a base image, we recommend that all drivers that are installed be placed in a similar `C:\Install` directory for support.

OS Recovery from a Larger Disk Image

The following procedure should be used to restore an Operating System when the destination disk is smaller than the source image (i.e. OS Recovery was made on a 10 GB source disk, but is being recovered on a 4.3 GB drive).

1. Boot the system.

You should see a message during boot indicating that the CD-ROM has been recognized:

```
Micro Solutions BACKPACK CD-ROM v0.3
. . .
Booting from BACKPACK CD
Starting MS-DOS
```

2. Follow the DOS screen prompts. After each entry, you are asked to confirm your input. You can use *1* or *y* for **Yes**, *2* or *n* for **No**.
3. Enter **No** at the **Disk verification** question.
4. Select which type of recovery you want to perform from the next menu (normally option #1).
 - 1) Redo entire disk with the first partition the same size.
 - 2) Redo the first OS partition.
 - 3) Redo the second OS partition.
5. At the *Press any key to continue* dialog box, press **[CTRL]-C** to abort the process. When asked *Terminate batch job?* Answer **Y**.
6. From the command prompt, change to drive Z, which is the location of the Ghost software (CD-ROM drive).
7. Run the Ghost command.

```
Ghost.exe
```
8. Press **Enter**.
9. Select **L**ocal → **D**isk → **F**rom Image and press **Enter**.

10. The directory that Ghost is now looking in should be Z: (if not, switch to Z). Select the **File name to load image from** file (*nnnnnnnn.gho*) and press **Enter**.
11. Select the **Local destination drive** and press **Enter**.
12. Set the size of the first partition (which is FAT16) to 2 GB.
In order to do this you may need to clear the amount from the second partition.
13. Set the sizes of the primary and secondary partitions as follows.

O/S	Primary Partition/ Format	Secondary Partition Size
DOS	2 GB/FAT16	2 GB/FAT16
Win95	2 GB/FAT16	Fill remainder as FAT 32
WinNT	2 GB/FAT16	Fill remainder as NTFS
Win98	Single FAT 32 partition	N/A
Win2000	Single FAT 32 partition	N/A
WinXPe	Single NTFS partition	N/A

14. Press **Enter**.
15. If you are recovering from Win9x, it is likely that the second partition will be too small for FAT32. If so, a dialog is displayed `Converting partition from FAT32 to FAT, proceed?` Choose **Yes**.
16. At the next dialog box, `Proceed with disk load? Destination drive will be permanently overwritten,` Choose **Yes** to start the recovery process.

Chapter 5: BIOS Updating Procedures

Introduction

This chapter discusses procedures how to update the terminal BIOS by using the parallel CD-ROM drive. The software is distributed on bootable CD-ROM media. The drivers that are necessary to run the CD-ROM are temporarily installed during boot.

It is also possible to perform a BIOS update using a network connection. Refer to the *NCR FitClient Software User's Guide* (B005-0000-1235) for information about that procedure.

Crisis Recovery

In the event the BIOS becomes corrupt, such as the result of a power failure during the BIOS Update procedure, you can use the method discussed later in this chapter in the *BIOS Crisis Recovery* section to recover the BIOS.

Prerequisites

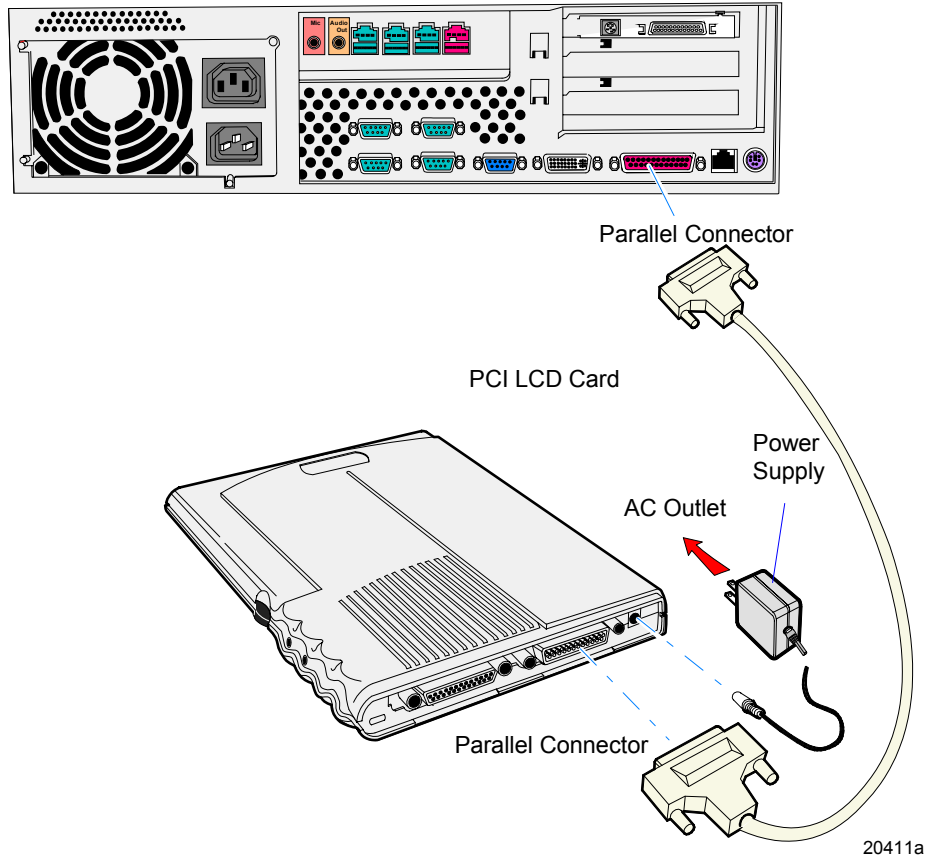
The following are required on the 7458 in order to perform a BIOS update using a CD.

- Bootable CD-ROM drive (2336-K024)
- Keyboard
- *NCR BIOS and BIOS Update Software* (LPIN: A370-0022-0100)

Connecting an External Backpack CD-ROM Drive

If your terminal contains an integrated CD-ROM, skip to step three.

1. Connect the external CD-ROM (2336-K024) drive to the *Parallel* connector on the terminal.



2. Connect the *Power Supply* to the CD-ROM and to an AC outlet.

Updating Procedures

1. Apply power to the terminal.
2. Press **F2** at the screen prompt to enter Setup.
3. In the *Advanced* menu, select **I/O Device Configuration**.
4. Verify that the **LPT 1 Mode** is set to **ECP**.
5. Go back to the *Advanced* menu, select **Multiple ROM Menu**.
6. Set the **Parallel CD-ROM Boot** to **Enabled**.
7. In the **Exit** menu, select **Save Changes** and reboot.
8. Open the CD-ROM drawer and snap the CD containing the BIOS update onto the spindle.

NCR BIOS and BIOS Update Software

LPIN: A370-0022-0100

Close the drawer.

As the terminal reboots, you should see a message during boot indicating that the CD-ROM has been recognized:

Starting MS-DOS

9. Follow the screen prompts on the client to update the BIOS. You can select two methods to run the update program.
 - Automatic BIOS Update – update process runs unattended

Note: You will see a prompt for terminal model and serial number information if the program detects invalid information in the current BIOS, or if you are replacing the processor board, in which case there is not model/serial number information in the BIOS.

Important: Model/Serial Number is mandatory for FitClient operation.
 - Interactive BIOS Update – permits you to input/replace the model/serial number information that is stored in the BIOS.

Note: Model/Serial number data that is currently stored in the BIOS is displayed during power up.

10. You should see a green window, indicating a successful update.
11. Remove the CD.
12. Press any key to reboot.
13. When the system reboots, press **F2** at the screen prompt to enter Setup.
14. In the **Exit** menu, select **Load Setup Defaults**.
15. Go to the **Advanced** menu and set **Reset Configuration Data** to **[Yes]**.
16. Exit Setup and Save Changes.

BIOS Crisis Recovery

The procedures below provide a way to restore the BIOS resulting from a non-recoverable condition.

Note: Use this BIOS crisis recovery procedure only for a **NON-RECOVERABLE** BIOS failure. A non-recoverable BIOS state typically results from power loss during a flash BIOS update process. This is a rare occurrence and should not be confused with other hardware errors that cause a *no video* state. **This procedure is not intended to be used for changing or upgrading an operational BIOS.**

Required Hardware

Part Number	Part Name	Use
	PC with an RS-232 port	Download BIOS
497-0408349	Cable, 9-Pin Female to 9-Pin Female RS232	PC to terminal connection
497-0413418	Parallel Dongle	Forces BIOS recovery

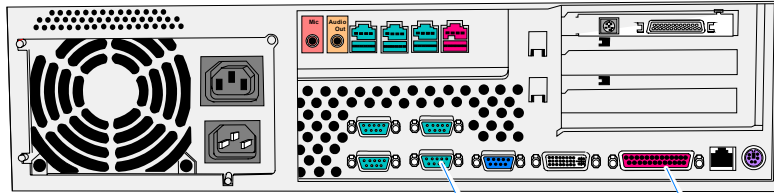
Required Software

Acquire the following software from NCR.

