



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



B005-000-1406  
Revision C  
November, 2003

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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.

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**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.

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**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 83***

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 2003	First printing
B	May 2003	Update to reflect first production configuration.
C	September 2003	Updated to add the 7167 check scan information.

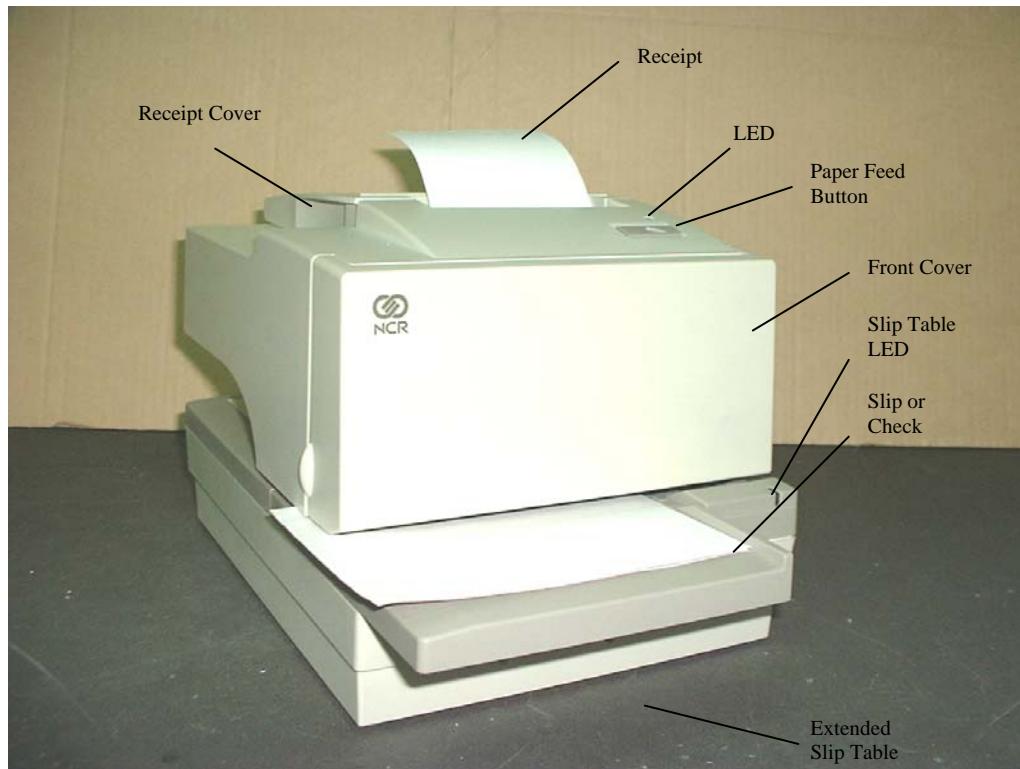
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# Chapter 1: About the 7167 Printer



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.

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\* Not supported by model 7167-1035 and 7167-2035.

## Options

Magnetic Ink Character Recognition (MICR) check reader built into the slip station for verifying checks (includes custom MICR field parsing). E13B and CMC-7 is support with auto sensing of the MICR type provided.

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

Remote power supply

Check Scanning function

## 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 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 formare 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
<b>RS-232C Communication Cables</b>		
9-pin to 9-pin (G11)	0.7 meters	1416-C359-0007
9-pin to 9-pin (G11)	4.0 meters (13.2 feet)	1416-C266-0040
9-pin to 9-pin (CG1)	4.0 meters (13.2 feet)	1416-C879-0040
<b>DC Plus Power Cable</b>		
DC Power from NCR POS Terminal (G11)	1.0 Meters	1416-C712-0010
DC Power from NCR POS Terminal (G11)	4.0 Meters	1416-C712-0040
DC Power from NCR POS Terminal (CG1)	4.0 Meters	1416-C881-0040
<b>USB Communication Cables</b>		
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
<b>USB Plus Power Cables</b>		
USB/Plus Power to Type B Connector (G11)	3.0 Meters	1416-C713-0010
USB/Plus Power to Type B Connector (G11)	4.0 Meters	1416-C713-0040
USB/Plus Power to Type B Connector (CG1)	4.0 Meters	1416-C880-0040
<b>Extended Slip Table (Standard)</b>		
Cash Drawer	2189  (Switchable for Drawer 1 or Drawer 2)	2189-K002-V001
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 isopropyl 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.

## Cleaning the Scanner Sensor

**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 scanner sensor and electronics.

If the scanner sensor appears dirty, wipe it with cotton swabs and isopropyl alcohol.

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

**Note:** The scanner sensor 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 isopropyl 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

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### What Is in the Box?

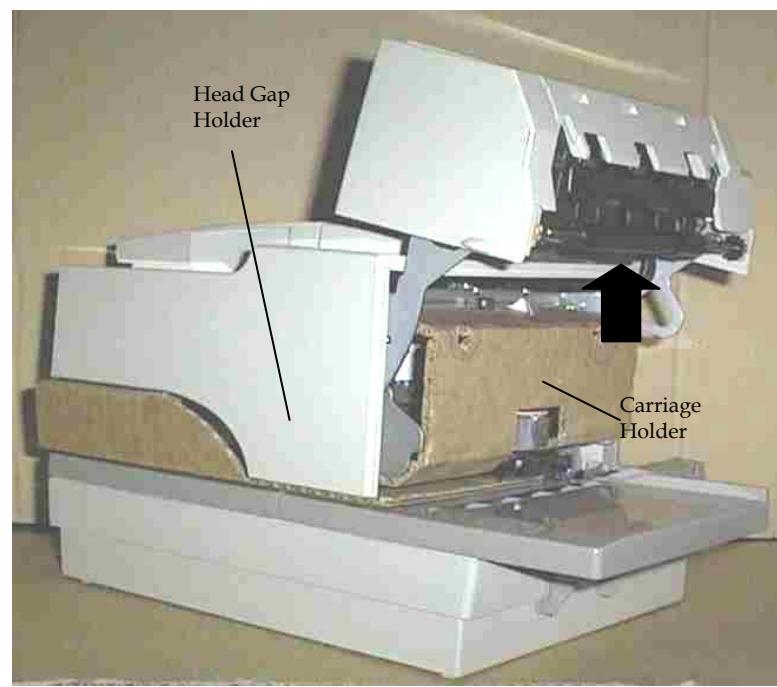
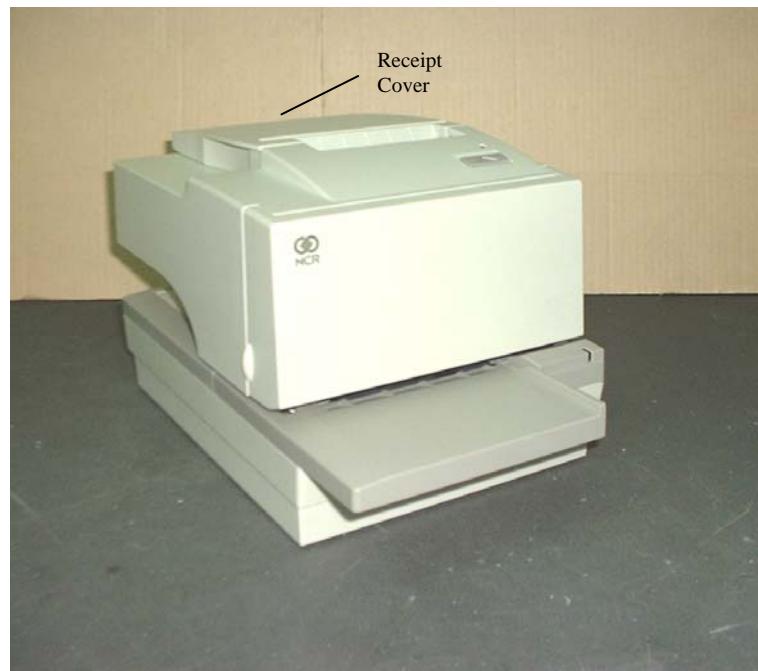
The following items are packed in the shipping box:

- 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.

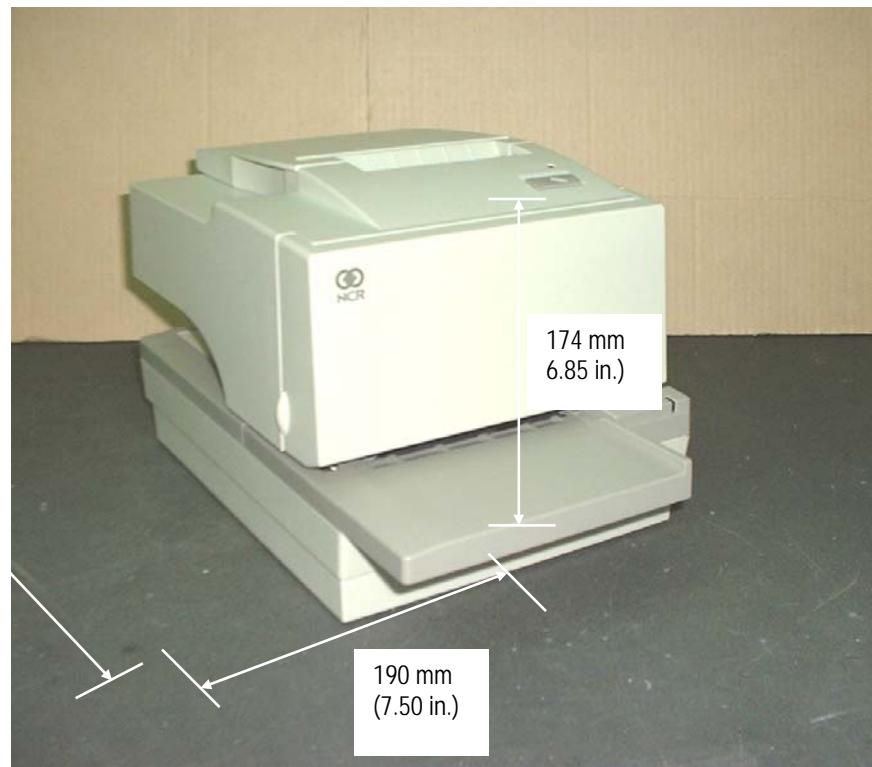
1. Place receipt paper between the receipt cover and the print head for protection.
2. Remove the ribbon cassette, move the carriage to the corner, and place the cardboard restraint in the slip carriage area.
3. Place the cardboard support on the slip table.
4. Place the printer in the plastic bag and 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

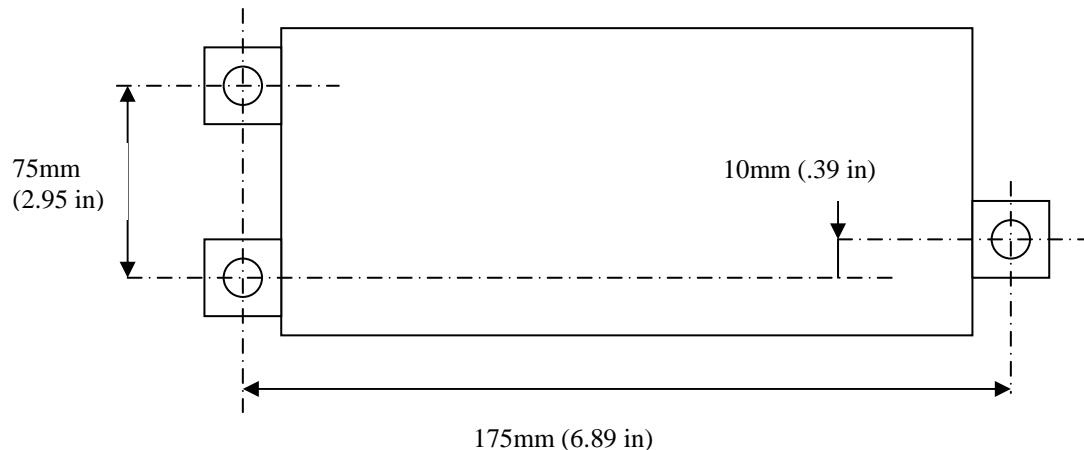
The 7167 printer takes up relatively little counter space and may be set on or near the host computer. Make sure there is enough room to open the receipt cover to change the paper and to open the front cover to change the ribbon cassette. The illustration shows the actual dimensions of the printer, but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

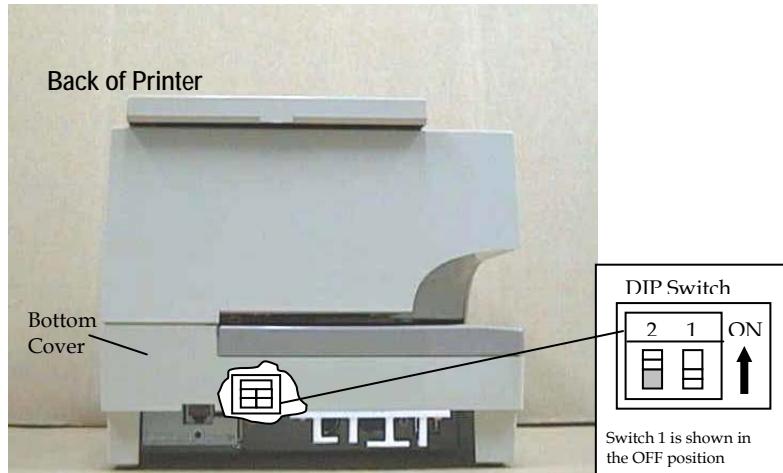


## Setting Switches

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.

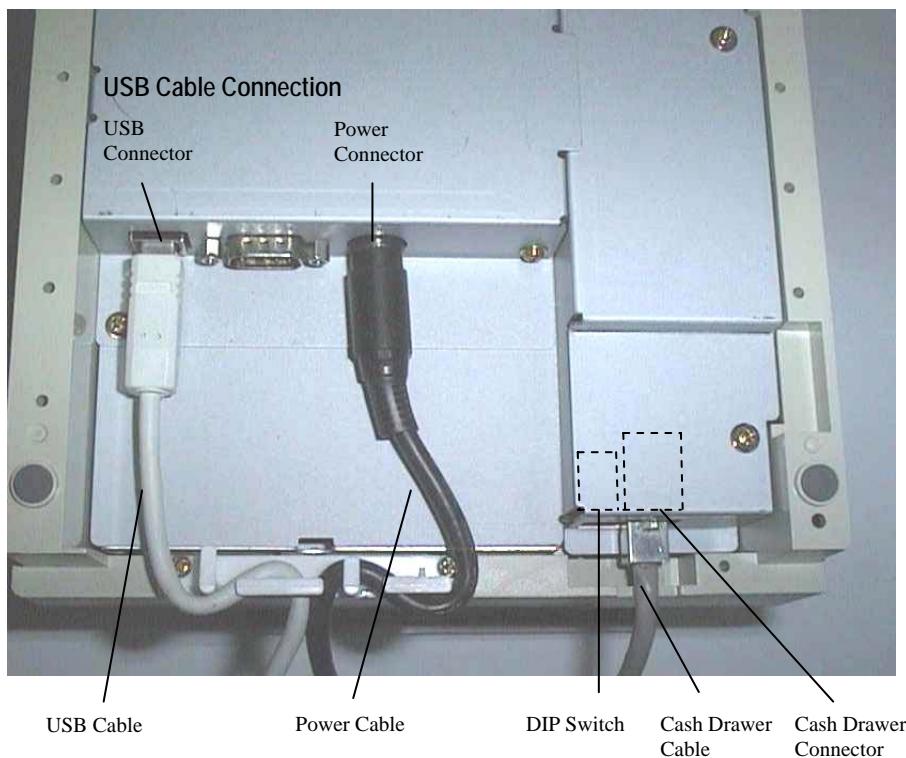
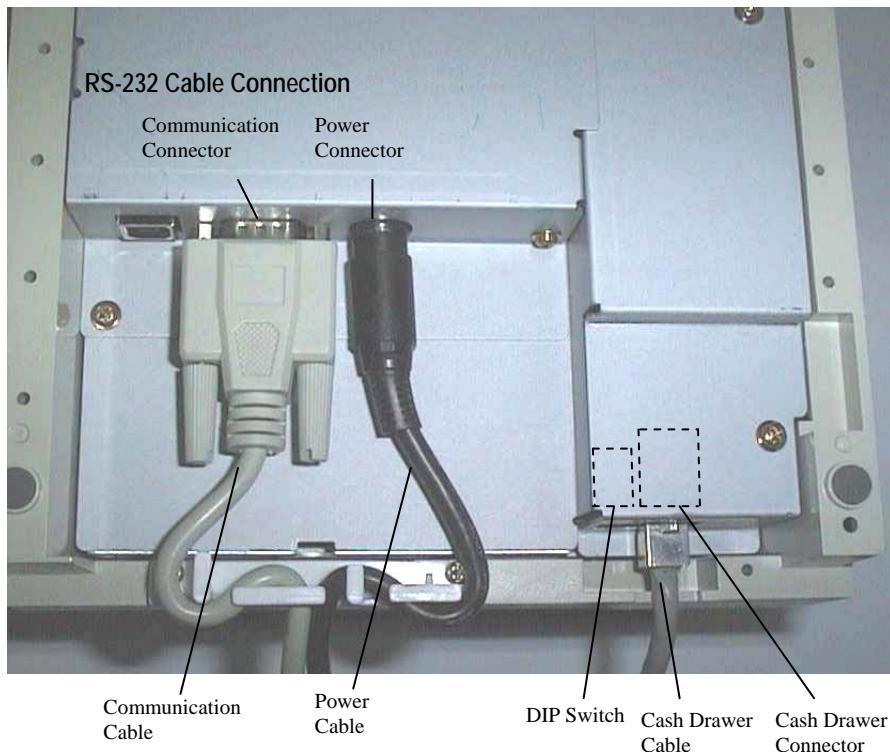
For RS232 cable, be sure to screw the communication cable to the communication connector.

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.

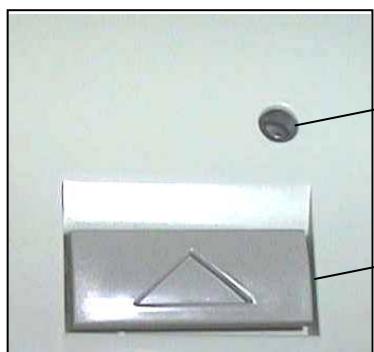
6. For Host powered installation plug the DC cable into the POS terminal or plug the power cord into the power supply for remote power supply installation, then plug the power supply into an outlet.

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

## Using the Printer



LED

Paper Feed  
Button

**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.

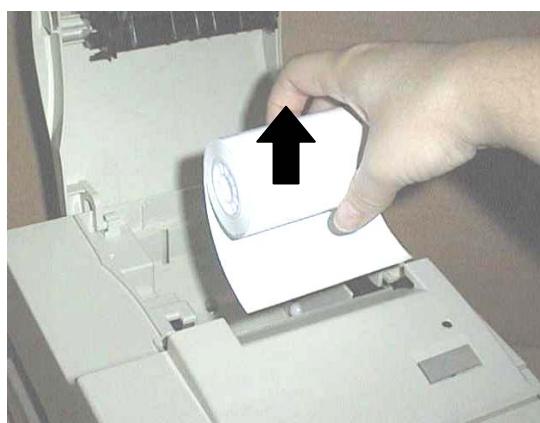
- LED blinks (fast): the paper is out

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.



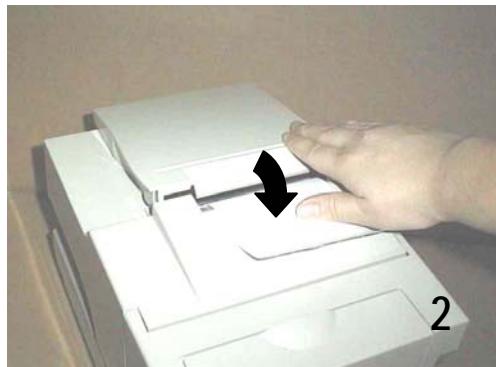
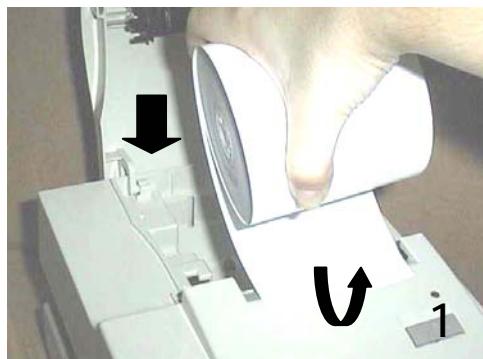
## Loading the Paper Roll

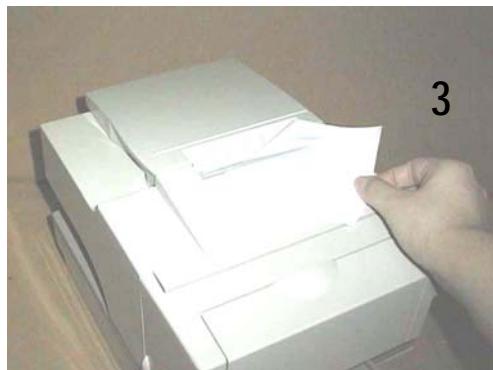
**Note:** Tear off the end of the new roll so that the edge is loose.

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.

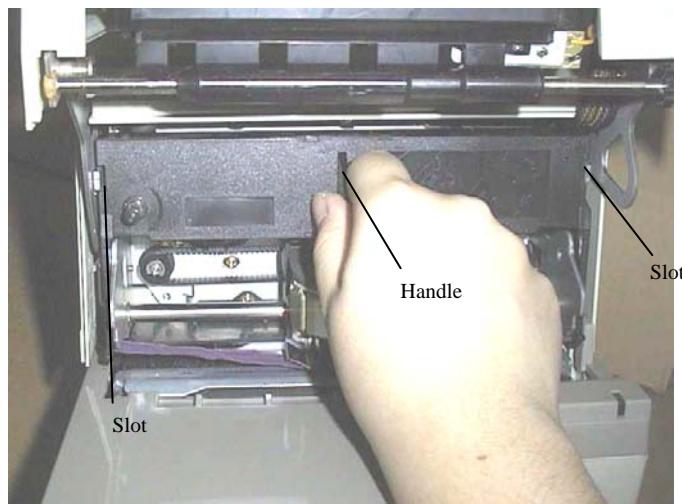
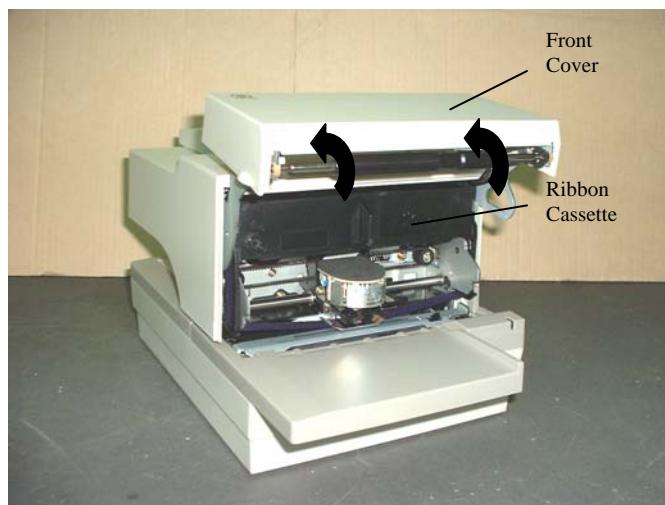
2. Tear off the excess paper against the tear-off blade.

## 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.



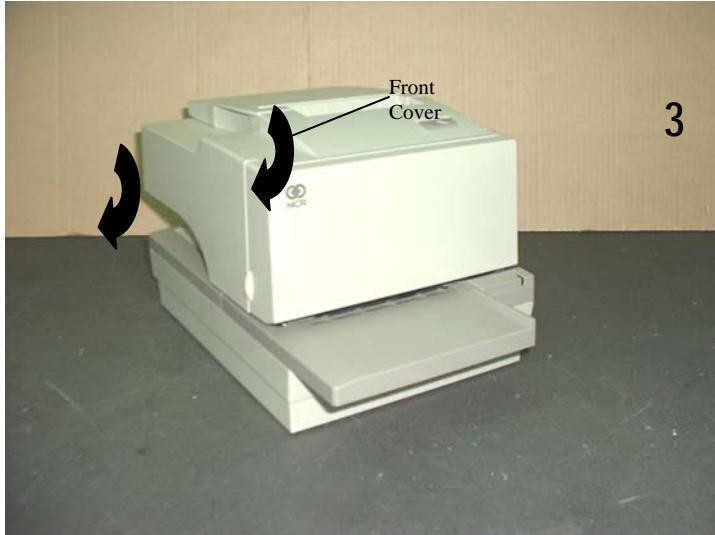
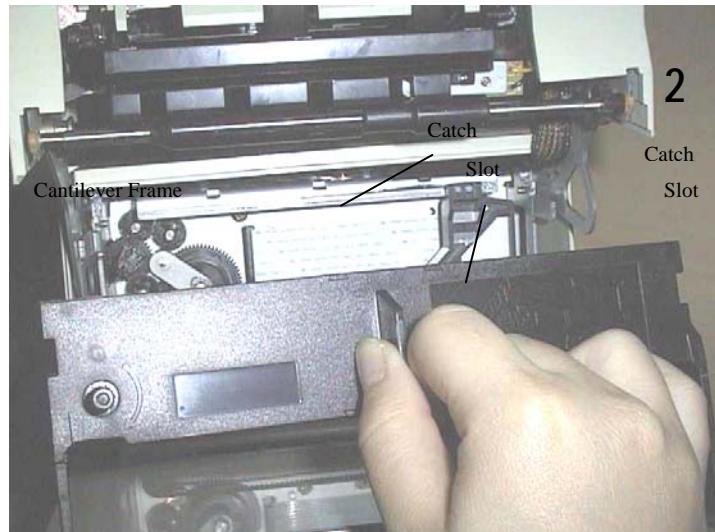
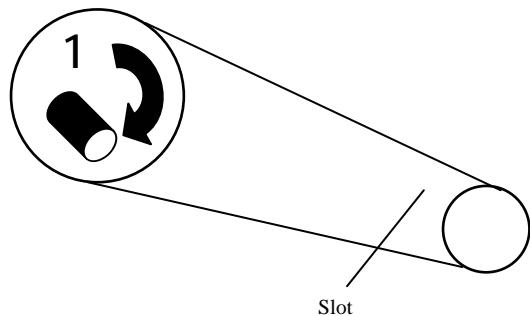
## Installing the Ribbon Cassette

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 and between the print head and the ribbon shield.

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);

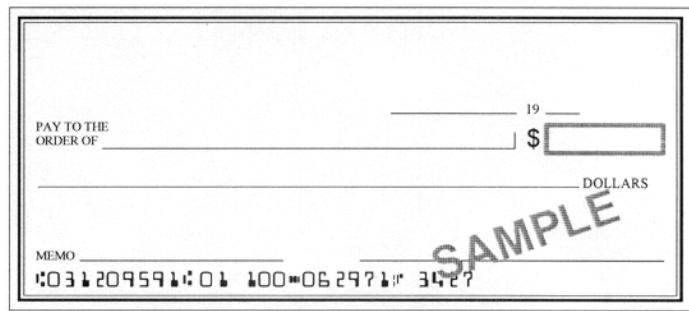
Or, align the form or check with the mark on the slip door.

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).

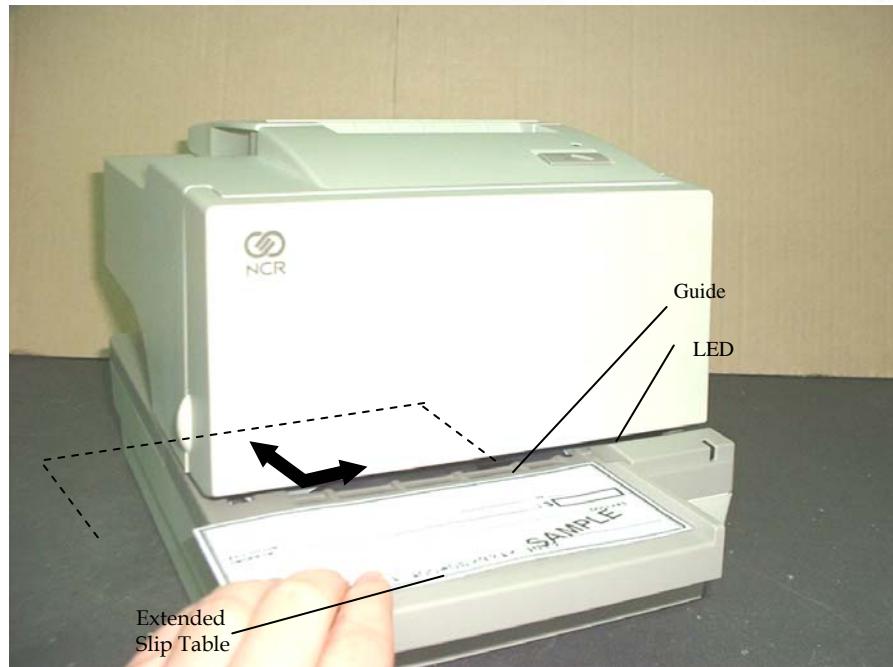
4. Follow the instructions from the host computer.

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.

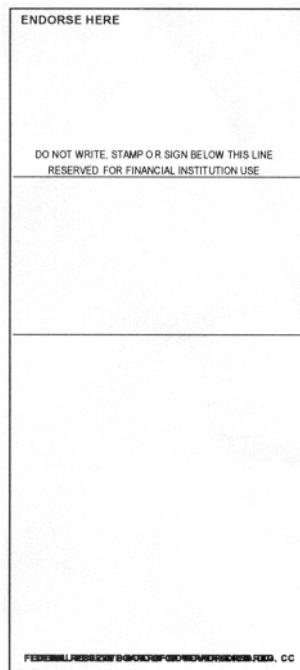
The green LED on the slip table turns on when the form or check is properly inserted (it has to cover two sensors on the slip table).

4. Follow the instructions from the host computer.

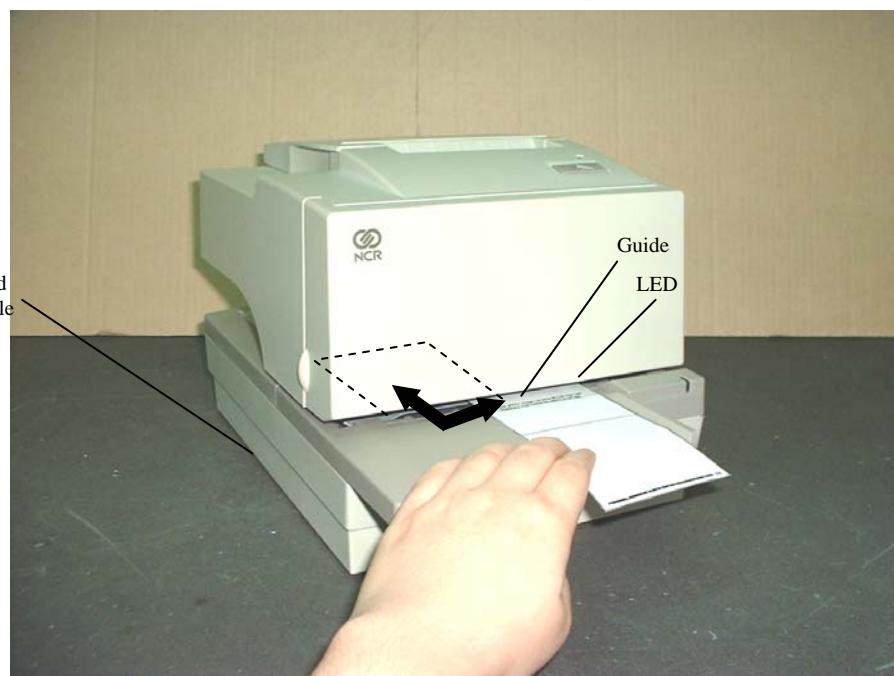
If the MICR check reader feature is present, the check is fed in and out while the check numbers are read. If the check is verified as good, it is then validated. If the check is not verified as good, it is not validated.

