Owner's Manual

NCR 7167 Two-Station POS Printer Series II

Release 2.0

NCR

Preface

Audience

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

Notice: This document is NCR proprietary information and is not to be disclosed or reproduced without consent.

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 3.125A.

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.

Wichtige Benutzerinformationen:

Um die Produktsicherheit und die FCC und CE–Markierungsanforderungen bei der Benutzung des Druckers sicherzustellen, müssen entweder das mitgesante Netzgerät, Netzanschlußkabel und Verbindungskabel verwendet werden oder folgende Anforderungen müssen erfüllt sein:

Netzgerät:

Das Netzgerät muß ein UL verzeichnetes (QQGQ) Netzgerät der Klasse 2 mit SELV (Sekundärextraniederspannung), Nichtenergie Gefahrenausgang, begrenzter Energiequelle, einer Aufnahmeleistung von 100–240 VAC, 1.5/0.8 A und 50/60 Hz, und einer Leistungsabgabe von 24 VDC, 3.125 A.c sein.

Die Benutzung des Produktes mit einem Netzgerät, daß nicht von NCR mitgeliefert wurde erfordert das Testen des Netzgerätes mit dem NCR Drucker auf FCC und CE–Markierungs Befolgung.

Verbindungskabel:

Bei der Benutzung dieses Produkts muß ein abgeschirmtes (360 Grad) Verbindungskabel benutzt werden. Die Abschirmleitung muß entweder mit dem Rahmens des Gerätes oder der Erde verbunden sein oder alternativ müssen alle Enden des Kabels geerdet werden.

Falls das Verbindungskabel nicht in der hier beschrieben Art benutzt wird, muessen das Kabel und der NCR Drucker auf die FCC und CE–Markierungs Befolgung überprüft werden.

Netzanschlußkabel:

Für dieses Produkt muß ein in UL aufgelistete, abnehmbares Netzanschlußkabel benutzt werden. Falls das Netzgerät fest auf dem Boden montiert ist, muß ein Netzanschlußkabel mit der SJT Markierung benutzt werden. Für Anwendungen außerhalb der USA, sollte ein Netzanschlußkabel benutzt werden, daß der Zertifizierung und Bestimmung des jeweiligen Landes entspricht.

Das Abweichen der hier beschriebenen Benutzungsanleitung des Netzanschlußkabels kann gegen die gesetzlichen Sicherheitsbestimmungen des jeweiligen Landes verstoßen.

用户须知

为了确保产品安全和遵守中国电磁兼容(EMC)规定,必须使用随产品附带或符合下列参数的电源,电源线和接口电缆:

电源

中国强制性产品认证,输入为：交流100～240伏, 1.5/0.8安倍, 50/60赫兹, 输出为: 直流24伏, 2.3或3.125安倍

如使用本产品与非NCR生产的电源产品, 必须测试电源和NCR生产的打印机以符合产品安全和**中国电磁**兼容(EMC)规定

接口电缆

本产品必须使用屏蔽(360度)接口电缆。屏蔽层必须连接到金属框架或接地或接口电缆两端的接地参考

使用没有在这里描述的接口电缆将要求您必须测试接口电缆和NCR生产的打印机以符合产品安全和**中国电磁**兼容(EMC)规定

电源线

中国强制性产品认证, 可拆卸的电源线.

使用没有在这里描述的电源线可能导致在该国的安全证书失效

销售打印机的安全规定

安全注意事项

维修
注意：本产品不含有用户可自行更换的部件，如需更换，请联系有资质的技术人员。

保险丝的更换
注意：为防止失火只可用相同规格的保险丝进行更换,

안전주의사항

서비스

주의 : 이 제품은 서비스 부품을 포함하지 않고 있습니다. 서비스는 자격이 있는 서비스 기술자에 의해 제공됩니다.

퓨즈교체

주의: 화재의 위험에 대한 계속적인 보호를 위해 같은 타입과 등급의 퓨즈로 교체해야 합니다. 。

한국 업무용(A급 기기) 방송통신기자재

이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Federal Communications Commission (FCC) Radio Frequency Interference Statement

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

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

Communication Cables

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

Information to User

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

The NCR Company is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by NCR. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

Industry Canada (IC)
Radio Frequency Interference Statement

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

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

Bundeskommunikationen Kommission (FCC) Hochfrequenz–Störungs Richtlinie.

Warnung: Änderungen oder Änderungen an der Maßeinheit, die nicht ausdrücklich von der Seite, die für die Befolgung verantwortlich ist, genehmigt ist, können zum Entzug der Benutzungsberechtigung dieses Gerätes führen.

Anmerkung: Dieses Gerät wurde getested und entspricht der zulässigem Richtlinien eines digitalen Gerätes der Klasse A, gemäß Abschitt 15 in den FCC Richtlinien. Diese Richtlinien sind dazu da, einen angemessenen Schutz gegen schädliche Störung bei der komerziellen Nutzung dieses Gerätes zu gewährleisten. Dieses Gerät erzeugt und benutzt Hochfrequenzenergie und kann Hochfrequenzenergie ausstrahlen. Wenn die Installierung und Benutzung dieses Gerätes nicht wie im Benutzer Handbuch beschrieben ist, durchgeführt wird, kann eine schädliche Störung von Funkverbindungen verursacht werden. Der Betrieb dieses Gerät in einem Wohngebiet kann schädliche Störung verursachen die auf Kosten des Benutzers behoben werden müssen.

Kommunikationskabel:

Dieses Gerät muß in Uebereinstimmung mit Kategorie A FCC Richtlinien mit einem abgeshirmten Kabel betrieben werden.

Benutzerinformationen:

Dieses Gerät muß wie in der Hersteller Anweisungen beschrieben installiert und benutzt werden. Jedoch gibt es keine Garantie dafür, daß Funkstörung nicht in bestimmten kommerziellen Installation auftritt. Für den Fall, daß das Gerät Funkstörungen verursacht, was durch das An und Abschalten des Gerätes festgestellt werden kann, wird der Benutzer aufgefordert sofort mit NCR Kontakt aufzunehmen.

NCR ist nicht für Radio– oder Fernsehenstörung verantwortlich, die durch unauthorisierte Änderung der Ausrüstung oder den Ersatzes der anschließenden Kabel oder durch Anschluß von Geräten hervorgerufen wird, die nicht ausdrücklich von NCR genehmigt wurden sind. Die Korrektur von Störungen, die durch solche unauthorisierte Änderung, Ersatz oder Zubehör verursacht werden, liegt in der Verantwortlichkeit des Benutzers.

Industrie–Kanada (IS) Hochfrequenz–Störungs Richtlinie:

Dieses digitale Gerät der Klasse A entspricht allen Anforderungen der kanadischen Störung–Verursachende Geräte Richtlinie.

无线电频率干扰声明

用户须知

本设备已经过测试，证明其符合A级数字设备的限定。这些限制旨在对设备在商业环境中运作时提供合理的保护,以防有害干扰。本设备产生,使用,并能发射无线电频率能量.因此如果不按照使用说明书安装和使用,可能对无线电通讯造成有害干扰. 如果在住宅区使用本设备很可能造成干扰.用户将被要求自费纠正干扰 。

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校正由此而产生的干扰将是用户的责任。用户需注意:未经NCR批准的改装可能导致用户无权操作本设备

中国电磁兼容声明:

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户自费对其干扰采取切实可行的措施。

Caution labels information

Hot Surface, Do not touch / Surface chaude, Ne pas toucher.

Sharp edge. Keep fingers and other body parts away / Tranchant, Tenir les doigts et les autres parties du corps éloignés.

References

- *NCR 7167 Two-Station POS Printer Service Manual* (B005-0000-2109)

- *NCR 7167 Two-Station POS Printer Parts Identification Manual* (B005-0000-2110)

Table of Contents

Chapter 3: Solving Problems

Chapter 4: Diagnostics

Chapter 5: Communication

Chapter 6: Commands

Revision Record

Issue	Date	Remarks
A	Oct 2011	First Issue
B	Oct 2012	Update QR bar code support, and NCR Lean Receipt Utilities information
C	Nov 2012	Thermal Head Failure detection
D	Nov 2015	Power Consumption and Print Speed for Print Density
E	Jul 2016	Add Printer Setting Change command parameter "58"
F	Sept 2017	Added printer setup procedures for Windows 8, 10, and POSReady 7
G	Feb 2018	Updated the Ordering Ribbon Cassettes information
		Updated the Ordering Other Supplies table

