

**NCR 7167 Two Station POS Printer
Release 1.0
Owner's Manual**



B005-000-1406
Revision C
November, 2002

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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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Important Information to the User

In order to ensure compliance with the Product Safety, FCC and CE marking requirements, you must use the power supply, power cord, and interface cable which were shipped with this product or which meet the following parameters:

Power Supply

UL Listed (QQGQ), Class 2 power supply with SELV (Secondary Extra Low Voltage), non-energy hazard output, limited energy source, input rated 100-240 Vac, 1.5/0.8 A, 50/60 Hz, output rated 24 Vdc, 2.3 A. or 3.15A

Use of this product with a power supply other than the NCR power supply will require you to test this power supply and NCR printer for FCC and CE mark certification.

Interface Cable

A shielded (360 degree) interface cable must be used with this product. The shield must be connected to the frame or earth ground connection or earth ground reference at EACH end of the cable.

Use of a cable other than described here will require that you test this cable with the NCR printer and your system for FCC and CE mark certification.

Power Cord

A UL listed, detachable power cord must be used for this product. For applications where the power supply module may be mounted on the floor, a power cord with Type SJT marking must be used. For applications outside the US, power cords which meet the particular country's certification and application requirements should be used.

Use of a power cord other than described here may result in a violation of safety certifications which are in force in the country of use.

Federal Communications Commission (FCC)
Radio Frequency Interference Statement

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

Communication Cables

Shielded communication cables must be used with this unit to ensure compliance with the Class A FCC limits.

Information to User

This equipment must be installed and used in strict accordance with the manufacturer's instructions. However, there is no guarantee that interference to radio communications will not occur in a particular commercial installation. If this equipment does cause interference, which can be determined by turning the equipment off and on, the user is encouraged to contact NCR immediately.

The NCR company 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 interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Industry Canada (IC)
Radio Frequency Interference Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Quick Reference

This Quick Reference will direct you to key areas of the Service Manual. For a complete listing of topics, consult the Table of Contents or the Index.

Setting Up the Printer page 9

Basic requirements for unpacking and installation, connecting the printer, turning it on, and running the print test.

Diagnostics page 53

Procedures for setting up the printer for items such as communications, diagnostics, and other printer options.

Printer Commands..... page 73

Printer firmware commands

How to Use this Book

Use this book as a general and technical reference manual and as a guide when replacing parts on the printer. The service guide is intended as a guide for service representatives, field engineers, and those who will be installing and learning about the 7167 printer. It can also be used as a reference for service courses.

See the Quick Reference page, the Contents, or the Index for detailed listings of what is contained in this book.

Who Should Use this Book?

You must be a trained service representative to service the 7167 Thermal Receipt and Impact printer.

How to Obtain More Information

For more information see the following documents:

7167 Two - Station POS Printer: Service Manual (B005-000-1407)

7167 Two - Station POS Printer: Parts Identification Manual (B005-000-1408)

For this and additional copies of the Owner's Manual, contact your sales representative.

Revision Record

Issue	Date	Remarks
A	Mar 2002	First printing
B	May 2002	Update to reflect first production configuration.

Contents

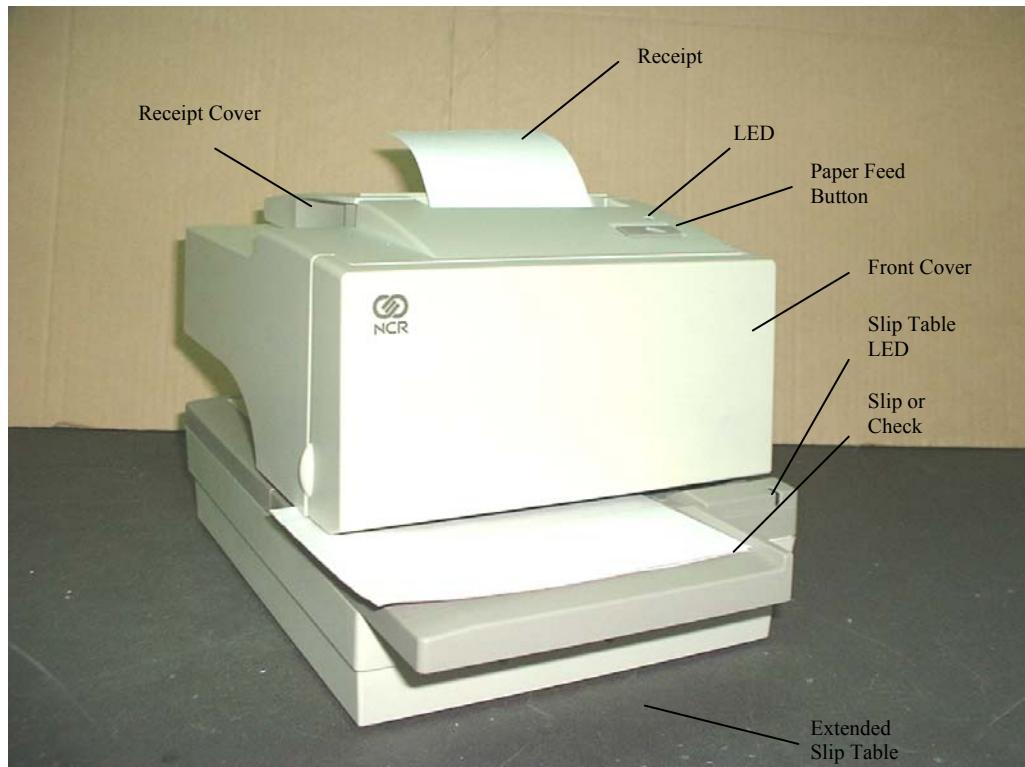
Quick Reference	v
How to Use this Book.....	vi
Who Should Use this Book?	vi
How to Obtain More Information	vi
Revision Record	vi
Contents	vii
Chapter 1: About the 7167 Printer	1
Features and Options	1
Receipt Station.....	2
Slip Station.....	2
Receipt and Slip Print Stations.....	3
General Features	3
Options.....	3
Thermal Print Head.....	4
Impact Print Head	4
Ordering Paper and Supplies.....	5
Ordering Thermal Receipt Paper.....	5
Ordering Ribbon Cassettes.....	6
Ordering Other Supplies	7
Ordering Documentation	7
Cleaning the Printer.....	8
Cleaning the Cabinet.....	8
Cleaning the Thermal Print Head	8
Chapter 2: Setting Up and Using the Printer	9
What Is in the Box?	9
Removing the Packing Material.....	10
Re Packing the Printer.....	11
Choosing a Location	11
c) Wall mounted Power Supply (Option).....	12
Setting Switches	13
Printer Reset	13
About the Universal Serial Bus	17
Advantages of USB connections.....	17
Advantages of the NCR USB Solution.....	17
Checking for USB Support on the Host Computer	18
Host Configuration.....	18
Configuring the Printer.....	19
Installing the USB Printer Drivers	23
Checking the Installation	33
Configuring Serial Port Number Assignments.....	36
Running the Edgeport Utility	36

Serial Port Configuration Methods	37
Uninstalling the Drivers	37
Using the Printer	39
Loading and Changing the Receipt Paper.....	40
Removing the Paper Roll	41
Loading the Paper Roll	42
Advancing Paper	43
Installing and Changing the Ribbon Cassette.....	44
Removing the Ribbon Cassette	44
Installing the Ribbon Cassette.....	45
Printing on Forms or Checks.....	46
Validating and Verifying Checks.....	48
Chapter 3: Solving Problems	47
Green LED Does Not Come On/Printer Will Not Print.....	47
Green LED Blinking (Slow)	48
Green LED Blinking (Fast).....	48
Slip or Forms Printing is Light.....	49
Receipt Printing is Light or Spotty	50
LED (Slip Table) Does Not Come On.....	50
Forms Skew or Catch.....	50
MICR Check Reader Not Reading Properly	51
Other Serious Problems	52
Contacting a Service Representative.....	52
Chapter 4: Diagnostics	53
Level 0 Diagnostics	53
Level 1 Diagnostics	54
Printer Configuration.....	54
Configuring the Printer.....	56
Communication Interface Modes	58
Diagnostic Modes	60
Emulation/Software Options	64
Hardware Options.....	67
Default Code Page.....	70
Level 2 Diagnostics	73
Level 3 Diagnostics	74
Chapter 5: Communication	72
Communication Overview	72
Interface.....	72
Sending Commands	72
RS-232C Interface.....	73
Print Speed and Timing	73
XON/XOFF Protocol.....	74
DTR/DSR Protocol.....	74
RS-232C Technical Specifications	74

RS-232C 9-Pin to 9-Pin Cable Diagram.....	75
USB Cable Connector	76
Power Cable Connector	76
Cash Drawer Connector and Pin Assignments	77
Setting Extra RS-232C Options	78
Chapter 6: Commands	73
Introduction.....	73
List of Commands and Location.....	73
By Command Code	74
Printer Function Commands.....	79
Vertical Positioning and Print.....	80
Horizontal Positioning Commands	80
Print Characteristic Commands.....	81
Graphics Commands.....	82
Status Commands.....	82
Real Time Commands.....	83
Auto Status Back Commands.....	83
Bar Code Commands	83
Macro Commands	84
MICR Check Reader Commands.....	84
MICR Parsing	84
User Data Storage Commands.....	85
Asian Character Commands	85
Flash Download Commands.....	86
Printer Function Commands.....	90
Vertical Positioning and Print Commands	105
Horizontal Positioning Commands	114
Print Characteristic Commands.....	122
Graphics Commands.....	142
Status Commands.....	151
Real Time Commands.....	163
Auto Status Back Commands.....	171
Page Mode Commands.....	181
Macro Commands	189
MICR Commands	191
MICR Parsing	192
Check Flip Command	200
User Data Storage Commands.....	200
Asian Character Commands	209
Flash Download Commands.....	213
Appendix A: Specifications	211
Printing Specifications.....	211
Power Requirements	213
Environmental Conditions	213
Reliability	215

Dimensions and Weight.....	215
Density of Receipt Print Lines.....	215
Duty Cycle Restrictions (Printing Solid Blocks)	215
Appendix B: Print Characteristics	217
Character Size.....	217
Receipt Station.....	217
Slip Station.....	218
Print Zones.....	221
Receipt Station.....	221
Slip Station.....	222
Slip Form Parameters.....	223
Check Size.....	224
MICR Media Requirements.....	224
Appendix C: Character Sets	225
Index	1

Chapter 1: About the 7167 Printer



The 7167 printer is a fast, quiet, relatively small and very reliable multiple-function printer. It prints receipts, validates and prints checks, and prints on a variety of single- or multiple-part forms. There is no journal as it is kept electronically by the host computer.

The industry-standard RS-232C communication interface allows the 7167 to be connected to any host computer that uses RS-232C or USB communication interface.

With thermal printing technology on the more frequently used receipt station, there is no ribbon cassette to change and paper loading is extremely simple. Printing on single- or multiple-part forms, validating checks, and printing checks is also easy in the accommodating slip station. An additional option is the Magnetic Ink Character Recognition (MICR) check reader with parsing which reads account numbers on checks for easy verification. An extended slip table is available for handling large forms and is standard with the MICR option.

Features and Options

The 7167 printer comes with several features and options.

Receipt Station

Thermal printing

Standard pitch (host selectable): 15.2 characters per inch, 44 columns

Compressed pitch (host selectable): 19.0 characters per inch, 56 columns

Resident bar codes

- Code 39
- Code 93
- Code 128
- UPC-A
- UPC-E
- JAN8 (EAN)
- JAN13 (EAN)
- Interleaved 2 of 5
- Codabar
- PDF417

Drop-in paper loading requiring no spindle or threading paper

Paper low indicator

Paper exhaust indicator

Slip Station

Bi-directional, impact printing

Standard pitch (host selectable): 13.9 characters per inch, 45 columns

Compressed pitch (host selectable): 17.1 characters per inch, 55 columns

Printing of forms up to five plies

- Front insertion of forms with forms stop
- Side insertion of forms with override of forms stop
- Automatic and manual insertion of forms

Form alignment sensors and Slip In LED indicator

Horizontal flat-bed slip table with optional extension (standard with MICR check reader)

Snap-on ribbon cassette

Resident bar codes

- Code 39
- Code 93
- Code 128
- UPC-A
- UPC-E
- JAN8 (EAN)
- JAN13 (EAN)
- Interleaved 2 of 5
- Codabar

Receipt and Slip Print Stations

Variety of print modes: double high (receipt station only), double strike (slip station only), double wide, upside down, and rotated

14 resident character language Code Pages:

- PC Code Page 437 (US English)
- PC Code Page 850 (Multilingual)
- PC Code Page 852 (Slavic)
- PC Code Page 858 (with Euro symbol)
- PC Code Page 860 (Portuguese)
- PC Code Page 862 (Hebrew)
- PC Code Page 863 (French Canadian)
- PC Code Page 864 (Arabic)
- PC Code Page 865 (Nordic)
- PC Code Page 866 (Cyrillic)
- PC Code Page 874 (Thai)
- PC Code Page 1252 (Windows Latin #1)
- PC Code Page Katakana
- Space Page
- Code Page 932
- Code Page 936
- Code Page 949
- Code Page 950

16K RAM for downloaded character sets or bit-mapped graphics (such as logos)

General Features

Knife

Cover open sensors

Industry standard RS-232C and USB communication interface

One cash drawer connector (supports 2 cash drawers)

History EEPROM for custom settings

Audible tone (controlled by application)

Note: The 7167 does not have a paper journal. The journal is kept electronically by the host computer.

Options

Magnetic Ink Character Recognition (MICR) check reader built into the slip station for verifying checks (includes custom MICR field parsing)

Extended slip table for handling large forms (standard with MICR check reader)

Remote power supply

Communication cables

Thermal Print Head

The 7167 Receipt Station uses a thermal print head for printing receipts, and is extremely fast and quiet. Since it uses heat to print directly on paper, there is no cassette or ribbon to change, eliminating soiled fingers and paper dust.

There is no regularly scheduled maintenance for the print head and it does not need to be regularly cleaned. However, if it does appear dirty, wipe it with cotton swabs and rubbing alcohol. If spotty or light printing problems persist after the thermal print head has been cleaned, see "Chapter 3: Solving Problems" for more information.

Note: The thermal print head does not normally require cleaning if the recommended paper is used. If non-recommended paper has been used for an extended period of time, cleaning the print head with cotton swabs and rubbing alcohol will not be of much benefit. See "Ordering Receipt Paper" on the next page for the recommended paper.

The print head is designed for a very long life, but it may be replaced if needed. Only a trained service representative may replace the print head. See "Chapter 3: Solving Problems" to determine if the print head needs to be replaced.

Impact Print Head

The bi-directional, impact print head is designed for a very long life, but it may be replaced if needed. Only a trained service technician may replace the impact print head. See "Chapter 3: Solving Problems" to determine if the print head needs to be replaced.

Ordering Paper and Supplies

Thermal receipt paper, ribbon cassettes, and forms can be ordered. Documentation is also available.

Ordering Thermal Receipt Paper

The 7167 requires NCR qualified thermal paper to be used on the thermal receipt print station to insure proper operation of the printer. In addition the paper rolls must be have the following dimension.

Diameter	Length	Width
80 mm max. (3.15 in.)	83 meters (273 ft.)	80 mm \pm .5 mm (3.15 \pm .008 in.)

The paper must not be attached at the core. Otherwise the receipt station will be damaged when the paper is exhausted.

Paper grades available from NCR

Paper Stock	Paper Grade Description
856911	Economy (for text printing)
856966	Standard Sensitivity (for text and simple graphics)
878559	High Sensitivity (for text, bar codes & detailed graphics)
856380	For improved archiveability and added resistance to incompatible substances
856461	Red/Black
856458	Blue/Black

The paper must not be attached at the core. Otherwise the receipt station will be damaged when the paper is exhausted.

To order thermal receipt paper, contact your sales representative or order from NCR at the following address or toll free number:

NCR
Media Products Division
9995 Washington Church Road
Miamisburg, OH 45342
Voice: 1(800)543-8130 (toll free), or local listing of The NCR Media Products sales office

It is critical that only certified thermal paper be used with this printer, otherwise damage may result causing poor print quality or cause damage to the printer.

Ordering Forms

The 7167 prints on single- or multiple-part forms in the slip station (up to five-part forms). Forms and slips must meet the following requirements:

Front insertion (minimum):

51 mm (2.0 inches) wide

70 mm (2.75 inches) long

Side insertion (minimum):

203 mm (8.0 inches) wide

51 mm (2.0 inches) long

Single-ply forms should be on paper that is greater than 15 pounds

Multiple-part forms (up to five parts) should be no thicker than .406 mm (.016 inches)

If multi-part form are used the cardstock must be the last ply of the form.

To order forms, contact your sales representative or order from NCR at the following address or toll free number:

NCR

Media Products Division

9995 Washington Church Road

Miamisburg, OH 45342

Voice: 1(800)543-8130 (toll free), or local listing of The NCR Media Products sales office

Ordering Ribbon Cassettes

To order ribbon cassettes, contact your sales representative or order from NCR at the following address or toll free number:

NCR

Media Products Division

9995 Washington Church Road

Miamisburg, OH 45342

Voice: 1(800)543-8130 (toll free), or local listing of Media Products sales office

Stock Numbers: (purple ribbon cassette—8 million characters) 127022

(black ribbon cassette—5 million characters) 127035

Ordering Other Supplies

Contact your NCR sales representative to order the supplies listed in the table.

Item	Type	Number
Power supply with attached cable to printer and U.S. power supply cord	75 Watt Power Supply	7167-K331-V001
Power supply (w/o power cord)	75 Watt Power Supply	7167-K302-V001
Power supply cord (to outlet)	United States International (no plug) United Kingdom S.E.V. Australia International (with plug)	1406-C325-0030 1416-C319-0030 1416-C321-0030 1416-C320-0030 1416-C322-0030 1416-C323-0030
RS-232C Communication Cables		
9-pin to 9-pin	0.7 meters	1416-C359-0007
9-pin to 9-pin	3.0 meters (9.8 feet)	1416-C266-0040
DC Plus Power Cable		
DC Power from NCR POS Terminal	1.0 Meters	1416-C712-0010
DC Power from NCR POS Terminal	4.0 Meters	1416-C712-0040
USB Communication Cables		
USB Type A to Type B Connector	2.0 Meters	1416-C528-0010
USB Type A to Type B Connector	4.0 Meters	1416-C528-0040
USB Plus Power Cables		
USB Plus Power to Type B Connector	3.0 Meters	1416-C713-0010
USB Plus Power to Type B Connector	4.0 Meters	1416-C713-0040
Extended Slip Table (Standard)		7167-K280-V001
Cash Drawer	2189	2189-K002-V001 (Switchable for Drawer 1 or Drawer 2)
Cash Drawer Cable	Y Cable	1416-C372-0006

Ordering Documentation

Contact your sales representative to obtain the following documentation:

7167 Thermal Receipt and Impact Slip Printer: Parts Identification Manual (B005-0000-1408)

7167 Thermal Receipt and Impact Slip Printer: Service Manual (B0005-0000-1407)
(includes Troubleshooting Guide and the Preventative Maintenance Guide)

Cleaning the Printer

Cleaning the Cabinet

The external cabinet materials and finish are durable and resistant to these items:

- Cleaning solutions
- Lubricants
- Fuels
- Cooking oils
- Ultraviolet light

There is no scheduled maintenance required for the 7167.

Clean the cabinet as needed to remove dust and finger marks. Use any household cleaner designed for plastics, but test it first on a small unseen area. If the receipt bucket is dirty, wipe it with a clean, damp cloth.

Cleaning the Thermal Print Head

Caution: Do not spray or try to clean the thermal print head or the inside of the printer with any kind of cleaner as this may damage the thermal print head and electronics.

If the thermal print head appears dirty, wipe it with cotton swabs and rubbing alcohol.

If spotty or light printing problems persist after the thermal print head has been cleaned, see "Chapter 3: Solving Problems" for more information.

Note: The thermal print head does not normally require cleaning if the recommended paper grades are used. If non-recommended paper has been used for an extended period of time, cleaning the print head with cotton swabs and rubbing alcohol will not be of much benefit. See "Ordering Paper and Supplies" earlier in this manual for recommended paper.

Chapter 2: Setting Up and Using the Printer

What Is in the Box?

The following items are packed in the shipping box:

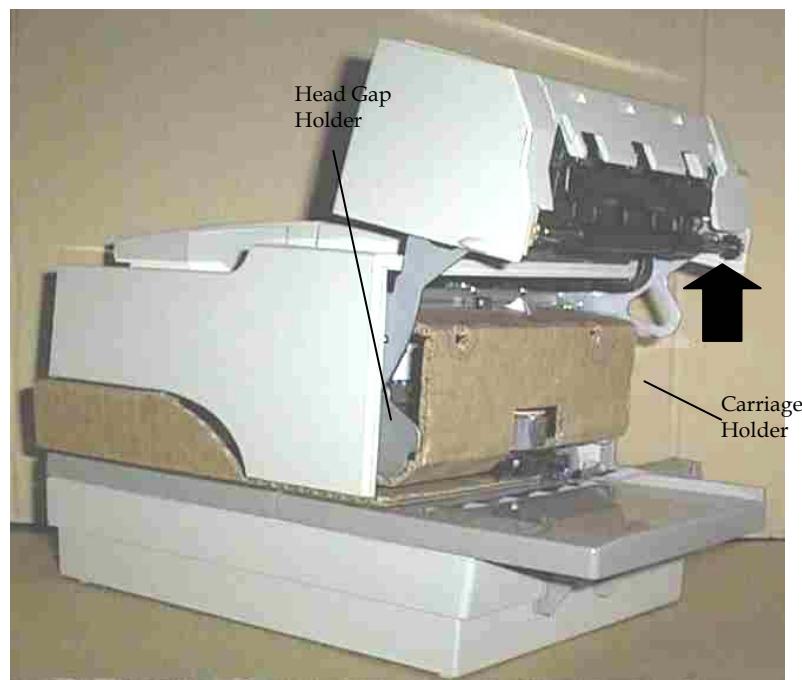
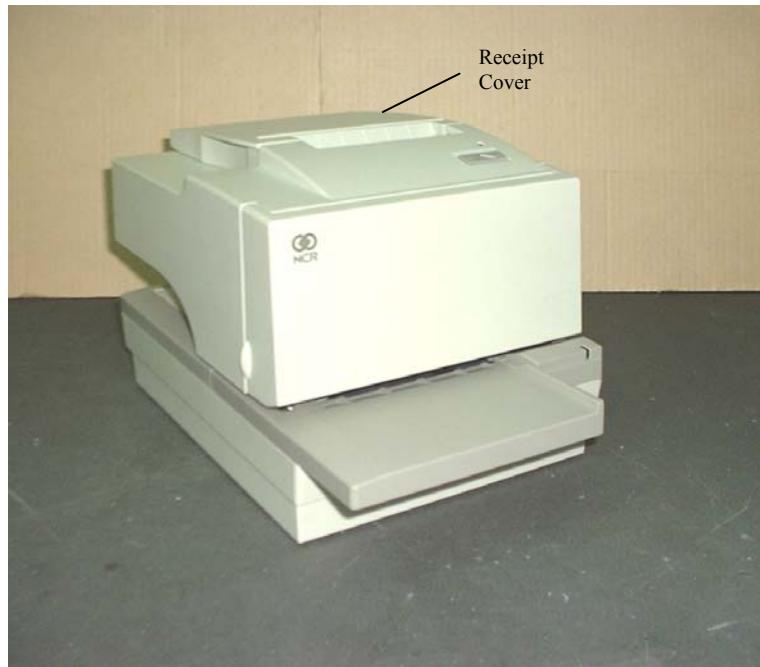
- Printer enclosed in a plastic bag and foam pack
- Ribbon cassette
- Thermal receipt paper roll

Cardboard restraint for carriage (behind front cover)

These items may be ordered as options from NCR and will be shipped separately:

- Communication cable (from host computer to printer)
- DC Power Cable
- Remote Power Supply
- USB plus Power Cables
- Cash drawer cables (may be ordered from other equipment suppliers: see "Ordering Other Supplies" in chapter 1)

Removing the Packing Material



1. Remove the printer from the foam pack and plastic bag.
2. Open the front cover and remove the carriage holder.
3. Remove the head gap holder from the slip table.

4. Remove the ribbon cassette / receipt paper roll and cables from the foam packing material.
5. Save all packing materials for future storing, moving, or shipping the printer.

Caution: Remove the carriage holder and the head gap holder before using the printer.

Do not pickup the printer using the slip table as a handle.

Re Packing the Printer

Review the illustrations on the previous pages to pack the printer.

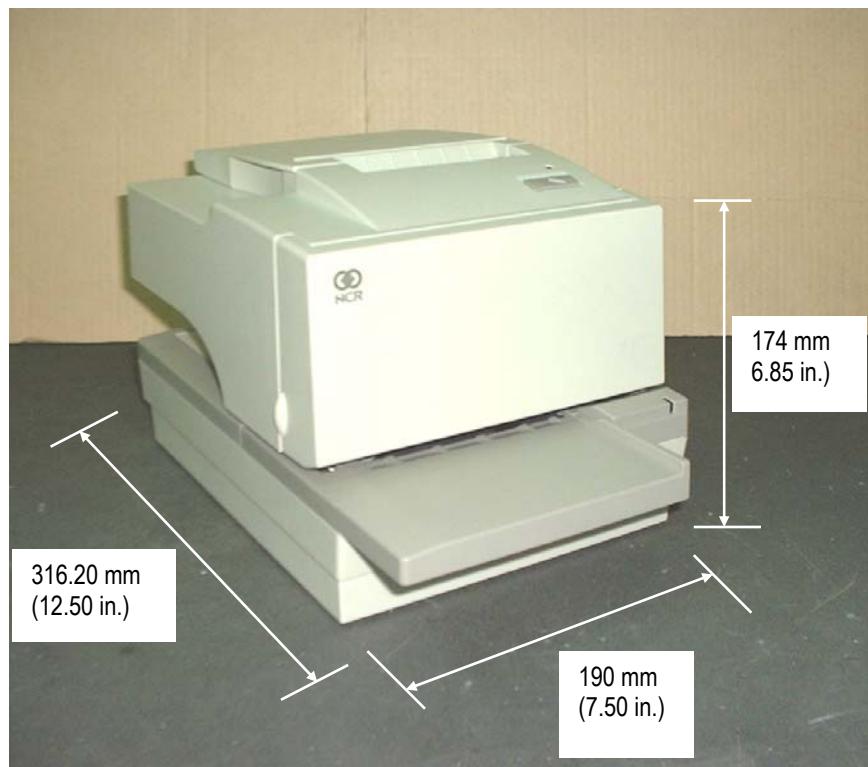
1. Place receipt paper between the receipt cover and the print head for protection.
2. Remove the ribbon cassette, move the carriage to the corner, and place the cardboard restraint in the slip carriage area.
3. Place the cardboard support on the slip table.
4. Place the printer in the plastic bag and foam pack, place the packed printer in the box, and secure the box with packing tape.
5. If you are sending the printer to NCR for repair, call your NCR-authorized service representative for instructions on where to send the printer.

Be prepared to answer questions concerning shipping and billing.

Choosing a Location

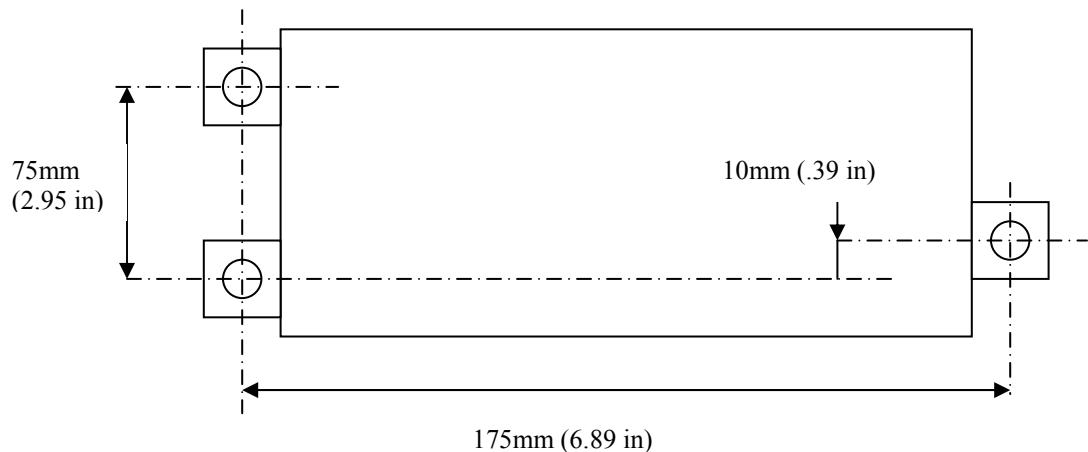
The 7167 printer takes up relatively little counter space and may be set on or near the host computer. Make sure there is enough room to open the receipt cover to change the paper and to open the front cover to change the ribbon cassette. The illustration shows the actual dimensions of the printer, but leave several inches around the printer for connecting and accessing the cables.

Note: The optional Magnetic Ink Character Recognition (MICR) check reader feature is designed to operate under a normal operating environment with a host computer. However, additional devices, such as CRT monitors, or large metal surfaces that are near the printer can affect the printer's magnetic field, causing intermittent reading errors when the MICR check reader is in operation. Relocating these devices may be required to prevent this interference.



c) Wall mounted Power Supply (Option)

The 75 watt power supply may be mounted on a vertical wall by using the holes on the cover. Mount the screws on the wall using the following recommended mount dimensions. Use a #8 wood screw which is to be securely fastened to a wall stud or using "Molly" fasteners (not provided).

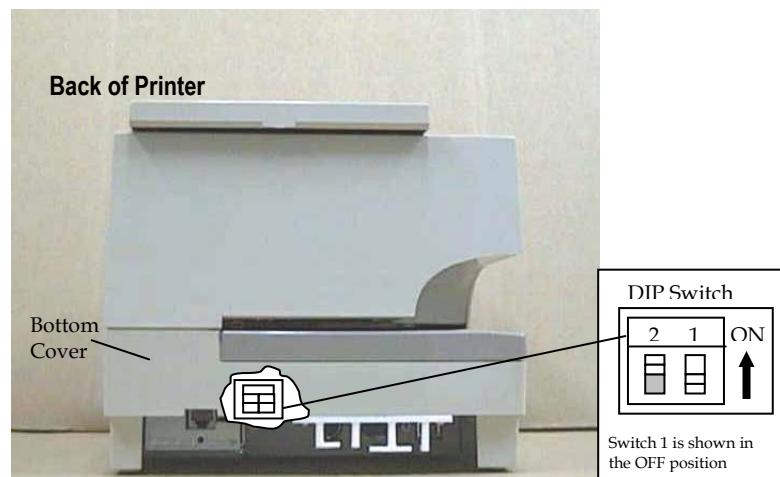


Setting Switches

The DIP switches, located at the back of the printer, are used for three purposes:

- To set variables for several printer functions (see the sections for the various printer functions in "Level 1 Diagnostics" in "Chapter 4: Diagnostics" for Setting Up The Printer)
- To perform diagnostic tests (see the sections for the various diagnostic tests in "Level 1 Diagnostics" in "Chapter 4: Diagnostics" for Setting Up The Printer)

Caution: The DIP switches are set to OFF.



Note: Switch 1 is shown in the Off position for reference.

Use a paper clip or other pointed object to set the switches.

1. Set the switches to the desired settings shown in the table.
2. Reset the printer.

Printer Reset

The printer is reset by disconnecting/reconnecting the DC power or by opening the slip door and closing the slip door while holding the receipt paper feed button down.

DIP Switch Settings

Switch 1 Settings	Switch 2 Settings	Printer State
OFF (0)	OFF (0)	On-line Mode (default)
ON (1)	OFF (0)	Diagnostic Mode
OFF (0)	ON (1) *	Flash Download Mode
ON (1)	ON (1)	Vendor Adjustment Mode

- It is optional to set this switch to ON when reflashing the IPL firmware.

Connecting the Cables

There are three different types of cables that connect to the printer:

- Power supply cable supplying power from the host POS terminal or from a external power supply
- Communication cable (RS-232 or USB) connecting the printer to the host computer
- Cash drawer cable connecting the printer to one or two cash drawers

Caution: Disconnect the power before connecting the cables. Always connect the communication cable and cash drawer cables before connecting power to the power source. Always disconnect power to the power source before disconnecting the communication and cash drawer cables.

Follow these steps to connect the cables. See the illustration on the next page.

1. Unplug the power cable from its power source.
2. Connect the power and communication cables to their respective connectors under the printer as shown in the illustration.

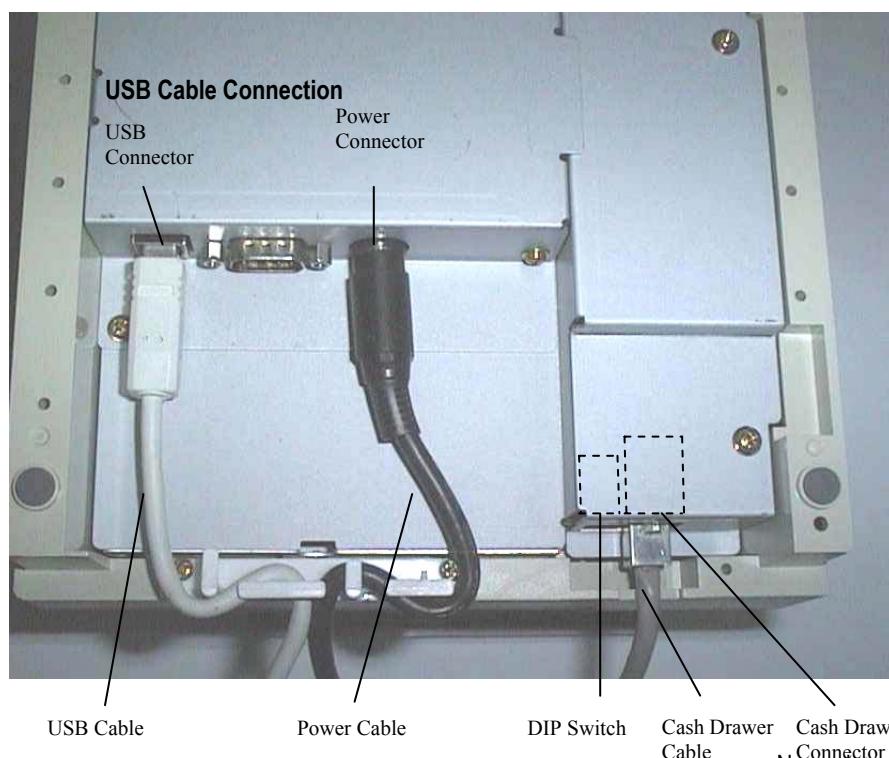
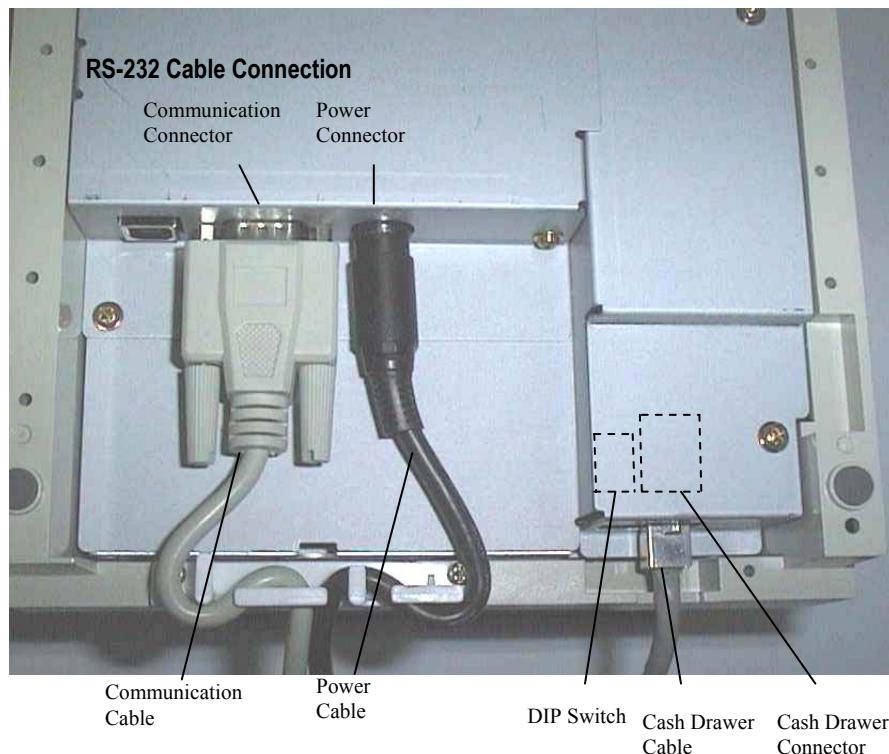
For RS232 cable, be sure to screw the communication cable to the communication connector.

3. Route the cables through the cable strain relief on the bottom of the printer, then through the two slots in the cable access cover as shown in the illustration.
4. Connect the communication cable to the appropriate host computer connector.
5. Connect the cash drawer cable to the printer and cash drawer.

The connectors is a standard phone jack located at the rear of the printer.

6. For Host powered installation plug the DC cable into the POS terminal or plug the power cord into the power supply for remote power supply installation, then plug the power supply into an outlet.

At this point, the printer receives power. If the On Line LED (green) is on, the printer is on-line. Otherwise, the printer is not receiving power. Check to insure that the host terminal is on or that the power supply is on.



Bottom of the Printer

About the Universal Serial Bus

The Universal Serial Bus (USB) is a peripheral bus for personal computers that was first released in January 1996. Since that time, virtually all Intel Architecture personal computers have the hardware to support USB, and a large number of computers exist that have both the hardware and software support required to interface with USB peripherals.

Advantages of USB connections

USB has a number of advantages over legacy connection schemes (e.g., serial RS-232). These advantages include:

- High Speed: up to 12 MB/second for high-speed devices.
- Plug and Play: Devices are automatically recognized and configured at installation.
- Hot plug: Bus supports installation and removal of devices with the power applied.
- Up to 127 devices: One host can support up to 127 devices with the use of hubs.
- “Free ports”: Most PC architecture machines contain two USB ports in the base hardware.

These advantages have become attractive to the POS industry for a couple of reasons.

Additional POS devices. Some POS systems are required to host more peripherals than can be supported by two RS-232 ports typical in a platform. With the addition of one (or two) USB connectors, the platform can now support the additional devices that had previously required a serial port expander card.

Higher bandwidths. New devices coming into use have bandwidth requirements that are higher than the bandwidth that can be supported on legacy interfaces. These devices include image scanners and printers. As the speed and capability of POS printers increases, the performance of the printer in an application can become limited by the speed of the communications interface. USB provides ample bandwidth to support current and future POS printer requirements.

Advantages of the NCR USB Solution

NCR has eliminated any cost associated with porting applications to USB by implementing a USB solution that simulates standard serial communications in Windows 98 (SR2), Windows 98 USB Hot Patch, ID: Q236934, NT 4.0 (Service Pack 3 or higher) and Windows 2000. Application developers need only redirect their software to the virtual serial ports created by the NCR USB solution to use the printer.

Checking for USB Support on the Host Computer

If the USB interface communications is required, the host computer must be equipped and setup properly. If it is not, you need to install a USB interface card. With the required hardware in place, Windows 98 (SR 2), Windows 98 USB Hot Patch, ID: Q236934, NT 4.0 (Service Pack 3 or higher) and Windows 2000 natively support plug-and-play USB with a built-in driver; Windows NT does not, and the NCR windows NT USB driver needs to be installed.

IMPORTANT: You need to have internet access to download the USB drivers from the NCR Web site://www.NCR.com

Host Configuration

Verify that the proper hardware has been installed in the host terminal.

Windows 98:

1. Open the Control Panel.
2. Click on System (Windows 98).
3. Click the Device Manager tab.
4. In the Device Manager window, scroll down the list of installed hardware devices until you find an entry for "Universal serial bus controller."

If this entry exists, your host computer is set up for USB operation. If this entry does not appear:

- Consult your computer documentation to see if USB must be enabled in the BIOS setup.

Windows NT:

To see if your POS terminal is USB-compliant, look at the back.

- If it has a USB connector port, your hardware is all set.

Note: Even though the host may have a USB port, Windows NT does not natively support plug-and-play USB because it does not have a built-in driver. You will need to load the NCR Windows NT USB driver (see "Installing the USB Printer Drivers").

Windows 2000:

1. Open the Control Panel.
2. Click on System.
3. Click on Hardware.
4. Click the Device Manager tab.
5. In the Device Manager window, scroll down the list of installed hardware devices until you find an entry for "Universal serial bus controller."

If this entry exists, your host computer is set up for USB operation. If this entry does not appear:

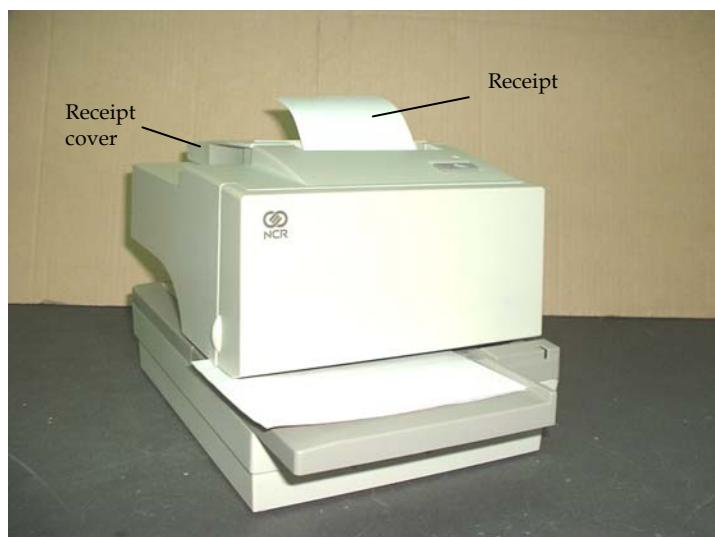
- Consult your computer documentation to see if USB must be enabled in the BIOS setup.

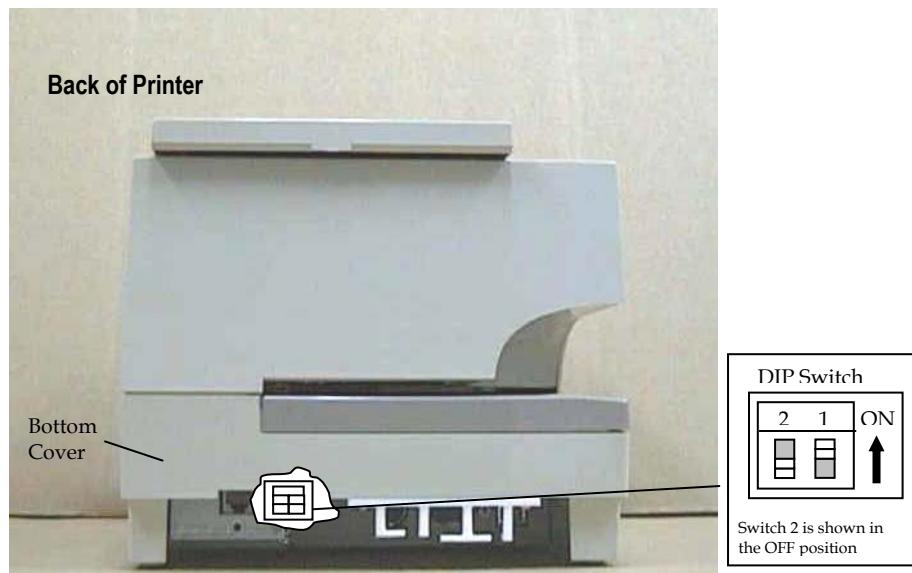
Configuring the Printer

USB is a plug-and-play environment. As such, neither the printer nor the host requires user configuration to work. However, since the NCR solution simulates a serial communication interface, you must configure "handshaking" on the printer for proper operation. The printer can be configured to use hardware flow control (using DTR/DSR) or software flow control (using XON/XOFF). All other serial communication parameters (i.e., baud rate, parity, stop bits, and data bits) are ignored.

To define software or hardware handshaking:

1. Open the Receipt Cover and check whether there is paper in the printer. If there isn't, insert the paper roll, as described in the *Owner's Manual*.
2. Turn the printer so the back is facing you.
3. Set DIP switch 1 to the On position (up).





4. Reset the printer.

The printer beeps, prints the current configuration, then waits for you to make a selection from the Main Menu on the printout.

*** Diagnostics Form ***		
Model number	:	7167
Serial number	:	A991703053
Boot Firmware	:	V0.17
Revision	:	C525
Flash Firmware	:	V03.12
Revision	:	0EFF
CRC	:	
Hardware	:	
Flash Memory Size	:	2Mbytes
Flash Logos Size	:	256Kbytes
Flash Fonts Size	:	64Kbytes
Flash User Storage	:	64Kbytes
Communication Interface	:	
Interface Type	:	RS232/USB
Parameters	:	
Baud Rate	:	9600
Data Bits	:	8
Stop Bits	:	1
Parity	:	None
Flow Control	:	DTR/DSR
Reception Errors	:	Print '?
Receive Buffer	:	4K Bytes
Diagnostic Mode	:	Off, Normal Mode
Emulation/Software	:	
Printer Emulation	:	7158 Native Mode
Printer ID Mode	:	7167 Native ID
Default LPI	:	7.52
To enter Diagnostics Mode:		
1) Flip DIP switch #1 on		
2) Reset the printer by pressing and holding the Receipt Feed switch down while disconnecting and reconnecting the power.		

The config menu allows you to set general printer parameters. Sub-menus are entered and selections are made using the Paper Feed Button:

- Short Click : Feed Button is quickly depressed then released.
- Long Click : Feed Button is held Down more than 1sec then released.

CAUTION !!

The settings are predetermined in factory and should generally not be changed to avoid changing other functions.

Main Menu

Select a sub -menu:

- EXIT 1 Click
- Print Current Configuration 2 Clicks
- Set Communication Interface 3 Clicks
- Set Diagnostics Modes 4 Clicks
- Set Emulation/Software 5 Clicks
- Set Hardware Options 6 Clicks
- Set Default Code Page 7 Clicks
- Set EEPROM To Default 8 Clicks

Enter code, then hold Button DOWN at least 1 second to validate

Important: Ensure that the configuration settings match your host computer, if not, enter the Configuration Menu to make changes.

Follow the instructions on the scrolling menu, pressing the Paper Feed button to make selections. Indicate Yes with a long click, and No with a short click.

- Press and hold the Paper Feed button for at least one second for a long click.
 - Press the Paper Feed button quickly for a short click.

5. Select Set Communication Interface from the Main Menu.

The printer scrolls to the first menu selections.

The printer scrolls to the first menu selections.

6. Select RS232/USB.
7. Skip through the parameters with short clicks until Set Flow Control Method is displayed.
8. Follow the instructions to select either XON/OFF or DTR/DSR, then skip the remaining communications parameters.
9. When you have finished, set DIP switch 1 to Off (down).
10. Reset the printer.

The printer resets with the new selection. You can verify the new setting by pressing the Paper Feed button to print out a diagnostics form or by holding the Paper Feed button while closing the Receipt Cover.

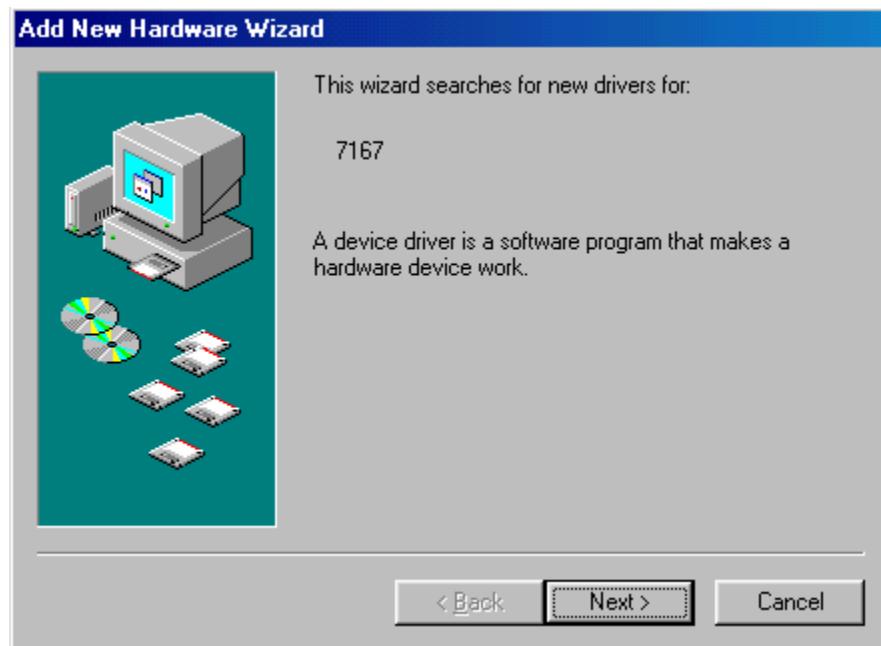
Installing the USB Printer Drivers

Windows NT users need to run Service Pak 3 or higher for a successful installation and should exit all Windows programs before starting.

1. Verify that the printer is plugged in and the power is on.
2. The installation varies depending on the operating system.

Windows 98

Follow the on-screen instructions. The printer beeps when the USB device is recognized. Go to the location where you downloaded the drivers and double click the file.







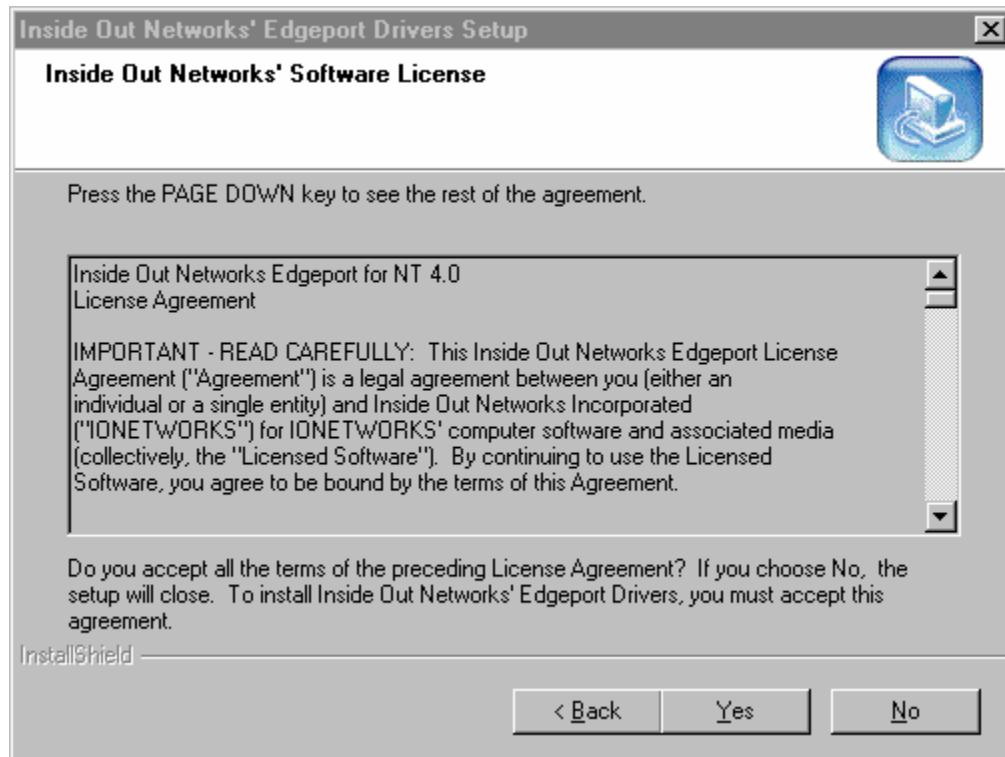
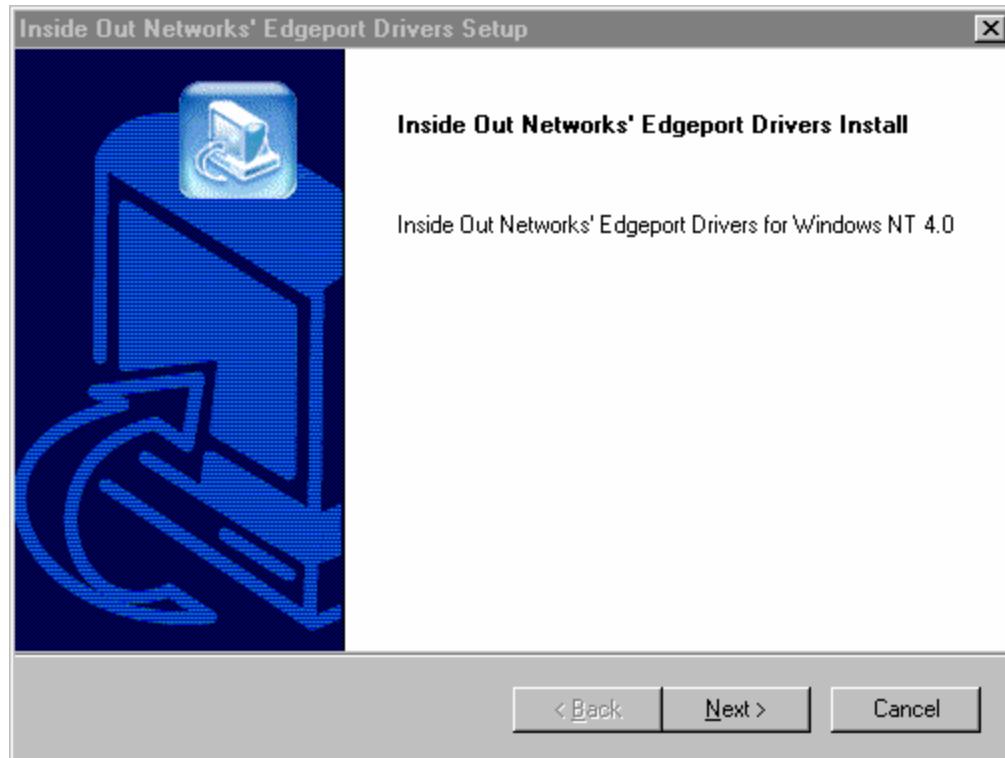
Note: Location of the IONetworks files on the CD-ROM may vary depending on the version of the CD that is being used.

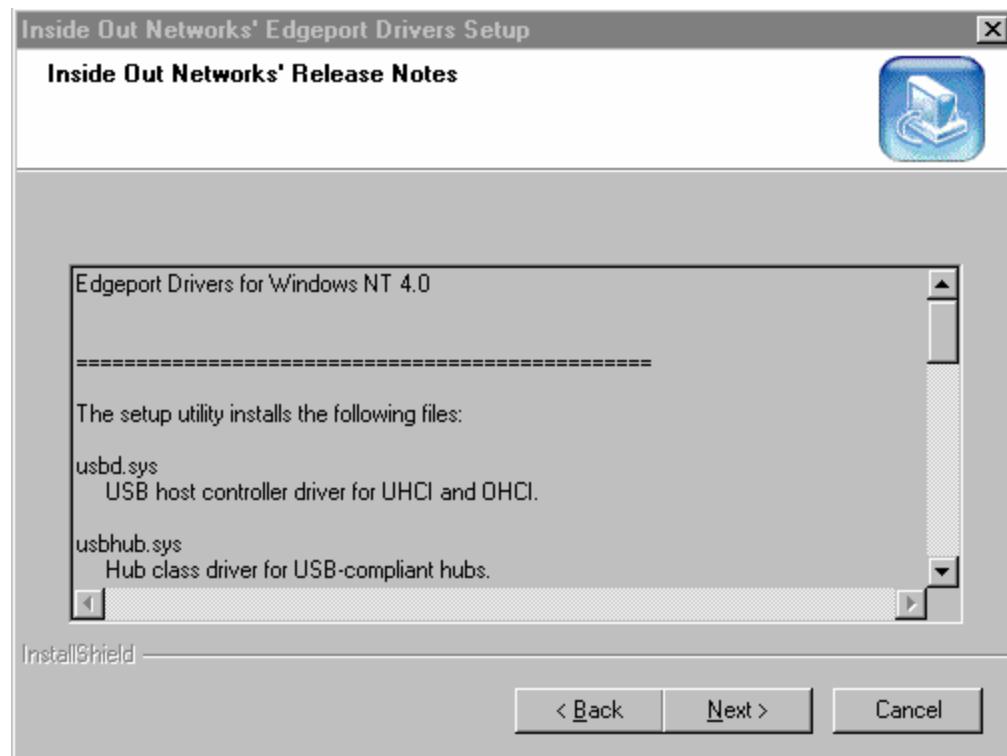


Also verify that you have the Windows 98 USB Hot Patch, ID: Q236934, created: 08-Jul-1999 and modified: 10Aug-1999 installed. To verify if this hot patch is installed check file c:\Windows\System32\Drivers\usbhub.sys. This file should be dated 08/13/99, size 36,672, version 4.10.22223.

Windows NT

The printer beeps when it is plugged in to show the USB device is recognized. Click on the file you downloaded and follow the on-screen instructions.

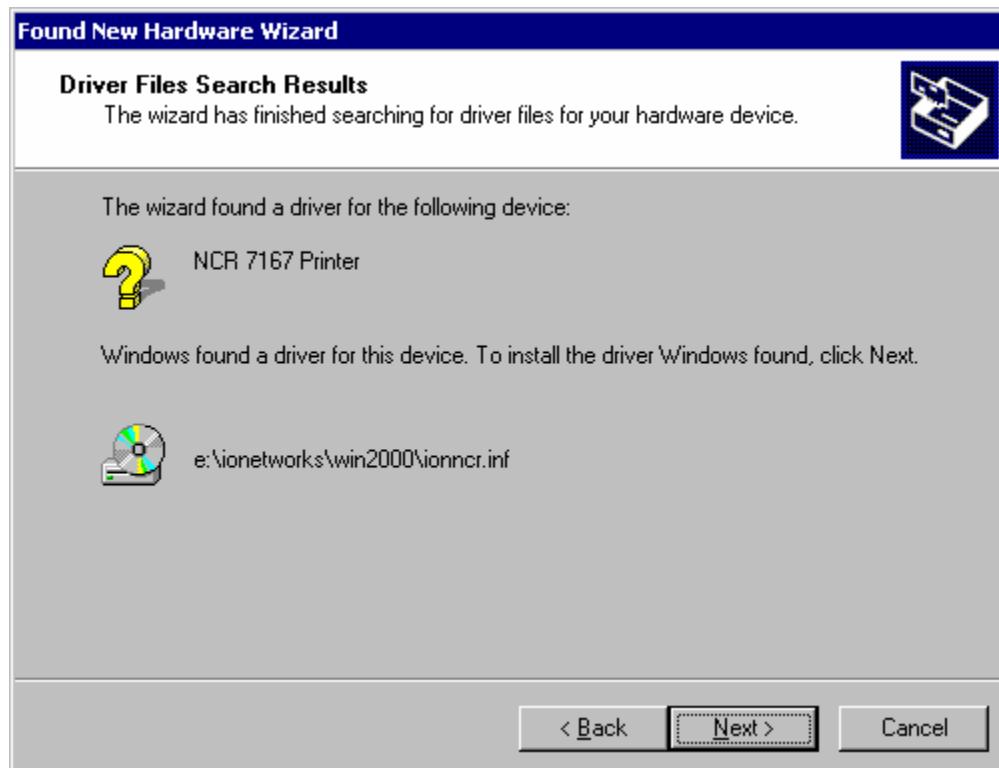
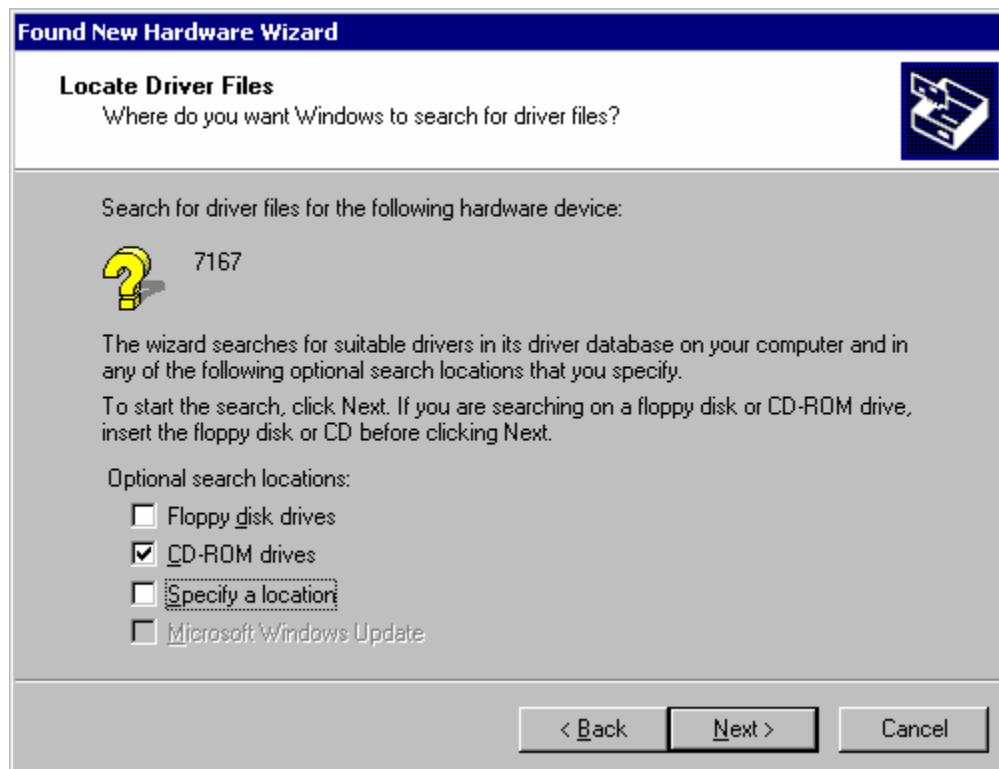




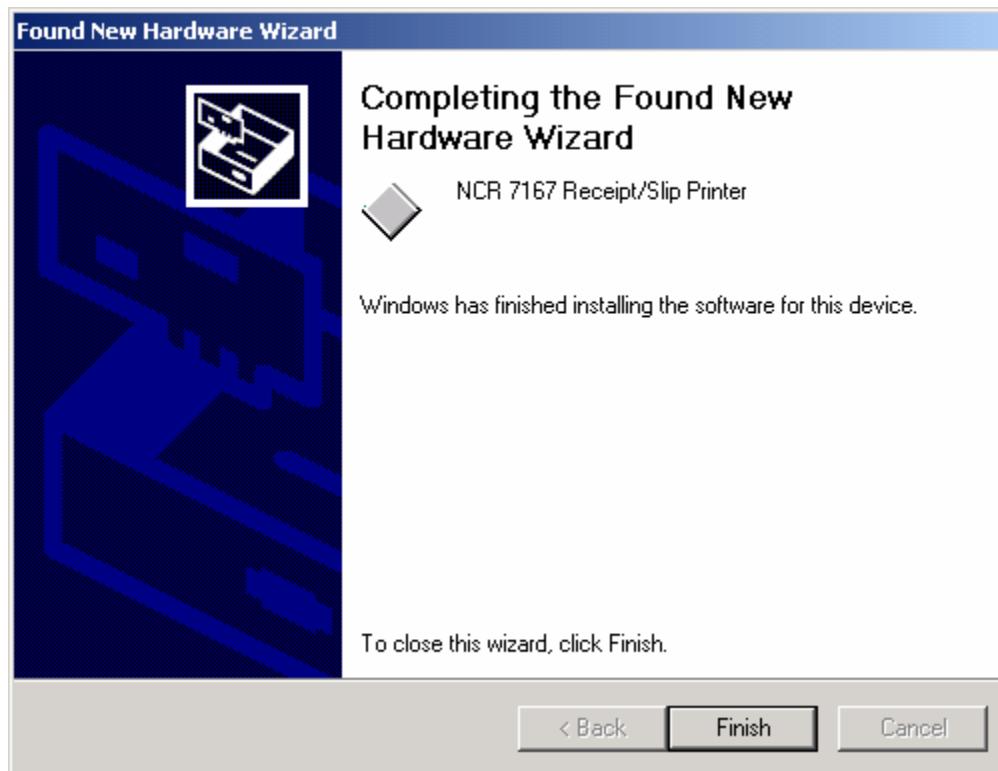
Windows 2000

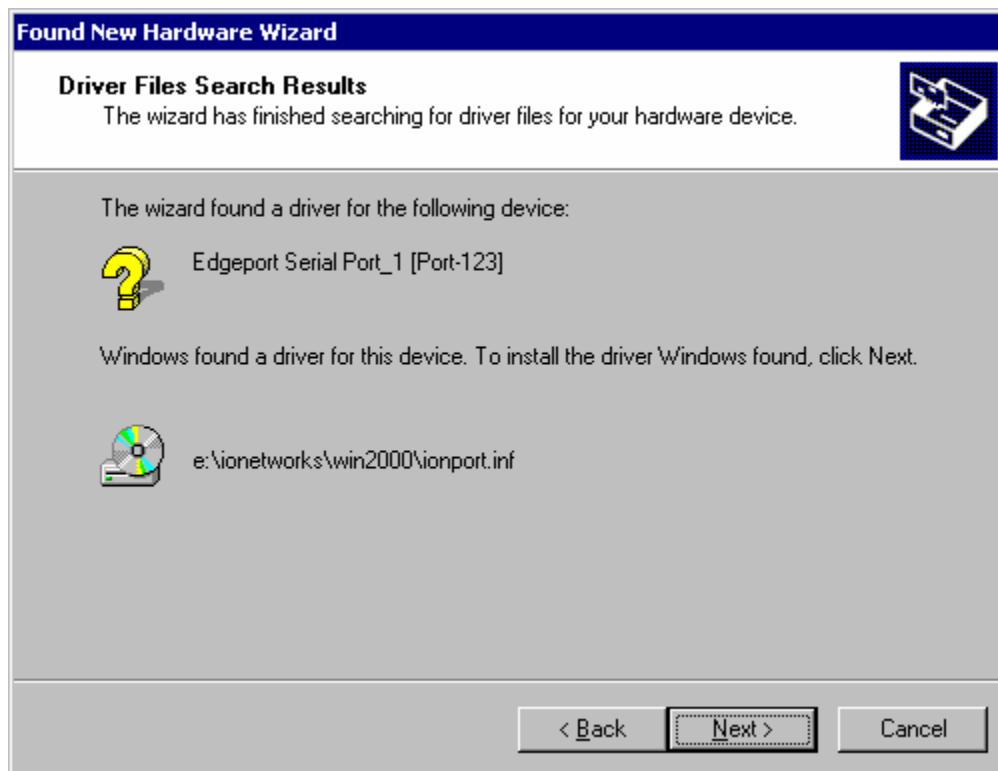
Follow the on-screen instructions. The printer beeps when the USB device is recognized. Go to the location where you downloaded the drivers and double click the file.