**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



## 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**

### 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.

## 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.







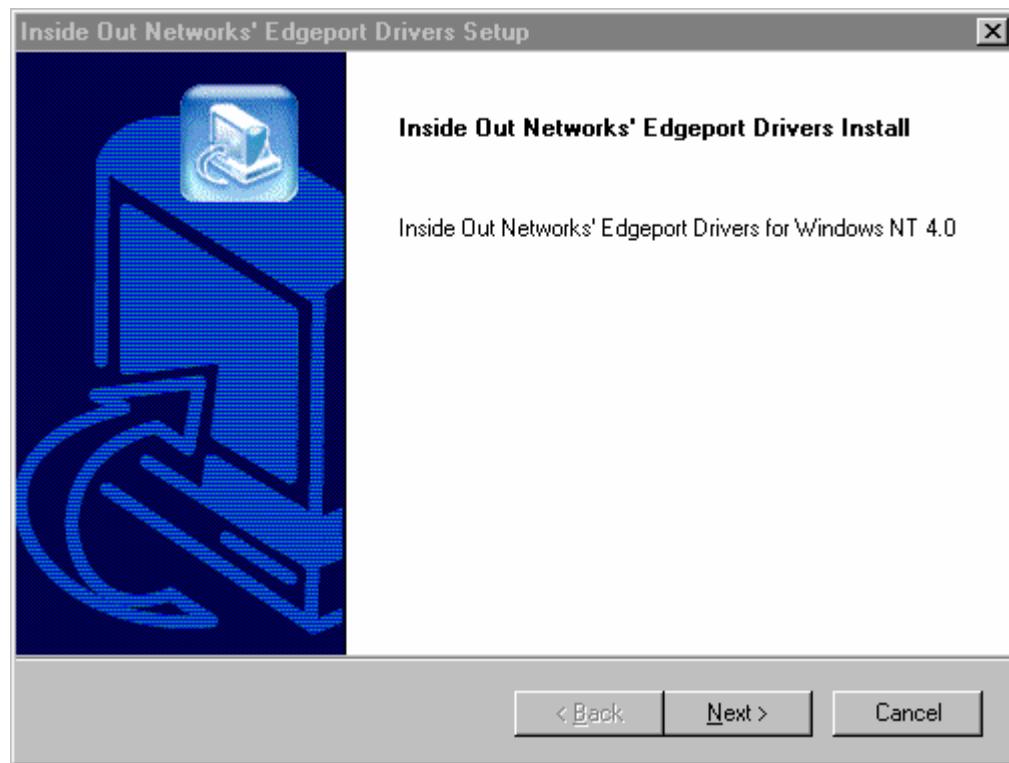
Note: Location of the IONetworks files on the CD-ROM may very depending on the version of the CD that is being used.

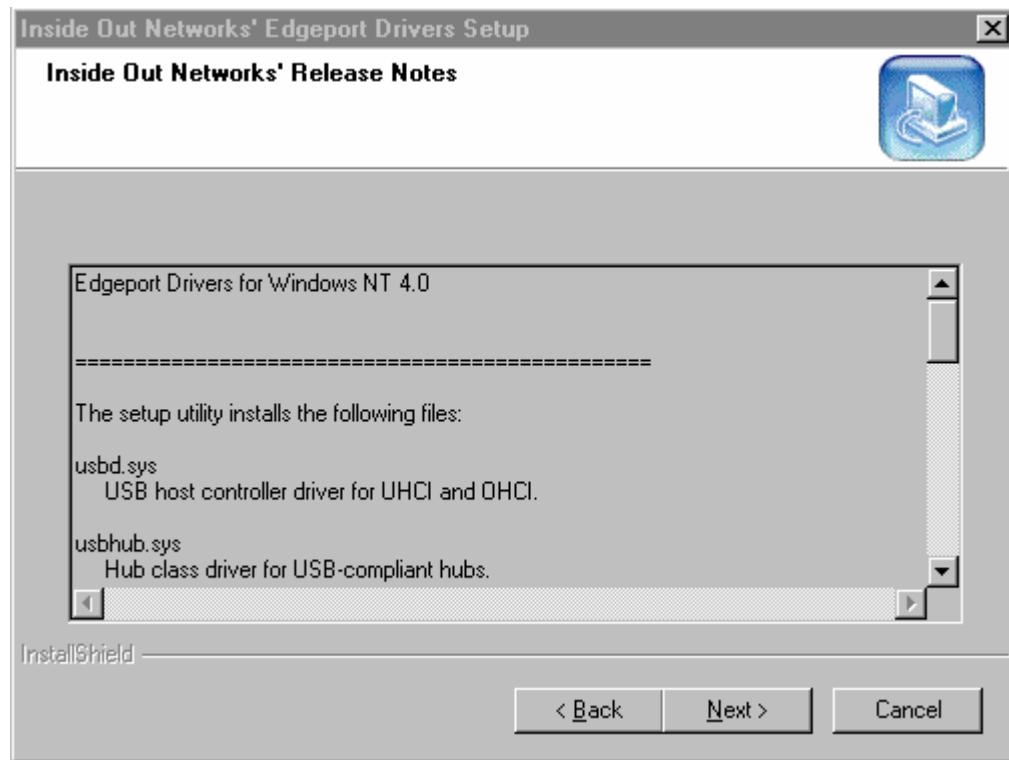
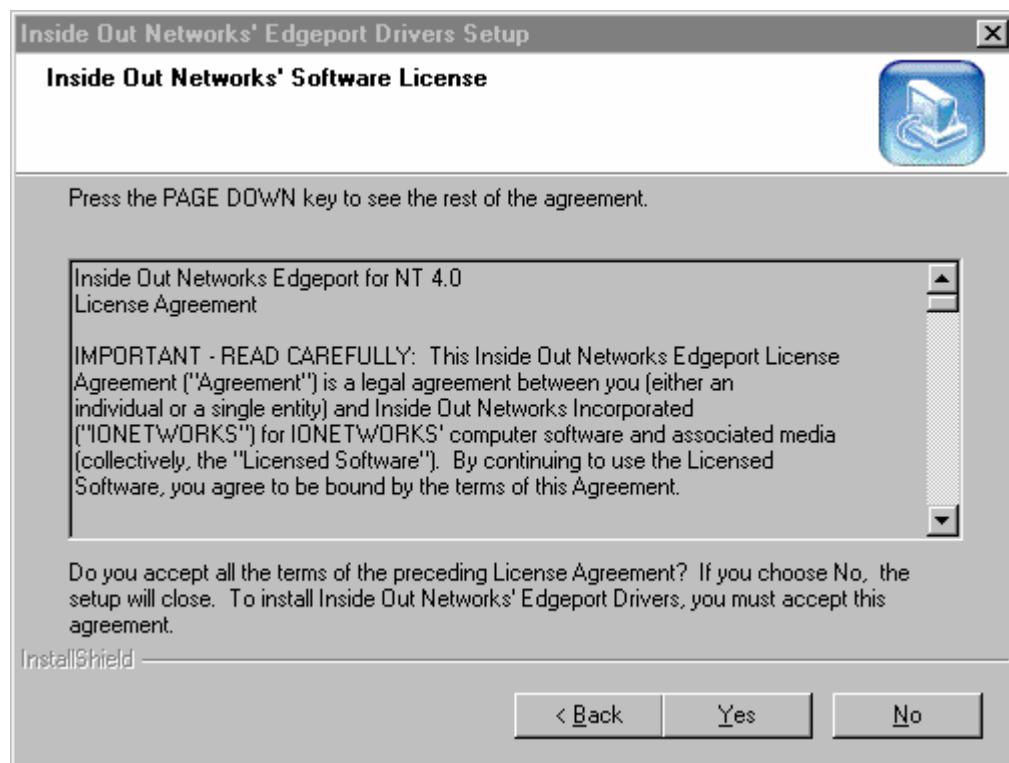


Also verify that you have the Windows 98 USB Hot Patch, ID: Q236934, created: 08-Jul-1999 and modified: 10Aug-1999 installed. To verify if this hot patch is installed check file c:\Windows\System32\Drivers\usbhub.sys. This file should be dated 08/13/99, size 36,672, version 4.10.22223.

## 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.



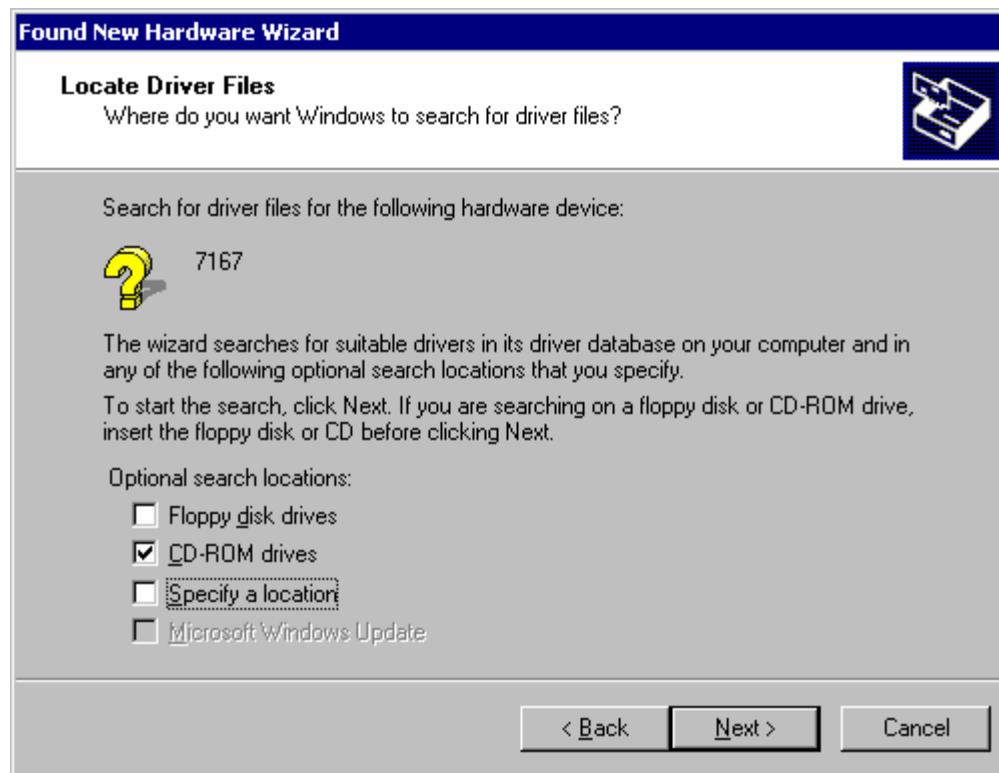


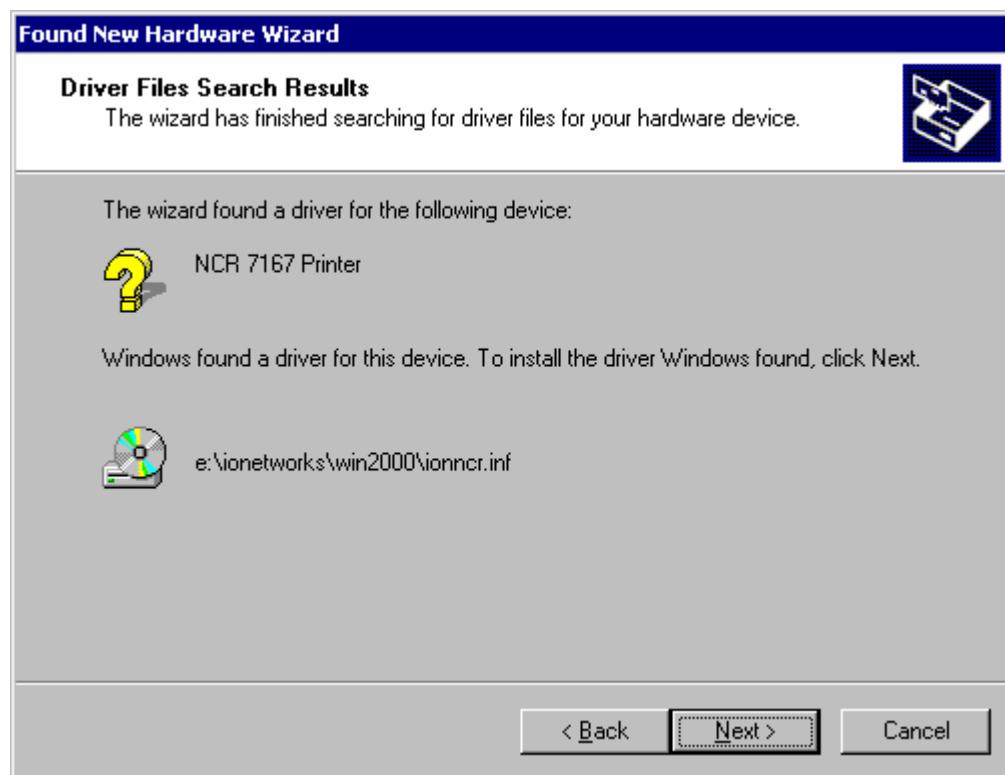


## Windows 2000

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.

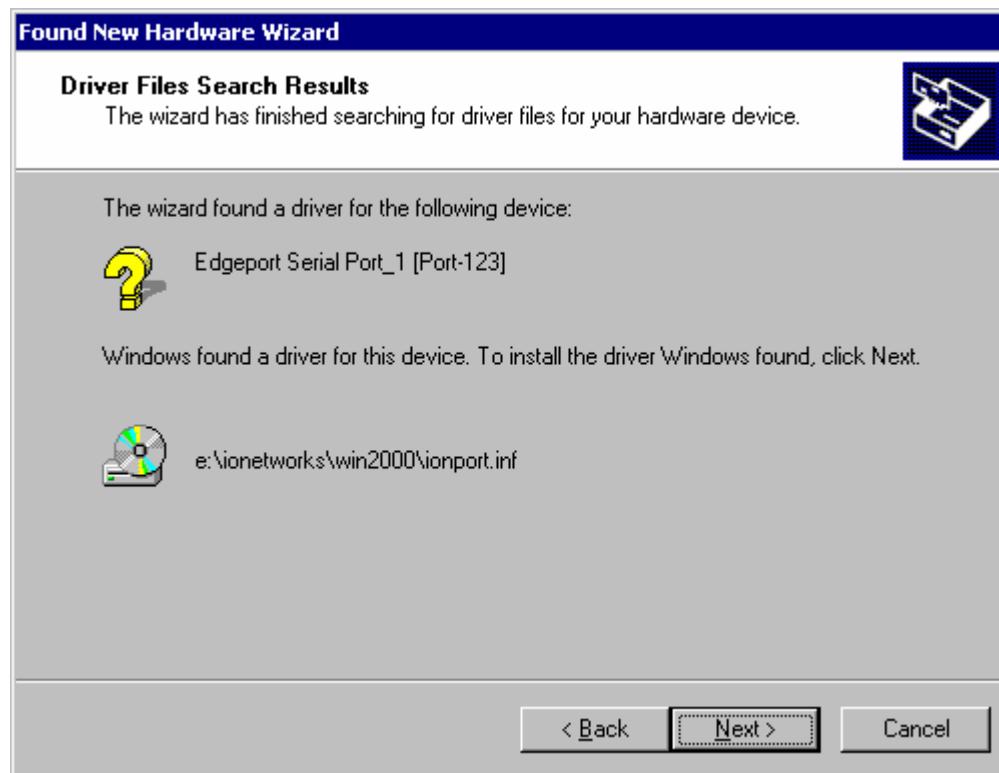




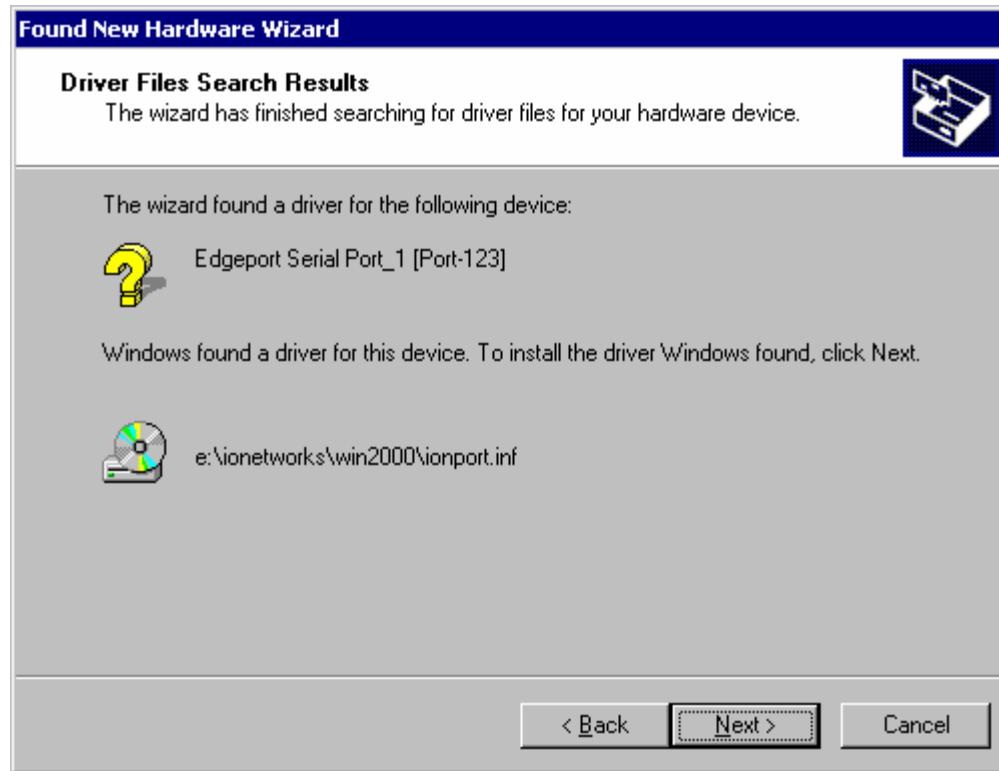


Note: Location of the IONetworks files on the CD-ROM may very depending on the version of the CD that is being used.





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





## Checking the Installation

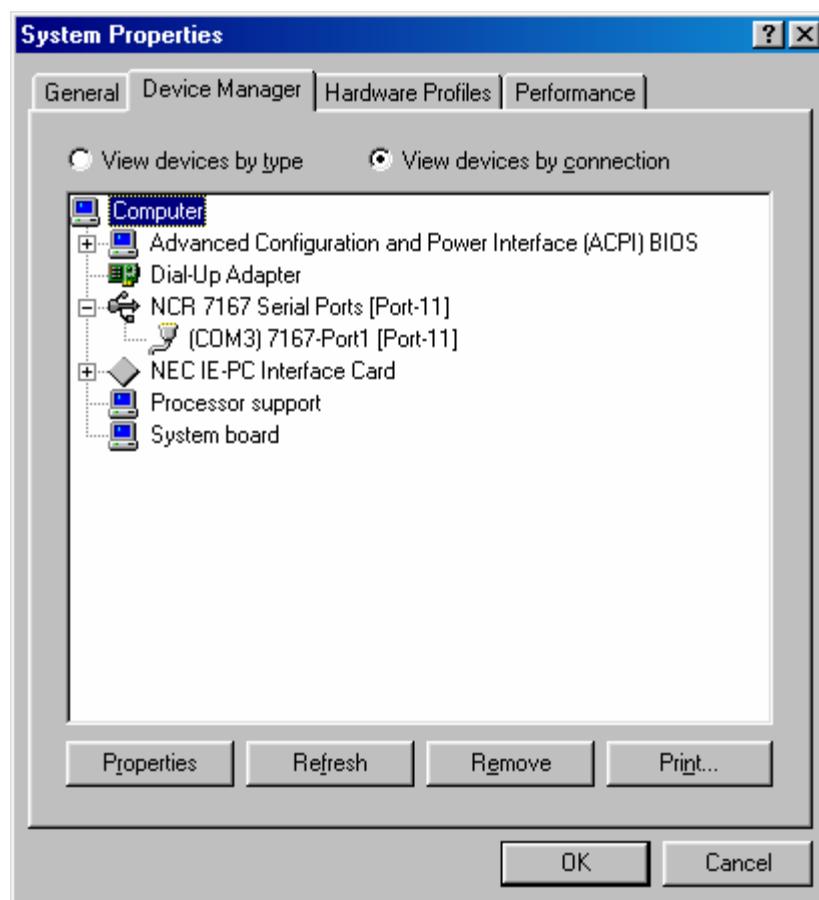
You need to verify that the device drivers were installed correctly:

### 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."

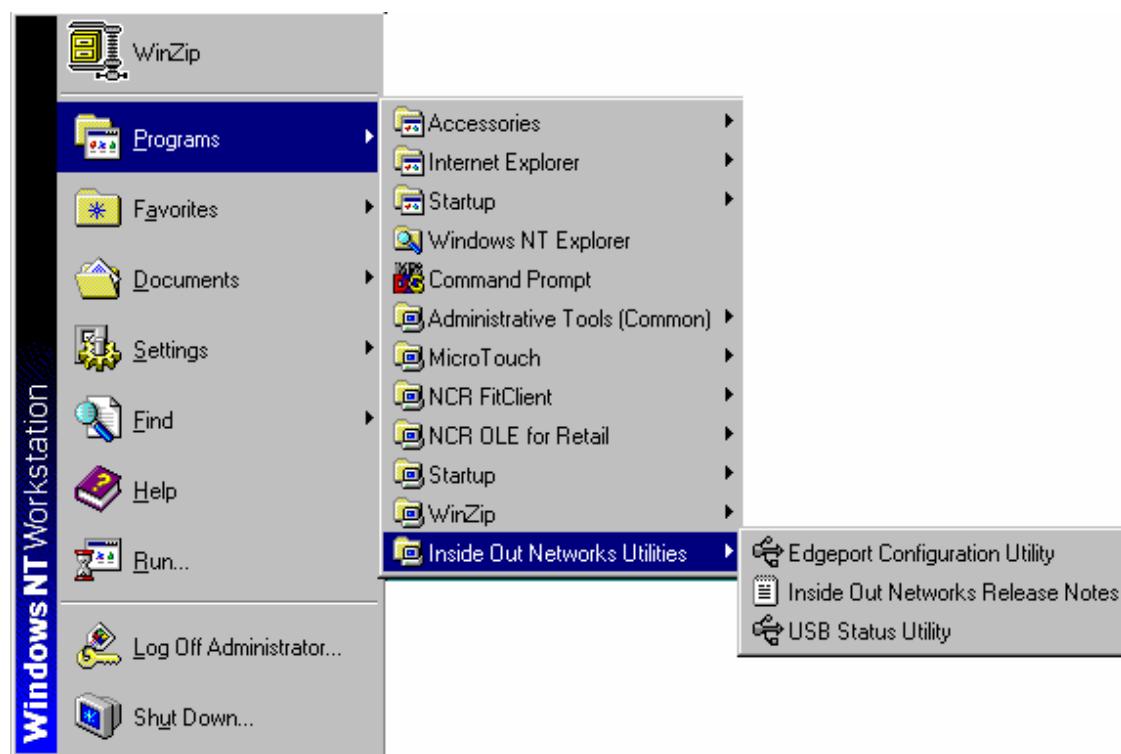
You should see a COM number and port description for the NCR printer.

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

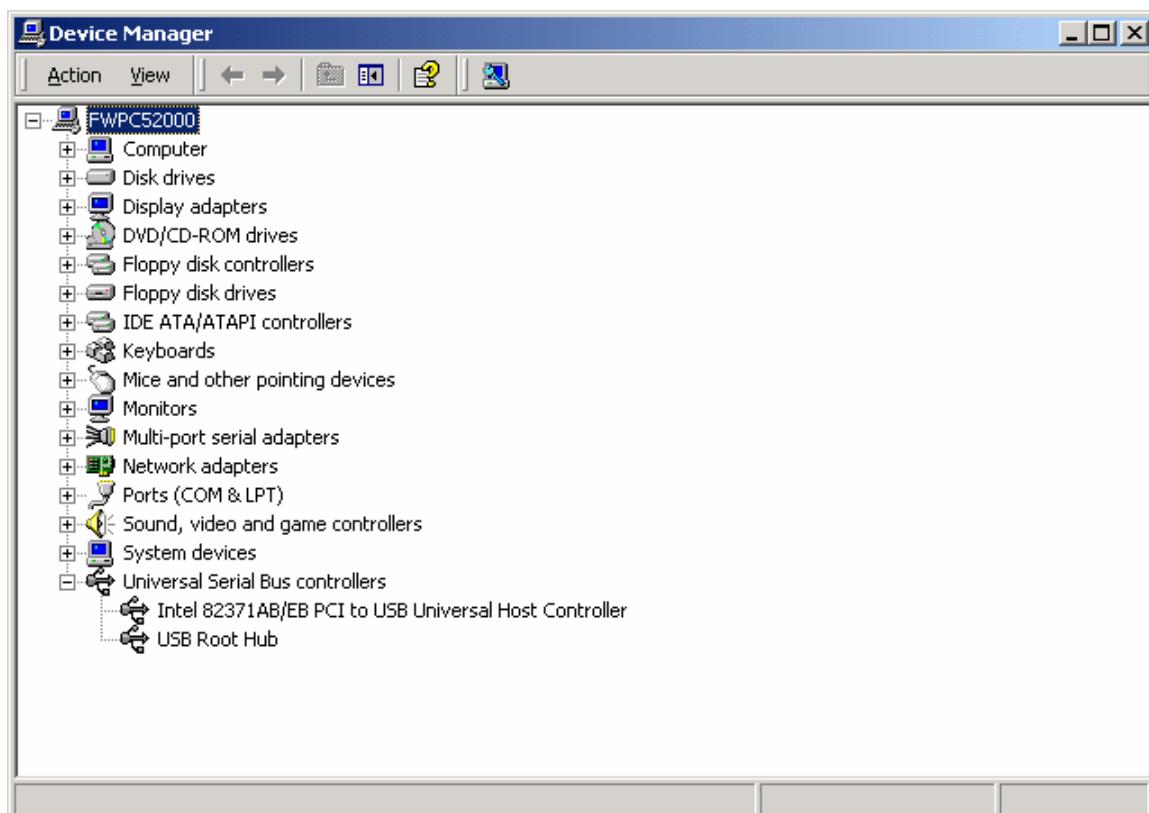
#### Windows NT:

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:**

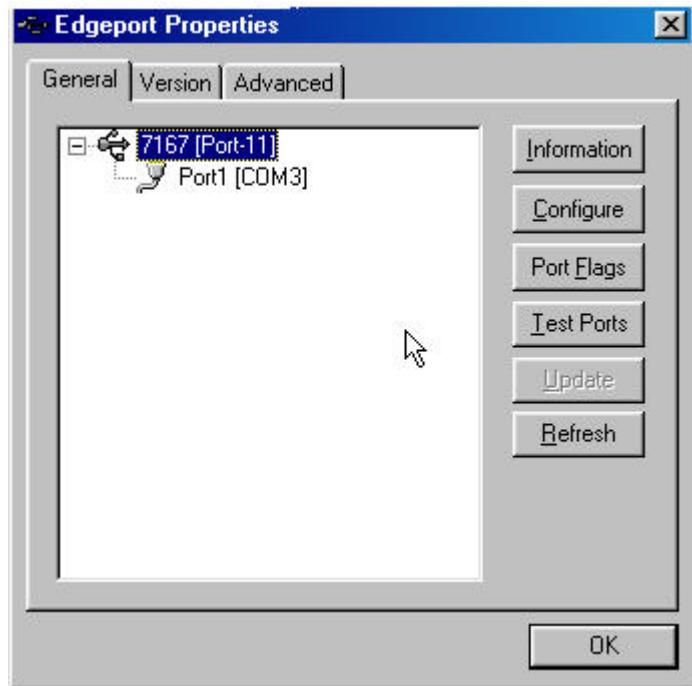
1. Open the Device Manager window, as you did in "Checking for USB Support."
2. Scroll down to "Universal serial bus controllers."



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.

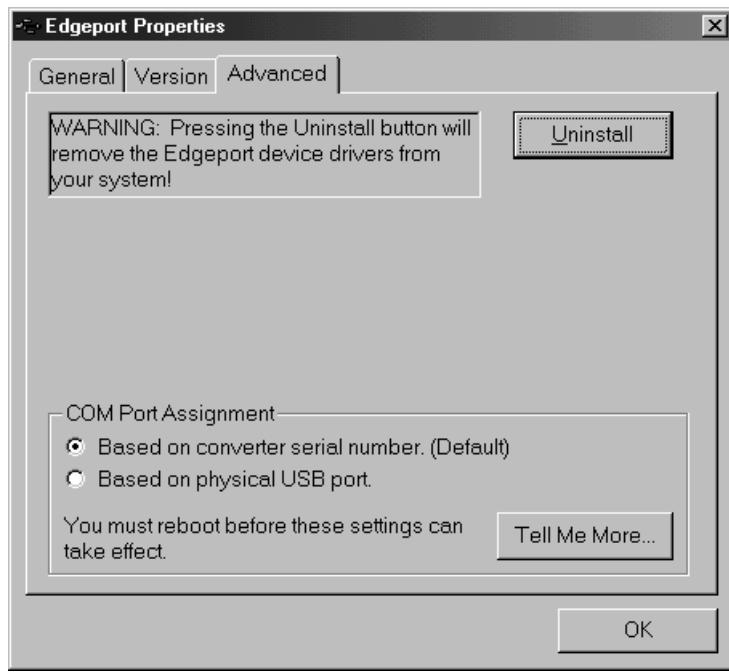
**Assigning a serial port to the printer.** If the default assignment does not meet the requirements of the installation, you can assign a different serial port to the printer. From the General tab of the Edgeport utility, select the printer and press Configure. Follow the directions on the resulting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

## Chapter 3: Solving Problems

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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.  Contact a service representative if this does not resolve the problem.	See "Putting In and Changing the Ribbon Cassette" in chapter 2.  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><b>Caution:</b> 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><b>Note:</b> 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

## 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<sup>1</sup>  
Slip Print Width  
Receipt Synchronization  
Platen Waiting Time  
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  
Scan  
Setting Default Code Page  
Setting EEPROM to default settings

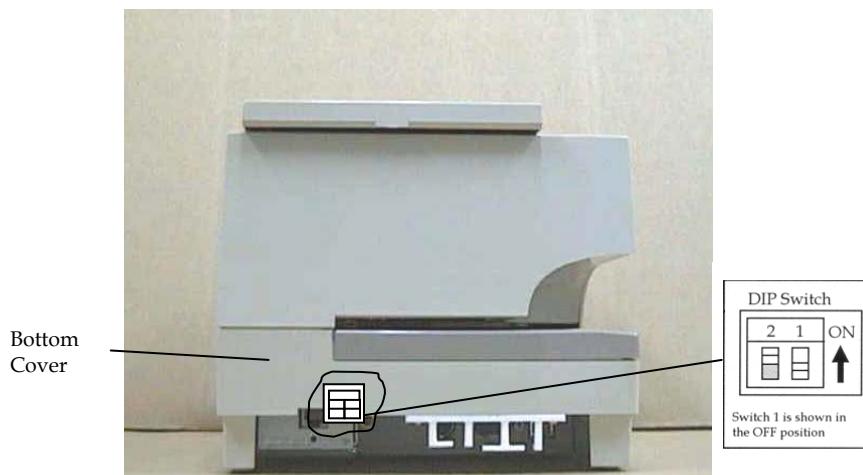
---

<sup>1</sup> Asian Mode isn't supported by model 7167-1035 and 7167-2035.

## 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:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>- EXIT</li> <li>- Print Current Configuration</li> <li>- Set Communication Interface</li> <li>- Set Diagnostics Modes</li> <li>- Set Emulation/Software Options</li> <li>- Set Hardware Options</li> <li>- Set Default Code page</li> <li>- Set EEPROM To Default Settings</li> </ul> | <ul style="list-style-type: none"> <li>-&gt; 1 Click</li> <li>-&gt; 2 Clicks</li> <li>-&gt; 3 Clicks</li> <li>-&gt; 4 Clicks</li> <li>-&gt; 5 Clicks</li> <li>-&gt; 6 Clicks</li> <li>-&gt; 7 Clicks</li> <li>-&gt; 8 Clicks</li> </ul> |
|--|---|

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

<p><b>*** Diagnostics Form ***</b></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><b>*** Printer Config Menu ***</b></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"> <li>- Short Click : Feed Button is quickly depressed then released.</li> <li>- Long Click : Feed Button is held Down more than 1sec then released.</li> </ul> <p><b>CAUTION !!</b> 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><b>Important:</b> 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	0	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.

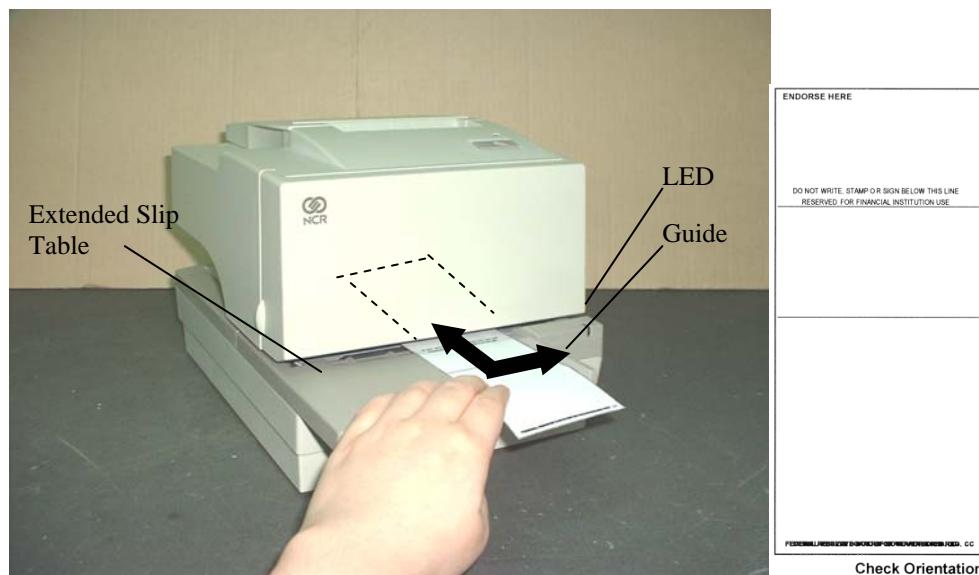
The printer is in the Normal Mode and can communicate with the host computer.

## 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 7167 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.

---

\* Not supported by 7167-1035 and 7167-2035

## 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.

## Platen Waiting Time

This function makes it possible for the user to select whether to select wait time which paper detect from . (See "Configuring the Printer" for instructions on how to enter the Configuration Menu to change this setting.)