NCR 74xx BIOS and BIOS Update Software
 LPIN: A370-0022-0100, Release 3.0 or later
 P/N: 497-0424310

Recovery Procedures

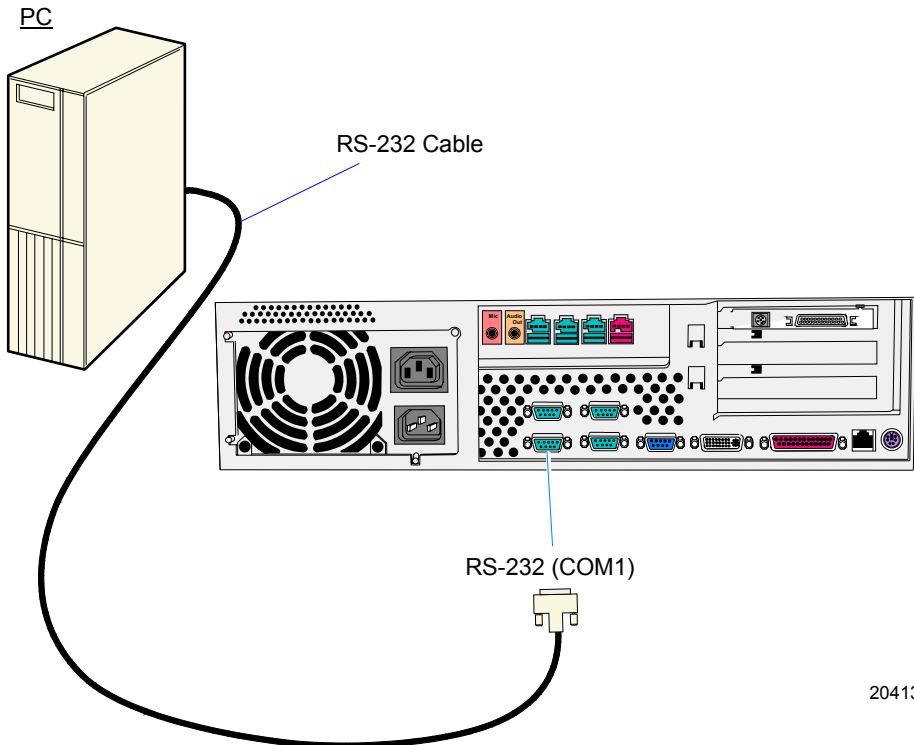
1. Connect the Parallel Dongle to the parallel connector on the terminal.



RS-232 Connector Parallel Connector

20412

2. Connect the two machines with an RS-232 cable. Use COM Connector 1 on both machines.



20413

3. Boot the PC in the DOS mode with CD-ROM support.

Note: The PC must be running in the DOS mode (not in a Windows DOS box) for the software to operate correctly.

4. Insert the BIOS update CD into the PC.

NCR BIOS and BIOS Update Software

LPIN: A370-0022-0100

5. Apply power to the terminal.
6. On the PC, change directory to the CD-ROM drive.

E: [Enter]

7. Enter the update command:

EMBflash [Enter]

8. Select the number for the 7458 terminal from the menu list:

1) 7454

2) 7401

3) 7452

4) 7453

5) 7455

6) 7460

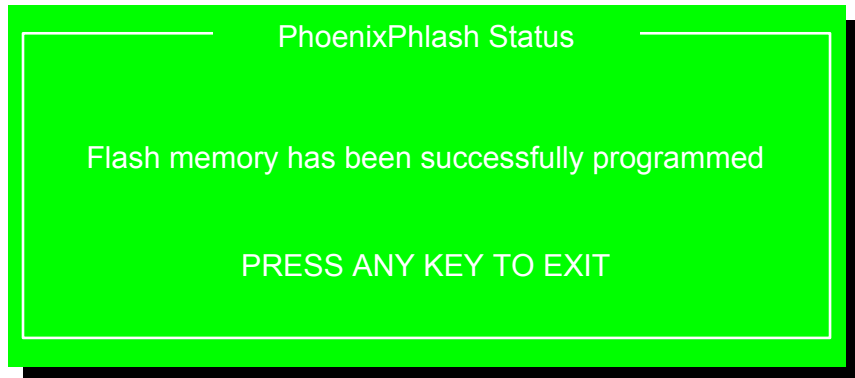
7) 7451

8) 7456

9) 7458

9 [Enter]

A blue screen displays as the program runs, showing the program progress, followed by a green screen, indicating a successful load.



19502

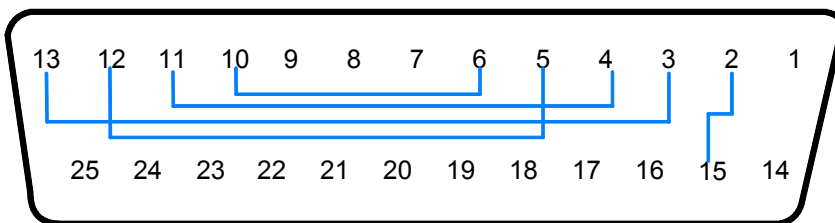
The Class/Model/Serial # information is deleted using the Crisis Recovery procedure.

Use the normal BIOS update procedures as discussed earlier in this chapter to restore the information.

Cable/Connector Pin-Out Information

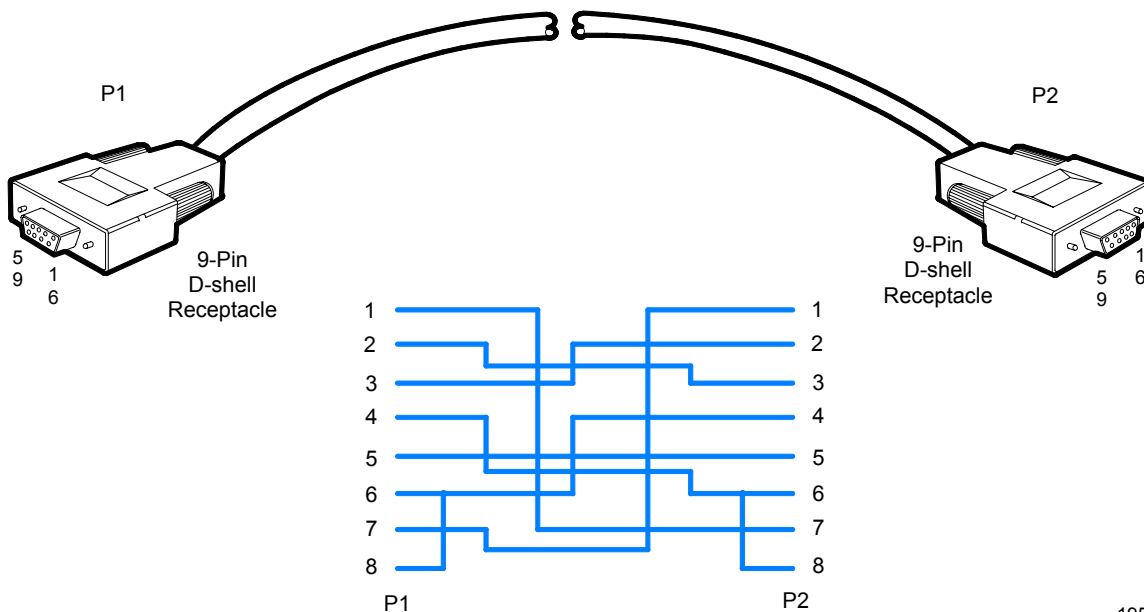
Parallel Dongle

25-Pin D-shell Receptacle
(Viewed from wiring side)



19513

RS-232 Cable



19512

Chapter 6: Memory Dump

General Memory Dump Information

In the event of a catastrophic software failure (system lock up), the 7458 provides a means to *dump* the contents of the system memory contents (RAM) to a file that can then be analyzed using the Memory Dump Analyzer Utility.

In order to get a memory dump on the 7458 it must first be configured in BIOS Setup and/or the Operating System.

Note: The memory dump file is intended to be analyzed by Microsoft or requires a certain level of Post Mortem expertise.

BIOS Requirements

The 7458 Memory Dump ROM's image is contained in the BIOS and can be updated by the BIOS Phlash update Process/Utilities. See the *BIOS Updating Procedures* chapter.

Memory Dump capability on the 7458 requires NCR BIOS version 3.0.0.0 (or greater).

Disk Format

The Memory Dump ROM writes the data to the diskette in the form of a binary FAT compatible file. The ROM directly writes the FAT table information required to permit DOS to interpret the file as a normal binary file. Each diskette receives a single file named dumpinfo.xxx. The extension .xxx is a number denoting the sequential position of the diskette in the consolidated dump image. This extension starts at 001 and increments with each additional diskette used.

Note: All pre-existing data on the diskette is overwritten during the dump process.

Each diskette's dumpinfo.xxx file is created with the same time and date information to help designate a diskette as being part of a specific set.

Supported Operating Systems

The following table provides a summary of operating systems supported by the Memory Dump Utility.

Summary of Operating Systems

Operating System	Memory Dump Support	Notes
MS-DOS	Inherent	Reset Switch set to <i>Dump</i> ; <i>Dump Option ROM</i> enabled in BIOS Setup
Pharlap 286 DOS Extender	Not Supported	
Windows 3.1 Windows 3.11 Windows for Workgroups 3.1 Windows for Workgroups 3.11 Windows 95	Not Supported	
Windows 98	Not Supported	
Windows XP	Supported	Operating System configured; Reset Switch set to <i>Dump</i> in BIOS Setup
Windows 2000	Supported	Operating System configured; Reset Switch set to <i>Dump</i> in BIOS Setup
Windows NT	Supported	Operating System configured; Reset Switch set to <i>Dump</i> in BIOS Setup
OS/2	Not supported	

Prerequisites

Windows 2000 and Windows NT systems require preparation prior to performing a memory dump.

For additional information about Windows Memory dump refer to the Microsoft web site and search their Knowledge Base for the following:

- *Windows 2000 Memory Dump Options Overview (Q254649)*
- *Gathering Blue Screen Information After Memory Dump in Windows 2000 or Windows NT (Q192463)*

Windows XP/2000

To enable memory dump on a Windows 2000 system, complete the following steps prior to performing the memory dump:

1. In the *Control Panel*, click on **System**.
2. In *System Properties*, select **Advanced** and then **Startup and Recovery**.
3. Under *System Failure*, check the following boxes:
 - Write an event to the system log
 - Send an administrative alert
 - Automatically reboot
4. In *Write debugging information* select **Complete Memory Dump**, and in *Dump file:* enter - **C:\Memory.dmp**.

Note: The size of the memory file can be very large. Therefore, the file should be dumped to the local drive or a network drive and not to diskettes.

5. Check the box - **Overwrite any existing files** and enter **OK**. Do not reboot the system yet.
6. Click on START→Run. Enter `regedit` and click on **OK**.
7. Go to `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\CrashControl`.
8. Click on **Edit** and then on **New**.
9. Click on **DWORD Value** and enter `NMICrashDump`.
10. Highlight **NMICrashDump**. Click on **Edit** and then on **Modify**.
11. Enter a 1 in *Value Data* and enter **OK**.
12. Close the Registry editor.
13. Reboot the system for changes to take effect.