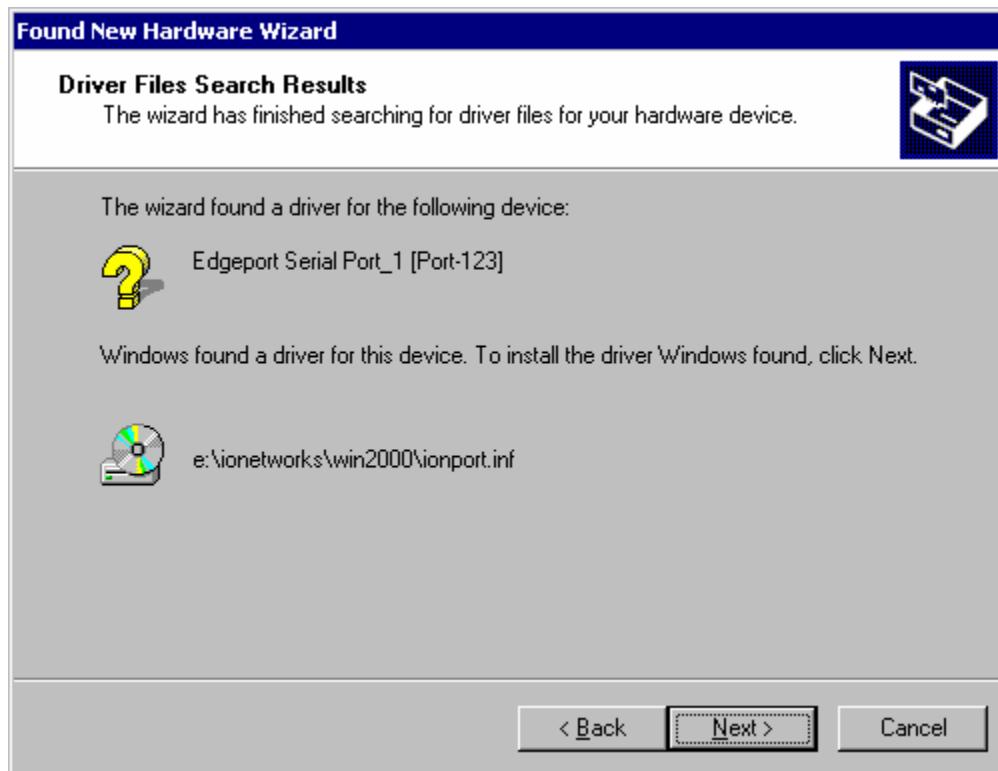


Note: Location of the IONetworks files on the CD-ROM may very depending on the version of the CD that is being used.





Note: Location of the IONetworks files on the CD-ROM may vary depending on the version of the CD that is being used.





Checking the Installation

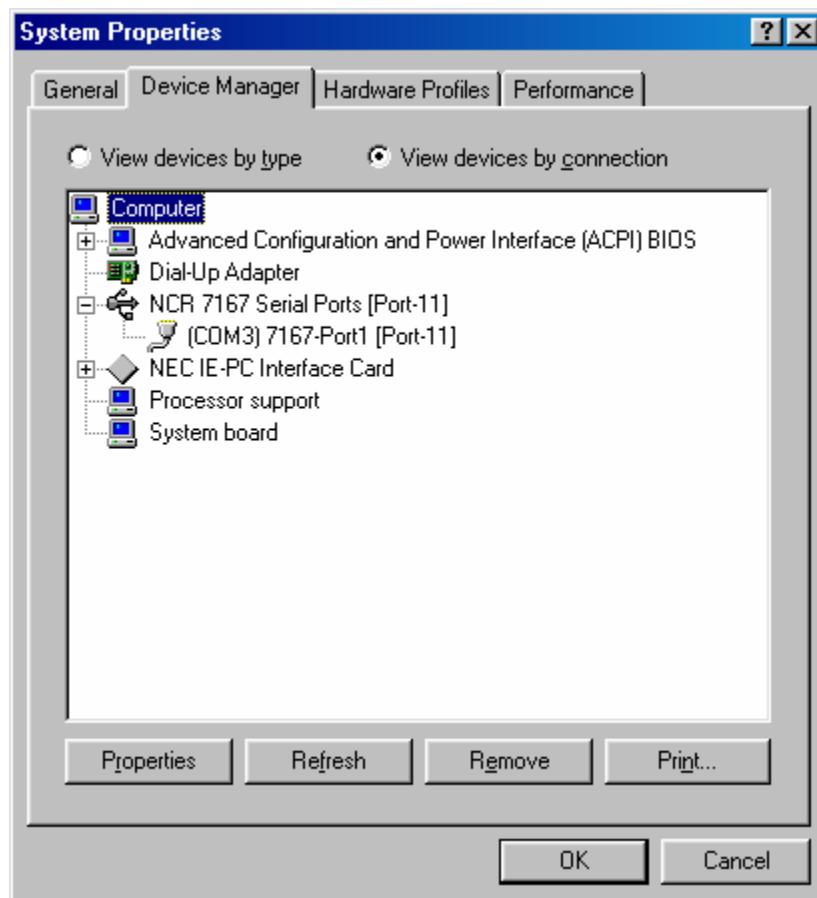
You need to verify that the device drivers were installed correctly:

Windows 98:

1. Open the Device Manager window, as you did in "Checking for USB Support."
2. Scroll down to "Universal serial bus controllers."

The following devices should be displayed:

- NCR 7167 Printer
- NCR 7167 Serial Ports [Port#] (where the # is the location of the printer)



3. Scroll back up to "Ports."

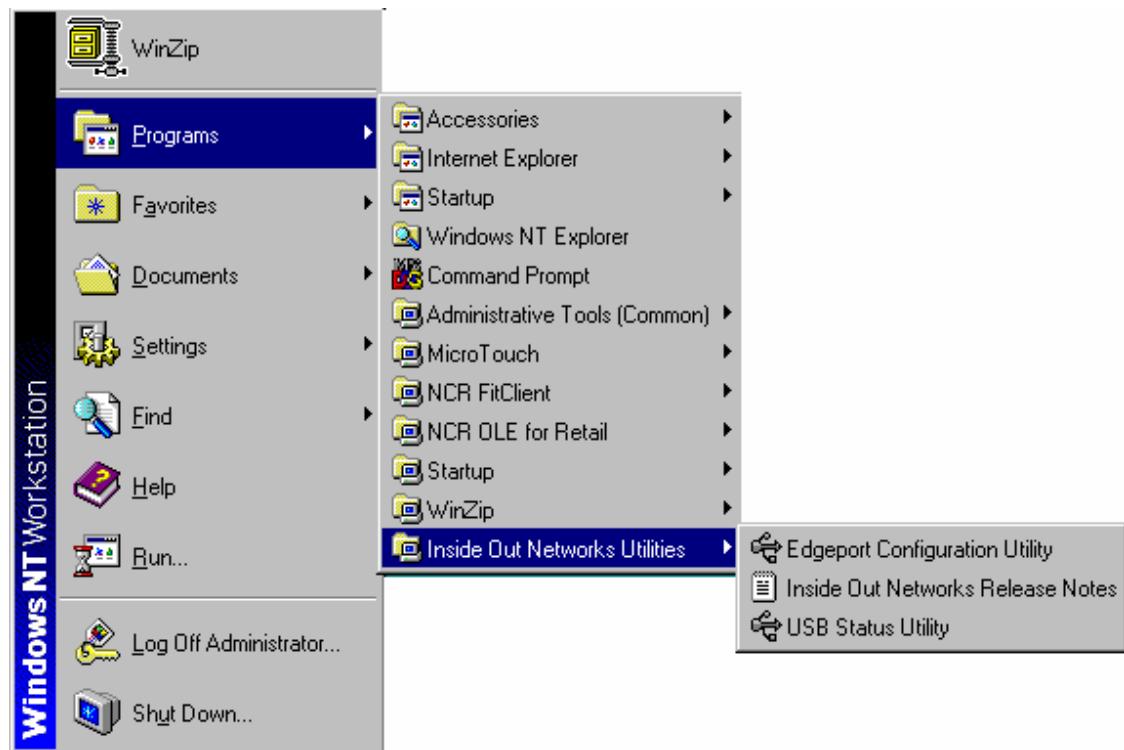
You should see a COM number and port description for the NCR printer.

If the devices are missing or are not listed correctly, the installation wasn't successful. You will need to reinstall the drivers.

Windows NT:

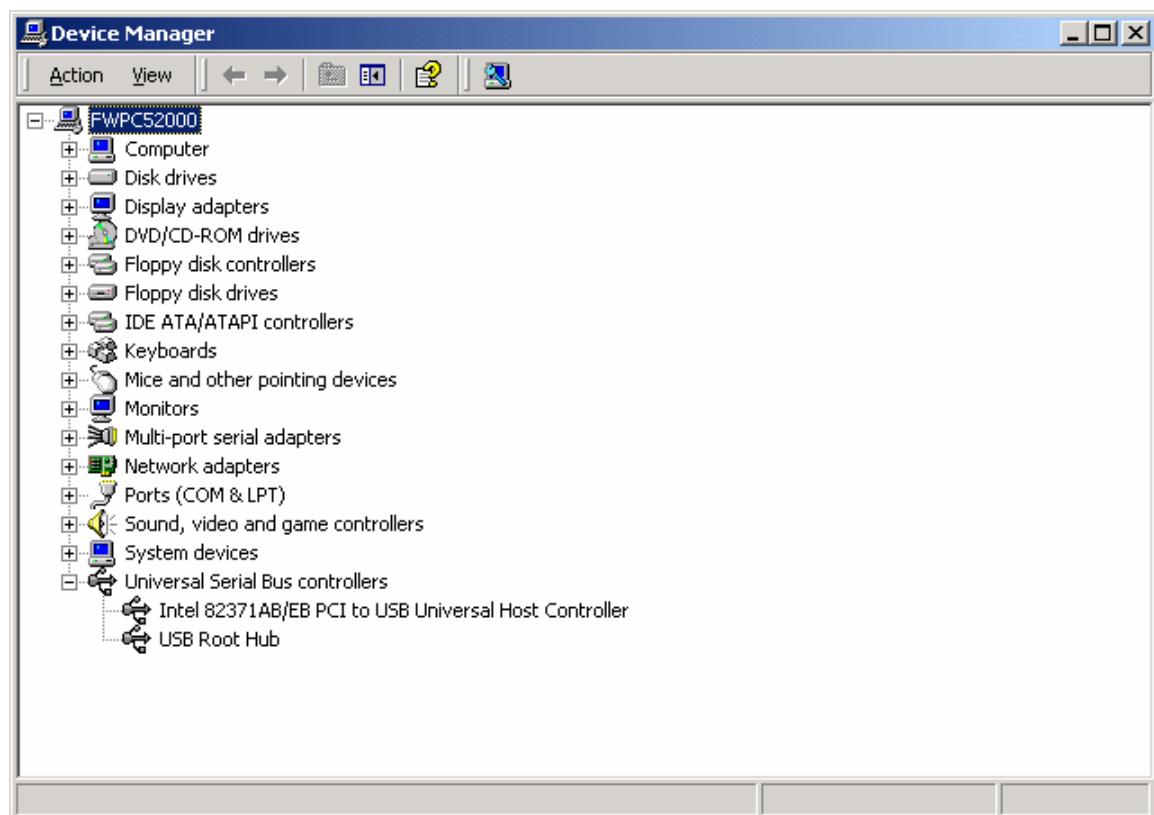
Go the Windows Start button and select Programs > InsideOut Networks Utilities > Edgeport Configuration Utility. A window opens that contains the name of the printer, and the port assignment.

If this information is not listed, then the installation was not successful. You will need to reinstall the drivers.



Windows 2000:

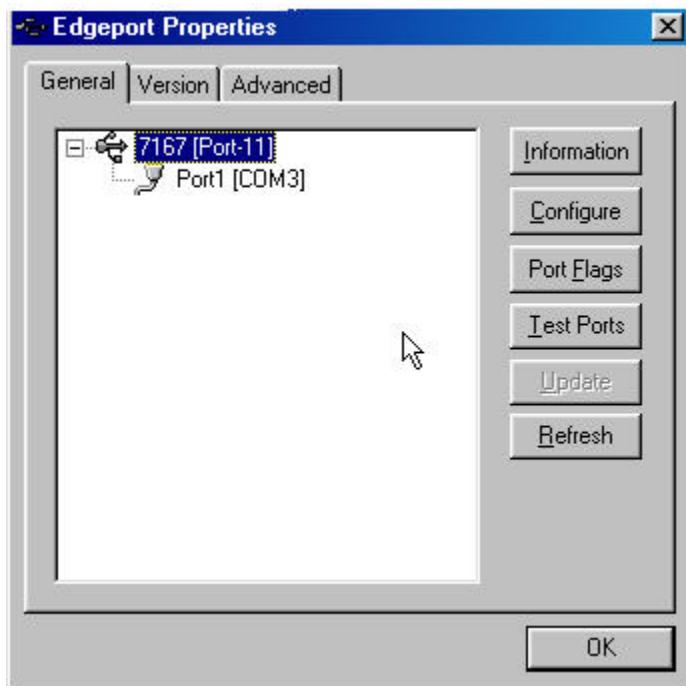
1. Open the Device Manager window, as you did in "Checking for USB Support."
2. Scroll down to "Universal serial bus controllers."



3. Scroll back up to "Ports."

If the devices are missing or are not listed correctly, the installation wasn't successful. You will need to reinstall the drivers.

If this information is not listed, then the installation was not successful. You will need to reinstall the drivers.



Configuring Serial Port Number Assignments

This section described how the NCR USB solution assigns serial port numbers (e.g., COMx) to the printer. The information that determines the assigned port number is stored in the host computer and not in the printer. This assignment is made in one of three ways. The first method is the default method that automatically assigns a serial port number to the printer. The other two methods require the user to specify a port number. These methods are described more fully in "Serial Port Configuration Methods" on the following page.

Running the Edgeport Utility

You'll need to run the Edgeport utility to check which serial port has been assigned to the printer. This utility queries and configures the operating system and driver for the information regarding the virtual serial port.

Windows 98

1. Open the Device Manager and make sure "View Devices By Type" is selected.
2. Scroll down to Universal serial bus controller, and expand the list by pressing the "+" symbol. You'll see two entries for your NCR printer.

3. Select the printer name and click Properties.
4. Select the Details tab, then press the Details button to start the Edgeport utility.

Windows NT 4.0

From the Windows Start menu, select Programs > Inside Out Networks Utilities > Edgeport Configuration Utility.

Windows 2000

1. Open the Device Manager and make sure "View Devices By Type" is selected.
2. Scroll down to Universal serial bus controller, and expand the list by pressing the "+" symbol. You'll see two entries for your NCR printer.
3. Select the printer name and click Properties.
4. Select the Details tab, then press the Details button to start the Edgeport utility.

Serial Port Configuration Methods

Automatic (Default). When the printer is plugged into the USB port of the host and the drivers are loaded, the printer will default to the next available serial port number. In many cases this is exactly what is desired. You can check the assigned serial port by clicking the General tab in the Edgeport utility. You'll see an entry for the NCR printer. Expand the list to see which serial port has been assigned to the printer.

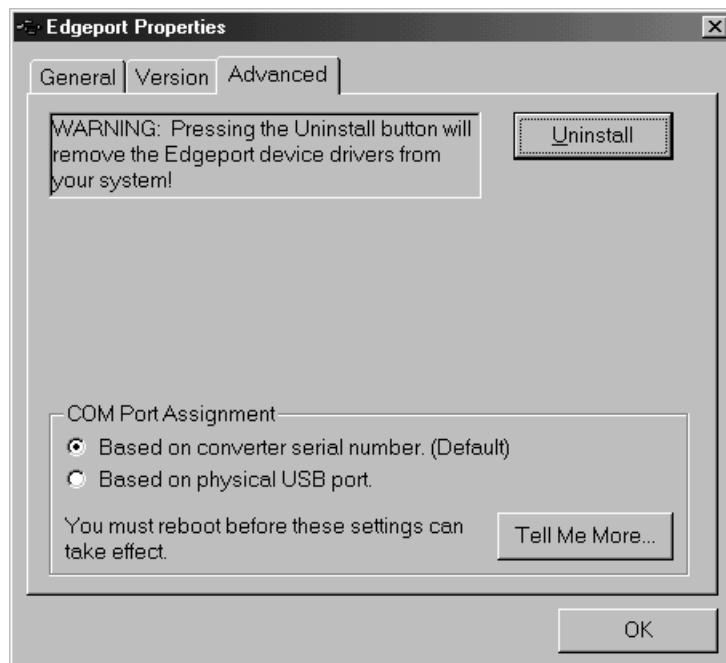
Assigning a serial port to the printer. If the default assignment does not meet the requirements of the installation, you can assign a different serial port to the printer. From the General tab of the Edgeport utility, select the printer and press Configure. Follow the directions on the resulting form to assign a new port to the printer.

Associating a serial port with a specific USB port. (Windows 98 and NT) In certain installations it is desirable to associate a serial port number with a specific USB port. This is particularly important if multiple identical printers are installed on one host. Select the Advanced tab in the Edgeport utility, and follow the instructions for configuring the serial port number based on the physical USB port.

Uninstalling the Drivers

Windows 98:

1. Open the Device Manager and make sure "View Devices By Type" is selected.
2. Scroll down to Universal serial bus controller, and expand the list by pressing the "+" symbol. You'll see two entries for your NCR printer.
3. Select the printer name and click Properties.
4. Select the Details tab, then press the Details button to start the Edgeport utility.
5. Click the Advanced tab.
6. Click the Uninstall button and follow the on-screen instructions.



Windows NT:

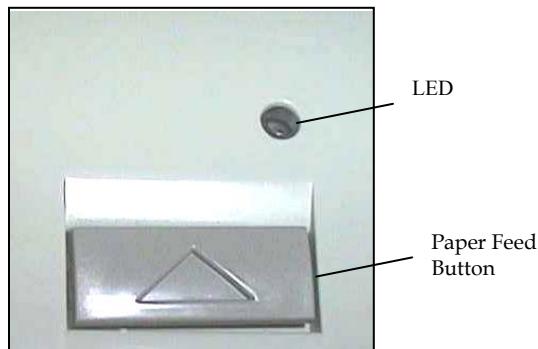
Windows NT users will need to run the Edgeport Configuration Utility to uninstall the drivers.

1. Press Windows Start Menu button.
2. Choose Programs, then Inside Out Networks Utilities.
3. Choose Edgeport Configuration Utility.
4. Click the Advanced tab.
5. Click the Uninstall button and follow the on-screen instructions.

Windows 2000:

1. Open the Device Manager and make sure "View Devices By Type" is selected.
2. Scroll down to Universal serial bus controller, and expand the list by pressing the "+" symbol. You'll see two entries for your NCR printer.
3. Select the printer name and click Properties.
4. Select the Details tab, then press the Details button to start the Edgeport utility.
5. Click the Advanced tab.
6. Click the Uninstall button and follow the on-screen instructions.

Using the Printer



Note: See "Setting Switches" earlier in this book for instructions on setting the DIP switches.

1. Connect the power supply cable to the printer and turn on the power source.

The printer goes through a self-test routine to ensure everything is working properly then "beeps." After the printer has completed its "startup" cycle, it is ready to receive data.

If the LED blinks, or the host computer indicates that there is a problem, see "Chapter 3: Solving Problems" for more information.

2. To perform a Configuration check (optional), reset the printer while holding the Paper Feed Button, or open the receipt door and while pressing the paper feed button close the receipt door, let go of the Paper Feed Button once the printing begins.

Note: The printer receives power when the power supply is on even if the printer is off-line. To completely remove power, unplug the power supply from the outlet, or turn the POS terminal off.

Loading and Changing the Receipt Paper

Although the illustrations show a used roll being removed, the instructions apply to loading paper for the first time.

Change the paper when either of the following two conditions occurs:

- LED blinks (slow): the paper is low

There are approximately 1 ½ to 7 ½ meters (5-25 feet) of paper remaining on the roll. Change the paper as soon as possible to avoid running out part way through a transaction.

Depending on the application program, the host computer may alert you when the paper is low.

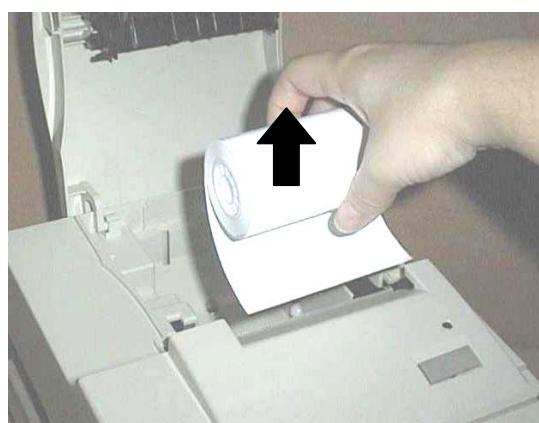
- LED blinks (fast): the paper is out

Change the paper immediately or data may be lost.

Caution: Do not operate the printer or host computer if the printer runs out of paper. The printer will not operate without paper, but it may continue to accept data from the host computer. Because the printer cannot print any transactions, the data may be lost.

Removing the Paper Roll

1. Open the receipt cover.
2. Remove the used roll.



Loading the Paper Roll

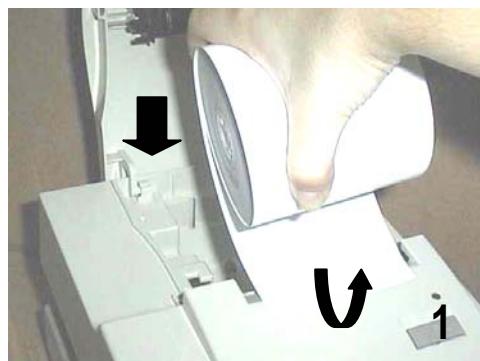
Note: Tear off the end of the new roll so that the edge is loose.

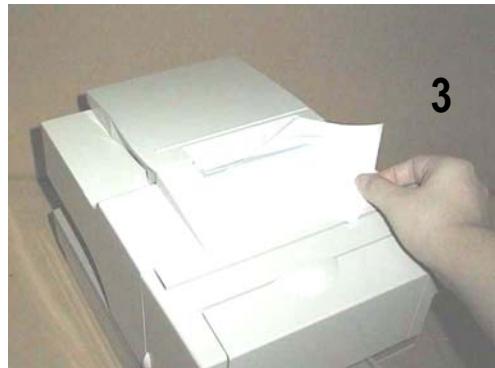
1. Place the new roll in the bin with a little extra paper extending over the front.

Be sure the paper unrolls from the bottom of the roll. Otherwise the paper will not be printed on because the thermal coating will be on the wrong side.

2. Close the receipt cover.

3. Remove the excess paper by tearing it against the tear-off blade.





Advancing Paper

1. Press the Paper Feed button on the operator panel to advance the paper.

The cover must be closed. To ensure print quality and the proper alignment of the paper, advance about 30 cm (12 inches) of paper.

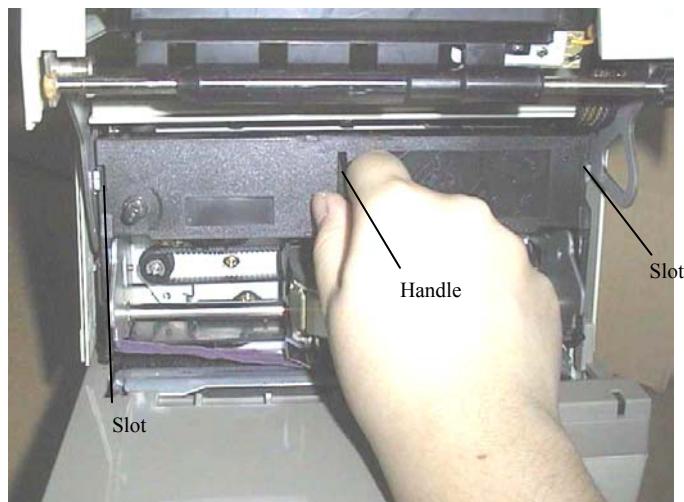
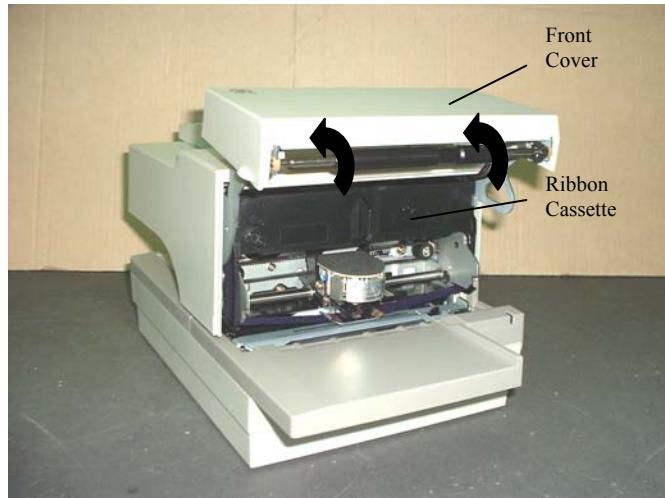
2. Tear off the excess paper against the tear-off blade.

Installing and Changing the Ribbon Cassette

Change the ribbon cassette when the print is too light or the ribbon is frayed.

Removing the Ribbon Cassette

1. Open the front cover.
2. Use the handle on the cassette and pull the cassette from the printer.



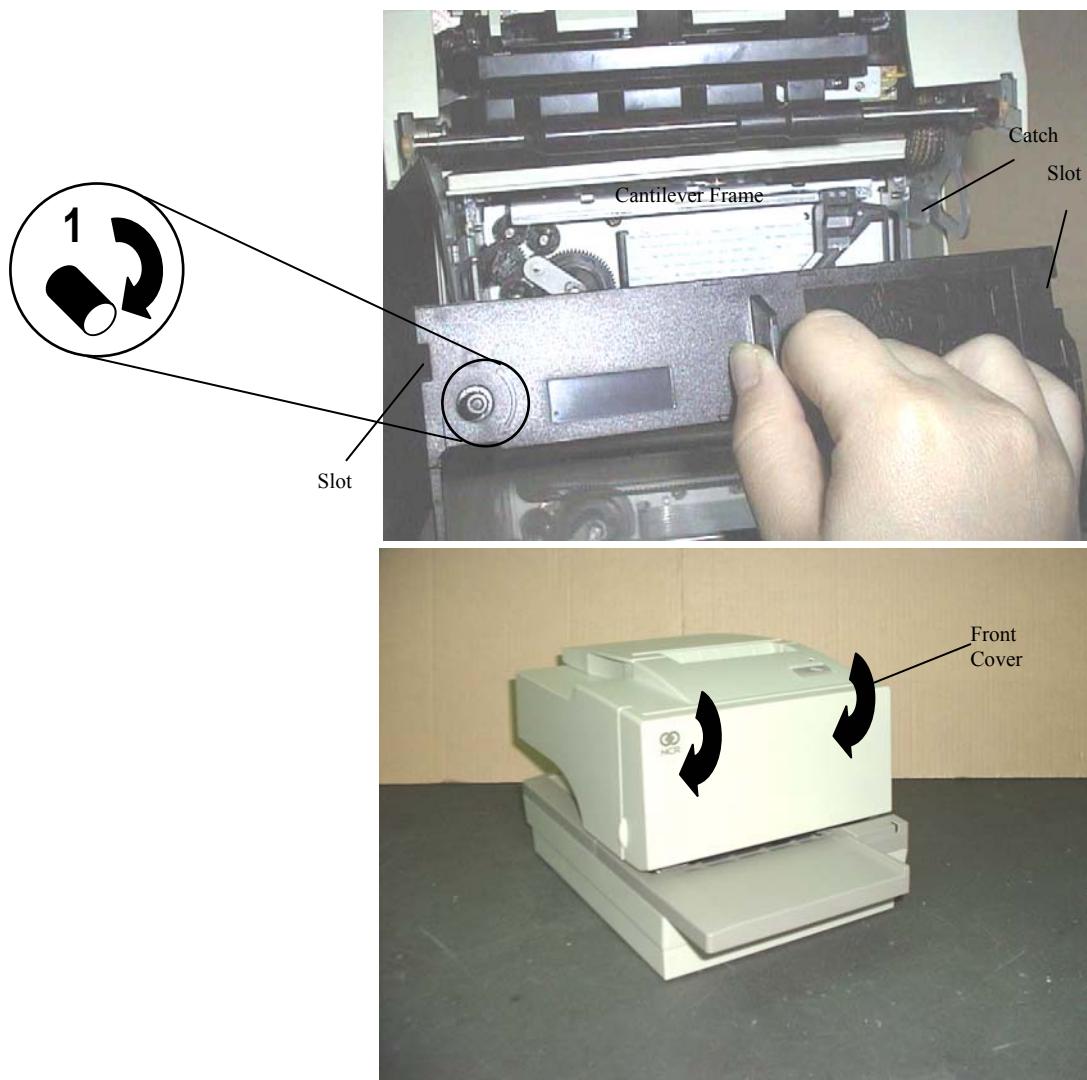
Installing the Ribbon Cassette

1. Tighten the ribbon by turning the knob in the direction of the arrow.
2. Position the ribbon cassette slot at the catch on the printer slip frame and push it into place.

Be sure the ribbon is in front of or underneath the print head.

Tighten the ribbon using the shaft at the upper left corner of the cassette. Rotate the shaft clockwise until the ribbon is positioned between the print head and the metal ribbon guide.

3. Close the front cover.



Printing on Forms or Checks

There are several types of transactions that require you to insert a form or check into the printer:

- Credit card transaction (some credit card transactions may be printed on the receipt station and not require any forms)
- Multiple-part forms such as credit transactions or merchandise returns
- Electronic funds transfers
- Check printing (printing the date, payee, and amount on the check face)
- Check endorsement

Although the illustration on the facing page shows a check being inserted into the printer, the instructions apply to any type of form. The 7167 can print on forms up to five-parts thick. See "Ordering Forms" in chapter 1 for more information about the type of forms that can be used.

1. Insert the form or check (check shown in the illustration) from the front and place it on the slip table top first and with the print side up.

If the form is extra long, you may need to insert it from the side.

2. Slide the form or check to the right until it lines up against the slip guide.

If the form is extra long, you need to slide it over the form stop to disengage it. In this situation use the mark that is located on the slip door to align the form for printing in the proper location on the form.

3. Slide the form or check toward the back of the printer until it contacts the form stop (it won't be able to go any further);

Or, align the form or check with the mark on the slip door.

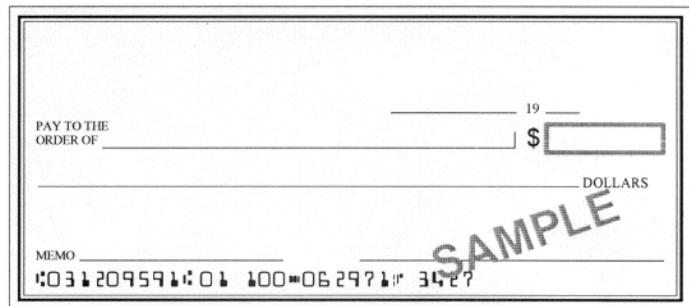
The green LED on the slip table turns on when the form or check is properly inserted (the form has to cover two sensors on the slip table).

4. Follow the instructions from the host computer.

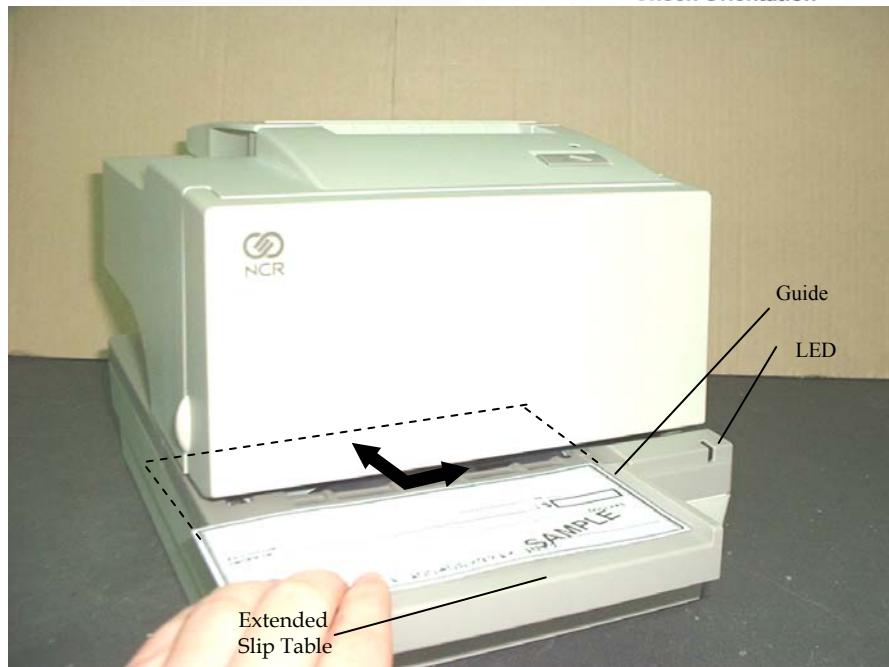
The printer begins printing.

5. Remove the form or check after it has been fed back out.

6. Follow the instructions from the host computer to finish the transaction.



Check Orientation



Validating and Verifying Checks

Note: If the MICR check reader feature is present, checks are verified then validated.

1. Insert the check from the front and place it on the slip table face down as shown in the illustration on the facing page.
2. Slide the check to the right until it lines up against the guide (wall).
3. Slide the check toward the back of the printer until it contacts the form stop (it won't be able to go any further);

Or, align the check with any preset mark you may have made on the slip table.

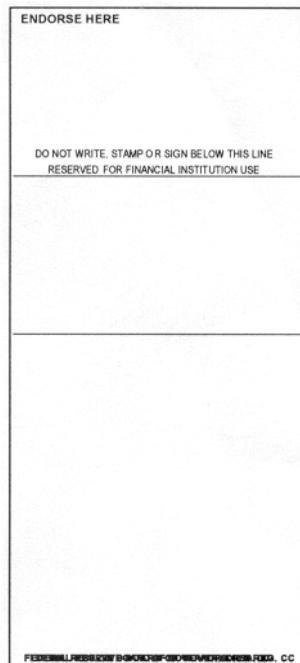
The green LED on the slip table turns on when the form or check is properly inserted (it has to cover two sensors on the slip table).

4. Follow the instructions from the host computer.

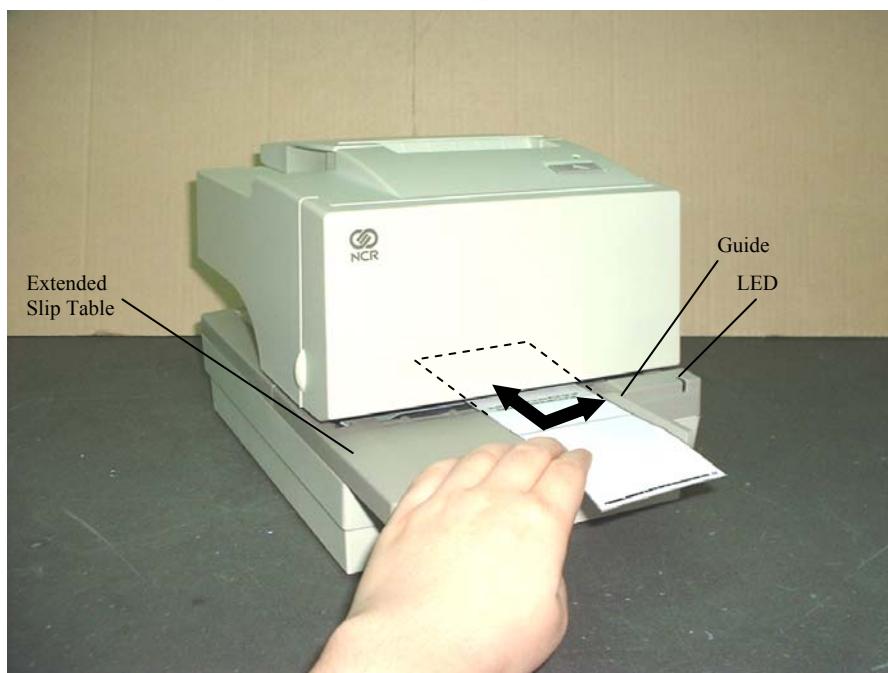
If the MICR check reader feature is present, the check is fed in and out while the check numbers are read. If the check is verified as good, it is then validated. If the check is not verified as good, it is not validated.

Note: Do not hold or keep the check from moving during the MICR check reader transaction or the check numbers will not be read accurately.

5. Remove the check after it has been fed all the way back out.
6. Follow the instructions from the host computer to finish the transaction.



Check Orientation



Chapter 3: Solving Problems

The 7167 printer is a simple, generally trouble-free printer, but from time to time minor problems may occur. For example, the power supply may be interrupted or the thermal print head may overheat.

A green LED on the operator panel signals that something may be wrong.

For some problems, the printer communicates the information to the host computer and relies on the application to indicate what the problem is.

The information on the following pages describes some problems that you may encounter: problems that you can easily fix, and others that you will need to contact a service representative for.

You may be able to correct many of the conditions or problems without calling for service. However, if a problem persists, contact a service representative. See "Contacting a Service Representative" at the end of this chapter.

Green LED Does Not Come On/Printer Will Not Print

Problem	What to Do	Where to Go
Cables may not be connected properly	Check all cable connections. Check that the host computer and power supply are both on (the power supply is turned on by plugging it into an outlet).	See "Connecting the Cables" in chapter 2.
Power supply may be defective	If the power supply is plugged in, but does not come on, you will need to order a new power supply.	See "Ordering Other Supplies" in chapter 1.

Green LED Blinking (Slow)

Problem	What to Do	Where to Go
Receipt paper is low*	There are about 4 1/2 meters, ± 3 meters, (15 feet, ± 10 feet) of paper left. Change the paper soon to avoid running out of paper part way through a transaction.	See "Loading and Changing the Receipt Paper" in chapter 2.

Green LED Blinking (Fast)

Problem	What to Do	Where to Go
Receipt paper is out	Change the paper now. Do not run a transaction without paper as the data may be lost.	See "Loading and Changing the Receipt Paper" in chapter 2.
Receipt cover or front cover is open	Close the cover. The printer will not operate with either of the covers open.	
Knife failure	Open the receipt cover and check the knife. Clear any jammed paper you can see. Tear off any excess paper against the tear-off blade.	
	Contact a service representative if this does not resolve the problem.	See "Contacting a Service Representative" later in this chapter.
Paper jam in slip station	Open the front cover and check the slip table and under the carriage. Remove any paper you see.	
	If you cannot see a paper jam or other obstruction, contact a service representative.	See "Contacting a Service Representative" later in this chapter.
Paper jam in carriage	Open Front Cover and clear paper from path.	
Paper jam during flip	If visible through Front Window, open access door and clear paper jam, if not, open Front Cover and clear jam.	

AC supply voltage is out of range	If paper is not low and no conditions indicate that the thermal print head is too hot, then it is likely that the power supply voltage is out of range.	Contact a service representative if this does not resolve the problem.	See "Contacting a Service Representative" later in this chapter.
Thermal print head temperature is out of range	The print head may overheat when printing in a room where the temperature is above the recommended operating temperature or when printing high-density graphics continuously, regardless of the room temperature. In either case, the printer will shut off.	If the temperature of the print head is too hot, adjust the room temperature or move the printer to a cooler location. If the print head is overheating because of printing high density graphics continuously, reduce the demand on the printer.	See "Environmental Conditions" in Appendix A for the recommended temperature range for operating the printer.
Power supply voltage is out of range	If paper is not low and no conditions indicate that the print head is too hot, the power supply voltage is out of range. Contact a service representative.	If the printer continues to overheat, contact a service representative.	See "Contacting a Service Representative" later in this chapter.

Slip or Forms Printing is Light

Problem	What to Do	Where to Go
Ribbon cassette is worn	Replace the ribbon cassette.	See "Putting In and Changing the Ribbon Cassette" in chapter 2.
	Contact a service representative if this does not resolve the problem.	See "Contacting a Service Representative" later in this chapter.

Receipt Printing is Light or Spotty

Problem	What to Do	Where to Go
Thermal print head may be dirty	<p>Open the receipt cover and clean the thermal print head with cotton swabs and isopropyl alcohol.</p> <p>Caution: Do not use the alcohol to clean other parts of the printer. Damage will occur.</p> <p>Contact a service representative if this does not resolve the problem.</p>	See "Cleaning the Printer" in chapter 2.
<p>Note: The thermal print head does not normally require cleaning if the recommended paper grades are used. If non-recommended paper has been used for an extended period of time, cleaning the print head with the alcohol and cotton swabs will not be of much benefit. See "Ordering Thermal Paper" in chapter 1 for recommended paper.</p>		

LED (Slip Table) Does Not Come On

Problem	What to Do	Where to Go
Form or check not inserted properly	<p>Line up the form or check against the guide (wall) and slide it toward the back of the printer until it contacts the form stop and can't go any further. Extra long forms may need to be inserted from the side to disengage the form stop.</p> <p>Contact a service representative if this does not resolve the problem.</p>	See "Printing on Forms or Checks" or "Validating and Verifying Checks" in chapter 2
<p>See "Contacting a Service Representative" later in this chapter.</p>		

Forms Skew or Catch

Problem	What to Do	Where to Go
Form or check skewing or catching in slip station due to an obstruction or paper jam	<p>Open the front cover and check for any paper jams or obvious obstruction in the slip station. Clear the obstruction or jammed paper.</p> <p>Contact a service representative if this does not resolve the problem.</p>	See "Contacting a Service Representative" later in this chapter.

MICR Check Reader Not Reading Properly

Problem	What to Do	Where to Go
MICR (Magnetic Ink Character Recognition) check reader does not read or misreads checks	Open the slip cover and clean the MICR read head with cotton swabs and isopropyl alcohol.	See "Adjusting the MICR Check Reader" in chapter 4.

Other Serious Problems

The following problems all need to be corrected by a qualified service representative. See the next section, "Contacting a Service Representative."

- MICR check reader not operating properly
- Forms not feeding into the slip/forms area properly
- Missing dots in slip or forms printing
- Printer will not cycle or stop when required
- Illegible characters
- Paper will not feed
- Knife will not cycle or cut
- Platen will not open or close
- Printer will not communicate with Host

Contacting a Service Representative

For serious problems, such as the printer not printing, not communicating with the host computer, or not turning on, contact your NCR-authorized service organization to arrange for a service call. In addition to the service manual listed below, other service-related materials may be available. Contact your NCR-authorized service representative to obtain the service manual.

7167 Thermal Receipt and Impact Slip Printer: Service Manual (B005-000-1407)
(includes the Troubleshooting Guide and the Preventative Maintenance Guide)

Chapter 4: Diagnostics

The following diagnostic tests are available for the 7167:

Level 0 Diagnostics (Startup)

Performed during the startup cycle.

Level 1 Diagnostics (Printer Configuration)

Allows configuration of the printer using a Configuration Menu that is printed on a receipt.

Level 2 Diagnostics (Runtime)

The printer checks the status of these conditions during normal operation.

Level 3 Diagnostics (Remote)

The printer keeps track of counters during normal operation.

Vendor Adjustment

Performed in off-line mode. Allows to change settings for mechanical and perform printer test.

Modifications of these settings are to be made by service personnel only.

Level 0 Diagnostics

The printer automatically performs level 0 diagnostics when it is put on-line. Level 0 diagnostics comprise the following actions:

Motors are turned off.

Microprocessor timing is checked, CRC check of the firmware ROM is performed, external RAM is read.

- The green LED on the slip table flashes once if this action succeeds.
- Level 0 diagnostics stop if this action fails. Failure is indicated by the printer going dead: knife and print head do not home, the platen does not open, LEDs are not lit, the printer is unable to communicate with the host computer.
- Knife is homed. A fault condition is caused if this action fails.
- Slip platen is opened.
- Slip print head is homed. A fault condition is caused if this action fails.
- The status of all sensors is checked, and the status bytes are updated.

If the printer has not been turned on before, the default values for the printer functions will be loaded into the non volatile memory during level 0. These values can be changed in level 1 diagnostics. See "Level 1 Diagnostics" for the functions and their settings.

When the last step is complete, the Paper Feed button is enabled and the printer is ready for normal operation. Information about the tests is available to the communication interface through the commands.

Level 1 Diagnostics

Level 1 diagnostics (setup mode) allow you to change the settings for various printer functions and run certain tests.

Keep the following information in mind when changing the settings:

The settings can only be changed when the printer is in level 1 diagnostics (setup mode): Switch 1 must be set to On and Switch 2 must be set to Off.

The default options are set at the factory and are stored in the history non volatile memory

Once the settings have been changed and stored in the non volatile memory, the diagnostic setup is exited which saves the settings.

Caution: If you are changing the printer settings, be sure they are the correct settings for that particular function or test to avoid accidentally changing the settings for another function or test. If the settings are accidentally changed you must reenter the setup mode and reenter the correct settings. If you need assistance, contact a service representative. See "Contacting a Service Representative" in chapter 3.

Printer Configuration

Printers are generally shipped with all appropriate configuration settings pre-set at the factory. The only time the user should need to change the printer configuration is if a new option is installed or the firmware is changed. It is also possible the user may need to run certain tests using the Configuration Menu.

The user configures the printer using a convenient Configuration Menu that is printed on receipt paper. The Configuration Menu prints instructions and setting options interactively as the user goes through the configuration process. The following functions and parameters can be changed with the scrolling Configuration Menu:

Configuring the Printer

Communication Interface

Interface Type

Baud Rate

Number of Data Bits

Number of Stop Bits

Parity

Flow Control

Data Reception Errors

Receive Buffer

Setting Diagnostic Modes

Off, Normal Mode

Datascope Mode

Slip Test Mode

Receipt Test Mode

MICR Test Mode

Check Flip Test Mode

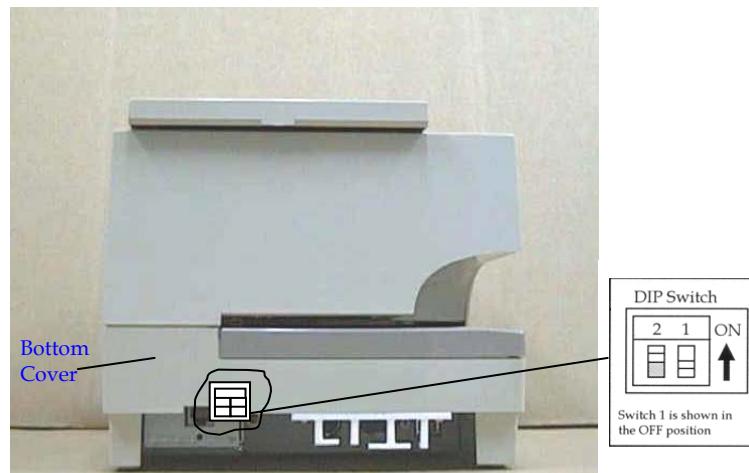
Print Head Gap Adjust Test Mode

Setting Emulation/Software Options
Emulation
Printer ID
Default Lines Per Inch
Carriage Return Usage
Asian Mode
Slip Print Width
Receipt Synchronization
Setting Hardware Options
Print Density
Maximum Power Option
Paper Low Sensor
Paper Width
Knife Options
MICR Option
Check Flip Option
Color Paper Option
MICR Dual Pass
Setting Default Code Page
Setting EEPROM to default settings

Configuring the Printer

Use the Configuration Menu to select functions or change various settings as indicated in the preceding sections. The Configuration Menu prints instructions and setting options interactively as the user goes through the configuration process.

Caution: Be extremely careful in changing any of the printer settings to avoid changing settings that might affect the performance of the printer.



1. Set DIP Switch 2 to Off, Switch 1 to On.
2. Reset the printer.

For resetting the printer instruction see Chapter 2 page 13

This configuration menu allows you to set mechanical adjustment parameters and select printer test.

Sub-menus are entered and selections are made using the Paper Feed Button.

- Short Click: Feed Button is quickly depressed and released
- Long click: Feed Button is held down more than 1 second

Press the paper feed for the configuration you want.

Defaults are marked with asterisk (*).

***** Main Menu *****

Select a sub-menu:

- | | |
|----------------------------------|-------------|
| - EXIT | -> 1 Click |
| - Print Current Configuration | -> 2 Clicks |
| - Set Communication Interface | -> 3 Clicks |
| - Set Diagnostics Modes | -> 4 Clicks |
| - Set Emulation/Software Options | -> 5 Clicks |
| - Set Hardware Options | -> 6 Clicks |
| - Set Default Code page | -> 7 Clicks |
| - Set EEPROM To Default Settings | -> 8 Clicks |

Enter code, then hold Button DOWN
at least 1 second to validate

<p>*** Diagnostics Form ***</p> <table border="0"> <tr><td>Model number</td><td>:</td><td>7167</td></tr> <tr><td>Serial number</td><td>:</td><td>A991703053</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>Boot Firmware</td><td>:</td><td>V00.17</td></tr> <tr><td>Revision</td><td>:</td><td>C525</td></tr> <tr><td>Flash Firmware</td><td>:</td><td>V03.12</td></tr> <tr><td>Revision</td><td>:</td><td>0EFF</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>Hardware</td><td>:</td><td></td></tr> <tr><td>Flash Memory Size</td><td>:</td><td>2Mbytes</td></tr> <tr><td>Flash Logos Size</td><td>:</td><td>256Kbytes</td></tr> <tr><td>Flash Fonts Size</td><td>:</td><td>64Kbytes</td></tr> <tr><td>Flash User Storage</td><td>:</td><td>64Kbytes</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>Communication Interface</td><td>:</td><td></td></tr> <tr><td>Interface Type</td><td>:</td><td>RS232/USB</td></tr> <tr><td>Parameters</td><td>:</td><td></td></tr> <tr><td>Baud Rate</td><td>:</td><td>9600</td></tr> <tr><td>Data Bits</td><td>:</td><td>8</td></tr> <tr><td>Stop Bits</td><td>:</td><td>1</td></tr> <tr><td>Parity</td><td>:</td><td>None</td></tr> <tr><td>Flow Control</td><td>:</td><td>DTR/DSR</td></tr> <tr><td>Reception Errors</td><td>:</td><td>Print '?'</td></tr> <tr><td>Receive Buffer</td><td>:</td><td>4K Bytes</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>Diagnostic Mode</td><td>:</td><td>OFF, Normal Mode</td></tr> <tr><td colspan="3"> </td></tr> <tr><td>Emulation/Software</td><td>:</td><td></td></tr> <tr><td>Printer Emulation</td><td>:</td><td>7158 Native Mode</td></tr> <tr><td>Printer ID Mode</td><td>:</td><td>7158 Native ID</td></tr> <tr><td>Default LPI</td><td>:</td><td>7.52</td></tr> </table>	Model number	:	7167	Serial number	:	A991703053	 			Boot Firmware	:	V00.17	Revision	:	C525	Flash Firmware	:	V03.12	Revision	:	0EFF	 			Hardware	:		Flash Memory Size	:	2Mbytes	Flash Logos Size	:	256Kbytes	Flash Fonts Size	:	64Kbytes	Flash User Storage	:	64Kbytes	 			Communication Interface	:		Interface Type	:	RS232/USB	Parameters	:		Baud Rate	:	9600	Data Bits	:	8	Stop Bits	:	1	Parity	:	None	Flow Control	:	DTR/DSR	Reception Errors	:	Print '?'	Receive Buffer	:	4K Bytes	 			Diagnostic Mode	:	OFF, Normal Mode	 			Emulation/Software	:		Printer Emulation	:	7158 Native Mode	Printer ID Mode	:	7158 Native ID	Default LPI	:	7.52	<p>*** Printer Config Menu ***</p> <p>The config menu allows you to set general printer parameters. Sub-menus are entered and selections are made using the Paper Feed Button:</p> <ul style="list-style-type: none"> - Short Click : Feed Button is quickly depressed then released. - Long Click : Feed Button is held Down more than 1sec then released. <p>CAUTION !! The settings are predetermined in factory and should generally not be changed to avoid changing other functions.</p> <p>***** Main Menu *****</p> <p>Select a sub -menu:</p> <table border="0"> <tr><td>- EXIT</td><td>1 Click</td></tr> <tr><td>- Print Current Configuration</td><td>2 Clicks</td></tr> <tr><td>- Set Communication Interface</td><td>3 Clicks</td></tr> <tr><td>- Set Diagnostics Modes</td><td>4 Clicks</td></tr> <tr><td>- Set Emulation/Software</td><td>5 Clicks</td></tr> <tr><td>- Set Hardware Options</td><td>6 Clicks</td></tr> <tr><td>- Set Default Code Page</td><td>7 Clicks</td></tr> <tr><td>Set EEPROM To Default</td><td>8 Clicks</td></tr> </table> <p>Enter code, then hold Button DOWN at least 1 second to validate</p> <p>Important: Ensure that the configuration settings match your host computer, if not, enter the Configuration Menu to make changes.</p>	- EXIT	1 Click	- Print Current Configuration	2 Clicks	- Set Communication Interface	3 Clicks	- Set Diagnostics Modes	4 Clicks	- Set Emulation/Software	5 Clicks	- Set Hardware Options	6 Clicks	- Set Default Code Page	7 Clicks	Set EEPROM To Default	8 Clicks
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To enter Diagnostics Mode:
 1) Flip DIP switch #1 on
 2) Reset the printer by pressing and holding the Receipt Feed switch down while disconnecting and reconnecting the power.

Configuration Menu and Print Test samples (show approximately 60% of size).

4. Press the Paper Feed Button to make the selections.

The instructions indicate whether to select something with a short click, a long click, or a series of short clicks. Indicate Yes with a long click, No with a short click.

Press and hold the Paper Feed Button for at least one second for a long click. Press the Paper Feed Button quickly for a short click.

5. When finished, set DIP Switch 1 to Off and reset printer.

Communication Interface Modes

The Configuration Menu gives the user the option of setting the printer to use an RS-232C serial port. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu.)

RS-232C Interface Settings

If the user sets the printer to use an RS-232C serial interface, the Configuration Menu can be used to set the following RS-232C specific settings:

Set the baud rate to 115200, 57600, 38400, 19200, 9600, 4800, 2400, or 1200 baud

Set the number of data bits to seven or eight

Set the number of stop bits to one or two

Enable or disable parity

Set flow control to software (XON/XOFF) or Hardware (DTR/DSR)

Set the printer to ignore data errors or print a "?" upon encountering an error

The settings used will depend on the software the operator is using and the capabilities of the host computer.

Press the paper feed button for the communications settings you want.

Defaults are marked with asterisks (*).

**** SET INTERFACE TYPE ?**

YES -> Long Click

NO -> Short Click

RS232/USB* -> 1 Click

RS232 -> 2 Clicks

USB -> 3 Clicks

Enter code, then hold Button Down

At least 1 second to validate

**** SET BAUD RATE ?**

YES -> Long Click

NO -> Short Click

115200 Baud -> 1 Click

57600 Baud -> 2 Clicks

38400 Baud -> 3 Clicks

19200 Baud -> 4 Clicks

More -> 5 Clicks
 Enter code, then hold Button DOWN
 At least 1 second to validate

9600 Baud* -> 1 Clicks
 4800 Baud -> 2 Clicks
 2400 Baud -> 3 Clicks
 1200 Baud -> 4 clicks

Enter code, then hold Button DOWN
 At least 1 second to validate

**** SET NUMBER OF DATA BITS ?**

YES -> Long Click
 NO -> Short Click

8 Data Bits* -> Long Click
 7 Data Bits -> Short Click

**** SET NUMBER OF STOP BITS ?**

YES -> Long Click
 NO -> Short Click

1 Stop Bits* -> Long Click
 2 Stop Bits -> Short Click

**** SET PARITY ?**

YES -> Long Click
 NO -> Short Click

No Parity* -> 1 Click
 Even Parity -> 2 Clicks
 Odd Parity -> 3 Clicks
 Enter code, then hold Button DOWN
 At least 1 second to validate

**** SET FLOW CONTROL METHOD ?**

YES -> Long Click
 NO -> Short Click

Software (XON/XOFF) -> Long Click
 Hardware (DTR/DSR)* -> Short Click

**** SET DATA RECEPTION ERRORS OPTION ?**

YES -> Long Click
 NO -> Short Click

Ignore Errors -> Long Click
 Print '?'* -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Receive Buffer Size Option

This function allows the user to set the buffer size to a single line or a 4 K buffer.

Press the Paper Feed Button for the option you want.

**** SET RECEIVE BUFFER SIZE ?**

YES -> Long Click
 NO -> Short Click

4K Buffer* -> Long Click
 One Line -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Save Parameters

This function allows to save the selected communication settings or return to the communication settings to select additional options.

Press the Paper Feed Button for the option you want.

Save new parameters ?

YES -> Long Click
 NO, MODIFY -> Short Click

Diagnostic Modes

This function allows the user to put the printer into the following diagnostic modes:

OFF, Normal Mode: this is the normal operating mode of the printer.

Datascope Mode: the receipt printer prints incoming commands and data in hexadecimal format.

Slip test Mode: the slip printer prints two code pages.

Receipt Test Mode: the receipt printer prints two code pages.

MICR Test Mode: the receipt printer prints all characters recognized by the MICR.

Check Flip Test Mode: the check flip mechanism will flip an inserted check.

Print Head Gap Adjustment Mode: the slip printer prints several lines of rolling ascii even receipt cover is open.

The diagnostic modes are enabled or disabled by using the Configuration Menu. See "Configuration the Printer," for instructions on how to enter the Configuration Menu.

Press the Paper Feed Button for the diagnostic mode you want.

**** SET DIAGNOSTICS MODE ?**

YES -> Long Click
 NO -> Short Click

OFF, Normal Mode* -> 1 Click
 Data Scope Mode -> 2 Clicks
 Slip Test Mode -> 3 Clicks
 Receipt Test Mode -> 4 Clicks
 More Options -> 7 Clicks

Enter code, then hold Button DOWN
 At least 1 second to validate

MICR Test mode -> 1 Click
 Check Flip Test mode -> 2 Clicks
 Print Head Test Mode -> 3 Clicks
 Enter code, then hold Button DOWN
 At least 1 second to validate

Datascope Mode

Datascope Mode allows the user to test the printer's communications. When in Datascope Mode the printer receives all communications, but instead of executing the commands it prints them out on receipt paper as hexadecimal numbers in the order received. For example, the ASCII character "A" is printed as the hexadecimal number 41 and so on.

To run the Datascope Mode:

1. Enter the Configuration Menu. See "Configuring the Printer" for instruction on how to enter the Configuration Menu.
2. After you have enabled the Datascope Mode through the Configuration Menu, exit the Configuration Menu.
3. Run a transaction from the host computer.

All commands and data sent from the host computer will be printed as hexadecimal numbers as shown in the illustration.

30 31 32 33 34 35 36 37 38 39 40 41	:	0 1 2 3 4 5 6 7 8 9 @ A
41 42 43 44 45 46 47 48 49 50 51 52	:	A B C D E F G H I J K L

To exit the Datascope Mode:

1. Enter the Configuration Menu again
2. Disable the Datascope Mode
3. Exit the Configuration Menu

The printer is in Normal Mode and can communicate with the host computer.

Slip Test Mode

To run the Slip Test Mode:

1. Enable the Slip Test Mode through the Configuration Menu, (See "Configuring the Printer," for instructions on how to enter Configuration Menu). Then exit the Configuration Menu.
2. Insert a slip into the slip station.
3. Push the Paper Feed Button
4. All code pages will be printed.
5. Go to step 2 again to repeat this test.

To exit the Slip Test Mode:

1. Enter the Configuration Menu again.
2. Disable the Slip Test Mode.

3. Exit the Configuration Menu.

The printer is in the Normal Mode and can communicate with the host computer.

Receipt Test Mode

To run the Receipt Test Mode:

1. Enable the Receipt Test Mode through the Configuration Menu. See "Configuring the Printer," for instructions on how to enter the Configuration Menu.
2. Push Paper Feed Button and the receipt station will print all code pages.
3. The test ends with a cut.
4. Go to step 2 again to repeat this test.

To exit the Receipt Test Mode:

1. Enter the Configuration Menu again.
2. Disable the Receipt Test Mode
3. Exit the Configuration Menu

The printer is in Normal Mode and can communicate with the host computer.

MICR Test Mode

MICR Test Mode allows the user to test whether the MICR is operating correctly. When the printer is in this mode the MICR reads characters on a cheque as usual, but instead of transmitting the values to the software it prints on receipt paper.