Press the Paper Feed Button for the platen waiting time option you want.

### **\*\* SET PLATEN WAITING TIME ?**

YES	-> Long Click
NO	-> Short Click

No Extra Time\* -> 1 Click

Extra 1 sec -> 2 Clicks

Extra 2 sec -> 3 Clicks

## 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

### Scan Option

This function allows the user to set Scan option either enabled or disabled.

Press the Paper Feed Button for the option you want.

**\*\* SET SCAN OPTION ?**

YES      -> Long Click  
NO      -> Short Click

Enable Scan\*      -> Long Click  
Disable Scan      -> 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 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

---

\* Not supported by 7167-1035 and 7167-2035

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

---

\* Not supported by 7167-1035 and 7167-2035

## 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

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## 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	0.5 Seconds
20	40	2.8 Seconds	2.4 Seconds	1.0 Seconds
44	20	1.88 Seconds	1.44 Seconds	1.1 Seconds
44	40	3.76 Seconds	2.88 Seconds	2.2 Seconds

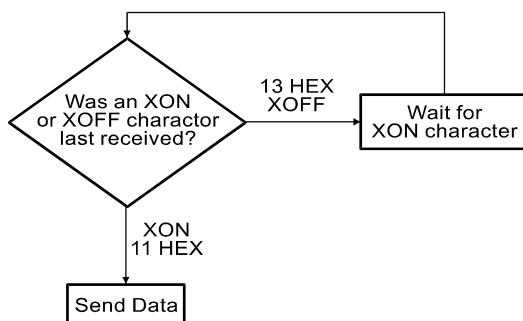
The next table shows that with no delay between lines, the transmit time is much less than the print time, allowing the printer to print at full speed.

Char./Line	Lines/Receipt	Transmit Time: (9600 Baud)	Transmit Time: (19.2 K Baud)	Print Time
20	20	0.4 Seconds	0.2 Seconds	0.5 Seconds
20	40	0.8 Seconds	0.4 Seconds	1.0 Seconds
44	20	0.88 Seconds	0.44 Seconds	1.1 Seconds
44	40	1.76 Seconds	0.88 Seconds	2.2 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.

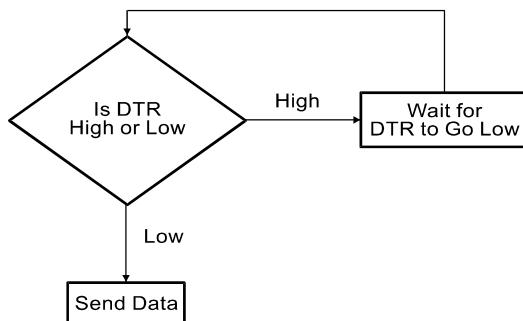


XON character = Hex 11.

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.



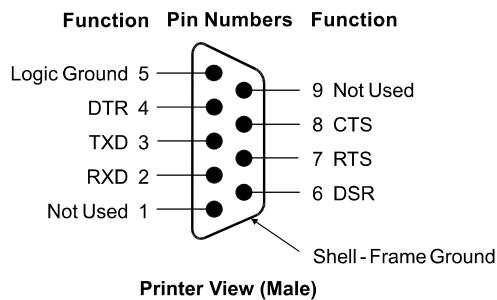
## RS-232C Technical Specifications

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

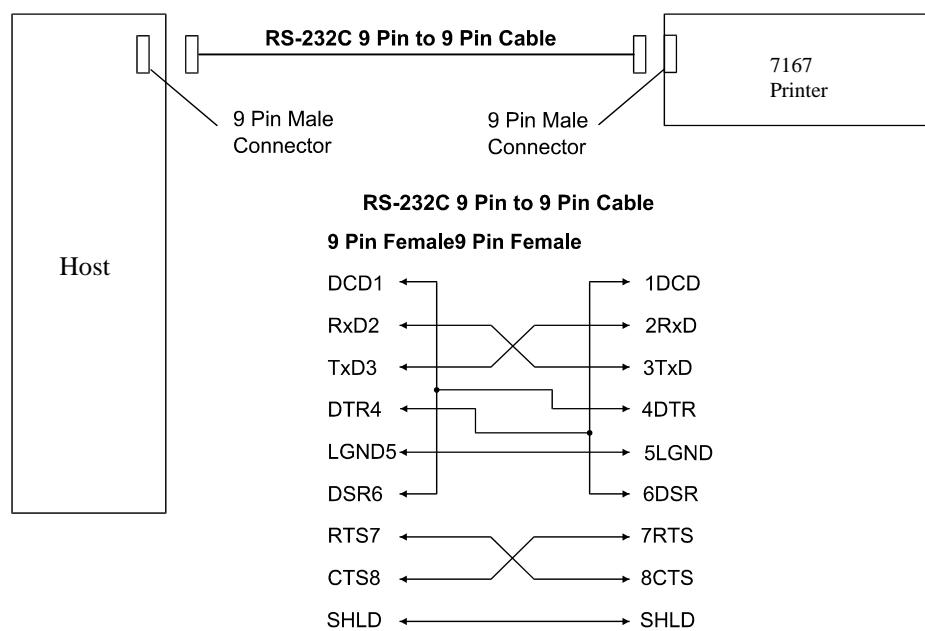
### RS-232C Communication Connector Pin Assignments

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.



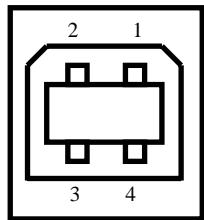
### RS-232C 9-Pin to 9-Pin Cable Diagram

**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

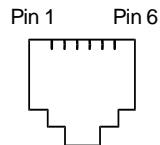
The illustration shows the power cable connector and pin assignments. The power cable connector is a 3-pin DIN plug and is located in the hollow cavity under the printer at the rear.



Printer View End (Female)

## Cash Drawer Connector and Pin Assignments

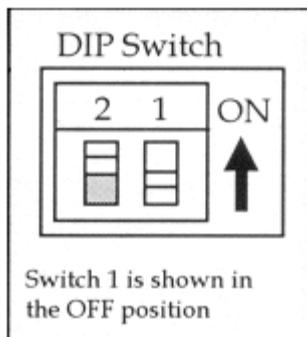
The following illustration shows the pin out designation for the cash drawer connectors. The following table provides the pinout assignments for cash drawers one and two. The cash drawer connectors are located at the rear of the printer.



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** or italics are new or have additional functionality when compared to the NCR 7156. Commands in italics are supported by model 7167-1035 and 7167-2035. These two models can not support commands in bold italics.

## By Command Code

All items in **BOLD** are new or have additional functionality when compared to the 7156. All items in italic letters are commands for scanner function and are supported only by model 7167-1035 and 7167-2035. Items in bold italic are Asian mode commands and are not supported by model 7167-1035 and 7167-2035.

Hexadecimal Command Code and Operands	Command Name	Page
09	Horizontal Tab	126
0A	Print and Feed Paper One Line	117
<b>0C</b>	<b>Print and Return to Standard Mode</b>	<b>193</b>
0C	Print and Eject Slip	117
0D	Print and Carriage Return	118
10	Clear Printer	102
10 04 n	Real Time Status Transmission (DLE Sequence)	177
10 05 n	Real Time Request to Printer (GS Sequence)	180
11	Close Form	103
12	Select Double-Wide Characters	134
13	Select Single-Wide Characters	134
14 n	Feed <i>n</i> Print Lines	118
15 n	Feed <i>n</i> Dot Rows	119
16 n	Add <i>n</i> Extra Dot Rows	119
17	Print	120
18	Open Form	103
<b>18</b>	<b>Cancel Print Data in Page Mode</b>	<b>194</b>
19	Perform Full Knife Cut	104
1A	Perform Partial Knife Cut	104
<b>1B (+ *.bmp)</b>	<b>Download BMP Logo</b>	<b>154</b>
1B 07	Generate Tone	105
<b>1B 0C</b>	<b>Print Data in Page Mode</b>	<b>194</b>
1B 12	Select 90 Degree Counter-Clockwise Rotated Print	135
1B 14 n	Set Column	126
1B 16 n	Select Pitch (Column Width)	135
1B 20 n	Set Character Right-Side Spacing	136

Hexadecimal Command Code and Operands	Command Name	Page
1B 21 <i>n</i>	Select Print Modes	138
1B 24 <i>n1 n2</i>	Set Absolute Starting Position	127
1B 25 <i>n</i>	Select or Cancel User-Defined Character Set	139
1B 26 3 <i>c1 c2...dn</i>	Define User-Defined Characters	140
1B 27 <i>m a0 a1 a2 d1 ... dm</i>	Write to User Data Storage	212
1B 2A <i>m n1 n2 d1 ... dn</i>	Select Bit Image Mode	155
<b>1B 2D <i>n</i></b>	<b>Select or Cancel Underline Mode</b>	<b>142</b>
1B 32	Set Line Spacing to 1/6 Inch	121
1B 33 <i>n</i>	Set Line Spacing	121
1B 34 <i>m a0 a1 a2</i>	Read from User Data Storage	213
1B 3A 30 30 30	Copy Character Set from ROM to RAM	142
1B 3C	Return Home	105
1B 3D <i>n</i>	Select Peripheral Device (For Multi-Drop)	105
1B 3F <i>n</i>	Cancel User-defined Characters	143
1B 40	Initialize Printer	106
1B 43 <i>n</i>	Set Slip Paper Eject Length	106
1B 44 [ <i>n</i> ] <i>k 00</i>	Set Horizontal Tabs	128
1B 45 <i>n</i>	Select or Cancel Emphasized Mode	143
1B 47	Select Double Strike ( <u>7156 Emulation</u> )	144
1B 48	Cancel Double Strike	145
<b>1B 49 <i>n</i></b>	<b>Select or Cancel Italic Print</b>	<b>145</b>
1B 4A <i>n</i>	Print and Feed Paper	122
1B 4B <i>n</i>	Print and Reverse Feed Paper	122
<b>1B 4C</b>	<b>Select Page Mode</b>	<b>195</b>
1B 4C <i>n1 n2 d1...dn</i>	Select Double Density Graphics ( <u>7156 Emulation</u> )	158
<b>1B 52 <i>n</i></b>	<b>Select International Character Set</b>	<b>146</b>
<b>1B 53</b>	<b>Select Standard Mode</b>	<b>196</b>
<b>1B 54 <i>n</i></b>	<b>Select Print Direction in Page Mode</b>	<b>197</b>
1B 55 <i>n</i>	Select or Cancel Unidirectional Printing Mode	147
1B 56 <i>n</i>	Select or Cancel 90 Degrees Clockwise Rotated	147
<b>1B 57 <i>n1, n2,...n8</i></b>	<b>Set Printing Area in Page Mode</b>	<b>198</b>
1B 59 <i>n1 n2 d1...dn</i>	Select Double Density Graphics	158
1B 5B 7D	Switch to Flash Download Mode	249
1B 5C <i>n1 n2</i>	Set Relative Print Position	129

Hexadecimal Command Code and Operands	Command Name	Page
1B 61 <i>n</i>	Select Justification	130
1B 63 30 <i>n</i>	Select Receipt or Slip for Printing; Slip for MICR Read	106
1B 63 31 <i>n</i>	Select Receipt or Slip for Setting Line Spacing	108
1B 63 34 <i>n</i>	Select Sensors to Stop Printing	109
1B 63 35 <i>n</i>	Enable or Disable Panel Buttons	110
1B 64 <i>n</i>	Print and Feed <i>n</i> Lines	123
1B 63 37 <i>n</i>	Enable or Disable Slip Paper End Feeding Stop	111
1B 65 <i>n</i>	Print and Reverse Feed <i>n</i> Lines	123
1B 66 <i>m n</i>	Set Slip Paper Waiting Time	112
1B 69	Perform Full Knife Cut	104
1B 6A <i>k</i>	Read from Non-Volatile Memory	214
1B 6D	Perform Partial Cut	104
1B 70 <i>n p1 p2</i>	Generate Pulse to Open Cash Drawer	113
1B 72 <i>n</i>	Select Print Color	148
1B 73 <i>n1 n2 k</i>	Write to Non-Volatile Memory (NVRAM)	214
<b>1B 74 <i>n</i></b>	<b>Select International Character Set</b>	<b>146</b>
1B 75 0	Transmit Peripheral Device Status	164
1B 76	Transmit Printer Status	164
1B 77 01	Read MICR Data and Transmit	203
<b>1B 77 46</b>	<b>Check Flip</b>	<b>212</b>
1B 77 50	Define Parsing Format, Save in NVRAM	204
1B 77 52	Reread MICR Data	203
1B 77 70	Define Parsing Format, Do Not Save Permanently	204
1B 7A <i>n</i>	Select or Cancel Parallel Printing Mode on R&J	114
1B 7B <i>n</i>	Select or Cancel Upside Down Printing Mode	148
1C	Select Slip Station	114
<b>1C 21 <i>n</i></b>	<b>Select print modes for Kanji characters</b>	<b>221</b>
<i>1C 28 67 pL pH 28</i>	<i>Scanning Threshold</i>	<i>225</i>
<i>1C 28 67 pL pH 29</i>	<i>Scanning Area</i>	<i>226</i>
<i>1C 28 67 pL pH 32</i>	<i>Compression Mode</i>	<i>226</i>
<i>1C 28 67 pL pH 38</i>	<i>Deletes Cropping Area</i>	<i>227</i>
<i>1C 28 67 pL pH 39</i>	<i>Set Cropping Area</i>	<i>228</i>
<i>1C 28 67 pL pH 3C</i>	<i>Transmission Format</i>	<i>229</i>
<i>1C 28 67 pL pH 50</i>	<i>Transmits Threshold Level</i>	<i>230</i>
<i>1C 28 67 pL pH 51</i>	<i>Transmits Scanning Area</i>	<i>231</i>
<i>1C 28 67 pL pH 5A</i>	<i>Transmits Compression Method</i>	<i>232</i>
<i>1C 28 67 pL pH 61</i>	<i>Transmits the cropping area</i>	<i>233</i>

Hexadecimal Command Code and Operands	Command Name	Page
<b>1C 28 67 pL pH 64</b>	<i>Transmits the File Format</i>	<b>235</b>
<b>1C 28 67 pL pH 65</b>	<i>Select Scanning mode</i>	<b>236</b>
<b>1C 28 67 pL pH 66</b>	<i>Transmits scanning mode</i>	<b>236</b>
<b>1C 2D n</b>	<i>Turn underline mode ON/OFF for Kanji</i>	<b>222</b>
<b>1C 32 c1 c2 d1...dn</b>	<i>Define user-defined Kanji characters</i>	<b>222</b>
<b>1C 53 n1 n2</b>	<i>Set Kanji character spacing</i>	<b>223</b>
<b>1F 56 n</b>	Send Printer Software Version	<b>173</b>
<b>1c 57 n</b>	<i>Set quadruple mode ON/OFF for Kanji</i>	<b>224</b>
<b>1D 00</b>	Request Printer ID	<b>250</b>
<b>1D 01</b>	Return Segment Number Status of Flash Memory	<b>251</b>
<b>1D 02 n</b>	Select Flash Memory Sector to Download	<b>251</b>
<b>1D 03 n</b>	Real Time Request to Printer (DLE Sequence)	<b>180</b>
<b>1D 04 n</b>	Real Time Status Transmission (GS Sequence)	<b>177</b>
<b>1D 05</b>	Real Time Printer Status Transmission	<b>182</b>
<b>1D 06</b>	Get Firmware CRC	<b>252</b>
<b>1D 07</b>	Return Microprocessor CRC	<b>252</b>
<b>1D 0E</b>	Erase the Flash Memory	<b>252</b>
<b>1D 0F</b>	Return Main Program Flash CRC	<b>253</b>
<b>1D 10 n</b>	Erase Selected Flash Sector	<b>253</b>
<b>1D 11 al ah cl ch d1...dn</b>	Download to Active Flash Sector	<b>254</b>
<b>1D 14 n</b>	Reverse Feed n Lines	<b>124</b>
<b>1D 15 n</b>	Reverse Feed n Dots	<b>124</b>
<b>1D 21 n</b>	<b>Select Character Size</b>	<b>149</b>
<b>1D 22 n</b>	Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts	<b>215</b>
<b>1D 22 55 n1 n2</b>	<b>Flash Allocation</b>	<b>216</b>
<b>1D 23 n</b>	Select the Current Logo (Downloaded Bit Image)	<b>158</b>
<b>1D 24 nL nH</b>	<b>Set Absolute Vertical Print Position in Page Mode</b>	<b>199</b>
<b>1D 28 47 pL pH 41</b>	<i>Executes Scan</i>	<b>236</b>
<b>1D 28 47 pL pH 42</b>	<i>Transmits Scan Data from Working Buffer</i>	<b>244</b>
<b>1D 28 47 pL pH 44</b>	<i>Print Scanned Image</i>	<b>248</b>
<b>1D 28 47 pL pH 45</b>	<i>Execute Shading Correction</i>	<b>248</b>
<b>1D 28 47 pL pH 46</b>	<i>Store Image into Flash ROM</i>	<b>246</b>
<b>1D 28 47 pL pH 47</b>	<i>Clear All Scan Image Files in Flash ROM</i>	<b>247</b>
<b>1D 28 47 pL pH 49</b>	<i>Transmits Scan Data from Flash ROM</i>	<b>245</b>
<b>1D 28 47 pL pH 4A</b>	<i>Reverse Feed to top of form</i>	<b>249</b>
<b>1D 2A n1 n2 d1...dn]</b>	Define Downloaded Bit Image	<b>159</b>

Hexadecimal Command Code and Operands	Command Name	Page
1D 2F <i>m</i>	Print Downloaded Bit Image	161
<b>1D 3A</b>	<b>Start or End Macro Definition</b>	<b>201</b>
1D 40 <i>n</i>	Erase User Flash Sector	217
<b>1D 42 <i>n</i></b>	<b>Select or Cancel White/Black Reverse Print Mode</b>	<b>150</b>
1D 48 <i>n</i>	Select Printing Position for HRI Characters	187
1D 49 <i>n</i>	Transmit Printer ID	165
1D 49 40 <i>n</i>	Transmit Printer ID, Remote Diagnostics Extension	167
1D 4C <i>nL nH</i>	Set Left Margin	131
1D 50 <i>x y</i>	Set Horizontal and Vertical Minimum Motion Units	125
1D 56 <i>m</i>	Select Cut Mode and Cut Paper	114
1D 56 <i>m n</i>	Select Cut Mode and Cut Paper	114
1D 57 <i>nL nH</i>	Set Printing Area Width	132
<b>1D 5C <i>nL nH</i></b>	<b>Set Relative Vertical Print Position in Page Mode</b>	<b>200</b>
<b>1D 5E <i>r t m</i></b>	<b>Execute Macro</b>	<b>202</b>
1D 61 <i>n</i>	Select or Cancel Automatic Status Back	183
1D 66 <i>n</i>	Select Pitch for HRI Characters	188
1D 68 <i>n</i>	Select Bar Code Height	188
<b>1D 6B <i>m d1...dn</i></b>	<b>Print Bar Code</b>	<b>189</b>
1D 6B <i>m n d1...dn</i>	Print Bar Code	189
1D 72 <i>n</i>	Transmit Status	168
1D 77 <i>n</i>	Select Bar Code Width	192
1D FF	Reboot Printer	255
1E	Select Receipt Station	116
<b>1F 04 <i>n</i></b>	Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap	162
<b>1F 05 <i>n</i></b>	<b>Select Superscript or Subscript Modes</b>	<b>151</b>
IF 11 [ <i>m n</i> ],[ <i>m n</i> ]...[ <i>m n</i> ] OFFH	Printer Setting Change	218
1F 56	Send Printer Software Version	173
<b>1F 74</b>	<b>Print Test Form</b>	<b>116</b>

## Printer Function Commands

Hexadecimal Command Code and Operands	Command Name	Page
10	Clear Printer	102
11	Close Form	103
18	Open Form	103
19	Perform Full Knife Cut	104
1A	Perform Partial Knife Cut	104
1B 07	Generate Tone	105
1B 3C	Return Home	105
1B 3D	Select Peripheral Device (for Multi-Drop)	105
1B 40	Initialize Printer	106
1B 43 n	Set Slip Paper Eject Length	106
1B 63 30 n	Select Receipt or Slip for Printing; Slip for MICR Read	106
1B 63 31 n	Select Receipt or Slip for Setting Line Spacing	108
1B 63 34 n	Select Sensors to Stop Printing	109
1B 63 35 n	Enable or Disable Panel Buttons	110
1B 63 37 n	Enable or Disable Slip Paper End Feeding Stop	111
1B 66 m n	Set Slip Paper Waiting Time	112
1B 69	Perform Full Knife Cut	104
1B 6D	Perform Partial Knife Cut	104
1B 70 n p1 p2	Generate Pulse to Open Cash Drawer	113
1B 7A n	Select or Cancel Parallel Printing Mode on R&J	114
1C	Select Slip Station	114
1D 56 m	Select Cut Mode and Cut Paper	114
1D 56 m n	Select Cut Mode and Cut Paper	114
1E	Select Receipt Station	116
<b>1F 74</b>	<b>Print Test Form</b>	<b>116</b>

## Vertical Positioning and Print

Hexadecimal Command Code and Operands	Command Name	Page
0A	Print and Feed Paper One Line	117
0C	Print and Return to Standard Mode/Print and Eject Slip	117
0D	Print and Carriage Return	118
14 n	Feed <i>n</i> Print Lines	118
15 n	Feed <i>n</i> Dot Rows	119
16 n	Add <i>n</i> Extra Dot Rows	119
17	Print	120
1B 32	Set Line Spacing to 1/6 Inch	121
1B 33 n	Set Line Spacing	121
1B 4A n	Print and Feed Paper	122
1B 4B n	Print and Reverse Feed Paper	123
1B 64 n	Print and Feed <i>n</i> Lines	124
1B 65 n	Print and Reverse Feed <i>n</i> Lines	123
1D 14 n	Reverse Feed <i>n</i> Lines	124
1D 15 n	Reverse Feed <i>n</i> Dots	124
1D 50 x y	Set Horizontal and Vertical Minimum Motion Units	125

## Horizontal Positioning Commands

Hexadecimal Command Code and Operands	Command	Page
09	Horizontal Tab	126
1B 14 n	Set Column	126
1B 24 n1 n2	Set Absolute Starting Position	127
1B 44 [n] k 00	Set Horizontal Tabs	128
1B 5C n1 n2	Set Relative Print Position	129
1B 61 n	Select Justification	130
1D 4C nL nH	Set Left Margin	131
1D 57 nL nH	Set Printing Area Width	132



## Print Characteristic Commands

Hexadecimal Command Code and Operands	Command	Page
12	Select Double-Wide Characters	134
13	Select Single-Wide Characters	134
1B 12	Select 90 Degree Counter-Clockwise Rotated Print	135
1B 16 n	Select Pitch (Column Width)	135
1B 20 n	Set Character Right-Side Spacing	136
1B 21 n	Select Print Modes	138
1B 25 n	Select or Cancel User-Defined Character Set	139
1B 26 s c1 c2 d1...dn	Define User-Defined Characters	140
<b>1B 2D n</b>	<b>Select or Cancel Underline Mode</b>	<b>142</b>
1B 3A 30 30 30	Copy Character Set from ROM to RAM	142
1B 3F n	Cancel User-Defined Characters	143
1B 45 n	Select or Cancel Emphasized Mode	143
1B 47	Select Double Strike (7156 Emulation Mode)	144
1B 47 n	Select Double Strike (7158/7167 Native Modes)	144
1B 48	Cancel Double Strike	145
<b>1B 49 n</b>	<b>Select or Cancel Italic Print</b>	<b>145</b>
<b>1B 52 n</b>	<b>Select International Character Set</b>	<b>146</b>
1B 55 n	Select or Cancel Unidirectional Printing Mode	147
1B 56 n	Select or Cancel 90 Degrees Clockwise Rotated Print	147
1B 72 n	Select Print Color	148
1B 74 n	Select International Character Set	146
1B 7B n	Select or Cancel Upside Down Printing Mode	148
<b>1D 21 n</b>	<b>Select Character Size</b>	<b>149</b>
<b>1D 42 n</b>	<b>Select or Cancel White/Black Reverse Print Mode</b>	<b>150</b>
<b>1F 05 n</b>	<b>Select Superscript or Subscript Modes</b>	<b>151</b>

## Graphics Commands

Hexadecimal Command Code and Operands	Command	Page
1B (+*.bmp)	Download BMP Logo	154
1B 2A m n1 n2 d1...dn	Select Bit Image Mode	155
1B 4C n1 n2 d1...dn	Select Double-Density Graphics (in 7156 Emulation Mode)	158
1B 59 n1 n2 d1...dn	Select Double-Density Graphics	158
1D 23 n	Select Current Logo (Downloaded Bit Image)	158
1D 2A n1 n2 d1...dn]	Define Downloaded Bit Image	159
1D 2F m	Print Downloaded Bit Image	161
1F 04 n	Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap	162

## Status Commands

Hexadecimal Command Code and Operands	Command	Page
1B 75 0	Transmit Peripheral Device Status	164
1B 76	Transmit Printer Status	164
1D 49 n	Transmit Printer ID	165
1D 49 40 n	Transmit Printer ID, Remote Diagnostics Extension	167
1D 72 n	Transmit Status	168
1F 56 n	Send Printer Software Version	173

## Real Time Commands

Hexadecimal Command Code and Operands	Command	Page
10 04 n	Real Time Status Transmission (DLE Sequence)	177
10 05 n	Real Time Request to Printer (GS Sequence)	180
1D 03 n	Real Time Request to Printer (DLE Sequence)	180
1D 04 n	Real Time Status Transmission (GS Sequence)	177
1D 05	Real Time Printer Status Transmission	182

## Auto Status Back Commands

Hexadecimal Command Code and Operands	Command	Page
1D 61 n	Select or Cancel Auto Status Back	182

## Bar Code Commands

Hexadecimal Command Code and Operands	Command	Page
1D 48 n	Select Printing Position for HRI Characters	187
1D 66 n	Select Pitch for HRI Characters	188
1D 68 n	Select Bar Code Height	188
<b>1D 6B m d1...dk 00 or 1D 6B m n d1...dn</b>	<b>Print Bar Code</b>	<b>189</b>
1D 77 n	Select Bar Code Width	192

## Page Mode Commands

Hexadecimal Command Code and Operands	Command	Page
0C	Print and Return to Standard Mode/Print and Eject Slip	193
18	Cancel Print Data in Page Mode	194
1B 0C	Print Data in Page Mode	194
1B 4C	Select Page Mode	195
1B 53	Select Standard Mode	196
1B 54 n	Select Print Direction in Page Mode	197
1B 57 n1, n2...n8]	Set printing Area in Page Mode	198
1D 24 nL nH	Set Absolute Vertical Print Position in Page Mode	199
1D 5C nL nH	Set Relative Vertical Print Position in Page Mode	200

## Macro Commands

Hexadecimal Command Code and Operands	Command	Page
1D 3A	<b>Start or End Macro Definition</b>	201
1D 5E r t m	<b>Execute Macro</b>	202

## MICR Check Reader Commands

### MICR Reading

Hexadecimal Command Code and Operands	Command	Page
1B 77 01	Read MICR Data and Transmit	203
1B 77 52	Reread MICR Data	203

## MICR Parsing

Hexadecimal Command Code and Operands	Command	Page
1B 77 50	Define Parsing Format, Save in NVRAM	204
1B 77 70	Define Parsing Format, Do Not Save Permanently	204

## Check Flip Command

Hexadecimal Command Code and Operands	Command	Page
<b>1B 77 46</b>	<b>Check Flip Command</b>	<b>212</b>

## User Data Storage Commands

Hexadecimal Command Code and Operands	Command	Page
1B 27 m addr d1...dm	Write to User Data Storage	212
1B 34 m addr	Read from User Data Storage	213
1B 6A k	Read from Non-Volatile Memory	214
1B 73 n1 n2 k	Write to Non-Volatile Memory (NVRAM)	214
1D 22 n	Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts	215
<b>1D 22 55 n1 n2</b>	<b>Flash Allocation</b>	<b>216</b>
1D 40 n	Erase User Flash Sector	217
IF 11 [m n],[m n]...[m n] OFFH	Printer Setting Change	218

## Asian Character Commands

Hexadecimal Command Code and Operands	Command	Page
1C 21 n	Select print modes for Kanji characters	221
1C 2D n	Turn underline mode ON/OFF for Kanji	222
1C 32 c1 c2 d1...dn	Define user-defined Kanji characters	222
1C 53 n1 n2	Set Kanji character spacing	223
1C 57 n	Set quadruple mode ON/OFF for Kanji	224

## Scanner Function Commands

Hexadecimal Command Code and Operands	Command	Page
1C 28 67 pL pH 28	<i>Scanning Threshold</i>	225
1C 28 67 pL pH 29	<i>Scanning Area</i>	226
1C 28 67 pL pH 32	<i>Compression Mode</i>	226
1C 28 67 pL pH 38	<i>Deletes Cropping Area</i>	227
1C 28 67 pL pH 39	<i>Set Cropping Area</i>	228
1C 28 67 pL pH 3C	<i>Transmission Format</i>	229
1C 28 67 pL pH 50	<i>Transmits Threshold Level</i>	230
1C 28 67 pL pH 51	<i>Transmits Scanning Area</i>	231
1C 28 67 pL pH 5A	<i>Transmits Compression Method</i>	232
1C 28 67 pL pH 61	<i>Transmits the cropping area</i>	233
1C 28 67 pL pH 64	<i>Transmits the File Format</i>	235
1C 28 67 pL pH 65	<i>Select Scanning mode</i>	236
1C 28 67 pL pH 66	<i>Transmits scanning mode</i>	236
1D 28 47 pL pH 41	<i>Executes Scan</i>	236
1D 28 47 pL pH 42	<i>Transmits Scan Data from Working Buffer</i>	244
1D 28 47 pL pH 44	<i>Print Scanned Image</i>	248
1D 28 47 pL pH 45	<i>Execute Shading Correction</i>	248
1D 28 47 pL pH 46	<i>Store Image into Flash ROM</i>	246
1D 28 47 pL pH 47	<i>Clear All Scan Image Files in Flash ROM (Function 71 of GS ( G command )</i>	247
1D 28 47 pL pH 49	<i>Transmits Scan Data from Flash ROM</i>	245
1D 28 47 pL pH 4A	<i>Reverse Feed to top of form</i>	249

## Flash Download Commands

Hexadecimal Command Code and Operands	Command	Page
1B 5B 7D	Switch Flash Download Mode	249
1D 00	Request Printer ID	250
1D 01	Return Segment Number Status of Flash Memory	251
1D 02 n	Select Flash Memory Sector to Download	251
1D 06	Get Firmware	252
1D 07	Return Microprocessor CRC	252
1D 0E	Erase the Flash Memory	252
1D 0F	Return Main Program Flash CRC	252
1D 10 n	Erase Selected Flash Sector	253
1D 11 aL aH cL cH d1...dn	Download to Active Flash Sector	254
1D FF	Reboot the Printer	255

## 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

<b>Default:</b>	<b><u>Receipt</u></b>	<b><u>Slip</u></b>
<b>Character Pitch:</b>	15.6 CPI	13.9 CPI
<b>Column Width:</b>	44 characters (80mm) 32 characters (58mm)	45 characters
<b>Extra Dot Rows:</b>	2	3
<b>Character Set:</b>	Code Page 437	Code Page 437
<b>Printing Position:</b>	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 Length**ASCII: 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 Spacing****ASCII:** 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 Stop****ASCII:** 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 :** Minutes**Value 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* × 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.

<i>m</i>	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\$(&amp;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\$(&amp;H1F) &amp; Chr\$(&amp;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 Rows****ASCII:** NAK *n***Hexadecimal:** 15 *n***Decimal:** 21 *n***Value of *n*:** Receipt      Slip*n*/203 inch      *n*/72 inch**Range 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 inch**Range of *n*:** 0 - 12**Default:** 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
<b>3</b>	<b>7.52</b>	<b>27</b>	<b>3</b>	<b>7.20</b>	<b>10</b>
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.).

<u>Slip</u>	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* Lines****ASCII:** 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* Lines****ASCII:** 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\$(&amp;H1D) &amp; Chr\$(&amp;H14) &amp; 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\$(&amp;H1D) &amp; Chr\$(&amp;H15) &amp; 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.

$2 \times 10 = 20$  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.

$2 \times 10 = 20$  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:

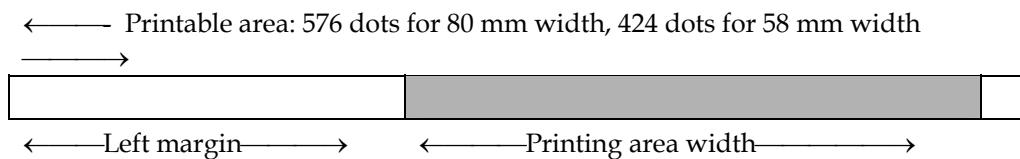
To set the left margin to one inch at the default horizontal motion unit of 1/203 inches, send the four-byte string:

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:

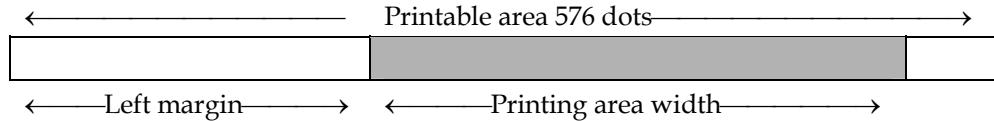
To set the width of the printing area to one inch at the default horizontal motion unit of 1/203 inches, send the four-byte string:

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 <sup>1</sup> 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 <sup>2</sup>	Canceled	Set
Bit 5	Double-wide	Canceled	Set
Bit 7	Underlined Mode	Canceled	Set

Bits 1, 2, 6 are not used.