Chapter 1: **About the 7167 Series II Printer**

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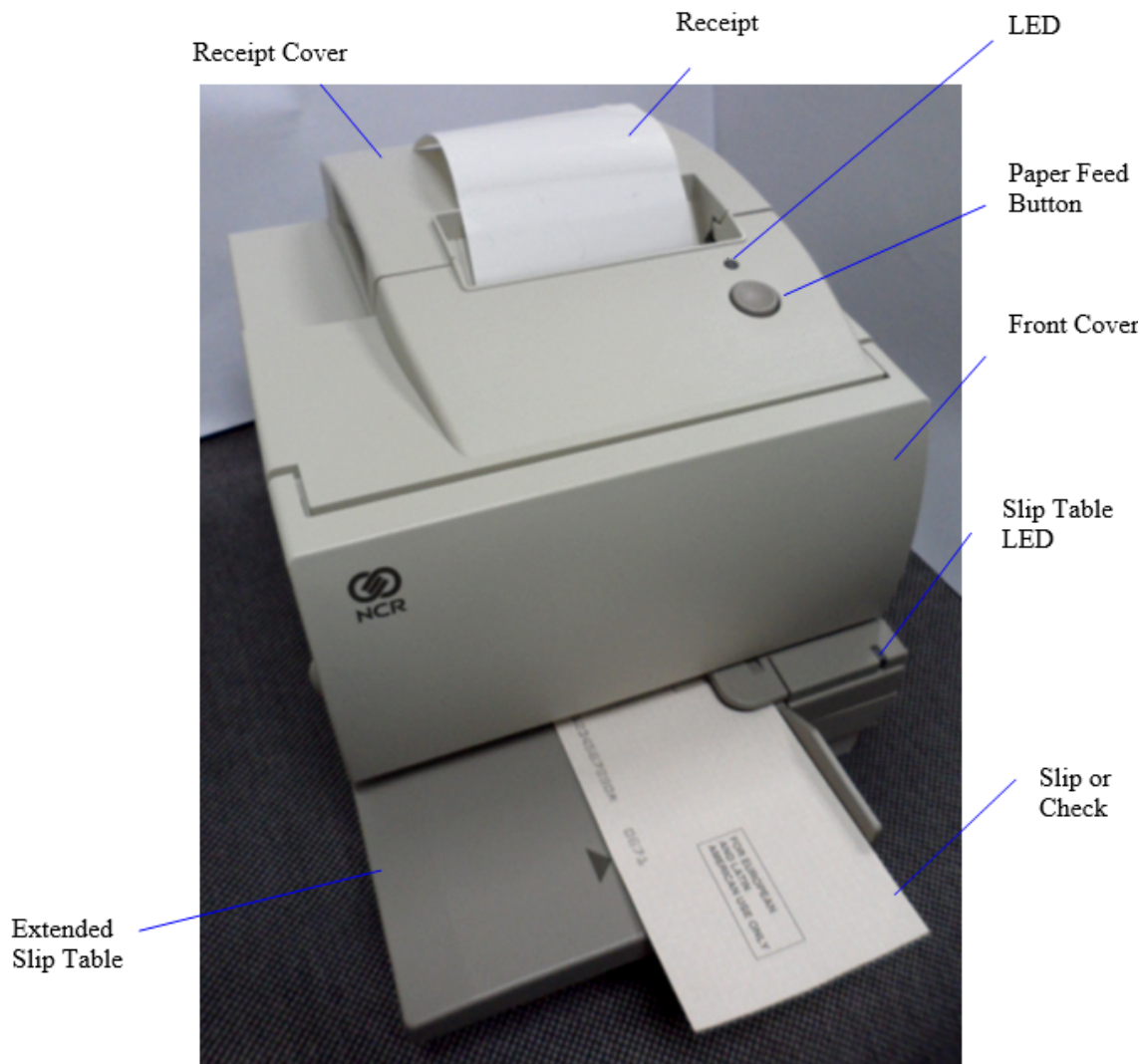
The 7167 Series II printer is a fast, quiet, relatively small and reliable multiple-function printer. It prints receipts, validates and prints checks, and prints on a variety of single or multiple-part forms. There is no journal as it is kept electronically by the host computer.

The industry-standard RS-232C communication interface allows the 7167 Series II 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

The 7167 Series II 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
- ECO feature
- Resident bar codes
    - Code 39
    - Code 93
    - Code 128
    - UPC-A
    - UPC-E
    - JAN8 (EAN)
    - JAN13 (EAN)
    - Interleaved 2 of 5
    - Codabar
    - PDF417
    - GS1 DataBar Omnidirectional
    - GS1 DataBar Truncated
    - GS1 DataBar Stacked
    - GS1 DataBar Stacked Omnidirectional
    - GS1 DataBar Limited
    - GS1 DataBar Expanded
    - GS1 DataBar Expanded Stacked

- QR code

- 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 1256 (Windows Arabic)

  - PC Code Page Katakana

  - Code Page Hungary

  - 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)

Note: Code Pages 932, 936, 949, and 950 are not supported by models 7167-1035 and 7167-2035.

General Features

- Knife

- Cover open sensors

- Industry standard RS-232C communication interface

- One cash drawer connector (supports 2 cash drawers)

- History EEROM for custom settings

- Audible tone (controlled by application)

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

Options

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

- E13B and CMC-7 support with auto sensing of the MICR type provided

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

- Remote power supply

Thermal Print Head

The 7167 Series II Receipt Station uses a thermal print head for printing receipts. The following are its advantages:

- Fast and silent printing.

- Heat causes to print on paper. Because of this functionality, there is no need to change a cassette or ribbon, which prevents having soiled fingers and paper dust.

- No scheduled maintenance for the print head. For more information, refer to *Cleaning the Printer* on page 11.

- Durable print head design. For more information, refer to the "Impact Print Head" section below.

Thermal Head Failure Detection

The 7167 Series II features the Thermal Head Failure Detection functionality. This functionality provides early detection for thermal head failure and reports the failure dot count in a diagnostic form.

There are two ways to enable this function:

- Power-on detection—is turned on by configuring the resident firmware setup menu of the 7167 Series II printer. After it is configured, the printer executes the detection every time it is turned on.

  To check the error status, modify an option in the application after the detection. Do this step during the boot sequence. The application retrieves the result either through Real Time Status Transmission or Unsolicited Status Update.

- Manual detection—is enabled by running an Execute Head Failure Detection command. To send the head failure detection command and to check the error status, modify an option the application.

Impact Print Head

The bi-directional, impact print head has a durable design that can last for a long time. If necessary, the print head must be replaced.

Note: Only a trained service technician must replace the impact print head. To determine if the print head needs to be replaced, refer to *Solving Problems* on page 76.

Ordering Paper and Supplies

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

Ordering Thermal Receipt Paper

The 7167 Series II requires using an NCR recommended thermal paper to use on the thermal receipt print station. This paper type ensures proper operation of the printer.

Note: The paper must not be attached at the core, otherwise the receipt station will be damaged when the paper is exhausted.

NCR recommends for the paper rolls to have the following dimensions.

Diameter	Length	Width
Maximum of **80 mm.** (3.15 inches)	**83 m** (273 ft.)	**80 mm ± .5 mm** (3.15 ± .008 inches)

The following paper grades are available from Iconex.

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 achievability and added resistance to incompatible substances
856461	Red/Black
856458	Blue/Black

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

Voice: 1(800)543-8130 (toll free), or local listing of Iconex product sales office.

The following are other certified thermal papers that can be used.

Paper Manufacturer	Media model
Kanzaki	P300
Koehler	KT 44 FA

⚠ **Warning:** **It is critical that only certified thermal paper be used with this printer, otherwise the printer can be damaged or it prints with poor quality.**

Ordering Forms

The 7167 Series II printer prints on single- or multiple-part, which can be up to five forms, in the slip station. Forms and slips must meet the following requirements:

- Front insertion (minimum):
  - **51 mm** (2.0 in.) wide
  - **70 mm** (2.75 in.) long
- Side insertion (minimum):
  - **203 mm** (8.0 in.) wide
  - **51 mm** (2.0 in.) long
- Single-ply forms should be on paper that is greater than 15 pounds.
- Multiple-part forms, which can be up to five parts should be no thicker than **0.406 mm** (0.016 in.).
- If multi-part forms are used, the cardstock must be the last ply of the form.

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

Voice: 1(800)543-8130 (toll free), or local listing of Iconex product sales office.

Ordering Ribbon Cassettes

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

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

Stock Numbers:

- (purple ribbon cassette—8 million characters) 9416-0100 – 6 ribbons per carton
- (black ribbon cassette—5 million characters) 9416-0197 – 6 ribbons per carton

Ordering Other Supplies

Contact your sales representative to order the supplies listed in the table. The numbers are for reference only. Suppliers may use other numbers.

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

Item	Type	Alias Number
External Power Supply	75W External Power Supply, No Power Cord	7167-K511
	75W External Power Supply with US Power Cord	7167-K510
	60W External Power Supply	7197-K510
AC Cables for External Power Supply	US Power Cord	1416-C325-0030
	UK Power Cord	1416-C321-0030
	SEV Power Cord	1416-C320-0030
	Australian Power Cord	1416-C322-0030
	International Power Cord	1416-C323-0030
	Argentina Power Cord	1416-C009-0018
	International (with plug) Power Cord	1416-C319-0030
Non-Powered RS-232 (Serial) Interface	1.0 meter	1416-C879-0010
	4.0 meters	1416-C879-0040
Non-Powered USB Cable	1.0 meter	1432-C083-0010
	4.0 meters	1432-C083-0040
	4.0 meters (USB)	1432-C089-0040
Powered USB Cable	24V Powered USB Cable, 1.0 meter, Black	1432-C086-0010
	24V Powered USB Cable, 4.0 meters, Black	1432-C402-0040
Narrow 58mm Width Paper Guide	Release 1.0	7167-K058
	Series II	7167-K059
Ethernet Cable	8–wire	1432-C046-0030

Item	Type	Alias Number
Power only USB Cable for Serial Configuration	1.0 meter	1432-C092-0010
	4.0 meters	1432-C092-0040
Cash Drawer Cable	1.8 meters	1639-K044
		1639-K043
		1639-K213
	0.6 meter (Y-Cable)	1416-C372-0006
		1639-K045
Extended Slip Table	G11	7167-K352
	Black	7167-K356
Fiscal Module	Chile	7167-K003
Thermal Head		7167-K900
Thermal Mechanism		7167-K901
MICR Slip Table		7167-K902

Ordering Documentation

Contact your sales representative to obtain the following documentation:

- *7167 Series II Two - Station POS Printer: Parts Identification Manual* (B005-000-2110)

- *7167 Series II Two - Station POS Printer: Service Manual* (B005-000-2109). This publication includes the Troubleshooting Guide and the Preventative Maintenance Guide.