To run the MICR Test Mode:

1. Enter the Configuration Menu. See "Configuring the Printer," for instructions on how to enter the Configuration Menu.
2. After enabling the MICR Test Mode through the Configuration Menu, exit the Configuration Menu.
3. Insert a check into the slip station. (See "Verifying and Validating Checks" section.)
4. The printer waits until a check is inserted and detected before the platen closes and the characters are read by the MICR check reader. The decoded data is printed on receipt paper, the platen is opened, and the test is re-started.
5. The printed numbers should match the numbers on the check. If the MICR check reader misreads a character, the test prints question mark "?". If the MICR check reader is unable to read any characters, the test prints "NO MICR DATA TO DECODE."

```
*** GOOD READ ***
MICR Data:
5001234UT33456789T 123 67 5
```

To exit the MICR Test Mode:

1. Enter the Configuration Menu again.
2. Disable the MICR Test Mode.
3. Exit the Configuration Menu.

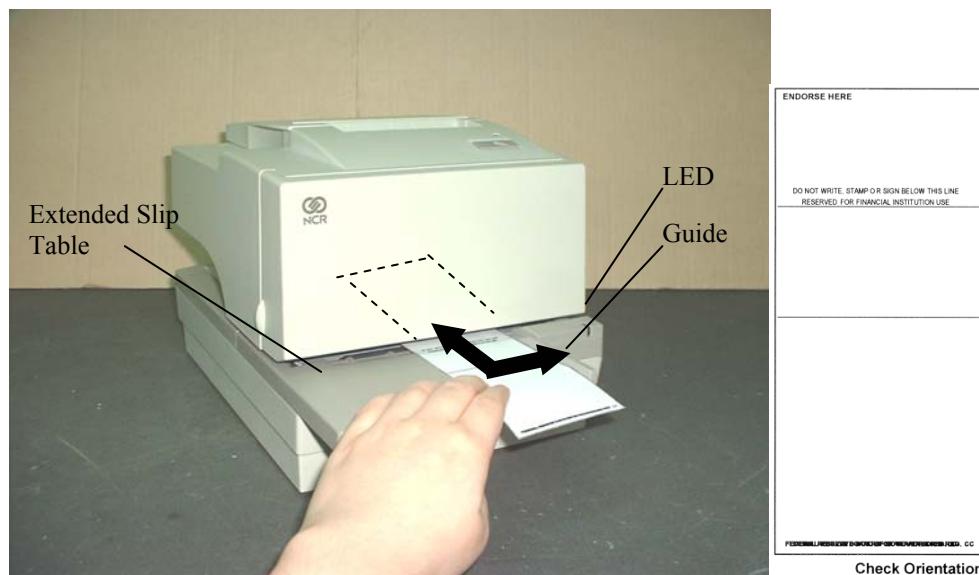
The printer is in the Normal Mode and can communicate with the host computer.

Check Flip Test Mode

To run the Check Flip Test Mode:

1. Enable the Check Flip Test Mode through the Configuration Menu (See "Configuring the Printer," for instruction on how to enter the Configuration Menu), then exit the Configuration Menu.
2. Insert a check as if validating the check, lengthwise and face down into the slip station. (See "Verifying and Validating Checks" section to insert check.)

A check must be used – if any other slip or form is inserted the printer will not conduct.



3. Push Paper Feed Button.
4. The check then goes through the flip routine only – no printing takes place.

To exit the Check Flip Test Model:

1. Enter the Configuration Menu again.
2. Disable the Check Flip Test Mode.
3. Exit the Configuration Menu

The printer is in Normal Mode and can communicate with the host computer.

Print Head Gap Adjustment Mode

Print Head Gap Adjustment Test Mode prints several lines of 'H' character. This is the slip print testing during the print head gap adjustment. During adjustment, some covers will be removed from the printer, even in this condition, slip printing need to be run when paper is inserted. Print Head Gap Adjustment Test Mode is enabled and disabled using the Configuration Menu.

To run the Print Head Gap Adjustment Test Mode:

1. Enable the Print Head Gap Test Mode through the Configuration Menu, ("See Configuring the Printer," for instructions on how to enter the Configuration Menu).
2. Insert a slip into the slip station.

3. Push Paper Feed Button.
 4. Several lines of Rolling ASCII character will be printed.
- Note: Printing will take place even when receipt cover is open.
5. Go to step 2 again to repeat this test.

To exit the Print Head Gap Adjustment Test Mode:

1. Enter the Configuration Menu again.
2. Disable the Print Head Gap Adjustment Test Mode.
3. Exit the Configuration Menu.

The printer is in Normal Mode and can communicate with the host computer.

Save Parameters

This function allows to save the selected diagnostics modes or return to the diagnostics mode to select additional options.

Press the Paper Feed Button for the option you want.

Save new parameters ?

- | | |
|------------|----------------|
| YES | -> Long Click |
| NO, MODIFY | -> Short Click |

Emulation/Software Options

Printer Emulations

Printer emulations determine the commands that are available to the printer. They are set by using the Configuration Menu. (See "Configuring the Printer," for instructions on how to enter the Configuration Menu.). The available options are:

7158 Native Mode

7156 Mode

7150 Mode

7167 Mode

Press the Paper Feed Button for the emulation you want.

**** SET EMULATION ?**

- | | |
|-----|----------------|
| YES | -> Long Click |
| NO | -> Short Click |

- | | |
|------------------|-------------|
| 7158 Mode* | -> 1 Click |
| 7156 Mode | -> 2 Clicks |
| 7150 Mode | -> 3 Clicks |
| 7167 Native Mode | -> 4 Clicks |

Enter code, then hold Button DOWN

At least 1 second to validate

Note: Press the Paper Feed Button for at least one second to validate the selection.

Printer ID Selections

Printer ID Selections determines the print ID that is returned from the printer. This is set by using the Configuration Menu. (See "Configuring the Printer," for instructions on how to enter the Configuration Menu.). The available options are:

- 7158 Native ID
- Emulated Print ID
- 7167 Native ID

Press the Paper Feed Button for the emulation you want.

**** SET PRINTER ID MODE ?**

- YES -> Long Click
- NO -> Short Click

- 7158 Mode ID* -> 1 Click
- Emulated Printer ID -> 2 Clicks
- 7167 Native ID -> 3 Clicks
- Enter code, then hold Button DOWN
- At least 1 second to validate

Note: Press the Paper Feed Button for at least one second to validate the selection

Default Lines Per Inch

This function allows the user to set the default lines per inch printed by the thermal printer to 6, 7.52 or 8.13. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu to change this setting.)

Press the Paper Feed Button for the lines per inch you want.

**** SET DEFAULT LINES PER INCH ?**

- YES -> Long Click
- NO -> Short Click

- 8.13 Lines per Inch -> 1 Click
- 7.52 Lines per Inch* -> 2 Clicks
- 6 Lines per Inch -> 3 Clicks
- Enter code, then hold Button DOWN
- At least 1 second to validate

Note: Press the Paper Feed Button for at least one second to validate the selection.

Carriage Return Usage

This function allows the printer to ignore or use the Carriage Return (hexadecimal 0D) command depending on the application. Some applications expect the command to be ignored while others use the command as a print command. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu to change this setting.)

Press the Paper Feed Button for the carriage return usage you want.

**** SET CARRIAGE RETURN USAGE ?**

YES -> Long Click
 NO -> Short Click

Ignore CR -> Long Click
 Use CR as Print Cmd* -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Asian Mode

This function makes it possible for the user to select an Asian character for the printer. (See "Configuring the Printer" for instructions on how to enter the Configuration Menu to change this setting.)

Note: For Asian code pages, only one (either 932, 936, 949 or 950) will exist in the firmware.

Press the Paper Feed Button for the Asian mode you want.

**** SET ASIAN MODE ?**

YES -> Long Click
 NO -> Short Click

Asian Mode On -> Long Click
 Asian Mode Off* -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Slip Printing Width

This function allows for the 7197 printer to be set in a mode that allows for the printer to drop the left 21 columns of data. For example if the printer was connected to an application that was sending data for a 7158 printer which supports 66 columns of print the 7167 printer could replace the 7158 without application changes.

Press the Paper Feed Button for the slip printing width option you want.

**** SET SLIP PRINTING WIDTH ?**

YES -> Long Click
 NO -> Short Click

7167 MODE* -> Long Click
 7158/7156 MODE -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Receipt Synchronization Mode

The standard mode for synchronization allows for verification of each line printed to the host. When the receipt synchronization is disabled the printer will allow for maximum print speed and ignore the verification of each line printed.

Press the Paper Feed Button for the receipt synchronization mode option you want.

**** SET RECEIPT SYNCHRONIZATION MODE ?**

- YES -> Long Click
- NO -> Short Click

Enable Receipt Sync.* -> Long Click

Disable Receipt Sync. -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Save Parameters

This function allows to save the selected emulations/software settings or return to the emulations/software settings to select additional options.

Press the Paper Feed Button for the option you want.

Save new parameters ?

- YES -> Long Click
- NO, MODIFY -> Short Click

Hardware Options

Print Density

This function makes it possible to adjust the energy level of the print head to darken the printout. An adjustment should only be made when necessary. The factory setting is 100%.

Warning: Choose an energy level no higher than necessary to achieve a dark printout.

Failure to observe this rule may result in a printer service call or voiding of the printer warranty. Consult your NCR technical support specialist if you have any questions.

Press the Paper Feed Button for the print density you want.

**** SET PRINT DENSITY ?**

- YES -> Long Click
- NO -> Short Click

100 %* -> 1 Click

110 % -> 2 Clicks

120 % -> 3 Clicks

Enter code, then hold Button DOWN

At least 1 second to validate

Note: Press the Paper Feed Button for at least one second to validate the selection.

Maximum Power Option

This function allows the user to set the maximum power for the printer to 75W or 55W.

Press the Paper Feed Button for the option you want.

**** SET MAX POWER OPTION ?**

YES -> Long Click
NO -> Short Click

55W Power Supply* -> Long Click
75W Power Supply -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Paper Low Sensor

Paper Low Sensor makes it possible to enable or disable the paper low sensor for particular printer configurations.

Press the Paper Feed Button for the option you want.

**** SET PAPER LOW SENSOR OPTION ?**

YES -> Long Click
NO -> Short Click

Enable Paper Low Sensor* -> Long Click
Disable Paper Low Sensor -> Short Clicks

Note: Press the Paper Feed Button for at least one second to validate the selection.

Paper Width

This function allows the user to set the default paper width for the receipt thermal printer to 58mm or 80mm wide.

Press the Paper Feed Button for the paper width option you want.

**** SET PAPER WIDTH ?**

YES -> Long Click
NO -> Short Click

Paper Width = 80 mm* -> 1 Click
Paper Width = 58 mm -> 2 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

Note: Press the Paper Feed Button for at least one second to validate the selection.

Knife Option

This option makes it possible to set the Knife Option if it is installed in the printer. This setting should only be changed if the option is added or removed.

Press the Paper Feed Button for the option you want.

**** SET KNIFE OPTION ?**

YES -> Long Click
NO -> Short Click

Enable Knife* -> Long
Disable Knife -> Short

Note: Press the Paper Feed Button for at least one second to validate the selection.

MICR Option

This function makes it possible to set the MICR Option if it is installed in the printer. This setting should only be changed if the option is added or removed.

Press the Paper Feed Button for the option you want.

**** SET MICR OPTION ?**

YES -> Long Click
NO -> Short Click

Enable MICR* -> Long
Disable MICR -> Short

Note: Press the Paper Feed Button for at least one second to validate the selection.

Check Flip Option

This function makes it possible to set the Check Flip Option if it is installed in the printer. This setting should only be changed if the option is added or removed.

Press the Paper Feed Button for the option you want.

**** SET CHECK FLIP OPTION ?**

YES -> Long Click
NO -> Short Click

Enable Check Flip* -> Long
Disable Check Flip -> Short

Note: Press the Paper Feed Button for at least one second to validate the selection.

Color Paper Option

This function allows the user to set the color paper for the receipt thermal printer to one color paper or two color paper.

Press the Paper Feed Button for the option you want.

**** SET COLOR PAPER OPTION ?**

YES -> Long Click
 NO -> Short Click

Monochrome* -> Long Click
 Color Paper -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

MICR Dual Pass Option

This function allows the user to set the dual pass MICR option.

Press the Paper Feed Button for the MICR dual pass option you want.

** SET MICR DUAL PASS OPTION ?

YES -> Long Click
 NO -> Short Click

Enable Dual Pass -> Long Click
 Disable Dual Pass* -> Short Click

Save Parameters

This function allows to save the selected hardware settings or return to the hardware options to select additional options.

Press the Paper Feed Button for the option you want.

Save new parameters ?

YES -> Long Click
 NO, MODIFY -> Short Click

Default Code Page

This function makes it possible to select the default code page.

These are the code pages available for printing:

- Code page 437 (US English)
- Code page 850 (Multilingual)
- Code page 852 (Slavic)
- Code page 858 (with Euro symbol)
- Code page 860 (Portuguese)
- Code page 862 (Hebrew)
- Code page 863 (French Canadian)
- Code page 864 (Arabic)
- Code page 865 (Nordic)
- Code page 866 (Cyrillic)
- Code page 874 (Thai)
- Code page 1252 (Windows Latin #1)

Code page Katakana
Code page 932 (MS Japan)
Space page

Note: For Asian code pages, code page 936, 949, or 950 replaces code page 932. Only one Asian code page (either 932, 936, 949, 950) will exist in firmware.

Press the Paper Feed Button for the Default Code Page you want.

**** SET CODE PAGE ?**
YES -> Long Click
NO -> Short Click

FOR 7158 Mode:

Code Page 437* -> 1 Click
Code Page 850 -> 2 Clicks
Code Page 852 -> 3 Clicks
Code Page 858 -> 4 Clicks
More Options -> 5 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

Code Page 860 -> 1 Click
Code Page 862 -> 2 Clicks
Code Page 863 -> 3 Clicks
Code Page 864 -> 4 Clicks
More Options -> 5 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

Code Page 865 -> 1 Click
Code Page 866 -> 2 Clicks
Code Page 874 -> 3 Clicks
Code Page 1252 -> 4 Clicks
More Options -> 5 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

Code Page Katakana -> 1 Click
Code Page 932 -> 2 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

FOR 7156 Mode:

Code Page 437* -> 1 Click
Code Page 850 -> 2 Clicks
Enter code, then hold Button DOWN
At least 1 second to validate

Note: Press the Paper Feed Button for at least one second to validate the selection.
For Asian code pages, code page 936, 949 or 950 replaces code page 932 in the above shown menu. Only one Asian code page (Either 932, 936, 949 or 950) will exist in firmware.

Save Parameters

This function allows to save the selected default code page selecton or return to the default code page selecton to select additional options.

Press the Paper Feed Button for the option you want.

Save new parameters ?

YES -> Long Click
NO, MODIFY -> Short Click

EEPROM to Default Settings

This selection resets the configuration to the Default Settings.

Caution: Be extremely careful changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

** RESET EEPROM TO DEFAULT VALUES ?

YES -> Long Click
NO -> Short Click

Note: Press the Paper Feed Button for at least one second to validate the selection.

Save Parameters

This function allows to save the selected default code page selecton or return to the default code page selecton to select additional options.

Press the Paper Feed Button for the option you want.

Save new parameters ?

YES -> Long Click
NO, MODIFY -> Short Click

Level 2 Diagnostics

Level 2 diagnostics run during normal printer operation. When the following conditions occur, the printer automatically turns off the appropriate motor, disables printing to prevent damage, and turns on the green LED (flashes the green LED if the receipt print head is too hot or the voltages are out of range):

- Paper out
- Cover open
- Knife unable to go back to home position
- Print head too hot
- Power supply voltage out of range
- Slip or flip motor jam

See "Chapter 3: Solving Problems" for more information about other conditions that may occur and how to correct them.

Status	LED Behaviour
Power Off	Off
Firmware Download	Very Fast Blink
Level 0 Diagnostics	No Blink
Receipt Paper Low	Slow Blink
Temperature Error	No Blink
Voltage Error	No Blink
Cover Open	Fast Blink
Receipt Paper Out	Fast Blink
Knife Jam	Fast Blink, then Slow Blink
Slip Cover Open	Fast Blink
Flip Cover Open	Fast Blink
Receipt Cover Open	Fast Blink
Slip Motor Jam	Fast Blink
Flip Motor Jam	Fast Blink
Slip Ribbon Carriage Error	Fast Blink
All other states	On

Level 3 Diagnostics

Level 3 diagnostics keeps track of the following tallies and prints them on the receipt during the receipt test. See "Sample Print Test" later in this chapter.

- Serial number
- Model number
- CRC number
- Number of receipt lines printed
- Number of knife cuts
- Number of slip lines
- Number of slip characters
- Number of MICR reads
- Number of hours printer is on
- Number of flash cycles
- Maximum temperature reached
- Number of cutter jams
- Number of times the door is open

Chapter 5: Communication

Communication Overview

In order for a receipt to be printed, a program must be in place that translates the data from the host computer into a language that the printer can understand. This program must tell the printer exactly how to print each character. This chapter describes how to create such a program or modify an existing one.

Interface

In order for the printer to communicate with the host, a communication link must be set up. The 7167 supports the industry standard RS-232C communication interface. This interface has a protocol associated with it that the host computer must understand and adhere. The printer also supports USB communications.

Only when the interface parameters are matched and the proper protocol is used will the host and the printer be able to communicate. See the section, "RS-232C Interface" on the next page for a description of the protocol associated with the RS-232C interface.

Sending Commands

Once the communication link is established, commands can be sent to the printer. This section describes how to send commands to the printer using DOS and BASIC. This section does not take into account the necessary protocol, but is meant as a general introduction to how the printer functions.

Using DOS to Send Commands

One way of getting commands to the printer is to send them directly from DOS. For example, the command

COPY CON: COM1:

This sets the computer up such that the Hex code corresponding to any key that was pressed would be sent to the RS-232C communication port COM1 when the COPY mode is exited. If the printer is connected to COM1, then the data will go to the printer.

Exit the COPY mode by typing

CTRL Z

and then pressing the ENTER key. This directs the data from any print command to the proper port, commands can be sent from any software program.

Using BASIC to Send Commands

In BASIC, printer commands are sent as a string of characters preceded by the LPRINT command. For example,

```
LPRINT CHR$(&H0A)
```

sends the hexadecimal number 0A to the printer, which causes the printer to print the contents of its print buffer. Previously sent commands tell the printer exactly how this data should appear on the paper. For example,

```
LPRINT CHR$(&H12); "ABC"; CHR$(&H0A)
```

sends the Hex numbers 12 41 42 43 0A to the printer. This causes the printer to set itself to double wide mode (12), load the print buffer with “ABC” (41 42 43), and finally, print (0A). Again, the communication link that the BASIC program outputs to must be matched to that of the printer.

RS-232C Interface

The RS-232C interface uses either XON/XOFF or DTR/DSR protocol. For XON/XOFF, a particular character is sent back and forth between the host and the printer to regulate the communication. For DTR/DSR, changes in the DTR/DSR signal coordinate the data flow.

The RS-232C version of the 7167 offers the standard options which are selectable in the Diagnostic mode. See “Diagnostics: Communications Interface Settings” later in this book.

Print Speed and Timing

The fast speed of the printer requires the application to send data to the printer at least as fast as it is printed. This application must also allow receipt lines to be buffered ahead at the printer, so the printer can print each line immediately after the preceding line, without stopping to wait for more data. Ideally, the application will send all the data for an entire receipt without pausing between characters or lines transmitted.

If the application sends data at 9600 baud and pauses between lines for as little as 50 milliseconds, the printer will never be able to print at full speed. But, if the application sends data at 19.2 K baud and does not pause between lines, the printer will be able to print at its full speed of 1020 lines/minute.

The table shows that with a pause of 50 milliseconds after each line, the transmit time equals or exceeds the print time, slowing down the printer, regardless of the baud rate.

Char./Line	Lines/Receipt	Transmit Time: (9600 Baud)	Transmit Time: (19.2 K Baud)	Print Time
20	20	1.4 Seconds	1.2 Seconds	1.2 Seconds
20	40	2.8 Seconds	2.4 Seconds	2.4 Seconds
44	20	1.88 Seconds	1.44 Seconds	1.2 Seconds
44	40	3.76 Seconds	2.88 Seconds	2.4 Seconds

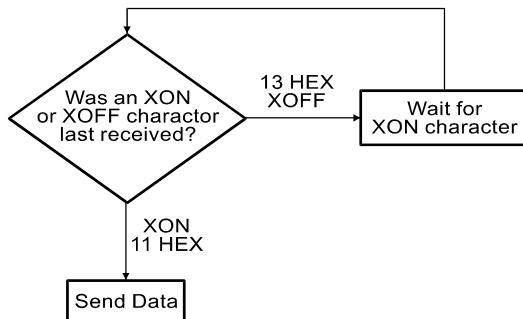
The next table shows that with no delay between lines, the transmit time is much less than the print time, allowing the printer to print at full speed.

Char./Line	Lines/Receipt	Transmit Time: (9600 Baud)	Transmit Time: (19.2 K Baud)	Print Time
20	20	0.4 Seconds	0.2 Seconds	1.2 Seconds
20	40	0.8 Seconds	0.4 Seconds	2.4 Seconds
44	20	0.88 Seconds	0.44 Seconds	1.2 Seconds
44	40	1.76 Seconds	0.88 Seconds	2.4 Seconds

XON/XOFF Protocol

The XON/XOFF characters coordinate the information transfer between the printer and the host computer. The printer sends an XON character when it is ready to receive data and it sends an XOFF character when it cannot accept any more data. The software on the host computer must monitor the communication link as shown in the following flowchart in order to send data at the appropriate times.

If XON/XOFF has been selected, the printer also toggles the DTR signal, as described in the next section, but it does not look at the DSR signal to transmit data.

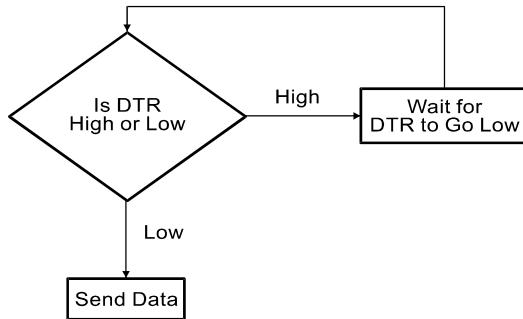


XON character = Hex 11.

XOFF character = Hex 13.

DTR/DSR Protocol

The DTR signal is used to control data transmission to the printer. It is driven low when the printer is ready to receive data and driven high when it cannot accept any more data. Data is transmitted from the printer after it confirms that the DSR signal is low.



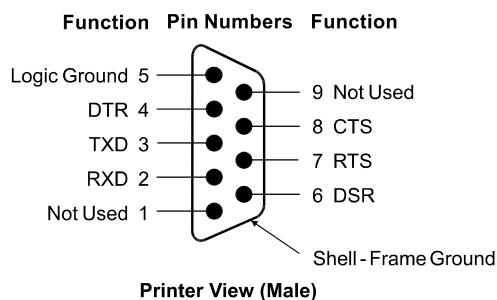
RS-232C Technical Specifications

This section describes the pin settings for the connectors and the RS-232C interface parameters. The RS-232C parameters are selectable in the Diagnostic mode. See "Diagnostics: Communications Interface Settings" in chapter 4 for the position of the DIP switches. The RS-232C parameters must match those of the host.

Connectors

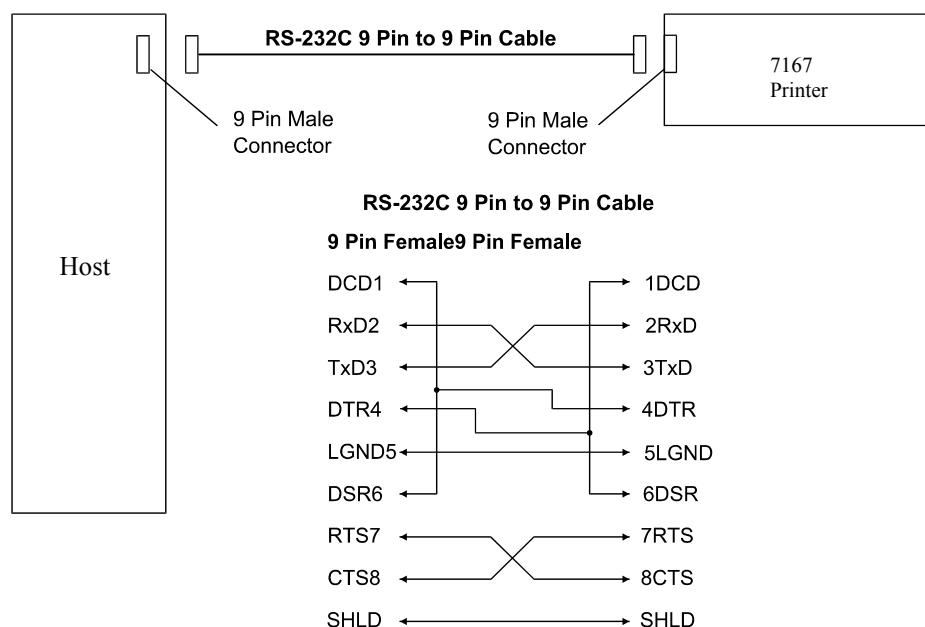
RS-232C Communication Connector Pin Assignments

The illustration shows the RS-232C communication connector and pin assignments. The connector is a 9-pin male D-shell connector and is located in the hollow cavity under the printer at the rear.



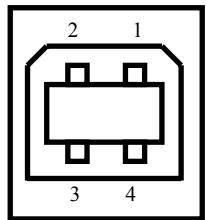
RS-232C 9-Pin to 9-Pin Cable Diagram

Note: This information is provided for testing and troubleshooting only.



USB Cable Connector

The following illustration is for the USB Type B communication connector and pin assignment.



Printer View End

Pin No	Signal
1	+5 V – USB
2	Data -
3	Data +
4	Ground

Power Cable Connector

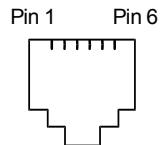
The illustration shows the power cable connector and pin assignments. The power cable connector is a 3-pin DIN plug and is located in the hollow cavity under the printer at the rear.



Printer View End (Female)

Cash Drawer Connector and Pin Assignments

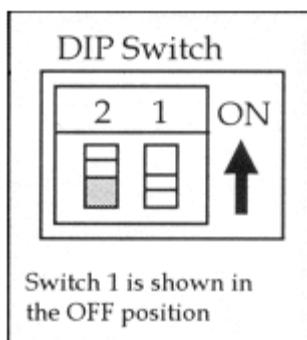
The following illustration shows the pin out designation for the cash drawer connectors. The following table provides the pinout assignments for cash drawers one and two. The cash drawer connectors are located at the rear of the printer.



Pin Number	Cash Drawer 1 Connector
1	Frame Ground
2	Drawer 1 Solenoid
3	Drawer 1 Status Switch
4	+24 Volts (to Solenoid +)
5	Drawer 2 Solenoid
6	Ground (Status Switch Return)

Switch Settings

The DIP switches are located on the PC board at the back of the printer as shown in the illustration in "Level 1 Diagnostics" in chapter 4. The switches are used to put the printer into various modes for printer configuration set up.



Use a paper clip or other pointed object to set the switches.

1. Set the switches to the desired settings shown in the table.
2. Reset the printer.

Caution: Setting switch 1 to On puts the printer in level 1 diagnostics (setup mode) where other functions and tests can be changed.

DIP Switch Settings for RS-232C Parameters

Switch 1 Setting	Switch 2 Setting	Printer State
OFF (0)	OFF (0)	On-line Mode (default)
ON(1)	OFF (0)	Diagnostic Mode
OFF (0)	ON (1)	Flash Download Mode
ON (1)	ON (1)	Vendor Adjustment Mode

Setting Extra RS-232C Options

The following extra options are available for the RS-232C Interface:

Data errors

- Print "?" for data errors (default)
- Ignore data errors

Chapter 6: Commands

Introduction

The different features and functions provided by the printer are controlled by sending commands from the host computer to the printer. This section describes the commands that are supported by the printer. The printer commands are made up of one or more bytes of data starting with a command control code followed by its supporting parameters.

Commands control all operations and functions of the printer. This includes selecting the size and placement of characters and graphics on the receipt or the slip and feeding and cutting the paper. Unless otherwise noted, any of the commands may be used in any combination to communicate with the printer from a program in a host computer.

In order to allow the graceful handling of commands that may be available in other printers but are not available in this printer, some commands will be listed and described but identified as "not implemented." If the printer receives one of these "not implemented" commands, the command and its supporting operands will be discarded. Any other data bytes, including unrecognized commands, are sent to the print buffer as data, and the printer will attempt to print the data when it is instructed to print the buffer.

List of Commands and Location

This section presents groups of lists of the hexadecimal command codes, parameters, and the command names. A page reference is provided for the page on which the command is more fully described. If this document is being viewed online, the page reference will be linked to the actual page and may clicked to go to that page.

The first section lists all of the commands. The following lists are separated into functional category groupings.

All commands **listed in bold** are new or have additional functionality when compared to the NCR 7156.

By Command Code

All items in **BOLD** are new or have additional functionality when compared to the 7156.

Hexadecimal Command Code and Operands	Command Name	Page
09	Horizontal Tab	114
0A	Print and Feed Paper One Line	105
0C	Print and Return to Standard Mode	181
0C	Print and Eject Slip	105
0D	Print and Carriage Return	106
10	Clear Printer	90
10 04 n	Real Time Status Transmission (DLE Sequence)	165
10 05 n	Real Time Request to Printer (GS Sequence)	168
11	Close Form	91
12	Select Double-Wide Characters	122
13	Select Single-Wide Characters	122
14 n	Feed <i>n</i> Print Lines	106
15 n	Feed <i>n</i> Dot Rows	107
16 n	Add <i>n</i> Extra Dot Rows	107
17	Print	108
18	Open Form	91
18	Cancel Print Data in Page Mode	182
19	Perform Full Knife Cut	92
1A	Perform Partial Knife Cut	92
1B (+ *.bmp)	Download BMP Logo	142
1B 07	Generate Tone	93
1B 0C	Print Data in Page Mode	182
1B 12	Select 90 Degree Counter-Clockwise Rotated Print	123
1B 14 n	Set Column	114
1B 16 n	Select Pitch (Column Width)	123
1B 20 n	Set Character Right-Side Spacing	124
1B 21 n	Select Print Modes	126
1B 24 n1 n2	Set Absolute Starting Position	115
1B 25 n	Select or Cancel User-Defined Character Set	127

Hexadecimal Command Code and Operands	Command Name	Page
1B 26 3 c1 c2...dn	Define User-Defined Characters	128
1B 27 m a0 a1 a2 d1 ... dm	Write to User Data Storage	200
1B 2A m n1 n2 d1 ... dn	Select Bit Image Mode	143
1B 2D n	Select or Cancel Underline Mode	130
1B 32	Set Line Spacing to 1/6 Inch	109
1B 33 n	Set Line Spacing	109
1B 34 m a0 a1 a2	Read from User Data Storage	201
1B 3A 30 30 30	Copy Character Set from ROM to RAM	130
1B 3C	Return Home	93
1B 3D n	Select Peripheral Device (For Multi-Drop)	93
1B 3F n	Cancel User-defined Characters	131
1B 40	Initialize Printer	94
1B 43 n	Set Slip Paper Eject Length	94
1B 44 [n] k 00	Set Horizontal Tabs	116
1B 45 n	Select or Cancel Emphasized Mode	131
1B 47	Select Double Strike (<u>7156 Emulation</u>)	132
1B 48	Cancel Double Strike	133
1B 49 n	Select or Cancel Italic Print	133
1B 4A n	Print and Feed Paper	110
1B 4B n	Print and Reverse Feed Paper	110
1B 4C	Select Page Mode	183
1B 4C n1 n2 d1...dn	Select Double Density Graphics (<u>7156 Emulation</u>)	146
1B 52 n	Select International Character Set	134
1B 53	Select Standard Mode	184
1B 54 n	Select Print Direction in Page Mode	185
1B 55 n	Select or Cancel Unidirectional Printing Mode	135
1B 56 n	Select or Cancel 90 Degrees Clockwise Rotated	135
1B 57 n1, n2,...n8	Select Printing Area in Page Mode	186
1B 59 n1 n2 d1...dn	Select Double Density Graphics	146
1B 5B 7D	Switch to Flash Download Mode	213
1B 5C n1 n2	Set Relative Print Position	117
1B 61 n	Select Justification	118
1B 63 30 n	Select Receipt or Slip for Printing; Slip for MICR Read	94
1B 63 31 n	Select Receipt or Slip for Setting Line Spacing	96

Hexadecimal Command Code and Operands	Command Name	Page
1B 63 34 <i>n</i>	Select Sensors to Stop Printing	97
1B 63 35 <i>n</i>	Enable or Disable Panel Buttons	98
1B 64 <i>n</i>	Print and Feed <i>n</i> Lines	111
1B 63 37 <i>n</i>	Enable or Disable Slip Paper End Feeding Stop	99
1B 65 <i>n</i>	Print and Reverse Feed <i>n</i> Lines	111
1B 66 <i>m n</i>	Set Slip Paper Waiting Time	100
1B 69	Perform Full Knife Cut	92
1B 6A <i>k</i>	Read from Non-Volatile Memory	202
1B 6D	Perform Partial Cut	92
1B 70 <i>n p1 p2</i>	Generate Pulse to Open Cash Drawer	101
1B 72 <i>n</i>	Select Print Color	136
1B 73 <i>n1 n2 k</i>	Write to Non-Volatile Memory (NVRAM)	202
1B 74 n	Select International Character Set	134
1B 75 0	Transmit Peripheral Device Status	152
1B 76	Transmit Printer Status	152
1B 77 01	Read MICR Data and Transmit	191
1B 77 46	Check Flip	200
1B 77 50	Define Parsing Format, Save in NVRAM	192
1B 77 52	Reread MICR Data	191
1B 77 70	Define Parsing Format, Do Not Save Permanently	192
1B 7A <i>n</i>	Select or Cancel Parallel Printing Mode on R&J	102
1B 7B <i>n</i>	Select or Cancel Upside Down Printing Mode	136
1C	Select Slip Station	102
1C 21 <i>n</i>	Select print modes for Kanji characters	209
1C 2D <i>n</i>	Turn underline mode ON/OFF for Kanji	210
1C 32 <i>c1 c2 d1...dn</i>	Define user-defined Kanji characters	210
1C 53 <i>n1 n2</i>	Set Kanji character spacing	211
1F 56 <i>n</i>	Send Printer Software Version	161
1c 57 <i>n</i>	Set quadruple mode ON/OFF for Kanji	212
1D 00	Request Printer ID	213
1D 01	Return Segment Number Status of Flash Memory	214
1D 02 <i>n</i>	Select Flash Memory Sector to Download	214
1D 03 <i>n</i>	Real Time Request to Printer (DLE Sequence)	168
1D 04 <i>n</i>	Real Time Status Transmission (GS Sequence)	165
1D 05	Real Time Printer Status Transmission	170
1D 06	Get Firmware CRC	215
1D 07	Return Microprocessor CRC	215
1D 0E	Erase the Flash Memory	215

Hexadecimal Command Code and Operands	Command Name	Page
1D 0F	Return Main Program Flash CRC	216
1D 10 <i>n</i>	Erase Selected Flash Sector	216
1D 11 <i>al ah cl ch d1...dn</i>	Download to Active Flash Sector	217
1D 14 <i>n</i>	Reverse Feed <i>n</i> Lines	112
1D 15 <i>n</i>	Reverse Feed <i>n</i> Dots	112
1D 21 <i>n</i>	Select Character Size	137
1D 22 <i>n</i>	Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts	203
1D 22 55 <i>n1 n2</i>	Flash Allocation	204
1D 23 <i>n</i>	Select the Current Logo (Downloaded Bit Image)	146
1D 24 <i>nL nH</i>	Set Absolute Vertical Print Position in Page Mode	187
1D 2A <i>n1 n2 d1...dn]</i>	Define Downloaded Bit Image	147
1D 2F <i>m</i>	Print Downloaded Bit Image	149
1D 3A	Start or End Macro Definition	189
1D 40 <i>n</i>	Erase User Flash Sector	205
1D 42 <i>n</i>	Select or Cancel White/Black Reverse Print Mode	138
1D 48 <i>n</i>	Select Printing Position for HRI Characters	175
1D 49 <i>n</i>	Transmit Printer ID	153
1D 49 40 <i>n</i>	Transmit Printer ID, Remote Diagnostics Extension	155
1D 4C <i>nL nH</i>	Set Left Margin	119
1D 50 <i>x y</i>	Set Horizontal and Vertical Minimum Motion Units	113
1D 56 <i>m</i>	Select Cut Mode and Cut Paper	102
1D 56 <i>m n</i>	Select Cut Mode and Cut Paper	102
1D 57 <i>nL nH</i>	Set Printing Area Width	120
1D 5C <i>nL nH</i>	Set Relative Vertical Print Position in Page Mode	188
1D 5E <i>r t m</i>	Execute Macro	190
1D 61 <i>n</i>	Select or Cancel Automatic Status Back	171
1D 66 <i>n</i>	Select Pitch for HRI Characters	176
1D 68 <i>n</i>	Select Bar Code Height	176
1D 6B <i>m d1...</i>	Print Bar Code	177
1D 6B <i>m n d1...dn</i>	Print Bar Code	177
1D 72 <i>n</i>	Transmit Status	156
1D 77 <i>n</i>	Select Bar Code Width	180
1D FF	Reboot Printer	218
1E	Select Receipt Station	104

Hexadecimal Command Code and Operands	Command Name	Page
1F 04 n	Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap	150
1F 05 n	Select Superscript or Subscript Modes	139
IF 11 [m n],[m n]...[m n] OFFH	Printer Setting Change	206
1F 56	Send Printer Software Version	161
1F 74	Print Test Form	104

Printer Function Commands

Hexadecimal Command Code and Operands	Command Name	Page
10	Clear Printer	90
11	Close Form	91
18	Open Form	91
19	Perform Full Knife Cut	92
1A	Perform Partial Knife Cut	92
1B 07	Generate Tone	93
1B 3C	Return Home	93
1B 3D	Select Peripheral Device (for Multi-Drop)	93
1B 40	Initialize Printer	94
1B 43 n	Set Slip Paper Eject Length	94
1B 63 30 n	Select Receipt or Slip for Printing; Slip for MICR Read	94
1B 63 31 n	Select Receipt or Slip for Setting Line Spacing	96
1B 63 34 n	Select Sensors to Stop Printing	97
1B 63 35 n	Enable or Disable Panel Buttons	98
1B 63 37 n	Enable or Disable Slip Paper End Feeding Stop	99
1B 66 m n	Set Slip Paper Waiting Time	100
1B 69	Perform Full Knife Cut	92
1B 6D	Perform Partial Knife Cut	92
1B 70 n p1 p2	Generate Pulse to Open Cash Drawer	101
1B 7A n	Select or Cancel Parallel Printing Mode on R&J	102
1C	Select Slip Station	102
1D 56 m	Select Cut Mode and Cut Paper	102
1D 56 m n	Select Cut Mode and Cut Paper	102
1E	Select Receipt Station	104
1F 74	Print Test Form	104

Vertical Positioning and Print

Hexadecimal Command Code and Operands	Command Name	Page
0A	Print and Feed Paper One Line	105
0C	Print and Return to Standard Mode/Print and Eject Slip	105
0D	Print and Carriage Return	106
14 n	Feed <i>n</i> Print Lines	106
15 n	Feed <i>n</i> Dot Rows	107
16 n	Add <i>n</i> Extra Dot Rows	107
17	Print	108
1B 32	Set Line Spacing to 1/6 Inch	109
1B 33 n	Set Line Spacing	109
1B 4A n	Print and Feed Paper	110
1B 4B n	Print and Reverse Feed Paper	111
1B 64 n	Print and Feed <i>n</i> Lines	112
1B 65 n	Print and Reverse Feed <i>n</i> Lines	111
1D 14 n	Reverse Feed <i>n</i> Lines	112
1D 15 n	Reverse Feed <i>n</i> Dots	112
1D 50 x y	Set Horizontal and Vertical Minimum Motion Units	113

Horizontal Positioning Commands

Hexadecimal Command Code and Operands	Command	Page
09	Horizontal Tab	114
1B 14 n	Set Column	114
1B 24 n1 n2	Set Absolute Starting Position	115
1B 44 [n] k 00	Set Horizontal Tabs	116
1B 5C n1 n2	Set Relative Print Position	117
1B 61 n	Select Justification	118
1D 4C nL nH	Set Left Margin	119
1D 57 nL nH	Set Printing Area Width	120

Print Characteristic Commands

Hexadecimal Command Code and Operands	Command	Page
12	Select Double-Wide Characters	122
13	Select Single-Wide Characters	122
1B 12	Select 90 Degree Counter-Clockwise Rotated Print	123
1B 16 n	Select Pitch (Column Width)	123
1B 20 n	Set Character Right-Side Spacing	124
1B 21 n	Select Print Modes	126
1B 25 n	Select or Cancel User-Defined Character Set	127
1B 26 s c1 c2 d1...dn	Define User-Defined Characters	128
1B 2D n	Select or Cancel Underline Mode	130
1B 3A 30 30 30	Copy Character Set from ROM to RAM	130
1B 3F n	Cancel User-Defined Characters	131
1B 45 n	Select or Cancel Emphasized Mode	131
1B 47	Select Double Strike (7156 Emulation Mode)	132
1B 47 n	Select Double Strike (7158/7167 Native Modes)	132
1B 48	Cancel Double Strike	133
1B 49 n	Select or Cancel Italic Print	133
1B 52 n	Select International Character Set	134
1B 55 n	Select or Cancel Unidirectional Printing Mode	135
1B 56 n	Select or Cancel 90 Degrees Clockwise Rotated Print	135
1B 72 n	Select Print Color	136
1B 74 n	Select International Character Set	134
1B 7B n	Select or Cancel Upside Down Printing Mode	136
1D 21 n	Select Character Size	137
1D 42 n	Select or Cancel White/Black Reverse Print Mode	138
1F 05 n	Select Superscript or Subscript Modes	139

Graphics Commands

Hexadecimal Command Code and Operands	Command	Page
1B (+*.bmp)	Download BMP Logo	142
1B 2A m n1 n2 d1...dn	Select Bit Image Mode	143
1B 4C n1 n2 d1...dn	Select Double-Density Graphics (in 7156 Emulation Mode)	146
1B 59 n1 n2 d1...dn	Select Double-Density Graphics	146
1D 23 n	Select Current Logo (Downloaded Bit Image)	146
1D 2A n1 n2 d1...dn]	Define Downloaded Bit Image	147
1D 2F m	Print Downloaded Bit Image	149
1F 04 n	Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap	150

Status Commands

Hexadecimal Command Code and Operands	Command	Page
1B 75 0	Transmit Peripheral Device Status	152
1B 76	Transmit Printer Status	152
1D 49 n	Transmit Printer ID	153
1D 49 40 n	Transmit Printer ID, Remote Diagnostics Extension	155
1D 72 n	Transmit Status	156
1F 56 n	Send Printer Software Version	161

Real Time Commands

Hexadecimal Command Code and Operands	Command	Page
10 04 n	Real Time Status Transmission (DLE Sequence)	165
10 05 n	Real Time Request to Printer (GS Sequence)	168
1D 03 n	Real Time Request to Printer (DLE Sequence)	168
1D 04 n	Real Time Status Transmission (GS Sequence)	165
1D 05	Real Time Printer Status Transmission	170

Auto Status Back Commands

Hexadecimal Command Code and Operands	Command	Page
1D 61 n	Select or Cancel Auto Status Back	170

Bar Code Commands

Hexadecimal Command Code and Operands	Command	Page
1D 48 n	Select Printing Position for HRI Characters	175
1D 66 n	Select Pitch for HRI Characters	176
1D 68 n	Select Bar Code Height	176
1D 6B m d1...dk 00 or 1D 6B m n d1...dn	Print Bar Code	177
1D 77 n	Select Bar Code Width	180

Page Mode Commands

Hexadecimal Command Code and Operands	Command	Page
0C	Print and Return to Standard Mode/Print and Eject Slip	181
18	Cancel Print Data in Page Mode	182
1B 0C	Print Data in Page Mode	182
1B 4C	Select Page Mode	183
1B 53	Select Standard Mode	184
1B 54 n	Select Print Direction in Page Mode	185
1B 57 n1, n2...n8]	Set printing Area in Page Mode	186
1D 24 nL nH	Set Absolute Vertical Print Position in Page Mode	187
1D 5C nL nH	Set Relative Vertical Print Position in Page Mode	188

Macro Commands

Hexadecimal Command Code and Operands	Command	Page
1D 3A	Start or End Macro Definition	189
1D 5E r t m	Execute Macro	190

MICR Check Reader Commands

MICR Reading

Hexadecimal Command Code and Operands	Command	Page
1B 77 01	Read MICR Data and Transmit	191
1B 77 52	Reread MICR Data	191

MICR Parsing

Hexadecimal Command Code and Operands	Command	Page
1B 77 50	Define Parsing Format, Save in NVRAM	192
1B 77 70	Define Parsing Format, Do Not Save Permanently	192

Check Flip Command

Hexadecimal Command Code and Operands	Command	Page
1B 77 46	Check Flip Command	200

User Data Storage Commands

Hexadecimal Command Code and Operands	Command	Page
1B 27 m addr d1...dm	Write to User Data Storage	200
1B 34 m addr	Read from User Data Storage	201
1B 6A k	Read from Non-Volatile Memory	202
1B 73 n1 n2 k	Write to Non-Volatile Memory (NVRAM)	202
1D 22 n	Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts	203
1D 22 55 n1 n2	Flash Allocation	204
1D 40 n	Erase User Flash Sector	205
IF 11 [m n],[m n]...[m n] OFFH	Printer Setting Change	206

Asian Character Commands

Hexadecimal Command Code and Operands	Command	Page
1C 21 n	Select print modes for Kanji characters	209
1C 2D n	Turn underline mode ON/OFF for Kanji	210
1C 32 c1 c2 d1...dn	Define user-defined Kanji characters	210
1C 53 n1 n2	Set Kanji character spacing	211
1c 57 n	Set quadruple mode ON/OFF for Kanji	212

Flash Download Commands

Hexadecimal Command Code and Operands	Command	Page
1B 5B 7D	Switch Flash Download Mode	213
1D 00	Request Printer ID	213
1D 01	Return Segment Number Status of Flash Memory	214
1D 02 n	Select Flash Memory Sector to Download	214
1D 06	Get Firmware	215
1D 07	Return Microprocessor CRC	215
1D 0E	Erase the Flash Memory	215
1D 0F	Return Main Program Flash CRC	215
1D 10 n	Erase Selected Flash Sector	216
1D 11 aL aH cL cH d1...dn	Download to Active Flash Sector	217
1D FF	Reboot the Printer	218

Comparison Chart

The following table details the list of commands whose behavior differs from the NCR 7156 because of the physical differences of a 6 dots/mm head (7156) versus an 8 dots/mm head (7167). Where the 7156 made movements in n/152 inch increments, the 7167 makes n/203 inch movements.

Command	Description	Difference between a 7156 and a 7167 configured in 7156 Emulation Mode.
15 <i>n</i>	Feed <i>n</i> Dot Rows	This command will move the paper on the receipt in n/203 inch steps instead of n/152 inch steps.
16 <i>n</i>	Add <i>n</i> Extra Dot Rows	The dot rows will be measured in n/203 inches versus n/152 inches.
1B 20 <i>n</i>	Set Right-Side Character Spacing	This command sets the right side spacing to "n" horizontal motion units. By default, these units are in terms of 1/203 inches versus 1/152 inches.
1B 24 <i>n1 n2</i>	Set Absolute Starting Position	For graphics commands, the position is scaled to best match the previous product. In text mode, the equivalent character position is calculated.
1B 26 <i>s c1 c2 n1 d1...nn dn]</i>	Define User-Defined Character Set	Since the dots on the new print head are smaller, user-defined characters that were used on the previous 7156 printer will appear smaller on the 7156 printer.
1B 2A <i>m n1 n2 d1...dn</i>	Select Bit Image Mode	In 7156 Emulation Mode, graphics are scaled to best match the size of the graphic in the 7156 printer.
1B 33 <i>n</i>	Set Line Spacing	This command uses <i>n</i> in terms of n/360 inches. Since the previous product had a fundamental step of 1/180 inch and the new product has a fundamental step of 1/203 inch, the actual line spacing will not exactly match the requested spacing.
1B 4A <i>n</i>	Print and Feed Paper	(Same as above)

Command	Description	Difference between a 7156 and a 7167 configured in 7156 Emulation Mode.
1B 59 <i>n1 n2 d1...dn</i>	Select Double-Density Graphics	In 7156 Emulation Mode, the printer scales the graphics to provide the best match.
1B 5C <i>n1 n2</i>	Set Relative Print Position	The parameter to this command is in units of dots. However, the command moves and aligns to character positions. In 7156 Emulation Mode, this command calculates how many character positions to move based on the 7156's character width in dots (10) versus the 7167's width (13).
1B 61 <i>n</i>	Select Justification	This command does true dot resolution alignment for centering versus character-aligned centering.
1D 2A <i>n1 n2 d1...dn</i>	Define Downloaded Bit Image	In 7156 Emulation Mode, this command scales the incoming data to provide a best match to the size of the image as it printed on the 7156 printer.
1D 2F <i>m</i>	Print Downloaded Bit Image	(Same as above)

Command Descriptions

This section provides the detailed description of the commands. These commands are separated into groups according to their function or use. The previous sections can be used as an index for the following sections.

The following lists and describes the headings used to present the elements of the commands in the descriptions in this section. Each command code is presented in three formats: ASCII, hexadecimal, and decimal. Choose the format that best suits the programming implementation. The printer interprets the 8-bit bytes it gets through its communication interface; it does not care what format the program lists them in.

Name: **Name of Command**

ASCII: The ASCII representation of the command control code followed by its operands.

Hexadecimal: The hexadecimal representation of the command control code followed by its operands.

Decimal: The decimal representation of the command control code followed by its operands.

Operand *n*: A description of the command operand. Other command operands may be m, p1, p2, x, or y.

Range of *n*: The upper and lower limits or list of possible values of the command operand. The values are listed as decimal values unless specified otherwise.

Default of *n*: The command operand default value after printer reset or startup.

Description: A brief description of the use of the command.

Formulas: Any formulas used for this command.

Example: Coding example of how to send the command in Visual Basic. This code assumes we are doing output to an opened and ready device called "MSCOMM1." The examples use the hexadecimal command code formats; the ASCII or decimal formats could also be used in VB. In commands that use an operand, a specific value is used, and the result of using the selected value for the operand is described.

Exceptions: Describes any exceptions to this command, e.g., incompatible commands.

Related Information: Describes related information for this command, e.g., bit information.

Printer Function Commands

The printer function commands control the following basic printer functions and are described in order of their hexadecimal codes:

1. Station Select
2. Platen Control
3. Resetting the printer
4. Cutting the paper
5. Opening the cash drawers

Clear Printer

ASCII: DLE

Hexadecimal: 10

Decimal: 16

Clears the print line buffer without printing and sets the printer to the following condition:

1. Receipt station is selected
2. Double-Wide command (0x12) is cancelled
3. Line Spacing, Pitch, and User-Defined Character Sets are maintained at current selections (RAM is not affected)
4. Single-Wide, Single-High, Non-Rotated, and Left-Aligned characters are set
5. Printer is restarted and error status is cleared if a fault condition existed
6. Printing position is set to column one
7. Slip platen is opened
8. Slip print head is homed
9. Knife is homed

Example:

```
MSComm1.Output = Chr$(&H10)
```

Exceptions:

A DLE command followed by a hexadecimal 04 or 05 is interpreted as a "real time command". (See Real Time commands)

Close Form**ASCII:** DC1**Hexadecimal:** 11**Decimal:** 17

Closes the feed roller and platen and retracts the forms arm stop to the forms stop position. If the printer is reset or the Clear command (0x10) is received, the feed roller and platen are opened.

This command executes if the platen is already closed. This command is processed regardless of which station is selected.

Example:

```
MSComm1.Output = Chr$(&H11)
```

Open Form**ASCII:** CAN**Hexadecimal:** 18**Decimal:** 24

When the printer is in 7156 Emulation Mode or in non-Page Mode, this command opens the feed roller and platen so that a form may be inserted (default position).

This command has the same code as the Cancel Print Data in Page Mode command, which is only executed in Page Mode.

This command executes if the platen is already open. This command executes (opens the feed roller and platen) regardless of which station is selected.

Example:

```
MSComm1.Output = Chr$(&H18)
```

Perform Partial Knife Cut

ASCII: EM or ESC i

Hexadecimal: 19 or 1B 69

Decimal: 25 or 27 105

Cuts the receipt, leaving .20 inch (5 mm) of paper. This command is implemented the same as Partial Knife Cut (1A, 1B 6D). There are two codes for this command. Both codes perform the same function.

A Line Feed is executed first if the print buffer is not empty.

This command is executed (cuts the receipt) regardless of which station is selected.

Example:

```
MSComm1.Output = Chr$(&H19) or  
MSComm1.Output = Chr$(&H1B) & Chr$(&H69)
```

Perform Partial Knife Cut

ASCII: SUB or ESC m

Hexadecimal: 1A or 1B 6D

Decimal: 26 or 27 109

Cuts the receipt, leaving .20 inch (5 mm) of paper. This command is implemented the same as Full Knife Cut (19, 1B 69) which results in a partial knife cut. There are two codes for this command and both perform the same function.

This command is processed regardless of which station is selected.

Example:

```
MSComm1.Output = Chr$(&H1A) or  
MSComm1.Output = Chr$(&H1B) & Chr$(&H6D)
```

Exceptions:

A line Feed is executed first if the printer buffer is not empty.

This command is executed (cuts the receipt) regardless of which station is selected.

Generate Tone

ASCII: ESC BEL

Hexadecimal: 1B 07

Decimal: 27 7

Generates an audible tone. This allows the application to provide an audible tone to the operator.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H07)
```

Return Home

ASCII: ESC <

Hexadecimal: 1B 3C

Decimal: 27 60

Moves the impact print head (unless it is already in the home position) to the home position.

This command is processed regardless of station, either receipt unit or slip unit.

Related Information:

The printer is able to detect carriage motor jams, eliminating the need to home the print head after each slip transaction.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H3C)
```

Initialize Printer

ASCII: ESC @

Hexadecimal: 1B 40

Decimal: 27 64

Default:	<u>Receipt</u>	<u>Slip</u>
Character Pitch:	15.6 CPI	13.9 CPI
Column Width:	44 characters (80mm) 32 characters (58mm)	45 characters
Extra Dot Rows:	2	3
Character Set:	Code Page 437	Code Page 437
Printing Position:	Column One	Column One

Clears the print line buffer and resets the printer to the default settings for the startup configuration (refer to Default settings above.)

Single-Wide, Single-High, Non-Rotated, and Left-Aligned characters are set and User-defined characters or logo graphics are cleared (Flash Memory is not affected). Tabs are reset to default settings. Receipt selection state is selected.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H40)
```

Set Slip Paper Eject LengthASCII: ESC C *n*Hexadecimal: 1B 43 *n*Decimal: 27 67 *n*

Value of *n*: 0 to 255

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H43) & Chr$(n)
```

Exception:

This command is ignored.

Select Receipt or Slip for Printing; Slip for MICR Read**ASCII:** ESC c 0 *n***Hexadecimal:** 1B 63 30 *n***Decimal:** 27 99 48 *n***Value of *n*:** 0 Journal selected

1, 2, 3 Receipt selected

4 Slip selected

Default of *n*: 1

Selects the station for printing. When the slip station is selected, the printer waits (based on the slip waiting time setting [ie: 1B 66 m n]) for the paper to be inserted. When the slip station has already been selected and the selection is changed, the form feed roller is opened.

If the station has already been selected and it is re-selected, no action takes place.

Example:

This statement selects the receipt for printing:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H63) & Chr$(&H30) & Chr$(&H01)
```

Exceptions:

Receiving the command discards unprinted data in the buffer, forcing a "beginning of line" state.

When *n* is out of range this command and its supporting operands are discarded.

Select Receipt or Slip for Setting Line SpacingASCII: ESC c 1 *n*Hexadecimal: 1B 63 31 *n*Decimal: 27 99 49 *n***Value of *n*:** 0 Journal selected

1, 2, 3 Select receipt

4 Select Slip

Default of *n* : 1

Selects which station receives the effects of the following commands:

1. Select Default Line Spacing (1B 32)
2. Set Line Spacing (1B 33)
3. Add *n* extra dot rows (16 *n*)

Example:

This statement selects the slip station for line spacing commands:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H63) & Chr$(&H31) & Chr$(&H04)
```

Exceptions:

This *n* is out of range this command it's supporting operands are discarded.

Select Sensors to Stop Printing

ASCII: ESC c 4 *n*

Hexadecimal: 1B 63 34 *n*

Decimal: 27 99 52 *n*

Value of *n*:

If this bit of <i>n</i> is 1	Function Performed
Bit 0, or bit 1	Stop Receipt on Receipt Low
Bit 4	Stop Slip if Trailing Edge Uncovered
Bit 5	Stop Slip if Leading Edge Uncovered

Default: 0

Determines which sensor causes the printer to stop printing on the respective station. The command does not affect the paper out sensor on the receipt station, which will automatically stop the printer when the paper is depleted.

Example:

This statement causes the receipt to stop on paper low and the slip to stop if the leading edge is uncovered (bits 0 and 5 equal to 1 yields hexadecimal 21 - binary 00100001):

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H63) & Chr\$(&H34) & Chr\$(&H21)

All other bits are ignored.

Enable or Disable Panel Buttons

ASCII: ESC c 5 *n*

Hexadecimal: 1B 63 35 *n*

Decimal: 27 99 53 *n*

Value of *n*: 0 = Enable

1 = Disable

Default: 0 (Enable)

Enables or disables the Paper Feed Button. If the last bit is 0, the Paper Feed Button is enabled. If the last bit is 1, the Paper Feed Button is disabled so pressing the paper feed button will result in no response.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H63) & Chr$(&H35) & Chr$(n)
```

Related Information:

Functions that require using the Paper Feed Button (except for the Execute Macro [1D 5E] command) cannot be used when it is disabled with this command.

Enable or Disable Slip Paper End Feeding StopASCII: ESC c 7 *n*Hexadecimal: 1B 63 37 *n*Decimal: 27 99 55 *n*Value of *n* : 0 = Enable

1 = Disable

Default: 0 (Enable)

Enables or disables the the slip paper end feeding stop function. When this feature is enabled the printer will print a line but will not perform a line feed when the slip paper end is detected.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H63) & Chr$(&H37) & Chr$(n)
```

Related Information:

When either the trailing edge sensor or the leading edge sensor does not sense the paper the printer recognizes this as a paper end condition.

Set Slip Paper Waiting Time

ASCII: ESC f m n

Hexadecimal: 1B 66 m n

Decimal: 27 102 m n

Value of *m* : MinutesValue of *n* : Tenth of seconds

Sets the time (in *m* minutes) that the printer waits for a slip to be inserted into the slip station. It also sets the time (*n* x 0.1 seconds) that the printer waits to close the platen and start printing once the slip has been inserted. The printer reads that a slip is inserted when the leading edge and trailing edge sensors are covered. The LED on the slip table is lit (green) when both sensors are covered.

If a slip is not inserted in the time specified, the receipt station is selected for the next function. If *m* = 0, the printer waits forever for a slip to be inserted. The times set by this command are used only by the command, Select Receipt or Slip for Printing, Slip for MICR Read (1B 63 30 *n*), with *n* set to 04.

Example:

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H66) & Chr\$(*m*) & Chr\$(*n*)

Generate Pulse to Open Cash Drawer**ASCII:** ESC p n p1 p2**Hexadecimal:** 1B 70 n p1 p2**Decimal:** 27 112 n p1 p2**Value of n:** 0, 48 = Drawer 1

1, 49 = Drawer 2

Value of p1: 0 - 255**Value of p2:** 0 - 255

Sends a pulse to open the cash drawer.

Formulas:

The value for either *p1* or *p2* is the hexadecimal number multiplied by 2 msec to equal the total time.

1. On time = *p1* x 2 msec
2. Off time = *p2* x 2 msec

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H70) & Chr$(n) & Chr$(n)
```

Related Information:

The off-time is the delay before the printer performs the next operation.

The recommend time for NCR cash drawers is 110 msec on time.

Refer to cash drawer specifications for required on and off times.

Select or Cancel Parallel Printing Mode on Receipt and Journal

ASCII: ESC z *n*

Hexadecimal: 1B 7A *n*

Decimal: 27 122 *n*

Because there is no journal station on the printer this command is not implemented and is ignored if received. The command and its supporting operands will be discarded.

Select Slip Station

ASCII: FS

Hexadecimal: 1C

Decimal: 28

Selects the Slip Station for all functions. The receipt station is the default setting after the printer is initialized or the Clear Printer (0x10) command is received. The Hex command: 1B 63 30 *n* , where *n* = 4 will also select the slip station.

Example:

MSComm1.Output = Chr\$(&H1C)

Exceptions:

This command is ignored if Asian mode is On by diagnostic setting.

Select Cut Mode and Cut Paper

ASCII: GS V *m* or GS V *m n*

Hexadecimal: 1D 56 *m* or 1D 56 *m n*

Decimal: 29 86 *m* or 29 86 *m n*

Value of *m*: Selects the mode as shown in the table

Value of *n*: Determines cutting position only if *m* is 65 or 66.

m	Feed and Cut Mode
0, 48	Full cut (no extra feed). Partial cut on the 7158/7167.
1, 49	Partial cut (no extra feed).
65	Feeds paper to cutting position + (<i>n</i> times vertical motion unit), and cuts the paper completely.
66	Feeds paper to cutting position + (<i>n</i> times vertical motion unit), and performs a partial cut.

Range of *m*: 0, 48; 1, 49

65, 66 (when used with *n*)

Range of *n*: 0 - 255

Default of *n*: 0

Default of *m*: 0

Selects a mode for cutting paper and cuts the paper. There are two formats for this command, one requiring one parameter *m*, the other requiring two parameters, *m* and *n*. The format is indicated by the parameter *m*.

Formulas: *n* times the vertical motion unit is used to determine the cutting position to the distance that the paper is fed.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H56) & Chr$(m) & Chr$(n)
```

Exceptions:

If *m* is out of the specified range, the command is ignored.

Select Receipt Station

ASCII: RS

Hexadecimal: 1E

Decimal: 30

Selects the Receipt Station for all functions. The receipt station is the default setting after the printer is initialized or the Clear Printer (0x10) command is received. The Hex command: 1B 63 30 n , where n = 1, 2, 3 will also select the receipt station.

Example:

```
MSComm1.Output = Chr$(&H1E)
```

Print Test Form

ASCII: US t

Hexadecimal: 1F 74

Decimal: 31 116

Prints the current printer configuration settings on the receipt.

Disabled in page mode.

Example:

```
MSComm1.Output = Chr$(&H1F) & Chr$(&H74)
```

Vertical Positioning and Print Commands

The vertical positioning and print commands control the vertical print positions of characters on the receipt and slip.

Print and Feed Paper One Line

ASCII: LF

Hexadecimal: 0A

Decimal: 10

Prints one line from the buffer and feeds paper one line.

Example:

```
MSComm1.Output = Chr$(&H0A)
```

Related Information:

Carriage Return + Line Feed, prints and feeds only one line.

Print and Eject Slip

ASCII: FF

Hexadecimal: 0C

Decimal: 12

Prints data from the buffer to the slip station and if the paper sensor is covered, reverses the slip out the front of the printer far enough to be accessible to the operator. The impact station opens the platen in all cases.

This command has the same code as the Print and Return to Standard Mode command, which is executed only when the printer is in Page Mode. When the printer is not in Page Mode this command executes the print and eject slip function.

Example:

```
MSComm1.Output = Chr$(&H0C)
```

Exceptions:

This command is ignored if the receipt station is the current station.