<sup>1</sup>Standard and compressed pitch cannot be used together in the same line.

<sup>2</sup>Double-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
<b>ASCII:</b> ESC & 3 c1 c2 n1 d1 ... nn dn	ESC & 0 c1 c2 d1 ... dn
<b>Hexadecimal:</b> 1B 26 3 c1 c2 n1 d1 ... nn dn	1B 26 0 c1 c2 d1 ... dn
<b>Decimal:</b> 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.

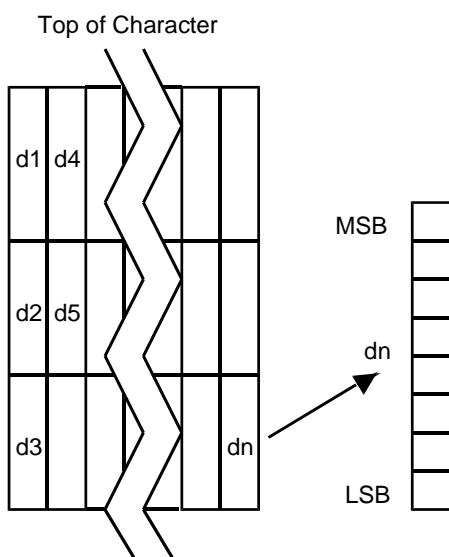
Any invalid byte (*s, c1, c2, n1*) aborts the command.

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.

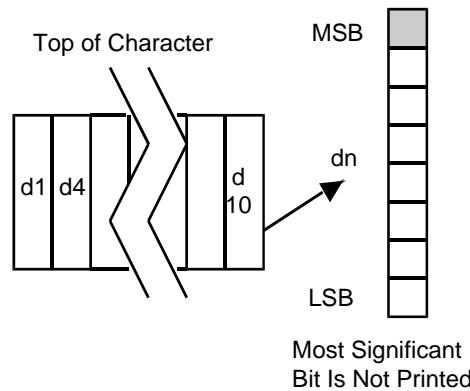
## Defining User-Defined Characters for the Slip and Receipt Station

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 Print****ASCII:** 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 Set

**ASCII:** 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<sup>2</sup>

129 = Code Page 936 Simple Chinese<sup>1</sup>

130 = Code Page Korean<sup>1</sup>

131 = Code Page Traditional Chinese<sup>1</sup>

---

<sup>2</sup> Not supported by 7167-1035 and 7167-2035

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 = 2<sup>nd</sup> 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)	8x288 (80mm)
			0-212 (101DPI, 58mm)	8x212 (58mm)
1	8 Dot Double Density	8 (68 DPI)	0-576 (101DPI, 80mm)	8x576 (80mm)
			0-424 (101DPI, 58mm)	8x424 (58mm)
32	24 Dot Single Density	24 (203 DPI)	0-288 (101DPI, 80mm)	24x288 (80mm)
			0-212 (101DPI, 58mm)	24x212 (58mm)
33	24 Dot Double Density	24 (203 DPI)	0-576 (101DPI, 80mm)	24x576 (80mm)
			0-424 (101DPI, 58mm)	24x424 (58mm)

**Slip Station**

Value of <i>m</i>	Mode	No. of Dots** (Vertical)	No. of Dots (Horizontal)	Number of Dots/Line
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.

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>
$n1 + (256 \times n2)$	$3 \times [n1 + (256 \times n2)]$	Number of Bytes of Data*

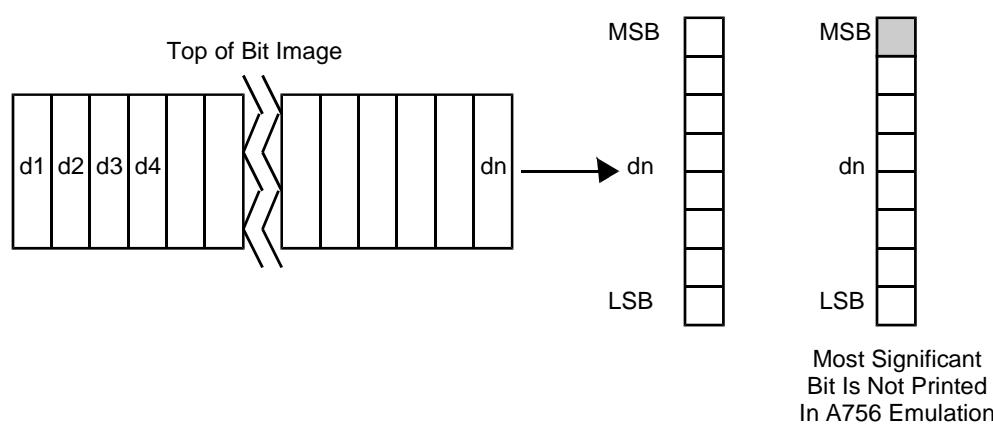
\*Printed left to right (8-dot mode); Printed down then across (24-dot mode).

Formulas:

$$8 \text{ Dot Single Density} \quad n1 + (256 \times n2)$$

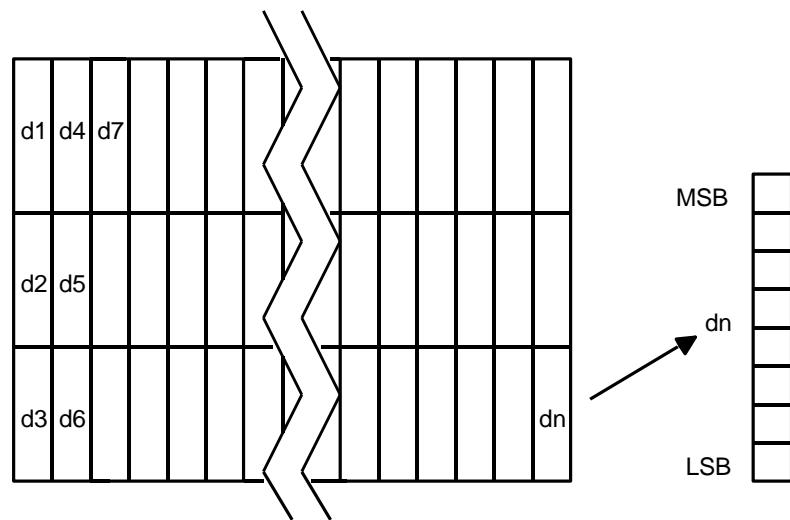
$$24 \text{ Dot Single Density} \quad 3 \times [n1 + (256 \times n2)]$$

8-Dot Single-Density Mode—Receipt and Slip



## 24-Dot Single-Density Mode—Receipt Only

Top of Bit Image



## Select Double-Density Graphics

<b>ASCII:</b>	ESC Y n1 n2 d1 ... dn	or	ESC L n1 n2 d1 ... dn
<b>Hexadecimal:</b>	1B 59 n1 n2 d1 ... dn	or	1B 4C n1 n2 d1 ... dn
<b>Decimal:</b>	27 89 n1 n2 d1 ... dn	or	27 76 n1 n2 d1 ... dn

**Value of n:**

Value of n (8-Dot Single Density Mode)	Value of n (24-Dot Single Density Mode)	Value of d
$n1 + (256 \times n2)$	$3 \times [n1 + (256 \times n2)]$	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)

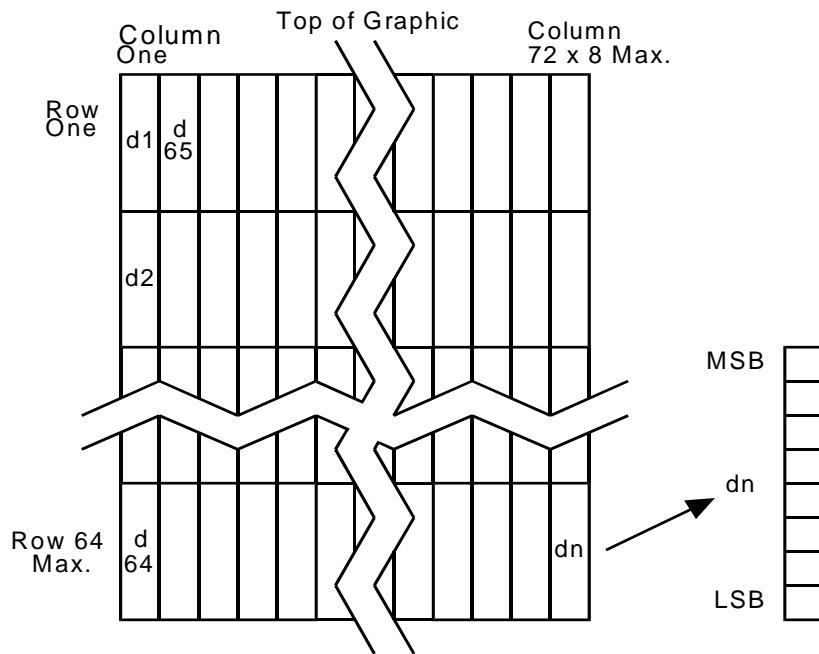
\*The number of bytes sent is represented by the following formula:

$n = 8 \times n1 \times n2$  (*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

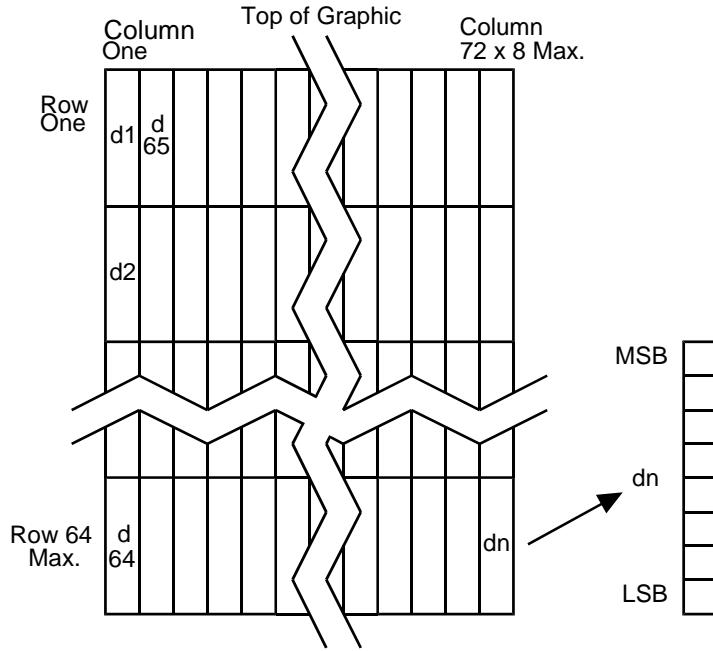
<b>ASCII:</b>	GS / <i>m</i>
<b>Hexadecimal:</b>	1D 2F <i>m</i>
<b>Decimal:</b>	29 47 <i>m</i>
<b>Value and Range of <i>m</i>:</b>	

Value of <i>m</i>	Print Mode	Vertical DPI <sup>1</sup>	Horizontal DPI*
0	Normal	203	203
1	Double Wide	203	101
2	Double High	101	203
3	Quadruple	101	101

<sup>1</sup>Dot 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

	<u>Bit 0</u>	<u>Bit 1</u>
<b>Return Value:</b>	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)**

<b>Bit</b>	<b>Function</b>	<b>0 Signifies</b>	<b>1 Signifies</b>
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 ID****ASCII 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
é	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 <i>n</i> 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 ( <i>n</i> = 4 or <i>n</i> = 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											
ASB Bytes 2-4		0	x	x	1	x	x	0	0	0	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>
<b>ASCII:</b>	GS ETX <i>n</i>	or DLE ENQ <i>n</i>
<b>Hexadecimal:</b>	1D 03 <i>n</i>	or 10 05 <i>n</i>
<b>Decimal:</b>	29 3 <i>n</i>	or 16 5 <i>n</i>
<b>Value of <i>n</i>:</b>	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 Characters

ASCII: 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 Height

ASCII: GS h *n*

Hexadecimal: 1D 68 *n*

Decimal: 29 104 *n*

Value of *n*: Number of dots

Range 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>
<b>ASCII:</b>	GS k m d1...dk NUL	or GS k m n d1...dn
<b>Hexadecimal:</b>	1D 6B m d1...dk 00	or 1D 6B m n d1...dn
<b>Decimal:</b>	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)

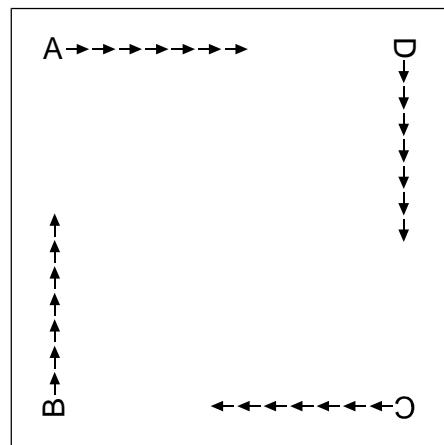
2      Lower right corner proceeding across page to the left (upside down) (C)

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 :** 1<sup>st</sup> Byte**Value of n2 :** 2<sup>nd</sup> 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