Cleaning the Printer

This section describes information about 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

Note: 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. This practice may damage the thermal print head and its 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, refer to *Solving Problems* on page 76.

Note: If the recommended paper is used, the thermal print head does not require regular cleaning. If non-recommended paper has been used for an extended period of time, cleaning the print head with cotton swabs and rubbing alcohol is insufficient. For the recommended paper type to use, refer to *Ordering Paper and Supplies* on page 7.

Chapter 2: **Setting up the Printer**

Overview

This chapter describes some of the basic procedures for setting up the 7167 printer.

What is in the Box?

The following items are packed in the shipping box:

- Printer, enclosed in a plastic bag and foam pack
- Ribbon cassette
- Thermal receipt paper roll
- Cardboard restraint for carriage (behind front cover)

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

- Communication cable from host computer to printer
- DC Power Cable
- Remote Power Supply
- USB Plus Power Cables
- Cash drawer cables. The cables may be ordered from other equipment suppliers. For more information, refer to *Ordering Paper and Supplies* on page 7.

Removing the Packing Material
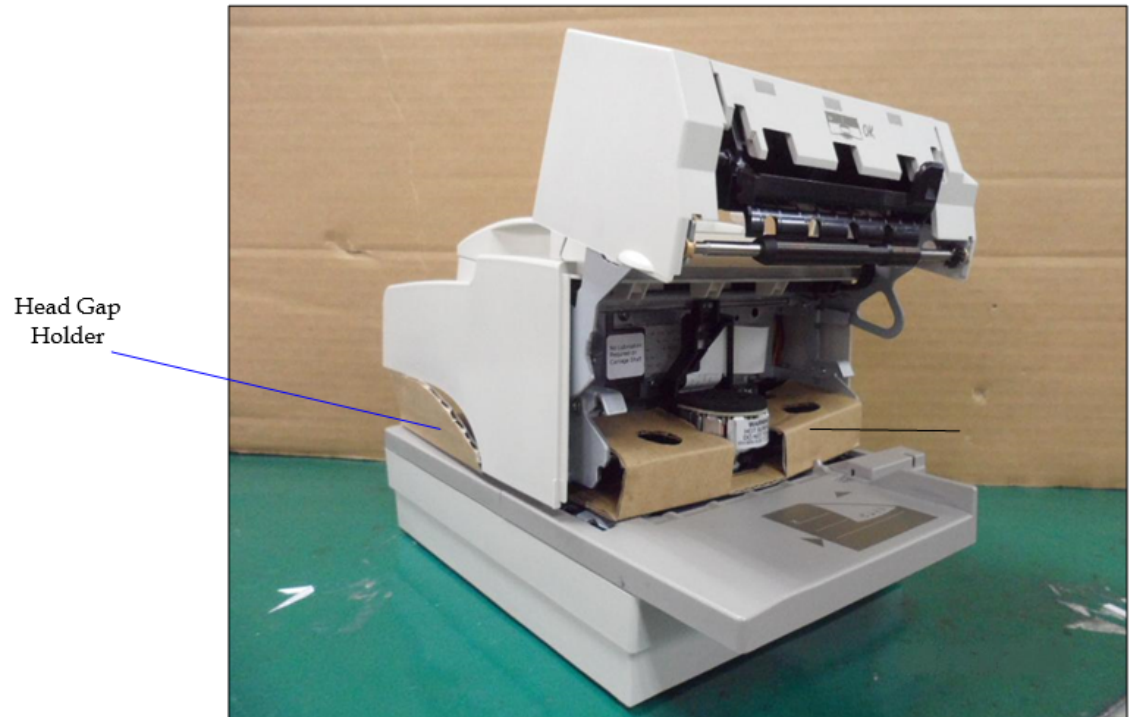
The printer is removed from the foam pack and plastic. There is an additional polyfoam for the non-flip model. To remove the packing material, follow these steps:

1. Remove the packing tape and packing materials.

2. Open the slip door and remove the carriage holder.

3. Remove the head gap holder from the slip table.

4. Remove the ribbon cassette from the foam pack.

5. Save all packing materials for future storing, moving, or shipping of the printer.

⚠️ **Caution:** Before using the printer, remove the carriage holder and the head gap holder. Do not pick up the printer using the slip table as a handle.

Repacking the Printer

Review the illustration on the previous page to pack the printer.

1. Place the receipt paper between the receipt cover and the print head for protection.

2. Remove the ribbon cassette, move the carriage to the center, 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.

5. Place the printer with the foam back in the box, and secure the box with packing tape.

Note: If sending the printer to NCR for repair, call an 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 slip door to change the ribbon cassette. The image below illustrates the actual dimensions of the printer, but leave several inches around the printer for connecting and accessing the cables.

Note: The Magnetic Ink Character Recognition (MICR) check reader feature has been factory adjusted for 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, which then causes intermittent reading errors when the MICR check reader is in operation. Relocating these devices may be required to prevent this interference.
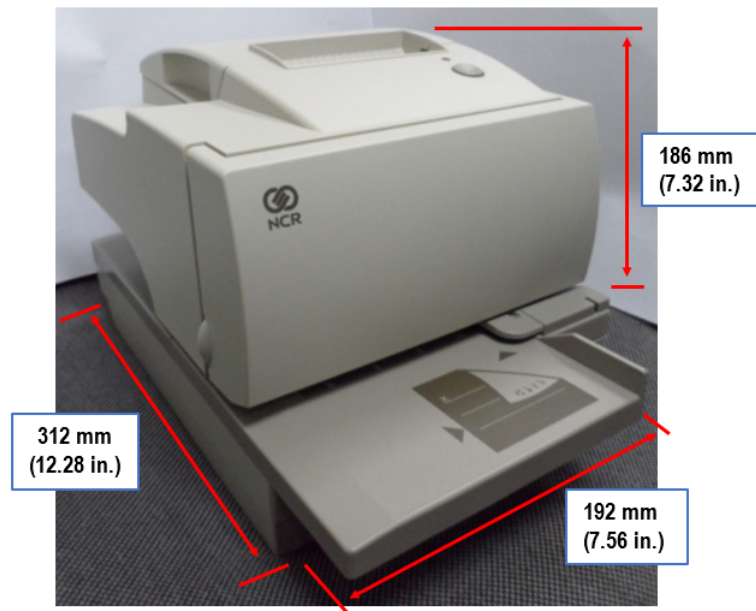
Connecting the Cables

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

- Power supply cable—supplies power from the power supply or POS terminal. For more information about the power supply, refer to *Power Requirements* on page 1.

- Communication cable (RS-232 or USB)—connects the printer to the host computer.

- Cash drawer cable—connects the printer to one or two cash drawers.

⚠️ **Caution:** Take caution of the following actions:

- Before disconnecting the Communication Cable and the Cash Drawer Cable from the printer, always disconnect the Power Cable from the power source.

- Before connecting the Power Cable to the power source, always connect the Communication Cable and the Cash Drawer Cable from the printer.

Follow these steps to connect the cables to the printer and host computer. For illustrations, refer to the images in the next sections.

1. Unplug the power cable from the power source.

2. Connect the power and communication cables to their respective connectors under the printer, as illustrated in the image that follows this section.

📝 **Note:** For the RS-232 cable, be sure to screw the communication cable to the communication connector on the printer.

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 illustrated in the image.

4. Connect the communication cable to the appropriate host computer connector.

5. Connect the cash drawer cables to the printer and cash drawers. The connectors are standard phone jacks 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 ensure that the host terminal is on or that the power supply is on.

RS-232 Cable Connection

Bottom of the printer
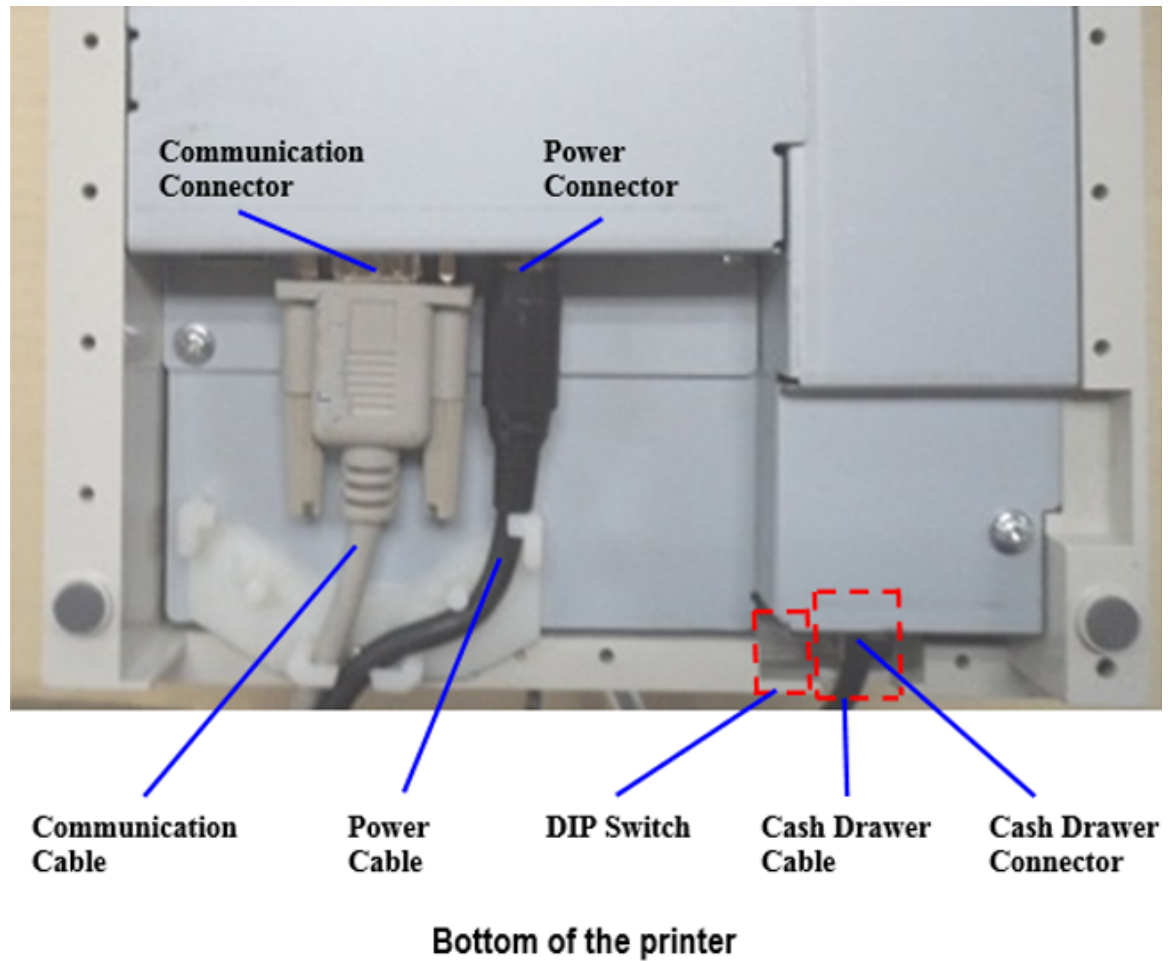
USB Cable Connection