Windows NT

To enable memory dump on an NT system, complete the following steps prior to performing the memory dump:

1. In the *Control Panel*, click on **System**.
2. In *System Properties*, select **Startup/Shutdown**.
3. In the *Recovery Section* and under *When a STOP error occurs, do the following*, check the boxes
 - Write an event to the system log
 - Send an administrative alert
 - Write debugging information to:
 - In the box enter the file name and the path to the local drive,

Example: C:\Memory.dmp

Note: The size of the memory file can be very large. Therefore, the file should be dumped to the local drive or a network drive and not to diskettes.

- Overwrite any existing files
 - Automatically reboot
4. Click on **Apply** and enter **OK**.
 5. Click on START→Run. Enter `regedit` and click on **OK**.
 6. Go to `HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\CrashControl`.
 7. Click on **Edit** and then on **New**.
 8. Click on **DWORD Value** and enter `NMICrashDump`.
 9. Highlight `NMICrashDump` and in the *Edit* function. Click on **Modify**.
 10. Enter a 1 in *Value Data* and enter **OK**.
 11. Reboot the system for changes to take effect.

DOS Memory Dump Specifics

In the event of a catastrophic software failure (system lock up), the 7458 provides a means to dump the contents of the system memory contents (RAM) to a file that can then be analyzed using the Memory Dump Analyzer Utility.

Workstations running MS-DOS are fully supported by the Memory Dump process. No additional runtime software is required.

The *Dump Option ROM* must be set to **[Enabled]** in BIOS Setup

Dump Process Overview

The memory dump process writes the data onto diskettes. As each diskette is filled, the user is prompted for another. When the memory dump is complete, all diskettes successfully used in the dump denote a set of diskettes that comprise a single consolidated memory dump image. The data from the diskettes is then moved to hard disk and the consolidated dump image file reassembled from its component pieces.

Note: The workstation must remain powered up following the system lock up, before performing the memory dump, else the memory contents will be lost.

Restrictions and Limitations

The Memory Dump functionality has the following restrictions and limitations:

- Dumps to flex drive only. No hard disk or LAN support is provided.
- All dumps are written to drive A:
- 1.44 MB diskettes and 12-bit FAT are the only supported media.
- Diskettes must be preformatted.
- Memory between the base 640K and the start of extended memory is not dumped. (A0000h and FFFFFh is not dumped)

- No control header information is added to the diskette dump files. Human error can cause memory dump images to be rebuilt incorrectly. An example would be mixing files from different memory dumps.
- No video or keyboard interaction during the memory dump process is provided. All information is provided to the user by way of speaker tones and beeps.
- If a protect mode NMI handler is not set up to direct NMIs to the real mode vector captured by the Memory Dump ROM, the system experiences the default protect mode NMI handling defined by the operating system and/or compilers used. Often this is a fatal system error.
- When the dump switch is pressed the signal SERR# is introduced onto the BUS producing a NMI. If the Memory Dump ROM's NMI handler is not invoked at this time, further activation of the memory dump switch will not produce a NMI as no software has run to re-enable the SERR# signal to produce a NMI. This would only occur in real mode if third party software captured the NMI vector and did not forward it to its previous handler. Under protect mode this can occur if the dump button's NMI is handled by the default protect mode NMI handler.
- The register contents stored within the pseudo CMOS storage in the resulting dump are those seen at entry to the Memory Dump ROM's NMI handler and do not specifically match those that would be most useful - those of the application interrupted.
- Intel 386 or higher processor, required as the Memory Dump ROM, is compiled with the .386 option in order to fully save the CPU state.
- Diskette drive must support change line.
- 512 bytes is the only supported sector size. This is the sector size MS-DOS is hard coded throughout to support.

- Corruption of the interrupt vector table will prevent memory dumps from working. If the NMI is not routed through to the ROM, the memory dump process cannot start. The Memory Dump ROM uses several BIOS interrupts to access the diskette, get time and date, and determine the amount of extended memory present. Corruption of the interrupt chain for these BIOS interrupts will prevent memory dumps from working/completing.
- Memory dumps are not supported with Nu-Mega's Soft-ice or other equivalent programs installed. The ROM's accessing extended memory for dumping of addresses past the 15.75 MB boundary with Soft-ice 2.80 installed results in Soft-ice popping up and proclaiming a protect violation, failing the dump process.
- Memory dumps initiated while at Nu-Mega Technologies' Soft-ice prompt will not complete. Soft-ice seems to absorb the NMI when it is active on the screen. When the user exits the debugger and returns to DOS, the dump does not then occur and further depressions of the memory dump switch will not cause a memory dump to start. A NMI occurred due to the dump switch (absorbed by Soft-ice) and no software has run to re-enable further memory dump switch NMIs.
- Installation of Microsoft's APM module power.exe without enabling the 7458's PC BIOS APM options may result in failed memory dumps if emm386.exe is also installed. The combination of emm386.exe and power.exe without the BIOS's APM support enabled causes emm386.exe to take an exception and halt the system when the memory dump button is pushed. emm386.exe displays a message: EMM386 has detected error #13 in an application at memory address 0048:0637. To minimize the chance of data loss, EMM386 has halted your computer. For more information, see the readme.txt file. To restart your computer press ENTER. Users installing power.exe should have the BIOS APM option enabled.
- Windows memory dumps may not always complete.

Performing the Memory Dump

Configuring the Terminal

Configure the terminal BIOS as follows prior to performing a memory dump.

Note: Steps 3 and 4 are only required for DOS dumps.

1. Apply power to the terminal.
2. Press **F2** at the screen prompt to enter Setup.
3. In the *Advanced* menu, select **Multiple ROM Menu**.
4. Set the **MS-DOS Memory Dump** to **Enabled**.
5. In the *Power* menu, set the **Reset Switch** to **Memory Dump**.
6. In the **Exit** menu, select **Save Changes** and reboot.

Dump Procedure

The number of diskettes required to perform the memory dump varies depending on your system configuration.

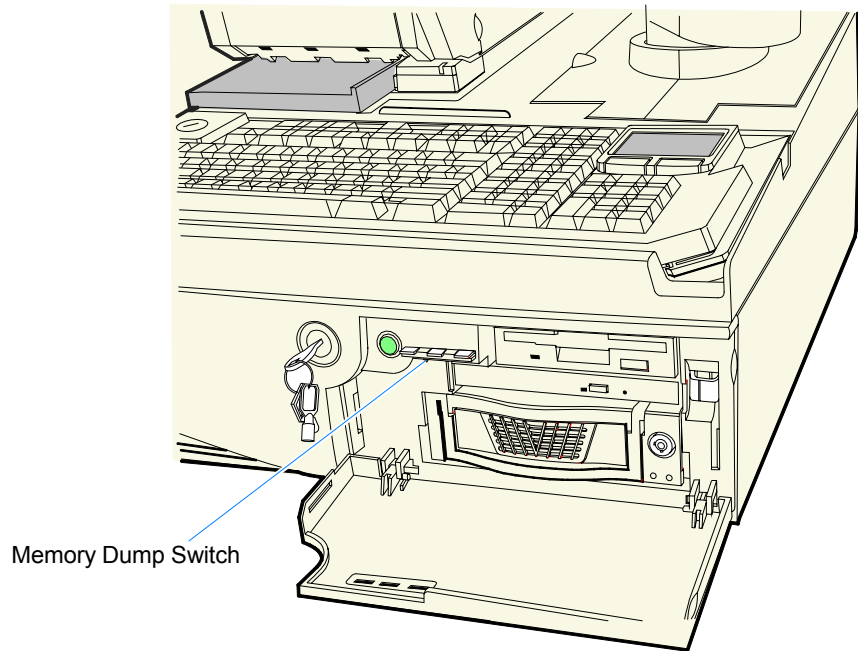
Workstation Memory Capacity (MB)	Approx. Number of 1.44 MB Diskettes Required
64	46
128	93
256	186

Note: Diskettes must be preformatted.

Fewer diskettes can be used if only the first part of the dump is needed.

1. Press the Memory Dump Switch.
 - Insert a small pointed object, such as an unfolded paper clip, through the opening below the On/Off Power Switch to access the Memory Dump Switch. (The switch is approximately 2 inches behind the cabinet.)

- Pressing the switch starts the tone sequence.



2. Insert a diskette into the flex drive when prompted by the audio tones.

The pseudo CMOS is dumped first, followed by the 640 KB of base memory. After this the extended memory is dumped.

Tunes/Tones

Periodic tunes/tones are sounded as memory is copied to the diskettes. The following tones are used:

Success tune - an upbeat 4 note song (ascending sequence)

Failure tune - 4 note song that's deeper toned and more depressing than the success tune. (descending sequence)

Extended flat tone - denotes diskette related information. The tone is about 2 seconds and is clearly distinguishable from a beep.

Tune/Tone	Meaning
Success Tune (played once)	The memory dump process successfully started.
Success Tune (played repeatedly)	The memory dump process successfully completed. The current diskette was successfully written to and is the last of the set.
Failure tune, followed by two groups of beeps (with a short delay to distinguish the end of a sequence)	The memory dump attempt failed. These are fatal errors. 1,1 - max retries exceeded (generally disk error retries) 1,2 - cannot forward non-dump NMI to previous NMI vector. 2,1 - failed resetting the disk subsystem 2,2 - diskette does not support change line - bad drive, disk disabled, etc. 2,3 - failed reading a sector from diskette
Extended flat tone, followed by a Success tune (repeated sequences, with a short delay to distinguish the end of a sequence)	The current diskette was successfully written to and another diskette is needed. Remove the diskette, label it as disk x, save it as part of the dump image set, and insert another diskette.
Extended flat tone, followed by two groups of beeps (repeated sequences, with a short delay to distinguish the end of a sequence)	Diskette related information. 1,1 - insert a diskette. 1,2 - diskette found in drive is part of a previous dump. Remove diskette, and insert first dump diskette. 2,1 - diskette failed. Remove diskette. Disk inserted at start of dump. 2,2 - invalid media (non-1.44 MB diskette). Insert a valid disk.

Either of the following tones are sounded when a diskette is successfully added to the set of disks composing a memory dump image:

- The Extended tone/Success tune is played, indicating the diskette has been successfully written to and that another diskette is required.
- The Success tune is repeatedly playing, indicating the dump process is complete and the current diskette is the last disk in the set.

Moving the Files to Hard Disk and Reassembling

Once the memory dump is complete, you have a set of diskettes, each with a single binary file `dumpinfo.xxx`. The next step is to move all files on the diskettes to a hard disk. Copy the files to the hard disk using the standard DOS copy command. The copy command **MUST** have the binary file option `/b` specified each time it is used.