GS @ *n*

### ASCII:

**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) <sup>1</sup>
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)
```

<sup>1</sup> Not supported by 7167-1035 and 7167-2035

## Asian Character Commands<sup>3</sup>

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)

---

<sup>3</sup> These commands are not supported by model 7167-1035 and 7167-2035

**FS – Turn underline mode ON/OFF for Kanji****ASCII:** 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 characters****ASCII:** 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 code**Value of *c2*:** Specified the end Asian character code**Value of *d*:** Image data

<b>Range of c1,c2:</b>	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\$(&amp;H1C) &amp; Chr\$(&amp;H57) &amp; Chr\$(n)

## Scanner Function Commands<sup>4</sup>

pL, pH specify (pL + (pH x 256)) as the number of bytes after pH (fn and m).

### Scanning Threshold FS ( g pL pH fn m d1 d2 d3 (when fn = 40)

The threshold level of the scanning density is specified by this command.

ASCII	FS ( g pL pH fn m d1 d2 d3
Hex	1C 28 67 pL pH fn m d1 d2 d3
Decimal	28 40 103 pL pH fn m d1 d2 d3
Para Value	(pL + pH x 256) = 5 (pL =5, pH = 0) fn = 40;m = 48;d1 = 1;d2 = 49;-128 ≤ d3 ≤ 127;
Default	d3 = 0

d3		Function
Hex	Decimal	
80H – FEH	-128 - - 1	Specifies a density lighter than the standard density level (the lightest density: - 128)
00H	0	Specifies the standard density level
01H – 7FH	1 – 127	Specifies a density darker than the standard density level (the darkest density – 127)

<sup>4</sup> These commands are supported only by 7167-1035 and 7167-2035.

## Scanning Area FS ( g pL pH fn x1 y1 x2 y2 (when fn = 41)

The area on the check to be scanned is defined by this function.

ASCII	FS ( g pL pH fn x1 y1 x2 y2
Hex	1C 28 67 pL pH fn x1 y1 x2 y2
Decimal	28 40 103 pL pH fn x1 y1 x2 y2

Range (pL + pH x 256) = 5 (pL = 5, pH = 0)

fn = 41

0 ≤ x1 ≤ 101

0 ≤ y1 ≤ 229

x1 < x2 ≤ 102, x2=0

y1 < y2 ≤ 230, y2=0

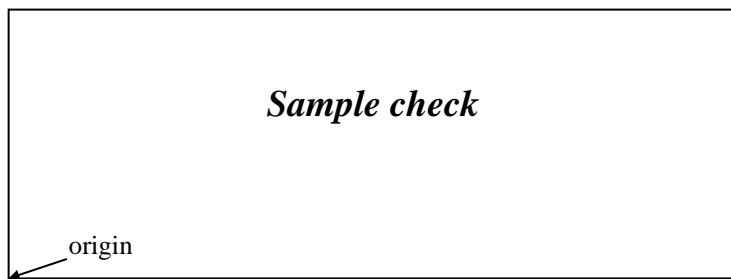
Default x1 = 0

y1 = 0

x2 = 70

y2 = 0

- x1, y1 Specifies the starting point to scan.
- x2, y2 specifies the end point that is to be scanned.
- The possible scanning range is 102 mm (4.02) in the X direction and 230 mm (9.06) in the Y direction.  
x2 > 102 or x2 = 0 specifies the maximum scanning range (=102) in X direction  
y2 > 230 specifies the maximum scanning range (=230) in Y direction  
If y2 = 0, the scanning range is to the bottom of the sheet within the maximum scanning range of 230 mm.
- All setting values are specified in millimeters for the distance from the origin (lower left corner in the check).



### Compression Mode FS ( g pL pH fn m n (when fn = 50)

This command sets the compression method and the file transmission format for the image data.

ASCII	FS ( g pL pH fn m n
Hex	1C 28 67 pL pH fn m n
Decimal	28 40 103 pL pH fn m n

Range      pL + pH x 256 = 3 (pL =3, pH = 0)  
fn = 50  
m = 48, 49  
n = 48, 49, 50 (when m = 48)  
n = 48, 49 (when m = 49)

Default    m = 49, n = 48

m	Compression Method	N	File Transmission Format
		48	TIFF format
48	No Compression	49	BMP format
		50	Raw data
49	Compress ON, if B/W mode, compress use CCITT (Group 4); if 8-bit gray scale mode, use JPEG algorithm	48	TIFF format
		49	B&W            Gray scale
			N/A            JPEG format

### Deletes Cropping Area FS ( g pL pH fn n (when fn = 56)

The defined cropping area n is deleted

ASCII	FS ( g pL pH fn n
Hex	1C 28 67 pL pH fn n
Decimal	28 40 103 pL pH fn n

Range      (pL + pH x 256) = 2 (pL =2, pH = 0)  
fn = 56  
0 ≤ n ≤ 10

N = 0 deletes all cropping areas.

After the cropping area is deleted the area number n is cleared.

## Set Cropping Area FS ( g pL pH fn n x1 y1 x2 y2 (when fn = 57)

The area to be cropped is the area of data that is to be retained. The remaining area of the scanned area is returned as "white" data. The area to be cropped is defined by n.

- x1, y1 specifies the starting point to be cropped
- x2, y2 specifies the ending point to be cropped
- The scanning range is 102 mm (4.02) in the X direction and 230 mm (9.06) in the Y direction.
- x2 > 102 specifies the maximum cropping range (= 102) in the X direction.
- y2 > 230 specifies the maximum cropping range (= 230) in the Y direction.
- All values are specified in millimeters for the distance from the origin of the check. (lower left corner of the check).

ASCII	FS ( g pL pH fn n x1 y1 x2 y2
Hex	1C 28 67 pL pH fn n x1 y1 x2 y2
Decimal	28 40 103 pL pH fn n x1 y1 x2 y2

Range (pL + pH × 256) = 6 (pL = 6, pH = 0)

Fn = 57

1 ≤ n ≤ 10

x<sub>1</sub><sub>scan</sub> ≤ x1 < x<sub>2</sub><sub>scan</sub>

y<sub>1</sub><sub>scan</sub> ≤ y1 < y<sub>2</sub><sub>scan</sub>

x1 < x2 ≤ x<sub>2</sub><sub>scan</sub>

y1 < y2 ≤ y<sub>2</sub><sub>scan</sub>

Default No cropping area is set

Scan Area outside cropping areas are turned white and sent together when CropID in corresponding commands are not 41H-4AH



## Transmission Format FS ( g pL pH fn m (When fn = 60)

This command sets the transmission file format as binary or hexadecimal

ASCII	FS ( g pL pH fn m
Hex	1C 28 67 pL pH fn m
Decimal	28 40 103 pL pH fn m

Range (pL + pH x 256) = 2 (pL =2, pH = 0)  
fn = 60  
m = 48, 49

Default m = 48

m	Transmission Method
48	Transmits the image data in Binary format.
49	Transmits the image data with Hexadecimal character strings format.

**Notes** Since the default value of this command is set to the one most suitable for the kind of interface, it is recommended to use the default as is. The default value can be checked with function 100.

With the serial interface model, when XON/OFF control is selected, specify m = 49.

## Transmits Threshold Level FS ( g pL pH fn m (when fn = 80)

The density of the threshold level of the scanned image for Function 40 is communicated to the host.

ASCII	FS ( g pL pH fn m
Hex	1C 28 67 pL pH fn m
Decimal	28 40 103 pL pH fn m

Range	$(pL + pH \times 256) = 2$ ( $pL = 2$ , $pH = 0$ )
fn = 80	
m = 48	

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	3BH	59	1 byte
Fixed Value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
m of Function 40	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
d1 of Function 40	31H	49	1 byte
Separator	1FH	31	1 byte
d2 of Function 40	34H, 39H	52, 57	2 bytes
Separator	1FH	31	1 byte
d3 of Function 40	30H - 39H	48 - 57	1 - 3 bytes
NUL	00H	0	1 byte

The value and transmission data of d3 of Function 40 are as follows:

Setting value	-128	...	-1	0	1	...	127
Transmission data	128	...	255	0	1	...	127

The transmission data values are converted to hexadecimal characters strings for the image data.

Example: When data is 48 the transmission data will be:

Hexadecimal:	34H, 38H
Decimal:	52, 56

## Transmits Scanning Area FS ( g pL pH fn m (when fn = 81)

The scanned image area for Function 41 is communicated to the host.

ASCII	FS ( g pL pH fn m
Hex	1C 28 67 pL pH fn m
Decimal	28 40 103 pL pH fn m

Range	(pL + pH x 256) = 2 (pL =2, pH = 0)
fn = 81	
m = 48	

Default      Same as Function 41 of FS ( g.

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	3CH	60	1 byte
Fixed Value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
x1 of Function 41	30H - 39H	48 - 57	1 - 3 bytes
Separator	1FH	31	1 byte
y1 of Function 41	30H - 39H	48 - 57	1 - 3 bytes
Separator	1FH	31	1 byte
x2 of Function 41	30H, 39H	48 - 57	1 - 3 bytes
Separator	1FH	31	1 byte
y2 of Function 41	30H - 39H	48 - 57	1 - 3 Bytes
NUL	00H	0	1 Byte

The transmission data values are converted to hexadecimal characters strings for the image data.

Example: When data is 48 the transmission data will be:

Hexadecimal:	34H, 38H
Decimal:	52, 56

## Transmits Compression Method FS ( g pL pH fn m (when fn = 90)

### Command Description:

The method of file compression and the file transmission format for the image data will be communicated to the host device for the value of Function 50.

ASCII	FS ( g pL pH fn m
Hex	1C 28 67 pL pH fn m
Decimal	28 40 103 pL pH fn m

Range	(pL + pH x 256) = 2 (pL =2, pH = 0)
fn = 90	
m = 48	

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	3DH	61	1 byte
Fixed Value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
m of Function 50	34H, 38H or 34H, 39H	52, 56 or 52, 57	2 bytes
Separator	1FH	31	1 byte
n of Function 50	34H ,38H or 34H, 39H or 35H,30H	52, 56 or 52, 57 or 53, 48	2 bytes
NUL	00H	0	1 Byte

The transmission data values are converted to hexadecimal characters strings for the image data.

Example: When data is 48 the transmission data will be:

Hexadecimal:	34H, 38H
Decimal:	52, 56

## Transmits the cropping area FS ( g pL pH fn m (when fn = 97)

### Command Description:

The cropping area of the scanned image as defined is communicated to the host

ASCII	FS ( g pL pH fn m
Hex	1C 28 67 pL pH fn m
Decimal	28 40 103 pL pH fn m

Range	(pL + pH x 256) = 2 (pL =2, pH = 0)
fn = 97	
m = 48	

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	75H	117	1 byte
Fixed Value	40H, last Block 41H next Blk exist	64 or 65	1 byte
Separator	1FH	31	1 byte
Data	30H - 39H and 1FH	48 - 57 and 31	9 - 80 bytes
NUL	00H	0	1 Byte

The “Data” will consist of data groups enumerated with the associated key codes.

If the total amount of data exceeds 80 bytes when several cropping areas are set, the data is divided up to a maximum of 80 bytes, then transmitted.

Transmission Data	Hexadecimal	Decimal	Amount of Data
n of Function 57	30H - 39H	48 - 57	1-2 byte
Separator	1FH	31	1 byte
x1 of Function 57	30H - 39H	48 - 57	1 - 3 bytes
Separator	1FH	31	1 byte
y1 of Function 57	30H - 39H	48 - 57	1 - 3 bytes
Separator	1FH	31	1 byte
x2 of Function 57	30H - 39H	48 - 57	1 - 3 bytes
Separator	1FH	31	1 byte
y2 of Function 57	30H - 39H	48 - 57	1 - 3 bytes
Separator	1FH	31	1 byte

Data transmission by this command is controlled by the ESC/POS handshaking protocol. The ESC/POS handshaking protocol is defined as the protocol that the printer receives as a response from the host after the [Header-NUL] is transmitted: then it performs the following process, corresponding to the response.

When the identification status (existence of the next data block) is  
Hexadecimal = 41H/Decimal = 65

Response			Process Performed
ASCII	HEX	Decimal	
ACK	06H	6	Transmits the next data block
NAK	15H	21	Transmits the previous data block again
CAN	18H	24	Cancels the process

When the identification status (for the previous data block) is  
Hexadecimal = 40H / Decimal = 64

Response			Process Performed
ASCII	HEX	Decimal	
ACK	06H	6	Ends the process
NAK	15H	21	Transmits the previous data block again
CAN	18H	24	Cancels the process

## Transmits the File Format FS ( g pL pH fn m (when fn = 100)

### Command Description:

This command transmits the format of the file transmission formation for the function value of 60 for the image data.

ASCII	FS ( g pL pH fn m
Hex	1C 28 67 pL pH fn m
Decimal	28 40 103 pL pH fn m

Range	(pL + pH x 256) = 2 (pL =2, pH = 0)
fn = 100	
m = 48	

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	3EH	62	1 byte
Fixed Value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
m of Function 60	34H, 38H or 34H, 39H	52, 56 or 52, 57	2 bytes
NUL	00H	0	1 Byte

The transmission data values are converted to hexadecimal characters strings for the image data.

Example: When data is 48 the transmission data will be:

Hexadecimal:	34H, 38H
Decimal:	52, 56

## Select Scanning mode FS ( g pL pH fn m (when fn = 101)

Command Description:

This command selects the scanning mode.

ASCII	FS ( g pL pH fn m
Hex	1C 28 67 pL pH fn m
Decimal	28 40 103 pL pH fn m

Range	(pL + pH x 256) = 2 (pL =2, pH = 0)
fn = 101	
m = 48,49	
Default	m = 48

m	Scanning Mode
48	Black / White mode
49	8 bit gray scale mode

## Transmits Scanning mode FS ( g pL pH fn m (when fn = 102)

Command Description:

This command transmits the scanning mode.

ASCII	FS ( g pL pH fn
Hex	1C 28 67 pL pH fn
Decimal	28 40 103 pL pH fn

Range	(pL + pH x 256) = 1 (pL =1, pH = 0)
fn = 102	

This command transmits the scanning mode as the following format.

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	3AH	62	1 byte
Fixed Value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
m of Function 101	34H, 38H or 34H, 39H	52, 56 or 52, 57	2 bytes
NUL	00H	0	1 Byte

The transmission data values are converted to hexadecimal characters strings for the image data.

Example: When data is 48 the transmission data will be:

Hexadecimal:	34H, 38H
Decimal:	52, 56

## Executes Scan GS ( G pL pH fn nl nh m1 m2 [d1...dk] (when fn = 65)

Command Description:

Executes the process for the scanning of the image from the slip station and then transmits the scanned data to the host computer.

Hogan makes busy status during executing of scanning. Host can't send any data to Hogan in that time.

- If [d1..dk] is specified, [d1..dk] is added to the image data.
- If m1 is 48, when the scan operation is successful the printer transmits a three-block data group: file information block, size information block and an image data block in that sequence.
- Scan result will be retained in working buffer until another scan is performed or power off.
- If m1 is 49, this command executes scanning only. It doesn't transmit image data.
- When an error occurs in scanning, the printer transmits the file information block only.
- The contents of each data block are as shown below:

ASCII	GS ( G pL pH fn nl nH m1 m2 [d1..dk]
Hex	1D 28 67 pL pH fn nl nH m1 m2 [d1..dk]
Decimal	29 40 103 pL pH fn nl nH m1 m2 [d1..dk]

Range	$5 \leq (pL + pH \times 256) \leq 260$ ( $0 \leq pL \leq 255, 0 \leq pH \leq 1$ )
fn = 65	
$(nl + nH \times 256) = 1$	(nl = 1, nH = 0)
m1 = 48, 49	
m2 = 48	
$0 \leq d \leq 255$	
$0 \leq k \leq 255$	

a) When Binary is selected as file transmission format with Function 60 of FS ( g.

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	53H	83	1 byte
Identifier	20H	32	1 byte
Identification status	42H : last Blk 43H : next Blk exist	64 – 67	1 byte
Information data (See below)	Selections from 00H – FFH	0 - 255	1 byte

Identification status is indicates

40H: current block is last data block

41H:existence of the next data block

Information data in the file information block is as follows:

Transmission Data	Hexadecimal	Decimal	Amount of Data
Block Code	46H	70	1 byte
Fixed value	31H	49	1 byte
Separator	1FH	31	1 byte
Scanning status	Normal: 50H Abnormal: 70H	Normal: 80 Abnormal: 112	1 byte
Detailed information (See Table below)	40H – 48H	64 – 72	1 byte

Separator	1FH	31	1 byte
Compression process (*1)(*2)	30H – 39H	48 – 57	0 – 2 bytes
File transmission format (*1)	30H – 39H	48 – 57	0 – 2 bytes
Separator	1FH	31	1 byte
Fixed value (*1)	34H, 38H, 30H, 34H 38H, 34H, 38H	52, 56, 48, 52, 56, 52, 56	1 – 7 bytes
NUL	00H	0	1 byte

\*1. This type of data is not transmitted if an error has occurred.

\*2. This value depends on the value set with Function 50 of FS ( g ).

Status	Information	Hexadecimal	Decimal
Normal	Not abnormal status	40	64
Abnormal	There isn't any data for the scanned image	41	65
Abnormal	Processing stopped due to cover open.	44	68
Abnormal	An error occurred in the compression of image data	47	71
Abnormal	A check feeding error occurred during the scan of the check.	48	72

\*3. The check size is smaller than scan area size.

The size information block for the information data is shown below (This data is not transmitted if an error occurred).

Information Data	Hexadecimal	Decimal	Amount of Data
Block Code	53H	83	1 byte
Fixed value	30H, 30H	48, 48	2 bytes
Separator	1FH	31	1 byte
X starting point (*1)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
Y starting point (*1)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
X ending point (*2)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
Y ending point (*2)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
Amount of data in X (*3)	30H – 39H	48 – 57	1 – 4 bytes
Separator	1FH	31	1 byte
Amount of data in Y (*4)	30H – 39H	48 – 57	1 – 4 bytes
NUL	00H	0	1 byte

\*1. This value depends on the value set with Function 41 of FS (g).

\*2. This point indicates the ending point of the actual reading area.

\*3. This numerical value indicates the amount of actual scanning data in the X direction (dots).

\*4. This number value indicates the amount of the actual scanning data in the Y direction (dots).

Information data for the image data block is shown below (this data is not transmitted if an error occurred).

Information Data	Hexadecimal	Decimal	Amount of Data
Block Code	53H 20H	83, 32	2 bytes
Identification status	40H : last Blk 41H : next Blk exist	64 – 65	1 bytes
Block Size	1-FFFFH	1-65535	2 bytes
image data	00H – FFH	0 – 255	1 – 65535 bytes

If the total amount of data exceeds 65535 bytes, the data is divided up to a maximum of 65536 bytes, then transmitted

b) When Hexadecimal character strings is selected as file transmission format with Function 60 of FS ( g . )

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	74H	116	1 byte
Identification status	42H : last Blk 43H : next Blk exist	64 – 65	1 byte
Information data (See below)	30H – 39H 41H – 46H	48 – 57 65 – 70	1 – 80 bytes
NULL	00H	0	1 byte

Information data in the file information block is as follows:

Transmission Data	Hexadecimal	Decimal	Amount of Data
Block Code	46H	70	1 byte
Fixed value	31H	49	1 byte
Separator	1FH	31	1 byte
Scanning status	Normal: 50H Abnormal: 70H	Normal: 80 Abnormal: 112	1 byte
Detailed information (See Table below)	40H – 48H	64 – 72	1 byte
Separator	1FH	31	1 byte
Compression process (*1)(*2)	30H – 39H	48 – 57	0 – 2 bytes
File transmission format (*1)	30H – 39H	48 – 57	0 – 2 bytes
Separator	1FH	31	1 byte
Fixed value (*1)	34H, 38H, 30H, 34H 38H, 34H, 38H	52, 56, 48, 52, 56, 52, 56	1 – 7 bytes
NUL	00H	0	1 byte

\*1. This type of data is not transmitted if an error has occurred.

\*2. This value depends on the value set with Function 50 of FS ( g ).

Status	Information	Hexadecimal	Decimal
Normal	Not abnormal status	40	64
Abnormal	There isn't any data for the scanned image	41	65
Abnormal	Processing stopped due to cover open.	44	68
Abnormal	An error occurred in the compression of image data	47	71
Abnormal	A check feeding error occurred during the scan of the check.	48	72

The size information block for the information data is shown below (This data is not transmitted if an error occurred).

Information Data	Hexadecimal	Decimal	Amount of Data
Block Code	53H	83	1 byte
Fixed value	30H, 30H	48, 48	2 bytes
Separator	1FH	31	1 byte
X starting point (*1)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
Y starting point (*1)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
X ending point (*2)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
Y ending point (*2)	30H – 39H	48 – 57	1 – 3 bytes
Separator	1FH	31	1 byte
Amount of data in X (*3)	30H – 39H	48 – 57	1 – 4 bytes
Separator	1FH	31	1 byte
Amount of data in Y (*4)	30H – 39H	48 – 57	1 – 4 bytes
NUL	00H	0	1 byte

\*1. This value depends on the value set with Function 41 of FS (g).

\*2. This point indicates the ending point of the actual reading area.

\*3. This numerical value indicates the amount of actual scanning data in the X direction (dots).

\*4. This number value indicates the amount of the actual scanning data in the Y direction (dots).

Information data for the image data block is shown below (this data is not transmitted if an error occurred).

Information Data	Hexadecimal	Decimal	Amount of Data
Block Code	37H 74H	55 116	1 byte
Identification status	40H : last Blk 41H : next Blk exist	64 – 65	1 bytes
image data	30H – 39H, 41H – 46H	48 – 57, 65 - 70	1 – 80 bytes
NUL	00H	0	1 byte

If the total amount of data exceeds 80 bytes, the data is divided up to a maximum of 80 bytes, then transmitted

The printer transmits the image data in the file transmission format specified with Function 50 of FS ( g ).

If the capacity of the image data is large, the image data is divided into several data blocks, then transmitted.

Only when Hexadecimal is specified as the file transmission format with Function 60 of FS ( g , the transmission data values are converted to the hexadecimal character strings for the image data.

Example: When data is 3FH. The transmission data is Hexadecimal: 30H, 46H, Decimal 48, 70.

Data transmitted with this command is controlled by the ESC/POS handshaking protocol. The ESC/POS handshaking protocol is defined as the protocol that the printer receives as a response from the host; then it performs the following process corresponding to the response.

When the identification status is: Hexadecimal = 41H, 43H / Decimal = 65, 67.

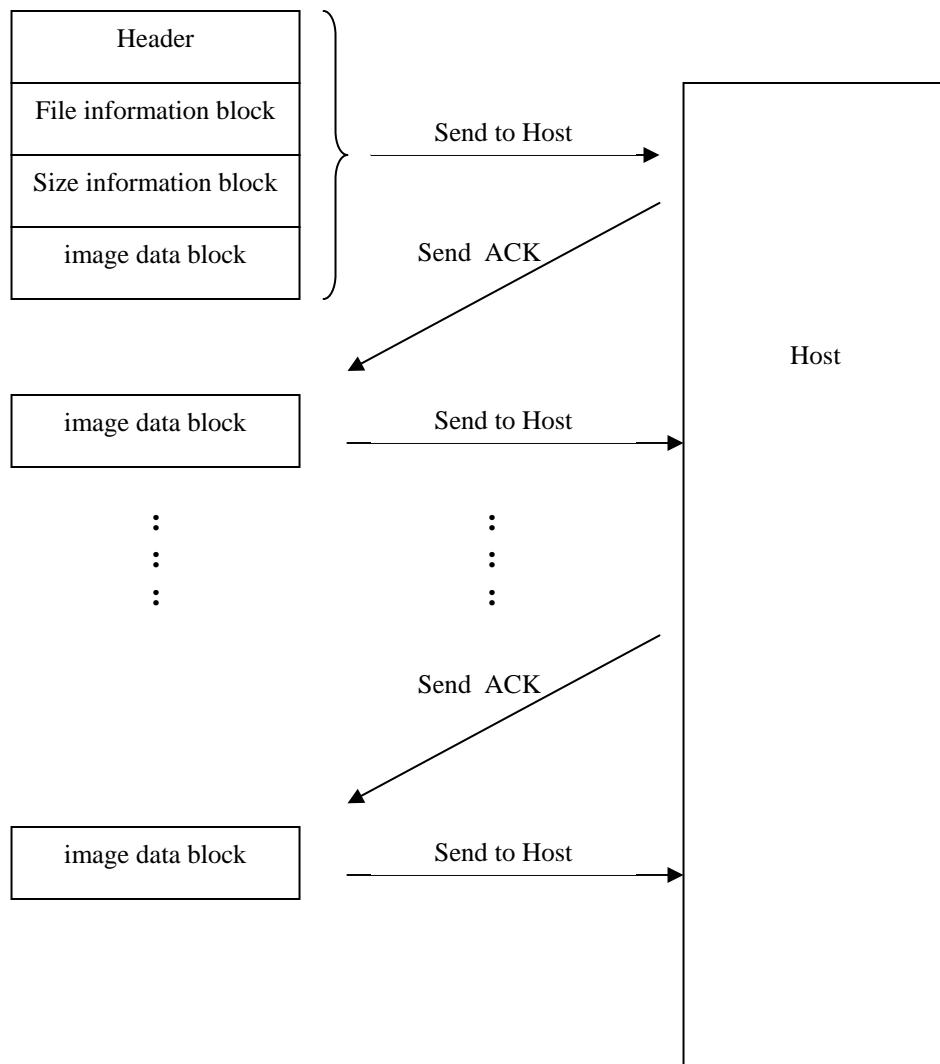
Response			Process Performed
ASCII	HEX	Decimal	
ACK	06H	6	Transmits the next data block
NAK	15H	21	Transmits the previous data block again
CAN	18H	24	Cancels the process

When the identification status is: Hexadecimal = 40H, 42H / Decimal = 64, 66

Response			Process Performed
ASCII	HEX	Decimal	
ACK	06H	6	Ends the process
NAK	15H	21	Transmits the previous data block again
CAN	18H	24	Cancels the process

Notes:

- While transmitting block data, the printer does not process a real-time command or send ASB status. Therefore it is not possible to determine the printer status while transmitting data.



## Transmit Scan Image from Working Buffer GS ( G pL pH fn m CropID [d1...dk], k=1, ..., 255

### Command Description:

- Retrieve original scan data from working buffer (RAM)
- Crop, compress and make image file based on current settings and transmit it to the host
- If scan has not been executed on receiving this command, send error block
- If Bit6 of CropID is ON (CropID= 0x41 to 0x4A), This command transmits cropping area data only.

ASCII	GS ( G pL pH fn m CropID [d1...dk]
Hex	1D 28 47 pL pH fn m CropID [d1...dk]
Decimal	29 40 71 pL pH fn m CropID [d1...dk]

Range       $2 < (pL + pH \times 256) \leq 257$

fn = 66

m=48: use original data in scan image buffer, crop according to the cropping area set by CropID, compress and make image file based on current settings, then transmit file to host

CropID=0, transmit original (uncropped) image

CropID=1-10, transmit image file with the  $n^{\text{th}}$  cropping area, data outside the cropping area but inside the scanarea will be transmitted as “white”.

CropID=0x41 – 0x4A, transmit image file with the  $n^{\text{th}}$  ( $n=1$  to 10) cropping area, but only data that resides within the Crop Area is transmitted.

CropID>10 (except 0x41 to 0x4A), transmit image file with all the cropping area set, if no cropping area is set, send the original scan image

When GS ( G Function 65 is not executed, only the file information block which consists of the following information data, is transmitted. Information data in the file information block is as follows.

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	53H / 37H	83/55	1 byte
Identifier	20H / 74H	32/116	1 byte
Identification status	42H : last Blk	66	1 byte
Block Code	46H	70	1 byte
Fixed value	31H	49	1 byte
Separator	1FH	31	1 byte
Scanning status	70H	112	1 byte
Detailed information	41H	65	1 byte
Separator	1FH	31	1 byte
NUL	00H	0	1 byte

If scan has completed normally, Hogan will send image file to host, data strings have the same format as that in “Execute Scan” command.

### Notes:

- While transmitting block data, the printer does not process a real-time command or send ASB status. Therefore it is not possible to determine the printer status while transmitting data.

## Transmit Scan Image from Flash ROM GS ( G pL pH fn m FileIndex (when fn = 73)

### Command Description:

- Retrieve scan image file from flash ROM and transmit to host.
- If scan has not be executed on receiving this command, send error block

ASCII        GS ( G pL pH fn m [File Index]  
 Hex            1D 28 47 pL pH fn m [File Index]  
 Decimal      29 40 71 pL pH fn m [File Index]  
 Range        pL + pH x 256=2  
 fn = 73

m=49: send image file stored in flash ROM to host, the image file is selected using File Index, which is defined by the firmware when image file is stored into flash ROM, FileIndex is larger than 0 in this command.

If cannot find an image file with the specified FileIndex in flash ROM, transmit the following block.

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	53H / 37H	83/55	1 byte
Identifier	20H / 74H	32/116	1 byte
Identification status	42H : last Blk	66	1 byte
Block Code	46H	70	1 byte
Fixed value	31H	49	1 byte
Separator	1FH	31	1 byte
Scanning status	70H	112	1 byte
Detailed information	41H	65	1 byte
Separator	1FH	31	1 byte
NUL	00H	0	1 byte

If the image file exists, send the file in the same format as that sent in "Execute Scan" command.

### Notes:

- While transmitting block data, the printer does not process a real-time command or send ASB status. Therefore it is not possible to determine the printer status while transmitting data.

## Store Scan Image to Flash ROM GS ( G pL pH fn n [d1..dk] (when fn = 70)

Hogan makes busy status during store scan image. Host can't send any data to Hogan at that time.

Command Description:

- If [d1..dk] is specified, it's added to image file as image description (image tag data); if not specified, use the one specified before. This string is included in the image file.
- Image file will be appended to the end of the last image stored in flash ROM.
- In each image file, the first 2 bytes hold file index (2 byte), the next 4 bytes store the length of the file, followed by 2 blocks of scan information and image file data string.
- Original scan data are retrieved from working buffer, cropped, compressed and made into image file based on current settings.
- The scanner locates all available flash ROM space and compares with the image size.
- If the image file size is smaller than ROM space, increase file index number and write file to flash ROM, send host "store information" block
- If ROM space is too small for image file, transmit "store information" block to host
- Max. number of files can be stored is 255.
- If bit6 of n(CropID) is 1, Hogan stores only image data that resides within the crop area.

ASCII	FS ( g pL pH fn n [d1... dk]
Hex	1D 28 47 pL pH fn n [d1 ...dk]
Decimal	29 40 71 pL pH fn n [d1... dk]

Range       $2 \leq (pL + pH \times 256) \leq 257$   
fn = 70

n: CropID, n = 0, no cropping, or n $\leq$ 10 and equal to CropID that is not defined, entire scan area selected;

n = exist CropAreaID (0x00 to 0x0A), only selected crop area is processed and stored,  
n = exist CropAreaID (0x41 to 0x4A), only selected crop area is processed and stored. The stored data is only data that resides within the crop area.  
n>10 (except 0x41 to 0x4A), all crop areas are selected

The storage information block is as follows:

Transmission Data	Hexadecimal	Decimal	Amount of Data
Header	37H	55	1 byte
Identifier	77H	119	1 byte
Fixed Value	34H, 38H	52, 56	2 bytes
Separator	1FH	31	1 byte
Store Status	30-33H(*1)	48-51	1 byte
Separator	1FH	31	1 byte
FileIndex	30-39H	48-57	1-3 bytes
Separator	1FH	31	1 byte
Free ROM space	30 - 39H, 41 - 46H	48 - 57, 65 - 70	6 bytes
Separator	1FH	31	1 byte
NUL	00H	0	1 Byte

*1. Store Status:	Successful	30H
	Not enough memory	31H
	Image file not exist	32H
	Flash ROM is cleared	33H

Notes:

- While writing flash ROM, the printer does not process a real-time command or send ASB status. Therefore it is not possible to determine the printer status while storing scan image.

## Clear All Scan Images GS ( G pL pH fn (when fn = 71)

Hogan makes busy status in clearing flash ROM. Host can't send any data to Hogan at that time.  
Command Description:

- Erase all scan image files

ASCII	FS ( g pL pH fn
Hex	1D 28 47 pL pH fn
Decimal	29 40 71 pL pH fn

Range  
pL=1, pH=0  
fn = 71

Notes:

- While clearing flash ROM, the printer does not process a real-time command or send ASB status. Therefore it is not possible to determine the printer status while clearing image files.
- This command sent the information block to host PC. The format is same format of the store to flash ROM command.

**Print Scanned Image GS ( G pL pH fn m (when fn = 68)**

Command Description:

This command performs printing the scanned image data

ASCII	GS ( G pL pH fn m
Hex	1D 28 47 pL pH fn m
Decimal	29 40 71 pL pH fn m

Range	(pL + pH x 256) = 2 (pl = 2, pH = 0)
fn = 68	
m = 48,49	

Default	m = 48
---------	--------

<b>m</b>	Printing ratio of x direction
48	100% printing mode if scan area width > printable width, the extra image is cut.
49	50% printing mode (Horizontal & Vertical direction)

This command is available on Black/White mode. (When scan mode is 8 bit gray scale, this command is ignored.)

**Execute Shading correction GS ( G pL pH fn m (when fn = 69)**

Command Description:

This command performs Black/White shading correction.

ASCII	GS ( G pL pH fn m
Hex	1D 28 47 pL pH fn m
Decimal	29 40 71 pL pH fn m
Parameter Value	(pL + pH x 256) = 2 (pl = 2, pH = 0)
	fn = 69
	m = 48,49
Default	m = 48

<b>m</b>	Shading correction
48	Execute Black Shading correction