Bottom of the printer
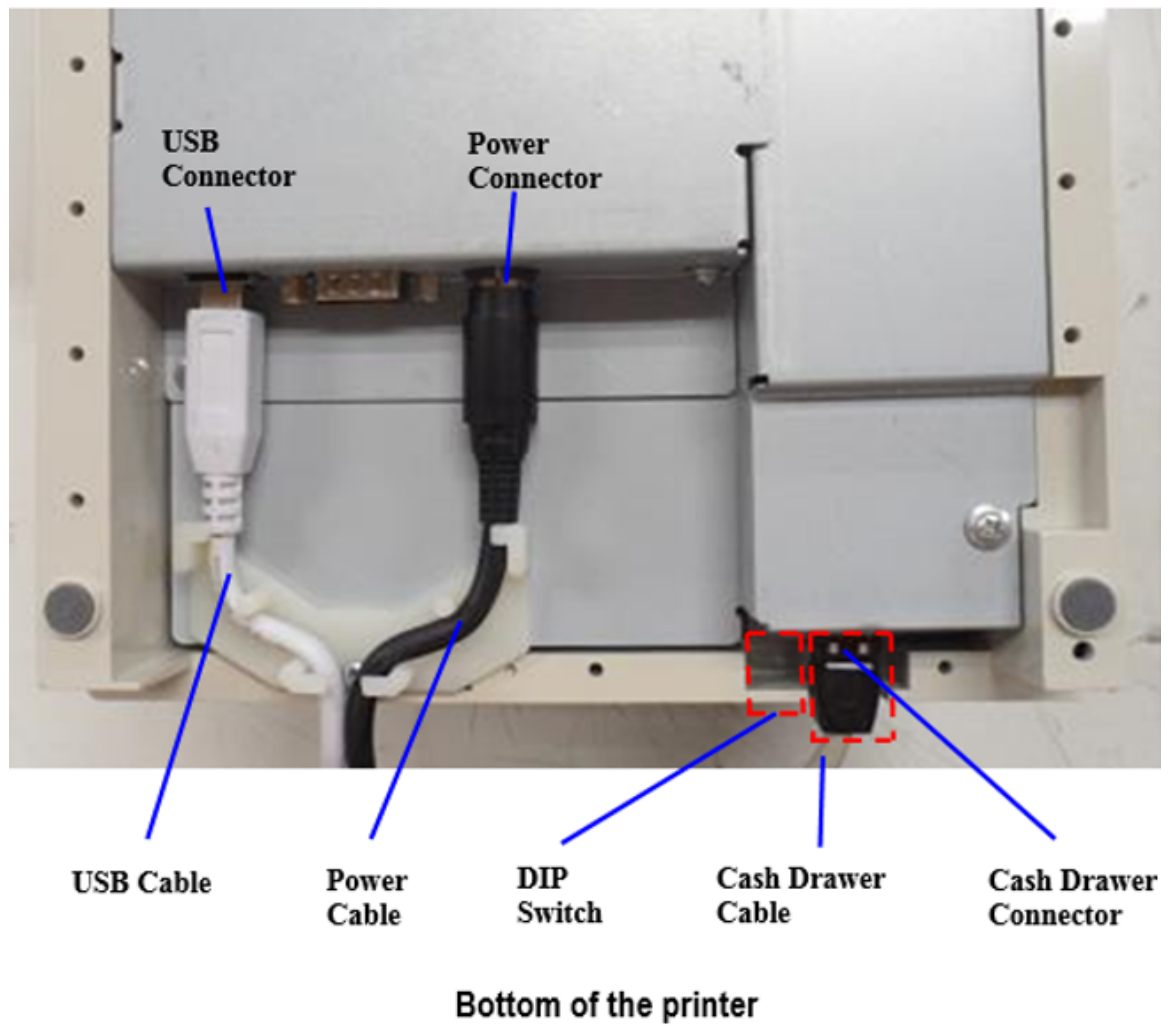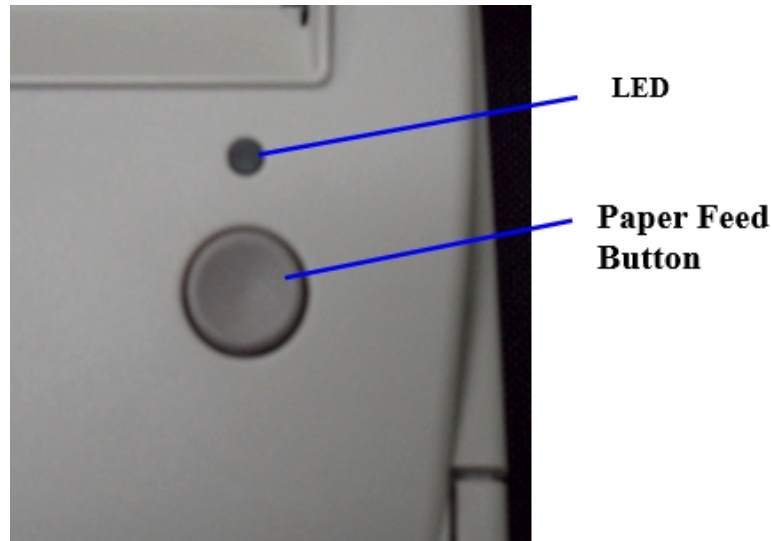
Using the Printer

Note: For more information about setting the DIP switches, refer to *Setting Switches* on page 70.

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*. When the printer completes its *startup* cycle, it is ready to receive data.

Note: If the LED blinks, or the host computer indicates that there is a problem, refer to *Solving Problems* on page 76.

2. To obtain an optional Configuration check, 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 offline. To completely remove power, unplug the power supply from the outlet, or turn the POS terminal off.

Loading and Changing the Receipt Paper

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

- LED blinks (slow)—indicates 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)—indicates 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

📝 **Note:** Although the images illustrate a used roll being removed, the instructions apply to loading paper for the first time.

1. Open the receipt cover. Refer to the next two images for the illustrations on this step.

2.   Remove the used roll.
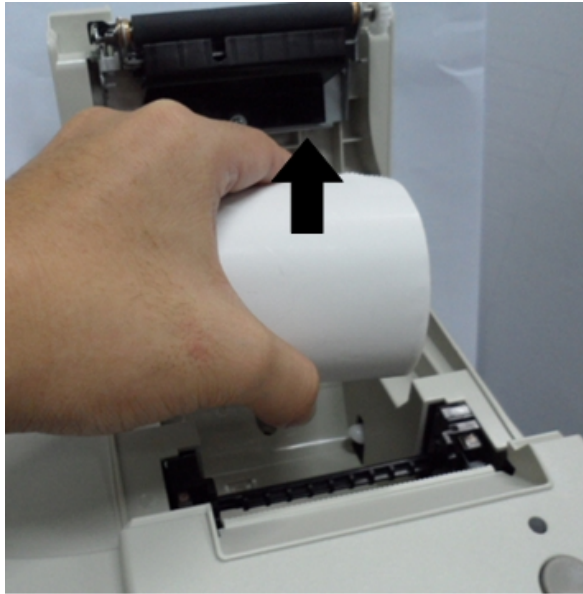
Loading the Paper Roll

📝 **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.