Note: The amount of hard disk space required to assemble the file is twice the memory dump image size (individual files plus composite image).

After the files are on the hard disk, the DOS utility `assemble.exe` is run to build the memory dump image from the individual files. The individual diskette files will be left on the hard disk and must be removed manually.

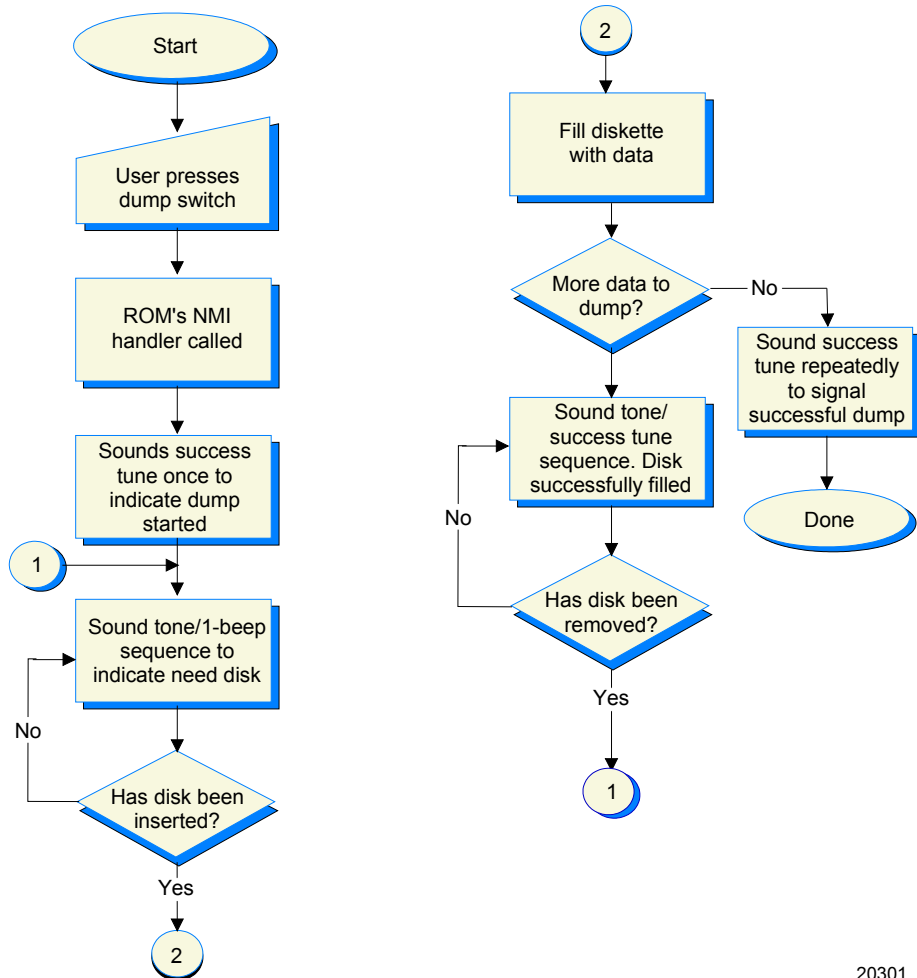
Follow these steps when reassembling the diskettes onto the PC:

1. Change to a directory on the PC that has no other `dumpinfo.xxx` files. This is important to prevent files from different memory dumps being intermixed.
2. Copy each diskette's `dumpinfo.xxx` file to the hard disk using `copy /b a:\dumpinfo.*`.
3. Reassemble all individual component files into the memory dump image by running `assemble.exe`.

Note: After assembling the files the image is reassembled and ready for analysis by NCR.

Flow Chart

A high level flow chart of a typical successful memory dump follows:



20301

Note: Currently there are no NCR supported tools available to analyze the dump in the field. The diskettes containing the dump can be sent to NCR Corporation, RSG-Atlanta for analysis.

Memory Dump Assembler

The Memory Dump Assembler is a simple DOS application that reassembles the binary files resulting from a memory dump into a consolidated memory dump image. The utility is part of the Memory Dump Analyzer Utility (497-0406704). The file name is `assemble.exe`, which is a command line driven application. The command line is:

```
assemble -i <input file's basename> -o <output file name>  
where:
```

- **i** specifies the basename of the input files (8 characters max). All input files must have the same basename. Do not specify an extension. The default basename is `dumpinfo`, which is the basename used by the memory dump process.
- **o** specifies the destination file name. Specify a maximum of twelve characters including the extension, using the FAT 8.3 filename format. The default filename extension is `*.dmp`.

The diskette files composing the image must be moved manually to an empty subdirectory at a Memory Dump Analyzer workstation. Once all the files are on the hard disk. Run `assemble.exe` from that directory.

`assemble.exe` uses all files in the current directory with the configured base name and a numerical extension in the form `.001`, `.002`, etc, to build the Memory Dump Analyzer compatible image.

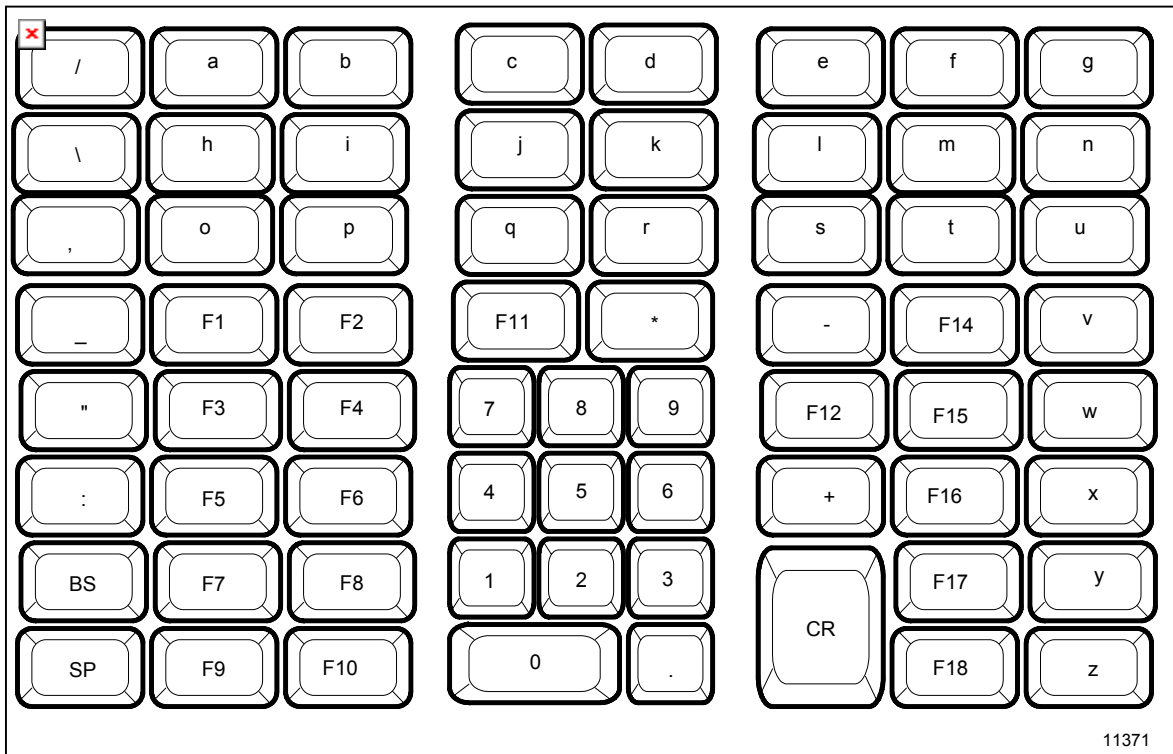
`assemble.exe` stops when a file with the next sequential extension cannot be located. Use care to not skip any files when moving the diskette files to hard disk. A list of files used in building the image will be displayed upon exit.

Note: The amount of hard disk space required to assemble the file is twice the memory dump image size (individual files plus composite image). The individual diskette files will be left on the hard disk and must be removed manually

Appendix A: Retail Keyboard Key Layouts

68-Key Keyboard

There may be occasions when it is necessary to perform DOS functions on the 7458. The following illustration provides the character layout for the 68-key keyboard.

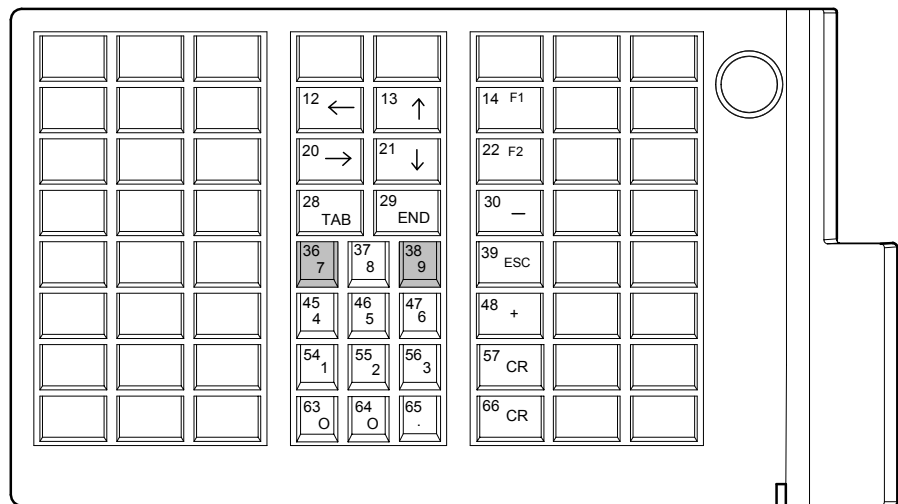


Special Keypad Mode

To use the 68-key keyboard to run PC setup routines, the operator can place the keyboard into a special alternate layout mode that replaces the normal layout of the keypad and function keys.

The alternate layout has the following keys.

F1	Up Arrow	+
F2	Down Arrow	-
ESC	Right Arrow	Tab
End	Left Arrow	Enter



14613

The numeric keypad is shown in *calculator* layout. All unlabeled keys are inactive in the special mode. The 68-key Basic Keyboard does not have an MSR or keylock.