49	Execute White Shading correction

## Reverse feed to top of form GS ( G pL pH fn m (when fn = 74)

Command Description:

This command performs a reverse feed to top of form on the slip print station.  
This command is ignored if slip is not the selected station.

ASCII	GS ( G pL pH fn m
Hex	1D 28 47 pL pH fn m
Decimal	29 40 71 pL pH fn m
Parameter value	(pL + pH x 256) = 2 (pL = 2, pH = 0) fn = 74 m = 48

## 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 is 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> )
(( <i>ch</i> * 256) + <i>cl</i> )	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

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## 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 $\pm$ 1mm (3.15 Inches $\pm$ .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 $\pm$ 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	52 Million Lines
Impact Slip Printer	30 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	500,000 Reads
Flip	500,000 Flips
Power Supply	200,000 On-time Hours
Flip Mechanism	200,000 Cycles
Scan I/F Board	1,383,000 MTBF
Scanner Mechanism	500,000 Cycles
Scan Head	1,000,000 Hours MTBF

Reliability statistics based on averages exhibited under lab conditions and do not constitute a warranty

## 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

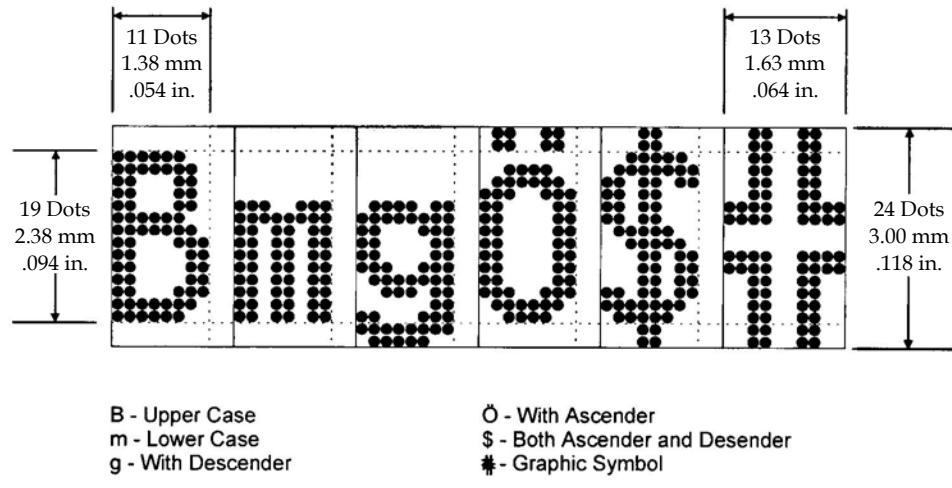
### Character Size

This section shows the dot pattern for characters printed on the receipt and slip stations.

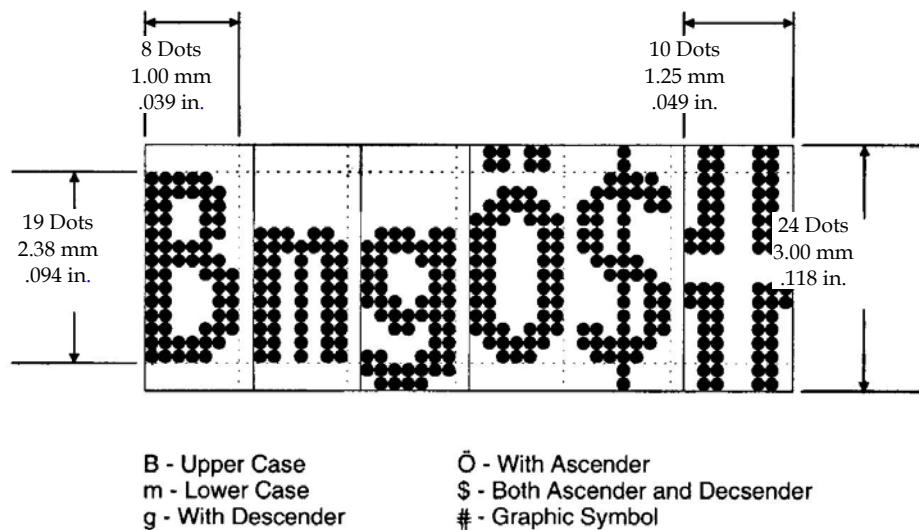
#### Receipt Station

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

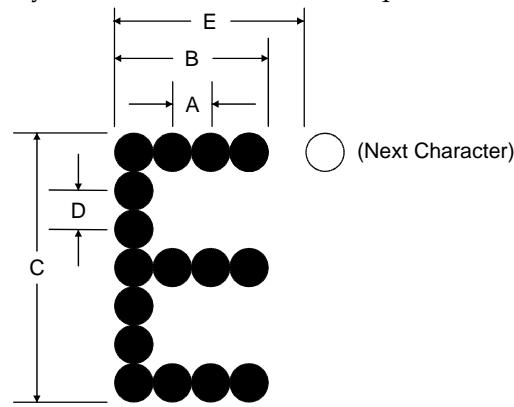


## Slip Station

The following illustrations show the dot patterns of sample characters for standard pitch (13.9 CPI), double-wide characters, and rotated characters (counterclockwise).

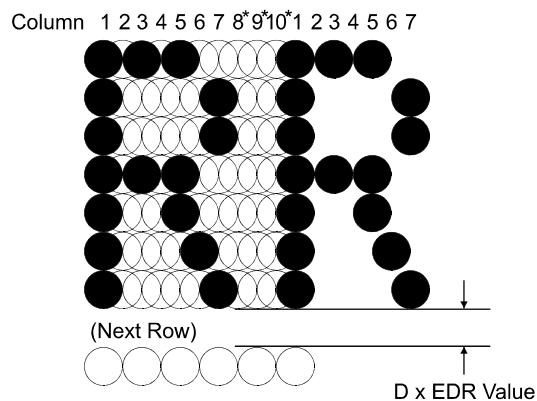
### Standard Pitch

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)

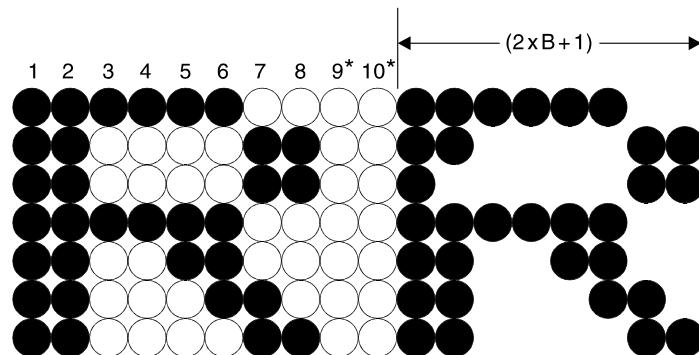


\* Columns 8, 9, and 10 are for graphics or for certain special characters

**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

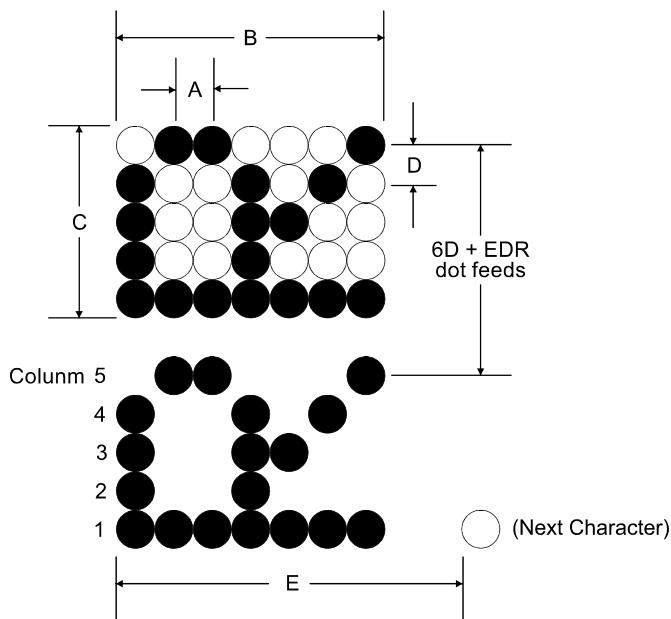
Double-wide characters are upright characters in an 8x7 dot format with twice the column (horizontal) spacing between printed dots as for standard characters.



\* 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.

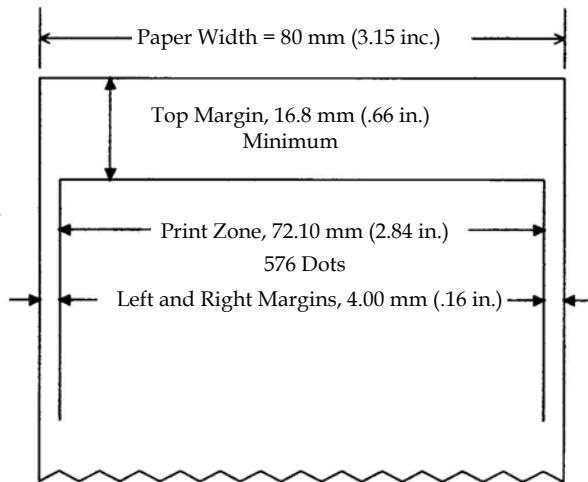
Standard pitch: 13 x 24 dots in character cell, 44 characters (columns) per line

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.

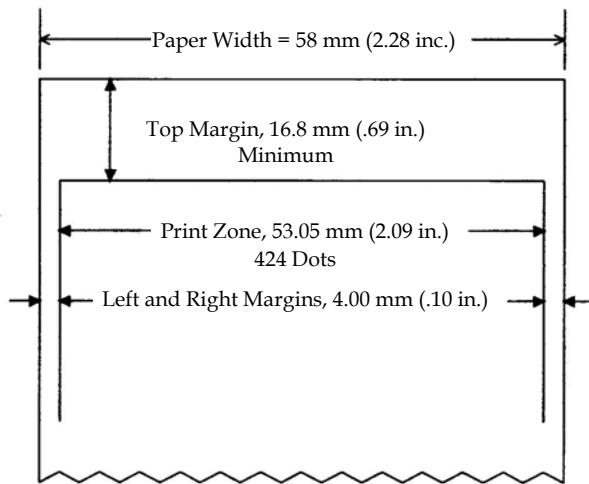
Standard pitch: 13 x 24 dots in character cell, 32 characters (columns) per line

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

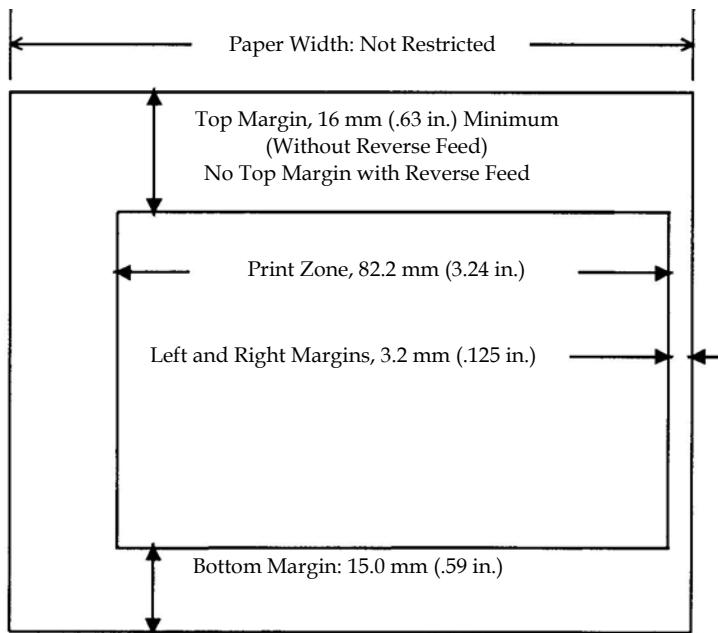
The slip station prints characters (standard pitch and compressed pitch) and graphics in a print zone of 82.2 mm (3.24 inches) wide on a slip or form.

Standard pitch: 45 characters (columns) per line

Compressed pitch: 55 characters (columns) per line

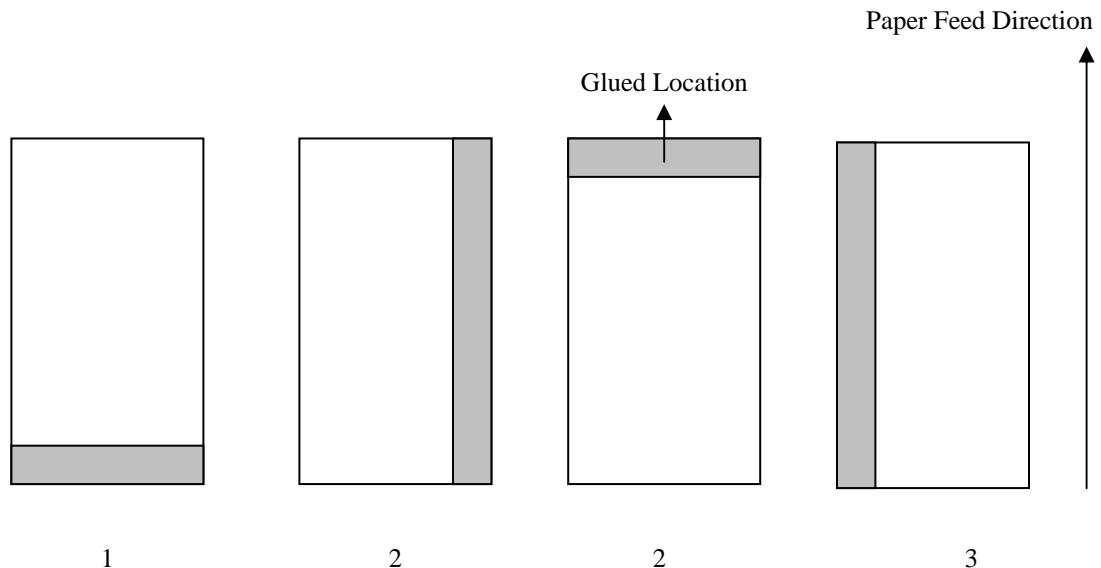
Double byte character: 27 characters (columns) per line

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

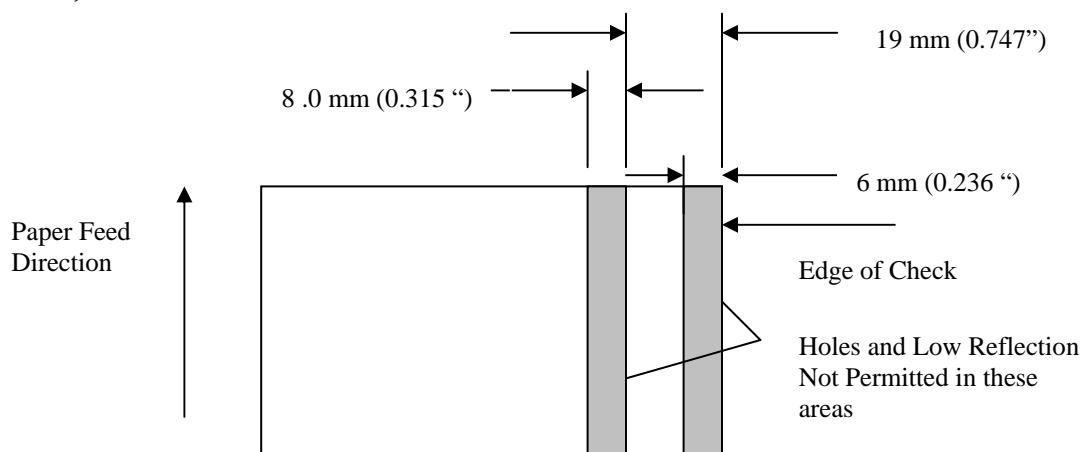
Printing of MICR Characters must conform to MICR standards as defined in ANSI/ABA X9.13, X9.18 and 9.27 as well ISO 1004.

### 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<sup>1</sup>
- Code Page 936<sup>1</sup>
- Code Page 949<sup>1</sup>
- Code Page 950<sup>1</sup>

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<sup>1</sup> Not supported by 7167-1035 and 7167-2035

## 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 T Z
08	( 8 H X h x è y ç :: T Í F Ø °
09	) 9 I Y i y è ö :: T Í F J Ø •
0A	* : J Z j z è U :: T Í F Ø ·
0B	+ ; K [ k { i ø z :: T Í F Ø √
0C	, < L \ l   i ï z :: T Í F Ø n
0D	- = M ] m } i ¥ i :: T Í F Ø 2
0E	. > N ^ n ~ Á M « z :: T Í F Ø ε
0F	/ ? 0 o ñ Á f » :: T Í F Ø 0

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 ð Ó -
01	! 1 A Q a q u à i :: L Í ð B ±
02	" 2 B R b r é Æ ó :: T Í ð E ð :
03	# 3 C S c s â ô ú :: T Í ð E ð :
04	\$ 4 D T d t ä ö Ñ :: T Í ð E ð :
05	% 5 E U e u à ò Ñ :: T Í ð E ð :
06	& 6 F V f v à û :: T Í ð A ã I ð :
07	' 7 G W g w ç ù :: T Í ð A ã I ð :
08	( 8 H X h x è y ç :: T Í ð A ã I ð :
09	) 9 I Y i y è ö :: T Í ð A ã I ð :
0A	* : J Z j z è U :: T Í ð A ã I ð :
0B	+ ; K [ k { i ø z :: T Í ð A ã I ð :
0C	, < L \ l   i ï z :: T Í ð A ã I ð :
0D	- = M ] m } i Ø i :: T Í ð A ã I ð :
0E	. > N ^ n ~ Á x « z :: T Í ð A ã I ð :
0F	/ ? 0 o ñ Á f » :: T Í ð A ã I ð :

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 ð Ó -
01	! 1 A Q a q u L 1 :: L Í ð B
02	" 2 B R b r é 1 ó :: T Í ð ð Õ :
03	# 3 C S c s á ô ú :: T Í ð ð Õ :
04	\$ 4 D T d t ä ö A :: T Í ð ð Õ :
05	% 5 E U e u ù L a A + Ñ ñ S
06	& 6 F V f v c i Ð A Ä í S +
07	' 7 G W g w ç S Ð È ä Ì S
08	( 8 H X h x l s È ß È R
09	) 9 I Y i y è ö e :: T Í ð ð Õ :
0A	* : J Z j z Õ U :: T Í ð ð Õ :
0B	+ ; K [ k { ð t z :: T Í ð ð Õ :
0C	, < L \ l   i t c :: T Í ð ð Õ :
0D	- = M ] m } Ð l s Ð = J Y Ð
0E	. > N ^ n ~ Á x « z :: T Í ð ð Õ :
0F	/ ? 0 o ñ Á c c » :: T Í ð ð Õ :

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 ð Ó -
01	! 1 A Q a q u à i :: L Í ð B ±
02	" 2 B R b r é Æ ó :: T Í ð E ð :
03	# 3 C S c s â ô ú :: T Í ð E ð :
04	\$ 4 D T d t ä ö Ñ :: T Í ð E ð :
05	% 5 E U e u à ò Ñ :: T Í ð E ð :
06	& 6 F V f v à û :: T Í ð A ã I ð :
07	' 7 G W g w ç ù :: T Í ð A ã I ð :
08	( 8 H X h x è y ç :: T Í ð A ã I ð :
09	) 9 I Y i y è ö :: T Í ð A ã I ð :
0A	* : J Z j z è U :: T Í ð A ã I ð :
0B	+ ; K [ k { i ø z :: T Í ð A ã I ð :
0C	, < L \ l   i ï z :: T Í ð A ã I ð :
0D	- = M ] m } i Ø i :: T Í ð A ã I ð :
0E	. > N ^ n ~ Á x « z :: T Í ð A ã I ð :
0F	/ ? 0 o ñ Á f » :: T Í ð A ã I ð :

## Code Page 860, 862, 863 and 864

Code Page 860.

Code Page 863.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0	@	P	`	p	ç	í	í	l	ll	a	é	=	
01	!	1	A	Q	a	ü	ó	é	é	é	b	ê	±	
02	"	2	B	R	b	é	ú	â	ô	ê	c	ë	+	
03	#	3	C	S	c	â	û	à	î	ê	d	ö	.	
04	\$	4	D	T	d	á	ù	è	ë	ë	e	ø	-	
05	%	5	E	U	e	ç	ó	é	í	í	f	ø	*	
06	&	6	F	V	f	ê	ô	ê	í	í	g	ñ	.	
07	'	7	G	W	g	ë	ö	ë	í	í	h	à	=	
08	<	8	H	X	h	é	ö	é	í	í	i	s	>	
09	)	9	I	Y	i	é	ö	é	í	í	j	á	«	
0A	*	:	J	Z	j	í	ö	é	í	í	k	á	»	
0B	+	;	K	[	k	í	ö	é	í	í	l	á	?	
0C	,	<	L	\	l	í	ö	é	í	í	m	á	■	
0D	-	=	M	]	m	í	ö	é	í	í	n	á	■	
0E	.	>	N	^	n	í	ö	é	í	í	o	á	■	
0F	/	?	O	_	o	í	ö	é	í	í	o	á	■	

Code Page 862

	2	3	4	5	6	7	8	9	A	B	C	D	E
00	0	@	P	'	p	x	j	á	í	ł	ł	ł	ł
01	!	1	A	q	q	s	t	1	ó	ł	ł	ł	ł
02	"	2	B	R	q	ב	ג	ו	ú	ł	ł	ł	ł
03	#	3	C	S	r	ד	ה	ו	ָ	ł	ł	ł	ł
04	\$	4	D	T	s	ז	ת	ְ	ָ	ł	ł	ł	ł
05	%	5	E	U	t	ִ	ְ	ְ	ְ	ł	ł	ł	ł
06	&	6	F	V	u	ְ	ְ	ְ	ְ	ł	ł	ł	ł
07	-	7	G	W	v	ְ	ְ	ְ	ְ	ł	ł	ł	ł
08	<	8	H	X	w	ְ	ְ	ְ	ְ	ł	ł	ł	ł
09	)	9	I	Y	y	ְ	ְ	ְ	ְ	ł	ł	ł	ł
0A	*	:	J	Z	n	ְ	ְ	ְ	ְ	ł	ł	ł	ł
0B	+	:	K	[	o	ְ	ְ	ְ	ְ	ł	ł	ł	ł
0C	,	:	L	\	m	ְ	ְ	ְ	ְ	ł	ł	ł	ł
0D	-	=	M	]	n	ְ	ְ	ְ	ְ	ł	ł	ł	ł
0E	.	>	N	^	o	ְ	ְ	ְ	ְ	ł	ł	ł	ł
0F	/	?	O	_	o	ְ	ְ	ְ	ְ	ł	ł	ł	ł

Code Page 864

## 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
01	! 1 A Q	a	q	ü	ä	í	ö	ł	ł	ł	ł	ł	ł	ł
02	" 2 B R	b	r	é	ó	ó	ó	ł	ł	ł	ł	ł	ł	ł
03	# 3 C S	c	s	â	ô	ú	í	ł	ł	ł	ł	ł	ł	ł
04	\$ 4 D T	d	t	ä	ö	ñ	í	ł	ł	ł	ł	ł	ł	ł
05	% 5 E U	e	u	å	ò	N	í	ł	ł	ł	ł	ł	ł	ł
06	& 6 F V	f	v	ä	ó	ú	í	ł	ł	ł	ł	ł	ł	ł
07	' 7 G W	g	w	ç	ü	ö	ö	ł	ł	ł	ł	ł	ł	ł
08	( 8 H X	h	x	é	ë	ü	ü	ł	ł	ł	ł	ł	ł	ł
09	) 9 I Y	i	y	ë	ö	ü	ü	ł	ł	ł	ł	ł	ł	ł
0A	* : J Z	j	z	é	ö	ü	ü	ł	ł	ł	ł	ł	ł	ł
0B	+ ; K [	k	{	í	ø	ñ	ñ	ł	ł	ł	ł	ł	ł	ł
0C	, < L \	l		í	ø	ñ	ñ	ł	ł	ł	ł	ł	ł	ł
0D	- = M ] m	m	}	í	ø	ñ	ñ	ł	ł	ł	ł	ł	ł	ł
0E	. > N ^ n	n	-	ä	pt	«	»	ł	ł	ł	ł	ł	ł	ł
0F	/ ? O _ o	o	o	ä	pt	»	»	ł	ł	ł	ł	ł	ł	ł

Code Page 866.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P	'	p	А	Р	а	и	л	л	л	л	л	л	л
01	! 1 A Q	a	q	б	с	б	и	т	т	т	т	т	т	т
02	" 2 B R	b	r	в	т	в	т	т	т	т	т	т	т	т
03	# 3 C S	c	s	г	у	г	и	т	т	т	т	т	т	т
04	\$ 4 D T	d	t	д	ф	д	и	т	т	т	т	т	т	т
05	% 5 E U	e	u	е	х	е	и	т	т	т	т	т	т	т
06	& 6 F V	f	v	ж	ц	ж	и	т	т	т	т	т	т	т
07	' 7 G W	g	w	з	и	з	и	т	т	т	т	т	т	т
08	( 8 H X	h	x	и	ш	и	и	т	т	т	т	т	т	т
09	) 9 I Y	i	y	и	ш	и	и	т	т	т	т	т	т	т
0A	* : J Z	j	z	к	ъ	к	и	т	т	т	т	т	т	т
0B	+ ; K [	k	{	л	ы	л	и	т	т	т	т	т	т	т
0C	, < L \	l		и	м	и	и	т	т	т	т	т	т	т
0D	- = M ] m	m	}	и	н	и	и	т	т	т	т	т	т	т
0E	. > N ^ n	n	-	о	ю	о	и	т	т	т	т	т	т	т
0F	/ ? O _ o	o	o	п	я	п	и	т	т	т	т	т	т	т

Code Page 874.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P	'	p	ą	ł	ż	ł	ó	ó	ó	ó	ó	ó	ó
01	! 1 A Q	a	q	ń	ń	ń	ń	ń	ń	ń	ń	ń	ń	ń
02	" 2 B R	b	r	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
03	# 3 C S	c	s	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
04	\$ 4 D T	d	t	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
05	% 5 E U	e	u	ń	ń	ń	ń	ń	ń	ń	ń	ń	ń	ń
06	& 6 F V	f	v	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
07	' 7 G W	g	w	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
08	( 8 H X	h	x	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
09	) 9 I Y	i	y	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
0A	* : J Z	j	z	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
0B	+ ; K [	k	{	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
0C	, < L \	l		ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
0D	- = M ] m	m	}	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
0E	. > N ^ n	n	-	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę
0F	/ ? O _ o	o	o	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę	ę

Code Page 1252.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	0 @ P	'	p	€	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
01	! 1 A Q	a	q	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
02	" 2 B R	b	r	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
03	# 3 C S	c	s	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
04	\$ 4 D T	d	t	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
05	% 5 E U	e	u	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
06	& 6 F V	f	v	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
07	' 7 G W	g	w	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
08	( 8 H X	h	x	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
09	) 9 I Y	i	y	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
0A	* : J Z	j	z	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
0B	+ ; K [	k	{	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
0C	, < L \	l		ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
0D	- = M ] m	m	}	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł	ł
0E	. > N ^ n	n	-	ž	ž	ž	ž	ž	ž	ž	ž	ž	ž	ž
0F	/ ? O _ o	o	o	ÿ	ÿ	ÿ	ÿ	ÿ	ÿ	ÿ	ÿ	ÿ	ÿ	ÿ

## 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	X		
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	
04	\$	4	D	T	d	t	-	ト	イ	ト	ヤ	▲	日	
05	%	5	E	U	e	u	-	ト	オ	ナ	ヨ	ヨ	時	
06	&	6	F	V	f	v	-	ト	カ	ニ	ヨ	ヲ	カ	
07	'	7	G	W	g	w	-	ト	キ	ヌ	ラ	▼	秒	
08	<	8	H	X	h	x	-	ト	ク	ネ	リ	▲	テ	
09	)	9	I	Y	i	y	-	ト	ウ	ケ	ノ	ル	◆	市
0A	*	:	J	Z	j	z	-	ト	コ	ハ	レ	◆	区	
0B	+	;	K	[	k	{	-	ト	オ	サ	ヒ	ロ	◆	町
0C	,	<	L	\	l		-	ト	ヤ	シ	フ	○	村	
0D	-	=	M	]	m	}	-	ト	ユ	ス	ヘ	ン	人	
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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 {   }
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90	
A0	。 「 」 、 。 ヲ ア イ ウ エ オ カ キ ク ケ コ サ シ ジ セ ソ
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	げこごさざしじすず	せせそぞただち
C0	ちっつづてでとどな	すねのはばば
D0	ひびびふぶふへべペ	まぼぼまみむめ
E0	もややゅゆよよらり	れれろわわゑゑ
F0	をん	

Code page 932-81

Code page 932-83

40	ア イ イ ウ ェ エ ォ ォ カ ガ キ ギ ク 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	パ ヒ ビ ピ フ ブ プ ヘ ベ ペ ホ ボ ポ マ ミ
80	ム メ モ ャ ャ ュ ュ ヨ ヨ ラ リ ル レ ロ ワ ワ
90	ヰ エ ラ ン ヴ カ ケ
A0	ヰ エ ラ ン ヴ カ ケ A
B0	ヰ エ ラ ン ヴ カ ケ B
C0	ヰ エ ラ ン ヴ カ ケ C
D0	ヰ エ ラ ン ヴ カ ケ D
E0	ヰ エ ラ ン ヴ カ ケ E
F0	ヰ エ ラ ン ヴ カ ケ F

## 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 Ъ Э Ю  
60 Я  
70 а б в г д е ё ж з и й к л м н  
80 о п р с т у ф х ц ч ш щ ъ ў є з  
90 ю я

A0 | Г Г + Ц + Т Т + + - | Г Г + Г +  
B0 + + + + + + + + + + + + + + + +  
C0  
D0  
E0  
F0

Code page 932-87

40 ①②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭⑮⑯  
45 ⑯⑰⑱⑲⑳ | II III IV V VI VII VIII IX X \*  
50 \*。サンドルゴラントルーフスドルゴラントロードサンバークリー mm  
55 cmkmmgkgccm<sup>1</sup> 平成  
60 " K.K.Tel(上)(中)(下)(左)(右)株(有)代明太正印  
65  
70  
75  
80  
85  
90  
A0  
B0  
C0  
D0  
E0  
F0

Code page 932-88

Code page 932-89

唯雲顙纓綠押憶珂  
卯闔洩焰央冲化架課雅餓戒拐  
鶴嘴瑛樓煙奧狹返歌嘲  
丑運穎彥瘞往億伽火珂  
雨瓜泳越炎凹岡下果蝦賀駕介會  
迂浦永謁演螺黃音暇菓蛾懷  
鳥姥曳駢於薰溫寡荷臥悔  
羽熒熒悅沿汚鷗穩科華芽蛾懷  
迂厥映益掩塲恩家茄画怪  
右蔚影疫怨鷺翁卸嫁苛牙快  
宇鰐映益掩塲恩家茄画怪  
隱噭嘯當銳宴遠殿乙嘉箇峨壞  
院陰時詩嬰液延鉛王俺夏花我廻  
白渦餌叢詠奇蘆歐牡可稼俄塊  
荏英圓艷苑橫桶加天蚊回  
旺膽佳禍霞解

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涅聲蛙垣  
 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蕡粥  
 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柏桓棺款歡汗漢  
 C0 潛淹環甘監看竿管簡緩缶翰肝艦莞觀  
 D0 謙貢還繼間閑闌陷韓館館丸含庫嚴玩  
 E0 瘋眼岩覩廣雁頑顧企伎危喜器基奇  
 F0 嫖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 義蟻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興蕃鄉鏡響  
 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遭憲懸拳捲檢  
 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諺  
 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 吳吾娘後御悟梧橋湖善語誤謾醜乞鯉  
 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 項香高鴻剛劫号合壠拷滾豪轟魏克刻  
 90 告國穀酷鵠黑獄漉腰餓忽惚骨泊込此  
 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瑳砂詐鎖裟坐  
 C0 座挫債催再最哉臺妻宰彩才採裁歲濟  
 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 繫拶摺札殺薩帷臘鯖捌鐫絞皿晒三  
 50 垈參山慘撤散棧燦珊瑚產算纂蠶讚贊酸  
 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 裝跛蹕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 紹肖薦蔣蕉銜篆訟詔詳象實攝証鍾  
 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埴飾

## 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 記唾墮妥情打杞舵梢陀駁驛体堆對耐  
 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鷹淹浦車啄宅托  
 F0 拚拓沵灌珍訖鐸濶詰苴屢蛸只

## Code page 932-92

40 叽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 耶智池痴稚匱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 註酌鑄駐櫻漪猪亨著貯丁兆凋嘆顰帖  
 A0 帳厅弔張影徵懲挑暢朝潮牒町眺聽脹  
 B0 腸蝶調謀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惱楓佃  
 D0 濱柘迂薰礙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統到董  
 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届萬苦  
 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 捻燃燃粘乃迺之莖囊惱濃納能膚臘農  
 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 柏泊白箔舶薄迫曝漠爆縛莫駁妻函  
 A0 箱硌晉苦櫛幡肌畠八鉢澆發饒髮  
 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 鼻格裨匹仄彌彥膝萎肘弼必畢筆逼桧  
 50 姬媛紐百謬彪標冰漂瓢票表評豹廟  
 60 描病秒苗锚鋸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赴阜附侮撫  
 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 焚寶粉糞粉霧文聞丙併兵墀幣平弊柄  
 C0 並蔽閉陛米貢僻碧別營寢範偏變  
 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	Code page 932-97
40 法泡東砲縫胞芳萌蓬蜂褒訪豐邦鋒飽	40 諭輸唯佑優勇友宥幽悠憂捐有柚湧涌
50 鳳鵬乏亡傍剖坊妨帽忘忙房暴望某棒	50 猶猷由祐裕誘遊邑郵雄融夕予余与營
60 冒紡肪脹謀貌貿鉅防吠頰北僕卜墨摸	60 與預備幼妖容膚揚搖擁暭楊様洋溶熔
70 朴牧睦穆釦勃沒殆崛幌奔本翻凡盆	70 用窯羊燭葉蓉要謳踊遙陽養慾抑欲
80 摩磨魔麻埋妹昧枚每哩楨幕膜枕綃枉	80 沃浴翌翼淀羅螺裸來萊賴雷洛絡落酩
90 鮑柟亦俟又抹末沫迄併繭靡万慢滿漫	90 亂卵廬欄濫藍蘭覽利吏履李梨理璃砌
A0 墓味未魅已箕岬密蜜湊囊穩脈妙耗民盟	A0 裏裡里離陸律率立葎掠略劉流溜琉留
B0 眠務夢無牟矛霧躉椋娟娘冥名命明盟	B0 疏粒隆竇龍侶慮旅膚了亮僚而凌寮料
C0 迷銘鳴姪牝減免棉綿纏面麵摸模茂妄	C0 梁涼猶療瞭稜糧良諒遼量陵領力綠倫
D0 孟毛猛言網耗藏儲木默目全勿餅尤戾	D0 墾林琳熒琳臨輪隣麟鱗璫璫淚累類令
E0 粉貞問閼紋門夕也治夜爺耶野弥矢厄	E0 伶例冷勵嶺怜玲礼苓鈴隸零靈麗齡
F0 役約藥訖蹕靖柳蔽鑪愉愈油癒	F0 歷列劣烈裂廉恋憐連燥廉練聯

## Code Page 932 (Cont)

	Code page 932-9C	Code page 932-9D
40	廖廣廝廚塵廢廡廬廸升	憂戇截戰戇戇扁扎扱扣扣扱扱扠
50	弃葬彝彞弋弑弔聳彊	抉找抒抓抖拔扞拗拍坤擊拿拆擔
60	彖彗彙彌彥彫彳彷往徂	拜拌拊拂摸拋拉格拮拱羽挂犁拯掉
70	徘徊徧徯徵徯忻忤伍	挾捍搜搜挾揷搘掀撇插挪揄搖擣
80	怙恂怩怎忽怛怕佛惄	援接攝攝搘搏摶摵擊摵摵摵摵摵摵
90	協恆恍恣恃恤恂恬祠	攝攝摵摵摵摵摵摵摵摵摵摵摵摵
A0	慢悖悞悞悞悞悞悞悞悞	摵摵摵摵摵摵摵摵摵摵摵摵摵
B0	懼悶悶悶悶悶悶悶悶悶	摵摵摵摵摵摵摵摵摵摵摵摵摵
C0	懼悶悶悶悶悶悶悶悶悶	摵摵摵摵摵摵摵摵摵摵摵摵摵
D0	悶悶悶悶悶悶悶悶悶悶	摵摵摵摵摵摵摵摵摵摵摵摵摵
E0	悶悶悶悶悶悶悶悶悶悶	摵摵摵摵摵摵摵摵摵摵摵摵摵
F0	悶悶悶悶悶悶悶悶悶悶	摵摵摵摵摵摵摵摵摵摵摵摵摵

Code page 932-9E

Code page 932-9F

40 梁棟檻櫃櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈  
50 藤櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈櫈  
60 欽欽欽欽欽欽欽欽欽欽欽欽欽欽欽  
70 欽欽欽欽欽欽欽欽欽欽欽欽欽欽  
80 雜殲殲殲殲殲殲殲殲殲殲殲  
90 麵氳氳氳氳氳氳氳氳氳氳氳氳  
A0 汾汨汨汨汨汨汨汨汨汨汨汨  
B0 泛汎汎汎汎汎汎汎汎汎汎汎汎  
C0 滴澣澣澣澣澣澣澣澣澣澣澣澣  
D0 滴澣澣澣澣澣澣澣澣澣澣澣澣  
E0 游游游游游游游游游游游  
F0 淚淚淚淚淚淚淚淚淚淚淚

Code page 932-E0

40 漢濶澣澣澣澣澣澣澣澣澣澣澣澣  
50 濶澣澣澣澣澣澣澣澣澣澣澣澣澣  
60 漢澣澣澣澣澣澣澣澣澣澣澣澣澣  
70 澄澣澣澣澣澣澣澣澣澣澣澣澣澣  
80 烈澣澣澣澣澣澣澣澣澣澣澣澣澣  
90 煙澣澣澣澣澣澣澣澣澣澣澣澣澣  
A0 燭澣澣澣澣澣澣澣澣澣澣澣澣澣  
B0 犀澣澣澣澣澣澣澣澣澣澣澣澣澣  
C0 犀澣澣澣澣澣澣澣澣澣澣澣澣澣  
D0 犀澣澣澣澣澣澣澣澣澣澣澣澣澣  
E0 犀澣澣澣澣澣澣澣澣澣澣澣澣澣  
F0 犀澣澣澣澣澣澣澣澣澣澣澣澣澣

Code page 932-E1

40 驚辯吐延益弛弛庭陌盜甄甄熾颶颶顛顛  
50 壅嬖普姓甬甲苗盼盼昧昧訕訕審跋時暑  
60 睽睤睽當疆晴晴疊疊疊疔疚疝疥疮痂  
70 痘痃疵疽疽瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
80 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
90 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
A0 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
B0 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
C0 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
D0 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
E0 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡  
F0 瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡瘡

## Code Page 932 (Cont)

Code page 932-E2

40 碩磚礎礎礎礎礎礎礎礎礎礎  
45 祀祔祔祔祔祔祔祔祔祔祔  
50 祀祔祔祔祔祔祔祔祔祔祔祔  
55 祀祔祔祔祔祔祔祔祔祔祔祔  
60 祀祔祔祔祔祔祔祔祔祔祔祔  
65 祀祔祔祔祔祔祔祔祔祔祔祔  
70 祀祔祔祔祔祔祔祔祔祔祔祔  
75 祀祔祔祔祔祔祔祔祔祔祔祔  
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85 祀祔祔祔祔祔祔祔祔祔祔祔  
90 祀祔祔祔祔祔祔祔祔祔祔祔  
A0 祀祔祔祔祔祔祔祔祔祔祔祔  
B0 祀祔祔祔祔祔祔祔祔祔祔祔  
C0 祀祔祔祔祔祔祔祔祔祔祔祔  
D0 祀祔祔祔祔祔祔祔祔祔祔祔  
E0 祀祔祔祔祔祔祔祔祔祔祔祔  
F0 祀祔祔祔祔祔祔祔祔祔祔祔

Code page 932-E4

40		脣臉與	以茵蕎蕷蕩施菜
50		膀膚翼膜芬芷我蕡萸蘂勞	脣臂春膚芻茱延蕡莽萬蕘
60		脣腎異膚芟首位風崩葆蕡草	脣腎異膚芟首位風崩葆蕡草
70		脣膚臾膚莞茆荔莉葩葩葵義	脣膚臾膚莞茆荔莉葩葩葵義
80		腴膚臻艘芒苞茗蕡萍蒂萼蓀	腴膚臻艘芒苞茗蕡萍蒂萼蓀
90		脣膚臺膚芍苯茫惹菲設棘棘	脣膚臺膚芍苯茫惹菲設棘棘
A0		腥膚臧膚艾苻沃莧浪葛蘋蓼	腥膚臧膚艾苻沃莧浪葛蘋蓼
B0		腥膚牆膚艸范蒼菟莫胡蕪蕪	腥膚牆膚艸范蒼菟莫胡蕪蕪
C0		腥膚膚膚舸蕡荼荼蕡蕡蕡蕡	腥膚膚膚舸蕡荼荼蕡蕡蕡蕡
D0		胼膚膚膚舫蕡茹莊蕡蔻蒟蒟	胼膚膚膚舫蕡茹莊蕡蔻蒟蒟
E0		胼膚膚膚松舸蕡蒟昉蕡蘋蘋	胼膚膚膚松舸蕡蒟昉蕡蘋蘋
F0		胼膚膚膚蓀蕡苜蕡蕡蕡蕡蕡	胼膚膚膚蓀蕡苜蕡蕡蕡蕡蕡

Code page 932-E6

40	觀計訛	舌音
50	畜躁壹	舌音
60	比賺乏	舌音
70	支蹠蹊	舌音
80	觸觸蹊	舌音
90	東薨詭	舌音
A0	薨詭定	舌音
B0	薨詭定	舌音
C0	薨詭定	舌音
D0	薨詭定	舌音
E0	薨詭定	舌音
F0	薨詭定	舌音

Code page 932-E3

Code page 932-E5

Code page 932-E7

40 蹤躋躉躈躉躉躉躉躉躉躉  
50 踩躉躉躉躉躉躉躉躉躉  
60 蹤躉躉躉躉躉躉躉躉  
70 蹤躉躉躉躉躉躉  
80 蹤躉躉  
90 蹤  
A0 蹤  
B0 蹤  
C0 郡  
D0 酵  
E0 鈎  
F0 銜

## Code Page 932 (Cont)

Code page 932-E8

Code page 932-EA

Code page 932-EE

40 犹揆猪獮堦玳瑣瑣瑣瑣瑣瑣瑣瑣瑣  
45 瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣  
50 瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣  
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90 瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣  
95 瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣瑣  
A0 鈎釤釤釤釤釤釤釤釤釤釤釤釤  
B0 鈎釤釤釤釤釤釤釤釤釤釤釤釤  
C0 鈎釤釤釤釤釤釤釤釤釤釤釤釤  
D0 鈎釤釤釤釤釤釤釤釤釤釤釤釤  
E0 鈎釤釤釤釤釤釤釤釤釤釤釤釤  
F0 ii iii iv v vi viii ix x | ▼ ▼

Code page 932-F9

Code page 932-ED

40 繡嫂銕銕葩悟炳昱精構銀舜彌！仡任公  
50 仔但必伎伎併徇侔復僕儕儕儕儕儕儕儕儕  
60 僕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕  
70 儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕儕  
80 墳增塙爻爹翁裔裔好妹子柰甯甯寬寬奈  
90 岌穸峩崧嵒崎嶇嶺嶺嶺嶺嶺嶺嶺嶺嶺  
A0 懈悅愁愀惄惄惄惄惄惄惄惄惄惄惄惄  
B0 整教的昕昂昉易昞昞昞昞昞昞昞  
C0 暉暗晝晝晝晝晝晝晝晝晝晝晝晝  
D0 褥櫻晝晝晝晝晝晝晝晝晝晝晝晝  
E0 活泣涙涙涙涙涙涙涙涙涙涙涙涙涙涙  
F0 濡瀨瀨瀨瀨瀨瀨瀨瀨瀨瀨瀨瀨瀨瀨瀨瀨

Code page 932-FA

## Code Page 932 (Cont)

Code page 932-FB

Code page 932-FC

高昇魚分戶鮑生魚老魚發新發用鳥卓鳥雀鵠黑  
40  
50  
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AO  
BO  
CO  
DO  
EO  
FO

Code Page 936 Simple Chinese

A140 - A1FF

A240 - A2FF

40	
50	
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A0	i ii iii iv v vi vii viii ix x
B0	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.
C0	16. 17. 18. 19. 20. (1)(2)(3)(4)(5)(6)(7)(8)(9)(10)(11)
D0	(12)(13)(4)(5)(6)(7)(8)(9)(20)①②③④⑤⑥⑦
E0	⑧⑨⑩ (-)(-) (=)四(五)(六)(七)(八)(九)(十)
F0	I II III IV V VI VII VIII IX X XI XII

A340 - A3FF

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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 [ \ ] ^ -
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

40  
50  
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A0 ああいいううええおおかがきぎく  
B0 ぐけげこごきぎしじすせぜそぞた  
C0 だちぢつつづでとどなにねねのはみ  
D0 ばばひびびふぶぶへべべほぼま  
E0 むめもややゆゆよよらりるれわわ  
F0 るゑをん

A540 - A5FF

A640 - A6FF

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A0	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο
B0	Π Ρ Σ Τ Ι Φ Χ Ψ Ω
C0	α β γ δ ε ζ η θ ι κ λ μ ν ξ ο
D0	π ρ σ τ υ φ χ ψ ω
E0	΅ θ ι κ λ μ ν ξ ο
F0	΅ θ ι κ λ μ ν ξ ο

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 ј к л м н
E0	о п р с т у х ф ц ч щ ъ ѿ э
F0	ю я

## Code Page 936 Simple Chinese (Cont.)

## A840 - A8FF

40	
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A0	��������������������
B0	��������������������
C0	��������������������
D0	��������������������
E0	��������������������
F0	

## AC40 - ACFF

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A0	
B0	
C0	
D0	
E0	
F0	

## A940 - A9FF

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A0	—   ---   ---
B0	
C0	
D0	
E0	
F0	

## AD40 - ADFF

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A0	
B0	
C0	
D0	
E0	
F0	

## AA40 - AAFF

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A0	
B0	
C0	
D0	
E0	
F0	

## AE40 - AEFF

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A0	
B0	
C0	
D0	
E0	
F0	

## AB40 - ABFF

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A0	
B0	
C0	
D0	
E0	
F0	

## AF40 - AFFF

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A0	
B0	
C0	
D0	
E0	
F0	

## Code Page 936 Simple Chinese (Cont.)

## B040 ~ B0FF

40	
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A0	啊阿埃挨哎唉哀皑癌萬矮艾碍爰隘
B0	鞍氮安俺按暗岸腋案肮昂益凹欹熬翻
C0	袄傲奥懊澳芭捌扒叭吧包八疤巴拔跋
D0	靼把耙坝霸罢爸白柏百摆伯败拜碑斑
E0	班搬扳般领板版扮拌伴瓣半办绊邦帮
F0	梆梆榜绑棒磅蚌镑傍滂苞胞包裹剥

## B140 ~ B1FF

40	
50	
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A0	薄雹保堡饱宝抱报暴豹飽爆杯碑悲
B0	卑北辈背贝钡倍狈备惫培被奔苯本笨
C0	崩绷甭泵躉进逼鼻比鄙笔彼碧葩蔽华
D0	毙毖币庇痹闭敝弊必辟壁臀避陞鞭边
E0	编贬扁便变下辨辩瓣遍标彪膘表整愍
F0	别遵彬斌濒滨宾摈兵冰柄丙秉饼炳

## B240 ~ B2FF

40	
50	
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80	
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A0	病并玻蒗播拨鉢波博勃搏铂箔伯帛
B0	舶膊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	残慘慘灿苍舱仓沧藏操糙橹曹草厕策
E0	侧册测层躉插叉茬茶查碴搽察允差诧
F0	拆柴豺擗摻蝉谗缠铲产阐颤昌猖

## B340 ~ B3FF

40	
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A0	场尝常长偿肠厂敞畅唱倡超抄钞朝
B0	嘲潮巢吵炒车扯撤掣初激柳臣辰尘晨
C0	忱沉陈趁村撑称城橙成皇乘程惩澄诚
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畴膝稠愁筹
F0	仇绸瞅丑臭初出掘厨躉锄雏滁除楚

## B440 ~ B4FF

40	
50	
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A0	础储臺挡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	蠹截婵疵茨磁雌辞慈瓷词此刺赐次聪
D0	葱囱匆从丛凌粗醋簇促躉躉摧催催
E0	脆瘁粹淬翠村存寸磋撮措挫措搭达
F0	笞瘡打大呆歹瘡戴带殆代货袋待逮

## B540 ~ B5FF

40	
50	
60	
70	
80	
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A0	怠耽担丹单郸掸胆且氮但惮淡涎弹
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递给
E0	掂滇碘点典碇垫电佃甸店惦奠淀殿碉
F0	叼雕洞刁掉吊钓调跌爹碟蝶迭谋叠

## B640 ~ B6FF

40	
50	
60	
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A0	丁盯叮钉顶鼎锭定订丢东冬董懂得
B0	栋侗冻洞兜抖斗陡豆逗痘都督毒核
C0	独读堵堵赌杜镀肚度渡妒端短镀段断
D0	缎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鹅俄额讹
F0	娥恶厄扼遏鄂饿恩而儿耳尔饵洱二

## B740 ~ B7FF

40	
50	
60	
70	
80	
90	
A0	貳发罚箠伐乏閼法珐藩帆番翻樊矾
B0	钒繁凡烦反返范贩犯饭泛坊芳方肪房
C0	防妨妨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	粪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氣符伏俘服

## Code Page 936 Simple Chinese (Cont.)

## B840 - B8FF

40  
50  
60  
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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

40  
50  
60  
70  
80  
90  
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险  
FO 捡捡简俭剪减荐槛鉴践贱见键箭件

## B940 - B9FF

40  
50  
60  
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80  
90  
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

40  
50  
60  
70  
80  
90  
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剿教酵轿较  
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

40  
50  
60  
70  
80  
90  
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

40  
50  
60  
70  
80  
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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 撅抉掘倔爵觉决决绝均菌钩军君峻

## BB40 - BBFF

40  
50  
60  
70  
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90  
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 恍恍灰挥辉微恢蛔回毁悔慧卉蕙晦贿  
EO 秽会绘汇讳悔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

40  
50  
60  
70  
80  
90  
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宽款匡  
FO 筐狂框矿眶旷况亏益岿窥葵奎魁

Code Page 936 Simple Chinese (Cont.)

## C040 - COFF

40  
50  
60  
70  
80  
90  
A0 馋愧溃坤昆搁困括扩廓阁垃拉喇揩  
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 鲣礼莉荔吏栗丽厉励砾历利懈例例

## C140 - C1FF

40  
50  
60  
70  
80  
90  
A0 痢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 瞄亮谅撩聊僚疗燎寥辽潦了撂镣廖料  
D0 列裂烈劣猎琳林磷霖临邻鳞淋凜煖音  
E0 拎玲菱零龄铃伶羚凌灵陵岭领另令溜  
F0 流榴疏馆留刘瘤流柳六龙聋咙笼窿

## C240 - C2FF

40  
50  
60  
70  
80  
90  
A0 隆垄拢陇楼姿接婆漏陋芦卢倾庐炉  
B0 捷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 漆卵乱掠略抡轮伦伦纶纶论螺罗逻  
E0 锣箩骡裸落洛骆络妈麻玛码蚂马驾嘛  
F0 吻埋买麦卖迈脉瞒慢蛮满蔓慢漫漫

## C340 - C3FF

40  
50  
60  
70  
80  
90  
A0 漫芒茫盲氓忙莽猫茅锚毛矛卯卯茂  
B0 罂帽貌贸么攻枚梅醜霉煤没眉媒镁每  
C0 美昧寐妹媚门闷们萌蒙檬盟猛猛梦孟  
D0 眇鼈靡麋迷迷弥米秘觅泌蜜密幕棉眠  
E0 绪冕免勉娩缠面苗描瞄藐妙妙  
F0 灭民抿皿敏悯闻明螟鸣铭名命谬摸

## C440 - C4FF

40  
50  
60  
70  
80  
90  
A0 莠磨模膜磨摩抹末莫墨默沫漠冥  
B0 陌谋牟某拇牡亩母墓暮幕募木目  
C0 隳牧穆拿哪呐纳那娜纳氛乃奶耐奈南  
D0 男难囊挠脑恼闹淖呢妥内嫩能呢霓倪  
E0 泥尼拟你匿腻逆溺藉拈年碾撵捻念娘  
F0 酸鸟尿捏聂孽嗜镊镍涅您柠泞凝宁

## C540 - C5FF

40  
50  
60  
70  
80  
90  
A0 挤泞牛扭钮纽脓浓农弄奴努怒女暖  
B0 虐疟那懦懦诺哦欧鸥殴薅呕偶沤呕趴  
C0 爬怕怕琶拍排牌徘徊派攀潘盘磐盼畔  
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霹批披劈屁毗

## C640 - C6FF

40  
50  
60  
70  
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A0 啰脾疲皮匹痞僻屁嬖篇偏片骗飘漂  
B0 飘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 漆漆柒沏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

40  
50  
60  
70  
80  
90  
A0 怡洽牵扦钎铅千迁签仟谦乾黔钱鉗  
B0 前潜遣浅遭堑嵌欠歉枪呛腔羌墙蔷强  
C0 抢橇锹敲俏桥瞧乔桥巧鞘撬超峭俏窍  
D0 切茄且怯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

40  
50  
60  
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A0 取娶誘趣去圈顛权醛泉全痊攀犬券  
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

## CC40 - CCFF

40  
50  
60  
70  
80  
90  
A0 猥挞躡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 汤塘塘堂掌膻膾糖倘淌淌趟溪掏涛滔  
D0 缘葛桃逃淘陶讨套特藤腾疼養梯剔踢  
E0 鎏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

## C940 - C9FF

40  
50  
60  
70  
80  
90  
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

## CD40 - CDFF

40  
50  
60  
70  
80  
90  
A0 汀廷停事庭挺艇通桐酮瞳同铜形童  
B0 捕桶箇统痛偷投头透凸秃突图徒途涂  
C0 屢土吐免湍团推颓腿蛻褪退吞屯脣施  
D0 托脱鸵陀駄鸵椭妥拓唾挖哇娃洼娃瓦  
E0 栋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

## CA40 - CAFF

40  
50  
60  
70  
80  
90  
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 极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

## CE40 - CEFF

40  
50  
60  
70  
80  
90  
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蜗  
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物  
F0 勿务悟误昔熙析西硝矽嘶嘻吸锡粞

## CB40 - CBFF

40  
50  
60  
70  
80  
90  
A0 恕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 蒜酸蒜算里隋随绥龇碎岁穗遂隨果孙  
F0 损筭蓑梭唆缩琐索锁所塌他它她塔

## CF40 - CFFF

40  
50  
60  
70  
80  
90  
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競宪陷限线  
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

40  
50  
60  
70  
80  
90  
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 朽嗅锈秀袖绣蝶戍需虚嘘须徐许薰酬  
FO 叙旭序畜恤絮婿续轩喧宣悬旋玄

## D140 - D1FF

40  
50  
60  
70  
80  
90  
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 牙蚜崖衙涯雅哩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

40  
50  
60  
70  
80  
90  
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

40  
50  
60  
70  
80  
90  
AO 印英樱婴鹰应綴莹莹萤螢迎羸盈  
BO 影颖硬映哟拥佣瞞痈膺雍踊咏泳涌  
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

40  
50  
60  
70  
80  
90  
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 肮葬遭糟践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

40  
50  
60  
70  
80  
90  
AO 钩闸贬枷榨咋乍炸乍摘斋宅窄债寨  
BO 瞻毡詹粘沾盏斩镢墘展蘸栈占战站湛  
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 铸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

40  
50  
60  
70  
80  
90  
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诌  
EO 翘袖肘帚咒铍宙量牒珠株朱猪诸诛  
FO 逐竹烛煮挂嘱嘱主著柱助蛀贮铸筑

## D740 - D7FF

40  
50  
60  
70  
80  
90  
AO 住注祝驻抓爪拽专砖转撰赚纂桩庄  
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 泰接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.)

D840 - D8FF

D940 - D9FF

40	依 恆 僕 悅 姐 兜 洗
50	佻 僕 僕 僕 僕 僕 僕
60	僕 僕 僕 僕 僕 僕 僕
70	僕 僕 僕 僕 僕 僕 僕
80	僕 僕 僕 僕 僕 僕 僕
90	僕 僕 僕 僕 僕 僕 僕
A0	佾 僕 僕 僕 僕 僕 僕
B0	佾 僕 僕 僕 僕 僕 僕
C0	佾 僕 僕 僕 僕 僕 僕
D0	佾 僕 僕 僕 僕 僕 僕
E0	佾 僕 僕 僕 僕 僕 僕
F0	佾 僕 僕 僕 僕 僕 僕

DA40 - DAFF

40	讷沽诃诃诋詖
50	讷涸诃诃诋詖
60	讷涸诃诃诋詖
70	讷涸诃诃诋詖
80	讷涸诃诃诋詖
90	讷涸诃诃诋詖
A0	讷涸诃诃诋詖
B0	讷涸诃诃诋詖
C0	讷涸诃诃诋詖
D0	讷涸诃诃诋詖
E0	讷涸诃诃诋詖
F0	讷涸诃诃诋詖

DB40 - DBFF

DC40 - DCFF

DD40 - DDFF

40	莎	蕙	嵩	莓
50	葛	蕪	蓀	薜
60	蕘	蕘	蕘	薜
70	蕘	蕘	蕘	薜
80	蕘	蕘	蕘	薜
90	蕘	蕘	蕘	薜
A0	蕘	蕘	蕘	薜
B0	蕘	蕘	蕘	薜
C0	蕘	蕘	蕘	薜
D0	蕘	蕘	蕘	薜
E0	蕘	蕘	蕘	薜
F0	蕘	蕘	蕘	薜

DE40 - DFFF

DE40 - DEFF

## Code Page 936 Simple Chinese (Cont.)

## Code Page 936 Simple Chinese (Cont.)

F040 - F0FF

40	鷗
50	鷗
60	鷗
70	鷗
80	鷗
90	鷗
A0	鷗
B0	鷗
C0	鷗
D0	鷗
E0	鷗
F0	鷗

F140 - F1FF

F240 - F2FF

F340 - F3FF

F440 - F4FF

40	烏	泉	衄	肛	舢	𦵹	𦵹
50	筋	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
60	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
70	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
80	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
90	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
A0	簷	簷	簷	簷	簷	簷	簷
B0	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
C0	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
D0	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
E0	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹
F0	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹	𦵹

F540 - F5FF

F640 - F6FF

F740 - F7FF



## 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 - A3EE