Print and Carriage Return**ASCII:** CR**Hexadecimal:** 0D**Decimal:** 13

Prints one line from the buffer and feeds paper one line. The printer can be set through the configuration menu to ignore or use this command. Some applications expect the command to be ignored while others use it as print command.

Example:

```
MSComm1.Output = Chr$(&H0D)
```

Related Information:

See Ignoring/Using the Carriage Return in *Diagnostics* for more information.

Carriage Return + Line Feed, prints and feeds only one line.

Feed *n* Print Lines**ASCII:** DC4 *n***Hexadecimal:** 14 *n***Decimal:** 20 *n*

Value of *n*: The number of lines to feed at current line height setting.

Range of *n*: 0 – 127 7156 Emulation Mode

0 – 255 7158 Native Mode or 7167 Native Mode

Feeds paper *n* lines at the current line height without printing.

Ignored on receipt if the current line is not empty.

Example:

```
MSComm1.Output = Chr$(&H14) & Chr$(n)
```

Feed *n* Dot RowsASCII: NAK *n*Hexadecimal: 15 *n*Decimal: 21 *n*Value of *n*: Receipt Slip*n*/203 inch *n*/72 inchRange of *n*: 0 – 127 7156 Emulation Mode

0 – 255 7158 Native Mode or 7167 Native Mode

Feeds paper *n* dot rows without printing. Receipt moves *n* rows if the print buffer is empty.

Example:

MSComm1.Output = Chr\$(&H15) & Chr\$(*n*)**Add *n* Extra Dot Rows**ASCII: SYN *n*Hexadecimal: 16 *n*Decimal: 22 *n*Value of *n*: Receipt Slip*n*/203 inch *n*/72 inchRange of *n*: 0 - 12Default: Receipt Slip

3 3

Adds *n* extra dot rows to the character height to increase space between print lines or decrease number of lines per inch.

Formulas:

The following table shows the relationship between the number of lines per inch and each extra dot row(s) added for both the receipt and slip stations:

Receipt Station			Slip Station		
Extra Rows	Lines Per Inch	Dot Rows	Extra Rows	Lines Per Inch	Dot Rows
0	8.47	24	0	10.29	7
1	8.13	25	1	9.00	8
2	7.81	26	2	8.00	9
3	7.52	27	3	7.20	10
4	7.25	28	4	6.55	11
5	7.00	29	5	6.00	12
6	6.77	30	6	5.54	13
7	6.55	31	7	5.14	14
8	6.35	32	8	4.80	15
9	6.16	33	9	4.50	16
10	5.98	34	10	4.24	17
11	5.81	35	11	4.00	18
12	5.64	36	12	3.79	19

Example:

```
MSComm1.Output = Chr$(&H16) & Chr$(n)
```

Print

ASCII: ETB

Hexadecimal: 17

Decimal: 23

Prints one line from the buffer and feeds paper one line. Executes LF on receipt. Executes LF on slip if previous character was not a CR.

Example:

```
MSComm1.Output = Chr$(&H17)
```

Set Line Spacing to 1/6 Inch

ASCII: ESC 2

Hexadecimal: 1B 32

Decimal: 27 50

Default: 0.13 Inch (3.33 mm)

Sets the default line spacing to 1/6 of an inch (4.25 mm).

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H32)
```

Set Line Spacing

ASCII: ESC 3 *n*

Hexadecimal: 1B 33 *n*

Decimal: 27 51 *n*

Value of *n*: *n*/406 inches on receipt

n/144 inches in slip

Range of *n*: 0 – 255

Default: Receipt .13 inch (3.37 mm or 7.52 lines per inch, 3 extra dot rows.).

Slip 14 inch (7.2 lines per inch, 3 extra dot rows.)

Sets the line spacing for the receipt and for the slip. For the receipt the spacing is set to *n*/406 inches. For the slip, the line spacing is set to *n*/144 inches. The line spacing equals the character height when *n* is too small.

If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion unit, the parameters of this command (Set Line Spacing) will be interpreted accordingly.

Related Information:

For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command in this document.

Print and Feed Paper

ASCII: ESC J *n*

Hexadecimal: 1B 4A *n*

Decimal: 27 74 *n*

Value of *n*: *n*/203 inches receipt

n/144 inches slip

Range of *n*: 0 - 255

Prints one line from the buffer and feeds the paper.

On the receipt station, the line height equals the character height when *n* is too small. This does not apply to the slip station. Use *n* = 0 to print a line without feeding the paper. This allows the printer to print on the last line of the slip (at .59 inches from the trailing edge) and still retain the slip in the feed rollers for reverse feeding the paper back out of the slip station.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H4A) & Chr$(n)
```

Related Information:

For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command in this document.

Print and Reverse Feed Paper

ASCII: ESC K *n*

Hexadecimal: 1B 4B *n*

Decimal: 27 75 *n*

Value of *n*: Slip = *n*/144 of an inch

Range of *n*: 0 - 255

Prints one line from the buffer and reverse feeds the paper *n*/144 of an inch on the slip station.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H4B) & Chr$(n)
```

Exceptions:

The receipt station cannot be reverse fed.

Print and Feed *n* LinesASCII: ESC d *n*Hexadecimal: 1B 64 *n*Decimal: 27 100 *n***Value of *n*:** Number of lines to be printed and fed.**Range of *n*:** 1 – 255

(0 is interpreted as 1 on the receipt station)

Prints one line from the buffer and feeds paper *n* lines at the current line height.

Example:

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H64) & Chr\$(n)

Print and Reverse Feed *n* LinesASCII: ESC e *n*Hexadecimal: 1B 65 *n*Decimal: 27 101 *n***Value of *n*:** The number of lines on the slip station to be reverse fed.**Range of *n*:** 0 – 255

Prints one line from the buffer and reverse feeds the paper *n* lines on the slip station. The receipt station cannot be reverse fed.

Example:

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H65) & Chr\$(n)

Reverse Feed *n* Lines**ASCII:** GS DC4 *n***Hexadecimal:** 1D 14 *n***Decimal:** 29 20 *n***Range of *n*:** 0 – 127 7156 Emulation Mode

0 – 255 7158 Native Mode or 7167 Native Mode

Reverses the paper feed in the slip station by *n* lines at the current spacing. The next character feed command returns the paper feed back to the normal feed direction. This command is ignored if slip is not the selected station. Current spacing is not a factor.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H14) & Chr$(n)
```

Reverse Feed *n* Dots**ASCII:** GS NAK *n***Hexadecimal:** 1D 15 *n***Decimal:** 29 21 *n***Value of *n*:** *n* dots at 1/72 inch**Range of *n*:** 0 – 127 7156 Emulation Mode

0 – 255 7158 Native Mode or 7167 Native Mode

Reverses the paper feed in the slip station by *n* dots at 1/72 inch (NCR 7150™ command). This command is ignored if receipt station is selected.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H15) & Chr$(n)
```

Set Horizontal and Vertical Minimum Motion Units**ASCII:** GS P *x y***Hexadecimal:** 1D 50 *x y***Decimal:** 29 80 *x y***Value of x:** Horizontal**Value of y:** Vertical**Range of x:** 0 - 255**Range of y:** 0 - 255**Default: of x:** 203**Default: of y:** 203

Sets the horizontal and vertical motion units to $1/x$ inch and $1/y$ inch respectively.

When *x* or *y* is set to 0, the default setting for that motion unit is used.

The default horizontal motion is *x* = 203.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H50) & Chr$(x) & Chr$(y)
```

Exceptions:

This command is ignored if slip station is selected.

Horizontal Positioning Commands

The horizontal positioning commands control the horizontal print positions of characters on the receipt and slip.

Horizontal Tab

ASCII: HT

Hexadecimal: 09

Decimal: 9

Moves the print position to the next tab position set by the Set Horizontal Tab Positions (1B 44 n1 n2 ... 00) command. The print position is reset to column one after each line.

Tab treats the left margin as column one, therefore changes to the left margin will move the tab positions.

When there are no tabs defined to the right of the current position, or if the next tab is past the right margin, line feed is executed (both slip and receipt.) HT has no effect in page mode. Printer initialization sets 32 tabs at column 9, 17, 25, ... (Every 8 characters)

Example:

```
MSComm1.Output = Chr$(&H09)
```

Set Column

ASCII: ESC DC4 n

Hexadecimal: 1B 14 n

Decimal: 27 20 n

Value of n: Receipt

Slip

1 - 44 (Standard,80 mm)	1 - 45 (Standard)
-------------------------	-------------------

1 - 56 (Compressed,80 mm)	1 - 55 (Compressed)
---------------------------	---------------------

1 - 32 (Standard,58mm)	
------------------------	--

1 - 42 (Compressed, 58mm)	
---------------------------	--

Default of n: 1

Prints the first character of the next print line in column *n*. It must be sent for each line not printed at column one. The value of *n* is set to one after each line.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H14) & Chr$(n)
```

Exceptions:

The command cannot be used with Single- or Double-Density graphics.

Set Absolute Starting Position

ASCII: ESC \$ *n1 n2*

Hexadecimal: 1B 24 *n1 n2*

Decimal: 27 36 *n1 n2*

Value of *n*: Number of dots to be moved from the beginning of the line.

Value of *n1*: Remainder after dividing *n* by 256.

Value of *n2*: Integer after dividing *n* by 256.

The values for *n1* and *n2* are two bytes in low byte, high byte word orientation.

Sets the print starting position to the specified number of dots (up to the right margin) from the beginning of the line. The print starting position is reset to the first column after each line.

Formulas:

Determine the value of *n* by multiplying the column for the absolute starting position by 10 (slip, or receipt standard pitch) or 8 (receipt compressed pitch). The example shows how to calculate column 29 (10 dots per column) as the absolute starting position.

$28 \times 10 = 280$ dots (beginning of column 29)

$280 / 256 = 1$, remainder of 24

n1 = 24 *n2* = 1

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H24) & Chr$(n1) & Chr$(n2)
```

Related Information:

This command is also used in the graphics mode on the receipt. See Graphics Commands in this chapter for more information.

If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion unit, the parameters of this command (Set Absolute Print Position) will be interpreted accordingly. For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command (1D 50) in this document.

Set Horizontal Tabs

ASCII: ESC D [n] k NUL

Hexadecimal: 1B 44 [n] k 00

Decimal: 27 68 [n] k 0

Value of n: Column for tab minus one.

n is always less than or equal to the current selected column width.

Value of k: 0 - 32

Default: Every 8 characters from column 1 (9, 17, 25, etc.) for normal print.

Sets up to 32 horizontal tab positions n columns from column one, but does not move the print position. See the Horizontal Tab (09) command.

The tab positions remain unchanged if the character widths are changed after the tabs are set. This command ends with hexadecimal 00; hexadecimal 1B 44 00 clears all tabs. Tabs assumed to be in strictly ascending order. A tab out of order terminates the command string as if it were 00, and remaining tab values are taken as normal data.

Formulas:

Set the tab positions in ascending order and put Hex 00 at the end.

Hex 1B 44 00 (number of tabs not specified) clears all tab positions.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H44) & Chr$(&H00)
```

Exceptions:

The tabs cannot be set higher than the column width of the current pitch.

Set Relative Print Position

ASCII: ESC \ n1 n2

Hexadecimal: 1B 5C n1 n2

Decimal: 27 92 n1 n2

Value of n:

To Move the Relative Starting Position Right of the Current Position by *n* dots:

n1 = Remainder after dividing *n* by 256.

n2 = Integer after dividing *n* by 256.

The values for *n1* and *n2* are two bytes in low byte, high byte word orientation.

To Move the Relative Starting Position Left of the Current Position by *n* dots:

n1 = Remainder after dividing (65,536-*n*) by 256

n2 = Integer after dividing (65,536-*n*) by 256

The values for *n1* and *n2* are two bytes in low byte, high byte word orientation.

Moves the print starting position the specified number of dots either right (up to the right margin) or left (up to the left margin) of the current position. The print starting position is reset to the first column after each line.

Formulas:

To move to the left:

Determine the value of *n* by multiplying the number of columns to move left of the current position by 13 (receipt standard pitch) or 10 (slip or receipt compressed pitch). The example shows how to set the relative position two columns in standard pitch (10 dots per column) to the left of the current position.

2 x 10 = 20 dots (two columns to be moved left of the current position)

65,536-20 = 65516

65,516/256 = 255, remainder of 236

n1 = 236 n2 = 255

To move to the right:

Determine the value of *n* by multiplying the number of columns to move right of the current position by 10 (slip or receipt standard pitch) or 8 (receipt compressed pitch). The example shows how to set the relative position two columns in standard pitch (10 dots per column) to the right of the current position.

2 x 10 = 20 dots (two columns to be moved right of the current position)

20/256 = 0, remainder of 20

n1 = 20 n2 = 0

Example:

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H5C) & Chr\$(n1) & Chr\$(n2)

Related Information:

If the Set Horizontal and Vertical Minimum Motion Units command (1D 50) is used to change the horizontal and vertical minimum motion unit, the parameters of this command (Set Relative Print Position) will be interpreted accordingly. For more information, see the description of the Set Horizontal and Vertical Minimum Motion Units command (1D 50) in this document.

Compatibility Information (7167 receipt vs. 7156 receipt)

There is a difference in the normal behavior of this command in 7158 Native Mode/7167 Native Mode as compared to the original 7156. The difference exists when the command is used to move to the left. The 7156 processes the whole print string prior to putting it in the buffer for the print head. This method of processing allows the 7156 to backup in the print string and replace characters and their associated attributes when a "Set Relative Print Position" command instructs the printer to move the print position to the left.

In order to improve the speed of printing, the 7167 moves the data into a buffer for the print head when it receives it. When the "Set Relative Print Position" command contains a move to the left, this causes the new data to overstrike the previous data. This behavior can be used to an application's advantage to provide the ability to create compound characters on the receipt station.

Select Justification

ASCII: ESC a *n*

Hexadecimal: 1B 61 *n*

Decimal: 27 97 *n*

Value of *n*: 0, 48 = Left Aligned

1, 49 = Center Aligned

2, 50 = Right Aligned

Range of *n*: 0 – 2, 48-50

Default: 0 (Left aligned)

Specifies the alignment of the characters, graphics, logos, and bar codes on the receipt station.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H61) & Chr$(n)
```

Exceptions:

The command is valid only when input at the beginning of a line.

Set Left Margin

ASCII: GS L *nL nH*

Hexadecimal: 1D 4C *nL nH*

Decimal: 29 76 *nL nH*

Range of *nL*: 0 - 255

Range of *nH*: 0 - 255

Default: 80 mm width 576 dots (the maximum printable area)

58 mm width 424 dots (the maximum printable area)

Sets the left margin of the printing area. The left margin is set to $((nH \times 256) + nL)$ times horizontal motion unit inches. The horizontal motion units are set by the Set Horizontal and Vertical Minimum Motion Units command (1D 50), described in this manual.

The width of the printing area is set by the Set Printing Area Width command (1D 57), which follows this command. See the Set Printing Area Width command (1D 57) in this document for a description of that command.

If the setting exceeds the printable area, the maximum value of the printable area is used. The maximum printable area is 576 dots. See the illustration.

Formulas:

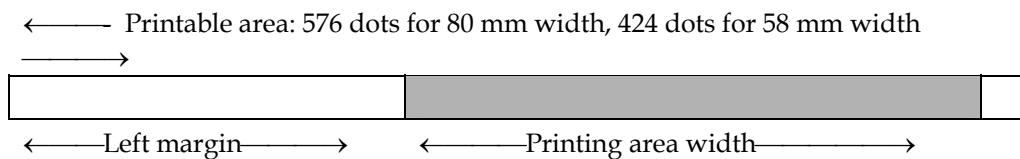
To set the left margin to one inch at the default horizontal motion unit of 1/203 inches, send the four-byte string:

GS L 203 0

Or, to set the left margin to two inches at the default horizontal motion unit of 1/203 units per inch, send the four-byte string:

GS L 150 1

Where 2 inches = 406/203, and 406 = $(1 \times 256) + 150$.



Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H4C) & Chr$(nL) & Chr$(nH)
```

Exceptions:

The command is effective only at the beginning of a line.

This command is ignored if the line buffer is not empty, and only effects the Receipt interface.

Set Printing Area Width

ASCII: GS W *nL nH*

Hexadecimal: 1D 57 *nL nH*

Decimal: 29 87 *nL nH*

Range of *nL*: 0 – 255

Range of *nH*: 0 - 255

Default: 80 mm width 576 dots (the maximum printable area)

58 mm width 424 dots (the maximum printable area)

Sets the width of the printing area. If the setting exceeds the printable area, the maximum value of the printable area is used.

The width of the printing area is set to $((nH \times 256) + nL)$ times horizontal motion unit inches. The horizontal motion units are set by the Set Horizontal and Vertical Minimum Motion Units command (1D 50).

The width of the printing area follows the Set Left Margin command (1D 4C). See the Set Left Margin command (1D 4C...) earlier in this document for a description.

Formulas:

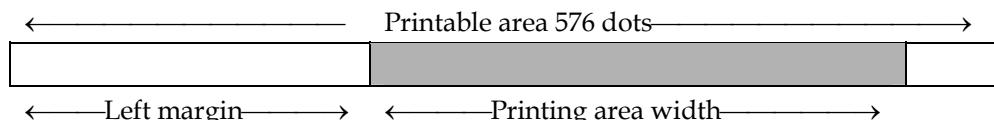
To set the width of the printing area to one inch at the default horizontal motion unit of 1/203 inches, send the four-byte string:

GS W 203 0

Or, to set the width of the printing area to two inches at the default horizontal motion unit of 1/203 units per inch, send the four-byte string:

GS W 150 1

Where 2 inches = 406/203, and 406 = $(1 \times 256) + 150$.



Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H57) & Chr$(nL) & Chr$(nH)
```

Exceptions:

This command is effective only at the beginning of a line.

This command is ignored if the line buffer is not empty, and only effects the Receipt interface.

If the setting exceeds the printable area, the maximum value of the printable area is used. The maximum printable area is 576 dots for 80 mm paper width and 424 dots for 58 mm paper width. See the illustration in the Set Left Margin command (1D 4C).

Print Characteristic Commands

These commands control what the printed information looks like: selection of character sets, definition of custom-defined characters, and setting of margins. The commands are described in order of their hexadecimal codes

Select Double-Wide Characters

ASCII: DC2

Hexadecimal: 12

Decimal: 18

Prints double-wide characters. The printer is reset to single-wide mode after a line has been printed or the Clear Printer (0x10) command is received. Double-wide characters may be used in the same line with single-wide characters.

Example:

```
MSComm1.Output = Chr$(&H12)
```

Select Single-Wide Characters

ASCII: DC3

Hexadecimal: 13

Decimal: 19

Prints single-wide characters. Single-wide characters may be used in the same line with double-wide characters.

Example:

```
MSComm1.Output = Chr$(&H13)
```

Select 90 Degree Counter-Clockwise Rotated Print

ASCII: ESC DC2

Hexadecimal: 1B 12**Decimal:** 27 18

Rotates characters 90 degrees counter-clockwise. The command remains in effect until the printer is reset or until a Clear Printer (0x10), Select or Cancel Upside-Down Print (1B 7B), or Select or Cancel Rotated Print (1B 56) command is received.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H12)
```

Exceptions:

This command is valid only at the beginning of a line.

Rotated print and non-rotated print characters cannot be used together in the same line.

Related Information:

See Summary of Rotated Printing in this chapter.

Select Pitch (Column Width)ASCII: ESC SYN *n***Hexadecimal:** 1B 16 *n***Decimal:** 27 22 *n***Value of *n*:** 0 = Standard Pitch

1 = Compressed Pitch

Default: 0 (Standard pitch)

Selects the character pitch for a print line.

Formulas:

The following table provides the print characteristics for both pitches on the receipt and slip stations.

Pitch	Receipt Columns	Receipt CPI	Slip Columns	Slip CPI
Standard	44 for 80 mm paper	15.6	45	13.9
	32 for 58 mm paper			
Compressed	56 for 80 mm paper	20.3	55	17.1
	42 for 58 mm paper			

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H16) & Chr$(n)
```

Related Information:

See "Technical Specifications" for descriptions of character pitches (print modes).

Set Character Right-Side Spacing

ASCII: ESC SP *n*

Hexadecimal: 1B 20 *n*

Decimal: 27 32 *n*

Range of *n*: 0 - 32

Default: 0

Sets the right side character spacing to [*n* x horizontal or vertical motion units]. Values for this command are set independently in Standard and Page Mode.

The units of horizontal and vertical motion are specified by the Set Horizontal and Vertical Minimum Motion Units (1D 50...) command. Changes in the horizontal or vertical units do not affect the current right side character spacing. When the horizontal or vertical motion unit is changed by the Set Horizontal and Vertical Minimum Motion Units (1D 50...) command the value must be in even units and not less than the minimum amount of horizontal movement.

In Standard Mode the horizontal motion unit is used.

In Page Mode the horizontal or vertical motion unit differs and depends on the starting position of the printable area. When the starting printing position is the upper left or lower right of the printable area (set by Select Print Direction in Page Mode, 1B 54 n) the horizontal motion unit (*x*) is used. When the starting printing position is the upper right or lower left of the printable area (set by Select Print Direction in Page Mode, 1B 54 n) the vertical motion unit (*y*) is used.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H20) & Chr$(n)
```

Exception:

This command is ignored in 7156 Emulation Mode and is only valid on the receipt station.

Select Print Modes

ASCII: ESC ! n

Hexadecimal: 1B 21 n

Decimal: 27 33 n

Value of n: Pitch selection (standard, compressed, double high, or double wide.)

Bit	Function	0	1
Bit 0	Pitch	Standard Pitch ¹ 15.6 CPI (Receipt) 44 Col/Line (80 mm) 32 Col/Line (58 mm) 13.9 CPI (Slip) 45 Col/Line	Compressed Pitch 20.3 CPI (Receipt) 56 Col/Line (80 mm) 42 Col/Line (58 mm) 17.1 CPI (Slip) 55 Col/Line
Bit 3	Emphasized Mode	Canceled	Set
Bit 4	Double-high ²	Canceled	Set
Bit 5	Double-wide	Canceled	Set
Bit 7	Underlined Mode	Canceled	Set

Bits 1, 2, 6 are not used.

¹Standard and compressed pitch cannot be used together in the same line.

²Double-high characters cannot be used with normal characters in the same line, nor can they be used on the slip station.

Default: 0 (for bits 0, 3, 4, 5, 7)

Selects the print mode: standard, compressed, double high, or double wide.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H21) & Chr$(n)
```

Related Information:

The bits in this command perform the same function as the standalone functions:

1B 16 n	Select Pitch
1B 45 n	Emphasized
12	Double-wide
13	Single-wide
1B 2D n	Underline

Select or Cancel User-Defined Character Set

ASCII: ESC % *n*

Hexadecimal: 1B 25 *n*

Decimal: 27 37 *n*

Value of *n*: 0= Code Page 437

1= User-defined (RAM character set)

2= Code Page 850

Range: 0 - 2

Default: 0 (Code Page 437)

Selects the character set. When an undefined RAM character is selected, the Code Page 437 character is used. See the *Printing Specification Guide* for the character sets.

Example:

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H25) & Chr\$(n)

Define User-Defined Characters

Receipt	Slip
ASCII: ESC & 3 c1 c2 n1 d1 ... nn dn	ESC & 0 c1 c2 d1 ... dn
Hexadecimal: 1B 26 3 c1 c2 n1 d1 ... nn dn	1B 26 0 c1 c2 d1 ... dn
Decimal: 27 38 3 c1 c2 n1 d1 ... nn dn	27 38 0 c1 c2 d1 ... dn

Defines and enters downloaded characters into RAM or Flash. The command may be used to overwrite single characters. User-defined characters are available until power is turned off or the Initialize Printer command (1B 40) is received.

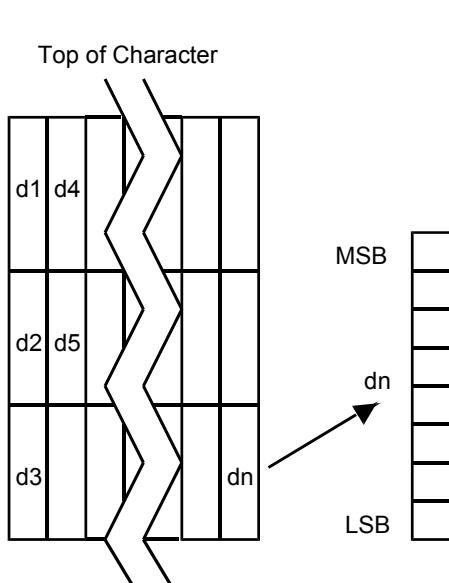
Any invalid byte (*s, c1, c2, n1*) aborts the command.

User-defined character sets for both slip and receipt may be used at the same time. The command clears bit image logo data from RAM. The illustration below provides a sample of a character cell.

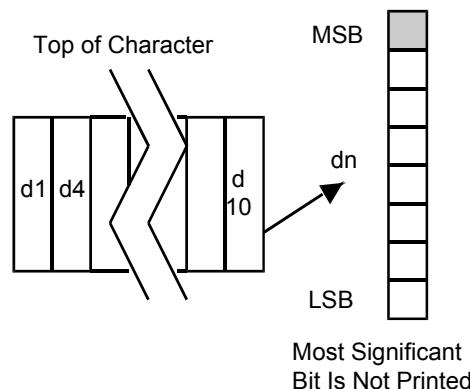
Defining User-Defined Characters for the Slip and Receipt Station

Defines and enters downloaded characters into RAM.

Receipt Characters (1B 26 3)



Slip Characters (1B 26 0)



Values and Ranges:

Receipt

c = the ASCII codes of the first (*c1*) and last (*c2*) characters respectively

c1 = Hex 20-FF (Hex 20 is always printed as a space)

c2 = Hex 20-FF (Hex 20 is always printed as a space)

To define only one character, use the same code for both *c1* and *c2*.

n = the number of dot columns for the nth character as specified by *n1* ... *nn*

n = 1-10 (standard pitch), 12 and less accepted but ignored

n = 1-8 (compressed pitch), 12 and less accepted but ignored

d = the column data for the nth character as specified by *d1* ... *dn*

The number of bytes for a particular character cell is $3 \times n1$.

The bytes are printed down and across each cell.

Slip

c = the ASCII codes of the first (*c1*) and last (*c2*) characters respectively

c1 = Hex 20-FF (Hex 20 is always printed as a space)

c2 = Hex 20-FF (Hex 20 is always printed as a space)

To define only one character, use the same code for both *c1* and *c2*.

d = the column data for the nth character as specified by *d1* ... *dn*

Each character is defined by 12 bytes (only bytes 2-11 are printed.)

Each byte is one 7-dot high column (full- or half-dot column.)

Overlapped dots are not printed

The data must contain $[(c2 - c1 + 1) \times 12]$ bytes

Related Information:

See 1D 22 *n* (Select Memory Type Where to Save User-Defined Fonts.)

Select or Cancel Underline Mode

ASCII: ESC - *n*

Hexadecimal: 1B 2D *n*

Decimal: 27 45 *n*

Value of *n*: 0, 48 = Cancel underline mode

1, 49 = Select underline mode

Default of *n*: 0 (Cancels underline mode)

Turns underline mode on or off. Underlines cannot be printed for spaces set by the Horizontal Tab, Set Absolute Start Position, or Set Relative Print Position commands.

This command and the Select Print Mode(s) command (1B 21) turn underline on and off in the same way.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H2D) & Chr$(n)
```

Exceptions:

This command is ignored if *n* is out of the specified range.

This command is only available in 7158 Native Mode and 7167 Native Mode.

Copy Character Set from ROM to RAM

ASCII: ESC : 0 0 0

Hexadecimal: 1B 3A 30 30 30

Decimal: 27 58 48 48 48

Default: Code Page 437

Copies characters in the active ROM set to RAM. Use this command to re-initialize the User-Defined Character Set. Code Page 437 is copied by default at initialization.

The command is ignored if current font is the user font.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H3A) & Chr$(&H30) & Chr$(&H30)
& Chr$(&H30)
```

Related Information:

To modify characters in one of the character set variations, such as Rotated Print, select one of the Rotated Print commands, copy to RAM, then use the Define User-Defined Character Set command (1B 26).

Cancel User-Defined Characters

ASCII: ESC ? *n*

Hexadecimal: 1B 3F *n*

Decimal: 27 63 *n*

Value of *n*: Specified character code

Range of *n*: 32 - 255

Cancels the pattern defined for the character code specified by *n*. After the user-defined character is canceled, the corresponding pattern from Code Page 437 is printed.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H3F) & Chr$(n)
```

Exceptions:

This command is ignored if *n* is out of range or if the user-defined character is not defined.

Select or Cancel Emphasized Mode

ASCII: ESC E *n*

Hexadecimal: 1B 45 *n*

Decimal: 27 69

Value of *n*: 0 (bit 0), not selected

1 (bit 0), selected

Range of *n*: 0 - 255

Default: 0 (bit 0)

Starts or stops emphasized printing on slip and receipt. In Emphasized Mode on the slip, each line is printed twice to improve penetration of multi-part forms and increase print contrast. The second pass is printed the same direction as the first to ensure accuracy of the overprint. Printing speed decreases due to the second printing pass.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H45) & Chr$(n)
```

Exceptions:

Only the lowest bit of *n* is effective.

Emphasized printing cannot be used with bit-images or downloaded bit-images.

Related Information:

This command and the Select Print Mode(s) command (1B 21) function identically.

Select Double Strike

7156 Emulation

7158 Native and

7167 Native Mode

ASCII: ESC G

ESC G *n*

Hexadecimal: 1B 47

1B 47 *n*

Decimal: 27 71

27 71 *n*

Value of *n*:

0 = Off

1 = On

Turns double strike mode on for the slip station. Overprints a second pass of the print line on the slip station to improve penetration of multi-part forms and increase print contrast. The second pass is printed the same direction as the first to ensure accuracy of the overprint. The printer is reset to the standard print mode after a line has been printed or after a Clear Printer (0x10) command is received.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H47) & Chr$(n)
```

Exceptions:

These settings do not apply in Page Mode. However they can be set or cleared in Page Mode.

Double-strike printing cannot be used with bit-images or downloaded bit-images.

This command functions the same as the 7156 when the printer is in 7156 Emulation Mode. In Native Mode, the command takes a parameter to enable and disable it.

Related Information:

Printer output is the same as in Emphasized Mode.

Cancel Double Strike

ASCII: ESC H

Hexadecimal: 1B 48

Decimal: 27 72

Turns off double strike mode on the slip station in **7156 Emulation Mode**.

This command is ignored in the **7158 Native Mode** and **7167 Native Mode**.

This command works on both slip and receipt stations.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H48)
```

Select or Cancel Italic PrintASCII: ESC I *n*Hexadecimal: 1B 49 *n*Decimal: 27 73 *n*

Value of *n*: 0 = Off

1 = On

(When 0 and 1 are the Least Significant Bit, LSB)

Default: 0 (Off)

Turns Italic print mode on or off. This command is only available in **7158 Native Mode** and **7167 Native Mode**. Italic print mode is available for built-in, user-defined characters. This command only works on the receipt station.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H49) & Chr$(n)
```

Exceptions:

Only the lowest bit of *n* is valid. This command is only valid for the receipt station in **7158 Native Mode** and **7167 Native Mode**.

Select International Character SetASCII: ESC R *n* or ESC t *n*Hexadecimal: 1B 52 *n* or 1B 74 *n*Decimal: 27 82 *n* or 27 116 *n*[7158 Native Mode and](#)[7156 Emulation](#)

7167 Native Mode.

Value of *n*: 0 = Code Page 437 US English 0 = Code Page 437

1 = Code Page 850 Multilingual 1 = Code Page 850

2 = Code Page 852 Slavic

3 = Code Page 860 Portuguese

4 = Code Page 863 French Canadian

5 = Code Page 865 Nordic

6 = Code Page 858 Multilingual with Euro Symbol

7 = Code Page 866 Cyrillic

8 = Code Page 1252 Windows Latin I

9 = Code Page 862 Hebrew

20 = Code Page Katakana

21 = Code Page 874 Thailand

22 = Code Page 864 Arabic

128 = Code Page 932 Kanji

129 = Code Page 936 Simple Chinese

130 = Code Page Korean

131 = Code Page Traditional Chinese

Selects the character set to be used. See *Print Specifications* for the character sets.

There are two codes for this command. Both codes perform the same function.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H52) & Chr$(n)
```

Related Information:

This command may also be known as Select Character Code Table.

Select Character Code Table

See the previous command, Select International Character Set.

Select or Cancel Unidirectional Printing Mode

ASCII: ESC U *n*

Hexadecimal: 1B 55 *n*

Decimal: 27 85 *n*

Value of *n*: 0 = select bi-directional

1 = select unidirectional

Default: 0 (bi-directional)

Toggles between unidirectional and bi-directional printing on the slip station. Unidirectional printing increases column alignment and provides higher quality printing. Printing is normally bi-directional because of the faster speed.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H55) & Chr$(n)
```

Select or Cancel 90 Degrees Clockwise Rotated Print

ASCII: ESC V *n*

Hexadecimal: 1B 56 *n*

Decimal: 27 86 *n*

Value of *n*: 0 = Cancel

1 = Set

Default: 0 (Cancel)

Rotates characters 90 degrees clockwise. The command remains in effect until the printer is reset or the Clear Printer (0x10) command is received. See Summary of Rotated Printing in this chapter.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H56) & Chr$(n)
```

Select Print Color

ASCII: ESC r n

Hexadecimal: 1B 72 n

Decimal: 27 114 n

Value of n: 0 = Black

1 = 2nd Color

Default: 0 (Black)

Selects color printing. Color printing is valid for character, graphics, logo, and barcodes.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H72) & Chr$(n)
```

Exceptions:

The command is valid only for receipt station.

Select or Cancel Upside Down Printing Mode

ASCII: ESC { n

Hexadecimal: 1B 7B n

Decimal: 27 123 n

Value of n: 0 = Cancel

1 = Set

Default: 0 (Cancel)

Prints upside-down characters. The character order is inverted in the buffer so text is readable. The command remains in effect until the Rotated Print (1B 12) command is received. Only bit 0 is used. Bits 1-7 are not used. See Summary of Rotated Printing in this document for more information.

Example:

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H7B) & Chr\$(n)

Exceptions:

The command is valid only at the beginning of a line.
The Rotated Print command (1B 12) cancels this command.

Select Character Size

ASCII: GS ! n

Hexadecimal: 1D 21 n

Decimal: 29 33 n

Value of n: 1 - 8 = vertical number of times normal font

1 - 8 = horizontal number of times normal font

Range of n: 00 - 07, 10 - 17, ... 70 - 77

Default of n: 0

Selects the character height using bits 0 to 2 and selects the character width using bits 4 to 7, as follows:

Character Width Selection

Hex	Decimal	Width
00	0	1 (normal)
10	16	2 (two times width)
20	32	3 (three times width)
30	48	4 (four times width)
40	64	5 (five times width)
50	80	6 (six times width)
60	96	7 (seven times width)
70	112	8 (eight times width)

Character Height Selection

Hex	Decimal	Height
00	0	1 (normal)
01	1	2 (two times height)
02	2	3 (three times height)
03	3	4 (four times height)
04	4	5 (five times height)
05	5	6 (six times height)
06	6	7 (seven times height)
07	7	8 (eight times height)

This command is effective for all characters (except for HRI characters).

In Standard Mode, the vertical direction is the paper feed direction, and the horizontal direction is perpendicular to the paper feed direction. However, when character orientation changes in 90 degree clockwise-rotation mode, the relationship between vertical and horizontal directions is reversed.

In Page Mode, vertical and horizontal directions are based on the character orientation. When characters are enlarged with different sizes on one line, all the characters on the line are aligned at the baseline.

The Select Print Mode (1B 21 n) command can also select or cancel double-width and double-height modes. However, the setting of the last received command is effective.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H21) & Chr$(n)
```

Exceptions:

If *n* is out of the defined range, this command is ignored. This command is only valid for the receipt station.

This is only available in 7158 Native Mode and 7167 Native Mode..

Select or Cancel White/Black Reverse Print Mode

ASCII: GS B *n*

Hexadecimal: 1D 42 *n*

Decimal: 29 66 *n*

Value of *n*: 0 = Off

Range of *n*: 1 = On(Only the lowest bit is used.)

Default of *n*: 0 – 255

0 (Off)

Turns on White/Black reverse printing mode. This command is only available in 7158 Native Mode and 7167 Native Mode.. In White/Black reverse printing mode, print dots and non-print dots are reversed, which means that white characters are formed by printing a black background. When the White/Black reverse printing mode is selected it is also applied to character spacing which is set by Right-Side Character Spacing (1B 20).

This command can be used with built-in characters and user-defined characters, but does not affect the space between lines.

White/Black Reverse Print Mode does not affect bit image, downloaded bit image, bar code, HRI characters, and spacing skipped by Horizontal Tab (09), Set Absolute Starting Position (1B 24...), and Set Relative Print Position (1B 5C).

White/Black reverse mode has a higher priority than Underline Mode. When Underline Mode is on and White/Black Reverse Print Mode is selected, Underline Mode is disabled, but not canceled.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H42) & Chr$(n)
```

Exceptions:

This command is only valid on the receipt station.

This is only available in 7158 Native Mode and 7167 Native Mode..

Select or Cancel Smoothing Mode

ASCII: GS b n

Hexadecimal: 1D 62 n

Decimal: 29 98 n

This command is ignored.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H62) & Chr$(n)
```

Select Superscript or Subscript Modes

ASCII: US ENQ n

Hexadecimal: 1F 05 n

Decimal: 31 05 n

Value of n: 0 = Normal character size

1 = Select subscript size

2 = Select superscript size

Default: 0 (normal size)

Turns superscript or subscript modes on or off. This attribute may be combined with other characters size settings commands (12, 13, 1B 21 *n*, 1D 21 *n*, ...)

This command is only available on the receipt station in [7158 Native Mode](#) and [7167 Native Mode..](#)

Example:

```
MSComm1.Output = Chr$(&H1F) & Chr$(&H05) & Chr$(n)
```

Exceptions:

This command is ignored if *n* is out of the specified range.

This is only available in [7158 Native Mode](#) and [7167 Native Mode..](#)

Summary of Rotated Printing

The table shows the combinations of Set/Cancel Upside-Down Print, Set/Cancel Rotated Print (clockwise), and Rotated Print (counterclockwise). Rotated CCW is mutually exclusive with the other two commands. Unintended consequences may result when rotated CCW is mixed with other commands.

The samples of the print show only the normal size characters. Double-wide and double-high characters are printed in the same orientation (double-high characters cannot be printed on the slip station). They may also be mixed on the same line.

Upside Down (1B 7B <i>n</i>)	Rotated CW (1B 56 <i>n</i>)	Rotated CCW (1B 12)	Resulting Output
Canceled	Canceled	Cleared	A B C
Canceled	Set	X	C B A
Set	Canceled	X	A B C
Set	Set	X	C B A
X	X	Set	A B C

Note: The following print modes cannot be mixed on the same line:

1. Standard and compressed pitch
2. Vertical (normal) and rotated
3. Right-side up and upside down
4. Single high (normal) and double high

Graphics Commands

These commands are used to enter and print graphics data and are described in order of their hexadecimal codes.

Download BMP Logo

ASCII: ESC (+*.BMP file data)

Hexadecimal: 1B (+*.BMP file data)

Decimal: 27 (+*.BMP file data)

Value: Maximum width = 576

Maximum height = 512

Enters a BMP file data into RAM or Flash.

This command is used by sending the file data of a monochrome BMP file preceded by a 0 x 1B. The bit map is stored in the printer in the same manner as a down loaded bit image.

The downloaded BMP file can be printed by using the Print Downloaded Bit Image (1D 2F m) command.

Example:

1. MSComm1.Output = Chr\$(&H1B)
2. Open bitmapfile For Binary As filehandle
3. filecontent = Input(LOF(filehandle), filehandle)
4. MSComm1.Output = filecontent & vbLf
5. This last step is to use the print downloaded image command to print

Exceptions:

BMP file images that are not monochrome are ignored. This command is only valid for the receipt station.

This is only available in 7158 Native Mode and 7167 Native Mode..

Related Information:

See 1D 22 n (Select Memory Type to save logos.)

For the 7158 native mode and 7167 Native Mode. of operation, if multiple logos are to be defined and used, this command should be preceded by the Select Current Logo command to define the number by which this downloaded logo is to be referenced.

Select Bit Image Mode

ASCII: ESC * m n1 n2 d1 ... dn

Hexadecimal: 1B 2A m n1 n2 d1 ... dn

Decimal: 27 42 m n1 n2 d1 ... dn

Sets the print resolution and enters one line of graphics data into the print buffer. Excess data is accepted but ignored. Any print command is required to print the data, after which the printer returns to normal processing mode.

See the illustration graphic representation of the bit image.

In 7156 Emulation Mode, slip graphics are only 7-bit (MSB not printed.) In 7158 Native Mode and 7167 Native Mode, slip graphics are 8-bit.

Values:

Receipt Station

Value of m	Mode	No. of Dots (Vertical)	No. of Dots (Horizontal)	Number of Dots/Line
0	8 Dot Single Density	8 (68 DPI)	0-288 (101DPI, 80mm) 0-212 (101DPI, 58mm)	8x288 (80mm) 8x212 (58mm)
1	8 Dot Double Density	8 (68 DPI)	0-576 (101DPI, 80mm) 0-424 (101DPI, 58mm)	8x576 (80mm) 8x424 (58mm)
32	24 Dot Single Density	24 (203 DPI)	0-288 (101DPI, 80mm) 0-212 (101DPI, 58mm)	24x288 24x212 (58mm)
33	24 Dot Double Density	24 (203 DPI)	0-576 (101DPI, 80mm) 0-424 (101DPI, 58mm)	24x576 (80mm) 24x424 (58mm)

<u>Slip Station</u>		<u>No. of Dots**</u>	<u>No. of Dots (Horizontal)</u>	<u>Number of Dots/Line</u>
<u>Value of <i>m</i></u>	<u>Mode</u>	<u>(Vertical)</u>		
0	7 Dot Single Density	7 (72 DPI)	224 (69.5 DPI)	7 x 224
1*	7 Dot Double Density	7 (72 DPI)	448 (139 DPI)	7 x 448
32, 33	Not Available on Slip			

In single density, one byte (7 dots) is printed in each full dot column; in double density, one byte is printed in each half/full dot column.

*Adjacent horizontal dots (overlapping dots) are not printed on the slip.

**In 7158 Native Mode and 7167 Native Mode.. There are 8 vertical dots.

<u>Value of <i>n</i> (8-Dot Single-Density Mode)</u>	<u>Value of <i>n</i> (24-Dot Single-Density Mode)</u>	<u>Value of <i>d</i></u>
$n1 + (256 \times n2)$	$3 \times [n1 + (256 \times n2)]$	Number of Bytes of Data*

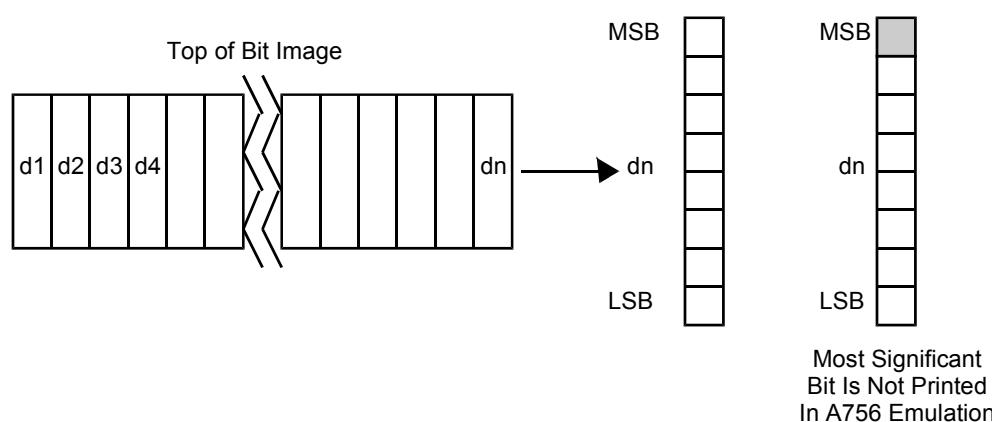
*Printed left to right (8-dot mode); Printed down then across (24-dot mode).

Formulas:

8 Dot Single Density $n1 + (256 \times n2)$

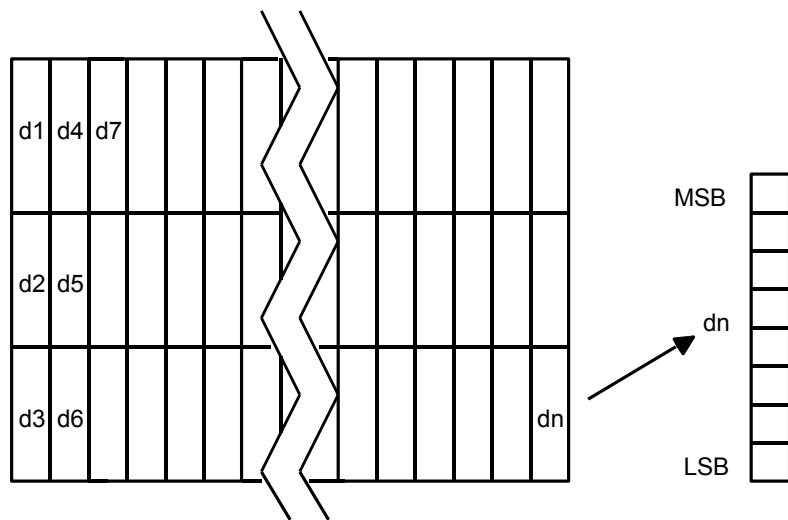
24 Dot Single Density $3 \times [n1 + (256 \times n2)]$

8-Dot Single-Density Mode—Receipt and Slip



24-Dot Single-Density Mode—Receipt Only

Top of Bit Image



Select Double-Density Graphics

ASCII:	ESC Y <i>n1 n2 d1 ... dn</i>	or	ESC L <i>n1 n2 d1 ... dn</i>
Hexadecimal:	1B 59 <i>n1 n2 d1 ... dn</i>	or	1B 4C <i>n1 n2 d1 ... dn</i>
Decimal:	27 89 <i>n1 n2 d1 ... dn</i>	or	27 76 <i>n1 n2 d1 ... dn</i>

Value of *n*:

Value of <i>n</i> (8-Dot Single Density Mode)	Value of <i>n</i> (24-Dot Single Density Mode)	Value of <i>d</i>
<i>n1 + (256 × n2)</i>	$3 \times [n1 + (256 \times n2)]$	Number of Bytes of Data (Printed Down, Then Across)

Enters one line of 7 (slip in 7156 mode) or 8-dot double-density graphics into the print buffer. Any print command is required to print the line, after which the printer returns to normal processing mode. The number of bytes sent is represented by the formulas in the table.

Each bit corresponds to one horizontal dot. Compare to Set Bit Image Mode (1B 2A, m=1) earlier in this document.

Exception:

1B 4C *n1 n2 d1 ... dn* is only valid in 7156 Emulation Mode.

Select the Current Logo (Downloaded Bit Image)

ASCII: GS # *n*

Hexadecimal: 1D 23 *n*

Decimal: 29 35 *n*

Range of *n*: 0 – 255

Selects a logo to be defined or printed. The active logo *n* remains in use until this command is sent again with a different logo *n*.

When this command precedes a logo definition, that definition is stored in Flash Memory as logo *n*. If there is already a different definition in Flash Memory for logo *n*, the first is inactivated and the new definition is used. The inactive definition is not erased from Flash and continues to take up space in Flash Memory.

When this command precedes a logo print command and *n* is different from the previously active logo selected, the printer retrieves the logo definition for *n* from Flash Memory and prints it. If there is no definition for logo *n*, then no logo is printed.

In the case of a previously existing application that expects only one possible logo, the printer will not receive the Select Current Logo (1D 23 *n*) command. In this case, the printer assigns 0 as the active logo identifier. It automatically stores any new logo definition in Flash Memory as logo 0, inactivating any previous logo 0 definition. If the Flash Memory space available for logos fills up with inactive logo 0 definitions, the

firmware erases the old definitions at the next power cycle. This is the only case in which the printer erases Flash Memory without an application command.

In the case of a new application using multiple logos, the Select Current Logo (1D 23 *n*) command is used. After that, the printer no longer automatically erases the logo definition Flash Memory page when it fills with multiple definitions. A new application using multiple logos, writing a user-defined character set into Flash Memory, or both, is responsible for erasing the logo and user-defined character set Flash Memory page when the logo area is full or before a new character set is defined.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H23) & Chr$(n)
```

Exceptions:

This command is only valid for the receipt station. However, it will be processed correctly regardless of whether the receipt station is currently selected.

Define Downloaded Bit Image

ASCII: GS * *n1 n2 d1 ... dn]*

Hexadecimal: 1D 2A *n1 n2 d1 ... dn]*

Decimal: 29 42 *n1 n2 d1 ... dn*

Value of *n1*: See the following table.

Value of *n2*: See the following table.

Value of *d*: See the following table.

Value of <i>n1</i>	Value of <i>n2</i>	Value of <i>d</i>
1-72 (8 × <i>n1</i> = Number of Horizontal Dot Columns)	1-64 (Number of Vertical Bytes)*	Bytes of Data (Printed Down Then Across)

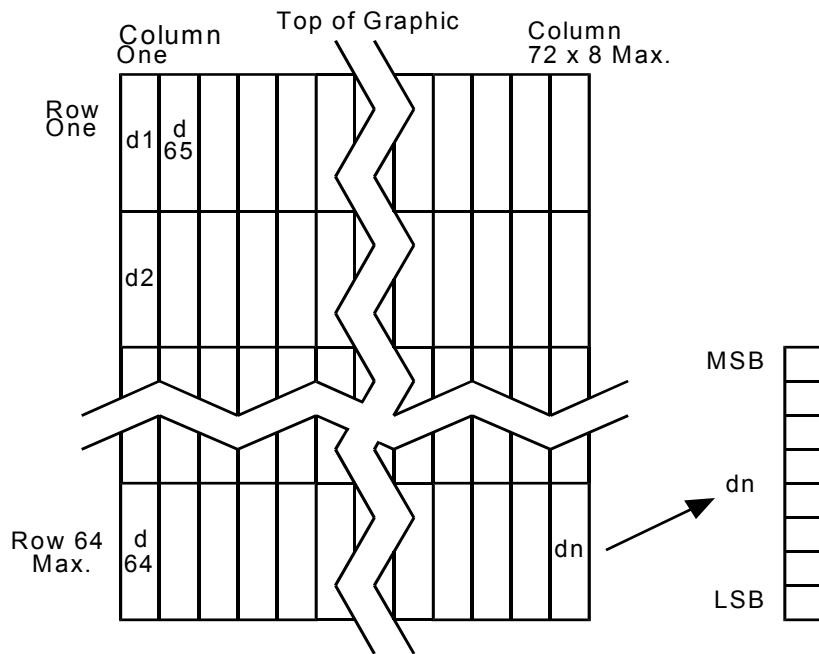
*The number of bytes sent is represented by the following formula:

$n = 8 \times n1 \times n2$ (*n1* × *n2* must be less than or equal to 4608).

Enters a downloaded bit image (such as a logo) into RAM or Flash with the number of dots specified by *n1* and *n2* in 7156 Emulation, unless loaded into Flash. The downloaded bit image is available until power is turned off, another bit image is defined, or either Initialize Printer (1B 40), or Define User-Defined Character Set (1B 26), command is received.

By default, 7156 Emulation loads downloaded bit image to SRAM, while 7158 Native Mode and 7167 Native Mode loads them to Flash.

See the illustration on the following page for a graphic representation of the downloaded bit image.



Exceptions:

See the illustration for the Print Downloaded Bit Image command (1D 2F) for a representation of the bit image.

Related Information:

See 1D 22 n (Select Memory Type to store logos) and 1D 23 n (Select the Current Logo.)

For the 7158 native mode and 7167 Native Mode of operation, if multiple logos are to be defined and used, this command should be preceded by the Select Current Logo command to define the number by which this downloaded logo is to be referenced.

Print Downloaded Bit Image

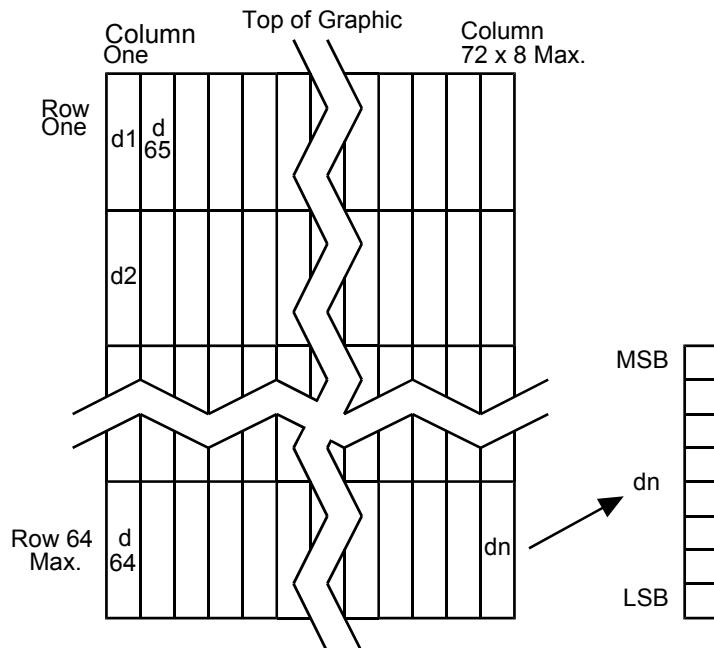
ASCII:	GS / <i>m</i>
Hexadecimal:	1D 2F <i>m</i>
Decimal:	29 47 <i>m</i>
Value and Range of <i>m</i>:	

Value of <i>m</i>	Print Mode	Vertical DPI ¹	Horizontal DPI*
0	Normal	203	203
1	Double Wide	203	101
2	Double High	101	203
3	Quadruple	101	101

¹Dot density measured in dots per inch

Prints a downloaded bit image in RAM or Flash on the receipt station at a density specified by *m*. It is ignored if any data is in the print buffer, if the downloaded bit image is undefined, or if the data defined exceeds one line.

See the illustration for a representation of the bit image.



Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H2F) & Chr$(m)
```

Related Information:

See 1D 22 n (Select Memory Type to store logos) and 1D 23 n (Select the Current Logo.)

Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap**ASCII:** US EOT *n***Hexadecimal:** 1F 04 *n***Decimal:** 31 04 *n***Value:** 0 = Off

1 = On

Default: 0 (Off)

Selects or cancels 6 dot/mm in 7158 Emulation Mode and 7167 Native Mode.

When the 6 dot/mm emulation is selected, logos and graphics are expanded horizontally and vertically to emulate their size on a 6 dot/mm printer. The horizontal positioning commands also emulate positioning on a 6 dot/mm printer.

Example:

```
MSComm1.Output = Chr$(&H1F) & Chr$(&H04) & Chr$(n)
```

Exception:

This command is available in 7158 Native Mode and 7167 Native Mode only.

Status Commands

Status Command Introduction

The 7167 has three methods of providing status to the application. These methods are through Batch Status Commands, Real Time Status Commands, and Auto Status Back. An application may use one or more of these methods to understand the current status of the printer. A brief description of each of these methods follows.

Batch Status Commands – These commands are sent to the printer and stored in the printer's buffer. Once the printer has processed all the previous commands these commands are processed and the proper status is returned to the application. In the event a condition causes the printer to go BUSY, it stops processing commands from the printer buffer. If a Batch Status Command remained in the buffer during this busy condition, it would not be processed. In fact, no Batch Commands are processed while the printer is in this state.

Real-Time Commands – These commands are sent to the printer and are NOT stored in the printer's buffer. Instead, they are acted on immediately (regardless of the printer's BUSY status) and their response (if any) is returned to the application. This gives the application the ability to query the printer when it is in a busy state in order to correct whatever fault has occurred.

Auto Status Back – This mechanism allows the application developer to program the printer to automatically respond with a four byte status when certain conditions in the printer change.

Please see the subsequent sections for a more detailed description of these status commands. At the end of this Status Commands section is a page entitled "Recognizing Data from the Printer". This describes how to interpret what command or setting (in the case of Auto Status Back) triggered a response from the printer.

Batch Mode

For RS-232C printers, these commands enable the printer to communicate with the host computer following the selected handshaking protocol, either DTR/DSR or XON/XOFF. They are stored in the printer's data buffer as they are received, and are handled by the firmware in the order in which they are received.

When a fault occurs, the printer will go busy at the RS-232C interface and not respond to any of the Batch Mode Printer Status commands. If the fault causing the busy condition can be cleared, such as by loading paper, or letting the thermal print head cool down, the printer will resume processing the data in its receive buffer.

Transmit Peripheral Device Status

ASCII: ESC u 0

Hexadecimal: 1B 75 0

Decimal: 27 117 0

Bit 0Bit 1**Return Value:** 1 = Drawer 1 closed 1 = Drawer 2 closed

0 = Drawer 1 open

0 = Drawer 2 open

(Bits 2-7 are not used)

Transmits current status of the cash drawers. One byte is sent to the host computer. In DTR/DSR protocol the printer waits for DSR = SPACE. If a drawer is not connected, the status will indicate it is closed.

Example:

MSComm1.Output = Chr\$(&H1B) & Chr\$(&H75) & Chr\$(&H0)

Transmit Printer Status

ASCII: ESC v

Hexadecimal: 1B 76

Decimal: 27 118

Sends status data to the host computer. The printer sends one byte to the host computer when it is not busy or in a fault condition. In DTR/DSR protocol, the printer waits for DSR = SPACE.

Status Byte (RS-232C)

Bit	Function	0 Signifies	1 Signifies
0	Receipt Paper	Ok	Low
1	Receipt Cover or Front Cover	Closed	Open
2	Receipt Paper	Ok	Out
3	Knife or Slip	Ok	Jam
4	Always Zero		
5	Slip Leading Edge Sensor	Not Covered	Covered
6	Slip Trailing Edge Sensor	Not Covered	Covered
7	Thermal Head Temp or Voltage	Ok	Out of Range

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H76)
```

Related Information:

See Real Time Commands, in this document for details about fault condition reporting.

Transmit Printer IDASCII GS I *n***Hexadecimal** 1D 49 *n***Decimal** 29 73 *n***Value of *n*** 1, 49 = Printer model ID

2, 50 = Type ID

3, 51 = ROM version ID

4, 52 = Logo definition

Transmits the printer ID specified by *n* as follows:

N	Printer ID	Specification	ID (hexadecimal)
1, 49	Printer model ID	NCR 7167	0xA1 (7167 Native Mode)
1, 49	Printer model ID	NCR 7158	0x28 (7158 Native Mode)
1, 49	Printer model ID	NCR 7156	0x26 (7156 Emulation)
1, 49	Printer model ID	NCR 7150	0x02 (7150 Mode)
2, 50	Type ID	Installed options	Refer to the table below
3, 51	ROM version ID	ROM version	0x00
4, 52	Logo Definition	Logo Definition	Refer to table below

Type ID (n=2)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	No two-byte character code installed.
	On	01	1	Two-byte character code installed.
1	Off	00	0	No knife installed.
	On	02	2	Knife installed.
2	-	-	-	Undefined
3	Off	00	0	No MICR installed.
	On	08	8	MICR installed.
4	Off	00	0	Not used. Fixed to Off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off.

Type ID (n=4)

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	No logo definition loaded by application.
	On	01	1	Logo loaded by application.
1	-	-	-	Undefined
2	-	-	-	Undefined
3	-	-	-	Undefined
4	Off	00	0	Not used. Fixed to Off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to Off.

Example:

MSComm1.Output = Chr\$(&H1D) & Chr\$(&H49) & Chr\$(n)

Transmit Printer ID, Remote Diagnostics Extension

ASCII: GS I @ *n*

Hexadecimal: 1D 49 40 *n*

Decimal: 29 73 64 *n*

Values of *n*: Refer to table above

Range of *n*: 32 – 255

(not all defined but reserved)

Performs the remote diagnostic function specified by *n*.

Eighteen remote diagnostic items are defined: eight printer ID items and ten printer tally items. A group of four remote diagnostic functions is assigned to each diagnostic item. Most of the diagnostic items are maintained in non-volatile memory (NVRAM), but some are maintained in read-only memory (ROM).

The table that follows describes the variables.

The first item group in the table includes an example of data to send and to receive. Data sent from the host to write to NVRAM must contain all digits required by the remote diagnostic item. All data must be ASCII. The printer returns all ASCII data. It is preceded by the parameter *n* to identify the diagnostic item and is followed by a Carriage Return (0D) to signify the end of the data.

The command performs the remote diagnostic function specified by *n* as described in the following table.

Value of <i>n</i>			Remote Diagnostic Item	Function
ASC	Hex	Dec		
Space	20	32	Serial #, 10 digit ASCII	Write to NVRAM Example, send 14 bytes to printer: GS I @ 0x20 1234567890
!	21	33	Serial # , 10 digit ASCII	Write to NVRAM, and print on receipt to verify Example, send 14 bytes to printer: GS I @ ! 1234567890 This will print on receipt: Serial # written: 1234567890
"	22	34	Serial #	Not available, cannot clear Serial # item
#	23	35	Serial #	Return Serial #, preceded by <i>n</i> to identify Printer returns 12 bytes in above example: #1234567890<CR>
\$	24	36	Class/model #, 15 digit ASCII	Write to NVRAM
%	25	37	Class/model #	Write to NVRAM, and print on receipt to verify
'	27	39	Class/model #	Return Class/model #, returns 17 bytes
+	2B	43	Boot firmware part #, 12 digit ASCII	Return Boot firmware part #, returns 14 bytes
/	2F	47	Boot firmware CRC, 4 digit ASCII	Return Boot firmware CRC, returns 6 bytes
3	33	51	Flash firmware part #, 12 digit ASCII	Return Flash firmware part #, returns 14 bytes
7	37	55	Flash firmware CRC, 4 digit ASCII	Return Flash firmware CRC, returns 6 bytes
Ç	80	128	Receipt lines tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM Example, send 12 bytes to printer: GS I @ Ç00010000 To set receipt lines tally to 10,000
ü	81	129	Receipt lines tally	Write to NVRAM, and print on receipt to verify Example, send 12 bytes to printer: GS I @ ü00010000 This will print on receipt: Receipt tally written: 10,000
é	82	130	Receipt lines tally	Clear receipt lines tally to 0
â	83	131	Receipt lines tally	Return receipt lines tally, preceded by <i>n</i> to identify Printer returns 10 bytes in above example: â00010000<CR>

Value of <i>n</i> ASC	Hex	Dec	Remote Diagnostic Item	Function
ä	84	132	Knife cut tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
à	85	133	Knife cut tally	Write to NVRAM, and print on receipt to verify
å	86	134	Knife cut tally	Clear knife cut tally to 0
ç	87	135	Knife cut tally	Return knife cut tally, returns 10 bytes
ê	88	136	Slip character tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
ë	89	137	Slip character tally	Write to NVRAM, and print on receipt to verify
è	8A	138	Slip character tally	Clear slip character tally to 0
ï	8B	139	Slip character tally	Return slip character tally, returns 10 bytes
î	8C	140	MICR read tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
ì	8D	141	MICR read tally	Write to NVRAM, and print on receipt to verify
Ä	8E	142	MICR read tally	Clear MICR read tally to 0
Å	8F	143	MICR read tally	Return MICR read tally, returns 10 bytes
É	90	144	Hours on tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
æ	91	145	Hours on tally	Write to NVRAM, and print on receipt to verify
Æ	92	146	Hours on tally	Clear Hours on tally to 0
ô	93	147	Hours on tally	Return Hours on tally, returns 10 bytes
ù	97	151	Boot firmware version	Return Boot firmware version, returns 6 bytes
ú	A3	163	Flash firmware version	Return Flash firmware version, returns 6 bytes
ñ	A4	164	Flash cycles tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
Ñ	A5	165	Flash cycles tally	Write to NVRAM, and print on receipt to verify
¤	A6	166	Flash cycles tally	Clear Flash cycles cut tally to 0

Value of n ASC	Hex	Dec	Remote Diagnostic Item	Function
Ω	A7	167	Flash cycles tally	Return Flash cycles cut tally, returns 10 bytes
ι	A8	168	Knife jams tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
Γ	A9	169	Knife jams tally	Write to NVRAM, and print on receipt to verify
Τ	AA	170	Knife jams tally	Clear Knife jams tally to 0
½	AB	171	Knife jams tally	Return Knife jams tally, returns 10 bytes
¼	AC	172	Cover openings tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
ι	AD	173	Cover openings tally	Write to NVRAM, and print on receipt to verify
«	AE	174	Cover openings tally	Clear Cover openings tally to 0
»	AF	175	Cover openings tally	Return Cover openings tally, returns 10 bytes
█	B2	178	Max Temperature tally	Clear Max temp tally
	B3	179	Max Temperature tally	Return Max Temperature tally, returns 10 bytes
-	B4	180	Slip lines tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
=	B5	181	Slip lines tally	Write to NVRAM, and print on receipt to verify
	B6	182	Slip lines tally	Clear Slip lines tally to 0
π	B7	183	Slip lines tally	Return Slip Lines tally, returns 10 bytes

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H49) & Chr$(&H40) & Chr$(n) & CHR$(&H0D)
```

Transmit Status**ASCII:** GS r *n***Hexadecimal** 1D 72 *n*

:

Decimal: 29 114 *n***Value of *n*:** 1, 49 = printer status

2, 50 = cash drawer status

3, 51 = slip paper status

4, 52 = Flash Memory status

Transmits the status specified by *n*. This is a batch mode command which transmits the response after all prior data in the receive buffer has been processed. There may be a time lag between the printer receiving this command and transmitting the response, depending on the receive buffer status.