Note: The 68-key keyboard's special *PC Setup* mode is provided simply as a convenience feature. If the operator prefers not to use this mode, simply use a PC keyboard for system configuration.

To enter the special *PC Setup* mode, proceed as follows:

1. Power-up the system.
2. After the memory test completes, hold down key number **36** and key number **38** simultaneously (refer to the keypad layout in this chapter).

Make sure both keys are held down together on the full-featured 68-key keyboard. The status LED flashes red/green to indicate that the keypad entered the *PC Setup* mode. On the 68-key keyboard with no MSR, the speaker sounds one long beep.

Note: Ignore any *stuck key* error messages displayed as a result of the keys being held down.

The **36** and **38** keys must be the first two keys pressed after a power-on. If any other keys are pressed first, pressing the **36** and **38** keys simultaneously will not put the 68-key keyboard into the *PC Setup* mode.

3. Press the key required by the PC to put it into the BIOS configuration routine.

Use the special keypad layout to run the PC's BIOS Configuration routine. When you have completed configuring the PC, the 68-key keyboard can be taken out of *PC Setup* mode by either:

4. Pressing the **36** and **38** keys simultaneously again.
5. Power-cycling the system.

DynaKey

Because many of the terminal setup routines require keys that are not present in the regular DynaKey keypad layout (such as the ESC and END keys), a standard PC keyboard is recommended for completing Setup functions. Although the DynaKey has a PC keyboard connector, a PC keyboard may not be readily available to the operator. If only a DynaKey module is available refer to the text that follows which discusses the special DynaKey mode keypad. Otherwise, proceed to the *Configuration Setup Procedures* section.

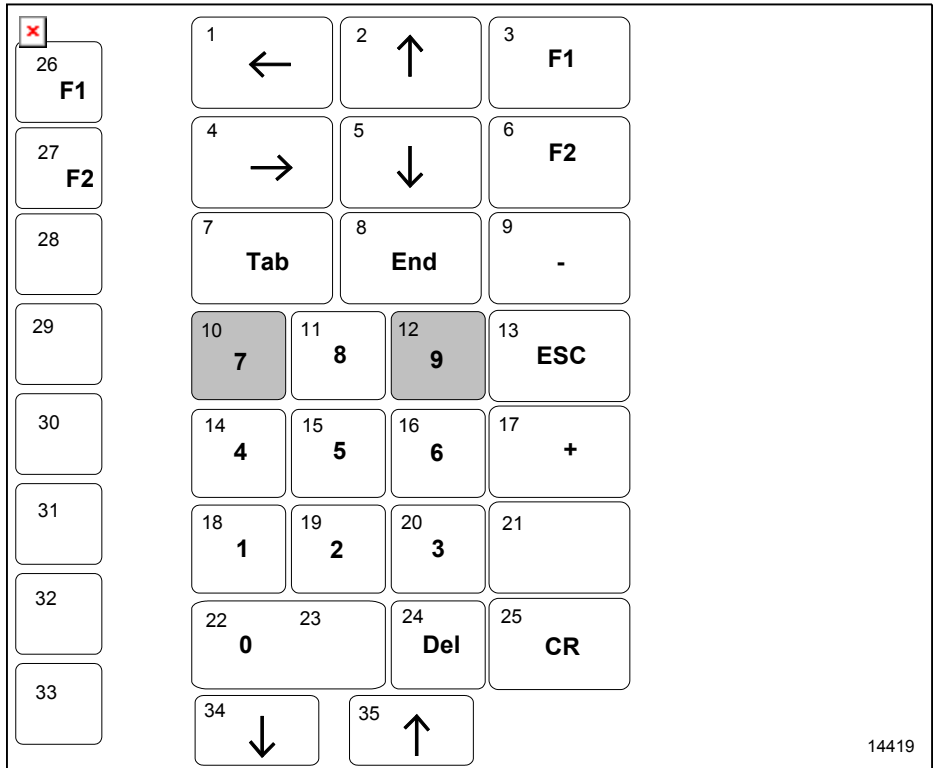
Note: No setup is required for the DynaKey module itself at installation unless the factory default configuration needs changing. The operational parameters can be changed using the *Wedge Configuration Utility* (LPIN: G370-0701-0000) diskette or the *74xx Diagnostics* (P/N: 497-0408905) diskette.

Special DynaKey Keypad Mode

To use the DynaKey without a PC keyboard attached to run the terminal setup routines, you must place it in the Special DynaKey Keypad Mode. This mode replaces the normal keypad layout and function keys with special key assignments that are required to run setup. To ENTER the special mode, press the 7 and 9 keys simultaneously during POST diagnostics.

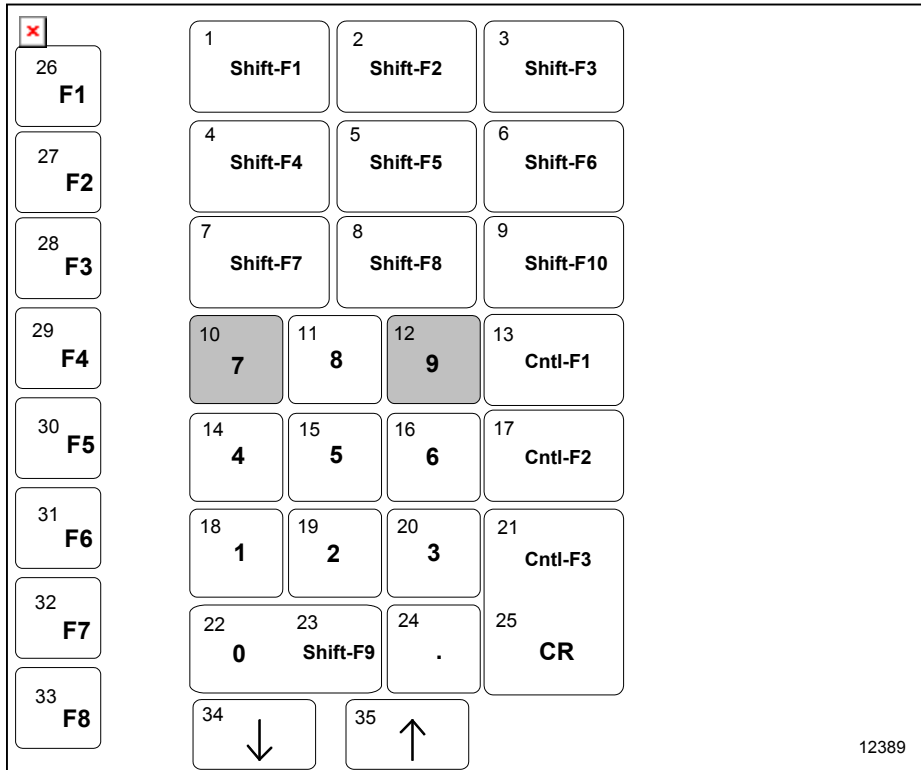
Note: The 7 and 9 keys must be the FIRST keys pressed during or after a power-up; otherwise, the keypad ENTERs the normal layout.

The following key layout is active in the special mode.



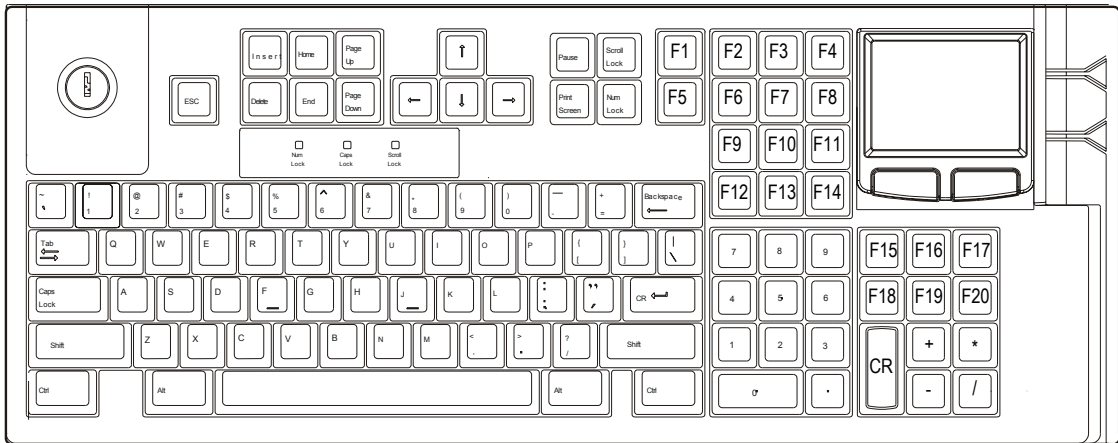
Normal DynaKey Keypad Operating Mode

After running setup the DynaKey can be reset to the normal mode by rebooting or by pressing the 7 and 9 keys simultaneously. The normal keypad layout is shown below.



5932 USB Keyboard

The 5932 USB Keyboard has a programmable keyboard matrix. The following illustration shows the location of the function keys and mathematical calculation keys in the default keyboard matrix configuration. Before using this keyboard for DOS functions, make sure you have the current keyboard matrix layout.



19759

Appendix B: Feature Kits

This section contains a comprehensive list of the available hardware Feature Kits that can be installed in the customer environment. Kit installation instructions (for those requiring instruction) are available on the Information Products web sites.

- Internet: <http://www.info.ncr.com>
- NCR Intranet: <http://inforetail.atlantaga.ncr.com>

To locate the installation guides on these sites:

1. Select **General Search**.
2. Select the **Kits** icon.
3. In the **Title** field, enter the *Kit Title*.

Example: *Memory*

or

In the **Product ID** field, enter the Kit Number.

Example: *7458-K141*

1. Select **Search**.

The file can be viewed online by left-mouse clicking on the pub title, or if you prefer to download the entire file you can right-mouse click on the title and then a *Save target as*.