📝 **Note:** 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.
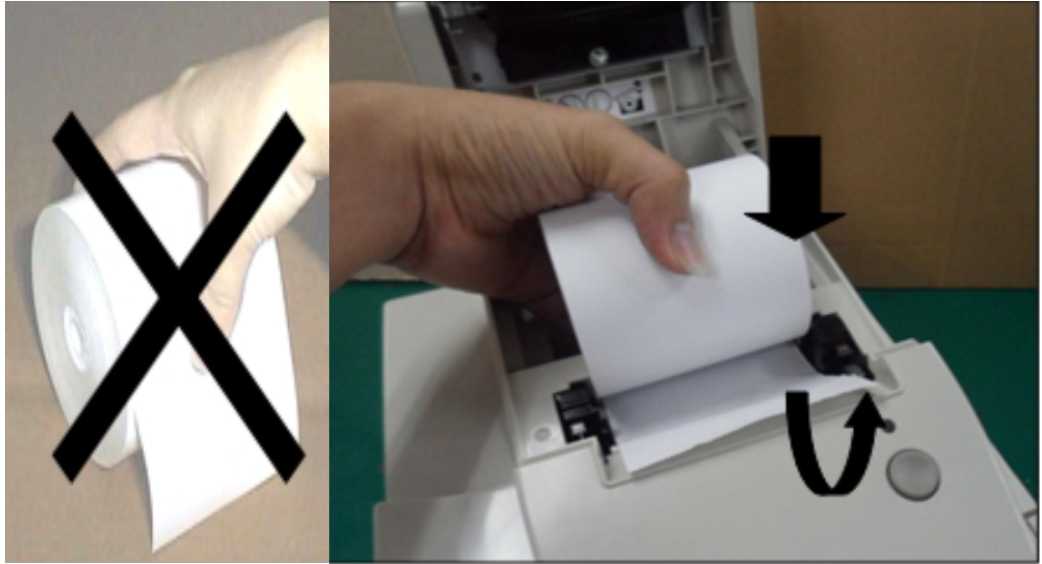
2. Close the receipt cover.
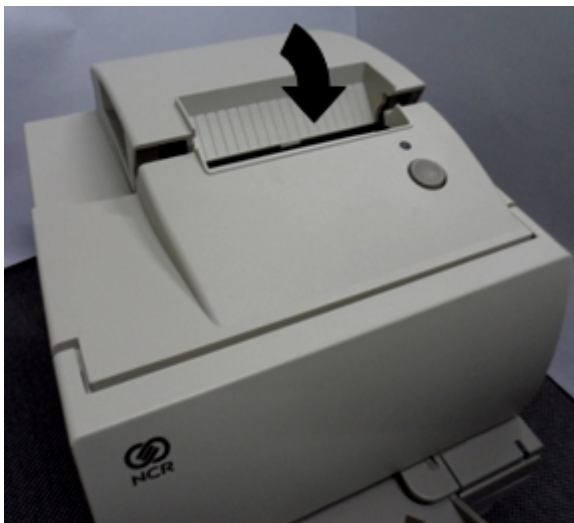
3. Remove the excess paper by tearing it against the tear-off blade.

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 in.) 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.
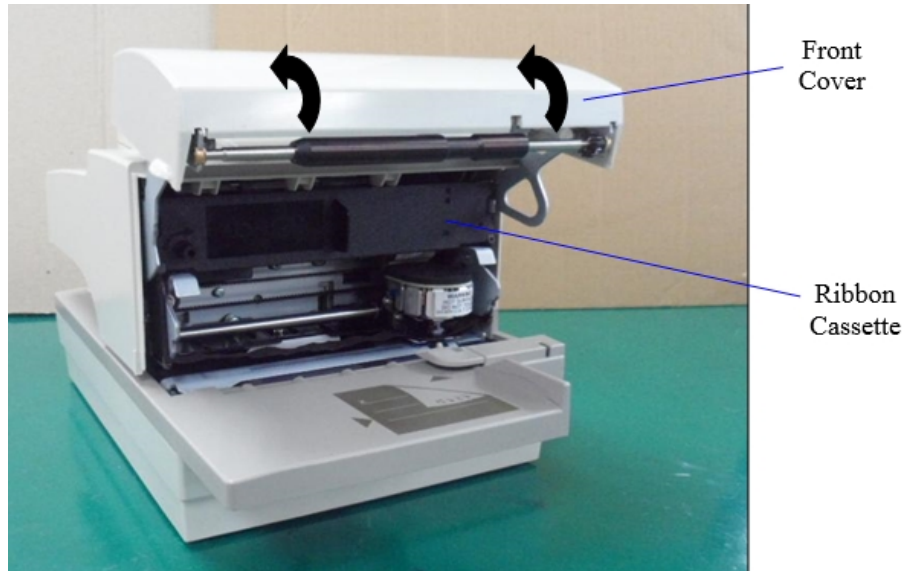
2. Use the handle on the cassette and pull the ribbon cassette from the printer.
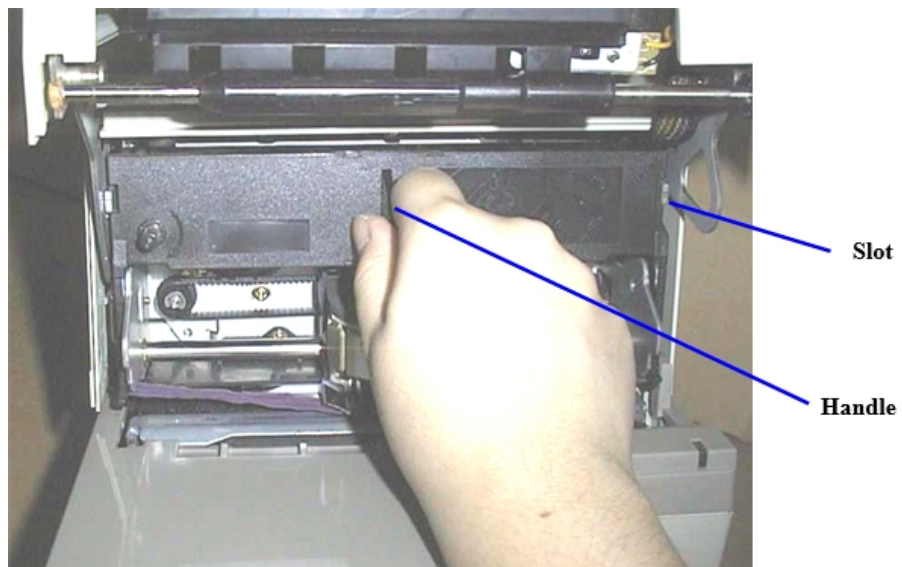
Installing the Ribbon Cassette

1. Tighten the ribbon fabric by turning the knob in the direction of the arrow (clockwise).
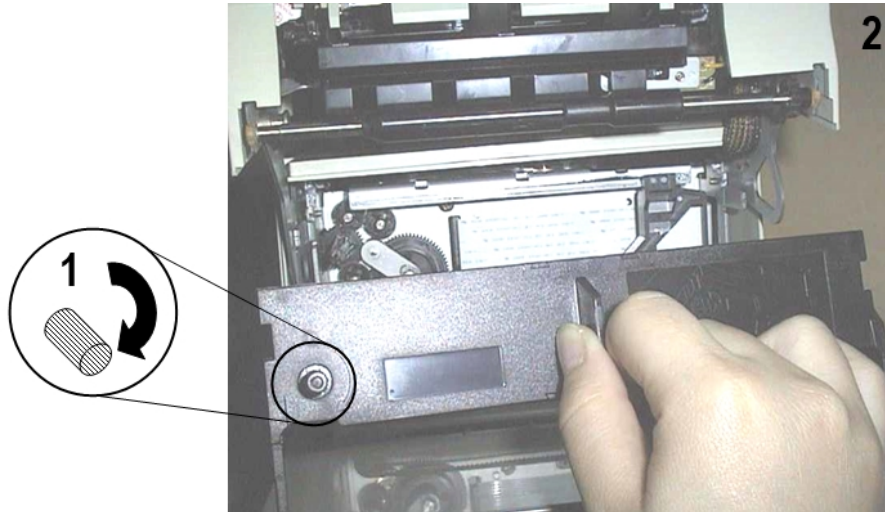
2. Position the ribbon cassette slots at the catch on the printer slip frame and push it into place. Be sure the ribbon is in front of or underneath the print head and between the print head and the ribbon shield.

3. 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.

4. Close the front cover.
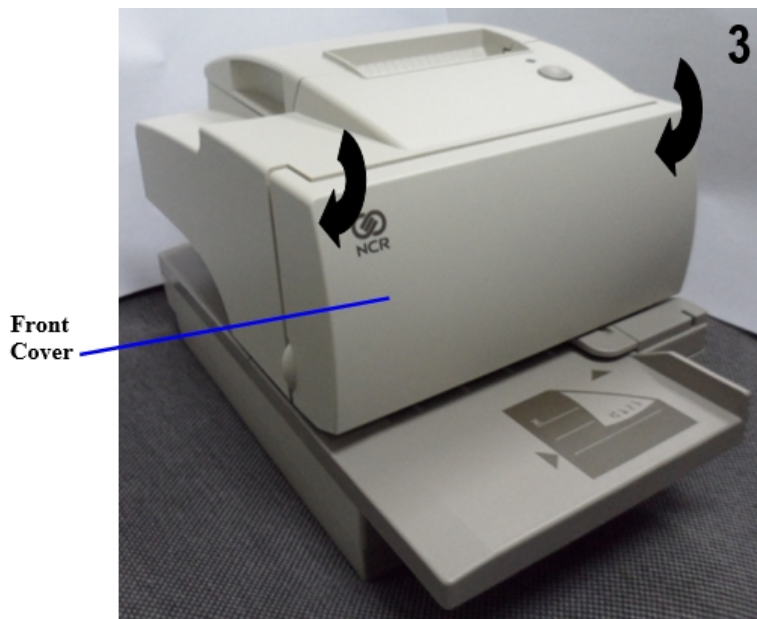
Printing in Forms or Checks

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, such as printing the date, payee, and amount on the check face

- Check endorsement

1. Insert the form or check from the front and place it on the slip table top first and with the print side up. If the form is extra long, insert it from the side.