When DTR/DSR RS232C communications handshaking control is selected, the printer transmits the one byte response only when the host signal DSR indicates it is ready to receive data.

When XON/XOFF RS232C communications handshaking control is selected, the printer transmits the one byte response regardless of the host signal DSR.

When Auto Status Back (ASB) is enabled using the Enable/Disable Automatic Status Back command (1D 61), the status transmitted by this command (Transmit Status) and the ASB status must be differentiated according to the information found in Recognizing Data from the Printer. This is found in the Real Time Commands section of this document.

The status bytes to be transmitted are described in the following four tables.

Printer Status ($n = 1$ or $n = 49$)

Bit	Off/On	Hex	Decimal	Status for Transmit Status
0	Off	00	0	Receipt paper adequate.
	On	01	1	Receipt paper low.
1	Off	00	0	Receipt paper adequate.
	On	02	2	Receipt paper low.
2	Off	00	0	Receipt paper present.
	On	04	4	Receipt paper exhausted.
3	Off	00	0	Receipt paper present.
	On	08	8	Receipt paper exhausted.
4	Off	00	0	Not used. Fixed to off.
5	Off	00	0	Slip leading edge sensor: paper present
	On	20	32	Slip leading edge sensor: no paper.
6	Off	00	0	Slip trailing edge sensor: paper present
	On	40	64	Slip trailing edge sensor: no paper.
7	Off	00	0	Not used. Fixed to off.

Cash Drawer Status ($n = 2$ or $n = 50$)

Bit	Off/On	Hex	Decimal	Status for Transmit Status
0	Off	00	0	One or both cash drawers open.
	On	01	1	Both cash drawers closed.
1	Off	00	0	One or both cash drawers open.
	On	02	2	Both cash drawers closed.
2	-	-	-	Undefined
3	-	-	-	Undefined
4	Off	00	0	Not used. Fixed to off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to off.

Slip Paper Status ($n = 3$ or $n = 51$)

Value of Byte Returned	Slip Status
0	There is no more printing space on the current slip, or the slip paper is not selected.
1 to 8	<p>Remaining print area on the current slip, in number of lines, at the currently set line spacing, when the trailing edge sensor has become uncovered.</p> <p>Until the trailing edge sensor becomes uncovered the value reported will be 6, because there are at least 6 lines remaining.</p> <p>There can be 7 or 8 lines remaining when the slip line spacing has been set to less than 7.2 lines per inch.</p>

Flash Memory Status (*n* = 4 or *n* = 52)

Bit	Off/On	Hex	Decimal	Status for Transmit Status
0	Off	00	0	Undefined. Fixed to off.
1	Off	00	0	Undefined. Fixed to off.
2	Off	00	0	User data storage write successful.
	On	04	4	User data storage write failed. Specified area not erased.
3	Off	00	0	Flash logo area adequate. Definition stored.
	On	08	8	Flash logo area not adequate for recent definition.
4	Off	00	0	Not used. Fixed to off.
5	Off	00	0	No thermal user-defined characters written to Flash
	On	20	32	Thermal user-defined characters written to Flash.
6	Off	00	0	No impact user-defined characters written to Flash.
	On	04	64	Impact user-defined characters written to Flash.
7	Off	00	0	Not used. Fixed to off.

Range of *n*:

1 - 4

49 - 52

Example:`MSComm1.Output = Chr$(&H1D) & Chr$(&H72) & Chr$(n)`**Exceptions:**When *n* is out of the specified range, the command is ignored.**Send Printer Software Version****ASCII:** US V**Hexadecimal:** 1F 56**Decimal:** 31 86

The printer returns 8 bytes containing the boot and Flash software version. The first 4 bytes returned are an ASCII string for the boot version. The second 4 bytes are an ASCII string for the boot version. Example: for 1.234.56(8bytes), the boot version is 1.23 and the Flash version is 4.56.

Example:`MSComm1.Output = Chr$(&H1F) & Chr$(&H56)`

Recognizing Data from the Printer

An application sending various Real Time and non-Real Time commands to which the printer responds can determine which command a response belongs to by the table below.

Responses to Transmit Peripheral Device Status (1B 75) and Transmit Paper Sensor Status (1B 76) are non-Real Time responses and will arrive in the order in which they were solicited.

Batch Mode Response		Response Recognized By:									
ASCII	HEX										
ESC u 0	1B 75 0	0	0	0	0	0	0	x	x	x	Binary
ESC v	1B 76	0	0	0	0	0	x	x	x	x	Binary
GS I n	1D 49 n	0	x	x	0	x	x	x	x	x	Binary
GS r n	1D 72 n	0	x	x	0	x	x	x	x	x	Binary

Real-Time Response		Response Recognized By:									
ASCII	HEX										
GS EOT n	1D 04 n	0	x	x	1	x	x	1	0	0	Binary
DLE EOT	10 04 n	0	x	x	1	x	x	1	0	0	Binary
n											
GS ENQ	1D 05	1	x	x	x	x	x	x	x	x	Binary
XON		0	0	0	1	0	0	0	1	1	Binary
XOFF		0	0	0	1	0	0	1	1	1	Binary

Auto Status Back (ASB)		Response Recognized By:									
ASB Byte 1		0	x	x	1	x	x	0	0	0	Binary
ASB Bytes 2-4		0	x	x	0	x	x	x	x	x	Binary

Real Time Commands

These commands provide an application interface to the printer even when the printer is not handling other commands (RS-232C communication interface only):

1. Real Time Status Transmission (GS Sequence and DLE Sequence)
2. Real Time Request to Printer (GS Sequence and DLE Sequence)
3. Real Time Printer Status Transmission

The Batch Mode Printer Status commands are placed in the printer's data buffer as they are received and handled by the firmware in the order in which they are received. If the paper exhausts while printing data that was in the buffer ahead of the status command, the printer goes busy at the RS-232C interface and suspends processing the data in the buffer until paper is reloaded. This is true for all error conditions: knife home error, slip paper jam, thermal print head overheat, etc.

In addition, there is no way to restart the printer after a paper jam, or to cancel a slip waiting condition when using the Wait for Slip command.

The Real Time commands are implemented in two ways to correct these problems. Both implementations offer the same functionality; which one you choose depends on the current usage of your application.

Preferred Implementation

For a new application the GS (1D) sequences are recommended to avoid possible misinterpretation of a DLE (0x10) sequence as a Clear Printer (0x10 0, ASCII DLE NUL) command.

An application using these GS (1D) sequences, does not need to distinguish for the printer between the new real time commands and the Clear Printer command. This implementation is ideal for an existing 7156 application that already uses the Clear Printer command or for a new application being developed.

Alternate Implementation

The alternate implementation uses the DLE (0x10) sequences as implemented on other printers. An application using these DLE (0x10) sequences and the original 7156 Clear Printer command (0x10) must distinguish for the printer between the new real time commands and the Clear Printer command by adding a NUL (0x00) to the Clear Printer command.

An application using these DLE (0x10) sequences must also send the second byte of the sequence within 100 milliseconds of the first, to prevent the first byte being mistaken for a Clear Printer command.

Rules for Using Real Time Commands

Three situations must be understood when using real time commands.

First, the printer executes the Real Time command upon receiving it and will transmit status regardless of the condition of the DSR signal.

Second, the printer transmits status whenever it recognizes a Real Time Status Transmission command sequence, even if that sequence happens to occur naturally within the data of another command, such as graphics data.

In this case the sequence will also be handled correctly as the graphics data it is intended to be when the graphics command is executed from the buffer.

Third, care must be taken not to insert a Real Time command into the data sequence of another command that consists of two or more bytes.

In this case the printer will use the real time command sequence bytes instead of the other command's parameter bytes when finally executing that other command from the buffer; the other command will NOT be executed correctly.

These three situations generally preclude use of standard DOS drivers for the serial communication ports when using real time commands.

Moving Data Through the Buffer

Another consideration is that an application should take care not to let the buffer fill up with real time commands when the printer is busy at the RS-232C interface. A busy condition at the RS-232C interface can be determined by bit 3 of the response to 1D 05 or 1D 04 1 or 10 04 1. The reason for a particular busy condition can be determined by other responses to 1D 04 n or 10 04 n.

Although the printer responds to Real Time commands when it is busy, it will place them into the buffer behind any other data there, and flush them out in the order in which they were received. When the printer is busy due simply to buffer full (that is, it can't print data as fast as it can receive it), then data continues to be processed out of the buffer at approximately print speed and the Real Time commands will eventually get flushed out.

When the printer is busy due to an error condition, then data stops being processed out of the buffer until the condition clears one way or another. In either case, but more quickly in the case of an error condition, the buffer can fill with real time commands.

When the DLE sequences are being used, the last byte stored when the buffer fills up could be the DLE code, with no room for the subsequent EOT or ENQ. When this lone DLE byte is finally processed out of the buffer it will be interpreted as a Clear Printer command.

Similarly, when the GS sequences are being used, the last byte stored when the buffer fills up could be the GS code, with no room for the subsequent EOT or ETX or ENQ. When this lone GS byte is finally processed out of the buffer it will use the next byte, whatever it is, as the second byte in its GS sequence.

To guard against this situation, an application should determine the cause of a busy condition and take appropriate action or pace further real time commands to avoid filling the buffer. There are a minimum of 256 bytes available in the printer's buffer when it goes busy.

Real Time Status Transmission

GS Sequence DLE Sequence

ASCII: GS EOT *n* DLE EOT *n*

Hexadecimal: 1D 04 *n* 10 04 *n*

Decimal: 29 4 *n* 16 4 *n*

Value of *n*: GS/DLE Sequence

1 = Transmit printer status

2 = Transmit RS-232C busy status

3 = Transmit error status

4 = Transmit receipt paper status

5 = Slip paper status

Transmits the selected one byte printer status specified by *n* in Real Time according to the following parameters. This command includes two sequences: GS and DLE and using either or will produce the same result.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H04) & Chr$(n)
```

Exceptions:

The command is ignored if *n* is out of range.

An application using the DLE sequence must send EOT within 100 milliseconds of DLE or the printer will misinterpret the DLE and execute a Clear Printer command. Avoid this possibility by using the 1D 04 *n* sequence, which is handled exactly the same as 10 04 *n*.

Related Information:

1 = Transmit Printer Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off
1	On	02	2	Fixed to On
2	Off	00	0	One or both cash drawers open
	On	04	4	Both cash drawers closed
3	Off	00	0	Not busy at the RS-232C interface
	On	08	8	Printer is Busy at the RS-232C interface
4	On	10	16	Fixed to On
5				Undefined
6				Undefined
7	Off	00	0	Fixed to Off

2 = Transmit RS-232C Busy Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off
1	On	02	2	Fixed to On
2	Off	00	0	Both receipt and cassette doors closed
	On	04	4	Receipt or cassette door open
3	Off	00	0	Paper Feed Button is not pressed
	On	08	8	Paper Feed Button is pressed
4	On	10	16	Fixed to On
5	Off	00	0	Printing not stopped due to paper condition
	On	20	32	Printing stopped due to paper condition
6	Off	00	0	No error condition
	On	40	64	Error condition exists in the printer
7	Off	00	0	Fixed to Off

3 = Transmit Error Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off
1	On	02	2	Fixed to On
2	Off	00	0	No slip motor or flip jam
	On	04	4	Slip motor or flip jam occurred
3	Off	00	0	No knife error
	On	08	8	Knife error occurred
4	On	10	16	Fixed to On
5	Off	00	0	No unrecoverable error
	On	20	32	Unrecoverable error occurred
6	Off	00	0	Thermal print head temp./power supply voltage are in range
	On	40	64	Thermal print head temp./power supply voltage are out of range
7	Off	00	0	Fixed to Off

4 = Transmit Receipt Paper Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off
1	On	02	2	Fixed to On
2	Off	00	0	Receipt paper adequate
	On	04	4	Receipt paper low
3	Off	00	0	Receipt paper adequate
	On	08	8	Receipt paper low
4	On	10	16	Fixed to On
5	Off	00	0	Receipt paper present
	On	20	32	Receipt paper exhausted
6	Off	00	0	Receipt paper present
	On	40	64	Receipt paper exhausted
7	Off	00	0	Fixed to Off

5 = Transmit Slip Paper Status

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Fixed to Off
1	On	02	2	Fixed to On
2	Off	00	0	Slip paper selected
	On	04	4	Receipt paper selected
3	Off	00	0	Not waiting for slip
	On	08	8	Waiting for slip
4	On	10	16	Fixed to On
5	Off	00	0	Slip leading edge sensor: paper preset
	On	20	32	Slip leading edge sensor: no paper
6	Off	00	0	Slip trailing edge sensor: paper preset
	On	40	64	Slip trailing edge sensor: no paper
7	Off	00	0	Fixed to Off

Real Time Request to Printer

	<u>GS Sequence</u>	<u>DLE Sequence</u>
ASCII:	GS ETX <i>n</i>	or DLE ENQ <i>n</i>
Hexadecimal:	1D 03 <i>n</i>	or 10 05 <i>n</i>
Decimal:	29 3 <i>n</i>	or 16 5 <i>n</i>
Value of <i>n</i>:	1 = Recover and restart 2 = Recover and clear buffers 3 = Cancel slip waiting	

The printer responds to a request from the host specified by *n*. This command includes two sequences: GS and DLE. The operations performed depend on the value of *n*, according to the following parameters.

***n* = 1:**

Restarts printing from the beginning of the line where an error occurred, after recovering from the error. Print settings that are normally preserved from line to line, such as character height and width, are still preserved with this command. This sequence is ignored except when the printer is busy due to an error condition.

If the receipt is selected, this command will attempt recovery from a knife error. Other errors associated with the receipt, such as paper out or print head overheating, can be recovered from only by clearing the specific condition, such as loading paper or letting the print head cool down.

If the slip is selected, this command will attempt recovery from a slip motor or flip jam by re-homing the print head and waiting for a slip to be inserted before restarting the print. Other errors associated with the slip, such as cassette door open, can be recovered from only by clearing the specific condition, such as closing the cassette door.

n = 2:

Recovers from an error after clearing the receive and print buffers. Print settings that are normally preserved from line to line, such as character height and width, are still preserved with this command. This sequence is ignored except when the printer is busy due to an error condition.

If the slip was selected when the error occurred, the receipt becomes selected when the buffers are cleared. When printing on the slip is to continue, the slip must be selected again.

The same error recovery possibilities exist as for *n* = 1.

n = 3:

Cancels the slip waiting status. This sequence is ignored except when the printer is waiting for a slip to be inserted.

When slip waiting is canceled, the receive and print buffers are cleared and the receipt is selected. When printing on the slip is to continue, the slip must be selected again.

Example using the GS sequence:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H03) & Chr$(n)
```

Exceptions:

The command is ignored if *n* is out of range

An application using the DLE sequence must send ENQ within 100 milliseconds of DLE or the printer will misinterpret the DLE and execute a Clear Printer command. Avoid this possibility by using the 1D 03 n sequence that is handled exactly the same as 10 05 n.

Real Time Printer Status Transmission

ASCII: GS ENQ

Hexadecimal: 1D 05

Decimal: 29 5

Transmits one byte status of the printer in real time.

Value of Byte:

Bit	Status	Hex	Decimal	Function
0	Off	00	0	Receipt paper adequate
	On	01	1	Receipt paper low
1	Off	00	0	Receipt paper adequate
	On	02	2	Receipt paper low
2	Off	00	0	Both receipt and cassette doors closed
	On	04	4	Receipt or cassette door open
3	Off	00	0	Not busy at the RS-232C interface
	On	08	8	Printer is busy at the RS-232C interface
4	Off	00	0	One or both cash drawers open
	On	1	16	Both cash drawers closed
5	Off	00	0	Paper present at both slip sensors
	On	20	32	Paper not present at one or both slip sensors
6	Off	00	0	No error condition
	On	40	64	Error condition exists in the printer
7	On	00	0	Fixed to On

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H05)
```

Auto Status Back Commands

Select or Cancel Automatic Status Back

ASCII: GS a *n*

Hexadecimal: 1D 61 *n*

Decimal: 29 97 *n*

Value of *n*: Status of ASB

Enables or disables automatic status back (ASB) and specifies the status items. This command is a batch mode command; that is, it is processed after all prior data in the receive buffer has been processed. There may be a time lag between the printer receiving this command and changing the ASB response, depending on the receive buffer status.

If any of the status items listed are selected, ASB is enabled and the printer automatically transmits 4 status bytes whenever the selected status changes. If no status is selected, ASB is disabled. All four status bytes are transmitted without checking DSR.

If the error status is enabled, a change in the following conditions will trigger the ASB:

1. Cash Drawer
2. Receipt Cover
3. Knife Error
4. Out-of-Range Print head Temperature
5. Out-of-Range Voltage
6. Paper Exhaust Status
7. Slip Paper

The bits of *n* are defined in the table.

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Cash drawer status disabled.
	On	01	1	Cash drawer status enabled.
1	Off	00	0	RS-232C Busy status disabled.
	On	02	2	RS-232C Busy status enabled.
2	Off	00	0	Error status disabled.
	On	04	4	Error status enabled.
3	Off	00	0	Receipt paper roll status disabled.
	On	08	8	Receipt paper roll status enabled.
4	-	-	-	Undefined
5	Off	00	0	Slip detector, slip paper status disabled.
	On	20	32	Slip detector, slip paper status enabled.
6	-	-	-	Undefined
7	-	-	-	Undefined

Default: 0 (ASB disabled)

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H61) & Chr$(n)
```

Exceptions

If *n* = 0, ASB is disabled.

Related Information

When Auto Status Back (ASB) is enabled using this command, the status transmitted by other commands and the ASB status are differentiated according to the information found in Recognizing Data from the printer, (in the Real Time Commands section in this chapter). The status bytes to be transmitted are described in the following four tables.

Byte 1 = printer information

Byte 2 = error information

Byte 3 = paper sensor information

Byte 4 = paper sensor information

First Byte (Printer Information)

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Not used. Fixed to off.
1	Off	00	0	Not used. Fixed to off.
2	Off	00	0	One or both cash drawers open.
	On	04	4	Both cash drawers closed.
3	Off	00	0	Not Busy at the RS232C interface.
	On	08	8	Printer is Busy at the RS232C interface.
4	On	10	16	Not used. Fixed to on.
5	Off	00	0	Receipt cover closed.
	On	20	32	Receipt cover open.
6	Off	00	0	Paper Feed Button is not pressed.
	On	40	64	Paper Feed Button is pressed.
7	Off	00	0	Not used. Fixed to off.

Second Byte (Error information)

Bit	Off/On	Hex	Decimal	Status for ASB
0	-	-	-	Undefined
1	-	-	-	Undefined
2	Off	00	0	No Mechanical Error
	On	04	4	Mechanical Error Occurred
3	Off	00	0	No knife error.
	On	08	8	Knife error occurred.
4	Off	00	0	Not used. Fixed to off.
5	Off	00	0	No unrecoverable error.
	On	20	32	Unrecoverable error occurred.
6	Off	00	0	No recoverable error occurred
	On	40	64	Recoverable error occurred: Receipt cover open Cassette cover open Receipt paper exhausted Thermal print head temp out of range. Power supply voltage out of range.
7	Off	00	0	Not used. Fixed to off.

Third Byte (Paper Sensor Information)

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Receipt paper adequate
	On	01	1	Receipt paper low
1	Off	00	0	Receipt paper adequate
	On	02	2	Receipt paper low
2	Off	00	0	Receipt paper present.
	On	04	4	Receipt paper exhausted.
3	Off	00	0	Receipt paper present
	On	08	8	Receipt paper exhausted
4	Off	00	0	Not used. Fixed to off.
5	Off	00	0	Slip leading edge sensor: paper present
	On	20	32	Slip leading edge sensor: no paper
6	Off	00	0	Slip trailing edge sensor: paper preset
	On	40	64	Slip trailing edge sensor: no paper.
7	Off	00	0	Not used. Fixed to off.

Fourth Byte (Paper Sensor Information)

Bit	Off/On	Hex	Decimal	Status for ASB
0	Off	00	0	Slip paper selected
	On	01	1	Receipt paper selected
1	Off	00	0	Possible to print in slip
	On	02	2	Not possible to print on slip because no form has been inserted
2	-	-	-	Undefined
3	-	-	-	Undefined
4	Off	00	0	Not used. Fixed to off.
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Not used. Fixed to off.

Bar Code Commands

These following describes the commands for the printing of bar codes and described in the order of their hexadecimal codes.

Note: 7156 firmware can be set for module widths in bar codes ranging from 2 dots to 4 dots per module (DPM) for the narrow modules. The default is 3 DPM. 7167 firmware ranges from 1 dot per module to 5 dots per module (DPM) printed on the receipt. The default is 2 DPM.

Select Printing Position for HRI Characters

ASCII: GS H *n*

Hexadecimal: 1D 48 *n*

Decimal: 29 72 *n*

Value of *n*: Printing position

0 = Not printed

1 = Above the bar code

2 = Below the bar code

3 = Both above and below the bar code

Default: 0 (Not printed)

Prints HRI (Human Readable Interface) characters above or below the bar code.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H48) & Chr$(n)
```

Select Pitch for HRI CharactersASCII: GS f *n*Hexadecimal: 1D 66 *n*Decimal: 29 102 *n*Value of *n*: Pitch

0 = Standard Pitch at 15.2 CPI on receipt

1 = Compressed Pitch at 19 CPI on receipt

Default: 0 (Standard Pitch at 15.2 CPI)

Selects standard or compressed font for printing Bar Code characters.

When slip is selected as the interface, HRI is always compressed.

Example:

MSComm1.Output = Chr\$(&H1D) & Chr\$(&H66) & Chr\$(n)

Select Bar Code HeightASCII: GS h *n*Hexadecimal: 1D 68 *n*Decimal: 29 104 *n*Value of *n*: Number of dotsRange of *n*: 1 - 255

Default: 162

Sets the bar code height to *n* dots or *n*/8 mm (*n*/203 inch) for receipt or *n*/8.5 mm (*n*/216 inch) for slip.

Example:

MSComm1.Output = Chr\$(&H1D) & Chr\$(&H68) & Chr\$(n)

Print Bar Code

	<u>First Variation</u>	<u>Second Variation</u>
ASCII:	GS k m d1...dk NUL	or GS k m n d1...dn
Hexadecimal:	1D 6B m d1...dk 00	or 1D 6B m n d1...dn
Decimal:	29 107 m d1...dk 0	or 29 107 m n d1...dn
0 = End of command.		

Values:

First Variation: String terminated with NUL Character

$m = 0 - 6, 10$

$d = 32 - 126$ (see the table)

$n = 1 - 255$ (see the table)

Selects the bar code type and prints a bar code for the ASCII characters entered. If the width of the bar code exceeds one line, the barcode is not printed.

There are two variations to this command. The first variation uses a NUL character to terminate the string; the second uses a length byte at the beginning of the string to compensate for the Code 128 bar code, which can accept a NUL character as part of the data. With the second variation the length of byte is specified at the beginning of the string.

Fixed-length codes can be aligned left, center, or right using the Align Positions command (1B 61). Variable-length codes are always center aligned in 7156 Emulation. This function is applicable to the receipt station only. Barcodes on the slip station are always right justified.

The check digit is calculated for UPC and JAN (EAN) codes if it is not sent from the host computer. Six-character zero-suppressed UPC-E tags are generated from full 11 or 12 characters sent from the host computer according to standard UPC-E rules. Start/Stop characters are added for Code 39 if they are not included.

m	Bar Code	D	n, Length
0	UPC-A	48- 57 (ASCII numerals)	Fixed Length: 11, 12
1	UPC-E	48- 57	Fixed Length: 11, 12
2	JAN13 (EAN13)	48- 57	Fixed Length: 12, 13
3	JAN8 (EAN8)	48- 57	Fixed Length: 7, 8
4	Code 39	48- 57, 65- 90 (ASCII alphabet), 32, 36, 37, 43, 45, 46, 47 (ASCII special characters) <i>d1 = dk = 42</i> (start/stop code is supplied by printer if necessary)	Variable Length
5	Interleaved 2 of 5 (ITF)	48- 57	Variable Length (Even Number)
6	CODABAR (NW-7)	65- 68, start code 48- 57, 36, 43, 45, 46, 47, 58	Variable Length
10	PDF 417 (7158 Native Mode and 7167 Native Mode)	1-255	Variable Length 7158 Native Mode and 7167 Native Mode

Second Variation: Length of Byte Specified at Beginning of String

m = 65 - 73, 75 (see the table)

d = 0 - 127 (see the table)

n = 1 - 255 (see the table)

The value of *m* selects the bar code system as described in the table. When data is present in the print buffer, the printer processes the data following *m* as normal data.

The variable *d* indicates the character code to be encoded into the specified bar code system. See the table. If character code *d* cannot be encoded, the printer prints the bar code data processed so far, and the following data is treated as normal data.

m	Bar Code	D	n, Length
65	UPC-A	48- 57 (ASCII numerals)	Fixed Length: 11, 12
66	UPC-E	48- 57	Fixed Length: 11, 12
67	JAN13 (EAN13)	48- 57	Fixed Length: 12, 13
68	JAN8 (EAN8)	48- 57	Fixed Length: 7, 8
69	CODE 39	48- 57, 65- 90 (ASCII alphabet), 32, 36, 37, 43, 45, 46, 47 (ASCII special characters) <i>d1 = dn = 42</i> (start/stop code is supplied by printer if necessary)	Variable
70	Interleaved 2 of 5 (ITF)	48- 57	Variable (Even Number)
71	CODABAR (NW-7)	65- 68, start code 48- 57, 36, 43, 45, 46, 47, 58	Variable
72	Code 93	0 - 127	Variable (7158 Native Mode and 7167 Native Mode only)
73	Code 128	0-105 <i>d1 = 103-105</i> (must be a Start code) <i>d2 = 0-102</i> (data bytes) (Stop code is provided by the printer)	Variable
75	PDF417	0 – 255	Variable Length (7158 Native Mode only and 7167 Native Mode)

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H6B) & Chr$(m) & "123456789012" & Chr$(0)
```

The above command will print the number above or below the bar code, depending on which parameter for m that specify.

Exceptions:

Illegal data cancels this command.

The command is valid only at the beginning of a line.

PDF 417 format cannot be printed on the slip.

Barcodes on the Slip are always right justified.

PDF417 and Code 93 are only available in 7158 Native Mode and 7167 Native Mode.

Select Bar Code Width**ASCII:** GS w *n***Hexadecimal:** 1D 77 *n***Decimal:** 29 119 *n***Value of *n*:** 1, 2, 3, 4, 5**Default:** 3 for receipt; 2 for slip

Sets the bar code width to *n* dots.

Formulas:

$n + 1/8 \text{ mm } (n + 1/203 \text{ inch})$ for receipt, $n + 1/5.7 \text{ mm } (n + 1/144 \text{ inch})$ for slip.

Slip module sizing: *n* must be even (it is rounded up if odd) and the size of modules is $n + 1/5.7 \text{ mm } (n + 1/144 \text{ inch})$.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H77) & Chr$(n)
```

Page Mode Commands

Page Mode is one of two modes, which the 7167 printer uses to operate. Standard Mode is typical of how most printers operate by printing data as it is received and feeding paper as the various paper feed commands are received. Page Mode is different in that it processes or prepares the data as a "page" in memory before it prints it. Think of this as a virtual page. The page can be any area within certain parameters that you define. Once the printer receives the (0x0C) command, it prints the page and returns the printer to Standard Mode.

The Select Page Mode command (1B 4C) puts the printer into Page Mode. Any commands that are received are interpreted as Page Mode commands. Several commands react differently when in Standard Mode and Page Mode. The descriptions of these individual commands in this chapter indicate the differences in how they operate in the two modes.

Limitations

Page mode is only implemented on the receipt station in 7158 Native Mode and 7167 Native Mode only.

Print and Return to Standard Mode

ASCII: FF

Hexadecimal: 0C

Decimal: 12

The processed data is printed and the printer returns to Standard Mode. The developed data is deleted after being printed. This command has the same code as the Print and Eject Slip command, which is executed when the printer is not in Page Mode.

Example:

```
MSComm1.Output = Chr$(&H0C)
```

Exceptions:

This command is enabled only in Page Mode.

Cancel Print Data in Page Mode**ASCII:** CAN**Hexadecimal:** 18**Decimal:** 24

Deletes all the data to be printed in the “page” area. Any data from the previously selected “page” area that is also part of the current data to be printed is deleted.

This command has the same code as the Open Form command, which is performed when the printer is not in Page Mode.

Example:

```
MSComm1.Output = Chr$(&H18)
```

Exceptions:

This command is only used in Page Mode.

Print Data in Page Mode**ASCII:** ESC FF**Hexadecimal:** 1B 0C**Decimal:** 27 12

Collectively prints all buffered data in the printing area.

After printing, the printer does not clear the buffered data and sets values for Select Print Direction in Page Mode (1B 54 n) and Set Print Area in Page Mode (1B 57...), and sets the position for buffering character data.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H0C)
```

Exceptions:

This command enabled only in Page Mode.

Select Page Mode

ASCII: ESC L

Hexadecimal: 1B 4C

Decimal: 27 76

Switches from Standard Mode to Page Mode. After printing has been completed either by the Print and Return to Standard Mode (FF) command or Select Standard Mode (1B 53) the printer returns to Standard Mode. The developed data is deleted after being printed.

This command sets the position where data is buffered to the position specified by Select Print Direction in Page Mode (1B 54) within the printing area defined by Set Print Area in Page Mode (1B 57).

This command switches the settings for the following commands (which values can be set independently in Standard Mode and Page Mode) to those for Page Mode.

1. Set Right-Side Character Spacing (1B 20)
2. Select 1/6-Inch Line Spacing (1B 32)
3. Set Line Spacing (1B 33)
4. It is possible only to set values for the following commands in Page Mode. These commands are not executed.
5. Select or Cancel 90 Degree Clockwise Rotation (1B 56)
6. Select Justification (1B 61)
7. Select or Cancel Upside Down Printing (1B 7B).
8. Set Left Margin (1D 4C)
9. Set Print Area Width (1D 57)

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H4C)
```

Exceptions:

The command is enabled only when input at the beginning of a line.

The command is available only when the receipt is selected by Select Paper (1B 63 30).

The command has no effect if Page Mode has previously been selected.

The Select Paper (1B 63 30) command can not be used in Page Mode.

In 7156 Emulation Mode, (1B 4C...) is used for double density graphics.

Select Standard Mode

ASCII: ESC S

Hexadecimal: 1B 53

Decimal: 27 83

Switches from Page Mode to Standard Mode. In switching from Page Mode to Standard Mode, data buffered in Page Mode is cleared, the printing area set by Set Print Area in Page Mode (1B 57) is initialized and the print position is set to the beginning of the line.

This command switches the settings for the following commands (the values for these commands can be set independently in Standard Mode and Page Mode) to those for Standard Mode:

1. Set Right-Side Character Spacing (1B 20)
2. Select 1/6 Inch Line Spacing (1B 32)
3. Set Line Spacing (1B 33)

Standard Mode is automatically selected when power is turned on, the printer is reset, or the Initialize Printer command (1B 40) is used.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H53)
```

Exceptions:

This command is effective only in Page Mode.

Select Print Direction in Page Mode

ASCII: ESC T *n*

Hexadecimal: 1B 54 *n*

Decimal: 27 84 *n*

Value of *n*: Start position

0 Upper left corner proceeding across page to the right (A)

1 Lower left corner proceeding up the page (B)

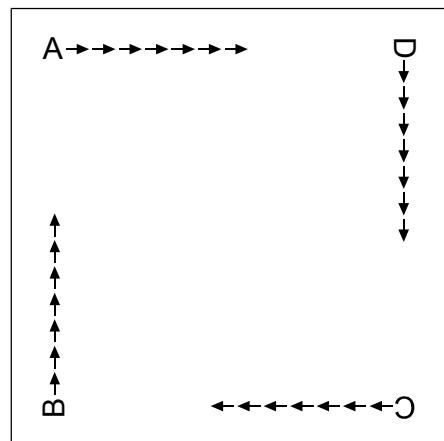
2 Lower right corner proceeding across page to the left (upside down) (C)

3 Upper right corner proceeding down page (D)

A, B, C and D note the direction of print. See illustration.

Selects the printing direction and start position in Page Mode. See the illustration.

The command can be sent multiple times so that several different print areas, aligned in different print directions, can be developed in the printer's page buffer before being printed by the Eject Slip command (0C).



Default: 0 (Upper left corner proceeding across page to the right)

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H54) & Chr$(n)
```

Exceptions:

This command is valid only in Page Mode.

This command is ignored if the value of *n* is out of the specified range.

Set Printing Area in Page Mode

ASCII: ESC W *n1, n2 ...n8.*]

Hexadecimal: 1B 57 *n1, n2 ...n8]*

Decimal: 27 87 *n1,n2 ...n8]*

Range: 0 - 255

Default: *n1-4 = 0*

n5 = 64

n6 = 2

n7 = 64

n8 = 2

Sets the position and size of the printing area in Page Mode.

The command can be sent multiple times so that several different print areas, aligned in different print directions, can be developed in the printer's page buffer before being printed by the Eject Slip command (0C).

Defaults equal an origin of 0,0 and a size of 576x576. This command is allowed in any mode.

Formulas:

The starting position of the print area is the upper left of the area to be printed (*x0, y0*). The length of the area to be printed in the *y* direction is set to *dy* inches. The length of the area to be printed in the *x* direction is set to *dx* inches. Use the equations to determine the Value of *x0, y0, dx*, and *dy*.

See the illustration for a graphic representation of the printing area. For more information about the fundamental calculation pitch, see the Set Fundamental Calculation Pitch command (1D 50).

1. $x0 = [(n1 + n2 \times 256) \times (\text{horizontal direction of the fundamental calculation pitch})]$
2. $y0 = [(n3 + n4 \times 256) \times (\text{vertical direction of the fundamental calculation pitch})]$
3. $dx = [(n5 + n6 \times 256) \times (\text{horizontal direction of the fundamental calculation pitch})]$
4. $dy = [(n7 + n8 \times 256) \times (\text{vertical direction of the fundamental calculation pitch})]$
5. Keep the following notes in mind for this command.
6. The fundamental calculation pitch depends on the vertical or horizontal direction.
7. The maximum printable area in the *x* direction is 576/203 inches.
8. The maximum printable area in the *y* direction is 2000/203 inches.

First the printer must be set to page mode, then the following command should be sent.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H57) & Chr$(&H40) & Chr$(&H0) & Chr$(&H40) &
Chr$(&H0) & Chr$(&H40) & Chr$(&H1) & Chr$(&H40) & Chr$(&H1)
```

Exception:

This command is effective only in Page Mode.

Set Absolute Vertical Print Position in Page Mode

ASCII: GS \$ nL nH

Hexadecimal: 1D 24 nL nH

Decimal: 29 36 nL nH

Formulas:

$[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$ inches.

Sets the absolute vertical print starting position for buffer character data in Page Mode.

The vertical or horizontal motion unit for the paper roll is used and the horizontal starting buffer position does not move.

The reference starting position is set by Select Print Direction in Page Mode (1B 54). This sets the absolute position in the vertical direction when the starting position is set to the upper left or lower right; and sets the absolute position in the horizontal direction when the starting position is set to the upper right or lower left. The horizontal and vertical motion unit are specified by the Set Horizontal and Vertical Minimum Motion Units (1D 50) command.

The Set Horizontal and Vertical Minimum Motion Units (1D 50) command can be used to change the horizontal and vertical motion unit. However, the value cannot be less than the minimum horizontal movement amount, and it must be in even units of the minimum horizontal movement amount.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H24) & Chr$(nL) & Chr$(nH)
```

Exceptions:

This command is effective only in Page Mode. If the $[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$ exceeds the specified printing area, this command is ignored.

Set Relative Vertical Print Position in Page Mode

ASCII: GS \ nL nH

Hexadecimal: 1D 5C nL nH

Decimal: 29 92 nL nH

Sets the relative vertical print starting position from the current position. This command can also change the horizontal and vertical motion unit. The unit of horizontal and vertical motion is specified by this command.

This command functions as follows, depending on the print starting position set by Select Print Direction in Page Mode (1B 54):

When the starting position is set to the upper left or lower left of the printing area, the vertical motion unit (y) is used.

When the starting position is set to the upper right or lower left of the printing area, the horizontal motion unit (x) is used.

Value:

The value for the horizontal and vertical movement cannot be less than the minimum horizontal movement amount, and must be in even units of the minimum horizontal movement amount.

Formulas:

The distance from the current position is set to $[(nL + nH \times 256) \times \text{vertical or horizontal motion unit}]$ inches. The amount of movement is calculated only for the receipt.

When pitch n is specified to the movement downward:

$$nL + nH \times 256 = n$$

When pitch n is specified to the movement upward (the negative direction), use the complement of 65536.

When pitch n is specified to the movement upward:

$$nL + nH \times 256 - 65536 = N$$

Exceptions:

This command is used only in Page Mode, otherwise it is ignored.

Any setting that exceeds the specified printing area is ignored.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H5C) & Chr$(nL) & Chr$(nH)
```

Macro Commands

These commands are used to select and perform a user-defined sequence of printer operations.

Start or End Macro Definition

ASCII: GS :

Hexadecimal: 1D 3A

Decimal: 29 58

Starts or ends macro definition. Macro definition begins when this command is received during normal operation and ends when this command is received during macro definition. The macro definition is cleared, during definition of the macro, when the Execute Macro (1D 5E) command is received.

Normal printing occurs while the macro is defined. When the power is turned on the macro is not defined.

The defined contents of the macro are not cleared by the Initialize Printer (1B 40), thus, the Initialize Printer (1B 40) command may be used as part of the macro definition.

If the printer receives a second Select or Cancel Macro Definition (1D 3A) command immediately after previously receiving a Select or Cancel Macro Definition (1D 3A) the printer remains in the macro undefined state.

Formulas:

The contents of the macro can be defined up to 2048 bytes.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H3A)
```

Exceptions:

If the macro definition exceeds 2048 bytes, excess data is not stored.

This command is available in 7158 Native Mode and 7167 Native Mode only.

Execute Macro

ASCII: GS ^ r t m

Hexadecimal: 1D 5E r t m

Decimal: 29 94 r t m

Value of r: The number of times to execute the macro.

Value of t: The waiting time for executing the macro.

Value of m: Macro executing mode

0 (Bit0): The Macro executes *r* times continuously with waiting time specified by *t*.

1 (Bit0): The printer waits for feed button to be pressed after waiting for the period specified by *t*. If the button is pressed, the printer executes the macro once. The printer repeats the operation *r* times.

Executes a macro. After waiting for a specified period the LED indicators blink and the printer waits for the Paper Feed Button to be pressed. After the button is pressed, the printer executes the macro once. The printer repeats this operation the number of specified times.

When the macro is executed by pressing the Paper Feed Button (*m* = 1), paper cannot be fed by using the Paper Feed Button.

Formulas:

The waiting time is *t* x 100 msec for every macro execution.

m specifies macro executing mode when the LSB (Least significant bit) *m* = 0

The macro executes *r* times continuously at the interval specified by *t* when the LSB (Least significant bit) of *m* = 1.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H5E) & Chr$(r) & Chr$(t) & Chr$(m)
```

Exceptions:

If this command is received while a macro is being defined, the macro definition is aborted and the definition is cleared.

If the macro is not defined or if *r* is 0, nothing is executed.

This command is available in 7158 Native Mode and 7167 Native Mode only.

MICR Commands

MICR Reading

These commands control the Magnetic Ink Character Recognition (MICR) check reader, including how it parses the character strings on checks.

The section, MICR Parsing, describes how to create a parsing format and how to create and maintain an Exceptions table.

Read MICR Data and Transmit

ASCII: ESC w 1

Hexadecimal: 1B 77 01

Decimal: 27 119 1

Default: All data returned

Reads and transmits the MICR data and adds a Carriage Return (0x0D). If no parsing format is selected with either of the Define Parsing Format commands (see below), all data will be returned, which is the default.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H77) & Chr$(&H01)
```

Reread MICR Data

ASCII: ESC w R

Hexadecimal: 1B 77 52

Decimal: 27 119 82

Resends the previously decoded MICR data to the host.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H77) & Chr$(&H52)
```

MICR Parsing

This section describes MICR parsing in detail and includes several examples of useful parsing variations. It also describes how to create a parsing format and how to create and maintain an exception table.

Define Parsing Format, Save in NVRAM

ASCII: ESC w P *d1 d2 ... dn CR*

Hexadecimal: 1B 77 50 *d1 d2 ... dn 0D*

Decimal: 27 119 80 *d1 d2 ... dn 13*

Defines and saves parsing format. See Parsing Parameter String Options in this document. Send with this command the parse data that is to be the default parse string at printer power-up. If no parameters are selected, parsing is not performed.

d1 through *dn* are the parse string. The string must be CR terminated. If the string has invalid characters in it or is too long, the printer will store a null string, and raw MICR data will be returned.

See sample parsing examples

Define Parsing Format, Do Not Save Permanently

ASCII: ESC w p *d1 d2 ... dn CR*

Hexadecimal: 1B 77 70 *d1 d2 ... dn CR*

Decimal: 27 119 112 *d1 d2 ... dn CR*

Defines, but does not save parsing format. See Parsing Parameter String Options in this document. Send this command as often as desired to change the previous parse format string. The data sent with 1B 77 50 will be restored at power-up.

d1 through *dn* are the parse string. The string must be CR terminated. If the string has invalid characters in it or is too long, the printer will store a null string, and raw MICR data will be returned.

See examples of parsing

Exceptions:

If no parameters are selected, parsing is not performed.

Parsing Parameter String Options

Variable Length Fields

Variable Length Field Name	Selector	Comments
Transit Number	T	Full 9 digit routing/transit number
Bank Number	B	Digits 4-8 of transit number
Check Digit	D	Digit 9 of transit number
Account Number	A	
Check Serial Number	C	Separate from account number
Amount	\$	This field may not be present or readable

Variable Length Field Optional Modifiers

Variable Length Field Optional Modifiers	Selector	Comments
Zero fill to length	0	ASCII zero preceding maximum length
Maximum length	nn	1- or 2-digit ASCII number
Remove space/dash	X	
Replace space/dash with 0	x	

Examples of Variable Length Field Format Specifications

Account #, all characters in the field, keep spaces and dashes	A
Account #, all characters in the field, replace spaces and dashes	xA
Account #, maximum 12 characters, keep spaces and dashes	12A
Account #, always 12 characters zero filled, remove spaces and dashes	012XA

Other Parameters

Error Number	E	One Digit Returned
0		Read OK
1		Read error: bad character, empty field invalid length, check digit invalid
Status	S	Two Digits Returned
00		No error
01		No MICR data
09		Mexican check
08		Canadian check
05		Error in transit number
07		Error in account number
04		Error in check serial number
10		Business or commercial check
11		Amount field present

Field Separator 'x

Field separator preceded by a single quote, so a field separator of the letter A would be sent as 'A (0x27 0x41).

If a Carriage Return is specified as a separator (0x27 0x0D), a final Carriage Return must still terminate the parsing parameter string.

Country Code	Un	One Digit Returned
	N	returned if US check
	Nothing	returned if not US check
Country Code	Km	One Digit Returned
	M	returned if Canadian check
	Nothing	returned if not Canadian check
Check Type	L	One Digit Returned
	1	Personal check
	2	Business or commercial check

Ten parameters are more than enough to specify all variable length fields with a field separator each and other status information that may be helpful to an application. More than 10 parameters are not recommended because they use up space in non-volatile memory (NVRAM) available for the exception table.

The parsing parameter string is stored packed in NVRAM starting at word 10, with the total byte length stored in the high order byte of word 10. While most parameters take two bytes of NVRAM, the following parameters take only one byte: B, D, E, S, L. None of the parsing examples in the following section take more than 14 bytes (seven words) of NVRAM.

The exception table starts at word 20. If the parsing parameter string extends into word 20, then the first exception table entry is unavailable.

Sample Parsing Formats

The following strings show various sample formats that you can use assuming they meet your parsing format needs. Included with the sample format is a description of the data that is returned to the application.

ESC w p 18 A <CR>

Maximum 18 characters in the account number
Final Carriage Return

ESC w p 18 X A <CR>

Maximum 18 characters in the account number with spaces and dashes removed
Final Carriage Return

ESC w p 18 x A <CR>

Maximum 18 characters in the account number with spaces and dashes replaced with 0
Final Carriage Return

ESC w p 018 A <CR>

Always 18 characters in the account number (high order zero-filled if necessary)
Final Carriage Return

ESC w p 018 X A <CR>

Always 18 characters in the account number with spaces and dashes removed
Final Carriage Return

ESC w p 018 x A <CR>

Always 18 characters in the account number with spaces and dashes replaced with 0
Final Carriage Return

ESC w p T 18 X A 04C <CR>

All characters in the transit number
All characters in the account number (up to 18) with spaces and dashes removed
Always four characters in the check number (zero-filled if check number is only three characters long)
Final Carriage Return

ESC w p K9 X T 18 X A 04C <CR>

Canadian check: dash in transit number removed; "9" inserted at beginning, resulting in a fully numeric nine character transit number
All nine characters in the transit number (because there are no dashes)
All characters in the account number (up to 18) with spaces and dashes removed
Always four characters in the check number (zero-filled if check number is only three characters long)
Final Carriage Return

ESC w p T '/ A '/ C '/ S <CR>

All characters in the transit number
 Field separator: /
 All characters in the account number
 Field separator: /
 All characters in the check number
 Field separator: /
 Two-digit status
 Final Carriage Return

Notes

All parameters are ASCII characters, i.e. greater than or equal to 0x20, with the exception of a non-ASCII character enclosed in single quotes as a field separator. This applies both to parameter specifications sent from application to printer, and to MICR data returned from printer to application.

Parameters are positional; their order in the parameter string is the order in which the parsed MICR data will be returned. Unrecognized parameters will be ignored, and processing of the parsing parameters will stop. Any data remaining after the unrecognized parameter will be treated as normal input data.

If parameters are not defined (for example, 1B 77 50 <CR> or 1B 77 70 <CR>) parsing is not selected. One status byte followed by all decoded MICR characters will be returned. This is the default parsing format if no other is selected:

Status	Status Byte Value
Good read, data follows	0x00
Bad read, data follows	0x01
No check present, no data	0x02
Paper jam, no data	0x03
No MICR characters, no data	0x04

MICR Characters	ASCII	Hexadecimal
Numerics	0...9	0x30...0x39
Unrecognized Character	?	0x3F
Space		0x20
Amount symbol	&	0x26
Dash symbol	'	0x27
"on us" symbol	(0x28
Transit symbol)	0x29

Once a parsing format is specified, the following values are returned:

MICR Characters	ASCII	Hexadecimal
Numerics	0...9	0x30...0x39
Space		0x20
Dash	-	0x2D
Field separator*		
Country code*		

*As specified in the parsing parameter string

Check Serial Number

Parsing the Check Serial Number

Most banks print the check serial number in three easily recognizable spots. The printer firmware will look for the number in these spots, using the following ordered algorithm. The examples use letters to represent symbols on the check:

- t Transit symbol
- o "on us" symbol
- \$ Amount symbol
- Dash
- c Check serial number
- x Any other number

A number bracketed by "on us" symbols in the auxiliary "on us" field is the check serial number.

```
occcccc o txxxxxxxxx t xxxxxxxx o
```

Otherwise, a three or more digit number to the right of the rightmost "on us" symbol, and to the left of the leftmost amount symbol if an amount field is present, is the check serial number.

```
txxxxxxxxx t xxxxxxxx o cccc  
txxxxxxxxx t xxxxxxxx o cccc $xxxxxx$
```

If both of these searches fail to produce the check serial number, extract the whole account number field from between the rightmost transit symbol and the rightmost "on us" symbol. A three, four, or five-digit number to the right of the rightmost transit symbol, separated by a space or a dash from the rest of the account number is the check serial number.

```
txxxxxxxxx t cccc xxxxxxxx o  
txxxxxxxxx t cccc -xxxxxxx o  
txxxxxxxxx t cccc xxxxxxxx o xx
```

If all of these searches fail to produce the distinct check serial number, and the check serial number field has been specified in the parsing parameter string options, no check serial number will be returned. If it is imbedded within the account number field, it will be returned as part of that variable length field.

Exceptions

Some banks print the check serial number in a location that cannot be electronically distinguished without specific exception information, although it can be visually distinguished because it is repeated in the upper right corner of the check. For these cases, the printer can hold up to nine exceptions for specific banks in its non-volatile memory (NVRAM), which is accessed by the read and write NVRAM commands. The specific bank is picked out by its transit number, and the firmware will look in the exception table for a transit number match before looking in the normal check serial number locations.

In this example, without an exception table entry, the firmware would always pick the rightmost four-digit number as the check serial number following rule two above. The bank with the three digit check serial number and the four digit extension after the "on us" symbol would need to be exceptionally recognized:

```
txxxxxxxxx ccc-xxxxxxxxxxxx
txxxxxxxxx xxx-xxxxxxxxxxxxccc
```

In this example, without an exception table entry, the firmware would not be able to pick out the check serial number because it is not separated from the rest of the account number:

```
txxxxxxxxx cccccccccccccc
```

In this example, without an exception table entry, the firmware would not be able to pick out the check serial number correctly, because it is imbedded within the rest of the account number:

```
txxxxxxxxx xxx-ccc-xxxxxxxxxxxx
```

Loading the Exception Table

The exception table begins at word 20 in NVRAM. Each entry takes five words. There is room for eight exceptions with a sumcheck written in the last word. An application can load local exceptions into the printer using the write NVRAM command:

```
0x1B 0x73 n1 n2 k
```

which writes the two byte word n1:n2 to word k in NVRAM.

Exception Table Entry Format

Each exception table entry consists of five words. The first two words contain the first eight characters of the transit number by packing the low order nibble of the numeric transit number characters. For Canadian checks, eliminate the dash and store the eight numerics.

The next three words are used as six individual bytes to tell the firmware how to interpret the MICR characters that fall to the right of the rightmost transit symbol. Each of the six bytes is positional and consists of two parts: character type and number.

The three high order bits of each byte mark the character type. The characters can be marked in three ways: check serial # character, account # character, or "skip this character or symbol."

The five low order bits of each byte contain the number of characters of that type to extract. Most exceptions will not need to use all six bytes; in that case clear the unused bytes to zero.

Bits within Byte	7	6	5	4	3	2	1	0
check serial # character string	0	0	1	n	n	n	n	n
account # character string	0	1	0	n	n	n	n	n
character string to ignore	1	0	0	n	n	n	n	n

Example 1

t123456780t12349876543210o 1234 is the check serial #
 9876543210 is the account #

To load the second table entry, which starts at word 25, the transit number 123456780 would be stored in the first two words of its table entry using this string of commands:

0x1B 0x73 0x12 0x34 25
 0x1B 0x73 0x56 0x78 26

After the right transit symbol are immediately the four characters of the check serial #, followed immediately by the ten characters of the account number. These would be bitwise encoded as:

0 0 1 0 0 1 0 0 (check #, four characters)
 and 0 1 0 0 1 0 1 0 (account #, 10 characters)

then stored in the other three words of the table entry using:

0x1B 0x73 0x24 0x4A 27
 0x1B 0x73 0x00 0x00 28
 0x1B 0x73 0x00 0x00 29

Example 2

t22137-632t001 6042202o927540 2754 is the check serial #
 6042202 is the account #

To load the third table entry, which starts at word 30, the transit number 2137-632 would be stored in the first two words of its table entry using this string of commands:

0x1B 0x73 0x22 0x13 30
 0x1B 0x73 0x76 0x32 31

After the right transit symbol are four characters to skip, a seven digit account number, two characters to skip, and finally a four digit check serial #. The final character to skip need not be encoded. These would be bitwise encoded as:

1 0 0 0 0 1 0 0 (skip four characters)
 0 1 0 0 0 1 1 1 (account #, seven characters)
 1 0 0 0 0 0 1 0 (skip two characters)
 0 0 1 0 0 1 0 0 (check #, four characters)

then stored in the other three words of the table entry using:

0x1B 0x73 0x84 0x47 32
 0x1B 0x73 0x82 0x24 33
 0x1B 0x73 0x00 0x00 34.

Maintaining the Exception Table

Present contents of the exception table can be examined using the read NVRAM command:

0x1B 0x6A k

which reads and returns word k in NVRAM. When the exception table is full, a new entry can replace an older, less frequently used entry, by merely rewriting the words for that table entry.

Check Flip Command

Check Flip Command

ASCII: ESC w F

Hexadecimal: 1B 77 46

Decimal: 27 119 70

Causes a check on the slip table to be fed into the printer, flipped and left with the trailing edge of the check in the slip feed rollers. Prior to the flip, the check is measured to see that it is of an appropriate size (see Appendix B) to be flipped. If not, the check is fed back to the user.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H77) & Chr$(&H46)
```

Exception:

This command is available only in 7158 Native Mode and 7167 Native Mode.

User Data Storage Commands

Write to User Data Storage

ASCII: ESC ' m a0 a1 a2 d1 ... dm

Hexadecimal: 1B 27 m a0 a1 a2 d1 ... dm

Decimal: 27 39 m a0 a1 a2 d1 ... dm

Value of m: 0 – 255

Writes m bytes of data to the User Data Storage Flash Page at the address specified. The printer waits for m bytes of data following the 3-byte address, addr.

If any of the memory locations addressed by this command are not currently erased, the command is not executed.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H27) & Chr$(&H5) & Chr$(&H0) & Chr$(&H0) &
Chr$(&H0) & "Hello"
```

The above command writes the word 'Hello' to the User Data Storage Flash Page.

Read from User Data Storage

ASCII: ESC 4 *m a0 a1 a2*

Hexadecimal: 1B 34 *m a0 a1 a2*

Decimal: 27 52 *m a0 a1 a2*

Value of *m*: 0 – 255

Reads *m* bytes of data from the User Data Storage Flash Page at the address specified.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H34) & Chr$(&H5) & Chr$(&H0) & Chr$(&H0) &  
Chr$(&H0)
```

Read from Non-Volatile Memory

ASCII: ESC j k

Hexadecimal: 1B 6A k

:

Decimal: 27 106 k**Range of k:** 20 – 63 (decimal)

Reads a two-byte word from location *k* in the history EEROM. The printer returns the word at the next available opportunity.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H6A) & Chr$(k)
```

Write to Non-Volatile Memory (NVRAM)ASCII: ESC s *n1 n2 k***Hexadecimal:** 1B 73 *n1 n2 k***Decimal:** 27 115 *n1 n2 k***Value of n1 :** 1st Byte**Value of n2 :** 2nd Byte**Range of k :** 20 - 63 (decimal)

Writes the two-byte word, *n1 n2*, to location *k* in history EEROM.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H73) & Chr$(n1) & Chr$(&Hn2k)
```

Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts

ASCII: GS " *n*

Hexadecimal: 1D 22 *n*

Decimal: 29 34 *n*

Value of *n*: 48 - 51

Specifies whether to load the logos or user-defined characters to Flash Memory or to RAM (volatile memory). The selection remains in effect until it is changed via this command or until the power cycles.

n = 48 (ASCII *n* = 0)

Loads active logo to RAM only. This is used to print a special logo but not have it take up Flash Memory. A logo defined following this command is not preserved over a power cycle.

n = 49 (ASCII *n* = 1)

Loads active logo to Flash Memory. This is the default condition for logo Flash storage. A logo defined following this command is stored in Flash Memory.

n = 50 (ASCII *n* = 2)

Loads user-defined characters to RAM only. This is the default condition for user-defined character storage. Any user-defined characters defined following this command are not preserved over a power cycle.

n = 51 (ASCII *n* = 3) Loads user-defined characters to Flash Memory. An application must use this command to store user-defined characters in Flash Memory. Any user-defined characters defined following this command are stored in Flash Memory. A user-defined character cannot be redefined in Flash Memory. The Flash Memory page must be erased by an application before redefining user-defined characters. For more information, see the Erase User Flash Sector (1D 40 *n*) command.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H22) & Chr$(n)
```

Flash Allocation

ASCII: GS " U *n1 n*

Hexadecimal: 1D 22 55 *n1 n2*

Decimal: 29 34 85 *n1 n2*

Default Value 1 (see below)
of *n1*:

Default Value 1 (see below)
of *n2*:

n1 is the number of 64k sectors used for logos and user-defined characters.
n2 is the number of 64k sectors used for user data storage.

This command sets the allocation of Flash sectors between user data storage and logos/user-defined characters. This allocation is saved in the EEPROM of the printer and is therefore saved across power cycles.

n1 + n2 <= 6 (3M)

The 7167 has been configured at the factory with 2M of Flash memory. If *n1 + n2* is greater than the maximum number of sectors available, the command is ignored. Reissuing this command with different parameters will erase all sectors.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H22) & Chr$(&H55) & Chr$(&Hn1) & Chr$(Hn2)
```

Exception:

This command is available only in 7158 Native Mode and 7167 Native Mode.

Erase User Flash Sector

ASCII: GS @ n
Hexadecimal: 1D 40 n
Decimal: 29 64 n
Value of n: 49 - 50

Erases a page of Flash Memory and sends a carriage return when the operation is complete.

n = 49 (ASCII n = 1)

This command erases all sectors available for user-defined characters and multiple logos. The page should be erased in two situations: when the logo definition area is full and an application is attempting to define new logos, and when an application wants to replace one user-defined character set with another. In both cases, all logos and character set definitions are erased and must be redefined.

n = 50 (ASCII n = 2)

This command erases all sectors available for user data storage.

Important: While erasing Flash Memory, the printer disables all interrupts, including communications. To provide feedback to the application, the printer responds to the application when the erase is complete. After sending the Erase User Flash Sector (1D 40 n) command, an application should wait for the response from the printer before sending data. Otherwise, data will be lost. If an application is unable to receive data, it should wait a minimum of five seconds after sending the Erase User Flash Sector (1D 40 n) command before sending data.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H40) & Chr$(n)
```

Printer Setting Change

ASCII: US DC1 [m n], [m n], ... [m n] OFFH

Hexadecimal: 1F 11 [m n], [m n], ... [m n] OFFH

Decimal: 31 17 [m n], [m n], ... [m n] OFFH

Value of m, n:

m (Hex)	Function	n (Hex)	Function
10	Interface type	00	USB/RS232C
		01	RS232C
		02	USB
11	Baud rate	00	115200 bps
		01	57600 bps
		02	38400 bps
		03	19200 bps
		04	9600 bps
		05	4800 bps
		06	2400 bps
		07	1200 bps
12	Number of data bit	00	8 data bits
		01	7 data bits
13	Number of stop bit	00	1 stop bits
		01	2 stop bits
14	Parity	00	No parity
		01	Even parity
			Odd parity
15	Flow control	00	Software (XON/XOFF)
		01	Hardware (DTR/DSR)
16	Data reception errors option	00	Ignore errors
		01	Print "?"
17	One Line Buffer	00	4 K Buffer
		01	Single Line Buffer (64 bytes)
19	Printer ID mode	00	7158 Native ID
		01	Emulated Printer ID
		02	7167 Native ID
20	Emulation	00	7158 Native mode
		01	7156 mode
		02	7150 mode
		03	7167 Mode

<i>m</i> (Hex)	Function	<i>n</i> (Hex)	Function
21	Default lines per inch	00	8.13 lines per inch
		01	7.52 lines per inch
		02	6 lines per inch
22	Carriage return usage	00	Ignore CR
		01	Use CR as Print cmd.
23	Asian mode	00	Asian mode on
		01	Asian mode off
24	Slip Print Width Option	00	82.2 mm (7167 Mode)
		01	120.7 Conversion (7156/58 Mode)
25	Receipt synchronization	00	Enabled
		01	Disabled
30	Print density	00	100%
		01	110%
		02	120%
31	Paper Low sensor option	00	Paper low sensor enable
		01	Paper low sensor disable
32	Paper width	00	80 mm
		01	58 mm
33	Knife option	00	Enable knife
		01	Disable knife
34	MICR option	00	Enable MICR
		01	Disable MICR
35	Check Flip option	00	Enable check flip
		01	Disable check flip
36	Max Power	00	55 W
		01	75 W
37	Color Paper Option	00	One color paper
		01	Two color paper

<i>m</i> (Hex)	Function	<i>n</i> (Hex)	Function
38	MICR dual pass option	00	Dual pass disable
		01	Dual pass enable
40	Default Code page	00	437
		01	850
		02	852
		03	858
		04	860
		05	862
		06	863
		07	864
		08	865
		09	866
		0A	874
		0B	1252
		0C	Katakana
		0D	932 (or 936, 949, 950)
50	EEPROM default setting	00	EEPROM default setting

Set the printer configuration specified by m and n. The printer is reset after receiving this command to activate the configuration setting. If m or n is out of range, this command is ignored. The printer will wait for the data until the terminator code "0FFH" is received.

Example:

The following command would set the communication baud rate to 115,200 bps.

```
MSComm1.Output = Chr$(&H1F) & Chr$(&H11) & Chr$(&H11) & Chr$(&H0) & Chr$(&HFF)
```

Asian Character Commands

Select print modes for Kanji characters

ASCII: FS ! *n*

Hexadecimal: 1C 21 *n*

Decimal: 28 33 *n*

Value of *n*: The character attribute for Asian character

Bit	Off/On	Hex	Decimal	Function
0	-	-	-	Select font
1	Off	00	0	Undefined
2	Off	00	0	Double width mode is not selected
	On	01	1	Double width mode is selected
3	Off	00	0	Double height mode is not selected
	On	01	1	Double height mode is selected
4	-	-	-	Undefined
5	-	-	-	Undefined
6	-	-	-	Undefined
7	Off	00	0	Underline mode is not selected
	On	01	1	Underline mode is selected

Default of *n*: 0

Selects character attribute for Asian character.

The underline mode can be turned on or off by using FS – or ESC – also.

The thickness of underline is defined by FS – or ESC -, it does not relate to character size.

Example:

MSComm1.Output = Chr\$(&H1C) & Chr\$(&H21) & Chr\$(n)

FS – Turn underline mode ON/OFF for KanjiASCII: FS - *n*Hexadecimal: 1C 2D *n*Decimal: 28 45 *n*Value of *n*: 0 = Cancel

1 = 1 dot height underline

2 = 2 dot height underline

Default *n*: 0 (Cancel)

Turn underline mode on or off for Asian character.