If you aren't sure of the title or number you can display all kits associated with a terminal product class by:

1. In the **Class** drop-down list, enter the *Class* of the terminal.

Example: *7458*

2. Select **Search**.

Part Number	Description
2336-K024	External CD-ROM Drive
3030-K169	PCI 4-Port Expansion Adapter Card
3212-K170	Low Profile PCI 4-Port Expansion Adapter Card
3212-K171	PCI 2-Port Expansion Adapter Card
5964-K026	7458 Peripheral Tray Mount (G11)
5964-K027	7458 Peripheral Tray Mount (CG1)
7456-K350	PCI Dual Display Adapter Card
7456-K132	128MB DIMM memory upgrade (PC-133
7456-K133	256MB DIMM memory upgrade (PC-133
7458-K140	Internal CD ROM Drive (G11)
7458-K141	Internal CD ROM Drive (CG1)
7458-K154	256MB Compact Flash Memory
7458-K160	Removable Hard Drive (G11)
7458-K161	Removable Hard Drive (CG1)
7458-K165	2 nd Hard Disk Drive
7458-K181	Internal Battery Backup
7458-K300	Integration Tray (G11)
7458-K305	Integration Tray (CG1)
7458-K310	Integration Tray Accessories (G11)
7458-K315	Integration Tray Accessories (CG1)

Appendix C: Cables

Printer Cables

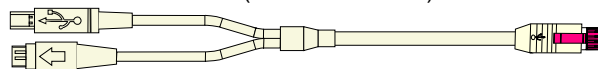
Powered USB

497-0424888 - 1 m
(1416-C713-0010)

497-0424501 - 4 m
(1416-C713-0040)

USB (Printer)

Power (Printer)



24V USB+
(Terminal)

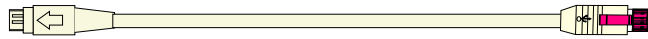
19307a

Powered USB (Power Only)

497-0424887 - 1m
1416-C712-0010

497-0422292 - 4m
1416-C712-0040

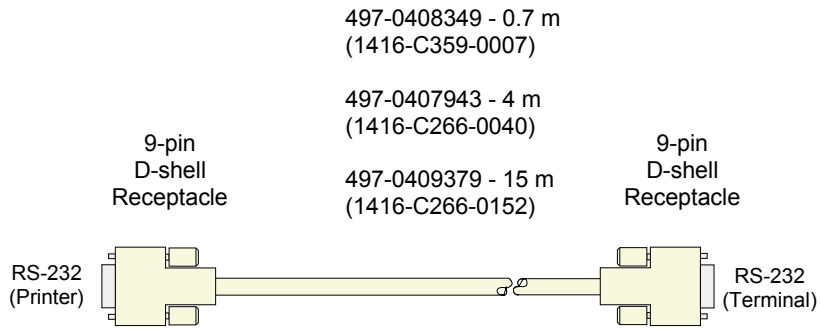
Power
(Printer)



24V USB+
(Terminal)

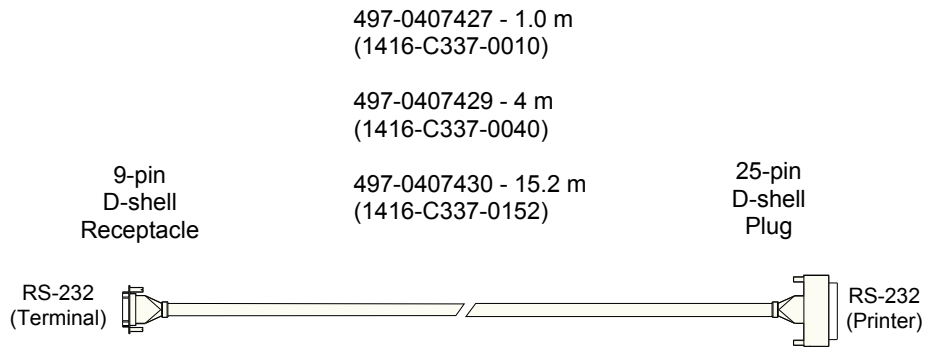
19721a

RS-232 (9-Pin to 9-Pin)



19722a

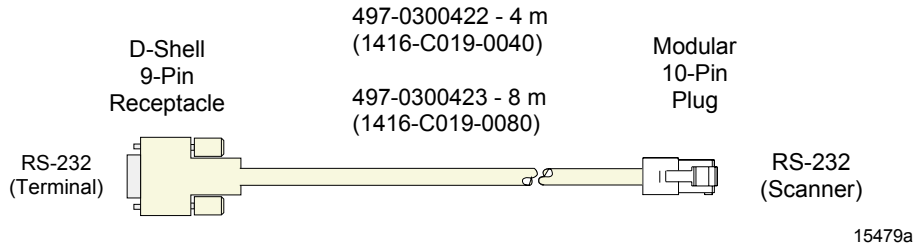
RS-232 (9-Pin to 25-Pin)



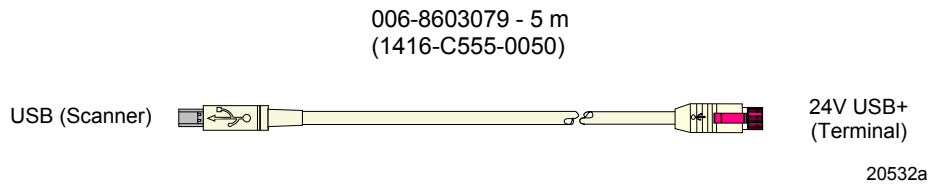
20127b

Scanner Cables

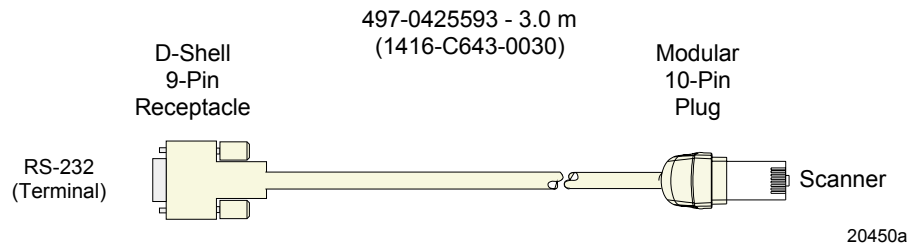
7872 or 7875 Scanner/Scale (RS-232)



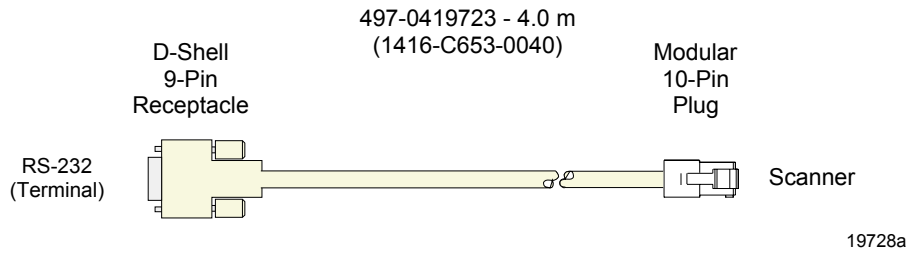
7872 or 7875 Scanner/Scale (Powered USB)



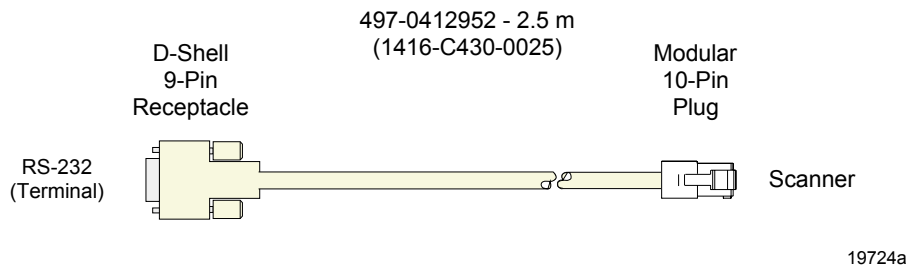
7892 Scanner (Powered RS-232)



7882 Scanner (Powered RS-232)

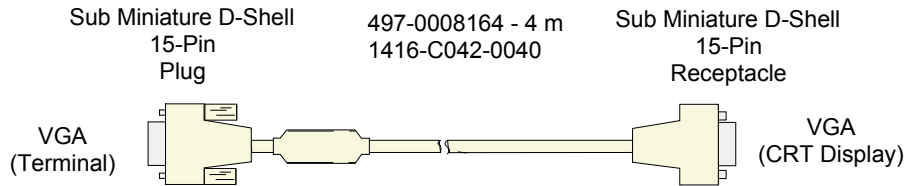


7837 Scanner (Powered RS-232)



Display Cables

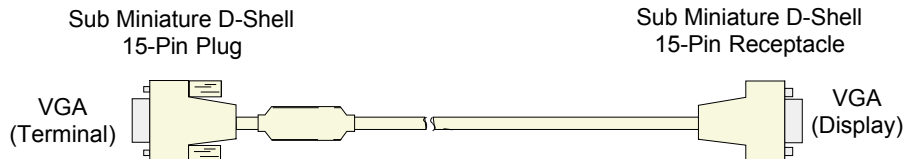
VGA Display, Mono



14607a

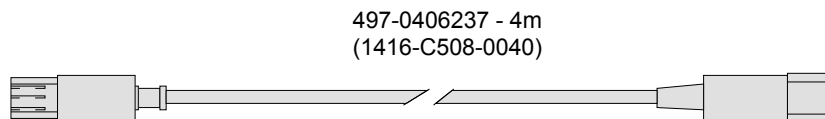
VGA Display, Color

1.0 m	Black	497-0428080	1416-C840-0010
1.5 m	Black	497-0428068	1416-C839-0015
1.0 m	White	497-0424530	1416-C753-0015
1.5 m	White	497-0424531	1416-C754-0010