Check Orientation

2. Slide the form or check to the right until it lines up against the guide or wall. If the form is extra long, slide it over the form stop to disengage it. In this case, mark the slip table to line up the form for the proper placement of the print on the form.
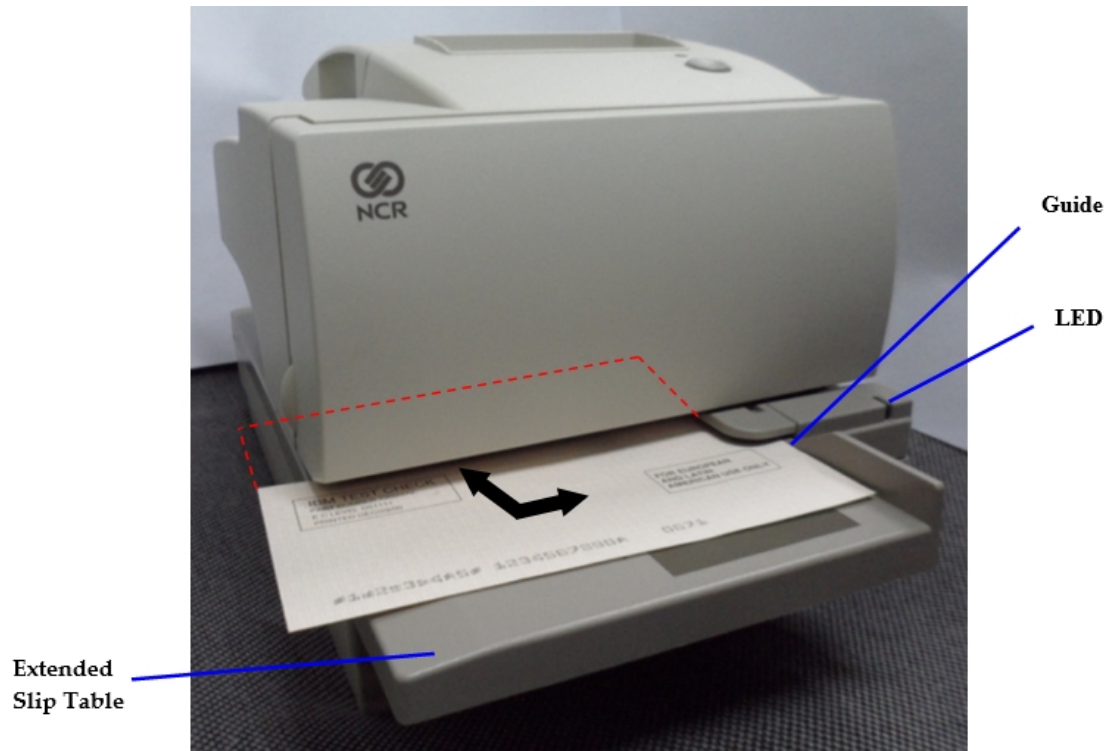
> **Note:** Although the image above illustrates a check being inserted into the printer, the instructions apply to any type of form. The 7167 can print on forms up to four-parts thick. For more information about the type of forms that can be used, refer to *Ordering Paper and Supplies* on page 7.

3. Slide the form or check toward the back of the printer until it contacts the form stop, which means it would not be able to go any further; or, align the form or check with any preset mark you may have made on the slip table for custom forms.

> **Note:** The green LED on the slip table turns on when the form or check is properly inserted, which means 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.

Validating and Verifying Checks

The following image is an example of the check orientation.

ENDORSE HERE

DO NOT WRITE, STAMP OR SIGN BELOW THIS LINE
RESERVED FOR FINANCIAL INSTITUTION USE
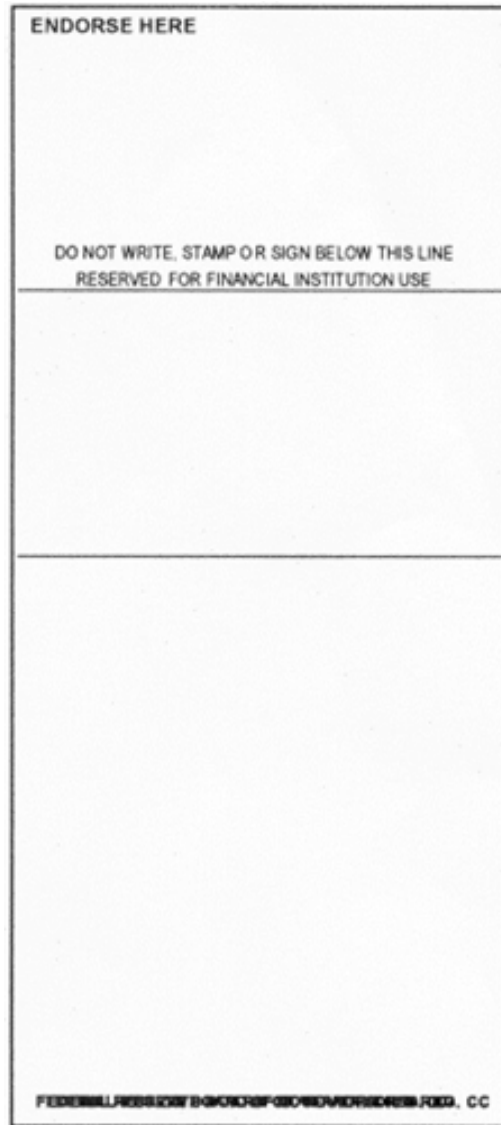
Check Orientation

1. Insert the check from the front and place it on the slip table face down with the MICR characters to the right as shown in the illustration on the facing page.

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

3. Slide the check toward the back of the printer until it contacts the form stop, which means it would not be able to go any further; or, align the check with any preset mark you may have made on the slip table.

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

4. Follow the instructions from the host computer. 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.

7. Slide the check to the right until it lines up against the guide or wall.
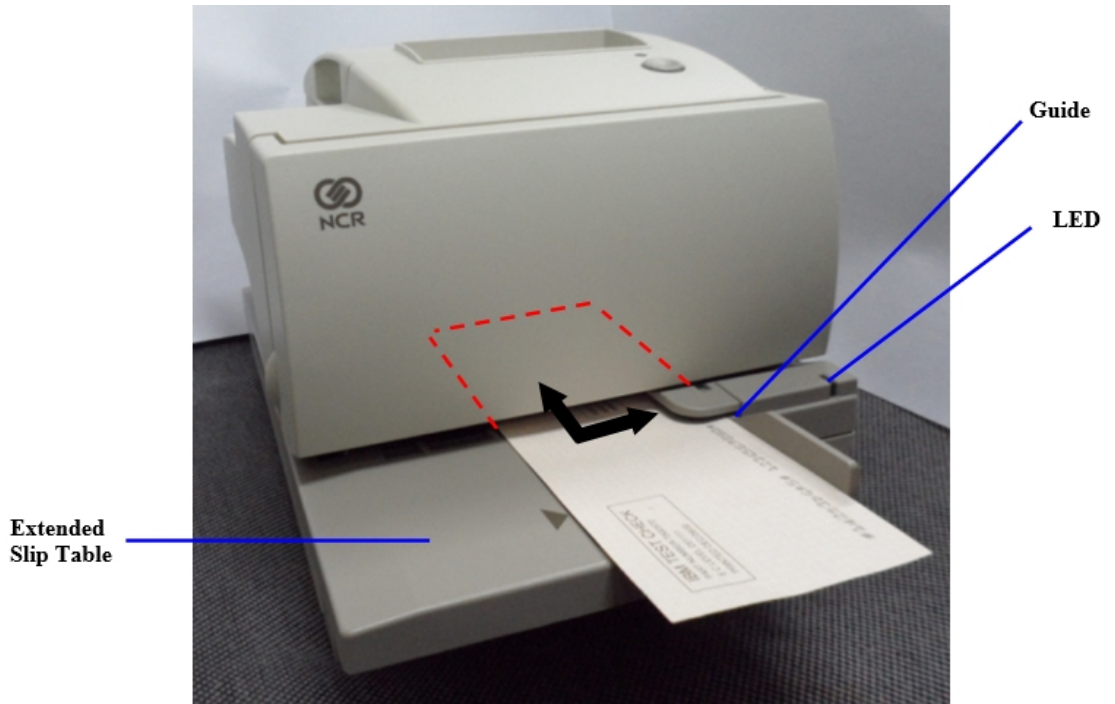
8. Slide the check toward the back of the printer until it contacts the form stop, which means it won't be able to go any further; or, align the check with any preset mark you may have made on the slip table.

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

9. Follow the instructions from the host computer. 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.

10. Remove the check after it has been fed all the way back out.

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

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, for example, the 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 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. 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), 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, install a USB interface card. With the required hardware in place, the Windows XP support plug-and-play USB with a built-in driver.

Note: Internet access is required to download the USB drivers from the NCR web site: *https://www.ncr.com*.

Host Configuration

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

Windows XP

1. Open the Control Panel.

2. Select **System**.

3. Select **Hardware**.

4. Select the **Device Manager** tab.

5. In the Device Manager window, scroll through the list of installed hardware devices until you find an entry for *Universal Serial Bus controllers*.

Note: If this entry exists, your host computer is set up for USB operation. If this entry is not in the list, consult your computer documentation to see if USB must be enabled in the BIOS setup.

Windows 7, 8, and 10

1. From the Windows search bar, search for Computer Management, then select to open.

2. Select **System Tools→Device Manager**.

3. In the Device Manager window, scroll through the list of installed hardware devices until you find an entry for *Universal Serial Bus controllers*.

Note: If this entry exists, your host computer is set up for USB operation. If this entry is not in the list, consult your computer documentation to see if USB must be enabled in the BIOS setup.