All characters could be underlined, including character right side spacing.

Underline can be selected by FS ! and ESC – also, the last received command is effective.

Example:

```
MSComm1.Output = Chr$(&H1C) & Chr$(&H2D) & Chr$(n)
```

Define user-defined Kanji charactersASCII: FS 2 *c1 c2 d1 ... dn*Hexadecimal: 1C 32 *c1 c2 d1 ... dn*Decimal: 28 50 *c1 c2 d1 ... dn*Value of *c1*: Specified the beginning Asian character codeValue of *c2*: Specified the end Asian character codeValue of *d*: Image data

Range of c1,c2:	Japanese (CP932)	F0 ≤ c1 ≤ F9, 40 ≤ c2 ≤ 7E and 80 ≤ c2 ≤ FC
	Simplified Chinese (CP936)	A1 ≤ c1 ≤ A7, 40 ≤ c2 ≤ 7E and 80 ≤ c2 ≤ A0, AA ≤ c1 ≤ AF, A1 ≤ c2 ≤ FE, F8 ≤ c1 ≤ FE, A1 ≤ c2 ≤ FE
	Korean (CP949)	c1 = C9 and c1 = FE, A1 ≤ c2 ≤ FE
	Traditional Chinese (CP950)	81 ≤ c1 ≤ A0 and FA ≤ c1 ≤ FE, 40 ≤ c2 ≤ 7E and 80 ≤ c2 ≤ FE C7 ≤ c1 ≤ C8, A1 ≤ c2 ≤ FE

Defines and enters downloaded characters into RAM. The user-defined character will be cleared by ESC @ or power off of printer. Each character requires 72 bytes for character definition.

The maximum number of user-defined character is 100.

Example:

```
MSComm1.Output = Chr$(&H1C) & Chr$(&H32) & Chr$(&HF0) & Chr$(&H40) & Chr$(d1) &
Chr$(dn)
```

Set Kanji character spacing

ASCII: FS S n1 n2

Hexadecimal: 1C 53 n1 n2

Decimal: 28 83 n1 n2

Value of n1: Ignored (0)

Value of n2: Character right side spacing dots (1/203 inch)

Default of n2: 1 for 1 byte character, 2 for 2 bytes character

Sets the character right side spacing for characters in Asian character.

The underline is valid on the space set by this command. ESC SP command is not valid for Asian character code pages. Therefore, this command is used to set the character right side spacing for characters in Asian code page.

Example:

```
MSComm1.Output = Chr$(&H1C) & Chr$(&H53) & Chr$(0) & Chr$(100)
```

FS W (Set quadruple mode ON/OFF for Kanji)ASCII: FS W *n*Hexadecimal: 1C 57 *n*Decimal: 28 87 *n***Value of *n*:** The quadruple mode for Asian characters.

0 (Bit 0) = Quadruple mode off

1 (Bit 0) = Quadruple mode on

Default of *n*: 0 (Quadruple mode off)

Selects or cancels the quadruple mode for Asian characters.

FS ! and GS ! also have control over character size. This, latest received command is effective.

Example:

MSComm1.Output = Chr\$(&H1C) & Chr\$(&H57) & Chr\$(n)

Flash Download Commands

These commands are used to load firmware into the printer.

The commands are listed in numerical order according to their hexadecimal codes. Each command is described and the hexadecimal, decimal, and ASCII codes are listed.

There are three ways to enter the Download Mode.

1. Powering the printer up with DIP Switch 2 up.
2. While the printer is running normally, use the command Switch to Flash Download Mode, to leave normal operation and enter the Download Mode.
3. If the Flash if found corrupted during Level 0 diagnostics the Download Mode is automatically entered after the printer has reset.

The printer never goes directly from the Download Mode to normal printer operation. To return to normal printer operation either the operator must turn the power off and then on to reboot or the application must send a command to cancel Download Mode and reboot.

Switch to Flash Download Mode

ASCII: ESC [}

Hexadecimal: 1B 5B 7D

Decimal: 27 91 125

Puts the printer in Flash Download Mode in preparation to receive commands controlling the downloading of objects into Flash Memory. When this command is received, the printer leaves normal operation and can no longer print transactions until the Reboot the Printer command (1D FF) is received or the printer is rebooted.

This command does not affect the current communication parameters. Once the printer is in Flash Download Mode, this command is no longer available.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H5B) & Chr$(&H7D)
```

Request Printer ID

ASCII: GS NUL

Hexadecimal: 1D 00

Decimal: 29 0

Returns ACK (06 hex) + 12 bytes ASCII string describing the Flash Memory Boot Sector Firmware part number. Ex : 189-1234567A

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H00)
```

Return Segment Number Status of Flash Memory

ASCII: GS SOH

Hexadecimal: 1D 01

Decimal: 29 1

Returns the size of the Flash used. There may be 8, 16, or 32 sectors (64K each) in Flash Memory. This command assures that the firmware to be downloaded is the appropriate size for Flash Memory. The value returned is the maximum sector number that can be accepted by the Select Sector to Download (1D 02 *n*) command.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H01)
```

Exceptions:

Available only in Download Mode.

Select Flash Memory Sector to Download

ASCII: GS STX *n*

Hexadecimal: 1D 02 *n*

Decimal: 29 2 *n*

Value of *n*: The Flash sector to which the next download operation applies

Range of *n*: 0 – 7 (512K)

0 – 15 (1 mB)

0 – 31 (2 mB)

Selects the Flash sector (*nn*) for which the next download operation applies. The values of the possible sector are restricted, depending upon the Flash part type. The printer transmits an ACK if the sector number is acceptable or an NAK if the sector number is not acceptable. Sector numbers start at 0.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H02) & Chr$(n)
```

Exceptions:

Available only in Download Mode.

Get Firmware CRC**ASCII:** GS ACK**Hexadecimal:** 1D 06**Decimal:** 29 6

Causes the printer to calculate the CRC for the currently selected sector and transmits the result. This is performed normally after downloading a sector to verify that the downloaded firmware is correct. The printer also calculates the CRC for each sector during power up and halts the program if any sector is erroneous.

The printer transmits ACK if the calculated CRC is correct for the selected sector; NAK if the CRC is incorrect or if no sector is selected.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H06)
```

Return Microprocessor CRC**ASCII:** GS BEL**Hexadecimal:** 1D 07**Decimal:** 29 7

Returns the CRC calculated over the boot sector code space.

Formulas: ACK <low byte> <high byte>

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H07)
```

Erase the Flash Memory**ASCII:** GS SO**Hexadecimal:** 1D 0E**Decimal:** 29 14

Causes the entire Flash Memory (except the boot) to be erased.

The printer returns ACK if the command is successful; NAK if it is unsuccessful.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H0E)
```

Exceptions:

Available only in Download Mode.

Return Main Program Flash CRC

ASCII: GS SI

Hexadecimal: 1D 0F

Decimal: 29 15

Returns the CRC calculated over the Flash firmware code space. The format of the response is ACK <low byte> <high byte>.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H0F)
```

Erase Selected Flash Sector

ASCII: GS DLE *n*

Hexadecimal: 1D 10 *n*

Decimal: 29 16 *n*

Value and Range of *n*: 0 – 7 = 512K bytes Flash

0 – 15 = 1M bytes Flash

0 – 31 = 2M bytes Flash

Erases the previously selected sector. The printer transmits ACK when the sector has been erased. If the previous sector is not successfully erased, or if no sector was selected, the printer transmits NAK.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H10) & Chr$(n)
```

Exceptions:

Available only in Download Mode.

Download to Active Flash Sector

ASCII: GS DC1 *al ah cl ch d1...dn*

Hexadecimal: 1D 11 *al ah cl ch d1...dn*

Decimal: 29 17 *al ah cl ch d1...dn*

Value of *al*: low byte of the address

Value of *ah*: high byte of the address

Value of *cl*: low byte of the count

Value of *ch*: high byte of the count

Value of *d*: data bytes, from 1 to n

Contains a start address (*ah* * 256 + *al*) and count (*ch* * 256 + *cl*) of binary bytes to load into the selected sector, followed by that many bytes. The start address is relative to the start of the sector. Addresses run from 0 to 64K.

The printer may return one of several responses. ACK means that the data was written correctly and the host should transmit the next block. NAK means that, for some reason, the data was not written correctly. This could mean that communications failed or that the write to Flash failed. The alternatives seem to be to retry the block or halt loading and assume a hardware failure.

Value of <i>n</i> (for number of data bytes)	Range of Address (<i>al ah</i>)	Range of Count (<i>cl ch</i>)
$((ch * 256) + cl)$	2000-FFFF (hexadecimal)	0001-0400 (hexadecimal)

Range: Addresses run from 0 to 64K.

Related Information:

Available only in Download Mode.

Reboot the Printer

ASCII: GS (SPACE)

Hexadecimal: 1D FF

Decimal: 29 255

Ends the load process and reboots the printer. Before executing this command, the printer should have firmware loaded and external switches set to the runtime settings.

Application software for downloading should prompt the user to set the external switches and confirm before sending this command. If the downloading was started from a diagnostic, the reboot will cause the printer to reenter download state unless the external switches are changed.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&HFF)
```

Appendix A: Specifications

Printing Specifications

	Thermal Receipt Station	Slip Station
Print head	Fixed 576 Print Elements Direct Thermal Fixed Head Line of Dots	Bi-directional Logic Seeking Serial Dot Matrix Ribbon Cassette Forms Insertion
Character Cell	Standard: 13 x 24 Dots Compressed: 10 x 24 Dots	Standard: 10 x 7 Dots Compressed: 10 x 7 Dots
Character Size	.0525" Wide by .092" High	.057" Wide by .097" High
Character Spacing	15.25 Characters per Inch (horizontal)	
Character Pitch	15.6 Characters/Inch (Standard) 20.3 Characters/Inch (Compressed)	13.9 Characters/Inch (Standard) 17.1 Characters/Inch (Compressed)
Columns (maximum)	For 80 mm paper: 44 Columns (Standard) 56 Columns (Compressed) For 58 mm paper: 32 Columns (Standard) 42 Columns (Compressed)	45 Columns (Standard) 55 Columns (Compressed)
Print Mode	Standard, Compressed, Double High, Double Wide, Upside Down, Rotated, Underline, Scalable, Bold, Superscript, Italic, Subscript	Standard, Compressed, Double Wide, Upside Down, Rotated
Resident Fonts	Code Page 437, 850, 852, 860, 863, 865, 858, 866, 1252, Katakana, 874, 862, 864, and Space page	Code Page 437, 850, 852, 860, 863, 865, 858, 866, 1252, Katakana, 874, 862, 864, and Space page
Speed	3019 Lines / Minute (44 columns), Depend on Line Spacing	240/202/164/142 Lines per Minute; Depending on # of Columns (40 column width)
Print Order	Descending	Descending
Line Spacing	7.52 Lines per Inch (default) 8.47, 8.13, 7.81, 7.25, 7.00, 5.98 Lines / Inch and variable lines per inch.	7.2 Lines / Inch (default) 10.3, 9.0, 8.0, 6.5, 6.0, Lines / Inch and variable lines per inch.

	Thermal Receipt Station	Slip Station
Slew Speed	6.7 Inches per Second	4.0 lines per Second
Print Zone	2.83 Inches Maximum	3.23 Inches Maximum
Noise	57 dBA Sound Pressure (ISO 7779)	62 dBA Sound Pressure (ISO 7779)
Graphics (Optional)	User-Defined Graphics, Logo	User-Defined Graphics
Other	No Reverse Paper Feed	Reverse Paper Feed Two Form in Sensors

	Thermal Receipt Station	Impact Slip Station
Paper Diameter	80 mm Max.	Not Applicable
Paper Length	83 Meters (273 feet)	Side Insertion: 2.0 Inches (Min.) Front Insertion: 2.75 Inches (Min.)
Paper Width	80 mm ± 1mm (3.15 Inches ± .02 Inches)	Side Insertion: 8.0 Inches (Min.) Front Insertion: 2.0 Inches (Min.)
Paper Thickness	Not Applicable	.406 mm (.016 Inch)
Printable Area	2.83 Inches (Max.)	3.22 Inches (Max.)

Power Requirements

The 7167 printer receives power from a separate power supply. Here are the voltage requirements for the power supply.

Maximum Current			
Voltage	Station	Short Term	Long Term
24.0 V ± 10%	Slip	4.6 Amps	3.15 Amps
	Receipt	6.5 Amps	3.15 Amps

Environmental Conditions

Operating Temperature	5°C to 45°C (40°F to 112°F), models with knife 5°C to 50°C (40°F to 120°F), models with no knife
Operating Humidity	5% to 90%

Condensation may occur when equipment is transferred from cold to warm areas after shipment. The printer's design permits operation after drying out and stabilizing at room temperature.

Reliability

The numbers in the table refer to the Mean Cycle Between Failure (MCBF) for the items indicated.

Thermal Receipt Printer	45 Million Lines
Impact Slip Printer	15 Million Lines
Impact Print head	200 Million Characters
Electronics	347,000 On time Hours
Communications Card	2,000,000 On Time Hours
Control Panel	2,100,000 On Time Hours
Knife	1 Million Cuts
MICR Check Reader	200,000 Reads
Flip	200,000 Flips
Power Supply	200,000 On-time Hours
Flip Mechanism	200,000 Cycles

Dimensions and Weight

Height	174 mm (6.9 Inches)
Height with Cover Open	296 mm (11.7 Inches)
Width	190 mm (7.5 Inches)
Depth	262 mm (10.3 Inches)
Depth with Extended Slip Table	316 mm (12.5 Inches)
Weight	4.50 Kg (10.0 Pounds), Flip Model 4.25 Kg (9.4 Pounds), Non-Flip Model

Density of Receipt Print Lines

When the receipt station prints high density print lines (graphics), it automatically slows down to a rate slower than 902 lines per minute. High density print lines are defined as lines with over 50% of the dots printing on the line (there are 576 total dot columns on the print station).

Duty Cycle Restrictions (Printing Solid Blocks)

There are restrictions on the duty cycle because of the heat generated by the receipt thermal print head when printing solid blocks (regardless of the length of the block in relation to the print line). The restrictions are ambient temperature, the percentage of time (measured against one minute) of continuous solid printing, and the amount of coverage.

Caution: When the duty cycle approaches the limits shown in the table, the receipt print head will heat up and shut down. This may damage the print head.

To avoid this problem, do one or a combination of the following:

1. Reduce the amount of coverage.
2. Reduce the time of continuous solid printing.
3. Reduce the ambient temperature.

Amount of Solid Coverage	Ambient Temperature		
	25° C	35° C	50° C
20%	100% of 1 min. continuous printing	50% of 1 min. continuous printing	20% of 1 min. continuous printing
40%	50% of 1 min. continuous printing	25% of 1 min. continuous printing	10% of 1 min. continuous printing
100%	20% of 1 min. continuous printing	10% of 1 min. continuous printing	3% of 1 min. continuous printing

Appendix B: Print Characteristics

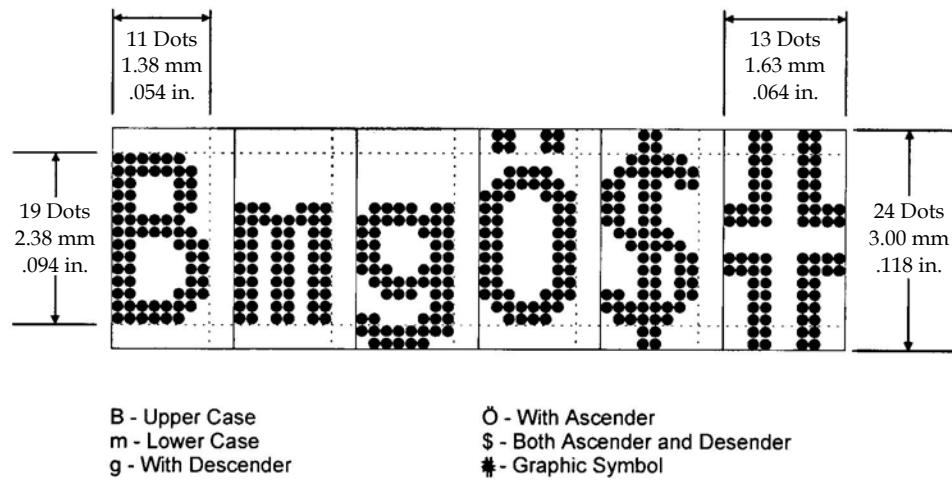
Character Size

This section shows the dot pattern for characters printed on the receipt and slip stations.

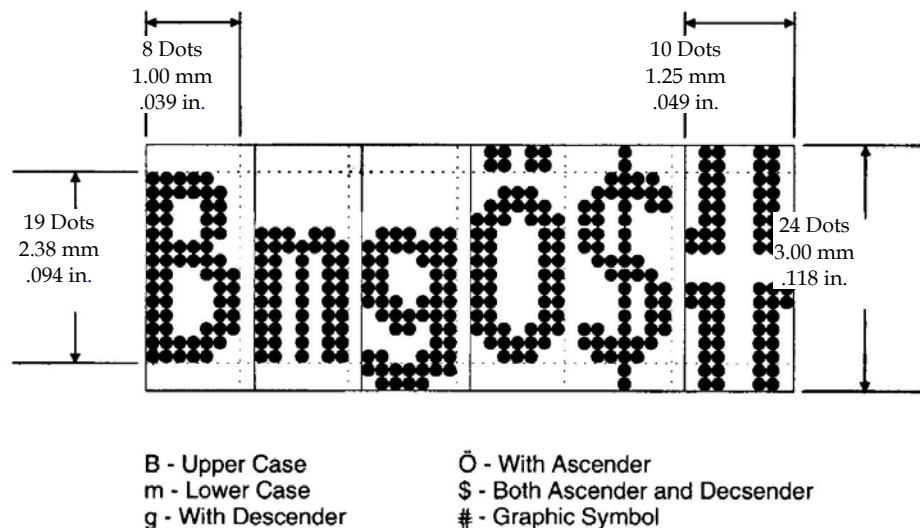
Receipt Station

The following two illustrations show the dot patterns of sample characters for standard pitch (15.6 CPI) and compressed pitch (20.3 CPI). Note that compressed pitch uses fewer dots horizontally than standard pitch.

Standard Pitch



Compressed Pitch

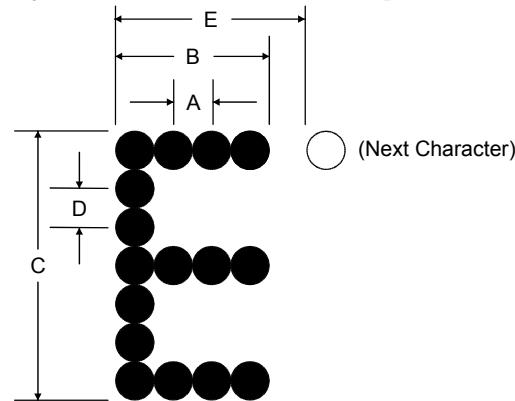


Slip Station

The following illustrations show the dot patterns of sample characters for standard pitch (13.9 CPI), double-wide characters, and rotated characters (counterclockwise).

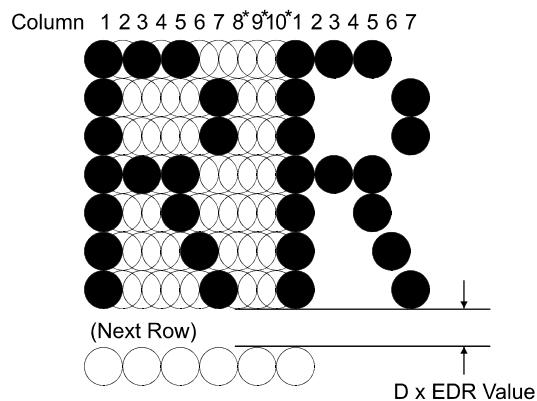
Standard Pitch

The first illustration shows a single character with the dimensions listed in the table that follows (including dimensions for compressed pitch). The second illustration shows the layout of columns for standard pitch characters.



Row spacing is fixed and column spacing depends upon the character pitch as indicated in the table.

Dimension	Standard Pitch (13.9 CPI, 45 Columns)	Compressed Pitch (17.1 CPI, 55 Columns)
A	.366 mm (.0144 inches)	.30 mm (.0117 inches)
B	1.45 mm (.057 inches)	1.24 mm (.049 inches)
C	2.46 mm (.097 inches)	
D	.353 mm (.0139 inches)	
E	1.83 mm (.072 inches)	1.49 mm (.0585 inches)

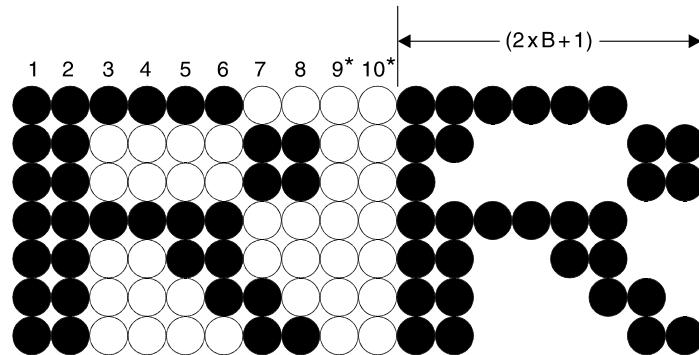


* Columns 8, 9, and 10 are for graphics or
for certain special characters

Note: Columns overlap within the format for each print row in half-dot increments (depending upon pitch), but the printer cannot print overlapping dots on a single print row. No ASCII character contains overlapping dots on a print row.

Double-Wide Characters

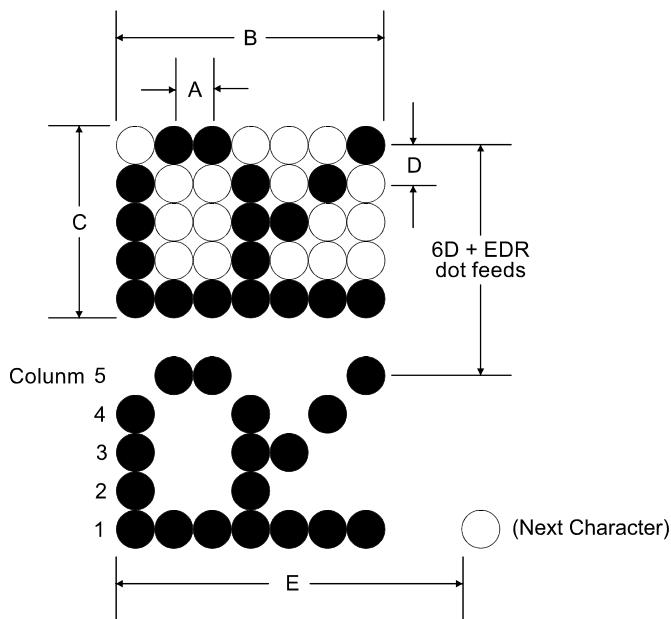
Double-wide characters are upright characters in an 8x7 dot format with twice the column (horizontal) spacing between printed dots as for standard characters.



* Columns 9 and 10 for certain special characters

Rotated Characters

Rotated characters are alternate characters in a 5x7 dot format printed 90 degrees counterclockwise (as shown in the illustration) or clockwise. Only one horizontal pitch is available: 6.95 CPI, 33 columns maximum.



Dimension	Horizontal Pitch (6.95 CPI, 33 Columns)
A	.366 mm (.0144 inches)
B	2.56 mm (.100 inches)
C	1.75 mm (.069 inches)
D	.353 mm (.0139 inches)
E	3.66 mm (.144 inches)

Print Zones

This section shows the printable area for the slip station and the receipt station.

Receipt Station

For 80 mm Paper

The receipt station centers characters (standard pitch and compressed pitch) and graphics on an 80 mm wide (3.15 inches) receipt.

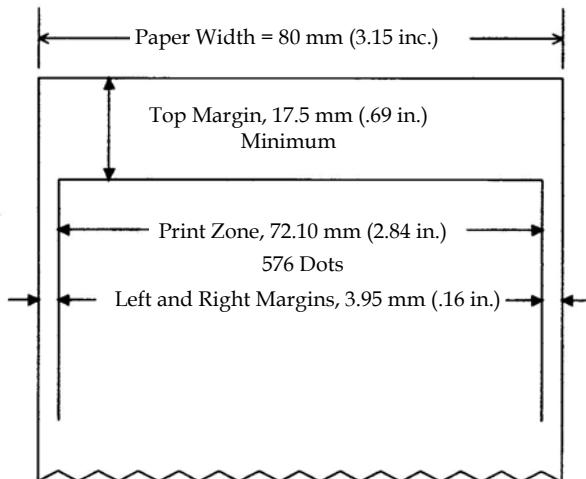
Standard pitch: 13 x 24 dots in character cell, 44 characters (columns) per line

Compressed pitch: 10 x 24 dots in character cell, 56 characters (columns) per line

Double byte character: 24 x 24 dots in character cell, 24 characters (columns) per line

Graphics: 576 addressable bits

The minimum print line height is 24 dots for characters and 24 dots for graphics. The standard print line height is 27 dots (3.38 mm, .133 inches) for characters (with three extra dot rows). See the following illustration (not to scale).



For 58 mm Paper

The receipt station centers characters (standard pitch and compressed pitch) and graphics on an 58 mm wide (2.28 inches) receipt.

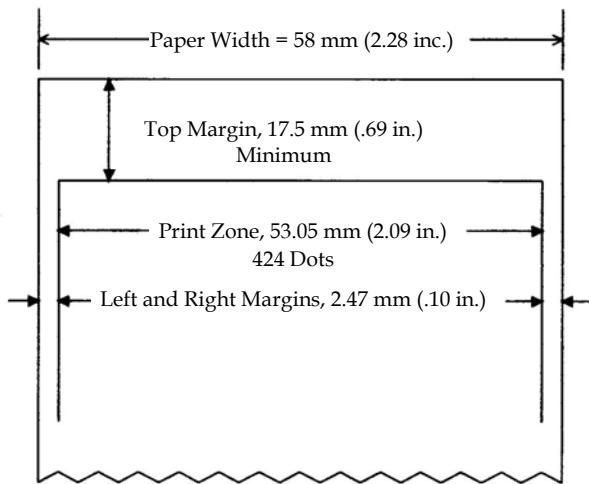
Standard pitch: 13 x 24 dots in character cell, 32 characters (columns) per line

Compressed pitch: 10 x 24 dots in character cell, 42 characters (columns) per line

Double byte character: 24 x 24 dots in character cell, 17 characters (columns) per line

Graphics: 424 addressable bits

The minimum print line height is 24 dots for characters and 24 dots for graphics. The standard print line height is 27 dots (3.38 mm, .133 inches) for characters (with three extra dot rows). See the following illustration (not to scale).



Slip Station

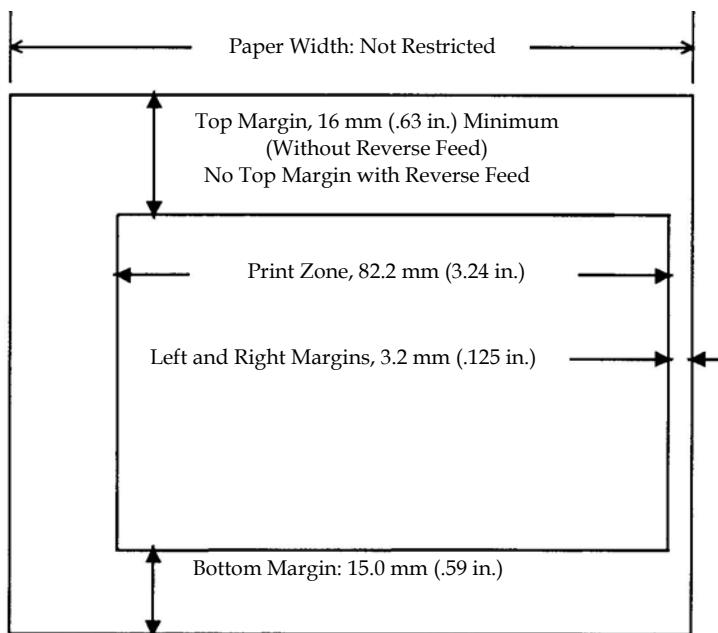
The slip station prints characters (standard pitch and compressed pitch) and graphics in a print zone of 82.2 mm (3.24 inches) wide on a slip or form.

Standard pitch: 45 characters (columns) per line

Compressed pitch: 55 characters (columns) per line

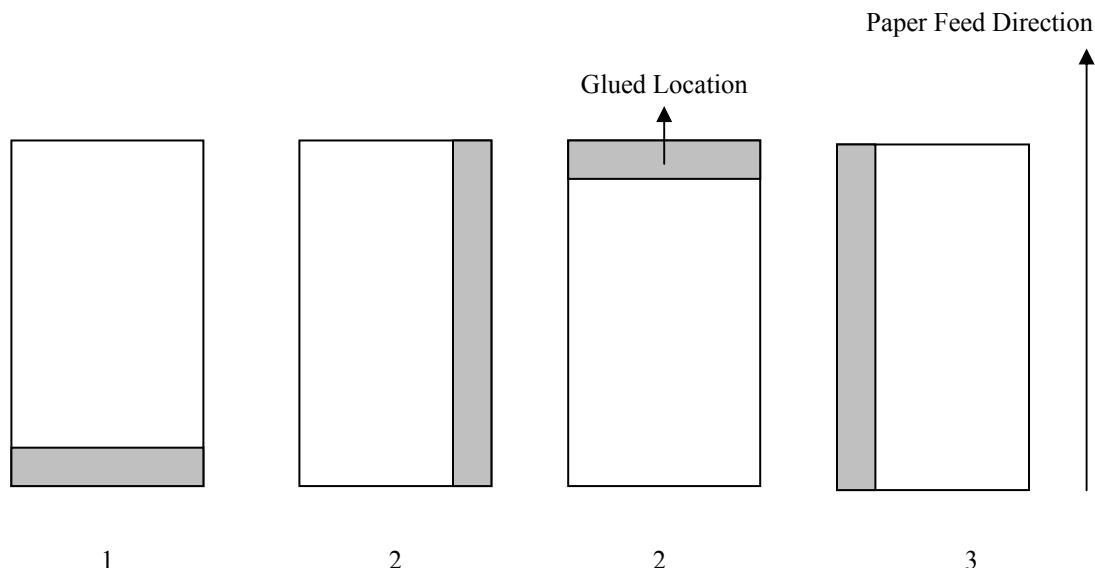
Double byte character: 27 characters (columns) per line

The print line height of 10 half dot x 7 dot characters is 2.46 mm (.097 in). With three-dot spacing, the print line height is 3.53 mm (.139 inches). See the following illustration (not to scale). To print as close to the bottom of the slip as possible without the slip leaving the feed rollers, use the **Print and Feed n Lines (1B 64 n)**, with n = 0.



Slip Form Parameters

In order for the printer to handle forms properly the forms shall be flat and void of curls or wrinkles especially at the leading edge of the form.



Form construction for glued edges.

- 1) Bottom edge of form should not be glued
- 2) Paper feeding and insertion are affected by gluing method and the quality of glue used when form is glued on the right or top edge of form.
- 3) Skewing may occur when the form is glued on the left edge or when a wide form is used.

The sensors on the printer slip station use a reflective type photo sensor. Therefore the following precautions must be taken to allow for proper operation.

- Paper that has holes or is translucent in the sensor locations as shown below should not be used.
- When thin paper is used it should be placed between the top and bottom sheets of multiply paper. The thickest ply of paper should be the last ply

Check Size

The size of the check that the slip station and check flip mechanism handles conforms to ANSI/ABA standard X9.13 dated 1999.

Personal Check

6.00" (152.40 mm) wide x 2.750" (69.85 mm) High .

Business

8.75" (222.25 mm) wide x 3.667" (93.14 mm) High

MICR Media Requirements

MICR Printing

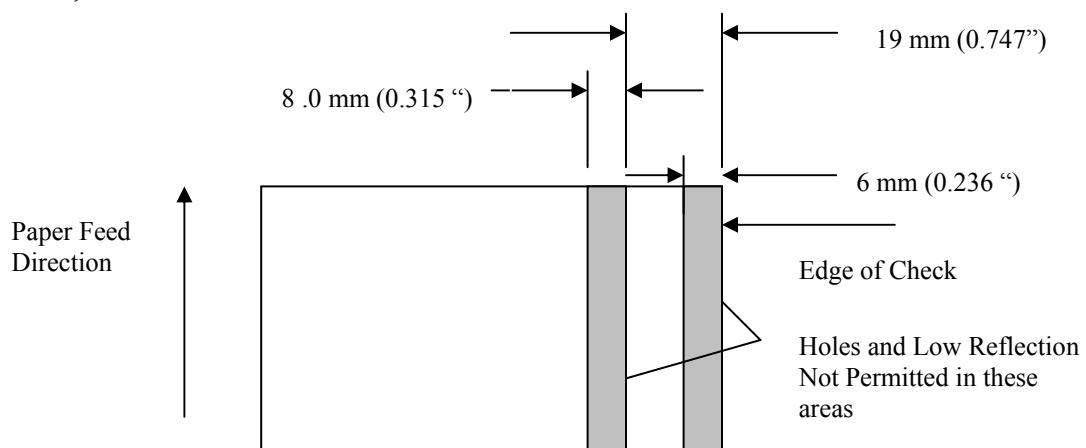
Printing of MICR Characters must conform to MICR standards as defined in ANSI/ABA X9.13, X9.18 and 9.27 as well ISO 1004.

Forms

Checks must be flat and void of curls, folds or wrinkles especially at the leading edges of the checks.

Paper jams and MICR read errors will occur if check have paper clips and staples. Also damage to the printer mechanism may occur to printer components such as the MICR read head, paper feed rollers, impact print head, etc..

When inserting the check into the printer and the the printer feed rolls begin to feed the check release the check immediately. Skewing of the check will occur which will cause check jams and MICR read errors.



Appendix C: Character Sets

The following pages show the character sets.

- PC Code Page 437 (USEnglish)
- PC Code Page 850 (Multilingual)
- PC Code Page 852 (Slavic)
- PC Code Page 860 (Portuguese)
- PC Code Page 862 (Hebrew)
- PC Code Page 863 (French-Canadian)
- PC Code Page 864 (Arabic)
- PC Code Page 865 (Nordic)
- PC Code Page 866 (Cyrillic)
- PC Code Page 1252 (Windows Latin #1)
- PC Code Page Katakana
- PC Code Page 874 (Thai)
- Space Page
- Code Page 932
- Code Page 936
- Code Page 949
- Code Page 950

Code Page 950 Code Page 437, 850, 852 and 858

Code Page 437.

2 3 4 5 6 7 8 9 A B C D E F

00	0 @ P ` p Ç É á :: L Í a =
01	! 1 A Q a q u à i :: L Í B ±
02	" 2 B R b r é Æ ó :: T Í G N :
03	# 3 C S c s â ô ú :: T Í P S ≤
04	\$ 4 D T d t ä ö Ñ :: T Í Z F
05	% 5 E U e u à ò Ñ :: T Í F O J
06	& 6 F V f v à û :: T Í F H +
07	' 7 G W g w ç ù :: T Í F T z
08	(8 H X h x è y ç :: T Í F F *
09) 9 I Y i y è ö :: T Í F J *
0A	* : J Z j z è U :: T Í F F *
0B	+ ; K [k { i ø z :: T Í F F *
0C	, < L \ l i ï :: T Í F F *
0D	- = M] m } i ¥ i :: T Í F F *
0E	. > N ^ n ~ Á x « z :: T Í F F *
0F	/ ? 0 o ñ Á f » :: T Í F F *

Code Page 850.

2 3 4 5 6 7 8 9 A B C D E F

00	0 @ P ` p Ç É á :: L Í Õ -
01	! 1 A Q a q u à i :: L Í Õ B ±
02	" 2 B R b r é Æ ó :: T Í Õ E Õ :
03	# 3 C S c s â ô ú :: T Í Õ E Õ S ≤
04	\$ 4 D T d t ä ö Ñ :: T Í Õ E Õ F
05	% 5 E U e u à ò Ñ :: T Í Õ A + 1
06	& 6 F V f v à û :: T Í Õ A ã I
07	' 7 G W g w ç ù :: T Í Õ A ã I
08	(8 H X h x è y ç :: T Í Õ A ã I
09) 9 I Y i y è ö :: T Í Õ A ã I
0A	* : J Z j z è U :: T Í Õ A ã I
0B	+ ; K [k { i ø 0 :: T Í Õ A ã I
0C	, < L \ l i ï :: T Í Õ A ã I
0D	- = M] m } i Ø i :: T Í Õ A ã I
0E	. > N ^ n ~ Á x « ¥ # :: T Í Õ A ã I
0F	/ ? 0 o ñ Á f » :: T Í Õ A ã I

Code Page 852.

2 3 4 5 6 7 8 9 A B C D E F

00	0 @ P ` p Ç É á :: L Í Õ -
01	! 1 A Q a q Ú L 1 :: L Í Õ B
02	" 2 B R b r é 1 ó :: T Í Õ D Õ :
03	# 3 C S c s á ô ú :: T Í Õ E N :
04	\$ 4 D T d t ä ö A :: T Í Õ Ä N :
05	% 5 E U e u Ú L a A + Ñ Ñ S
06	& 6 F V f v c í Ð A Ä Í S +
07	' 7 G W g w ç S Ð È Ä Í S :
08	(8 H X h x Ð S È Ð È R :
09) 9 I Y i y è ö e :: T Í Õ R
0A	* : J Z j z Õ U :: T Í Õ R
0B	+ ; K [k { Õ Ð z :: T Í Õ R
0C	, < L \ l i Ð c :: T Í Õ R
0D	- = M] m } Ð l s Ð = J Y Ð
0E	. > N ^ n ~ Á x « z :: T Í Õ R
0F	/ ? 0 o ñ Á c » :: T Í Õ R

Code Page 858.

2 3 4 5 6 7 8 9 A B C D E F

00	0 @ P ` p Ç É á :: L Í Õ -
01	! 1 A Q a q Ú L 1 :: L Í Õ B
02	" 2 B R b r é 1 ó :: T Í Õ D Õ :
03	# 3 C S c s â ô ú :: T Í Õ E Õ :
04	\$ 4 D T d t ä ö Ñ :: T Í Õ E Õ S
05	% 5 E U e u à ò Ñ :: T Í Õ A +
06	& 6 F V f v à û :: T Í Õ A ã I
07	' 7 G W g w ç ù :: T Í Õ A ã I
08	(8 H X h x è y ç :: T Í Õ A ã I
09) 9 I Y i y è ö :: T Í Õ A ã I
0A	* : J Z j z è U :: T Í Õ A ã I
0B	+ ; K [k { i ø 0 :: T Í Õ A ã I
0C	, < L \ l i ï :: T Í Õ A ã I
0D	- = M] m } i Ø i :: T Í Õ A ã I
0E	. > N ^ n ~ Á x « ¥ # :: T Í Õ A ã I
0F	/ ? 0 o ñ Á f » :: T Í Õ A ã I

Code Page 860, 862, 863 and 864

Code Page 860.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P ` p Ç É à				L	¶	α	=						
01	! 1 A Q a q Ú Á 1				+	ß	β	±						
02	" 2 B R b r é E ó				T	π	Γ	Σ						
03	# 3 C S c s â ô Ú				T	π	Π	Σ						
04	\$ 4 D T d t á ö ñ				T	π	Σ	ñ						
05	% 5 E U e u à ò Ñ				T	π	σ	ò						
06	& 6 F V f v Á Ú				T	π	μ	ú						
07	' 7 G W g w ç ù				T	π	τ	ù						
08	(8 H X h x ê ï				T	π	θ	ï						
09) 9 I Y i y É Õ				T	π	θ	õ						
0A	* : J Z j z è Ù				T	π	Ω	Ù	.					
0B	+ ; K [k { í ¢				T	π	δ	í	✓					
0C	, < L \ 1 ó £				T	π	ø	£	ø					
0D	- = M] m } í Ù				T	π	φ	Ù	ø					
0E	. > N ^ n ~ Á Ù				T	π	«	Ù	ø					
0F	/ ? 0 _ o ð Á Ó				T	π	»	Ó	ø					

Code Page 862

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P ` p à				L	¶	α	=						
01	! 1 A Q a q 1				S	ב	ב	א						
02	" 2 B R b r ג ג				ת	ג	ג	ג						
03	# 3 C S c s ד ד				ת	ד	ד	ד						
04	\$ 4 D T d t נ נ				ת	נ	נ	נ						
05	% 5 E U e u א א				ת	א	א	א						
06	& 6 F V f v ת ת				ת	ת	ת	ת						
07	' 7 G W g w ח ח				ת	ח	ח	ח						
08	(8 H X h x י י				ת	י	י	י						
09) 9 I Y i y א א				ת	א	א	א						
0A	* : J Z j z א א				ת	א	א	א	.					
0B	+ ; K [k { א א				ת	א	א	א	✓					
0C	, < L \ 1 א א				ת	א	א	א	ø					
0D	- = M] m } א א				ת	א	א	א	ø					
0E	. > N ^ n ~ א א				ת	א	א	א	ø					
0F	/ ? 0 _ o ð א א				ת	א	א	א	ø					

Code Page 863.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P ` p Ç É à				L	¶	α	=						
01	! 1 A Q a q Ú Á 1				+	ß	β	±						
02	" 2 B R b r é E ó				T	π	Γ	Σ						
03	# 3 C S c s â ô Ú				T	π	Π	Σ						
04	\$ 4 D T d t Á E				T	π	Σ	ñ						
05	% 5 E U e u à ò Ñ				T	π	σ	ò						
06	& 6 F V f v Á Ú				T	π	μ	ú						
07	' 7 G W g w ç ù				T	π	τ	ù						
08	(8 H X h x ê ï				T	π	θ	ï						
09) 9 I Y i y É Õ				T	π	θ	õ						
0A	* : J Z j z è Ù				T	π	Ω	Ù	.					
0B	+ ; K [k { í ¢				T	π	δ	í	✓					
0C	, < L \ 1 ó £				T	π	ø	£	ø					
0D	- = M] m } í Ù				T	π	φ	Ù	ø					
0E	. > N ^ n ~ Á Ù				T	π	«	Ù	ø					
0F	/ ? 0 _ o ð Á Ó				T	π	»	Ó	ø					

Code Page 864

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P ` p ° β				·	ø	-	*						
01	! 1 A Q a q . ø				۱	۰	۲	۳						
02	" 2 B R b r . φ				۲	۱	۳	۴						
03	# 3 C S c s √ ±				۵	۶	۷	۸						
04	\$ 4 D T d t ۷ ۸				۹	۰	۱	۲						
05	% 5 E U e u - ۴				۳	۵	۶	۷						
06	& 6 F V f v =				۸	۹	۰	۱						
07	' 7 G W g w + <				۲	۳	۴	۵						
08	(8 H X h x + >				۶	۷	۸	۹						
09) 9 I Y i y + ب				۰	۱	۲	۳						
0A	* : J Z j z أ				۴	۵	۶	۷						
0B	+ ; K [k { أ				۸	۹	۰	۱						
0C	, < L \ 1 أ				۲	۳	۴	۵						
0D	- = M] m } أ				۶	۷	۸	۹						
0E	. > N ^ n ~ أ				۰	۱	۲	۳						
0F	/ ? 0 _ o ð أ				۴	۵	۶	۷						

Code Page 865, 866, 874 and 1252

Code Page 865.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P	' p	Ç	É	á	í	ł	ł	ł	ł	ł	ł	ł	ł
01	! 1 A Q	a q	ü	ä	í	ö	ü	ü	ü	ü	ü	ü	ü	ü
02	" 2 B R	b r	é	ó	ó	ó	ó	ó	ó	ó	ó	ó	ó	ó
03	# 3 C S	c s	â	ô	û	û	û	û	û	û	û	û	û	û
04	\$ 4 D T	d t	ä	ö	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ
05	% 5 E U	e u	å	ò	N	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ
06	& 6 F V	f v	ä	ö	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ	ñ
07	' 7 G W	g w	ç	ú	º	º	º	º	º	º	º	º	º	º
08	(8 H X	h x	é	ó	º	º	º	º	º	º	º	º	º	º
09) 9 I Y	i y	ë	ö	º	º	º	º	º	º	º	º	º	º
0A	* : J Z	j z	é	ó	º	º	º	º	º	º	º	º	º	º
0B	+ ; K [k {	í	ó	º	º	º	º	º	º	º	º	º	º
0C	, < L \	l	í	ó	º	º	º	º	º	º	º	º	º	º
0D	- = M]	m }	í	ó	º	º	º	º	º	º	º	º	º	º
0E	. > N ^	n ^	Ä	Pt	«	»	»	»	»	»	»	»	»	»
0F	/ ? O _	o o	À	Þ	»	»	»	»	»	»	»	»	»	»

Code Page 866.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P	' p	À	Р	а	и	л	л	л	л	л	л	л	л
01	! 1 A Q	a q	Б	С	б	с	т	т	т	т	т	т	т	т
02	" 2 B R	b r	В	Т	в	т	п	п	п	п	п	п	п	п
03	# 3 C S	c s	Г	У	г	у	т	т	т	т	т	т	т	т
04	\$ 4 D T	d t	Д	Ф	д	ф	т	т	т	т	т	т	т	т
05	% 5 E U	e u	Е	Х	е	х	ш	ш	ш	ш	ш	ш	ш	ш
06	& 6 F V	f v	Ж	Ц	ж	ц	з	з	з	з	з	з	з	з
07	' 7 G W	g w	З	Ч	з	ч	ч	ч	ч	ч	ч	ч	ч	ч
08	(8 H X	h x	И	Ш	и	ш	и	ш	и	ш	и	ш	и	ш
09) 9 I Y	i y	Й	Ы	й	ы	и	и	и	и	и	и	и	и
0A	* : J Z	j z	К	Ы	к	ы	к	ы	к	ы	к	ы	к	ы
0B	+ ; K [k {	Л	Ы	л	ы	л	ы	л	ы	л	ы	л	ы
0C	, < L \	l	М	Ы	м	ы	м	ы	м	ы	м	ы	м	ы
0D	- = M]	m }	Н	Э	н	э	н	э	н	э	н	э	н	э
0E	. > N ^	n ^	О	Ю	о	ю	о	ю	о	ю	о	ю	о	ю
0F	/ ? O _	o o	П	Я	я	я	я	я	я	я	я	я	я	я

Code Page 874.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P	' p	æ	ø	ž	ı	º	º	º	º	º	º	º	º
01	! 1 A Q	a q	ñ	ä	ö	º	º	º	º	º	º	º	º	º
02	" 2 B R	b r	ø	å	å	º	º	º	º	º	º	º	º	º
03	# 3 C S	c s	å	ø	ø	º	º	º	º	º	º	º	º	º
04	\$ 4 D T	d t	œ	ø	ø	º	º	º	º	º	º	º	º	º
05	% 5 E U	e u	œ	ø	ø	º	º	º	º	º	º	º	º	º
06	& 6 F V	f v	ø	ø	ø	º	º	º	º	º	º	º	º	º
07	' 7 G W	g w	ø	ø	ø	º	º	º	º	º	º	º	º	º
08	(8 H X	h x	ø	ø	ø	º	º	º	º	º	º	º	º	º
09) 9 I Y	i y	ø	ø	ø	º	º	º	º	º	º	º	º	º
0A	* : J Z	j z	ø	ø	ø	º	º	º	º	º	º	º	º	º
0B	+ ; K [k {	ø	ø	ø	º	º	º	º	º	º	º	º	º
0C	, < L \	l	ø	ø	ø	º	º	º	º	º	º	º	º	º
0D	- = M]	m }	ø	ø	ø	º	º	º	º	º	º	º	º	º
0E	. > N ^	n ^	ø	ø	ø	º	º	º	º	º	º	º	º	º
0F	/ ? O _	o o	ø	ø	ø	º	º	º	º	º	º	º	º	º

Code Page 1252.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P	' p	€	‘	’	°	À	Đ	à	đ	‘	’	°	°
01	! 1 A Q	a q	’	’	’	’	’	’	’	’	’	’	’	’
02	" 2 B R	b r	’	’	’	’	’	’	’	’	’	’	’	’
03	# 3 C S	c s	’	’	’	’	’	’	’	’	’	’	’	’
04	\$ 4 D T	d t	”	”	”	”	”	”	”	”	”	”	”	”
05	% 5 E U	e u	”	”	”	”	”	”	”	”	”	”	”	”
06	& 6 F V	f v	’	’	’	’	’	’	’	’	’	’	’	’
07	' 7 G W	g w	’	’	’	’	’	’	’	’	’	’	’	’
08	(8 H X	h x	’	’	’	’	’	’	’	’	’	’	’	’
09) 9 I Y	i y	’	’	’	’	’	’	’	’	’	’	’	’
0A	* : J Z	j z	’	’	’	’	’	’	’	’	’	’	’	’
0B	+ ; K [k {	’	’	’	’	’	’	’	’	’	’	’	’
0C	, < L \	l	’	’	’	’	’	’	’	’	’	’	’	’
0D	- = M]	m }	’	’	’	’	’	’	’	’	’	’	’	’
0E	. > N ^	n ^	’	’	’	’	’	’	’	’	’	’	’	’
0F	/ ? O _	o o	’	’	’	’	’	’	’	’	’	’	’	’

Code Page Katakana

Code Page KATAKANA.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0	Q	P	`	p	_	ト	-	タ	ミ	ニ	×		
01	!	1	A	Q	a	q	-	ト	ア	チ	ム	ヒ	円	
02	"	2	B	R	b	r	-	ト	イ	ツ	メ	ヰ	年	
03	#	3	C	S	c	s	-	ト	ウ	テ	モ	ゴ	月	日
04	\$	4	D	T	d	t	-	ト	イ	ト	ヤ	ヨ	時	日
05	%	5	E	U	e	u	-	ト	オ	ナ	ヨ	ヨ	カ	分
06	&	6	F	V	f	v	-	ト	カ	ニ	ラ	ヲ	カ	秒
07	'	7	G	W	g	w	-	ト	キ	ヌ	ラ	リ	ツ	秒
08	<	8	H	X	h	x	-	ト	ク	ケ	ネ	ノ	リ	市
09)	9	I	Y	i	y	-	ト	ウ	ク	ハ	レ	◆	区
0A	*	:	J	Z	j	z	-	ト	コ	ハ	ロ	◆	◆	町
0B	+	;	K	[k	{	-	ト	オ	サ	ヒ	ロ	◆	町
0C	,	<	L	\	l		-	ト	ヤ	シ	フ	ン	◆	村
0D	-	=	M]	m	}	-	ト	ユ	ス	ヘ	ン	◆	人
0E	.	>	N	^	n	~	-	ト	ヨ	セ	ホ	◆	/	‰
0F	/	?	O	_	o	o	-	ト	ツ	ソ	マ	◆	＼	

Code Page 932

Code page 932

20 ! " # \$ % & ' () * + , - . /
30 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
40 @ A B C D E F G H I J K L M N O
50 P Q R S T U V W X Y Z [¥] ^ ~ _
60 ` a b c d e f g h i j k l m n o
70 p q r s t u v w x y z { | }
80
90
A0 。「」、・ヲ ア イ ウ エ オ カ キ ク ケ コ サ シ ジ ウ ェ ソ ッ
B0 - ア イ ウ エ オ カ キ ク ケ コ サ シ ジ セ ソ
C0 タ チ ツ テ ド ナ ニ ヌ ネ ノ ハ ヒ フ ヘ ホ マ
D0 ミ ム メ モ ャ ュ ョ ラ リ ル レ ロ ワ ヽ[。]
E0
F0

Code page 932-82

40		0
50	1 2 3 4 5 6 7 8 9	
60	A B C D E F G H I J K L M N O P	
70	Q R S T U V W X Y Z	
80	a b c d e f g h i j k l m n o	
90	p q r s t u v w x y z	あ
A0	あい い う う え え お お か が き ぎ く ぐ け	
B0	げ こ ご さ ざ し じ す す せ ぜ そ ぞ た だ ち	
C0	ち っ つ づ て で と ど な に ぬ ね の は ば ば	
D0	ひ び ぴ ふ ぶ ぶ へ べ べ ほ ぼ ま み む め	
E0	も ゃ や ゅ ゆ ょ よ ら り る れ ろ わ わ ん ん	
F0	を ん	

Code page 932-81

Code page 932-83

40	ア イ イ ウ ェ エ ォ ォ カ ガ キ キ グ
50	ケ ゲ コ ゴ サ ザ シ ジ ス ズ セ ゼ ソ ゾ タ ダ
60	チ チ ッ ツ ツ テ デ ト ド ナ ニ ヌ ネ ノ ハ バ
70	バ ヒ ビ ピ フ ブ プ ヘ ベ ペ ホ ボ ポ マ ミ
80	ム メ モ ャ ャ ュ コ ョ ョ ラ リ ル レ ロ ワ ワ
90	ヰ エ ラ ン ヴ カ ケ
A0	ビ ギ デ エ ズ ハ ウ イ カ ム ニ イ オ パ ピ
B0	シ タ ヨ フ チ リ ウ
C0	ビ ヨ ド エ ズ ハ ウ イ カ ム ニ イ タ ハ ピ ロ
D0	シ タ ユ フ チ リ ウ
E0	
F0	

Code Page 932 (Cont)

Code page 932-84

40	А Б В Г Д Е Ё Ж З И Й К Л М Н О
50	П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю
60	Я
70	абвгдежзиийклмн
80	опрстуфхчшщъыъэ
90	юя
A0	˘ ˘ ˘ ˘ ˘ ˘ ˘ ˘ ˘
B0	˘ ˘ ˘ ˘ ˘ ˘ ˘ ˘ ˘ ˘
C0	
D0	
E0	
F0	

Code page 932-87

40	① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯
50	⑯ ⑰ ⑱ ⑲ ⑳ Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ Ⅷ Ⅸ Ⅹ
60	*ロゴンダルムカントンルタニロードルモンセウタヌルジーマム
70	смкммгкгссм'
80	" " K.K.Tel(上)中(下)左(右)株有(代)略大正略
90	≒ ≈ ∫ φ Σ √ ⊥ ∠ L Δ :: ∏ ∏
A0	
B0	
C0	
D0	
E0	
F0	

Code page 932-88

40	
50	
60	
70	
80	
90	
A0	哩娃阿哀愛挨始遙葵茜穩惡握渥旭董
B0	芦繆梓压斡扳宛姐虻飴絢綾鮎或粟裕
C0	安庵按暗棗闇鞍杏以伊位依偉困夷委
D0	威尉惟意慰易椅為畏異移維縛冒萎衣
E0	謂違遺医并亥域育郁礪一壹溢逸稻茨
F0	芋觸允印咽員因姻引飲淫漸薩

Code page 932-89

40	院陰隱韻吋右宇烏羽迂雨卯鶼窺丑碓
50	臼渴噓唄鬱蔚鰐姥厥浦瓜闌鳴云運雲
60	荏餉叡營嬰影映叟榮永泳洩瑛盈穎頽
70	英衛詠銳液疫益駿悅謁越闊樞厭円
80	圓堰奄宴延怨掩援沿演炎焰煙燕猿綠
90	艷苑菌遠鉛鰐塙於汚甥凹央奧往応押
A0	旺橫歐殴王翁襖鳴黃岡沖荻億壓憶
B0	膾桶牡乙俺卸恩溫穩音下化仮何伽価
C0	佳加可嘉夏嫁家寡科暇果架歌河火珂
D0	禍禾稼箇花奇茄荷華葉蝦課嘩賣迦過
E0	霍蚊俄峨我牙画臥芽蛾賀雅餓駕介会
F0	解回塊壞廻快怪悔恢懷戒拐改

Code Page 932 (Cont)

Code page 932-8A

40 魁晦械海灰界皆繪芥蟹開階貝凱効外
 50 咳害崖慨概涯碍蓋街該鎧骸哩聲蛙垣
 60 柿蛎鈎劃哧各廓拏攬格核殼獲確獲覺
 70 角赫較郭闔隔革學岳渠額顎挂笠櫻
 80 檯梶欸渴割喝恰括活渴滑暮褐轄且鰣
 90 叶花樺鞞株兜電蒲釜鑑噏鴨栢茅薑粥
 A0 刍刈瓦乾侃冠寒刊勘勸卷喚堪姦完官
 B0 寛干幹患感憤憾換敢桓桓棺款歡汗漢
 C0 潛淹環甘監看竿管簡緩缶翰肝艦莞觀
 D0 諫貢還繼間閑闌陷韓館館丸含庫嚴玩
 E0 瘋眼岩覩廣雁頑顧願企伎危喜器基奇
 F0 嬉寄岐希幾忌揮机旗既期棋棄

Code page 932-8B

40 機帰毅氣汽畿祈季稀紀微規記賣起軌
 50 輜飢騎鬼龜偽儀妓宜戲技擬欺犧疑祇
 60 義蠻誼議採菊鞠吉吃喫桔橘詰砧杵黍
 70 却客脚膚逆丘久仇休及吸宮弓急救
 80 朽求汲泣灸球究窮笈級糾給日牛去居
 90 巨拒拏拳渠虛許距鋸漁樂魚亨享京供
 A0 俠儒兇競共凶協匪卿叫喬境峽強彊怯
 B0 忍恭挾教橋況狂狹矯胸脅與蕃鄉鏡響
 C0 擬驚仰凝堯曉業局曲極玉桐杆僅勤均
 D0 巾錦斤欣欽琴禁禽筋繫芹菌衿襟謹近
 E0 金吟銀九俱句区狗玖矩苦駆駢駒具
 F0 愚虞喰空偶寓遇隅串櫛鉗肩屈

Code page 932-8C

40 掘窟雀靴巒窟熊隈衆乘綠桑鍊動君薰
 50 訓群軍郡封袈祁係傾刑兄啓圭珪型契
 60 形徑恩慶慧想揭擣敬景桂溪畦稽系經
 70 繼繫罰莖刑蛩計詣瞽輕頸鷗芸迎鯨
 80 劇戰擊激隙衍傑欠決潔穴結血訣月件
 90 儉倦健乘券劍宣圖堅嫌違憲懸拳捲檢
 A0 権牽大獻研硯綱具肩見諫質軒直鍵檢
 B0 頸駁頤元原駁幻弦減源玄現弦弦言諱
 C0 限平個古呼固姑孤己庫弧戶故枯湖孤
 D0 溜拷股胡孤虎誇跨鈎履顧敲五互伍午
 E0 吳吾娘後御唔梧橋湖善語誤謾醜乞餽
 F0 交皎侯候倅光公功効勾厚口向

Code page 932-8D

40 后喉坑垢好孔孝宏工巧巷幸広庚康弘
 50 恒慌抗拘控攻昂晃更杭校梗檣江洪浩
 60 港溝甲皇硬稿糧紅紗絞綱耕考肯肱腔
 70 齒航荒行衛講賣購郊醇鉢礮鋼閭降
 80 項香高鴻剛劫号合壙拷滾豪轟魏克刻
 90 告國穀酷鵠黑獄漉腰誠忽惚骨泊込此
 A0 頃今困坤墾婚恨懇香昆根樞混痕紺良
 B0 魂些佐又唆嵯左差查沙嵯砂詐鎖裟坐
 C0 座挫債催再最哉塞妻宰彩才採裁歲濟
 D0 災采犀碎砦祭斎細菜裁載際劑在材罪
 E0 財汎坂阪堺棹肴咲崎崎砌鱗作削昨搾
 F0 昨朔柵窄策索錯櫻鮭筆冊刷

Code page 932-8E

40 繫拶摺擦札殺薩雜蟲鯖捌鐫絞皿晒三
 50 垈參山慘撤散棧燦珊瑚產算纂蚕讚贊酸
 60 養斬暫殘仕仔伺使刺司史嗣四十始姍
 70 姿子屍市師志思指支孜斯施旨枝止
 80 死氏獅社私糸紙紫肢脂至視詞詩試誌
 90 諮資賜雌飼齒事似侍兒字寺慈持時次
 A0 滋治爾靈痔磁示而耳自蒔辭汐鹿式識
 B0 瞞竺軸穴零七叱執失嫉室悉湿漆疾質
 C0 宰茚箇傀柴芝屢蕊縞舍写射捨放斜煮
 D0 社紗耆謝車遮蛇邪借勺尺杓灼爵酌釀
 E0 錫若寂弱惹主取守手朱殊特珠種腫趣
 F0 酒首儒受呪寿授樹綬需囚收周

Code page 932-8F

40 宗就州修愁拾洲秀秋終編習奧舟蒐衆
 50 裝跛蹠輯週酉酬集醜什住充十從戎柔
 60 汗汎獸縱重銳叔夙宿淑祝縮肅整熟出
 70 術述俊峻春瞬竣舜駿准循司橋殉淳
 80 準潤盾純巡邏醇順処初所暑署渚庶緒
 90 署書署諸助叙女序徐怒鋤除傷償勝
 A0 匠升召哨商唱當婆婆媚宵將小少尚庄
 B0 床廠彰承抄招掌捷昇昌昭晶松梢樟樵
 C0 沼消涉湘燒焦照症省硝礁祥称章笑粧
 D0 紹肖薦蔣蕉衝蓼訟証詔詳象實攝鍾
 E0 鐘障鞘上丈巫乘冗剝城場壞娘常情擾
 F0 条杖淨狀置穢蒸讓釀鋌曠飾

Code Page 932 (Cont)

Code page 932-90

40 拙植殖燭織職色触食蝕辱尻伸信侵營
 50 娑浸審心慎振新晉森棲漫深申疹真神
 60 素紳臣芯薪親診身辛進針震人仁刃虛
 70 王尋甚尽腎訊迅陣勒箭諫須醉罔厨
 80 逗吹垂帥推水炊睡粹翠衰遂醉錐錘隨
 90 瑞髓崇嵩數枢趨難据杉楣苦頗省裾澄
 A0 握寸世瀕歛是淒制勢姓征性成政整星
 B0 晴樓栖正清牲生盛精聖聲製西誠營請
 C0 逝醒青靜吝稅脆隻席憎戚斥昔析石積
 D0 箚續脊責赤跡蹟碩切拙接攝折設窺節
 E0 說雪絕舌蟬仙先干占宣專尖川戰扇撰
 F0 桂柄泉淺洗染潛煎燭旋穿箭線

Code page 932-91

40 織羨腺舛船薦詮賤踐選遷錢銑閃鮮前
 50 善漸然全禪繕膳糧增塑蛆措曾曾楚狙
 60 疏疎碰祖租粗素組蘇訴阻遡鼠僧創双
 70 叢倉喪壯奏爽宋層匝忽想搜掃搔搔
 80 操早薈巢槍槽潛煤爭瘦相窓槽絕綜聰
 90 草莊葬蒼藻裝走送遭鑑霜騷像增憎贓
 A0 藏贈造促側則即息捉束測足速俗屬賊
 B0 族統卒袖其渝存孫尊損村遜他多太汰
 C0 記唾鹽妥情打杞舵梢陀駁驛体堆对耐
 D0 岱蒂待怠態戴替泰滯胎腿苔袋貨退遠
 E0 隊黛觸代台大第醜韻齋淹灌車啄宅托
 F0 拊拓沵灌珍訛濶詰苴屢娟蛸只

Code page 932-92

40 叻但達辰奪脫巽豎汕棚谷狸燭樽誰丹
 50 單嘆坦袒探旦歎淡湛炭短端簾綻耽胆
 60 蛋誕鍛団壇彈斷暖檀段男談值知地弛
 70 耶智池痴稚置致蠅遲馳築畜竹筑晉
 80 逐秩筮茶嫡齋中仲亩忠抽暈柱注虫衷
 90 註酌鑄駐櫻漪猪苧著貯丁兆凋嘆蘿帖
 A0 帳厅弔張影徵懲挑暢朝潮牒町眺聽脹
 B0 腸蝶調譟超跳跳長頂鳥勅拂直朕沈珍
 C0 實鎮陳津墜椎稚追鉛痛通塚榜櫛櫛佃
 D0 濱柘迂薰縱鍋椿濟坪臺端袖爪吊釣鶴
 E0 亭低停儻荆貞呈堤定帝底庭廷弟悌抵
 F0 挺提梯汀碇禎程締艇訂蹄蹄遞