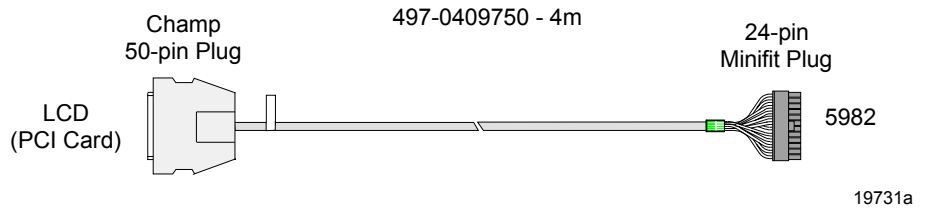
16318a

CRT AC Power Extension

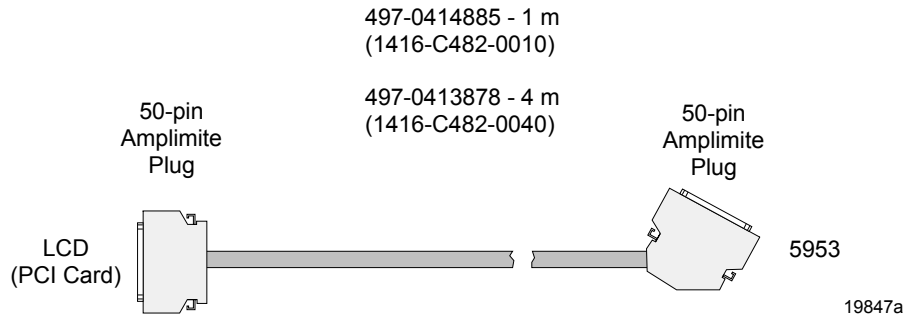


19741a

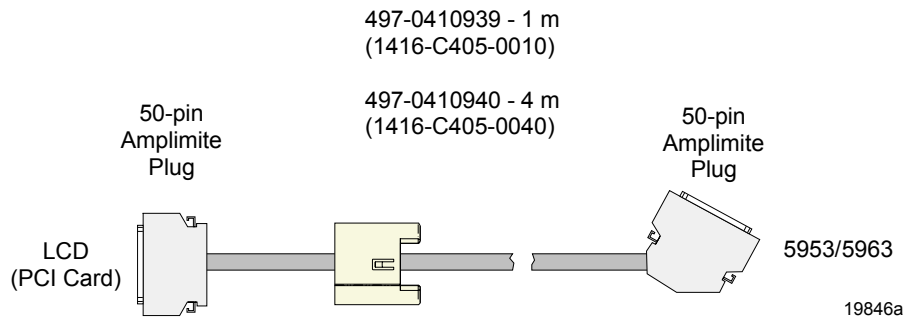
5982 5-Inch LCD



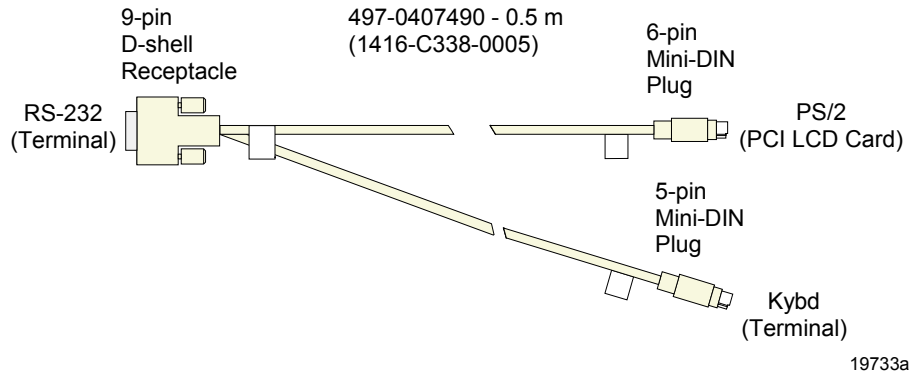
5953 DynaKey



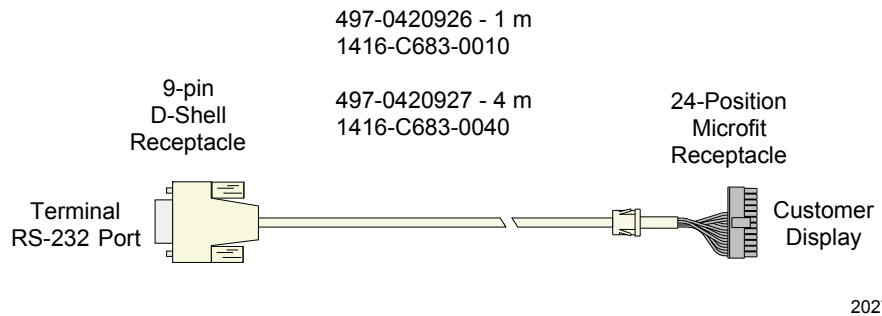
5953 DynaKey w/Insert



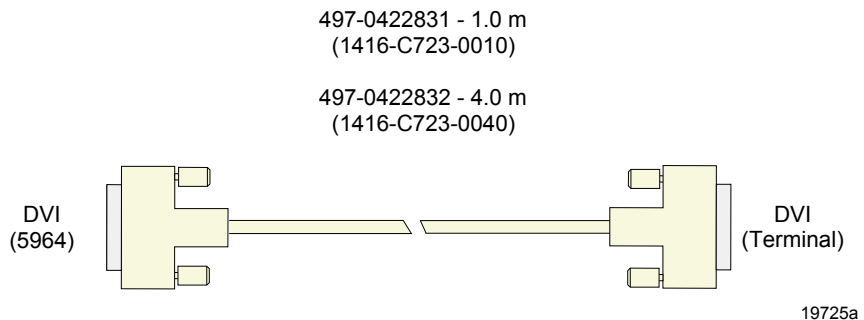
Wedge Keyboard Y-Cable



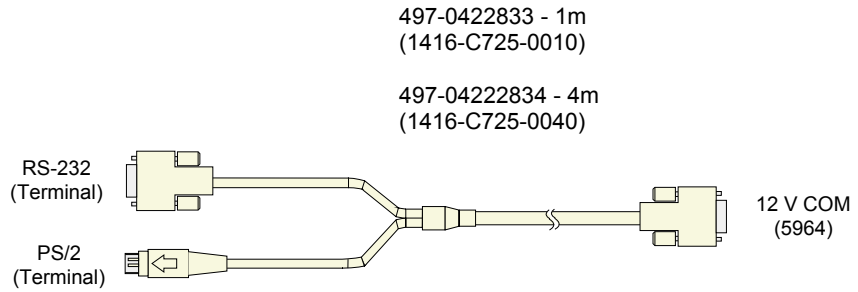
5972 VFD Customer Display (Powered RS-232)



DVI to DVI for 5964

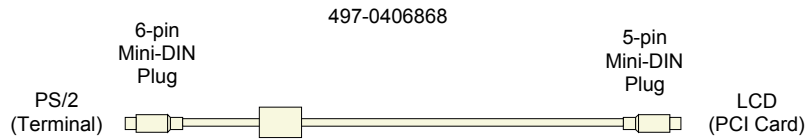


PS/2 - RS-232 & Power for 5964



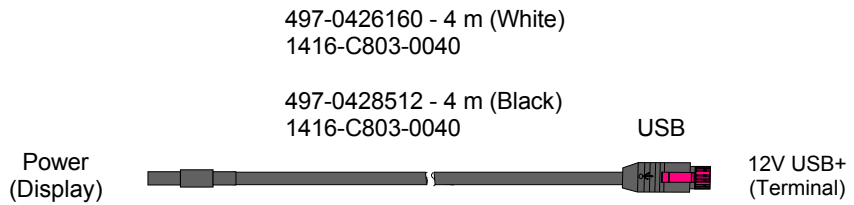
19734a

Wedge Keyboard Adapter



19735a

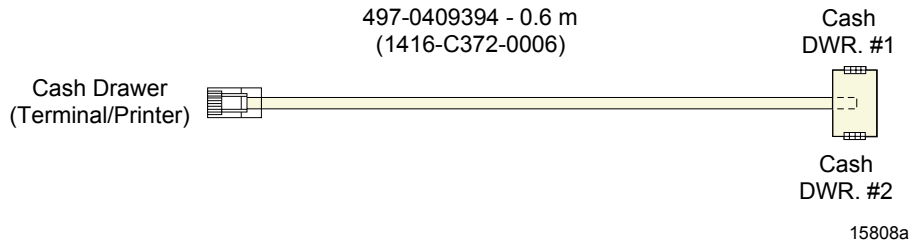
12.1-Inch LCD Aux Power Cable



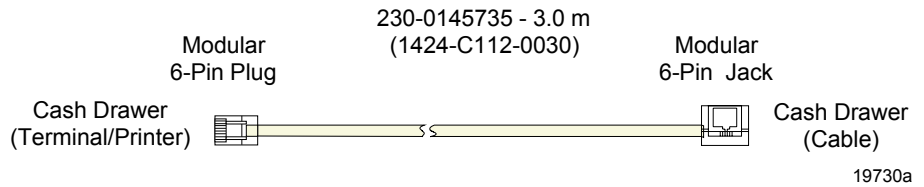
20444

Cash Drawer Cables

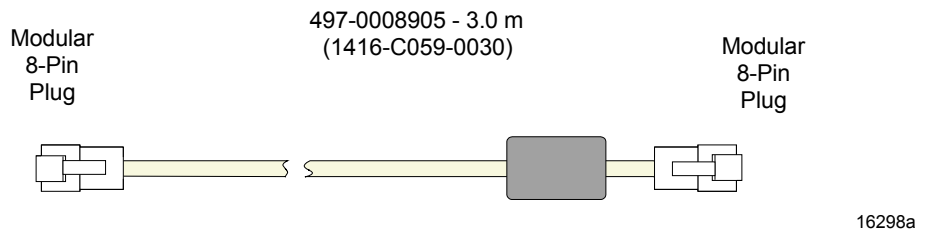
Dual Cash Drawer, Y-Cable



Cash Drawer, Extension Cable

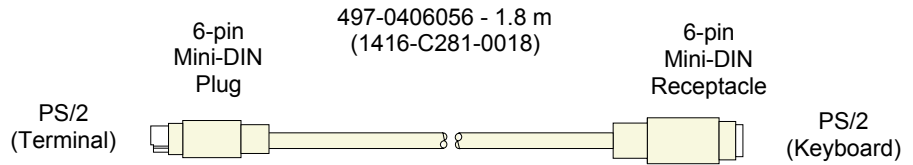


Ethernet Communications Cable



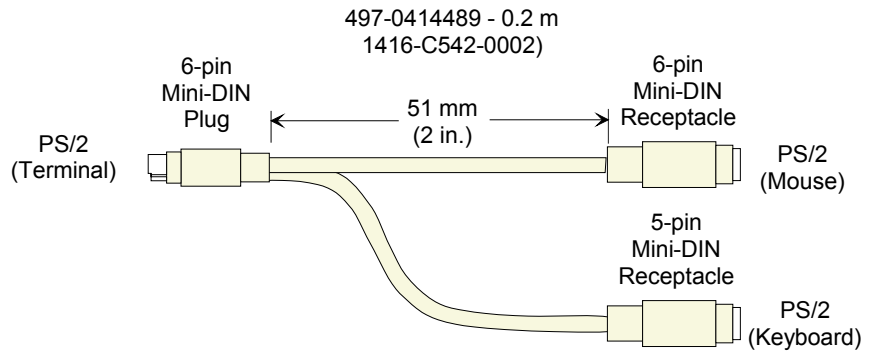
Keyboard Cables

PS/2 Keyboard Extension



15403a

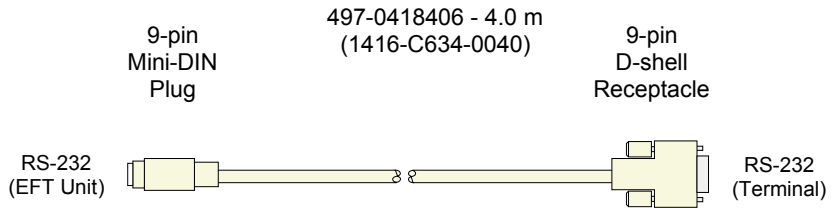
PS/2 Y-Cable



17894a

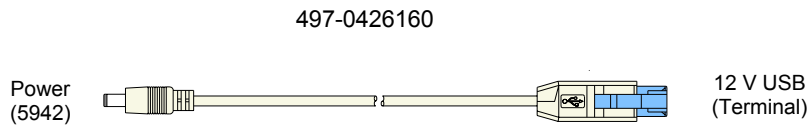
Signature Capture/Electronic Payment Terminal Cable