Installing the USB Virtual COM Port Driver for Printers

Windows XP

1. Follow the on-screen instructions. The printer beeps when the USB device is recognized.

2. Go to the location where you downloaded the drivers and double-click the file.

Note: The following images describe the on-screen instructions displayed on the Found New Hardware Wizard.

Found New Hardware Wizard

Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard will complete the installation for this device:
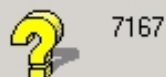
7167

A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.

What do you want the wizard to do?

⊙ Search for a suitable driver for my device (recommended)

○ Display a list of the known drivers for this device so that I can choose a specific driver

< Back   Next >   Cancel

Found New Hardware Wizard

Locate Driver Files
Where do you want Windows to search for driver files?

Search for driver files for the following hardware device:

7167

The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.

To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.

Optional search locations:

☐ Floppy disk drives

☑ CD-ROM drives

☐ Specify a location

☐ Microsoft Windows Update

< Back   Next >   Cancel

Found New Hardware Wizard

Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.

The wizard found a driver for the following device:

NCR 7167 Printer

Windows found a driver for this device. To install the driver Windows found, click Next.

e:\ionetworks\win2000\ionncr.inf

< Back   Next >   Cancel

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

Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

This wizard helps you install a device driver for a hardware device.

To continue, click Next.

< Back | Next > | Cancel

Found New Hardware Wizard

Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard will complete the installation for this device:

Edgeport Serial Port_1 [Port-12]

A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.

What do you want the wizard to do?

⦿ Search for a suitable driver for my device (recommended)

◯ Display a list of the known drivers for this device so that I can choose a specific driver

< Back | Next > | Cancel

Found New Hardware Wizard

Driver Files Search Results
The wizard has finished searching for driver files for your hardware device.

The wizard found a driver for the following device:

Edgeport Serial Port_1 [Port-123]

Windows found a driver for this device. To install the driver Windows found, click Next.

e:\ionetworks\win2000\ionport.inf

< Back   Next >   Cancel

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

Windows POSReady 7

To install the USB Virtual COM Port Driver on a Windows POSReady 7 system, follow these steps:

1. Plug the printer to the system USB port. The printer then beeps to indicate that the USB device is recognized. The Driver Software Installation window is displayed.
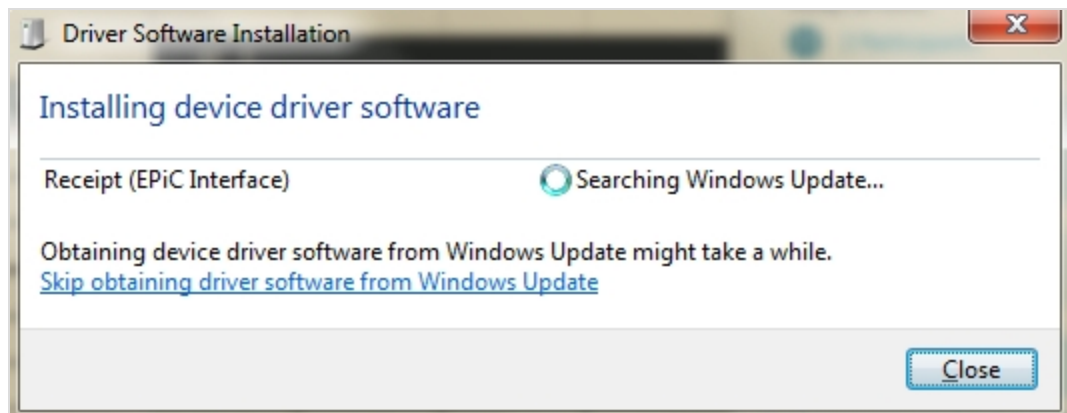
2. Select **Skip obtaining driver software from Windows Update**. The system skips searching for the driver software information from Windows Update. The following window is displayed.

3. Select **Yes**. The following window is displayed.
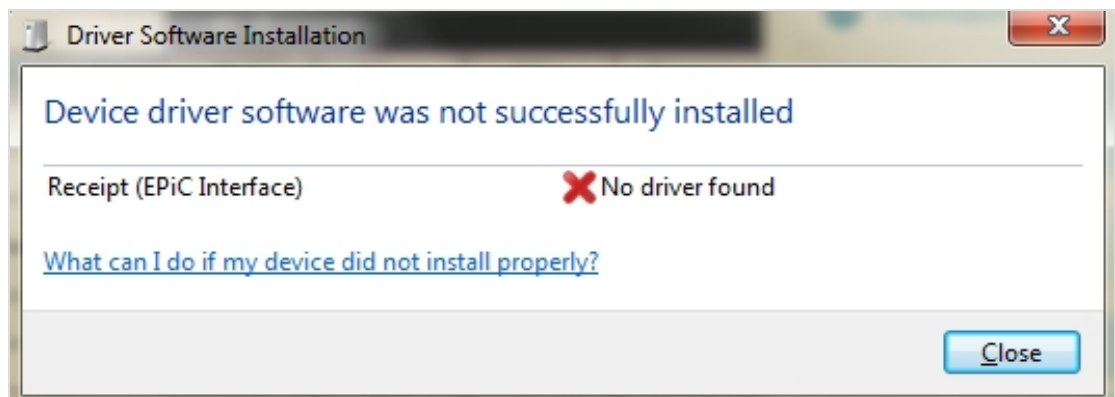
4. Select **Close** to exit the Driver Software Installation window.

5. From the Windows search bar, search for **Computer Management**, then select to open.

6. From the System Tools, select **Device Manager**. A list of devices is displayed on the right pane.
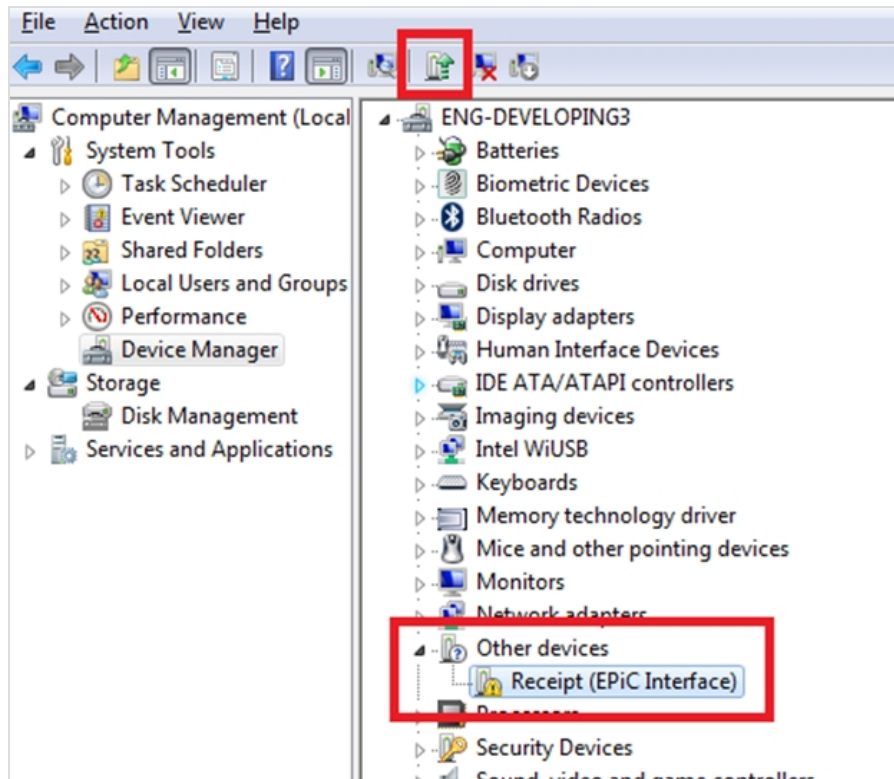
7. Select **Other devices→Receipt (EPiC Interface)**, then select **Update Driver Software**. The following window is displayed:
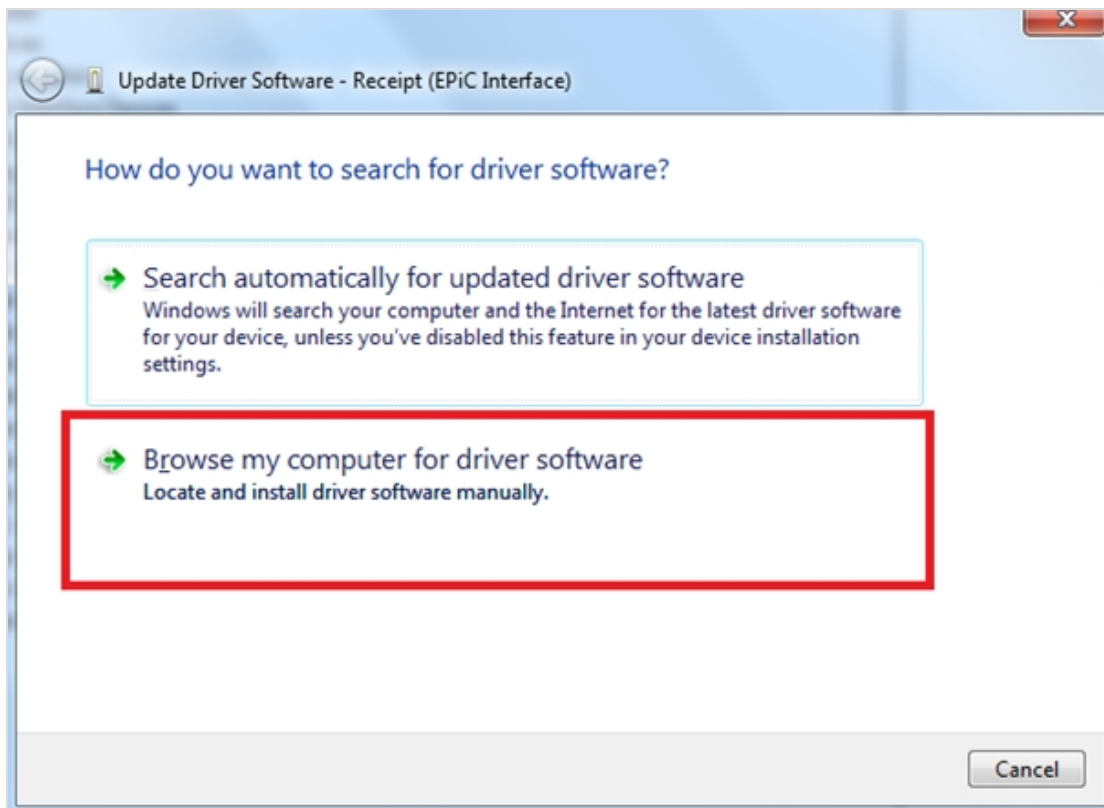
8. Select **Browse my computer for driver software**. The following window is displayed:
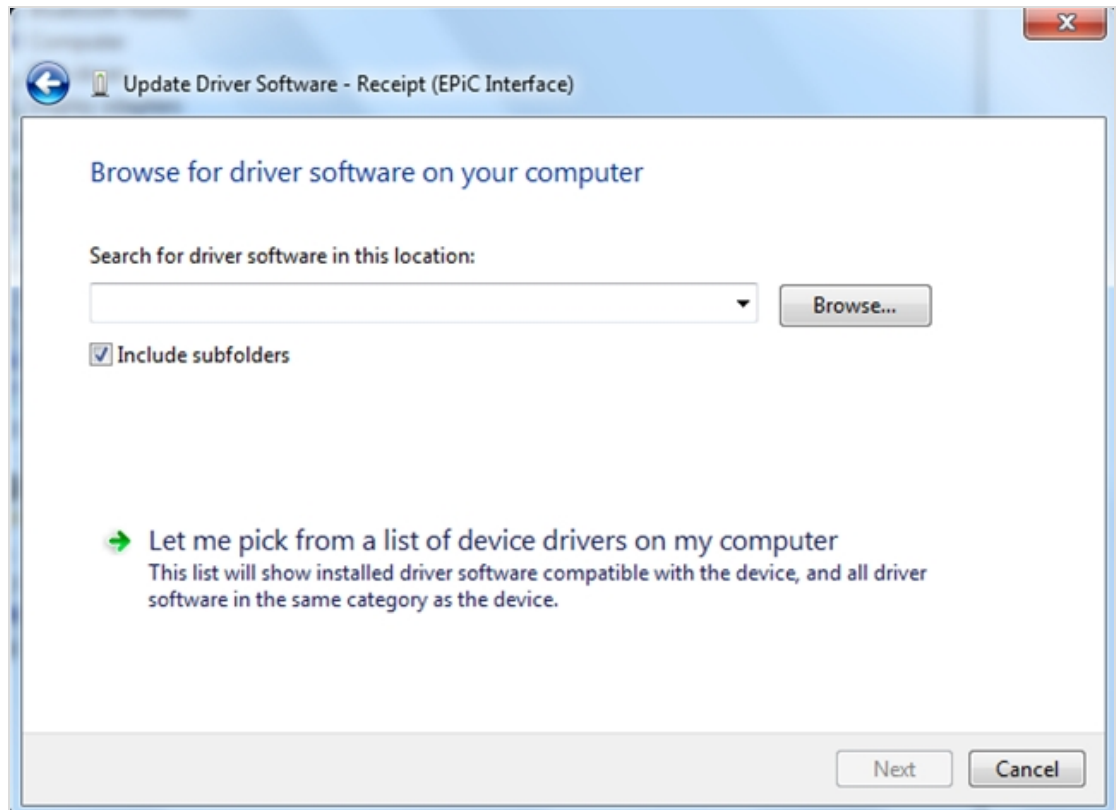
9. Select **Browse**, and then select the **Edgeport Driver** folder.