Code page 932-93

40 邱鄭釤鼎泥摘攢敵滴的笛遁鑄溺哲徹
 50 撤轍迭鉄典墳天展店添纏甜貼転顛点
 60 伝殿灑田電兔吐堵塗始層徒斗杜渡登
 70 莞賭途都鑛砥努度土奴怒倒党冬
 80 凍刀唇塔塘套石島鳴渾投搭東桃榜棟
 90 盗淘湯湧灯燈當痘榜等答筒糖紙到董
 A0 蘩勝討膳豆踏逃透鑽陶頭膳鬪動動同
 B0 堂導憶擅洞曉童胴苟道銅峠鴉匿得德
 C0 洗特督禿驚毒獨誦榜據凸突概眉蔚苦
 D0 實酉澣噴屯惇敦沌豚遞頓吞墨鈍奈那
 E0 內乍邱薤謎灘捺鍋楂馴繩啜南楠軟難
 F0 汝二尼式迄匱賑肉虹廿日乳入

Code page 932-94

40 如尿葷任妊忍認濡柵祢寧葱猫熟年念
 50 捻燃燃粘乃迺之埜惄惄濃納能膚臘農
 60 視蚤巴把播霸杷波派琶破婆黑芭馬俳
 70 廢摔排敗杯盃牌背肺輩配倍培媒梅
 80 楊煤狼賣壳賠陪這蠅秤矧萩伯剥博拍
 90 柏泊白箔柏舶薄迫曝漠爆縛莫駁妻函
 A0 箱硌晉苦櫛幡肌畠昌八鉢澆發饒髮
 B0 伐勸拔役閻鳴嘶噶蛤隼伴判半反叛帆
 C0 撤斑板汎汎版犯班畔繁般藩販範采煩
 D0 頒飯挽晚番盤醫蓋匪卑否妃庇彼悲
 E0 罪批披斐比泌疲皮碑秘紺寵肥被誹費
 F0 避非飛植姦備尾微粃覩琵眉美

Code page 932-95

40 鼻格裨匹正髭彥膝萎肘弼必畢筆逼桧
 50 姬媛紐百謔彪標冰漂瓢票表評豹廟
 60 描病秒苗锚鉢蒜蛭績品彬斌浜瀨貧賓
 70 頻噐瓶不付埠夫婦富富布府怖扶敷
 80 斧普浮父符腐膚芙蓉賦走阜附侮撫
 90 武舞蘭薰部封楓風薰路伏副復幅服福
 A0 腹複覆淵弗弘沸仫物紂分吻噴墻憤扮
 B0 焚寶粉糞糞粉文聞丙併兵墀幣平弊柄
 C0 並蔽閉陛米貢僻碧別營寢寢寢偏變
 D0 片篇編邊返遍便勉婉弁報保鋪圓捕
 E0 步甫補輔穗暮慕戊暮母薄著倣偉包
 F0 呆報奉寶峰峯崩庖抱捧放方朋

Code Page 932 (Cont)

Code page 932-96

40 泡裹縫胞芳萌蓬蜂忘吠幌哩乍漢嬌面目爺愈
45 邦鋒某墨盆鮎滿耗明茂尤矢
50 爲望卜凡枕慢妙命模餅弥
55 豐訪房北本幕簷蓑娘面目爺愈
60 壓僕翻膜万脈名摸勿野癥
65 蓬帽防堰每迄蜜棕綿木治
70 告剪貌質鉢殆枚沫密藏也
75 謀麻埋妹昧沫密藏也
80 牧睦鈍剝沒每迄蜜棕綿木治
85 穆鈍剝沒每迄蜜棕綿木治
90 磨魔亦侯又抹末沫密藏也
A0 磨魔亦侯又抹末沫密藏也
B0 紗未魅已資岬密藏也
C0 紗未魅已資岬密藏也
D0 眠務夢無牟矛霧免藏也
E0 迷銘鳴姪牝減棉儲也
F0 孟毛猛言網耗免藏也
G0 烙貞問悶紋門門治
H0 役約藥訛闢董
I0

Code page 932-97

40 諭渝余柚有予予洋欲落瑞留料倫
50 猶猷憂融夕楊養雷洛梨溜瀨綠
60 唯佑憂雄揚養雷洛梨溜瀨綠
70 友遊揚招裸驗立旅良膳麟等連
80 儘容要螺闖率處良膳麟等連
90 優裕羅藍闖率處良膳麟等連
A0 由幼闖率處良膳麟等連
B0 預容闖率處良膳麟等連
C0 用羊闖率處良膳麟等連
D0 沃浴闖率處良膳麟等連
E0 亂卵闖率處良膳麟等連
F0 裏廬闖率處良膳麟等連
 硫粒闖率處良膳麟等連
 梁涼闖率處良膳麟等連
 墓林闖率處良膳麟等連
 例冷闖率處良膳麟等連
 伶列闖率處良膳麟等連

Code page 932-98

蓮連鍊呂魯櫓炉賭路露勞婁廊弄朗樓
榔浪漏牢狼簷老聾蝶郎六龍祿肋錄論
倭和話歪賄脢惑杵鰲瓦亘鯛詫藁蕨椀
灣碗腕

Code page 932-99

Code page 932-9A

40 咯唔喺咁高咗哥哦唏唔喎喎哭嘅嘅
45 呀喎即空喎喎喎喎喎喎
50 嘴喎喎喎喎喎喎喎
55 嘴喎喎喎喎喎喎
60 嘴喎喎喎喎喎
65 嘴喎喎喎
70 嘴喎
75 嘴
80 嘴
85 嘴
90 嘴
A0 嘴
B0 嘴
C0 嘴
D0 嘴
E0 嘴
F0 嘴

Code page 932-9B

40 妍妁妝倭姪妣姐姆姨姜妍姪姚娥娟婆
50 娜娉嫋婀姪婉嫗娶婢嫠媚媼嫗嫗嫗嫗
60 嫣嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗
70 嫣嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗嫗
80 子孕孚李擎孩孰擎孵學李孺一
90 它宦宸寃寇窟寃寐寃寃寃寃寃寃寃寃
90 實寃寃寃寃寃寃寃寃寃寃寃寃寃寃寃寃
A0 實寃寃寃寃寃寃寃寃寃寃寃寃寃寃寃寃
B0 射冠將專對尙尙尙尙尙尙尙尙尙尙尙
C0 屏辱屬出此劣屹岌岌岌岌岌岌岌岌岌
D0 岌岌站杏峙峽哽峭巖咍咍咍咍咍咍咍
E0 嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺
F0 危秀希帙帑帑帑帑帑帑帑帑帑帑帑

Code Page 932 (Cont)

Code page 932-9C

40	升	互	徙
50	廡	䷙	從
60	彌	䷕	徯
70	徑	䷪	徯
80	愆	䷗	徯
A0	懼	䷖	徯
B0	懼	䷖	徯
C0	懼	䷖	徯
E0	懼	䷖	徯
F0	懼	䷖	徯

Code page 932-9E

Code page 932-E0

40 漢濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
45 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
50 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
55 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
60 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
65 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
70 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
75 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
80 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
85 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
90 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
A0 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
B0 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
C0 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
D0 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
E0 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆
F0 濱瀨澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆澆

Code page 932-9D

Code page 932-9F

Code page 932-E1

40 狸瓣吐旺金础励廷頤鑒鑿颯廻陋朝釐
50 裳嬖普甡角卑苗盼眸昧眇訕眷啖時
60 畫除畸當疆晴曉疊疊疊疔汎疝疥疣痂
70 痘瘍疵痘痘泡洩塗洋溼瘡瘍瘍瘍瘍瘍
80 瘰痒痄痄痄痄痄痄痄痄痄痄痄痄痄
90 瘰瘍瘍瘍瘍瘍瘍瘍瘍瘍瘍瘍瘍瘍瘍瘍
A0 水矣發皂兒阪幸攸院皓皆皓皚皚皚皚
B0 細玉蠹蟲盒蟲蟲蟲蟲蟲蟲蟲蟲蟲
C0 視眞眞眞眞眞眞眞眞眞眞眞眞
D0 眇眛眛眛眛眛眛眛眛眛眛眛
E0 瞳眞眞眞眞眞眞眞眞眞眞眞

Code Page 932 (Cont)

Code page 932-E2

40 磚磚礎磚礎礎礎礎礎礎礎礎
 50 祓祺祫禊禊禊禊禊禊禊禊禊
 60 梱棊稈稍稈稈稈稈稈稈稈稈
 70 稔穢穢穢穢穢穢穢穢穢穢穢
 80 穀穀穀穀穀穀穀穀穀穀穀穀
 90 穰穰穰穰穰穰穰穰穰穰穰
 A0 穗穂穂穂穂穂穂穂穂穂穂穂穂
 B0 穷空空空空空空空空空空
 C0 穗穂穂穂穂穂穂穂穂穂穂穂穂
 D0 穗穂穂穂穂穂穂穂穂穂穂穂穂
 E0 穗穂穂穂穂穂穂穂穂穂穂穂穂
 F0 穗穂穂穂穂穂穂穂穂穂穂穂穂穂

Code page 932-E3

40 約紝紏紏紏紏紏紏紏紏紏紏
 50 紋縷縷縷縷縷縷縷縷縷縷縷縷縷
 60 總綢綢綢綢綢綢綢綢綢綢綢
 70 縣綢綢綢綢綢綢綢綢綢綢綢
 80 縷縷縷縷縷縷縷縷縷縷縷縷縷
 90 縷縷縷縷縷縷縷縷縷縷縷縷縷
 A0 翳疊疊疊疊疊疊疊疊疊疊
 B0 疊疊疊疊疊疊疊疊疊疊疊
 C0 翳疊疊疊疊疊疊疊疊疊疊
 D0 疊疊疊疊疊疊疊疊疊疊疊
 E0 疊疊疊疊疊疊疊疊疊疊疊
 F0 疊疊疊疊疊疊疊疊疊疊疊

Code page 932-E4

40 隘腴腴腴腴腴腴腴腴腴腴腴
 50 膜膚膚膚膚膚膚膚膚膚膚膚膚
 60 膚膚膚膚膚膚膚膚膚膚膚膚膚
 70 膚膚膚膚膚膚膚膚膚膚膚膚膚
 80 艦膚膚膚膚膚膚膚膚膚膚膚膚
 90 艦膚膚膚膚膚膚膚膚膚膚膚膚
 A0 艦膚膚膚膚膚膚膚膚膚膚膚膚
 B0 艦膚膚膚膚膚膚膚膚膚膚膚膚
 C0 艦膚膚膚膚膚膚膚膚膚膚膚膚
 D0 艦膚膚膚膚膚膚膚膚膚膚膚膚
 E0 艦膚膚膚膚膚膚膚膚膚膚膚膚
 F0 艦膚膚膚膚膚膚膚膚膚膚膚膚

Code page 932-E5

40 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 50 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 60 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 70 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 80 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 90 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 A0 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 B0 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 C0 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 D0 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 E0 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪
 F0 蕃蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪蕪

Code page 932-E6

40 禡襯襯襯襯襯襯襯襯襯襯襯
 50 禡襯襯襯襯襯襯襯襯襯襯襯
 60 禡襯襯襯襯襯襯襯襯襯襯襯
 70 禡襯襯襯襯襯襯襯襯襯襯襯
 80 禡襯襯襯襯襯襯襯襯襯襯襯
 90 禡襯襯襯襯襯襯襯襯襯襯襯
 A0 禡襯襯襯襯襯襯襯襯襯襯襯
 B0 禡襯襯襯襯襯襯襯襯襯襯襯
 C0 禡襯襯襯襯襯襯襯襯襯襯襯
 D0 禡襯襯襯襯襯襯襯襯襯襯襯
 E0 禡襯襯襯襯襯襯襯襯襯襯襯
 F0 禡襯襯襯襯襯襯襯襯襯襯襯

Code page 932-E7

40 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 50 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 60 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 70 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 80 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 90 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 A0 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 B0 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 C0 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 D0 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 E0 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 F0 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠

Code Page 932 (Cont)

Code page 932-E8

Code page 932-EA

Code page 932-EE

40 犹犧猪犧珣珉珮珣璣瑤璣琨瓈瓈瓈瓈瓈瓈
50 瓢環瓶駁皂皚皚皚皚皚皚皚皚皚皚皚皚皚
60 磬祉祉祉祉祉祉祉祉祉祉祉祉祉祉祉祉祉祉
70 緣緒緒緒緒緒緒緒緒緒緒緒緒緒緒緒緒緒緒
80 薑薑薑薑薑薑薑薑薑薑薑薑薑薑薑薑薑薑薑
90 謂謂謂謂謂謂謂謂謂謂謂謂謂謂謂謂謂謂
A0 鈎鈎鈎鈎鈎鈎鈎鈎鈎鈎鈎鈎鈎鈎鈎
B0 鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛
C0 鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛
D0 鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛
E0 鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛
F0 鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛鉛
II III IV V VI VII VIII IX X ▼▼

Code page 932-F9

40 顧顛顛風颶颶飄飄飄飄飄飄
50 餘餉餉餉餉餉餉餉餉餉餉餉
60 饒饒饒饒饒饒饒饒饒饒饒
70 駱駱駱駱駱駱駱駱駱駱駱
80 駒駒駒駒駒駒駒駒駒駒駒
90 駢駢駢駢駢駢駢駢駢駢駢
A0 駔駔駔駔駔駔駔駔駔駔駔駔
B0 駔駔駔駔駔駔駔駔駔駔駔駔
C0 駔駔駔駔駔駔駔駔駔駔駔駔
D0 駔駔駔駔駔駔駔駔駔駔駔駔
E0 駔駔駔駔駔駔駔駔駔駔駔駔

Code page 932-ED

Code page 932-FA

Code Page 932 (Cont)

Code page 932-FB

Code page 932-FC

高昇魚分魚戶鮀生魚老魚袋魚綫周鳥雀鶴鸕黑
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AO
BO
CO
DO
EO
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Code Page 936 Simple Chinese

A140 - A1FF

A240 - A2FF

A340 - A3FF

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A0 ! " # ¥ % & ' ( ) × + , - . /
B0 ० १ २ ३ ४ ५ ६ ७ ८ ९ ; ; < = > ?
C0 @ A B C D E F G H I J K L M N O
D0 P Q R S T U V W X Y Z [ \ ] ^ -
E0 ' a b c d e f g h i j k l m n o
F0 p q r s t u v w x y z { | }
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A440 - A4FF

ああいいううええおおかがきぎく
ぐけげこごきぎじすせぜぞぞた
だちぢつつづでとどなにぬねのはみ
ばばひびびふぶぶへべべほばま
むめもややゆゆよよらりるれわわ
ゑゑゑゑ

A540 - A5FF

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A0	アアイイウエエオオカガキギク
B0	グケゲコゴサザシジスズセゼソゾタ
C0	ダチヂツツヅチヂトドナニヌオノハ
D0	ババヒビビフブヘベベホボボマミ
E0	ムメモヤヤユユヨヨラリルレロワウ
F0	ヰヰランヴカケ

A640 - A6FF

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 A0 ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟ
 B0 ΠΡΣΤΙΦΧΨΩ
 C0 αβγδεξηθικλμνξο
 D0 πρστυφχψω
 E0
 F0

A740 - A7FF

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A0 А Б В Г Д Е Ё Ж З И Й К Л М Н
B0 О П Р С Т У Х Ф Ц Ч Щ Ъ Ы Э
C0 Ю Я
D0 а б в г д е ё ж з и й к л м н
E0 о п р с т у х ф ц ч щ ъ ѿ з
F0 ю я

Code Page 936 Simple Chinese (Cont.)

A840 - A8FF

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B0	��������������������
C0	��������������������
D0	��������������������
E0	��������������������
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AC40 - ACFF

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C0	
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A940 - A9FF

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A0	— --- ---
B0	
C0	
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AD40 - ADFF

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AA40 - AAFF

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A0	
B0	
C0	
D0	
E0	
F0	

AE40 - AEFF

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A0	
B0	
C0	
D0	
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F0	

AB40 - ABFF

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AF40 - AFFF

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Code Page 936 Simple Chinese (Cont.)

B040 - B0FF

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A0 啊阿埃挨哎唉哀皓癌蒿矮艾碍爰隘
B0 鞍氮安俺按暗岸胺案肮昂益凹欹熬翱
C0 祛慨奥懊澳芭捌扒叭吧包八疤巴拔跋
D0 鞘把耙坝霸罢爸白柏百摆伯败拜裨斑
E0 班搬扳般烦板版扮拌伴瓣半办绊邦帮
F0 椅榜榜绑棒磅蚌镑傍滂苞胞包裹剥

B140 - B1FF

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A0 薄雹保堡饱宝抱报暴豹鲍爆杯碑悲
B0 卑北辈背贝钢倍狈备惫焙被奔苯本笨
C0 崩绷甭泵蹦进逼鼻比鄙笔彼碧葩蔽华
D0 姥姥币庇痹闭敝弊必辟壁臀避陛鞭边
E0 编贬扁便变下辨辩瓣遍标彪膘表整愍
F0 别遭彬斌濒滨宾摈兵冰柄丙秉饼炳

B240 - B2FF

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A0 痘并玻蒗播拨钵波博勃搏铂箔伯帛
B0 舶舶膊泐泊驳捕卜哺补埠不布步簿部
C0 怖擦猜裁材才财睬踩采彩菜藜餐参蚕
D0 残惭慘灿疮仓沧藏操糙槽曹草厕策
E0 侧册测层蹭插叉茬茶查碴搽察允差咤
F0 拆柴豺撵掺蝉谗浼缠铲产阐颤昌猖

B340 - B3FF

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A0 场尝常长偿肠厂敞畅唱倡超抄钞朝
B0 嘴潮巢吵炒车扯撤掣初澈柳臣辰尘晨
C0 忧沉陈趁村撑称城橙成呈乘程惩澄诚
D0 承逞聘秤吃痴持匙池迟弛驰耻齿侈尺
E0 赤翅斥炽充冲虫祟宠抽酬瞬畴愁筹筹
F0 仇绸瞅丑臭初出掘厨蹠鍊雏滁除楚

B440 - B4FF

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A0 琢储臺搞触处揣川穿椽传船喘串疮
B0 窗幢床闔创吹炊捶锤垂春椿醇唇淳纯
C0 璱截绰疵茨磁辞慈瓷词此刺赐次聪
D0 葱囱匆从丛凌粗醋簇促躰躰摧崔催
E0 脆瘁粹淬翠村存寸磋撮挫措措搭达
F0 答瘡打大呆歹瘡戴带殆代货袋待逮

B540 - B5FF

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A0 怨耽担丹单郸掸胆且氯但惮淡诞弹
B0 蛋当挡党档挡刀捣蹈倒岛搏导到稻俾
C0 道盗得得的蹬灯登等蹬凳邓堤低滴迪
D0 敌笛狄涤翟嫡抵底地蒂第帝弟递给颠
E0 捷滇碘点典碇垫电佃甸店惦奠淀殿碉
F0 叻雕洞刁掉吊钓调跌爹碟蝶迭谋叠

B640 - B6FF

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A0 丁盯叮钉顶鼎锭定订丢东冬董懂动
B0 栎桐冻洞兜抖斗陡豆逗痘都督毒核
C0 独读堵堵堵杜镀肚度渡妒端短镀段断
D0 缀堆兑队对墩吨蹲敦顿囤钝盾遵殿哆
E0 多夺垛躲朵踪航剁情堕蛾峨鵝俄额讹
F0 娥恶厄扼遏鄂饿恩而儿耳尔饵洱二

B740 - B7FF

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A0 武发罚箠伐乏閼法珐藩帆番翻樊矾
B0 钳繁凡烦反返范贩犯饭泛坊芳方肪房
C0 防妨防纺纺放菲非啡飞肥匪诽吹肺废
D0 沸费芬酚吩氛分分坟焚汾粉畚份忿愤
E0 羯丰封枫峰峰烽风疯烽逢冯缝讽奉风
F0 佛否夫敷肤孵扶拂辐幅氟符伏俘服

Code Page 936 Simple Chinese (Cont.)

B840 - B8FF

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AO 浮涪福袱弗甫抚辅俯釜斧脯脯府腐
BO 起副覆赋复傅付阜父腹负富讣附妇缚
CO 咐噶嘎该改概钙盖溉干甘杆柑竿肝赶
DO 感秆敢赣冈刚钢缸杠纲岗港杠篙皋高
EO 齿羔糕搞犒稿告哥歌搁戈鸽路疙割革
FO 葛格蛤阁隔铬个各给根跟耕更庚羹

BC40 - BCFF

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AO 肌饥迹激讥鸡姬绩绩吉极蛱辑籍集
BO 及急疾汲即嫉级挤几脊己翦技冀季伎
CO 禁刑悸济寄寂计记既忌际妓继纪嘉伽
DO 夹佳家加英颊贾甲钾假稼价架驾嫁歼
EO 监坚尖箋间煎兼肩艰奸械茧检柬碱验
FO 捡捡简俭剪减荐槛鉴践贱见键箭件

B940 - B9FF

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AO 墩耿梗工攻功恭龚供躬公宫弓巩永
BO 拱贡共钩勾苟狗垢构购够辜菇咕攘
CO 估沽孤姑鼓古蛊骨谷股故顾固雇刮瓜
DO 刷寡挂褂乖拐怪棺关官冠观管馆罐惯
EO 灌贲光广逛瑰规圭桂归龟阄轨鬼诡癸
FO 桂柜跪责剗辘滚棍锅郭国果裹过哈

BD40 - BDFF

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AO 健舰剑钱渐溅涧建僵姜将浆江疆蒋
BO 桨奖讲匠酱降蕉椒礁焦胶交郊浇骄娇
CO 嘴搅较桥挠脚狡角饺缴绞劓教酵轿较
DO 叫奢揭接皆桔街阶截劫节桔杰捷睫竭
EO 浩洁解姐戎藉芥界借介疥诚届巾筋斤
FO 金今津襟紧锦仅谨进斯晋禁近烬漫

BA40 - BAFF

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AO 骸孩海氮亥害骇酣愁邯韩含涵寒函
BO 喊罕翰撼捍旱憾悍汗汉夯杭航壕嚎
CO 蒙毫郝好耗号浩呵喝荷菏核禾和何合
DO 盒貉阂河涸赫褐鹤贺嘿黑痕很狠恨呻
EO 亨横衡恒轰哄烘虹鸿洪宏弘红喉侯猴
FO 吻厚候后呼乎忽瑚壶葫胡猢猢猢猢

BE40 - BEFF

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AO 尽劲荆棘茎睛晶鲸京惊精梗经井警
BO 景颈静境敬镜径胫靖竟竞净炯箸揪究
CO 纠玖韭久灸九酒厩救旧臼舅咎就疚鞠
DO 拘徂疽居驹菊局咀矩举沮聚拒据巨具
EO 距踞锯俱勾惧炬刷捐鹃娟倦眷卷绢撅
FO 撲抉掘倔爵觉决决绝均菌钩军君峻

BB40 - BBFF

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AO 弧虎唬护互沪户花哗华猾滑画划化
BO 话拽徊怀淮坏欢环桓还缓换患唤痪蒙
CO 焕涣宣幻荒慌黄磺蝗簧皇凰惶惶晃幌
DO 恍谎灰挥辉微恢蛔回毁悔慧卉蕙晦贿
EO 秽会烩汇讳诲绘翠昏婚魂浑混豁活伙
FO 火获或惑霍货祸击圾基机崎稽积箕

BF40 - BFFF

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AO 俊竣浚郡骏喀咖卡喀开揩楷凯慨刊
BO 堪勘坎砍看康慷糠扛抗亢炕考拷烤靠
CO 呵苛柯棵磕颗科壳咳可渴克刻客课肯
DO 噪垦恩坑吭空恐孔控抠口扣寇枯哭窟
EO 苦酷库裤夸垮跨跨块快快快宽款匡
FO 筐狂框矿眶旷况亏益岿窥葵奎魁傀

Code Page 936 Simple Chinese (Cont.)

C040 - COFF

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A0	馈愧溃坤昆捆困括扩廓阔垃拉喇揩
B0	腊辣啦莱来赖蓝婪栏拦篮阑兰谰谰搅
C0	览懒缆烂滥琅榔狼郎朗浪捞劳牢老
D0	佬姥酪烙涝勒乐雷雷磊累儡垒擂肋
E0	类泪棱楞冷厘梨黎黎篱理离漓理李里
F0	鲤礼莉荔吏栗丽厉励砾历利懈例例

C140 - C1FF

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A0	病立粒沥隶力璃哩俩联莲连嫌廉怜
B0	连帘敛脸媛恋炼练粮凉梁梁良两辆量
C0	晾亮谅掠聊僚疗燎寥辽潦了撂镓廖料
D0	列裂烈劣猎琳林磷霖临邻鳞淋凜煥音
E0	玲玲菱零龄铃伶羚凌灵陵岭领另令溜
F0	琉璃硫馏留刘瘤流柳六龙聋咙笼窿

C240 - C2FF

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A0	隆垄拢陇楼姿接婆漏陋芦卢倾庐炉
B0	掳卤虏鲁麓碌露路赂鹿潞禄录陆戮驴
C0	吕铝侷旅履屡缕虑氯律率滤绿峦孽李
D0	柒卵乱掠略抡轮伦伦纶纶论萝螺罗逻
E0	锣箩骡裸落洛骆络妈麻玛码码蚂马驾嘛
F0	吗埋买麦卖迈脉瞒慢蛮满蔓漫慢漫

C340 - C3FF

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A0	漫芒茫盲氓忙莽猫茅锚毛矛卯卯茂
B0	冒帽貌贸么攻枚梅酶霉煤没眉媒镁每
C0	美味寐妹媚门闷们萌蒙檬盟锰猛梦孟
D0	眯醚靡麇迷迷米秘觅泌蜜密幕棉眠
E0	绵冕免勉婉缠面苗描瞄藐妙妙
F0	灭民抿皿敏悯闻明螟鸣铭名命谬摸

C440 - C4FF

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A0	摹磨模膜磨摩抹末莫墨默沫漠寞
B0	陌谋牟某拇牡亩母摹暮幕募慕木目
C0	睦牧穆拿哪呐那娜纳氛乃奶耐奈南
D0	男难囊挠脑恼闹淖呢妥内嫩能妮霓倪
E0	泥尼拟你匿腻逆溺藉拈年碾撵捻念娘
F0	酿鸟尿捏聂孽嗜镊镊涅您柠泞凝宁

C540 - C5FF

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A0	拧泞牛扭纽忸农农弄奴努怒女暖
B0	虐疟那懦懦诸哦欧鸥殴殴呕偶呕呕趴
C0	爬怕怕琶拍排牌徘湃派攀潘盘磐盼畔
D0	判叛兵庞旁榜胖抛抱刨炮袍跑泡呸胚
E0	培裴赔陪佩沛喷盆砰抨烹澎彭蓬棚
F0	硼蓬膨朋鹏捧碰坯砒砒批披劈毗毗

C640 - C6FF

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A0	睥睥疲皮匹痞僻屁嬖篇偏片骗飘漂
B0	瓢票撇瞥拼频贫品聘乓坪苹萍平凭瓶
C0	评屏坡泼颇婆破魄迫粕剖扑铺仆蒲蒲
D0	菩蒲塘朴圃普浦谱曝瀑期欺栖戚妻七
E0	凄漆柒沏其棋奇歧畦崎脐齐旗祈祁骑
F0	起岂乞企启砌砌器气迄弃汽泣迄掐

C740 - C7FF

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A0	恰洽牵扦钎铅千迁签仟谦乾黔钱鉗
B0	前潜遣浅遣堑嵌欠歉枪呛腔羌墙蔷强
C0	抢橇锹敲俏桥瞧乔桥巧鞘撬赳俏窍
D0	切茄且快份钦侵亲秦琴勤芹擒禽寝沁
E0	青轻氢倾卿清擎晴氤情顷请庆琼穷秋
F0	丘邱球求囚酉泅趋区蛆曲躯屈驱渠

Code Page 936 Simple Chinese (Cont.)

C840 - C8FF

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A0 取娶誘趣去圈顛权醛泉全痊拳犬券
B0 劝缺烘腐却鵠榷確雀裙群然燃冉染瓠
C0 壤壤嚷让饶扰绕惹热壬仁人忍韧任认
D0 刃妊纫扔仍日戎营春荣融熔溶容绒冗
E0 揉柔肉茹螭襦孺如辱乳汝入襦软阮蕊
F0 瑞锐润润若弱撒洒萨腮鳃塞赛三叁

C940 - C9FF

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A0 伞散桑唆丧搔扫嫂瑟色涩森僧莎
B0 砂杀刹沙紗傻哈煞筛晒硼苦杉山刪爛
C0 衫闪陕擅膳膳善汕爾縕境伤商賞响上
D0 尚裳梢捎稍烧芍勺韶少哨邵绍奢蛇
E0 舌舍赦攝射懷涉社設呻呻伸身深娠
F0 绅神沈审婶甚肾慎渗声生甥牲升绳

CA40 - CAFF

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A0 省盛剩胜圣师失师施湿诗尸虱十石
B0 拾时什食蚀实识史矢使屎驶始式示士
C0 世柿事拭晝逝势是嗜噬适仕侍释怖氏
D0 市恃室视试收手首守寿授售受瘦善蔬
E0 枢梳殊抒输叔舒淑疏书赎孰熟薯署曙
F0 署蜀黍鼠属术述树束戍竖墅庶数漱

CB40 - CBFF

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A0 惑刷要摔裹甩帅栓拴霸双爽谁水睡
B0 稅吮瞬顺舜说硕朔烁斯撕嘶思私司丝
C0 死肆寺嗣四伺似饲已松耸怂颂送宋讼
D0 诵搜艘撇嗽苏酥俗素速粟牒塑溯宿诉
E0 蒜酸蒜算里隋随绥髓碎岁穗遂随果孙
F0 损筭蓑梭唆缩琐索锁所塌他它她塔

CC40 - CCFF

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A0 犀挞蹠踏胎苔抬台泰猷太态汰坍摊
B0 贪瘫滩坛擅痰潭潭谈坦毯袒碳探叹炭
C0 汤塘塘堂掌膛塘塘倘淌趟溪掏涛滔
D0 缘葛桃逃淘陶讨套特藤腾疼眷梯剔踢
E0 铆提题蹄啼体替嘘惕涕剃屣天添填填
F0 甜恬舔腆挑条迢眺跳贴铁帖厅听烃

CD40 - CDFF

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A0 汀廷停事庭挺艇通桐酮瞳同铜形童
B0 桶捅箇统痛偷投头透凸秃突图徒途涂
C0 層土吐免湍团推颓腿蜕褪退吞屯脣施
D0 托脱鸵陀駄鸵椭妥拓唾挖哇娃洼娃瓦
E0 栎歪外豌湾湾玩顽丸烷完碗挽晚惋惋
F0 宛婉万豌汪王亡枉网往旺望忘妄威

CE40 - CEFF

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A0 巍微危韦违槐围唯惟为潍维苇萎委
B0 伟伪尾纬未蔚味畏胃喂魏位渭尉慰
C0 卫瘟温蚊文闻纹吻稳紊问嗡翁瓮挝蝎
D0 涡窝我轔卧掘沃巫呜钨乌污诬屋无芜
E0 梧吾吴毋武五梧午舞伍侮坞戌雾唔牾
F0 勿务悟误昔熙析西硝矽嘶嘻吸锡迺

CF40 - CFFF

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A0 稀息希悉膝夕惜熄烯溪汐犀檄蓑席
B0 习媳喜铣洗系隙戏细膳虾匣霞辖暇峡
C0 侠狹下夏夏吓掀掀先仙鲜纤威贤衔舷
D0 闲涎弦嫌显险现献县牒饴羹宪馅限线
E0 相厢攘香箱襄湘乡翔祥详想响享项巷
F0 機像向象蕭硝霄削哮器销消宵涓晓

Code Page 936 Simple Chinese (Cont.)

D040 - D0FF

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AO 小孝校肖啸笑效楔些歎蝎鞋协挟携
BO 邪斜肋谐写械卸蟹懈泄泻谢屑薪芯锌
CO 欣辛新忻心信蚌星腥猩惺兴刑型形邢
DO 行醒幸杏性姓兄凶胸匈汹雄熊休修羞
EO 朽嗅锈秀袖绣蝶戌需虚嘘须徐许薰酬
FO 叙旭序畜恤絮婿续轩喧宣悬旋玄

D140 - D1FF

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AO 选癣眩徇鞶薛学穴雪血勋熏循匱询
BO 寻驯巡殉讯训讯迅压押鴨鴨呀丫芽
CO 牙蚜崖衙涯雅哑亚讶焉咽闇烟淹盐严
DO 研樊岩延言颤阎炎沿奄掩眼衍演艳堰
EO 燕仄硯雁唔彦焰裏谚验殃央遘秧扬场
FO 佯场羊洋洋仰痒养样漾邀腰妖塔

D240 - D2FF

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AO 摆尧遜窑谣姚咬召药要耀榔喳耶爷
BO 野治也页掖业叶曳腋夜液一壹医搘铱
CO 依伊衣颐夷遭移仪瞑疑沂宣姨彝椅蚁
DO 倚已乙矣以艺抑易色屹亿役臆逸肄疫
EO 亦裔意毅忆义益溢诣议谊译异翼翌绎
FO 茵荫因殷音阴媚吟银淫寅饮尹引隐

D340 - D3FF

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AO 印英樱婴鹰应綴莹莹营荧蠅迎羸盈
BO 影颖硬映哟拥佣臃痈膺雍踊咏泳涌
CO 水恩勇用幽悠悠尤由邮轴犹油游酉
DO 有友右佑袖诱又幼迂淤于孟榆虞愚舆
EO 余俞逾鱼偷渝渔隅予娛雨与屿禹宇语
FO 羽玉城芋郁吁邇喻峪御愈欲狱育普

D440 - D4FF

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AO 浴寓裕预豫驭蜀渊冤元垣袁原援辕
BO 园员圆猿源缘远苑愿怨院臼约越跃钥
CO 岳粤月悦阅耘云郎匀陨允运蕴酝晕韵
DO 孕匪砸杂裁哉灾宰载再在咱攢暂贊赃
EO 肮葬遭糟蛊藻柬早澡蚤躁噪造皂灶燥
FO 贲择则泽贼怎增憎曾赠扎喳渣札札

D540 - D5FF

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AO 钩闸贬枷榨咋乍炸乍摘斋宅窄债寨
BO 瞻毡詹粘沾盏斩辗墘展蘸栈占战站湛
CO 统樟章彰漳张掌涨杖丈帐仗胀账障
DO 招昭找沼赵照罩兆肇召遮折哲塾撇者
EO 储蔗这浙珍斟真甄砧臻贞针侦枕疹诊
FO 震振镇阵蒸挣睁征狰争怔整拯正政

D640 - D6FF

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AO 帧症郑证芝枝支吱唧知肢脂汁之织
BO 职直植殖执值侄址指止趾只旨纸志孳
CO 捷至致置帜峙制智秩稚质炙痔带治窒
DO 中蛊忠钟衷终种肿重仲众舟周州洲治
EO 翱袖肘帚咒铍宙量砾珠株朱猪诸诛
FO 逐竹烛煮挂嘱嘱主著柱助蛀贮铸筑

D740 - D7FF

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AO 住注祝驻抓爪拽专砖转撰赚篆桩庄
BO 装妆擅壮状椎追赘坠缀谆准捉拙卓
CO 桌琢苗酌啄着灼浊兹咨姿滋淄孜紫
DO 仔籽淳子自溃字鬓棕踪宗综总纵邹走
EO 奏揍租足卒族祖阻组钻裹嘴醉最罪
FO 尊遵昨左佐柞做作坐座

Code Page 936 Simple Chinese (Cont.)

Code Page 936 Simple Chinese (Cont.)

Code Page 936 Simple Chinese (Cont.)

F040 - F0FF

F140 - F1FF

F240 - F2FF

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60	颤
70	颤
80	颤
90	颤
A0	颤
B0	颤
C0	颤
D0	颤
E0	颤
F0	颤

F340 - F3FF

40	蠍
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A0	蟻
B0	蟻
C0	蟻
D0	蟻
E0	蟻
F0	蟻

F440 - F4FF

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A0	𦵃
B0	𦵃
C0	𦵃
D0	𦵃
E0	𦵃
F0	𦵃

F540 - F5FF

F640 - F6FF

F740 - F7FF

E840 - E8FF

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A0	琛琚瑨瑜瑕瑕瑭瑾瓊瑕瑕瑭
B0	瑋璣璣璣璣璣璣璣璣璣璣
C0	柇柇柇柇柇柇柇柇柇柇柇柇
D0	柇柇柇柇柇柇柇柇柇柇柇柇
E0	柇柇柇柇柇柇柇柇柇柇柇柇
F0	柇柇柇柇柇柇柇柇柇柇柇柇

EC40 - ECFF

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A0	膳膳欽欽欽欽欽欽欽欽欽欽
B0	裊裊裊裊裊裊裊裊裊裊
C0	焯焯焯焯焯焯焯焯焯
D0	熑熑熑熑熑熑熑熑熑
E0	熑熑熑熑熑熑熑熑熑
F0	熑熑熑熑熑熑熑熑熑

E940 - E9FF

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A0	榦榦榦榦榦榦榦榦榦榦
B0	榦榦榦榦榦榦榦榦榦榦
C0	榦榦榦榦榦榦榦榦榦榦
D0	榦榦榦榦榦榦榦榦榦榦
E0	榦榦榦榦榦榦榦榦榦榦
F0	榦榦榦榦榦榦榦榦榦榦

ED40 - EDFF

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A0	惄惄惄惄惄惄惄惄惄
B0	惄惄惄惄惄惄惄惄惄
C0	惄惄惄惄惄惄惄惄惄
D0	惄惄惄惄惄惄惄惄惄
E0	惄惄惄惄惄惄惄惄惄
F0	惄惄惄惄惄惄惄惄惄

EA40 - EAFF

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A0	報報報報報報報報報報
B0	臧臧臧臧臧臧臧臧臧臧
C0	昫昫昫昫昫昫昫昫昫昫昫
D0	昫昫昫昫昫昫昫昫昫昫昫
E0	昫昫昫昫昫昫昫昫昫昫昫
F0	昫昫昫昫昫昫昫昫昫昫昫

EE40 - EEFF

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A0	睢睢睢睢睢睢睢睢睢睢
B0	畎畎畎畎畎畎畎畎畎畎
C0	罟罟罟罟罟罟罟罟罟罟
D0	鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢
E0	鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢
F0	鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢鉢

EB40 - EBFF

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80	
90	
A0	胼胼胼胼胼胼胼胼胼胼
B0	氣氣氣氣氣氣氣氣氣氣
C0	肅肅肅肅肅肅肅肅肅肅
D0	肅肅肅肅肅肅肅肅肅肅
E0	肅肅肅肅肅肅肅肅肅肅
F0	肅肅肅肅肅肅肅肅肅肅

EF40 - EFFF

40	
50	
60	
70	
80	
90	
A0	銖銖銖銖銖銖銖銖銖銖銖銖銖
B0	銖銖銖銖銖銖銖銖銖銖銖銖銖
C0	銖銖銖銖銖銖銖銖銖銖銖銖銖
D0	銖銖銖銖銖銖銖銖銖銖銖銖銖
E0	銖銖銖銖銖銖銖銖銖銖銖銖銖
F0	銖銖銖銖銖銖銖銖銖銖銖銖銖

Code Page 936 Simple Chinese (Cont.)

F840 - F8FF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FC40 - FCFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

F940 - F9FF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FD40 - FDFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FA40 - FAFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FE40 - FEFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FB40 - FBFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

FF40 - FFFF

40
50
60
70
80
90
A0
B0
C0
D0
E0
F0

Code Page 949 Korean

A140 - A1FF

A240 - A2FF

A340 - A3FF

40
50
60
70
80
90
A0 ! " # \$ % & ' () * + , - . /
B0 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
C0 @ A B C D E F G H I J K L M N O
D0 P Q R S T U V W X Y Z [w] ^ _
E0 a b c d e f g h i j k l m n o
F0 p q r s t u v w x y z { | }

A440 - A4FF

A540 - A5EE

40	
50	
60	
70	
80	
90	
A0	ι ii iii iv v vi vii viii ix x
B0	I II III IV V VI VII VIII IX X
C0	ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟ
D0	ΠΡΣΤΥΦΧΨΩ
E0	αβγδεζηθικλμνξο
F0	πρστυφχψω

Code Page 949 Korean (Cont.)

A640 - A6FF

A 10x10 grid of binary values. The columns are labeled on the left with A0, B0, C0, D0, E0, F0, G0, H0, I0, J0. The rows are labeled on the top with 40, 50, 60, 70, 80, 90, A0, B0, C0, D0, E0, F0. The grid contains binary digits (0 or 1) at each intersection. The pattern shows a repeating sequence of binary digits across the columns and rows.

A840 - A8FF

AA40 - AAFF

40
50
60
70
80
90
A0 るあいいううええねおかがきぎく
B0 ぐけげこござざしじすずせぜそぞた
C0 だちちっつづてでとどなにぬねのは
D0 ばばひびびふぶぶへべべほぼぼまみ
E0 むめもややゅゆよやらりるれろわわ
F0 ゐゑゑん

A740 - A7FF

40
50
60
70
80
90
A0 μ lmldl l klcmmcm m'krifmnmpmmcm
B0 kmmcm m'kritha μ gmkgkt calkaidBm%/ μ sps
C0 ns μ smspVnV μ VmV kVMV pAnA μ AmA kApWnW
D0 μ WmWkWMNHz kHzMHzGHzTHz Ω k Ω MQpFnF μ Fmol
E0 cdad^{nd/nd}%/sr PakPalmPaWbImIx BqGySv%kg
F0

A940 - A9FF

AB40 - ABFF

40	
50	
60	
70	
80	
90	
A0	ア イ イ ウ ウ ェ エ オ オ カ ガ キ ギ ク
B0	グ ケ ゲ コ ゴ サ ザ シ ジ ス ズ セ ゼ ソ ゾ タ
C0	ダ チ チ ッ ツ ツ テ デ ド ナ ニ ヌ ネ ノ ハ
D0	バ バ ヒ ビ ピ フ ブ プ ヘ ベ ペ ホ ボ ポ マ ミ
E0	ム メ モ ャ ャ ュ コ ョ ラ リ ル レ ロ ッ ワ
F0	ヰ ニ ラ ン ヴ カ ケ

Code Page 949 Korean (Cont.)

AC40 - ACFF

40
50
60
70
80
90
A0 А Б В Г Д Е Ё Ж З И Й К Л М Н
B0 О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ъ Э
C0 ю я
D0 а б в г д е ё ж з и й к л м н
E0 о п р с т у ф х ц ч ш щ ъ ў є э
F0 ю я

AD40 - ADFF

40
50
60
70
80
90
AO
BO
CO
DO
EO
FO

AE40 - AEFF

40
50
60
70
80
90
AO
BO
CO
DO
EO
FO

AF40 - AFFF

40
50
60
70
80
90
AO
BO
CO
DO
EO
FO

B040 - BOFF

40
50
60
70
80
90
A0 가각간간갈갈감감갈값갓갓감갓갓
B0 갈감장개객갠갤캡캡갓갓갓갓
C0갓감개갠갤거걱건건걸걸걸걸걸걸
D0걸걸걸걸걸걸걸걸걸걸걸걸걸걸
E0걸걸걸걸걸걸걸걸걸걸걸걸걸걸
F0걸걸걸걸걸걸걸걸걸걸걸걸걸걸

B140 - B1FF

Code Page 949 Korean (Cont.)

B240 - B2FF

B440 - B4FF

B640 - B6FF

40	때
50	때
60	때
70	때
80	때
90	때
A0	때
BO	때
CO	때
DO	때
EO	때
FO	때

B340 - B3FF

B540 - B5FF

B740 - B7FF

40	라
50	라
60	라
70	라
80	라
90	라
A0	라
B0	라
C0	라
D0	라
E0	라
F0	라

Code Page 949 Korean (Cont.)

B840 - B8FF

40	
50	
60	
70	
80	
90	
A0	트종르록론률률률률률률리
B0	립립립립립립립립립립립립
C0	린망망망망망망망망망망망망
D0	망망망망망망망망망망망망
E0	멘멘멘멘멘멘멘멘멘멘
F0	모목목목목목목목목목

B940 - B9FF

40	
50	
60	
70	
80	
90	
A0	데마인파파파파
B0	데데데데데데데데
C0	데데데데데데데데
D0	데데데데데데데데
F0	데데데데데데데데

BA40 - BAFF

40	
50	
60	
70	
80	
90	
A0	교교교교교교교교교교
B0	교교교교교교교교교교
C0	교교교교교교교교교교
D0	교교교교교교교교교교
E0	교교교교교교교교교교
F0	교교교교교교교교교교

BB40 - BBFF

40	
50	
60	
70	
80	
90	
A0	국국국국국국국국국국
B0	국국국국국국국국국국
C0	국국국국국국국국국국
D0	국국국국국국국국국국
E0	국국국국국국국국국국
F0	국국국국국국국국국국

BC40 - BCFF

40	
50	
60	
70	
80	
90	
A0	삭산살살살살살살
B0	신신신신신신신신
C0	센센센센센센센센
D0	센센센센센센센센
E0	센센센센센센센센
F0	센센센센센센센센

BD40 - BDFF

40	
50	
60	
70	
80	
90	
A0	신신신신신신신신
B0	수수수수수수수수
C0	수수수수수수수수
D0	수수수수수수수수
E0	수수수수수수수수
F0	수수수수수수수수

Code Page 949 Korean (Cont.)

BE40 - BEFF

40	
50	
60	
70	
80	
90	
A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

BF40 - BFFF

40	
50	
60	
70	
80	
90	
A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C040 - COFF

40	
50	
60	
70	
80	
90	
A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C140 - C1FF

40	
50	
60	
70	
80	
90	
A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C240 - C2FF

40	
50	
60	
70	
80	
90	
A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C340 - C3FF

40	
50	
60	
70	
80	
90	
A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

Code Page 949 Korean (Cont.)

C440 - C4FF

40	
50	
60	
70	
80	
90	
A0	
B0	
C0	
D0	
E0	
F0	

C540 - C5FF

40	금	금	금	금
50	금	금	금	금
60	금	금	금	금
70	금	금	금	금
80	금	금	금	금
90	금	금	금	금
A0	금	금	금	금
B0	금	금	금	금
CO	금	금	금	금
DO	금	금	금	금
E0	금	금	금	금
FO	금	금	금	금

C640 - C6FF

40	부리
50	부리
60	부리
70	부리
80	부리
90	부리
A0	부리
B0	부리
C0	부리
D0	부리
E0	부리
F0	부리

C740 = C7EF

40	하
50	하
60	하
70	하
80	하
90	하
A0	하
BO	하
CO	하
DO	하
EO	하
FO	하

C840 - C8FF

C940 - C9FF

40
50
60
70
80
90
AO
BO
CO
DO
EO
FO

Code Page 949 Korean (Cont.)

CA40 - CAFF

40
50
60
70
80
90
A0 伽佳假價加可呵哥嘉嫁家暇架枷柯
B0 歌珂痴移苛茄街袈訶賣叻阿迦鷄刻却
C0 各恪懃殼玆脚覺角閣侃刊鑿奸姦干幹
D0 想揀杆東桿澗瘤看碼稈竿簡肝艮顛諫
E0 間哿喝曷湯碣竭葛褐蠅勸坎堪嵌感
F0 憾戡敢柑橄滅甘疳監敵紺邯鑑鑿瘞

CB40 - CBFF

40
50
60
70
80
90
A0 匣岬甲胛鉀閭剛爛姜岡尚康強彊懷
B0 江臺疆糠絳綱羌腔紅畫糧講綱降鱗介
C0 价個凱壇懽愷慨改概溉疥皆蓋箇芥蓋
D0 壹鑽開喀客坑更梗莫磧倨去居巨拒据
E0 捷舉渠炬祛距踞車遽鉅鋸乾件健巾建
F0 憾撻曉度蹇鍵瘞乞傑杰桀儉劍劍檢

CC40 - CCFF

40
50
60
70
80
90
A0 賤鈴齡劫怯達偶憩揭擊格檄激膈覘
B0 隔堅牽犬甄綱繭肩見謹遵鷄抉決潔結
C0 缺訣兼懶錯謙鉛鑑京侄惊傾徹勁勍卿
D0 坎境廣徑塵懼擎敬景暎更梗涇災烟環
E0 環瓈壅硬碧寬說網經耕耿經莖警輕運
F0 鏡頸頭驚鯨係啓塲契季屆憐戒桂械

CD40 - CDFF

40
50
60
70
80
90
A0 梨溪界榮礮權系繁繼計誠谿階鷄古
B0 叩告呱圓姑孤尻庫拷攷故敲曷枯槁沽
C0 瘋車毒稿羔考股膏苦瓜弧黃疊榜誥賣
D0 事鋼履顧高鼓哭斛曲楷穀谷鵠困坤麗
E0 昆梧楓浪琨哀餽汨滑骨供公共功孔工
F0 恐恭拱控攻珙空蚣貢鼙串寡戈果瓜

CE40 - CEFF

40
50
60
70
80
90
A0 科莫誇課跨過鍋頸廊梆整郭卑冠宮
B0 實慣棺款灌瑣瑾管饋管觀貢闕館刮惄
C0 括适佻光匪墻廣曠光吹狂咣笪胱鏡卦
D0 掛野乖傀塊壞怪愧拐槐魁宏紜肱轟交
E0 傑咬喬媾囉巧攢教校櫈狡皎矯紋翹膠
F0 蕃蛟較驕郊鉸驕駁丘久九仇俱具勾

CF40 - CFFF

40
50
60
70
80
90
A0 區口句咎嘔坼寇崛廝懶拘救枸枢
B0 構歎噏越求溝灸狗玖球醫矩究綠耆臼
C0 莫蓄苟衝驅驅遂邱鈞錄駒驅鳩躡躡
D0 國局菊鞠鞠趨君奢群福軍郡堦屈掘廬
E0 宮弓寫窮葛躬倦券勤卷園拳捲權港眷
F0 厥獵厥獵闕机樞漬詭軌頌句晷歸貴

Code Page 949 Korean (Cont.)

D040 - D0FF

40
50
60
70
80
90
A0 鬼龜叫圭蓋揆楓珪窺竅糾葵規赳
B0 達闊勻均昀筠箇鈞韁橘克剋劇載棘極
C0 陳僅勦勤勑斤根槿瑾筋芹董覲謹近謹
D0 契今姈擒吟檎琴禁高苓衾衿襟金錦伋
E0 及急汲汲級給亘競矜肯企伎其翼嗜器
F0 坤基埼夔奇妓寄岐崎己幾忌技旗既

D140 - D1FF

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A0 莫期杞棋棋棄機欺氣汽沂淇玘琦琪基
B0 環崎畿基磯邢祇祈祺箕紀綺霸晉機肌
C0 記旛宣起旛鎮飢饉騎駕驥駿緊信吉拮
D0 桔金喫儻喇宗娜懦憐嬖拿廉羅羅螺裸
E0 邏那樂洛烙烙落諾酪駱亂卵暖櫛煖爛
F0 蘭難薰捏掠南鳳枮楠滴澁澁男藍襯拉

D240 - D2FF

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A0 納臘蠟衲臺娘廊朗浪狼郎乃來內奈
B0 奈耐冷女年燃季念恬拈捻寧寧努勞奴
C0 驚怒搗櫓爐瑞盧老蘆虧路靈驚盡驚碌
D0 緣綠荼綠鹿論鹽弄憑寵娶脹脹惱牢
E0 腦路雷尿疊屢樓淚漏累縷陋嫩訥扭紐
F0 勒肋凜凌稜綴能蔓陵尼泥匱潤多茶

D340 - D3FF

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A0 丹賣但單圓壇彖斷旦檀段湍短端簷
B0 繼蛋相鄭鍛撻漣猶直達啖坍懶擔疊淡
C0 潘潭漬疲聃膚單談譚談沓沓答踏還
D0 廣堂塘噠慧撞榮當糖蠍黨代堡培大對
E0 岱帶待戴擅玳臺袋貨隊黨宅德惠倒刀
F0 到圓堵塗導層島鳴度徒悼挑掉搗桃

D440 - D4FF

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A0 棒櫛淘渡沿清乘盜賭禱稻萄觀賭跳
B0 踏逃途道都鑲陶船毒漬橫橫獨督禿驚
C0 紙讀墩惇敦盹噉沌煙燉豚頓訥突仝冬
D0 凍動同情東桐棟洞渣瘡童桐董調兜
E0 斗杜科痘賣蕡讀豆逗頭屯臂范逼遞鉢
F0 得燈燈燈等藤膽鄧騰喇懶擊獵羅

D540 - D5FF

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A0 蘿螺裸溫樂洛烙烙絡落諾酪駱丹亂
B0 卵櫛變渾爛蘭薰刺辣鳳孽攬櫻澁籃纏
C0 藍桂覽拉臘蠍廊朗浪狼琅鄉郎來峽
D0 侏萊冷掠略亮爾兩涼梁樑娘梁糧良諒
E0 輸量侷僻勵呂廬慮戾旅櫛澁礪葵蠍間
F0 離驕麗黎力曆歷溫碟蠍證憐戀攀漣

Code Page 949 Korean (Cont.)

D640 - D6FF

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A0	煉礮練聯蓮鼙連練冽列劣冽烈裂廉
B0	斂殮灑膚獵令伶困零岑領怜玲答矜翎
C0	聆遲鈴零靈領齡例澧禮醴賴勞怒撈搘
D0	櫓潞瀉爐盧老蘆虞路輅露魯薰幽碌祿
E0	綠荼錄鹿謐諭翌弄龍瀉琳龍聲偏瀨牢
F0	羈賂賣賴暫了僚寮廖料燐療曉聊蓼

D740 - D7FF

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A0	遼闊龍疊臺屢樓淚漏痕累縷薰樓鑑
B0	陋劉旒柳榴流溜濶琉璃留瘤硫膠類六
C0	戮陸龠倫嵩淪繪輪律慄栗率隆勒肋凜
D0	凌榜稜綴夔陵俚利屢更咧履刈李梨涅
E0	梨狸理璃異剝離罹高利裏裡釐難鯉
F0	吝澗熾瑞蘭躡隣鱗麟林琳臨霖砬

D840 - D8FF

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A0	立笠粒塵瑪麻碼磨馬魔麻真幕漠膜
B0	莫邈万疋燒蠻慢挽晚豔滿漫灣瞞萬
C0	墓盤較餸慢匙抹末沫茱襪袜亡妄忘忙
D0	望網罔芒茫莽觸邱埋妹媒寐昧枚梅每
E0	煤罵賣賣邁魅脈猶陌暮麥孟氓猛盲盟
F0	萌幕覓免冕勉棉迺咷眠綿緝面廸滅

D940 - D9FF

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A0	薦冥名命明暝榆溟皿瞑茗黃螟酩銘
B0	鳴袂傳嘆募姆帽幕摸摹某模母毛牟
C0	牡瓊眸矛耗茅謀讓貌木沐牧目睦穆
D0	驚歎沒夢膝蒙卯墓妙廟描昂杳渺貓妙
E0	苗錯務巫慘懲戌揭撫无楙武母無熾敵
F0	繆舞茂蕉陘質霧鶯墨默們刎吻問文

DA40 - DAFF

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A0	汝素紋閨蚊門委勿汎物味媚尾嵋彌
B0	微未褪櫈漢涓眉米美薇謎迷靡微岷閨
C0	惑惱教要叹民混玟珉縉閨密蜜鼈劍博
D0	拍搏撲朴撲泊珀璞箔柏縛膊船連迫霍
E0	駁伴半反叛拌搬華班槃泮潘班畔癩盤
F0	盼簪礮轡絆般蟠返頌飯勃拔撥泐潑

DB40 - DBFF

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A0	發跋礮鉢髮越倣傍坊妨施幫彷虧放
B0	方旁昉枋榜滂磅紡肪膀舫芳蕕蚌訪謗
C0	邦防龐倂俳北培徘徊拜排杯泮焙盃背胚
D0	裴裹褙賠輩配陪伯佰帛柏栢白百魄幡
E0	樊煥燔番亟繁蕃藩翻伐筏罰閻凡帆梵
F0	汜汎泛犯範范法珐僻虧髮斐靡

Code Page 949 Korean (Cont.)

DC40 - DCFF

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A0	碧蘋闊驛便卞弁變辨辯邊別瞥紫鼈
B0	丙併兵屏并炳禹柄榜炳瓶病秉竝餅餅
C0	耕保堡報寶普步湫深潛璫甫菩補褓譜
D0	輶伏僕匐卜宓復服福腹茯菊複履輶輶
E0	護廟本庖俸奉封峯峰捧俸烽燧烽燧蓬
F0	蜂逢鋒鳳不付俯傅剖副否咲埠夫婦

DD40 - DFFF

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A0	孚駢富府復扶敷斧浮溥父符簿缶腐
B0	臍膚躬芙莘計貞賦賄赴趺部蓋阜附駙
C0	臭北分吻噴噴奔奮忿情扮盼汾熒盆粉
D0	糞紛芳貢雾不佛弗拂拂崩朋棚硼繩鴨
E0	丕備比匪卑妃婢庇悲懲屢批斐粧榧比
F0	瑟毗昆沸泌琵琶砒碑秕秘粧緋鴉肥

DE40 - DEFF

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A0	脾臂菲誓裨誹醫費鄙非飛鼻噴噴彬
B0	斌橫殞浜濱灘牝玭貧賓頻憑水聘鷗乍
C0	事些仕伺似使俟僕史司唆嗣四士耆娑
D0	寫寺射日師徒恩捨斜斯柂查梭死沙泗
E0	渣瀉獅砂社祀祠私篩紗絲肆舍莎養蛇
F0	娑詐詞謝賜赦辭邪飼駟窮削數朔柔

DF40 - DFFF

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A0	傘刪山散汕珊產疝算蒜酸霰迷撒殺
B0	煞薩三參杉森渺芟蓼衫插澁鍛颶上傷
C0	傳償商喪蓄嫋尚峽常床庠廡想桑棣湘
D0	爽牀狀相祥籍翔裝觴詳象質霜塞靈賽
E0	晝塞權秉色牲生甥省笙暨堵嶼序庶徐
F0	恕抒擗敍暑曬晝栖棲犀瑞筮絮署

E040 - EOFF

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A0	胥舒薯西誓逝勤委鼠夕奭席惜昔哲
B0	析汐浙湯石碩鷺釋錫仙優先善嬪宣屬
C0	徵旋漣燭璇璇璫禪綠繙羨腺膳船
D0	蘋蟬跣跣銳鏗鏗鮮高胥櫻泄洩渫舌
E0	薛襄設說雪誓剗通殲纖蠟閃陁攝涉
F0	麥葉城姓威性惺成星最猖城盛省朮

E140 - E1FF

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A0	聖整腥誠醒世勢歲洗稅笞細說賣召
B0	嘴塑宵小少巢所掃搔昭梳沼消溯瀉炤
C0	燒甦疏疎瘡笑篠蕭素紹蔬蕭蘇訴逍遙
D0	邵銷韶騷俗屬東涼稟續謾贊速孫巽損
E0	蓀遜凜率宋棟松泓訟誦送頌刷毅灑碎
F0	鎮衷劍修受歟囚垂壽嫂守岫旨帥愁

Code Page 949 Korean (Cont.)

E240 - E2FF

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A0	戍手授搜收數樹殊水洙漱筵狩獸誘
B0	筵瘦睡秀穗堅粹綏漫縷茱見繆蔽
C0	袖誰響輶達達酬銖銖隔隨雖觸須首
D0	隨鬚叔塾夙孰宿淑瀟熟瑚璫痛菽巡徇
E0	循物徇徇桷桷徇淳珣盾瞬筍純胥舜舜
F0	荀尊蕡徇醇醇順訓戌術述毓崇極

E340 - E3FF

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A0	嵩瑟膝疊濕拾督禡襲丞乘僧勝升承
B0	界繩蠅陞侍匙嘶始妃戶屎屍市弑恃施
C0	是時柿柴猶矢示翅蒔蒔視試詩謠豕豺
D0	墻臺式息拭植殖湜炮資蝕譏軾食飾伸
E0	侁信呻姪廣慎新晨燧申神紳腎臣莘薪
F0	蓋暨訊身辛辰迅失室實悉審尋心沁

E440 - E4FF

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A0	沈深潛甚芯諳什十拾雙氏亞俄兒啞
B0	娥峨我牙芽蕤蛾衝訝阿雅誠鴉撫亞岳
C0	獮帽惡愕搢樂渥鄂鐸頸觸鑑安岸按要
D0	策眼雁較顏皎駢謁軋闕崎岩巖庵暗高
E0	裔閭壓押狎鴨仰央快昂殃秧薰壓表埃
F0	塵愛暖涯磚艾隘羈厄扼掖液縕腋額

E540 - E5FF

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A0	櫻瞿鳴鸞也仰治夜惹哿哿節耶若野
B0	弱掠略約若薑蘿葉躍亮佯兩涼壞壞恙
C0	揚揚歌喝梁楊橫洋濱揚淬嘉禮穠糧羊
D0	良裏諒讓臘陽量養圖御於漁療樂詰馭
E0	魚韜億憶抑槐臆僵彥焉言諦雙蘿倦
F0	儼嚴奇掩海業業円予余勵呂女如廬

E640 - E6FF

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A0	旅歟汝漣璵礪礪與絳茹與譽闇餘曠
B0	麗黎亦力域役易曆歷疫繹譯譯逆驕嘯
C0	壞姻娟宴年延嫋嫋捐誕燃椽沉沿誕涓
D0	淵漬漬烟然煙燄燃燕漬研硯季筵緣練
E0	績聯衍軟鞶道追鉛鍊鳶列劣咽悅涅烈
F0	熱裂說閱厭廉念捻染殮炎焰琰艷冉

E740 - E7FF

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A0	旆間鼙鼙鼙鼙葉令圉圉寧嶺嶺影
B0	怜映唼楂樂永泳渼渼灑瀛灑煥鑿鑿玲
C0	瑛瑩瑩盈瑩瑩玲玲英詠迎鈴鎗零零
D0	領又倪例刈叢曳汭滅猊睿穠芮藝藝禮
E0	裔脂譽贊贊銳競覽預伍伍倣倣午吾吳
F0	嗚墉壞裏娛肅悟惠懷教阡晤梧污漢

Code Page 949 Korean (Cont.)