```

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 a r s t u v w x y z { | }

```

A440 - A4FF

A540 - A5FF

40	
50	
60	
70	
80	
90	
A0	i ii iii iv v vi vii viii ix x
B0	I II III IV V VI VII VIII IX X
C0	Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ε Ο
D0	Π Ρ Σ Τ Υ Φ Χ Ψ Ω
E0	α β γ δ ε ζ η θ ι κ λ μ ν ξ ο
F0	π ρ σ τ υ φ χ ψ ω

## Code Page 949 Korean (Cont.)

A640 - A6FF

A840 - A8FF

AA40 - AAFF

40  
50  
60  
70  
80  
90  
A0 ああいいううええおおかがきぎく  
B0 ぐけげこござざしじすずせせそぞた  
C0 だちぢっつづてでとどなにぬねのは  
D0 ばばひびびふぶふへべペほぼぼまみ  
E0 むめもややゅゆよよらりるれろわわ  
F0 ゐゑゑん

A740 - A7FF

40  
50  
60  
70  
80  
90  
A0 μlmldl l klcmmcm m'knlfmmmpmmcm  
B0 kmmcm m'knlthaugmgkgkt calkcaldBm/s %eps  
C0 nsμsmspVnV μVmV kVmV pAnAμAmAkApWnW  
D0 μWmWkWMNHz kHzMHzGHzTHz Ω kΩMΩpFnFμFmol  
E0 cdrad<sup>nd/nd</sup> % sr PakPakPaWbImIx BqGySv %kp  
F0

A940 - A9FF

40	
50	
60	
70	
80	
90	
A0	aa ð ɔ h i ij k l t ʃ ø œ ʒ p t n
B0	n (ㄱ)(ㄴ)(ㄷ)(ㄹ)(ㅁ)(ㅂ)(ㅅ)(ㅈ)(ㅋ)(ㅌ)(ㅍ)(ㅎ)(ㄱ)
C0	(ㄴ)(ㄷ)(ㄹ)(ㅁ)(ㅂ)(ㅅ)(ㅇ)(ㅈ)(ㅊ)(ㅋ)(ㅌ)(ㅍ)(ㅎ)(ㄱ)(ㄱ)
D0	(d)(θ)(f)(g)(h)(l)(j)(k)(l)(m)(n)(o)(p)(q)(r)(s)
E0	(t)(u)(v)(w)(x)(y)(z)(1)(2)(3)(4)(5)(6)(7)(8)(9)
F0	(10)(11)(12)(13)(14)(15) 1 2 3 4 n 1 2 3 4

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 ツ ツ テ デ ト ド ナ ニ ヌ ネ ノ ハ
D0	バ バ ヒ ピ ピ フ ブ プ ヘ ベ ペ ホ ボ ポ マ ミ
E0	ム メ モ ャ ャ ュ ュ ョ ョ ラ リ ル レ ロ ッ ワ
F0	ヰ ネ 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

B140 - B1FF

## Code Page 949 Korean (Cont.)

B240 - B2FF

B440 - B4FF

B640 - B6FF

B340 - B3FF

B540 - B5FF

B740 - B7FF

40	라	랑	랑	랑	랑	랑
50	라	란	란	란	란	란
60	라	란	란	란	란	란
70	라	란	란	란	란	란
80	라	란	란	란	란	란
90	라	란	란	란	란	란
A0	라	란	란	란	란	란
B0	라	란	란	란	란	란
C0	라	란	란	란	란	란
D0	라	란	란	란	란	란
E0	라	란	란	란	란	란
F0	라	란	란	란	란	란

## Code Page 949 Korean (Cont.)

B840 - B8FF

40	
50	
60	
70	
80	
90	
A0	트종르록론률률률률률률률률리
B0	린릴림림림림림림림림림림
C0	린맛맛맛맛맛맛맛맛맛맛맛
D0	린맛맛맛맛맛맛맛맛맛맛맛
E0	모목목목목목목목목목목목
F0	모목목목목목목목목목목목

B940 - B9FF

40	
50	
60	
70	
80	
90	
A0	밀리미미미미미미미미미미
B0	밀리미미미미미미미미미미
C0	밀리미미미미미미미미미미
D0	밀리미미미미미미미미미미
E0	밀리미미미미미미미미미미
F0	밀리미미미미미미미미미미

BA40 - BAFF

40	
50	
60	
70	
80	
90	
A0	교교교교교교교교교교교교
B0	교교교교교교교교교교교교
C0	교교교교교교교교교교교교
D0	교교교교교교교교교교교교
E0	교교교교교교교교교교교교
F0	교교교교교교교교교교교교

BB40 - BBFF

40	
50	
60	
70	
80	
90	
A0	트트트트트트트트트트트트
B0	트트트트트트트트트트트트
C0	트트트트트트트트트트트트
D0	트트트트트트트트트트트트
E0	트트트트트트트트트트트트
F0	트트트트트트트트트트트트

BC40 - BCFF

40	
50	
60	
70	
80	
90	
A0	삭삭삭삭삭삭삭삭삭삭
B0	션션션션션션션션션션
C0	션션션션션션션션션션
D0	션션션션션션션션션션
E0	션션션션션션션션션션
F0	션션션션션션션션션션

BD40 - BDFF

40	
50	
60	
70	
80	
90	
A0	신신신신신신신신신신
B0	신신신신신신신신신신
C0	신신신신신신신신신신
D0	신신신신신신신신신신
E0	신신신신신신신신신신
F0	신신신신신신신신신신

## 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	
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70	
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A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C040 - COFF

40	
50	
60	
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A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C140 - C1FF

40	
50	
60	
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A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C240 - C2FF

40	
50	
60	
70	
80	
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A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

C340 - C3FF

40	
50	
60	
70	
80	
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A0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
B0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
C0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
D0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
E0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ
F0	ㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋㅋ

Code Page 949 Korean (Cont.)

## C440 - C4FF

40	
50	
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80	
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A0	치 칙 친 칠 침 침 침 침 침 카 카 칸 칸 칸 칸
B0	캅 카 캄 캄 캄 캄 캄 캄 캄 캄 캄 캄 캄
C0	컥 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨
D0	켕 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨 컨
E0	쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵 쿵
F0	쿨 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰

## C540 - C5FF

40	
50	
60	
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90	
A0	콤 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰 쿰
B0	키 키 키 키 키 키 키 키 키 키 키 키 키
C0	탸 탕 탕 탕 탕 탕 탕 탕 탕 탕 탕 탕 탕
D0	툐 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔
E0	툐 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔
F0	툐 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔

## C640 - C6FF

40	
50	
60	
70	
80	
90	
A0	체 투 투 투 투 투 투 투 투 투 투 투 투 투 투
B0	톤 투 투 투 투 투 투 투 투 투 투 투 투 투 투
C0	툐 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔
D0	꽈 팔 팔 팔 팔 팔 팔 팔 팔 팔 팔 팔 팔
E0	툐 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔
F0	툐 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔 텔

## C740 - C7FF

40	
50	
60	
70	
80	
90	
A0	파 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍
B0	풀 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍
C0	풀 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍 풍
D0	한 합 합 합 합 합 합 합 합 합 합 합 합
E0	행 합 합 합 합 합 합 합 합 합 합 합 합
F0	헬 헷 헷 헷 헷 헷 헷 헷 헷 헷 헷 헷

## C840 - C8FF

40	
50	
60	
70	
80	
90	
A0	헵 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤
B0	헵 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤
C0	헵 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤
D0	헵 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤
E0	헵 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤
F0	헵 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤 헤

## C940 - C9FF

40	
50	
60	
70	
80	
90	
A0	
B0	
C0	
D0	
E0	
F0	

## 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呵迦鰐刻却  
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 憾戇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 价個凱壘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鴻抉決潔結  
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晉觀貢闕館刮惄  
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 構歐噏毬求溝灸狗玖球醫矩究綠耆臼  
C0 莫蓄苟衝驅驅遂邱釣錄駒驅鳩躡躡  
D0 國局菊鞠鞠趨君奢群福軍郡堦屈掘廬  
E0 宮弓寫窮葛躬倦券勸卷園拳捲權港眷  
F0 厥獮厥蹶闕机樞漬詭軌頌句晷歸貴

## Code Page 949 Korean (Cont.)

## D040 - D0FF

40  
50  
60  
70  
80  
90  
AO 鬼龜叫圭蓋揆楓珪窺竅糾葵規赳  
BO 達闊勻均昀筠箇鈞韁橘克剋劇載棘極  
CO 陳僅勦勤勑斤根槿瑾筋芹董觀謹近鑑  
DO 契今姈擒吟檎琴禁高苓衾衿襟金錦伋  
EO 及急汲汲級給亘競矜肯企伎其翼嗜器  
FO 坤基埼嬖奇妓寄岐崎己幾忌技旗既

## D140 - D1FF

40  
50  
60  
70  
80  
90  
AO 莫期杞棋棋棄機欺氣汽沂淇玘琦琪基  
BO 環崎畿基磯邢祇祈祺箕紀綺霸晉饑肌  
CO 記旛宣起旛鎮飢饑騎駕駕駕駕駕駕駕  
DO 桔金喫儻喇宗娜懦憐嬖拿廉羅羅螺裸  
EO 邏那樂洛烙烙落諾酪駱亂卵暖櫛煖爛  
FO 蘭難難捏掠南鳳枮楠滴澁澁男藍襯拉

## D240 - D2FF

40  
50  
60  
70  
80  
90  
AO 納臘蠟衲臺娘廊朗浪狼郎乃來內奈  
BO 奈耐冷女年燃季念恬拈捻寧寧努勞奴  
CO 驚怒搗櫓爐瑞盧老蘆虧路靈驚盡驚碌  
DO 緣綠豪綠鹿論聾弄憑寵聾脹脹惱牢  
EO 腦路雷尿疊屢樓淚漏累縷陋嫩訥扭紐  
FO 勒肋凜凌稜綴能蔓陵尼泥匱潤多茶

## D340 - D3FF

40  
50  
60  
70  
80  
90  
AO 丹賣但單圓壇彖斷旦檀段湍短端簷  
BO 繼蛋相鄭鍛撻漣猶直達啖坍懶擔疊淡  
CO 淵潭漬疲聃聃單談譚談沓沓答踏還  
DO 廣堂塘塘慧撞檠當糖燈黨代堡培大對  
EO 岱帶待戴擗玳臺袋貸隊黨宅德惠倒刀  
FO 到圓堵塗導層島鳴度徒棹挑掉搗桃

## D440 - D4FF

40  
50  
60  
70  
80  
90  
AO 棒櫛淘渡沿清乘盜賭禱稻萄觀賭跳  
BO 踏逃途道都鑲陶船毒漬橫橫獨督禿驚  
CO 紫讀墩惇盹噉沌燐燐燐燐燐燐燐燐燐  
DO 凍動同情東桐棟洞渣瘡瘡瘡瘡瘡瘡  
EO 斗杜科痘賣蕡讀豆痘頭屯腫范遍遞鈍  
FO 得燈燈燈等藤膽鄧騰喇懈擊獵羅

## D540 - D5FF

40  
50  
60  
70  
80  
90  
AO 蘿螺裸溫樂洛烙烙絡落諾酪駱丹亂  
BO 卵櫛變渙爛蘭鱗刺辣鳳孽攬櫻澁籃纏  
CO 藍桂覽拉臘蠟廊朗浪狼琅鄉鄉郎來峽  
DO 來萊冷掠略亮爾兩涼梁樑娘梁糧良諒  
EO 輸量侶儻勵呂廳慮戾旅樁澁礪葵蠟間  
FO 離驅驅黎力曆歷溫碟蝶靈憐戀攀漣

## Code Page 949 Korean (Cont.)

## D640 - D6FF

40	
50	
60	
70	
80	
90	
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

40	
50	
60	
70	
80	
90	
A0	遼闊龍疊臺屢樓淚漏痕累縷薰樓鑑
B0	陋劉旒柳榴流溜潤琉璃留瘤硫膠類六
C0	戮陸龠偷嵩淪繪輪律慄栗率隆勒肋凍
D0	凌榜稜綴蔓陵俚利屢更喇履刈李梨涅
E0	梨狸理璃異剝離權高利裏裡釐難鯉
F0	吝滿熾瑞蘭躡隣麟麟林琳琳臨霖砬

## D840 - D8FF

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A0	立笠粒塵瑪碼磨馬魔麻真幕漠膜
B0	莫邀万卍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	望網罔芒茫莽觸卽埋妹媒寐昧枚梅每
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緬面麤減

## D940 - D9FF

40	
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A0	薦冥名命明暝榆溟皿瞑茗黃螟酩銘
B0	鳴袂傳嘆募姆帽慕摸摹某模母毛牟
C0	牡瓊眸矛耗茅謀讓貌木沐牧目睦穆
D0	驚歎沒夢朦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畝
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	微末梶櫟漢涓眉米美薇謎迷靡微岷閨
C0	惑惱教要叹民汎玟珉縉閨密審謐劍博
D0	拍搏撲朴樸泊珀璞箔柏縛膊船連迫霍
E0	駁伴半反叛拌撒華班獎泮潘班畔癩盤
F0	盼馨礪鑿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蕪蚌訪虧
C0	邦防龐倂併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闇凡帆梵
F0	汜汎泛犯範范法珐僻虧嬖嬖嬖嬖

## 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 - DDFF

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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	事些仕伺似使俟僖史司唆嗣四士耆娑
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叢迷撒殺
B0	煞薩三參杉森渺芟蓼衫插蒔鉛颶上傷
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	徵旋漁燭璇璇碧禪綠繙羨腺膳船
D0	蘋蟬跣跣銳鏗鏗鮮高胥櫻泄洩渫舌
E0	薛襄設說雲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	蓀逐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

40	
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A0	戍手授搜收數樹殊水洙漱燧狩獸誘
B0	遜瘦睡秀穂堅粹綏縷織茱見繆蔽
C0	袖誰響轍遂達酬銖銖隋隧隨雖觸須首
D0	髓鬚叔塾夙孰宿淑瀟熟瑚璫痛菽巡徇
E0	循物徇拘樞機徇洵淳珣盾瞬筭純胥舜
F0	苟尊養徇醇醇順訓戌術述鍊樂極

## E340 - E3FF

40	
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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	是時柿柴猶矢示翅時晝視試詩謹豕豺
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	臺暨訊身辛辰迅失室實悉審尋心沁

## E440 - E4FF

40	
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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	篆眼雁較頤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厓袁埃
F0	塵愛暖涯磚艾隘羈厄扼掖液縕腋額

## E540 - E5FF

40	
50	
60	
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A0	櫻翠鶯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	揚擴歌喝梁楊椽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	魚韻億憶抑槐曉僵彥焉言諦雙蘿倦
F0	儼嚴奇掩海業業円予余勵呂女如廬

## E640 - E6FF

40	
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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繩諺諺逆驕嘯
C0	壙妍娟宴年延憐憐捐誕燃椽沉沿誕涓
D0	淵演漣烟然煙燄燃燕漣研硯季筵緣練
E0	績聯衍軟贊蓮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

40	
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A0	旆間鼙鼙鼙鼙令圉圉寧嶺嶺影
B0	怜映唼楂樂永泳渼渼灑瀛灑煥鑿玲
C0	瑛瑩瓊盈頌縵矜聆英詠迎鈴鎻零零
D0	領又倪例刈翫曳汭滅猊睿穠芮藝藝禮
E0	裔脂譽犧醴銳犧覽預伍伍微微午吾吳
F0	嗚墉壤裏娛肅悟惠懷敷阡晤梧污漢

## Code Page 949 Korean (Cont.)

## E840 - E8FF

40  
50  
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80  
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A0 鳥熬獎莫蠍誤蘋龍屋沃獄玉鈺溫瑞  
B0 痘穢繩蘆兀臺擁塗甞癱翁龜雍甞渦瓦  
C0 窠窪臥蛙蝸訛婉完宛椀椀浣玩琬琬碗  
D0 緩斷腕腕莞豌阮頑曰往旺枉汪王倭娃  
E0 亞矮外冤觀猥畏了僚僥凹堯夭妖姚寧  
F0 壽尿曉拗搖撓擾料曜樂橈燐燐瑤瑤

## E940 - E9FF

40  
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60  
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A0 窝窩絲繞燐腰蓼姚要諾遙遺邀競愁  
B0 欲浴綿禡辱偶偏冗勇涌墉容膚憑榕涌  
C0 湧濶熔鑄用甬鑿草苔踊縮鑄龍于佑偶  
D0 僮又友右宇寓尤愚憂吁牛圩瑪孟祐禡  
E0 福紓羽芋萬廣迂遇郵軒隅雨穹勸或旭  
F0 昂楠烟械郁頊云暉櫻殞熒熒耘芸要

## EA40 - EAFF

40  
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A0 遷隣娶韻蔚鬱亏熊雄元原員圓圓垣  
B0 嫵嫖冤怨懨援汎沮源爰猿瑗苑袁轅  
C0 遷阮院願驚月越鉞位俾偽危圖委威尉  
D0 懈曉清爲達縫青萎董薦娟衛韓謂達韋  
E0 魏乳侑儒愈劉唯喚孺有幼幽庶悠惟愈  
F0 愉揄攸有扭柔袖柳榦榦油洧游溜

## EB40 - EBFF

40  
50  
60  
70  
80  
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A0 清猶歛琉璃由留癒硫紐維吳萸裕誘  
B0 諛諭踰蹊遊逾遭酉釉鎔類六堵戮毓肉  
C0 齊陸倫允鼐尹嵩渝潤琉璃輪銖閩律  
D0 楸栗率韋戎潤絳融墮壞恩懃殷闌銀隱  
E0 乙吟淫蔭陰音飲搔泣邑凝應膺鳳依倚  
F0 儀宜意懿擬椅毅疑矣義嬌蕙蠟衣暨

## EC40 - ECFF

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A0 譴醫二以伊利吏夷姨履已弛委怡易  
B0 李梨泥爾珥理異瘡瘌移罹而耳鍼苡奠  
C0 裹裡貽貳邇里離飴餌匱漏漬益翊翌翼  
D0 諺人仁刃印杳咽因烟實引忍渥熑熑細  
E0 茵蘭躬詔隣勦窮鱗麟一佚併臺曰溢逸  
F0 鑑駢任壬妊姪恁林淋稔臨莊質入廿

## ED40 - EDFF

40  
50  
60  
70  
80  
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A0 立笠粒仍剩孕芮仔刺姿姊姿子字孜  
B0 恕慈滋炙煮茲疵疵紫者自茨藨藉諮詢  
C0 資雌作勾嘴斫昨灼炸爵縛芍酌雀鵠屎  
D0 機殘鴻鑿岑暫潛簪簪雜丈仗匠場牆  
E0 壯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舊藏裝臘醬長

## Code Page 949 Korean (Cont.)

## EE40 - EEFF

40  
50  
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A0 隱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 樞沮潘猶猪道箸紵亨道蕃諳貯貯躇道  
D0 邸雖韻勑吊嫡寂摘敵滴狄炙的積笛籍  
E0 繢鞚荻謫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 煎瓈田甸畷痼筆箭筆纏詮輶轉鉛  
B0 銓錢鏡電顛顛錢切截折浙癲癲節絕占  
C0 岖店漸點粘霧鮎點接擗蝶丁井亭停儕  
D0 星姪定幘庭廷征情挺政整旌晶嚴征植  
E0 樞正汀淀淨渟溟灘延斑町晴碇禎程  
F0 穿精綈紙訂鈔賣鄭釅釅鈕綈靈靖

## F040 - FOFF

40  
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A0 靜門鼎制剝啼帝弟悌提梯濟祭第  
B0 膽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藻臺詔  
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

40  
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A0 跡踵鍾鑑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檣  
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蠍誌識贊趾  
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報

## F340 - F3FF

40  
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A0 鐵集徹懲澧且侘備又嗟嗟差次此磋  
B0 莎茶蹉車遮捉擰着窄錯整齷撰潔燦瓈  
C0 瓊竄纂纂縱讚贊讚餐饌利察擦札  
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 傷採采彩採塔採采采采釵冊柵策

Code Page Traditional Chinese (Cont.)

## F440 - F4FF

40	
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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	穢鐵僉尖沾添括瞻簽鏡瘡詎堞妾帖撻
E0	牒疊曉諺貼帆廝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

40	
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A0	椒楚樵炒蕉硝礮礮秒稍肖艸苕草蕉
B0	詔超酢醋醜促囁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	鍾雜鴉歎丑晉祝竺筑築縮蕃蹙軸逐
F0	春椿璫出朮勑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	痔痴癩稚稭縕緻齒輜雉馳齒則勑
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	汰泰笞胎苔踏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	姑投透闊厯特闊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爆
F0	轎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	行降項亥偕咳垓姦孩害懈楷海灘蟹
B0	解該諺邇駭骸効核倖幸杏荇行享向嚮
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衛迦邢螢
B0	藝兮瞽惠慧暎蕙蹊醯鞋乎互呼壕臺好
C0	岵孤戶扈昊皓浩渼湖渼渼渼渼渼渼渼渼
D0	琥猢楓皓枯糊縞葫葫蒿虎號蝴蝶豪
E0	鎬鎬顫惑或酷婚婚混渾璋魂忽惚笏哄
F0	弘永泓洪烘紅虹紅鴻化和媒構火鑿

## FC40 - FCFF

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A0	禍禾花華話謙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隍黃匯回迴
E0	徊恢悔懷晦會捨淮漬灰猶繪膾茵蛔誨
F0	財劉獲弘橫鎊嘆喟孝效穀曉島淳渢

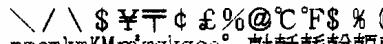
## FD40 - FDFF

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A0	爻肴醉曉侯候厚后吼喉喚帳後朽煦
B0	珝逅勑勑壠塈煮熏燶薰訓量冕喧煊煊
C0	董卉喙毀棄微揮暉輝耀麾休撓杰畦
D0	虧恤誦鵝兇匈徇胸黑昕欣忻痕吃屹
E0	矻矻欠欵欵吸恰洽翕與僖熙臺噫鼙姬
F0	嬉希憲憲戲唏嘴熙臺嬉犧福稀犧詰

Code Page 950 Traditional Chinese

A140 - A1FF

A240 - A2FF

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A0  
B0  
C0  
D0  
E0  
F0

A340 - A3FF

40 W x y z A B Γ Δ E Z H Θ I K A 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 ι ς η ι ι η η η η η η  
80  
90  
A0 ハクタ出ノ戸日アチャムヤゼセテ  
B0 ヘヌラムル一メド。 / V  
C0  
D0  
E0  
F0 €

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  
叨司臣叫另只史叱台句叭叻四囚外  
央失奴奶孕它尼巨巧左市布平幼弁  
弘弗必戊打扔扒扑斥且朮本末札正  
母民氐永汁汀犯犯玄玉瓜瓦甘生用甩  
田由甲申疋白皮皿皿矛矢石示禾穴立  
丞丢乒乓乩互交亦亥仇伙伊佚伍伐  
休伏仲件仟仰仕份企伋光燭兆生全

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兒克免兵治冷別  
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吭吵呐  
70 吼吼呀吱含吟听函困匱困坊坑址坍  
80  
90  
A0 均坎坂坐坏坼壯夾妝妒妨妞妣妙妖  
B0 妍娇妓奸妥孝孜孚宰完宋宏尬局屁屎  
C0 尾岐峯岔发巫希序庇床廷弄弟形形彷  
D0 役忘忌志忍忧快忸忪戒我抄抗抖技扶  
E0 挾扭把扼找批扳抒扯折扮投抓抑攺  
F0 攻攸早更東李杏材村杜杖杞杉杆杠

## Code Pare 949 Traditional Chinese (Cont.)

## A840 - A8FF

40 柄榦步每求汞沙沁沈沉沅沛汪決沫汰  
 50 沁汨冲沒汽沃汲汾汴沉汶沕沕沂社  
 60 灼炎灸牢牡牠狄狂玖甬甫男甸皂町矣  
 70 私秀秃究系罕肖膏肝肘肛肚膏良芒  
 80  
 90

A0 芋苟見角晉谷豆豕貝赤走足身車辛  
 B0 辰迁迺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併併全免  
 E0 兒兒兩真其典冽函刻券刷刺到刮制剝  
 F0 勅勸卒協卓卑卦卷卸卹取叔受味呵

## A940 - A9FF

40 咖呸咗咀呻呻咄咒兜呼呼呱呶和咚呢  
 50 周咋命咎固垃坷抨坦坡坦坤坼夜奉奇  
 60 奈奄奔妾妻委妹妮姑姆姐姍始姓姊妯  
 70 姝姒婢孟孤季宗定官宣亩宛尙屈居  
 80  
 90

A0 屬岷岡岸岩岫岱岳帘帶帖帕帛帑幸  
 B0 庚店府底庖延弦弧弩往征佛彼忝忠忽  
 C0 念忿快怔怯忧怖怪怕怡性昵拂恒或戕  
 D0 房戾所承拉拌拄振拂抹招招披拓拔拋  
 E0 拈拋抽押拐拙拋拍抵拋抱拘拖拗拆抬  
 F0 拎放斧於旺昔易昌昆昂明旣昏昕昊

## AA40 - AAFF

40 署服朋杭枋枕東果杳杷枇枝林杯杰板  
 50 杠松析杵枚料杼杪果欣武歧歿悵氣泣  
 60 注泳沱泥河活沾沿波沫法泓沸泄油  
 70 況沮泗泗浹沿治泡泛泊沫泯泜泖冷  
 80  
 90