5945/5992 EPT (RS-232 w/Power)



19723a

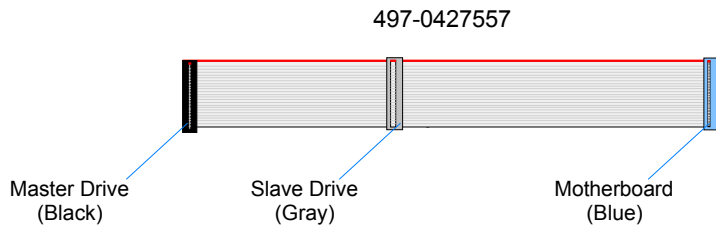
5942 12V Power Cable



20549

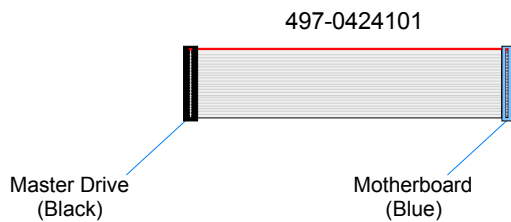
IDE Cables

IDE Interface Cable (3-Connector)



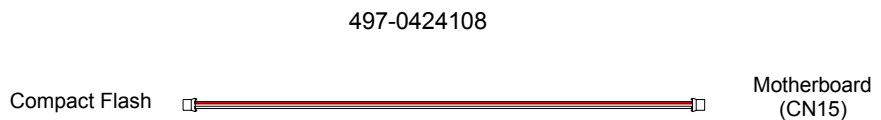
20544

IDE Interface Cable (2-Connector)



20547

Compact Flash Power Cable

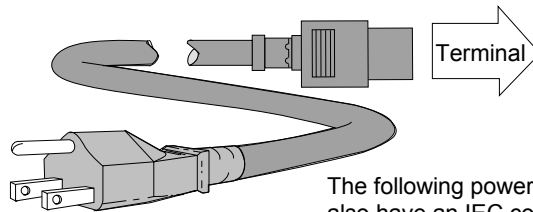


20547

Power Cables

AC Power

1416-C325-0030 006-1009037 - U.S.



The following power cables (not shown)

also have an IEC connection of 45 mm:

1416-C325-0030 006-8601001 - Japan Twist-Lock

1416-C325-0023 006-8601010 - International

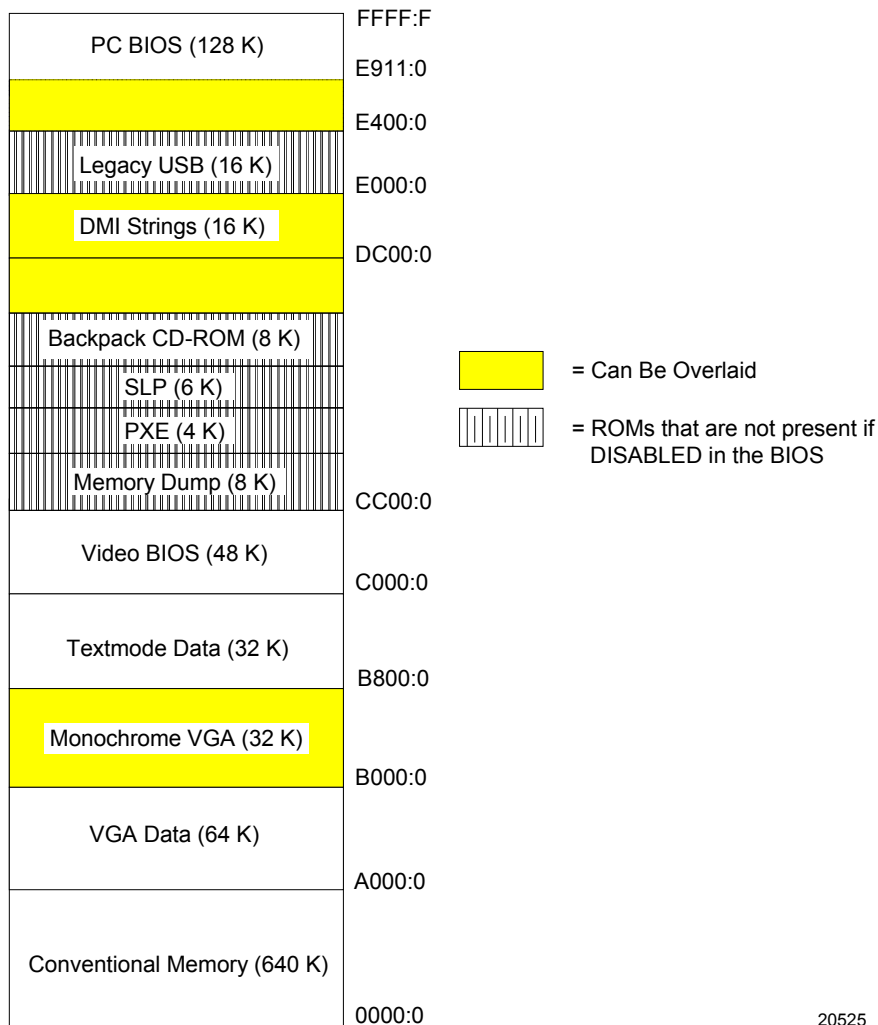
1416-C325-0020 006-8601011 - SEV

1416-C325-0021 006-8601012 - U.K.

1416-C325-0022 006-8601019 - Australia

Appendix D: Memory Map

ACPI BIOS 3.0.1.3



20525

With the 2.1.3.3 BIOS the memory used for the DMI strings starts at a different location if the Legacy USB is enabled in the BIOS Setup. With Legacy USB enabled, the DMI strings start at D800:0. If Legacy USB is disabled, the DMI strings start at DC00:0.

DOS Considerations

For DOS installations, the difference in Upper Memory Blocks may affect how an application loads and operates. If more UMB space is required (and a USB keyboard is not configured), the Legacy USB support should be disabled. In order to get maximum UMB usage, the EMM386.EXE driver should be loaded in the CONFIG.SYS file with the following recommended inclusions and exclusions.

Note: These settings should be validated for the desired workstation configuration and BIOS revision before the system is released.

This EMM386.EXE parameter information assumes you have all ROMs disabled in the BIOS Setup, including the Legacy USB. PXE, SLP, or Backpack CD may be enabled for loading and should not affect memory usage since they are not used during run time. If the memory dump option is enabled, the 8 KB memory area used by this option ROM (X=CC00-CDFE) must be excluded. Any memory used by added adapter cards should also be accounted for with the appropriate exclude parameters. The examples below assume there are no added adapter cards. EMM386 will itself use about 5 KB (5,280 bytes) of the available memory for its own purposes. This 5 KB has not been subtracted from the usable memory totals listed below (140 KB and 144 KB).

The latest BIOS has a starting address for the PC BIOS at E911:0. This address gets lower and lower in the E000 page as new features or corrections are added to the BIOS. With the current BIOS, an Include of I=DD00-E8FF can be used, but doing this risks that a future PC BIOS may become large enough to move into this included area. It is suggested that E3FF be used as a conservative setting if the memory requirements permit it. The smallest amount from the E000 page should be taken, which leaves as much room as possible for the BIOS to grow.

Non-TAPS DOS Environment

For the non-TAPS DOS environment, use EMM386.EXE with the following Include and eXclude parameters to get 144 KB of usable memory:

```
DEVICE= EMM386.EXE NOEMS I=B000-B7FF X=C000-CBFF ↵
        I=CC00-E7FF
```

I=B000-B7FF - 32 KB

This is the VGA Monochrome Text Mode Video RAM area. This assumes that for monochrome text, the VGA Color Text Mode Video RAM with the colors set to black and white is used.

X=C000-CBFF - 48 KB

This is the Video BIOS.

I=CC00-E7FF - 112 KB - Available memory

TAPS DOS Environment

For a DOS system using TAPS, 140 KB of usable memory is available with the following Include and eXclude parameters:

```
DEVICE= EMM386.EXE NOEMS I=B000-B7FF X=C000-CBFF ↵
        I=CC00-DBFF X=DC00-DCFF I=DD00-E7FF
```

I=B000-B7FF - 32 KB

This is the VGA Monochrome Text Mode Video RAM area. This assumes that for monochrome text, the VGA Color Text Mode Video RAM with the colors set to black and white is used.

X=C000-CBFF - 48 KB

This is the Video BIOS.

I=CC00-DBFF - 64 KB - Available memory

This provides 64 KB of usable memory.

X=DC00-DCFF - 4 KB

TAPS requires part of this area of the DMI information to read the terminal number. It is actually less than 4K, but 4K is an EMM386 minimum for this parameter. The Cash Drawer control in FS_MISC.DOS is one of the drivers that needs this information. The UPS driver also needs this information.

I=DD00-E7FF - 44 KB - Available memory.

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