E840 - E8FF

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A0 鳥熬葵箕蠍誤藜龍屢沃獄玉鈺溫瑞
B0 痘穠繩蘿兀臺擁塗甞癰翁畿雍甞渦瓦
C0 窩窪臥蛙蟆跳婉完宛椀椀浣玩琬琬碗
D0 緩訴腕腕莞豌阮頑曰往旺枉汪王倭娃
E0 亞矮外覓覲猥畏了僚僥凹堯夭妖姚寧
F0 壽尿曉拗搖撓擾料囉樂撓燎烟瑤瑤療

E940 - E9FF

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A0 窝窩絲繞纏腰夢曉要謠遙遙邀謫愁
B0 欲浴綢緋辱備備冗勇湧墉容膚憑榕涌
C0 湧溶熔增用甬鑿蕡菩踊綃鑄龍子佑偶
D0 僮又友右字寓尤愚憂吁牛孖瑪孟祐禡
E0 离紅羽宇萬處迂遇郵軒隔雨尋跡或加
F0 昂楠烟緜郁頃云暉櫻殞灑爛耘芸薹

EA40 - EAFF

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A0 運隕雲韻蔚鬱弓熊雄元原員圓圓垣
B0 媚嬪冤怨恩援沉沮源爰猿猱苑袁轄
C0 遊阮院顯驚月越鉞位偉僞危圓委威尉
D0 慰曉清爲達縫青萎葦薦娟衛禊謂達韋
E0 魏乳侑儒愈劉唯喻孺有幼幽庶悠惟愈
F0 愉揄攸有扭柔柚柳榦榦油涓流游潤

EB40 - EBFF

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A0 清猶歎琉璃由留應硫紐維與莫裕誘
B0 諛諭踰跋遊逾遭西袖鎔類六墳戮毓內
C0 齊陸倫允鼐尹峩渝潤珮勸贊輸銑律
D0 標栗率牽戎泄絳融隆垠恩懸殷闇銀隱
E0 乙吟淫靡陰音欽攝泣邑凝應膺鳳依倚
F0 儀宜意懿擬倚毅疑矣義趨蕙蠶衣蹠

EC40 - ECFF

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A0 讀醫二以伊利吏夷姨匱已弛羣怡易
B0 李梨泥爾珥理興瘼痼移罹而耳聾苡莫
C0 裹裡貽貳遷里離飴餌匱漏漢益翊翌翼
D0 論人仁刃印吝咽因姻寅引忍涇燒璇細
E0 苗蘭蚜認隣勒勒麟麟一佚份壹曰溢逸
F0 鰐駟任壬妊姪恁林淋稔臨莊質入廿

ED40 - EDFF

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A0 立笠粒仍剩孕彷仔刺客姍姿子字孜
B0 怨憤滋炙煮茲疵疵紫者自茨藨蘿諮
C0 資雌作勺嘴研昨灼炸爵綽芍酌雀鵠屢
D0 機殘溼零零暫潛藏簪璽雜丈仗匠場牆
E0 壮獎將帳庄張掌障杖棹檣櫈漿牆狀獐
F0 瑞章粧腸臟臧莊葬蔣薈藏裝臘醬長

Code Page 949 Korean (Cont.)

EE40 - EEFF

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A0 隘再哉在幸才材裁梓滅津災縛裁財
B0 載齋齋爭筆靜錚併低儲姐姐底抵杵楮
C0 樞沮潘猶猪道箸紵苧道蕃諳貯貯躇道
D0 邸雖韁勑吊嫡寂摘敵滴狄炙的積笛籍
E0 繢鞚荻綺賊赤跡蹟追迹適鑄佃佺傳全
F0 典前剪墳埠奠專廣慶梭戰栓殿耗澣

EF40 - EFFF

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A0 煎瓈田甸烟癆筆箋箋箋箋箋箋箋箋
B0 銓錢鏡電顛顛錢切截折浙癆癆節絕占
C0 岖店漸點粘霧鮎點接擗蝶丁井亭停儻
D0 星娅定幘庭廷征情挺政整旌晶嚴征植
E0 檉正汀淀淨渟溟灘延斑町晴碇禎程
F0 穿精綈紙訂鈔賣鄭釷釷釷釷釷釷釷

F040 - F0FF

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A0 靜門鼎制剝啼帝弟悌提梯濟祭第
B0 脍養製諸蹄醍除際躰題齊俎北凋助嘲
C0 吊彫措操早冕會嘗朝條樂櫈漕潮照燦
D0 爪璪眺祖祚租稠究粗糟組綠肇臺詔
E0 調趙躁造遭釣阻雕鳥族簇足雄存尊卒
F0 拙猝悰宗從悰懲棕淙琮種終綜縱腫

F140 - F1FF

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A0 跡踵鍾鑽佐坐左座挫罪主住侏做妹
B0 齒呪周噭麥宇宙廚畫朱柱株注洲湊澍
C0 烛珠疇繡紺袖綢舟蛛註株走蹟轔週酌
D0 酒鑄駐竹粥俊儕准塲离峻唆浚準潛
E0 煙啖啖羣邊還寫駿苗中仲衆重即柳櫈
F0 汗蒼增憎曾拯烝飴症繪蒸證贈之只

F240 - F2FF

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A0 趾地址志持指擊支旨智枝枳止池沚
B0 漬知砥祉祇紙肢脂至芝芷蠅誌識贊趾
C0 遷直種稷職啓噴廬振摺晉板棟殄
D0 津湊珍璫畛畛涉盡眞頌奏縉縉陳衫
E0 診賸夥辰進鎮陣陳屢侄叱姪妓帙桎瓊
F0 疾秩窟腔蛭質跌迭斟朕什執漾縕輯

F340 - F3FF

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A0 鐮集微懲澧且侘備又嗟嗟差次此磋
B0 斛茶蹉車遮捉擁着窄錯鑿攢潔燎瓈
C0 瓊竄纂纂縱讀贊讀餐饌利察擦札
D0 僮參暫慘慘懶斬站認識倉倡創唱媚廟
E0 彩槍敝風烈暢槍渝漲猖瘡脹船蕩蕩
F0 傷採采彩採培採採采采采采采采采

Code Page Traditional Chinese (Cont.)

F440 - F4FF

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A0	責湊妻懷處個刺剗尺憾戚拓擲斥滌
B0	瘠脊蹠陟隻仟千喘天川擅泉淺澗穿舛
C0	薦賤踐遷訓闡阡輞凸哲詰徹澈緩轔
D0	轆轤僉尖沾添括瞻簽鏡瘞詭堞妾帖撻
E0	牒疊疎牒貼帆廁晴清聽齊請青鱗切剗
F0	替涕滑締蹄遠遞體初剗哨憔抄招梢

F540 - F5FF

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A0	椒楚樵炒蕉硝礮礮秒稍肖艸苕草蕉
B0	詔超酢醋醜促囑蠟蟲蜀觸寸忖村邨叢
C0	塚寵恩愧捨總聰葱銃操催雀最墜抽推
D0	椎揪楓湫皺秋芻萩諷趣追鄒齒醜錐錘
E0	鍾雞鴉歎丑晉祝竺筑築縮蕃蹙軸逐
F0	春椿璫出朮勳充忠沖蟲衝表悴躰萃

F640 - F6FF

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A0	贊取吹嘴娶就炊翠聚脆臭趣醉驟薰
B0	側仄廁惻測層侈值嗤峙幃恥樞治淄熾
C0	痔痴癩稚穢緝置致齧輜雉馳齒則勑
D0	飭親七柒漆侵寢枕沈漫琛砧針鍼蟄杵
E0	稱快他咤唾墮愛情打拖朵精舵陀駛駛
F0	倬車啄坼度托拓擢晫柝濁灌琢瑣託

F740 - F7FF

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A0	鑽香嘆坦彈憚歎灘炭綻誕寧脫探耽
B0	耽貪塔搭榻宕帑湯糖蕩兒台太怠懶殆
C0	汰泰笞胎苔跆部駘宅擇澤撐攏免吐土
D0	討櫛桶洞痛箇統通堆槌腿褪退頹偷套
E0	姑投透闕懨特闢坡婆巴把播擺杷波派
F0	爬鼈破罷芭跛頤判坂板版瓣販辦鉢

F840 - F8FF

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A0	阪八叭捌佩唄恃敗沛湧牕狼裨羈貝
B0	彭澎烹膨慢便偏扇片篇編駁遍報驕貶
C0	坪平枰萍評吠嬖幣廢弊斃肺蔽閉陞佈
D0	包爾匏咆嘴圓布怖拋抱捕暴泡滿庖砲
E0	胞脯芭蒲袍裹逋鋪飽鮑幅暴曝爆炮
F0	轄俵剽彪標杓標漂瓢票表豹颺飄願

F940 - F9FF

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A0	品裏楓飄豎鳳鳴彼披疲皮被避陂匹
B0	弼必泌珌舉疋筆茲祕乏逼下何屢夏廩
C0	豐河瑕荷蝦賀遐霞盤盤學虐誠鵝寒恨
D0	博畢汗漢游漏罕翰閑閒限轉割轄函含
E0	戚唧噏滌涵械艦銜陷鹹合哈盒蛤閨閨
F0	陝亢仇姪媸恒抗杭衍汎港缸肛航

Code Page 949 Korean (Cont.)

FA40 - FAFF

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A0	行降項亥偕咳垓奚孩害懈楷海灘蟹
B0	解該諺邇駭骸劾核倖幸杏荇行亨向嚮
C0	璫鄉響餉響噏墟虛許憲權獻軒歇險
D0	驗奕炳赫革僂峴弦懸峴泫炫玄玗現眩
E0	覲絃絢絢縣舷銜見賢鉉顯子穴血貞嫌俠
F0	協夾峽挾浹狹脣脰英缺煥亨兄刑型

FB40 - FBFF

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A0	形洞熒灘燐炯熒珩螢荆螢衡迥邢螢
B0	藝兮瞽惠懸曠蕙蹊醯鞋乎互呼壤臺好
C0	岵孤戶扈昊皓臺浩渼湖游渼灘灘狐
D0	琥湖瓠皓枯糊縞胡芦葫蒿虎號蝴蝶豪
E0	鴟蠻顚惑或酷婚香混潭璋魂忽惚笏哄
F0	弘永泓洪烘紅虹紅鴻化和媒構火鑿

FC40 - FCFF

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A0	禍禾花華話譙貨靴廟擴攢確碼種丸
B0	喚奐宦幻患換歡惋桓溴換環紈還驪鱗
C0	活滑猾詎聞鳳幌徯恍恍晃暎幌況
D0	漒滉潢煌瑣皇簠筭荒蠅邊墮黃匯回迴
E0	徊恢悔懷晦會捨淮漬灰猶繪膾茵蛔誨
F0	財劉獲弘橫鎊嘆喟李效穀曉島淳渢

FD40 - FDFF

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A0	爻肴酵曉侯候厚后吼喉喚帳後朽煦
B0	珝逅勳勳壠煮熏燶薰訓量冕喧煊煊
C0	董卉喙毀棄微揮暉輝耀塵休撓杰畦
D0	虧恤誦鵝兇凶匈徇胸黑昕欣忻痕吃屹
E0	紇訖欠欽欽吸恰洽翕與僖熙臺噫鼙姬
F0	塘希憲憲戲唏嘴照臺嬉犧福稀轔詰

Code Page 950 Traditional Chinese

A140 - A1FF

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A240 - A2FF

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B0 1 2 3 4 5 6 7 8 9 I II III IV V VI VI
C0 VIIIIXX | ||| X 8 + - = 文 + ++ A
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E0 R S T U V W X Y Z a b c d e f g
F0 h i i k l m n o p q r s t u v

A340 - A3FF

40 W x y z A B Γ Δ E Z H Θ I K Λ M
50 Ν Ε Ο Π R Σ T T Φ X Ψ Ω α β γ δ
60 ε ζ η θ i κ λ μ ν ξ ο π ρ σ τ υ
70 φ χ ϕ ω ψ ς ρ ι π ι ι ι ι ι ι ι ι
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A0 ハシタビキ戸日下ちムヤニセセテ
B0 ハヌラル尤ル一メヒ。 / V
C0
D0
E0 €
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A440 - A4FF

40 一乙丁七乃九了二人儿入八几刀才力
50 ヒナト又三下丈上人丸凡久么也乞于
60 亡兀刃匀千爻口土士夕大女子子子寸
70 小尤戸山川工己巳巳巾干升弋弓才
80
90
A0 丑丐不中丰丹之尹予云井互五亢仁
B0 什行仆仇仍今介仄元允内大夸公冗凶
C0 分刈刈匀勾勿化匹午升卅丄厄友及反
D0 壬天夫太天孔少尤尺屯巴幻廿弔引心
E0 戈戸手扎支文斗斤方日曰月木欠止岁
F0 母比毛氐水火爪父爻片牙牛犬王丙

A540 - A5FF

世不且丘主乍乏乎以付仔仕他仗代令
仙仍充兄冉冊冬凹出凸刊加功包勿北
匝仟半卉卡占卯卮去可古右召叮叩叨
叨司亘叫另只吏叱台句叭叻四囚外
央失奴奶孕它尼巨巧左市布平幼弃
弘弗必戌打扔扒斥丘且朮本末末札正
母民氐永汁汀犯犯女玉瓜瓦甘生用甩
田由甲申疋白皮皿目矛矢石示禾穴立
丞丢兵兵乩爻交亦亥仇仿仇伊佚伍伐
体伏仲侄仟仰仕份公公𠙴光罔兆生全

A640 - A6FF

共再冰列刑划剥別努匈匡匠印危吉吏
同吊吐吁时各向名合吃后吆吒因回图
圳地在圭圬妃奸夙多夷夸妾奸妃好她
如灼字存宇守老安寺尖屹州帆并年
式弛忙忖戎成戍扣扛托收旱旨旬
旭曲曳有朽朴朱朵次此死累汝汗汗江
池汐汕污汎汎汎灰牟牝百竹米糸缶羊
羽老考而未耳聿肉助肌臣自至臼舌舛
舟艮色艾虫血行衣西阡事亨位住佇佗
佞伴佛何估佐佑伽匍伸佷佔似但𠙴

A740 - A7FF

40 作你伯低伶余仰佈佚免克免兵治冷別
50 判利刪削劫助努劬匣即卿客吭吞吾否
60 呀吧呆呃吳皇呂君吩咐告吹吻吸吮吵呐
70 吠吼呀吱含吟听函困匱困坊坑吐坍
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90
A0 均坎坂坐坏坼壯夾妝妒妨妞妣妙妖
B0 妍妍妓奸妥孝孕孚享完宋宏尬局屁尿
C0 尾岐峯岔发巫希序底床廷弄弟形形彷
D0 彿忘忌志忍忧快忸忪戒我抄抗抖技扶
E0 挾扭把扼找批板抒扯折扮投抓抑攷改
F0 攻攸旱夏東李杏材村杜村杞杉杆杠

Code Pare 949 Traditional Chinese (Cont.)

A840 - A8FF

40 沽宋步每求汞沙沁沈沉沅沛汪决沫汰
 50 沁汨冲没汽沃汲汾汴沉汶汲沔沂杜
 60 灼炎灸牢牡牠狄狂玖甬甫男甸皂盯矣
 70 私秀秃究系罕肖膏肝肘肛肚膏良芒
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 90
 A0 苦苟見角晉谷豆豕貝赤走足身車辛
 B0 辰迂迤迅迄巡邑邢邪邦那酉采里防阮
 C0 阱阪阤並乖乳事些亞享京佯依侍佳使
 D0 佬供例來侃併併侈佩佻禽俏侏僞全免
 E0 兒兒兩真其典冽函刻券刷刺到刮制剝
 F0 勁勸卒協卓卑卦卷卸卹取叔受味呵

A940 - A9FF

40 咖呸咕咀呻呻咄咒兜呼呼呱呱和咚呢
 50 周咋命咎固垃坷坪坦坡坦坤拆夜奉奇
 60 奈奄奔妾妻委妹妮姑姆姐姍始姓姊妯
 70 姊妙婢孟孤季宗定官宣亩宛尙屈居
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 90
 A0 屬岷岡岸岩岫岱岳帘幕帖帕帛帑幸
 B0 庚店府底庖延弦弧弩往征佛彼忝忠忽
 C0 念忿快怔怯怖怖怪怕怡性昵拂恒或戕
 D0 房戾所承拉拌拄振拂抹拒招披拓拔拋
 E0 拮抑抽押拐拙拇拍抵拏抱拘拖拗拆抬
 F0 拎放斧於旺昔易昌昆昂明昀昏昕昊

AA40 - AAFF

40 眇服朋杭枋枕東果杳杷枇枝林杯杰板
 50 纂松析杵枚料杼杪果欣武跋歿臥氛泣
 60 注泳沱泥汎河洁沾沿波沫法泓沸泄油
 70 泣沮泗泗浹沿治泡泛泊沫泯泜泖冷
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 A0 炙炎炒炊炙爬爭爸版牧物狀狎狃狗
 B0 狐玩狂攻玫瑰明嘲汎疣疚的孟盲直知矇
 C0 社祀祁秉仙空穹竺糾罔羌半者肺肥肢
 D0 肱股肫膚肴肪肯臥與舍芳芝芙芭芽芟
 E0 芹花芬芥芯芸茉芟芷虎虱初表軋迎
 F0 返近邵邸邱北采金長門臯陀阿阻附

AB40 - ABFF

40 破隹雨青非亟事亮信侵侯便俠俑俏保
 50 促侷併俟俊俗侮例俄係俚俎偷偏竟冒
 60 青冠刹剝削前刺剝則勇勃勒勁匍南卻
 70 厚叛咬袁咨咬哉咸嘆咳哇哂吶咪品
 80
 90
 A0 吻哈咯咫咱休咩咧咿圈垂型垠垣垢
 B0 城垓垓空壑奏奎兔妻姘姿姣嫫娃姥姪
 C0 姚森威姻核宣宦室客肴封屎屏屍墨峙
 D0 峙巒帝帥卒幽庠度建奔弭產很待徊律
 E0 徇後佯怒思怠急怎怨恍恰恨恢恆恃恬
 F0 恫恪恤肩拜摺按拼拭持摺拽指拱摺

AC40 - ACFF

40 滌括拾拴挑挂政故研施既春昭映昧是
 50 星昨豎昩曷柿染柱柔某柬架枯柵柩柯
 60 柄柏楊柚查杓柏柞柳枰柙柢柝柒歪殃
 70 殆段毒毗氟泉洋洲洪流津冽洱洞洗
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 90
 A0 活洽派淘洛泵洹洧洮洩洮洎洫坎
 B0 煙炳焰炯炭炸炮焰爰性拮抵狩狼狡玷
 C0 瑰玻玲珍珀玳基爾畏界畎畋疫疖疥疚
 D0 疣瘡眚皇皈盈盆盈盅省眸相眉看盾盼
 E0 眇矜砂研砌砍祿祉祈祇禹禹科秒秋穿
 F0 突竿竽籽紂紅紀紃約紓缸美羿畫

AD40 - ADFF

40 耐要耑耶脣胥胚胃賣背胡胛胎胞胤舐
 50 致舢苧范茅苣苦茄若茂茉蕕苗英苗
 60 首苔苑芭苔荀茆茆唐虹虻虺行衫要劖
 70 計訂計貞負赴赴趴軍軌迹迦迢迪迴
 80
 90
 A0 送迫迤迨郊郎郁部酋酌重門限陋陌
 B0 降面革革非首貢風飛食首香乘臺倍倍
 C0 做俯倦空儻儻倖倖倖倖借倚倒門俺僵倔
 D0 倨俱倡個候倘倘修委倪俾倫倉兼冤真
 E0 家凍凌准凋剖剝剝剛剝匪卿原厝叟哨
 F0 唐唔喟亨哥哲唆喟唔哩哭員唉哮哪

AE40 - AEFF

40 哟唧唇哽啼圓圓埂埔埋埃墻夏套柒奚
 50 娑娘娜娟娛娓姬嬌嬌娥娌媯孫魁宰
 60 寶家裏宮齊容痕射屑展屐峽峻峪峨
 70 峰島崁峴差席師庫庭座弱徒徑徐恙
 80
 90
 A0 态恥恐恕恭恩息悄悟悚惶悔悌悅悖
 B0 扇擎擎拿捎挾振捕搘捏捉挺搊搊挪
 C0 挫挨擗捌效敉料旁旅時晉娶晃晒煦眩
 D0 晃晝朔朕朗校核粢桓桓根桂桔芻梳栗
 E0 桌桑裁柴桐桀格桃株槐栓移衍殊殉殷
 F0 氣氯氯氣氯泰浪涕消溼浦漫海浙涓

AF40 - AFFF

40 混涉浮浚浴浩涌恣浹涅渙澇烊烘烤烙
 50 烈烏爹特狼狹獵狃玆班琉珮珠珪珞
 60 眇畝畜眷留疾病症疲疳疽瘳疹瘡瘡
 70 脊益盍盍眩真眼眨矩砰砸礮破礮
 80
 90
 A0 砥砭砧砟砲祐祠橐祖神祝祚祚
 B0 朶秧租橐秩秘簪矧站笆笑粉紡紗紋素
 C0 素繫純紐紺級纈納紙紛缺罟羔姻翕耆
 D0 耘耕耙耗耽耽脂膚膚膚膚膚膚膚膚膚
 E0 能脊胼膀奧臬舀舐航舫版般芻茫荒荔
 F0 荆葦葦草茵茵茲茹荼茗苟茱茨莖

Code Pare 980 Traditional Chinese (Cont.)

B040 - BOFF

B140 - B1FF

40 媚婢婚婆娘孰寇寅寄寂宿密尉專將屬
50 罷罪崇屹崎崛崖崢嶸崩崔嵬崎嶸巖巢
60 常帶恨惟慶膺庶庵夷張強善彩彬彰影得
70 徒從徘徊御俠倘患患悉悠您惋悴恬懷
80
90
A0 情悻悵惜憎惆悵惆悵惟憐惄憇憂憂
B0 掠控捲掖探接撻摶掘措捲掩掉捲掛捲
C0 推掄授掄探掄排掏掀掄摸掄捨揲散救救
D0 教敗啓敏救敵斜斛斬族旌旌旆晝晚
E0 暗襲晦曉會易呈采梯梢梓斧桿桶枯梧
F0 横械狂逐梭柳海桓條烈豐桂枝欲殺

B240 - B2FF

毫氳氳涼涼液淡渝游添淺清淇淋
涯淑淵淞澣澣混淵析臺渚渙涙淫淘淪
深淮淨清淮涪淬涿滌裏焉燭烽烯夾牽
翠猜猛猖渠淨率琅琊球理現珮瓠瓶

B340 - B3FF

40 蒲菟處彪蛇蛀蛆蚘蟲蛋蚱蚯蚓術袞
45 袂被袒袖袍袋貿規訪訝訥訐許設訟訛
50 訴貳豚販賣實貨貪貨赦放趾趺輶軟這
55 追逋逗連速逝逐逕造透逢逃逛途
60 遊都郭都酈野釵釦釣釧釤閉陪陵陳
65 陸陰陣陶陼陷雀雪等章竟頂頃魚鳥鹵
70 鹿麥麻傢傍傳備傑俛儻傎最勸割剗
75 創刺勞勝助導厥啻喀喧啼喊喝喘喂喜
80 豐屋喇嘩哩喃咱單喟唾喚喚喻哩哩喚
85 呷喚屢屢填場堤堰報保埠接賣霍食

B440 - B4FF

40 婷娟媚嬪媛嬌嬈
50 寒富寓尊尊就缺
60 嵐嵐移巽幡幃幃
70 循徨惑惡悲悶憇
80 慢惶偷秋轂載
90 插端提握握揭揮捶援揪換揜場指敝
A0 敦敢散斑斐斯普晰晴晶景暑智晾晷曾
B0 替期朝棺槨棠棘棗椅棟棵森棧掉棒檯
C0 樣惧泥植被椎棉棚楮裁款歛殘殖般
D0 紛氣氣龕港游前渡漁湧湧渠渥查滅湛
E0 湘渤湖潭瀘湯湯湯湯漸漸漸漸漸漸
F0

B540 - B5FF

B640 - B6FF

詔詎詐訴訟訶訛象貳貯貳貲賣
賀貴買貶貿貨越超趁距跑跌跛
距軸軋軼事遠達週逸進遷郵鄉酈酣
酥量鈔鈔鈕鈕鈎鈎鈎鈎鈎閂閂閂閂
間閒閂隊階隋陽隔隆隍陲雁雅雄
集雇雲輶項順須飧飪飯飮飮飮馮駁
黃黍黑靈儕儕儕儕儕儕儕儕儕儕儕
剗剗剗剗剗剗剗剗剗剗剗剗剗剗
嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣
嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣嗣

B740 - B7FF

40 媳媳媳嵩嵯峴幹廉廈試彙傍微愚意慈
50 感想愛惹愁愈憤慌栗溫愴愴愧慚愆
60 戲戲差搘搞搶搭搽搬搏搜摺損搶搖搗
70 搜散套新暗暉暉暉暉暉暉暉暉暉暉
80 暉暉暉暉暉暉暉暉暉暉暉暉暉暉暉
90 暉暉暉暉暉暉暉暉暉暉暉暉暉暉暉
A0 楚楷楠櫟極郴概楊慣楫楓楹榆棟
B0 帽桔歌歲殿毓璫溢潮溝溶旁源溝演
C0 滅溥瀆瀆瀆瀆瀆瀆瀆瀆瀆瀆瀆瀆瀆
D0 煩煩煩照燈煩煩煩煩煩煩煩煩煩
E0 獅猿滑珊瑚取瑟瑞瑩瓊瑤瑜當崎瘀
F0 疼疼痺痺痺痺痺痺痺痺痺痺痺痺

Code Pare 950 Traditional Chinese (Cont.)

B840 - B8FF

40 賽羣睂睂睥睨睢碎碰碗礮碌硼碑
50 碓砕祺祿禁萬禽稜稚禩稟稟稟稟
60 節筠筵簾梁梗粵經絹綢綉綏條置罩罪
70 署義羣聖聘肆肆腰腸腥腮御膳
80
90
A0 腹腺腦翼艇蒂蕈落蕈葵葦葫葉葬葛
B0 蔽萬荷董芭葭保虞虧蠅蛭蜀蛾
C0 脱蝶螢蛺銜婆商裙補裝袋裡裹裕裹
D0 𩷶解耗該詳試詩詰誇歌指誠話詭詭詢
E0 詮詬魯諾皆胶蠻猶賊貪賈貿賄賈賄
F0 賄賄賄賄賄賄賄賄賄賄賄賄賄

B940 - B955

BA40 - BAFF

BB40 - BBFF

40 詞翠翫翟聞聚聲腐膀膏騰腿脣減臺
罰與舞猛芙蓉萬萬蒼蒼泣蒜蒜然孫告
寬着表絲晚蜜蠻蠻斷折蜘蛛
表裹裸製裨楮禍誦詬語証認誠曾誤

BC40 - BCFF

劇劈劉劍創厲嘯噏噏嘲嘿噏噏噏噏
嘆噏噏嘶嘶哽哽哽哽哽哽哽哽
嬋嬋嬈嬈嬈嬈寫脣履履縱縱縱縱
腐廟廝廣廝單影德徵慶慧慮慕憂

BD40 - BDFF

瑾崔毅瘠瘡瘍瘦瘡瘍皚盤暗昧睡
暝眞嗟確磊碨磕碼磐構穀穀稷稻
索窮新箱篠徵篆篇薑鑑箋糊絲練緯緻
緘極編緣線緻緩絳絳羣龍鴟
翹脰膜膝膠膚膘蕪蔚蓮蔬蕪蔓
蔑蕪葵葫蘆蕙荀蕪螂蝴蝶蝠蛾蠅蠅
蝗蝶榆衝褐複委根榆福韻涼談詳趾
請諸課諉詔調誰論許辭說貌豎豬賠
賞賦賤賄賜賢賣賜質賡堵趙趣並踐踝
陽踏踩跋蹠暗躬邇軒輶暨鑿筆輪輶

BE40 - BEFF

BF40 - BFFF

40 濃羣濱澇澳激滄瀉瀆澗漫巖漱拂燒燈
50 燕棲燭漫燭燃燄獨躋璣璇瓊漢飄駟蕡
60 瘋癲痛盧盈眶瞞瞞睂磨碧磬積穎
70 穆紛穆觀筭蓑築簷窮篠篠籠糕糖綵
80
90
AO 繼繁縟縕縕縕縕縕縕縕縕縕縕縕縕縕
BO 脜膨臻與艘船蒼蕙草厥蕩蕪蕉蕭無最
CO 螳媒蠅螢融衝視幢幡搖搭親親諦諺諺
DO 謂謀諺諺諺諺諺諺諺諺諺諺諺
EO 賴躰躰躰躰躰躰躰躰躰躰
FO 濁羣濱澇澳激滄瀉瀆澗漫巖漱拂燒燈

Code Page 949 Traditional Chinese (Cont.)

C040 - COFF

40 錐錦銘銅鉗閩隱隨險辭雲宿雲覓
 50 霽酡醉貌頰頸頻顙頭頑頤餐館錢銀
 60 餡餚駭駭駭駭駭駭駭駭駭駭駭駭駭
 70 駭駭駭駭駭駭駭駭駭駭駭駭駭駭
 80
 90
 A0 嘘壞壓壘與嬪嬪孺嫵巒嶺巒
 B0 蒼彌微應董懇憇燃戲戰擎擊擊擊擊擦擦
 C0 擬擋擋擋效效效效效效效效效效
 D0 梨榦榦榦榦榦榦榦榦榦榦榦榦榦榦榦榦榦榦
 E0 濱濱濱濱濱濱濱濱濱濱濱濱濱濱濱濱濱
 F0 濱濱濱濱濱濱濱濱濱濱濱濱濱濱濱濱

C140 - C1FF

40 瞻瞻矯矯礮礮礮礮礮礮礮礮礮礮
 50 納條練麼糞模糞模糞模糞模糞模糞
 60 總縱縱縱縱縱縱縱縱縱縱縱
 70 聰聰聰聰聰聰聰聰聰聰聰聰聰
 80
 90
 A0 薄薈薛薈薛薛薜薜薜薜薜薜薜薜薜
 B0 蟠盤蟠蟠蟠蟠蟠蟠蟠蟠蟠蟠蟠蟠蟠蟠
 C0 誣謗謝膽詔詔詔詔詔詔詔詔詔詔詔
 D0 踏蹊蹊蹊蹊蹊蹊蹊蹊蹊蹊蹊蹊蹊蹊蹊
 E0 醉鍛鍛鍛鍛鍛鍛鍛鍛鍛鍛鍛鍛鍛
 F0 闕闕闕闕闕闕闕闕闕闕闕闕闕闕闕

C240 - C2FF

40 駿鮮鮫鮫鮫鮫鮫鮫鮫鮫鮫鮫鮫
 50 噎船漁疊漁漁漁漁漁漁漁漁漁漁
 60 暝棲棲棲棲棲棲棲棲棲棲
 70 濱濱濱濱濱濱濱濱濱濱濱濱濱
 80
 90
 A0 治瞽瞶瞶瞶瞶瞶瞶瞶瞶瞶瞶瞶瞶
 B0 简實簡簡纖織繞織織織織織織
 C0 脣肢脣脣脣脣脣脣脣脣脣脣脣脣
 D0 覆覲觴謨謨謨謨謨謨謨謨謨
 E0 轉輾還還還還還還還還還還
 F0 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔

C340 - C3FF

40 鞍韁韁韁韁韁韁韁韁韁韁韁韁韁韁韁韁
 50 驚魄額額額額額額額額額額額
 60 嘸壞壘壘壘壘壘壘壘壘壘壘壘壘
 70 暢暢暢暢暢暢暢暢暢暢暢暢
 80
 90
 A0 漵瀶瀶瀶瀶瀶瀶瀶瀶瀶瀶瀶瀶
 B0 篓簷簷簷簷簷簷簷簷簷簷簷簷簷
 C0 藝藪蘿藤葉諸葛蠻蠻蠻蠻蠻蠻
 D0 譜譜譜譜譜譜譜譜譜譜譜譜
 E0 蹤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
 F0 鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄

C440 - C4FF

40 願願願願願願願願願願
 50 鴨鴨鴨鴨鴨鴨鴨鴨鴨鴨鴨
 60 峴懸懸懸懸懸懸懸懸懸懸
 70 繖續續續續續續續續續
 80
 90
 A0 箕箕箕箕箕箕箕箕箕箕
 B0 複覺觸觸觸觸觸觸觸觸觸觸
 C0 釋道道道道道道道道道道
 D0 車輪輪輪輪輪輪輪輪輪
 E0 俗俗俗俗俗俗俗俗俗俗
 F0 篓籜籜籜籜籜籜籜籜籜籜

C540 - C5FF

40 護譽賊賊賊賊賊賊賊賊賊
 50 闡霸霸霸霸霸霸霸霸霸
 60 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
 70 孝顛顛顛顛顛顛顛顛顛
 80
 90
 A0 蓋籠籠籠籠籠籠籠籠籠
 B0 鄭鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
 C0 鱸魚魚魚魚魚魚魚魚魚
 D0 環環環環環環環環環
 E0 鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
 F0 微微微微微微微微

C640 - C6FF

40 譏詺詺詺詺詺詺詺詺詺詺詺
 50 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
 60 頗頗頗頗頗頗頗頗頗
 70 鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
 80
 90
 A0
 B0
 C0
 D0
 E0
 F0

C740 - C7FF

40
 50
 60
 70
 80
 90
 A0
 B0
 C0
 D0
 E0
 F0

Code Pare 980 Traditional Chinese (Cont.)

C840 - C8FF

40
50
60
70
80
90
AO
BO
CO
DO
EO
FO

C940 - C9FF

CA40 - CAFF

CB40 - CBFF

CC40 - CCFF

40 塹姁姁姁姁姁姁姁姁姁姁姁姁姁
45 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
50 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
55 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
60 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
65 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
70 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
75 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
80 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
85 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
90 姮姁姁姁姁姁姁姁姁姁姁姁姁姁
A0 懈恠恠恠恠恠恠恠恠恠恠恠
B0 懈恠恠恠恠恠恠恠恠恠恠恠
C0 懈恠恠恠恠恠恠恠恠恠恠恠
D0 懈恠恠恠恠恠恠恠恠恠恠恠
E0 懈恠恠恠恠恠恠恠恠恠恠恠
F0 懈恠恠恠恠恠恠恠恠恠恠恠

CD40 - CDFF

CE40 - CEFF

CF40 - CFFF

40 柏杷杼柘被枷杞拂粗杼杼杼袂枳祝杼杼
50 桀杼抱杼杌柰檠杖杼杼桐枯粗榦杼杼
60 梓榦榦榦榦榦榦榦榦榦榦榦榦榦榦榦榦榦
70 澳洼湾酒淳泚洳涸洙洛泽状涑涑涑
80
90
A0 浩滂涇涇涇涇涇涇涇涇涇涇涇涇涇涇
B0 焰夷黑炷煊烙煖舸𦵃炤轴轴轴轴轴
C0 犹猪狃狃狃狃狃狃狃狃狃狃狃狃狃
D0 眇珥珥珥珥珥珥珥珥珥珥珥珥珥珥珥
E0 眇眴眴眴眴眴眴眴眴眴眴眴眴眴眴
F0 眇眴眴眴眴眴眴眴眴眴眴眴眴眴眴眴

Code Pare 980 Traditional Chinese (Cont.)

D040 - D0FF

40 窒竑竺笠秆糴粃粒杖秆紩紩糸果萎莘
50 犹荀哭杉秆耷胫脯肢股脣肿脣脢昨
60 胜朐附朐脣脢脢脰垂紅此茲必萃芨危
70 莞苦莞苦齒直齿以乍矣往符不芸苦
80
90
A0 苦萬莓蓼莎蚜蚯蚓蠹行杼牠柵斛
B0 壁匍趨避遲追迨邦邦鄰鄰邾鄧自鄧
C0 鑑釅陔隋陌跨彥陳涼粹宛俊儕儕俱俵
D0 傑停係倬攸僻朋獨佞性武松俛佛党辱
E0 華清棗圓淨洽炎勦剖剝剝剝剝剝剝

D140 - D155

40 吱哩將啞啞哩喲嗰圍墳墳聖埠埠埠
50 近埠埠埠埠埠埠埠美姪嫔嫔嬪嬪
60 嫦娥娥娥娥娥娥娥娥娥娥娥
70 幸喜喜喜喜喜喜喜喜喜喜喜喜
80 喜喜喜喜喜喜喜喜喜喜喜喜喜
90 喜喜喜喜喜喜喜喜喜喜喜喜喜
A0 怨恨恨恨恨恨恨恨恨恨恨恨
B0 痴眷眷撓撓撓撓撓撓撓撓撓撓撓撓
C0 摟摺摺摺摺摺摺摺摺摺摺摺摺
D0 施施施施施施施施施施施施
E0 植植植植植植植植植植植植
F0 相相相相相相相相相相相相

D240 - D2FF

D340 - D3FF

40 箕箠箊笏箇筭箠箠板杷紫粕粗粃粃
50 純紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝
60 犀殼紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝
70 犀紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝
80 犀紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝
90 純紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝紝
A0 菁華蕡葩茈蘭攸若夢寐夜夜若若
B0 娄莽蕡蕡而茲殊虎蠍蜘蛛蛇
C0 蟑螂蚋蚋蚊蚋蚋蚋蚋蚋蚋蚋蚋
D0 鈕袂袒袖衲拘祓祓祓祓祓祓祓祓祓
E0 犬馳馳趕趨趨跔跔跔跔跔跔跔跔跔
F0 這這鄧鄧鄧鄧鄧鄧鄧鄧鄧鄧鄧鄧鄧

D440 - D4EE

40 酷釘釣釤陝陝隼釘影鬯氣剝僵僵
45 僥僵僵僵僵僵僵僵僵僵僵僵
50 僮僵僵僵僵僵僵僵僵僵僵僵
55 僮僵僵僵僵僵僵僵僵僵僵僵
60 僮僵僵僵僵僵僵僵僵僵僵僵
65 僮僵僵僵僵僵僵僵僵僵僵僵
70 僮僵僵僵僵僵僵僵僵僵僵僵
75 僮僵僵僵僵僵僵僵僵僵僵僵
80 僮僵僵僵僵僵僵僵僵僵僵僵
85 僮僵僵僵僵僵僵僵僵僵僵僵
90 僮僵僵僵僵僵僵僵僵僵僵僵
A0 僮僵僵僵僵僵僵僵僵僵僵僵
B0 僮僵僵僵僵僵僵僵僵僵僵僵
C0 僮僵僵僵僵僵僵僵僵僵僵僵
D0 僮僵僵僵僵僵僵僵僵僵僵僵
E0 僮僵僵僵僵僵僵僵僵僵僵僵
F0 僮僵僵僵僵僵僵僵僵僵僵僵

D540 - D5EE

D640 - D6FF

D740 - D7FF

Code Pare 950 Traditional Chinese (Cont.)

D840 - D8FF

D940 - D9FF

40 軒窗幕草集易序偏愛析宣恪僵僵是僵
45 爰屢堅難辨捨捨捨捨捨捨捨捨捨捨
50 摟撣撣撣捨捨捨捨捨捨捨捨捨捨捨捨
55 捶撣撣敲敲敲敲敲敲敲敲敲敲敲敲
60 敵敵敵敵敵敵敵敵敵敵敵敵敵敵
65 敗敗敗敗敗敗敗敗敗敗敗敗敗敗
70 敗敗敗敗敗敗敗敗敗敗敗敗敗敗
75 斷斷斷斷斷斷斷斷斷斷斷斷斷斷
80 姚姚姚姚姚姚姚姚姚姚姚姚姚姚
85 旗旗旗旗旗旗旗旗旗旗旗旗旗旗
90 旗旗旗旗旗旗旗旗旗旗旗旗旗旗

DA40 - DAFF

40 涅湜渢澗涒澦涒澦涒澦涒澦涒澦涒澦
50 春建匣涒澦涒澦涒澦涒澦涒澦涒澦涒澦
60 烬夜晵涒澦涒澦涒澦涒澦涒澦涒澦涒澦
70 湖獮瑕涒澦涒澦涒澦涒澦涒澦涒澦涒澦
80 瑰璇璫瑩瑩培璫璫璫璫璫璫璫璫
90 琉璃瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩
AO 瑞瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩
BO 瑞瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩
CO 瑞瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩
DO 瑞瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩
EO 瑞瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩
FO 瑞瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩瑩

DB40 - DBFF

DG40 - DCEFF

40 軛駢軸駢軸轆轤軒軸轄駢
45 駢駢爲鄧駢駢鄧鄧鄧鄧鄧鄧
50 酡酉酉金方釗火鉗鉗鉗鉗鉗鉗
55 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
60 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
65 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
70 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
75 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
80 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
85 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
90 鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗鉗
A0 隍隃墮雒雒雒雒雒雒雒雒
B0 畦鄰亂亶僅僅僅僅僅僅僅僅
C0 從儻僩僩僩僩僩僩僩僩僩
D0 嘴噏噏噏噏噏噏噏噏噏
E0 噏噏噏噏噏噏噏噏噏噏
F0 湛明姁姁姁姁姁姁姁姁姁

DD40 - DDEF

DE40 - DEFF

40 詩罷懶流漬滴瀆瀆溟溟漾漾漾漾漾漾
50 潤潤潤潤潤潤潤潤潤潤潤潤潤潤潤潤
60 淮淮淮淮淮淮淮淮淮淮淮淮淮淮淮淮
70 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
80 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
90 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
A0 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
B0 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
C0 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
D0 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
E0 煙煙煙煙煙煙煙煙煙煙煙煙煙煙
F0 煙煙煙煙煙煙煙煙煙煙煙煙煙煙

DF40 - DFFF

Code Page 950 Traditional Chinese (Cont.)

E040 - E0FF

40 駕齋齋齋觸訓詎詎訛訛訛訛訛訛
 50 詣詔訛訛訛訛訛訛訛訛訛訛訛
 60 謂詔訛訛訛訛訛訛訛訛訛訛訛
 70 訛訛訛訛訛訛訛訛訛訛訛訛
 80
 90
 A0 遙遠遙遙遙遙遙遙遙遙遙遙遙
 B0 鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤
 C0 鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤
 D0 鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤
 E0 鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤
 F0 鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤鍤

E140 - E1FF

40 淌副勸勸勸勸勸勸
 50 昭唯喇喇喇喇喇喇喇喇喇喇喇喇
 60 嘴喇喇喇喇喇喇喇喇喇喇喇喇喇喇
 70 嘴喇喇喇喇喇喇喇喇喇喇喇喇喇喇
 80
 90
 A0 痞羅喇喇喇喇喇喇喇喇喇喇喇喇
 B0 痞羅喇喇喇喇喇喇喇喇喇喇喇喇
 C0 痞羅喇喇喇喇喇喇喇喇喇喇喇喇
 D0 痞羅喇喇喇喇喇喇喇喇喇喇喇喇
 E0 痞羅喇喇喇喇喇喇喇喇喇喇喇喇
 F0 痞羅喇喇喇喇喇喇喇喇喇喇喇喇

E240 - E2FF

40 櫺檯櫻檯櫻檯櫻檯櫻檯櫻檯櫻檯
 50 櫺檯櫻檯櫻檯櫻檯櫻檯櫻檯櫻檯
 60 櫺檯櫻檯櫻檯櫻檯櫻檯櫻檯櫻檯
 70 櫺檯櫻檯櫻檯櫻檯櫻檯櫻檯櫻檯
 80
 90
 A0 澄濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬
 B0 澄濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬
 C0 澄濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬
 D0 澄濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬
 E0 澄濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬
 F0 澄濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬濬

E340 - E3FF

40 祢禪祿祿祿祿祿祿祿祿祿祿祿祿祿祿祿祿
 50 祕篠篠篠篠篠篠篠篠篠篠篠篠篠篠
 60 祕篠篠篠篠篠篠篠篠篠篠篠篠篠篠
 70 祕篠篠篠篠篠篠篠篠篠篠篠篠篠篠
 80
 90
 A0 罷職職職職職職職職職職職職職
 B0 罷職職職職職職職職職職職職職
 C0 罷職職職職職職職職職職職職職
 D0 罷職職職職職職職職職職職職職
 E0 罷職職職職職職職職職職職職職
 F0 罷職職職職職職職職職職職職職

E440 - E4FF

40 橋棲棲棲棲棲棲棲棲棲棲棲棲
 50 橋棲棲棲棲棲棲棲棲棲棲棲棲
 60 橋棲棲棲棲棲棲棲棲棲棲棲棲
 70 橋棲棲棲棲棲棲棲棲棲棲棲棲
 80
 90
 A0 鈦銅銅銅銅銅銅銅銅銅銅銅銅銅
 B0 鈦銅銅銅銅銅銅銅銅銅銅銅銅銅
 C0 鈦銅銅銅銅銅銅銅銅銅銅銅銅銅
 D0 鈦銅銅銅銅銅銅銅銅銅銅銅銅銅
 E0 鈦銅銅銅銅銅銅銅銅銅銅銅銅銅
 F0 鈦銅銅銅銅銅銅銅銅銅銅銅銅銅

E540 - E5FF

40 嘴嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰
 50 嘴嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰
 60 嘴嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰
 70 嘴嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰嘰
 80
 90
 A0 懶懶懶懶懶懶懶懶懶懶懶懶懶懶
 B0 懶懶懶懶懶懶懶懶懶懶懶懶懶懶
 C0 懶懶懶懶懶懶懶懶懶懶懶懶懶懶
 D0 懶懶懶懶懶懶懶懶懶懶懶懶懶懶
 E0 懶懶懶懶懶懶懶懶懶懶懶懶懶懶
 F0 懶懶懶懶懶懶懶懶懶懶懶懶懶懶

E640 - E6FF

40 澈激澌澌澌澌澌澌澌澌澌澌澌澌澌澌
 50 澈激澌澌澌澌澌澌澌澌澌澌澌澌澌澌
 60 澈激澌澌澌澌澌澌澌澌澌澌澌澌澌澌
 70 澈激澌澌澌澌澌澌澌澌澌澌澌澌澌澌
 80
 90
 A0 繢璇璫璫璫璫璫璫璫璫璫璫璫璫璫
 B0 繢璇璫璫璫璫璫璫璫璫璫璫璫璫璫
 C0 繢璇璫璫璫璫璫璫璫璫璫璫璫璫璫
 D0 繢璇璫璫璫璫璫璫璫璫璫璫璫璫璫
 E0 繢璇璫璫璫璫璫璫璫璫璫璫璫璫璫
 F0 繢璇璫璫璫璫璫璫璫璫璫璫璫璫璫

E740 - E7FF

40 膜臘臘臘臘臘臘臘臘臘臘臘臘臘臘
 50 膜臘臘臘臘臘臘臘臘臘臘臘臘臘臘
 60 膜臘臘臘臘臘臘臘臘臘臘臘臘臘臘
 70 膜臘臘臘臘臘臘臘臘臘臘臘臘臘臘
 80
 90
 A0 蟑螂蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
 B0 蟑螂蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
 C0 蟑螂蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
 D0 蟑螂蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
 E0 蟑螂蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
 F0 蟑螂蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅

Code Pare 950 Traditional Chinese (Cont.)

E840 - E8FF

40 距膝鉤蹠蹠蹠蹠蹠蹠蹠蹠蹠蹠
45 遊遊遊遊遊遊遊遊遊遊遊遊遊遊
50 酶酶酶酶酶酶酶酶酶酶酶酶酶酶
55 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
60 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
65 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
70 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
75 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
80 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
85 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
90 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
95 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
A0 鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔鎔
B0 醋醋醋醋醋醋醋醋醋醋醋醋
C0 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
D0 鴨鴨鴨鴨鴨鴨鴨鴨鴨鴨鴨
E0 雞雞雞雞雞雞雞雞雞雞
F0 雞雞雞雞雞雞雞雞雞雞

E940 - E9EE

40 嘎噠噠噠噠噠噠噠噠噠噠噠噠噠噠
45 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
50 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
55 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
60 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
65 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
70 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
75 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
80 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
85 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
90 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
95 噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
A0 滴噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
B0 敗噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
C0 機噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
D0 糉噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
E0 歡噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
F0 駁噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
G0 滾噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
H0 滾噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
I0 滾噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠
J0 滾噠噠噠噠噠噠噠噠噠噠噠噠噠噠噠

EA10 - EAEE

FR40 - FRFF

FC40 - FCFE

40 銅鉤鑄鈎鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
45 雖鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
50 醉鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
55 醉鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
60 醉鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
65 醉鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
70 醉鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
75 醉鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
80 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
85 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
90 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
A0 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
B0 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
C0 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
D0 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
E0 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑
F0 鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑鮑

EB40 EBBE

聚漿機植櫈檯機櫈欽殼贊
滌潤漬盡瀝潑淨鼻激溼潤慈暉燒
燭熒變燐孺獮疊增璐璪璫瓔
餌瓶髮瞬癢癢癢癢病潘整瞬蕈曠間曠

EE40

40 蘋蘿藏斯岐邇路穢過夢斷蕪舊莫蘿
50 蕃姆蘿華蘆箒荼蔚彌蹠螭蟠蠻蠅螭
60 蟬端蠻蠅蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶
70 蟬蠅蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶
80 蟬蠅蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶
90 蟬蠅蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶蠶
A0 譯譏溪譯譏護譏譏譏譏譏譏譏譏譏
B0 謐謙穀獮羨奚穀益糖蹠跟蹠蹠蹠
C0 輸輸邇邇那那醣醣醣醣醣醣醣醣醣
D0 鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
E0 鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄
F0

EE40 EEEEEE

Code Page 950 Traditional Chinese (Cont.)

F040 - F0FF

40 璞璫璵璵璵璵璵璵璵璵
50 璞璵璵璵璵璵璵璵璵璵
60 璞璵璵璵璵璵璵璵璵璵
70 璞璵璵璵璵璵璵璵璵璵
80
90
A0 脣𧈧𧈧𧈧𧈧𧈧𧈧𧈧
B0 脣𧈧𧈧𧈧𧈧𧈧𧈧𧈧
C0 脣𧈧𧈧𧈧𧈧𧈧𧈧𧈧
D0 脣𧈧𧈧𧈧𧈧𧈧𧈧𧈧
E0 脣𧈧𧈧𧈧𧈧𧈧𧈧𧈧
F0 脣𧈧𧈧𧈧𧈧𧈧𧈧𧈧

F440 - F4FF

40 嘴𦥑𦥑𦥑𦥑𦥑𦥑𦥑𦥑
50 嘴𦥑𦥑𦥑𦥑𦥑𦥑𦥑𦥑
60 嘴𦥑𦥑𦥑𦥑𦥑𦥑𦥑𦥑
70 嘴𦥑𦥑𦥑𦥑𦥑𦥑𦥑𦥑
80
90
A0 福穗積穗積穗積穗積穗
B0 福穗積穗積穗積穗積穗
C0 福穗積穗積穗積穗積穗
D0 福穗積穗積穗積穗積穗
E0 福穗積穗積穗積穗積穗
F0 福穗積穗積穗積穗積穗

F140 - F1FF

40 踤躰躰躰躰躰躰
50 踤躰躰躰躰躰躰
60 踤躰躰躰躰躰躰
70 踤躰躰躰躰躰躰
80
90
A0 雙幹幹幹幹幹幹幹
B0 雙幹幹幹幹幹幹幹
C0 雙幹幹幹幹幹幹幹
D0 雙幹幹幹幹幹幹幹
E0 雙幹幹幹幹幹幹幹
F0 雙幹幹幹幹幹幹幹

F540 - F5FF

40 錄錄錄錄錄錄錄錄
50 錄錄錄錄錄錄錄錄
60 錄錄錄錄錄錄錄錄
70 錄錄錄錄錄錄錄錄
80
90
A0 鳶鷗鷗鷗鷗鷗鷗鷗
B0 鳶鷗鷗鷗鷗鷗鷗鷗
C0 鳶鷗鷗鷗鷗鷗鷗鷗
D0 鳶鷗鷗鷗鷗鷗鷗鷗
E0 鳶鷗鷗鷗鷗鷗鷗鷗
F0 鳶鷗鷗鷗鷗鷗鷗鷗

F240 - F2FF

40 徜撲撲撲撲撲撲撲
50 徜撲撲撲撲撲撲撲
60 徜撲撲撲撲撲撲撲
70 徜撲撲撲撲撲撲撲
80
90
A0 磚磚磚磚磚磚磚磚
B0 磚磚磚磚磚磚磚磚
C0 磚磚磚磚磚磚磚磚
D0 磚磚磚磚磚磚磚磚
E0 磚磚磚磚磚磚磚磚
F0 磚磚磚磚磚磚磚磚

F640 - F6FF

40 蝕蠅蠅蠅蠅蠅蠅蠅
50 蝏蠅蠅蠅蠅蠅蠅蠅
60 蝏蠅蠅蠅蠅蠅蠅蠅
70 蝏蠅蠅蠅蠅蠅蠅蠅
80
90
A0 鯽鯽鯽鯽鯽鯽鯽鯽
B0 鯽鯽鯽鯽鯽鯽鯽鯽
C0 鯽鯽鯽鯽鯽鯽鯽鯽
D0 鯽鯽鯽鯽鯽鯽鯽鯽
E0 鯽鯽鯽鯽鯽鯽鯽鯽
F0 鯽鯽鯽鯽鯽鯽鯽鯽

F340 - F3FF

40 誰譁譁譁譁譁譁譁
50 誰譁譁譁譁譁譁譁
60 誰譁譁譁譁譁譁譁
70 誰譁譁譁譁譁譁譁
80
90
A0 菲臺臺臺臺臺臺
B0 菲臺臺臺臺臺臺
C0 菲臺臺臺臺臺臺
D0 菲臺臺臺臺臺臺
E0 菲臺臺臺臺臺臺
F0 菲臺臺臺臺臺臺

F740 - F7FF

40 羅獎獎獎獎獎獎
50 羅獎獎獎獎獎獎
60 羅獎獎獎獎獎
70 羅獎獎獎
80
90
A0 處罪罪罪罪罪
B0 處罪罪罪罪罪
C0 處罪罪罪罪罪
D0 處罪罪罪罪罪
E0 處罪罪罪罪罪
F0 處罪罪罪罪罪

Code Pare 950 Traditional Chinese (Cont.)

F840 - F8FF

40 謂讐讐讐讐讐讐
50 輒讐讐讐讐讐讐
60 詛讐讐讐讐讐
70 謐讐讐讐
80
90
AO 訐讐
B0 誐
C0 詐
D0 詐
E0 詐
FO 詐

FC40 - FCFF

40
50
60
70
80
90
AO
B0
C0
D0
E0
FO

F940 - F9FF

40 繢
50 繢
60 繢
70 繢
80
90
AO 繢
B0 繢
C0 繢
D0 繢
E0 繢
FO 繢

FD40 - FDFF

40
50
60
70
80
90
AO
B0
C0
D0
E0
FO

FA40 - FAFF

40
50
60
70
80
90
AO
B0
C0
D0
E0
FO

FE40 - FEFF

40
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80
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AO
B0
C0
D0
E0
FO

FB40 - FBFF

40
50
60
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80
90
AO
B0
C0
D0
E0
FO

FF40 - FFFF

40
50
60
70
80
90
AO
B0
C0
D0
E0
FO

Index

—7—

7167 printer
 clearance, 11
 dimensions, 11, 214
 environmental conditions, 213
 features, 1
 location, 11
 ordering supplies, 5
 power requirements, 213
 power supply, ordering, 7
 printer specifications, 211
 reliability, 214
 sending in for repair, 11
 specifications, 211
 turning on, 39

—A—

Accessories. *See Supplies*
 Asian mode
 setting, 66

—B—

Bar code commands, 175
 Bar codes
 commands, 175
 BASIC
 sending commands, 73

—C—

Cabinet
 cleaning, 8
Cables
 cash drawer, 9
 communication, 9
 connecting, 14
 Carriage return usage
 setting, 65
 Cash drawer
 ordering, 7
 Cash drawer cables
 connecting, 14
 Changing paper, 40
 Character set
 code page 437, 225
 code page 850, 226

code page 852, 228
 code page 863, 230
 code page 865, 227, 229, 230, 231, 232
 Character sets, 224
 Characters, receipt station
 dot patterns, 216
 Characters, slip station
 dot patterns, 217
 Check flip
 commands, 200
 setting, 69
 Check flip commands, 200
 Check flip test modes
 setting, 63
 Checks
 printing, 46
 validating, 48
 verifying, 48
 Cleaning the printer, 8
 Clearance around printer, 11
 Code page 437
 character set, 224
 Code Page 437, 225
 Code page 850
 character set, 224
 Code Page 850, 226
 Code Page 852, 228
 Code Page 863, 230
 Code Page 865, 227, 229, 230, 231, 232
 Color paper
 setting, 59, 60, 64, 67, 69, 70, 72
 Commands
 bar code, 175
 check flip, 200
 flash download, 213
 graphics, 142
 horizontal positioning, 114
 listing, 73
 macro, 189
 MICR, 191, 209
 page mode, 181
 print, 105
 print characteristics, 122
 printer function, 90
 printer status, 151
 real time, 163
 real time, rules for using, 163
 realtime, moving data through the buffer, 164
 sending, 72

user data storage, 200
 vertical positioning, 105
Commands, printer function
 set horizontal and vertical minimum motion units, 113
Commands, real time
 alternate implementation, 163
 first implementation, 163
 real time request to printer, GS sequence, 169
 recognizing data from the printer, 162
Commands, sending
 using BASIC, 73
 using DOS, 72
Communication, 72
Communication cables, 9
 connecting, 14
 ordering, 7
Communication interface. *See RS-232C interface*
Communication interface modes, 58
Configuring the printer, 56
Connecting cables
 cash drawer, 14
 communication, 14
 power, 14
Connector
 cash drawer, 77
 RS-232C communication, 75
Consumables. *See Paper*
Contacting a service representative, 52

- D -

Data
 moving through buffer, 164
Datascope modes
 setting, 61
Default code page, 70
Default lines per inch
 setting, 65
Density, of print, 214
Diagnostic modes, 60
Diagnostics, 53
 knife failure, 48
 level 0, 53
 level 1, 54
 level 2, 73
 level 3, 74
 paper jam, 48
 paper out, 48
 printhead over/under temperature, 49
 startup, 53
Dimensions, of printer, 11, 214
DIP switches. *See Switch settings*

Documentation
 ordering, 7
DOS
 sending commands, 72
Dot patterns, of characters, 216, 217
Double-wide characters
 dot patterns, 218
DTR/DSR protocol, 74
Duty cycle limitations, 214

- E -

Emulation/software options, 64
Environmental conditions, 213
Errors. *See Problems*

- F -

Features, 1
Flash download commands, 213
Flash download commands, 213
Forms
 ordering, 6
 printing, 46

- G -

Graphics commands, 142
Graphics commands, 142

- H -

Hardware options, 67
Horizontal positioning commands, 114

- I -

Installation
 choosing location, 11
 connecting cables, 14
 loading paper, 40
 removing packing material, 10
 setting switches, 13
 turning on the printer, 39
Interface. *See RS-232C interface*

- K -

Knife
 failure of, 48
 setting, 68

- L -

LED (green) blinking (fast)
 what to do, 48
 LED (green) blinking (slow)
 what to do, 48
 LED (green) does not come on
 what to do, 47
 LED (slip table) does not come on
 what to do, 50
 Level 0 diagnostics, 53
 Level 1 diagnostics, 54
 asian mode, 66
 carriage return usage, 65
 check flip option, 69
 check flip test modes, 63
 color paper option, 59, 60, 64, 67, 69, 70, 72
 communication interface modes, 58
 configuring the printer, 56
 datascope modes, 61
 default code page, 70
 default lines per inch, 65
 diagnostic modes, 60
 emulation/software options, 64
 hardware options, 67
 knife option, 68
 maximum power option, 67
 MICR option, 69
 MICR test modes, 62
 paper low sensor, 68
 paper width, 68
 print density, 67
 print head gap adjustment test modes, 63
 printer configuration, 54
 printer emulations, 64
 receipt test modes, 62
 RS 232 interface, 58
 set extra RS-232C options, 78
 slip test modes, 61
 Level 2 diagnostics, 73
 Level 3 diagnostics, 74
 Location
 choosing, 11
 clearance, 11

- M -

Macro
 commands, 189
 Macro commands, 189
 Maintenance
 cleaning the printer, 8
 Maximum power

setting, 67
 MICR
 commands, 191, 209
 setting, 69
 MICR check reader
 operating environment, 11
 MICR check reader commands, 191, 209
 MICR parsing, 192
 check serial number, parsing, 197
 exception table entry format, 198
 exception table, loading, 198
 exception table, maintaining, 199
 parameter string options, 193
 sample parsing formats, 195
 MICR test modes
 setting, 62
 Modes
 check flip test, 63
 datascope, 61
 MICR test, 62
 print head gap adjustment test, 63
 receipt test, 62
 slip test, 61

- O -

Operator panel, 73
 Options
 asian mode, 66
 carriage return usage, 65
 check flip, 69
 color paper, 59, 60, 64, 67, 69, 70, 72
 default lines per inch, 65
 knife, 68
 maximum power, 67
 MICR, 69
 paper low sensor, 68
 paper width, 68
 print density, 67
 printer emulations, 64
 Ordering
 cash drawer, 7
 communication cables, 7
 documentation, 7
 paper, 5
 power supply, 7
 supplies, 5

- P -

Packing material
 removing, 10
 repacking printer, 11
 Page mode

- commands, 181
 - Page mode commands, 181
 - Paper
 - advancing, 43
 - changing, 40
 - low, 40, 48
 - ordering, 5
 - out, 40
 - putting in the paper roll, 42
 - removing, 41
 - requirements, 5
 - suppliers, 5
 - Paper jam, 48
 - Paper low sensor
 - setting, 68
 - Paper out, 48
 - Paper width
 - setting, 68
 - Parsing. *See* MICR parsing
 - Power
 - turning on the printer, 39
 - Power cables
 - connecting, 14
 - Power requirements, 213
 - Power supply
 - ordering, 7
 - Print characterisitics commands, 122
 - Print characteristics
 - commands, 122
 - Print commands, 105
 - Print density
 - receipt, 214
 - setting, 67
 - Print head gap adjustment test modes
 - setting, 63
 - Print problems, 50
 - too light, 49
 - Print speed, 73
 - Print timing, 73
 - Print zones
 - receipt station, 220
 - slip station, 221
 - Printer
 - configuration, 54
 - Printer configuration
 - setting, 54
 - Printer emulations
 - setting, 64
 - Printer function commands, 90
 - Printer status
 - commands, 151
 - Printer status commands, 151
 - Printhead
 - impact, 4
 - thermal, 4
 - Printhead, thermal
 - cleaning, 8
 - over/under temperature, 49
 - Printing, continuous**
 - limitations of, 214**
 - Problems, 47
 - contacting a service representative, 52
 - forms skew or catch, 50
 - knife failure, 48
 - paper jam, 48
 - paper out, 48
 - print is light or spotty, 50
 - printhead over/under temperature, 49
 - Protocol, RS-232C
 - DTR/DSR, 74
 - XON/XOFF, 74
-
- R -**
- Real time
 - commands, 163
 - Real time commands, 163
 - alternate implementation, 163
 - preferred implementation, 163
 - using, 163
 - Receipt station
 - character dot patterns, 216
 - print zones, 220
 - Receipt test modes
 - setting, 62
 - Reliability, 214
 - Removing packing material, 10
 - Repacking printer, 11
 - Reset, 13
 - Ribbon cassette
 - changing, 44
 - ordering, 6
 - Rotated characters
 - dot patterns, 219
 - Rotated printing
 - summary, 141
 - RS 232 interface
 - setting, 58
 - RS 232 interface settings, 58
 - RS-232C interface, 73
 - cash drawer connector, 77
 - communication connector, 75
 - DTR/DSR protocol, 74
 - parameters, 78
 - setting extra options, 78
 - technical specifications, 74

XON/XOFF protocol, 74

— S —

Setting switches, 13
 RS-232C parameters, 78
 Setup mode. *See* Level 1 diagnostics
 Slip station
 character dot patterns, 217
 print zones, 221
 Slip test modes
 setting, 61
 Specifications, 211
 RS-232C interface, 74
 Speed, 73
 Standard pitch
 dot patterns, 217
 Supplies
 cash drawer, 7
 communication cables, 7
 forms, 6
 paper, 5
 power cord, 7
 power supply, 7
 ribbon cassette, 6
 shipped separately, 9
 Switch settings, 13
 Switch Settings
 RS-232C parameters, 78

— T —

Technical specifications
 RS-232C interface, 74
 Thermal paper
 ordering, 5
 requirements, 5
 suppliers, 5
 Thermal printhead. *See* Printhead
 cleaning, 8
 print density, 214
 Timing, 73
 Troubleshooting. *See* Problems
 Turning on the printer, 39

— U —

User data storage
 commands, 200
 User data storage commands, 200
 Using real time commands, 163

— V —

Vertical Positioning Commands, 105

— W —

Weight, of printer, 214

— X —

XON/XOFF protocol, 74