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 芹花芬芥芸茉芰蒂芷虎虱初表軋迎  
 F0 返近邵邸邱北采金長門臯陀阿阻附

## AB40 - ABFF

40 波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俞倜竟冒  
 60 冠刹剝削前剝剝則勇勃勁勦匍南卻  
 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圓垂型垠垣垢  
 B0 城垓垓空鑿奏奎奐姜姘姿姣嬪娃娃姪  
 C0 姚姁威姻孩宣宦室客宥封屎屏屍屋峙  
 D0 峙巷帝帥布幽庠度建奔弭彥很待徊律  
 E0 徇後佯怒思怠急怎怨恍恰恨恢恆恃恬  
 F0 恫恪血扁拜挖按拼拭持拮拽指拱搏

## AC40 - ACFF

40 滌括拾拴挑挂政故研施既春昭映昧是  
 50 星昨豎昜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浰耳洞洗  
 80  
 90

A0 活洽派淘洛泵洹洧洮洩洮洎洫坎  
 B0 爲炳焰炯炭炸炮焰爰性拮狃狠狡玷  
 C0 珊玻璃珍珀玳基爾畏界畎畋疫疖疥疚  
 D0 疣瘡眚皇皈盈盆盈盅省聰相眉看盾盼  
 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茱蕡苗英苗  
 60 首苔苑芭苔荀茆茆唐虹虻虺行衫要勛  
 70 計訂計貞負赴赳趴軍軌迹迦迢迪迴  
 80  
 90

A0 送迫迤迨郊郎郁部酋酌重門限陋陌  
 B0 降面革革非首貢鳳飛食首香乘臺倍倍  
 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 哟唧唇哽啼圓墮墮埋埃墮夏套柒奚  
 50 娑娘娜娟娛娓姬嫋嫋娥娌媯孫魁宰  
 60 實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桂移衍殊徇殷  
 F0 氣氯氯氮氯泰浪涕消溼浦漫海浙涓

## AF40 - AFFF

40 涅涉浮浚浴浩涌恣浹涅澑澑烊烘烤烙  
 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 砥砭砧砟砲祐祠祟祖神祝祇祚粹  
 B0 朶秧租橐秩秘簪矧站笆笑粉紡紗紋素  
 C0 素素純紐紺級耘納紙紛缺罟羔姻翕耆  
 D0 耘耕耙耗耽耽脂膾脣膾胸膾胸膾脈  
 E0 能脊胼膀臭梟舀舐航肪版般芻茫荒荔  
 F0 荆葷蓐草茵茝茲茹荼茗荀茱茨莖

Code Pare 980 Traditional Chinese (Cont.)

B040 - BOFF

40 虞蚊蚪𧈧蚕蚌𧈧𧈧袁袂袂袂袂袂袂袂袂袂  
45 計討釁訟託訓訖訟訟訟訟訟訟訟訟訟訟訟  
50 豈豈豈豈豈豈豈豈豈豈豈豈豈豈豈豈豈豈  
55 豺豹財賣起  
60 身弓軒輶軒送逆迷退迺迺逃追追追追  
65 邊近近近近近近近近近近近近近近近近  
70 郡都郵酒配酌釁針劍釜鉢閃院陣陸  
75  
80  
85  
90  
95

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 横械狂逐梭柳悔桓條烈豎桓枝欲殺

B240 - B2FF

毫氈氳涼淳淳夜淡渝淤添淺清淇淋  
涯淑潤淞澗涸混淵淅淒者汙漶淫海淪  
深淮淨清淮涪淬涿滄東焉燭烽烯爽牽  
翠猜猛猿狹淨率琅琊球理現珮瓠瓶  
盜甜產略眭畢異疏痔瘡旌奩  
盒盛養眾眼眶眸眺硫硃硎祥票祭移窒  
宛笠笨笛第符笛笞笞粒粗柏絆統繁  
紹繡細紳組累終絆紋齒豎翌羽習  
耜聊除肺脣脣脫脩脰脤春舵舷舶胎沙  
莞苦孽莢萃莽莫汗華新旆衝戎

B340 - B3FF

40 蒲菟處彪蛇蛙蚯蚓蛆蛋蚱蜢螳術袞  
45 裳被袒袖袍袋貿規訪訝訥訐許設訟訛  
50 訴政豚販賣實貨食糞板放趾趺輶軟這  
55 追逋逗連速逝逐逕逞透蓬逛途  
60 部都野釵釦釣釧釤閉陪陵陳  
65 陸陰陣陶陷隙雀雪零章竟頂漁鳥鹵  
70 鹿麥麻傢傍傳備傑俛儉傘效最勸割剗  
75 創刺勞勝助尊厥啻喀喧啼喊喝喘喂喜  
80 豢屋喇嘆喟啞啞單喟唾喎喎喚喎哩喎  
85 喆嗟屢嘆填場堤堰報保塢接賣聲  
90

B440 - B4FF

40 婷媚媚嬪嬌孽屏寒窗离寧尊就嵌  
50 巍巍松巽幅幅幃幃幾廊廡廬廬彌彌彭復  
60 循循徨惑惡悲悽憇憇惄惄惺惺情惻惻慨惻  
70 慫慢惶惶偷偷懶懶轂轂掣掣掌掌揜揜搘搘揦揦  
80  
90  
A0 插插提握握揭揭揮揮捶捶揪揪換換擗擗揩揩  
B0 敦敦散散斑斐斯普晰晰晶晶景景暑暑智智晾晾晷晷  
C0 替替期期朝朝棕棕棠棠棘棘棗棗楂楂棵棵樟樟槔槔  
D0 樂樂棋棋櫟櫟植植椎椎棉棉棚棚楮楮葛葛款款欵欵殘殘殖殖殼殼  
E0 疊疊氮氮氣氣龜龜游游前前渡渡道道湧湧溪溪渥渥瀉瀉減減湛湛  
F0 湘湘渤渤湖湖溼溼滑滑湯湯渴渴渺渺測測渝渝瀉瀉滋滋

B540 - B5FF

40 漑渙面潛漫淥漁漁焙焚焦焰無然煮焜  
50 牌掎羣猶獮猴猩珐琪琳琢琥珀琶琴瑣  
60 珠琦琅甥甦畫番瘌瘞瘞瘞瘞瘞瘞瘞瘞  
70 登發皖皓敎盜瞷短矱硬硯稍稈程稅稀窘  
80  
90  
A0 窗窖童竣等策筆笙箇答筭筋筏筑粟  
B0 粥絞結絨紫紫絲絡給絢經絳善翔翕  
C0 繩詰曉腕腔腋肺腎脹胸脾肫肺腴舒舜  
D0 音萃於淬波音蕤青華萎著萊蒼萌茵  
E0 菟菲菊萸奏荀榮采真服免虛蛟蛙蛭蛔  
F0 蛤蚰活街裁裂狀置視計詠評詞訶詰

B640 - B6FF

B740 - B7FF

40 媚娘嬌嵩嵯幃幹廉廈試集傍微愚意慈  
50 感想愛惹愁愈憤慌栗溫愴悔愧愍愆懼  
60 戲戰搓摺搞搭搽搬博搜摺損搶搖搗  
70 搖散蔚新暗暉暇量暖喧暉喚會榔業  
80  
90  
A0 楚楷楠櫟極都概楊慣楫楓榎榆棟  
B0 帽桔歌歲殿毓璫溢潮率溶滂源溝演  
C0 滅溥瀆瀆渥溫滑準溜滄滔溪深溴煎煙  
D0 煙煤煉照燎蕩煦煦煥煥假煥熑熑燭獸  
E0 獅猿猾瑚璐瑕瑟瑞瑩瓊瑤瑜當畸瘀  
F0 瘦寒痴庫秦痴麻妻明睇曉睦睞督

Code Pare 950 Traditional Chinese (Cont.)

B840 - B8FF

40 賈羣採睂睥睨睢碎碰碗碌碌砌碑  
50 碓砕旗祿禁萬禽棲稚櫛稟稟  
60 節筠笠簾梁煙粵經絹綱綉綴倏置罩罪  
70 署義羣聖聘肆肆腰腸腥腮御腫  
80  
90

A0 腹腺腦翼蒂董落董葵董葫葉葬墓  
B0 專蒿葡萄葭茱虞虧蛹蛭蠍蜀蛾  
C0 蜈蜂蜃蠍蚋衙衙裙補裝裝裡裕裕衰  
D0 牽解鰐該詳試詩詰誇歌詣誠話誅詭詢  
E0 詮詎脣詗皆設蒙貉貉貳資賣賄貨賄賂  
F0 脜脉曉路眺迢路皎駿點對載對縱

B940 - B9FF

BA40 - BAFF

40 慸態懷慢慣動嘶慘嘶載撇摘捺撒摸摸攘  
50 揣揭摧牽掠摻敲斡旗旗暢暨暨榜榜格  
60 搞榮橫構棟椎揚桿惋櫈樹粗軒槧槧格  
70 歎歌氤氳演滾濶濶旋漾溟溟漬漏漂溟  
80  
90

A0 滯滯漆漱漸漲漣漕漫灑漱漪漪漁潑  
B0 淐滷熔熙燭熊熜熒爾轍攀攀獄獐瑣瑣瑪  
C0 琥珀甄疑瘡瘍瘻瘻瘻瘻監曉晵齊睡破  
D0 碱碧破碩碣頑福禍種稱窪窩端管箕  
E0 美好算措措爭著箇孽粹純精經絃絃  
F0 線綫緊綴網網綺網綺綵綸維緒綹綹

BB40 - BBFF

40 翡翠翡翠翟聞聚肇腐膀膏膈脾腿膏減臺  
45 與誅舞艋蓉蒿蕩著蒙蒞蒜蓋蒸孫倍  
50 蒉蒼蒼蓑翁蜿蜜蜻蠍蚱蝨螭蜩蔓樹  
55 裳裘裸裸裨裨禡誦話語訛認誠晉誤  
60  
65  
70  
75  
80  
85  
90

BC40 - BCFF

BD40 - BDFF

瑾確鼓瘠瘡廬瘤瘦瘡瘻皺盤暗瞼瞼  
暝眞瘡確瘡瞼瘡瞼瘡瘻瘡瘻瘡  
案窮箭範箇箇簾簾簾簾糊糊練練  
緘緘緘緘緘緘緘緘緘緘緘緘緘  
嗣耦脣膜膝膠膚腰麻蔚蔚蓮蔬蔭蔓  
蔑蔣蔡蘋蓮蕙蕙蘋蠅蝴蝶蝠蝦蟆蠅蠅  
螳螂榆衛衛褐復裏保榆褐詎詎談諄詎  
請語課詔詔調誰論靜醉詤詤貌耽鑿  
賞賦賤賤賭賈賣賜賣賣賤賤趨趣跋跋  
陽踏跋跋跋跋跋跋跋跋跋跋跋跋跋跋

BE40 - BEFF

BF40 - BFFF

40 濃翠濶濃澳激滄瀆瀆漫熾燉燙燒燭  
50 燕棲燎漫燭燃燄獨躋躋躋躋躋躋  
60 齒齧齧齧齧齧齧齧齧齧齧齧齧齧  
70 齒齧齧齧齧齧齧齧齧齧齧齧齧齧  
80 穩穪穪穪穪穪穪穪穪穪穪  
90 穩穪穪穪穪穪穪穪穪穪穪  
AO 繼紫縛縣縕縕縕縕縕縕縕縕縕  
BO 脂脣興艘艸忘蕙草蕩蕩蕩蕩蕩  
CO 蜂蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅  
DO 謐謀諐諐諐諐諐諐諐諐諐諐  
EO 蠻蹄躑躅躑躅躑躅躑躅躑躅  
FO 遷遼遼遼遼遼遼遼遼遼遼遼

Code Page 949 Traditional Chinese (Cont.)

## C040 - COFF

40 錐錦銘銅閨邊邊險難憂酒森霍竟  
 50 霽定靜靚韻頸頸頻領頭頤頤餐館錢餛  
 60 鮑餚駭駢駢駢駢駢駢駢駢駢駢駢  
 70 鶴默默鶴默默鶴默默鶴默默鶴默  
 80  
 90  
 A0 嘘壞壓堅堅嬪嬪嬪嬪嬪嬪  
 B0 幫弼微應僅恩懦憇戲數擊壁擠擦擦  
 C0 擬擗擗擗敘敘敘暖增增檢檢檢  
 D0 美裕裕歡施施耗濟濟濟濟濟  
 E0 濟濟濟濟濟濟濟濟濟濟濟濟  
 F0 牆綈綈綈綈綈綈綈綈綈綈綈綈

## C140 - C1FF

40 瞻瞭矯磷磷磷福福福福福  
 50 軟柔柔柔柔柔柔柔柔柔柔柔  
 60 組組組組組組組組組  
 70 聯聰聰聰聰聰聰聰聰聰  
 80  
 90  
 A0 薄舊薛薑薑薑薑薑薑  
 B0 蠕整蠅蠅蠅蠅蠅蠅  
 C0 詭詭詭詭詭詭詭詭詭詭詭詭  
 D0 跳跳跳跳跳跳跳跳跳  
 E0 醋鍛鍛鍛鍛鍛鍛鍛鍛  
 F0 關關關關隱隱隱隱

## C240 - C2FF

40 駿鮮鮫鮫鮫鮫鮫鮫鮫鮫鮫  
 50 噜嚨嚨嚨嚨嚨嚨嚨嚨嚨  
 60 曜曠曠曠曠曠曠曠曠曠  
 70 濟濟濟濟濟濟濟濟濟  
 80  
 90  
 A0 恤督督督督督督督督  
 B0 算算算算算算算算算  
 C0 脣肢肢肢肢肢肢肢肢  
 D0 覆觀觴觴觴觴觴觴  
 E0 轉轉轉轉轉轉轉轉  
 F0 鑄鑄鑄鑄鑄鑄鑄鑄鑄鑄

## C340 - C3FF

40 鞭首額額額額額額額  
 50 髮魏翹翹翹翹翹翹翹  
 60 嘸壞壞壞壞壞壞壞  
 70 檻檻檻檻檻檻檻檻檻  
 80  
 90  
 A0 獅獅獅獅獅獅獅獅  
 B0 鏡鏡鏡鏡鏡鏡鏡  
 C0 藝蔽蔽蔽蔽蔽蔽  
 D0 譜譜譜譜譜譜  
 E0 跛跛跛跛跛跛  
 F0 鑄鑄鑄鑄鑄鑄鑄鑄鑄

## C440 - C4FF

40 願願願願願願願  
 50 鵬鹏鹏鹏鹏鹏鹏  
 60 峴峴峴峴峴峴峴  
 70 撇撇撇撇撇撇撇  
 80  
 90  
 A0 裳裳裳裳裳裳裳  
 B0 擬擬擬擬擬擬擬  
 C0 擬擗擗擗擗擗擗  
 D0 擬咸咸咸咸咸咸  
 E0 擬僵僵僵僵僵  
 F0 擬縊縊縊縊縊

## C540 - C5FF

40 護譽賦賦賦賦賦  
 50 闢霸霸霸霸霸霸  
 60 鮑鮑鮑鮑鮑鮑鮑  
 70 擬拟拟拟拟拟  
 80  
 90  
 A0 複籠籠籠籠籠  
 B0 鄰鑄鑄鑄鑄鑄鑄  
 C0 縱縛縛縛縛縛  
 D0 環環環環環環  
 E0 鑄鑄鑄鑄鑄鑄  
 F0 微微微微微

## C640 - C6FF

40 識艷艷艷艷艷  
 50 鑲鑲鑲鑲鑲鑲  
 60 頤饑饑饑饑饑饑  
 70 鑽鑽鑽鑽鑽鑽  
 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 坳姈姁姁姓姐姁姁姓姁姁姓姁姁姓姁  
50 姮姁姁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姁姁  
70 姮姁姁姁姁姁姁姁姁姁姁姁姁姁姁姁  
80 昭攷附彌彖徂衍低憲憲憲憲憲憲憲憲  
90 憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲  
A0 憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲  
B0 憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲  
C0 憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲  
D0 憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲  
E0 憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲  
F0 憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲憲

CD40 - CDFF

40 洪泝沵沵林杼泞河沗沫沕沗沮沗沗沗  
45 炫熯灵爌爌爌林爌熯熯熯熯熯熯熯熯  
50 犹猶猶猶猶猶猶猶猶猶猶猶猶猶猶猶  
55 犹猶猶猶猶猶猶猶猶猶猶猶猶猶猶猶  
60 犹猶猶猶猶猶猶猶猶猶猶猶猶猶猶猶  
65 犹猶猶猶猶猶猶猶猶猶猶猶猶猶猶猶  
70 犹猶猶猶猶猶猶猶猶猶猶猶猶猶猶猶  
75 犹猶猶猶猶猶猶猶猶猶猶猶猶猶猶猶

80 禄祔祔祔祔祔祔祔祔祔祔祔祔祔祔  
90 祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔  
A0 祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔  
B0 祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔  
C0 祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔  
D0 祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔  
E0 祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔  
F0 祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔祔

CE40 - CFFF

CE40 - CFFF

40 柜柂杼柘被枷杻拂粗柂柂柂枳柷柂柂  
50 株柂抱柂柂柰柂柂粒柂柂粘粗柂柂  
60 柅柂柂袋欱殂柂柂投步毘𡇁氯氢汝洴澼  
70 漢洼湾酒淳泚洳洄洙洛泲泲泲泲泲泲

Code Pare 980 Traditional Chinese (Cont.)

D040 - D0FF

D140 - D1FF

40 啟嘆呼嗟嗟唉唉喚唉闔墳墳聖姪培培培  
50 近堡培培培培培塔愛愛愛姪嫁嫁嫁  
60 姮姪姪姪姪姪姪姪姪姪姪姪姪姪姪姪  
70 姮姪姪姪姪姪姪姪姪姪姪姪姪姪姪姪  
80 姮姪姪姪姪姪姪姪姪姪姪姪姪姪姪姪  
90 姮姪姪姪姪姪姪姪姪姪姪姪姪姪姪姪  
A0 倦憊憊憊憊憊憊憊憊憊憊憊憊憊憊憊  
B0 屢攀攀挽攀攀揼揼揼揼揼揼揼揼揼揼揼揼  
C0 摙揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼  
D0 揣揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼  
E0 椁揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼  
F0 相揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼揼

D240 - D2FF

D340 - D3FF

D440 - D4FF

40 酬酌釣釣陝陝坐訂影影氣氣僵僵  
50 僵僵僵僵僵僵僵僵僵僵僵僵  
60 僵僵僵僵僵僵僵僵僵僵僵僵  
70 僵僵僵僵僵僵僵僵僵僵僵僵  
80 僵僵僵僵僵僵僵僵僵僵僵僵  
90 僵僵僵僵僵僵僵僵僵僵僵僵  
A0 僵僵僵僵僵僵僵僵僵僵僵僵  
B0 僵僵僵僵僵僵僵僵僵僵僵僵  
C0 僵僵僵僵僵僵僵僵僵僵僵僵  
D0 僵僵僵僵僵僵僵僵僵僵僵僵  
E0 僵僵僵僵僵僵僵僵僵僵僵僵  
F0 僵僵僵僵僵僵僵僵僵僵僵僵

D540 - D5FF

D640 - D6FF

D740 - D7FF

## Code Pare 950 Traditional Chinese (Cont.)

D840 - D8FF

D940 - D9FF

40 憂惄惄惄惄惄惄惄惄惄惄惄惄惄惄惄惄惄  
45 應應應應應應應應應應應應應應應應應應  
50 應應應應應應應應應應應應應應應應應應  
55 應應應應應應應應應應應應應應應應應應  
60 應應應應應應應應應應應應應應應應應應  
65 應應應應應應應應應應應應應應應應應應  
70 應應應應應應應應應應應應應應應應應應  
75 應應應應應應應應應應應應應應應應應應  
80 應應應應應應應應應應應應應應應應應應  
85 應應應應應應應應應應應應應應應應應應  
90 應應應應應應應應應應應應應應應應應應

DA40 - DAFF

40 漢湜渢渢汎渢滌滳秋澗風澣澣溢澣涕澣施  
50 潻澣澣滌澣淮漢澣猝焯焯涎涎啖啖啖啖啖  
60 烥啖啖焯焯澣澣澣澣澣澣澣澣澣澣澣澣澣  
70 独獮獮獨獮獮獨獮獮獨獮獮獨獮獮獨獮  
80 獮獮獮獨獮獮獨獮獮獨獮獮獨獮獮獨獮  
90 獲獮獮獨獮獮獨獮獮獨獮獮獨獮獮獨獮  
A0 瑰瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈  
B0 璇瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈  
C0 璇瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈  
D0 璇瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈  
E0 璇瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈  
F0 璇瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈瓈

DB40 - DBFF

40 罣叛叛羨羽朋聰聰皓戩尙膽膳膳膝膝雅  
50 脍辟辟泉戴鉉鉉馬艸鉉鉉垮垮鉉荷道走  
60 苑委堯底莖茨華蓮耽拉薑薑薑薑薑薑  
70 松剗菡蓀萬薑薑薑薑薑薑薑薑薑薑薑  
80  
90  
A0 蕎蕎姑蕎蕎蕎蕎蕎蕎蕎蕎蕎蕎蕎蕎蕎蕎蕎  
B0 蒸蚌蚌蟆蟆蟆蟆蟆蟆蟆蟆蟆蟆蟆蟆蟆  
C0 嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺嶺  
D0 燥燥燥燥燥燥燥燥燥燥燥燥燥燥燥燥燥  
E0 賈賈賈賈賈賈賈賈賈賈賈賈賈賈賈賈賈  
F0 践践践践践践践践践践践践践践践践

DC40 - DCFF

40 軛軛軛軛軛軛軛軛  
45 軛軛軛軛軛軛軛  
50 軛軛軛軛軛軛  
55 軛軛軛軛軛  
60 軛軛  
65 軛  
70 軛  
75 軛  
80 軛  
85 軛  
90 軛  
A0 陞  
B0 淪  
C0 從  
D0 喝  
E0 喂  
F0 濡

DD40 - DDFF

DE40 - DEFF

DF40 - DFFF

40 極樸空靈苔碧亮黃弄英苗胥宮廷夜竹  
50 筆草告利繁裡視綵縷練綺絲綿紗綠  
60 紗綵給新綵組絢武野蒜看蠟黃逕秋柳  
70 羽動暗曉隔膜膚脣膚脹脹脣股膚脣  
80  
90  
A0 腰脰羣艉船梢薄絳舷萍落葵華施薔薇  
B0 莲葑捨萎勃黃蕙基植葳蔚脫既蘋前  
C0 菖剪薑昨蕙慕殖秋蕙朐黃乾萬薑後  
D0 蕉蕊紅菂流浪昔柔春蘭蕙慕祚替侵侯  
E0 荚蓋娘蠅蝶蜘蛛蠅蠅蠅娘蠅蠅蠅  
F0 蟒帳短樞徑視裏蓑被褐躬臘觸觥觥

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## 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訛  
 60 謂詔訛訛訛訛訛訛訛訛訛訛訛訛  
 70 訛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 檻檻檻檻檻檻檻檻檻檻檻檻檻檻  
 50 檻檻檻檻檻檻檻檻檻檻檻檻檻檻檻  
 60 檻檻檻檻檻檻檻檻檻檻檻檻檻檻檻  
 70 檻檻檻檻檻檻檻檻檻檻檻檻檻檻檻  
 80  
 90  
 A0 澄澄澄澄澄澄澄澄澄澄澄澄  
 B0 澄澄澄澄澄澄澄澄澄澄澄澄  
 C0 澄澄澄澄澄澄澄澄澄澄澄澄  
 D0 澄澄澄澄澄澄澄澄澄澄澄澄  
 E0 澄澄澄澄澄澄澄澄澄澄澄澄  
 F0 澄澄澄澄澄澄澄澄澄澄澄澄

## E340 - E3FF

40 祢禪祿祿祿祿祿祿祿祿祿祿祿祿祿祿祿  
 50 祕審審審審審審審審審審審  
 60 祕審審審審審審審審審審審  
 70 祕審審審審審審審審審審審  
 80  
 90  
 A0 罷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  
 C0 罷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  
 E0 罷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

## E440 - E4FF

40 橫棲櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛  
 50 橫櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛  
 60 橫櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛  
 70 橫櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛櫛  
 80  
 90  
 A0 鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦  
 B0 鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦  
 C0 鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦  
 D0 鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦  
 E0 鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦  
 F0 鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦鈦

## E540 - E5FF

40 嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴  
 50 嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴  
 60 嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴  
 70 嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴嘴  
 80  
 90  
 A0 懶懶懶懶懶懶懶懶懶懶懶  
 B0 懶懶懶懶懶懶懶懶懶懶懶  
 C0 懶懶懶懶懶懶懶懶懶懶懶  
 D0 懶懶懶懶懶懶懶懶懶懶懶  
 E0 懶懶懶懶懶懶懶懶懶懶懶  
 F0 懶懶懶懶懶懶懶懶懶懶懶

## E640 - E6FF

40 澈澈澈澈澈澈澈澈澈澈澈澈  
 50 澈澈澈澈澈澈澈澈澈澈澈澈  
 60 澈澈澈澈澈澈澈澈澈澈澈澈  
 70 澈澈澈澈澈澈澈澈澈澈澈澈  
 80  
 90  
 A0 繁璇璫璫璫璫璫璫璫璫璫璫  
 B0 繁璇璫璫璫璫璫璫璫璫璫璫  
 C0 繁璇璫璫璫璫璫璫璫璫璫璫  
 D0 繁璇璫璫璫璫璫璫璫璫璫璫  
 E0 繁璇璫璫璫璫璫璫璫璫璫璫  
 F0 繁璇璫璫璫璫璫璫璫璫璫璫

## E740 - E7FF

40 膜膜膜膜膜膜膜膜膜膜膜膜  
 50 膜膜膜膜膜膜膜膜膜膜膜膜  
 60 膜膜膜膜膜膜膜膜膜膜膜膜  
 70 膜膜膜膜膜膜膜膜膜膜膜膜  
 80  
 90  
 A0 蟑螂蟑螂蟑螂蟑螂蟑螂蟑螂  
 B0 蟑螂蟑螂蟑螂蟑螂蟑螂蟑螂  
 C0 蟑螂蟑螂蟑螂蟑螂蟑螂蟑螂  
 D0 蟑螂蟑螂蟑螂蟑螂蟑螂蟑螂  
 E0 蟑螂蟑螂蟑螂蟑螂蟑螂蟑螂  
 F0 蟑螂蟑螂蟑螂蟑螂蟑螂蟑螂

Code Pare 950 Traditional Chinese (Cont.)

E840 - E8FF

40 跪膝踴躍躋踰蹠踰蹠京轉較較轉輞朝輞輞  
50 遊遊遊遊遊遊遊遊遊遊遊遊遊遊遊遊  
60 酢酢鋐鋐銕銕銕銕銕銕銕銕銕銕銕銕銕銕銕  
70 鎔鎔鎔鎔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鎔鎔鎔鎔  
90  
A0 鑄鎔鑄鎔鑄鎔鑄鎔鑄鎔鑄鎔鑄鎔鑄鎔鑄鎔鑄  
B0 醋華報華報華報華報華報華報華報華報  
C0 韶鈞韶鈞韶鈞韶鈞韶鈞韶鈞韶鈞韶鈞  
D0 駘駘駘駘駘駘駘駘駘駘駘駘駘駘  
E0 鏽鈹鈹鈹鈹鈹鈹鈹鈹鈹鈹鈹鈹  
F0 鹿黑鹿黑鹿黑鹿黑鹿黑鹿黑鹿黑鹿黑

E940 - E9FF

40 嘴噉囁噏喚喚喚喚  
45 圈圍塲塲塲塲塲塲塲塲  
50 墓塲塲塲塲塲塲塲塲塲  
55 墓塲塲塲塲塲塲塲塲塲  
60 墓塲塲塲塲塲塲塲塲塲  
65 墓塲塲塲塲塲塲塲塲塲  
70 墓塲塲塲塲塲塲塲塲塲  
75 墓塲塲塲塲塲塲塲塲塲  
80 墓塲塲塲塲塲塲塲塲塲  
85 墓塲塲塲塲塲塲塲塲塲  
90 墓塲塲塲塲塲塲塲塲塲  
A0 撇捺捺捺捺捺捺捺捺捺  
B0 敵敵對噬噬噬噬噬噬噬噬  
C0 檢檳檳檳檳檳檳檳檳檳  
D0 烫燙燙燙燙燙燙燙燙燙  
E0 歡歡歡歡歡歡歡歡歡歡  
F0 溶溶溶溶溶溶溶溶溶溶

EA40 - EAFF

40 潛確萬蕩潔漸洽鼓爌爌燭燐燭燐燭熒熒  
45 燥燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
50 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
55 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
60 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
65 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
70 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
75 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
80 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
85 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
90 燥燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭燭  
AO 鳴噷礮礮礮礮礮礮礮礮礮礮礮  
BO 糜移麥窯麥窯麥窯麥窯麥窯麥窯  
CO 貝施賣蒸賣蒸賣蒸賣蒸賣蒸  
DO 網毅原續續綱綱綱綱綱綱  
EO 脣罩翼鄰鄰磅礴磅礴磅礴  
FO 腰臊臘臘臘臘臘臘臘臘臘臘臘臘

EB40 - EBFF

40	棘戴莖蕁蕡蕡蕡蕡蕡蕡蕡蕡蕡蕡蕡蕡蕡蕡蕡蕡
50	復葉蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕蕕
60	蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
70	蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
80	蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
90	蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅
A0	譁誼誠誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦
B0	誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦
C0	誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦
D0	誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦
E0	誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦
F0	誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦誦

FC40 - FCFE

40 銅鉤鑄鈴鑿空閨關閨閨閨閨閨閨閨閨  
45 雖鑿鈴冠朝暉靚鑿峰頸須廷談鑽鑽鑽  
50 醉駁駁駕駕駕駕駕駕駕駕駕  
55 駕駕駕駕駕駕駕駕駕  
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65 駕駕駕駕駕駕駕駕駕  
70 駕駕駕駕駕駕駕駕駕  
75 駕駕駕駕駕駕駕駕駕  
80 駕駕駕駕駕駕駕駕駕  
85 駕駕駕駕駕駕駕駕駕  
90 駕駕駕駕駕駕駕駕駕  
A0 𩙑魚句鳥丸鳥鳥鴟鴟鴟鴟鴟鴟鴟鴟  
B0 壓裏去法裏裏裏裏  
C0 啟啓啓啓啓啓啓啓啓啓啓啓啓啓啓啓啓啓  
D0 腳婢婢婢婢婢婢婢婢婢婢婢婢婢婢婢婢  
E0 懸懸懸懸懸懸懸懸懸懸懸懸懸懸懸懸  
F0 獄旗墩檣檣檣檣檣檣檣檣檣檣檣檣檣

FD40 - FDFE

EE40 - EEEF

40 蘭蕙藏草殿題蘭後通愛亂雜舊英孽  
50 薈蕪蘿蔓蓬草姦虧腐虫蠅蠅蟲蠅  
60 蟬蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅蠅  
70 窗禍禍禍禍禍禍禍禍禍禍禍禍禍  
80  
90  
AO 謂謾譏謔謔謔謔謔謔謔謔謔謔  
BO 謂謔謔謔謔謔謔謔謔謔謔謔謔  
CO 謔謔謔謔謔謔謔謔謔謔謔謔謔  
DO 謔謔謔謔謔謔謔謔謔謔謔謔謔  
EO 謔謔謔謔謔謔謔謔謔謔謔謔謔  
FO 謔謔謔謔謔謔謔謔謔謔謔謔謔

EF40 - EFFF

Code Pare 950 Traditional Chinese (Cont.)

F040 - F0FF

40 琥珀琥珀璫環瑾甌璧瓈齧齒瘡瘍瘻瘞  
50 瘡痏數點暗喚唇齶碰微聲響礮瘞後禱  
60 稜鴟努搏箇箇箇箇箇箇箇箇箇箇箇箇箇  
70 繼續續續繢繢續續續續續續續續續續  
80  
90

F140 - F1FF

F240 - F2FF

40	僕撲拖擗擗擺檻檻蘆施捨鷗權櫛櫛櫛櫛櫛
50	檻楊櫟橐橐聚橐櫻櫻櫻歌頌頌頌頌頌頌
60	激瀉瀉瀉瀉瀉瀉瀉瀉瀉瀉瀉瀉瀉瀉瀉瀉
70	擺攤攤攤攤攤攤攤攤攤攤攤攤攤攤攤攤攤
80	擺攤攤攤攤攤攤攤攤攤攤攤攤攤攤攤攤攤
90	磚譽磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚
A0	磚譽磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚磚
B0	縫縫縫縫縫縫縫縫縫縫縫縫縫縫縫縫縫縫縫
C0	瞻臍臍臍臍臍臍臍臍臍臍臍臍臍臍臍臍臍臍臍
D0	藉蔥高龍藜蔓蘋草蘋蘋蘋蘋蘋蘋蘋蘋蘋
E0	蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻蠻
F0	檢檢檢檢檢檢檢檢檢檢檢檢檢檢檢檢檢檢檢

F340 - F3FF

F440 - F4FF

E540 - E5FF

F640 - F6FF

F740 - F7FF

Code Pare 950 Traditional Chinese (Cont.)

F840 - F8FF		FC40 - FCFF	
40	講話聲	40	雙
50	鞦韆聲	50	鞦韆聲
60	鯨魚聲	60	鯨魚聲
70	開尊聲	70	開尊聲
80		80	
90		90	
A0	噉噉聲	A0	噉噉聲
B0	潰爆聲	B0	潰爆聲
C0	噏噏聲	C0	噏噏聲
D0	噏噏聲	D0	噏噏聲
E0	噏噏聲	E0	噏噏聲
F0	噏噏聲	F0	噏噏聲
F940 - F9FF		FD40 - FDFF	
40	續續聲	40	續續聲
50	蹣跚聲	50	蹣跚聲
60	鷄鳴聲	60	鷄鳴聲
70	蹠蹠聲	70	蹠蹠聲
80		80	
90		90	
A0	噏噏聲	A0	噏噏聲
B0	噏噏聲	B0	噏噏聲
C0	噏噏聲	C0	噏噏聲
D0	噏噏聲	D0	噏噏聲
E0	噏噏聲	E0	噏噏聲
F0	噏噏聲	F0	噏噏聲
FA40 - FAFF		FE40 - FEFF	
40		40	
50		50	
60		60	
70		70	
80		80	
90		90	
A0		A0	
B0		B0	
C0		C0	
D0		D0	
E0		E0	
F0		F0	
FB40 - FBFF		FF40 - FFFF	
40		40	
50		50	
60		60	
70		70	
80		80	
90		90	
A0		A0	
B0		B0	
C0		C0	
D0		D0	
E0		E0	
F0		F0	

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III



B005-000-1406

Issue 1.0

0302

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Printed in U.S.A.