10. Select **Next**. The system starts installing the USB Virtual COM Port Driver.
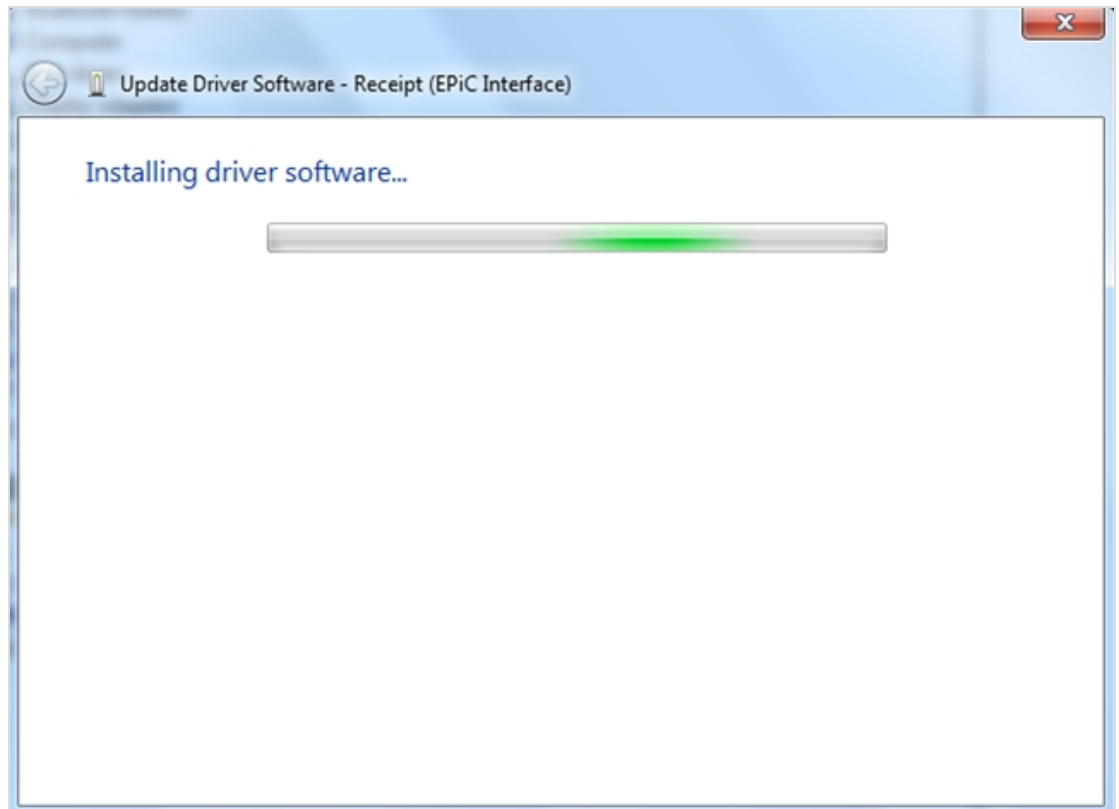
Windows 8

To install the USB Virtual COM Port Driver on a Windows 8 system, follow these steps:

1. Plug the printer to the system USB port. The printer then beeps to indicate that the USB device is recognized. The installation progress for the Receipt (EPiC Interface) process is displayed on the Device Setup window.
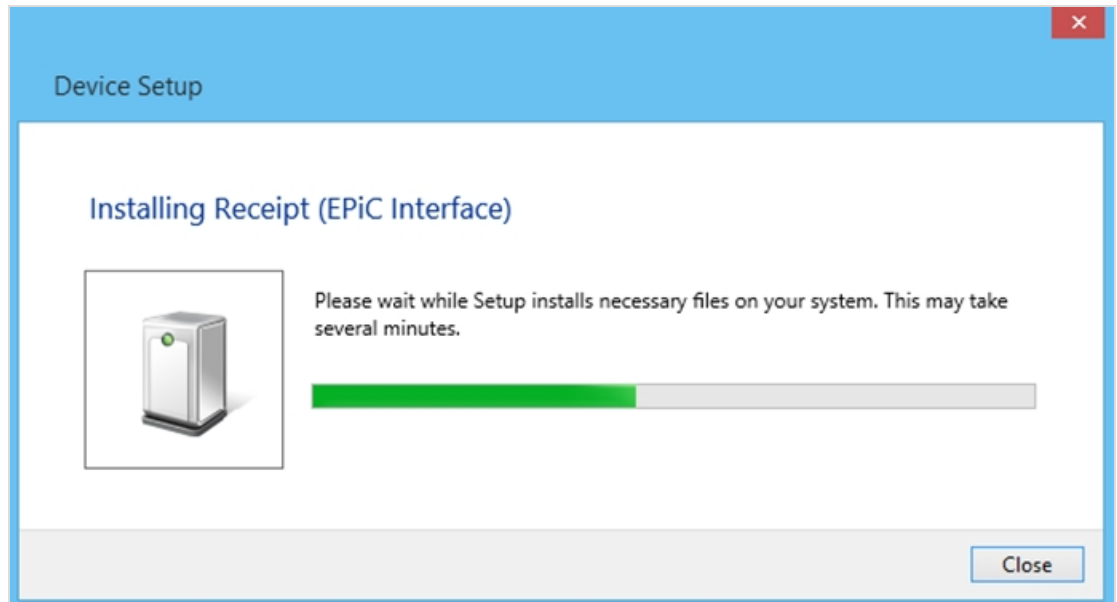
2. Select **Close** to exit the Device Setup window.

3. From the Windows search bar, search **Computer Management**, then select to open.

4. From the System Tools, select **Device Manager**, then select **Other devices→Receipt (EPiC interface)**.
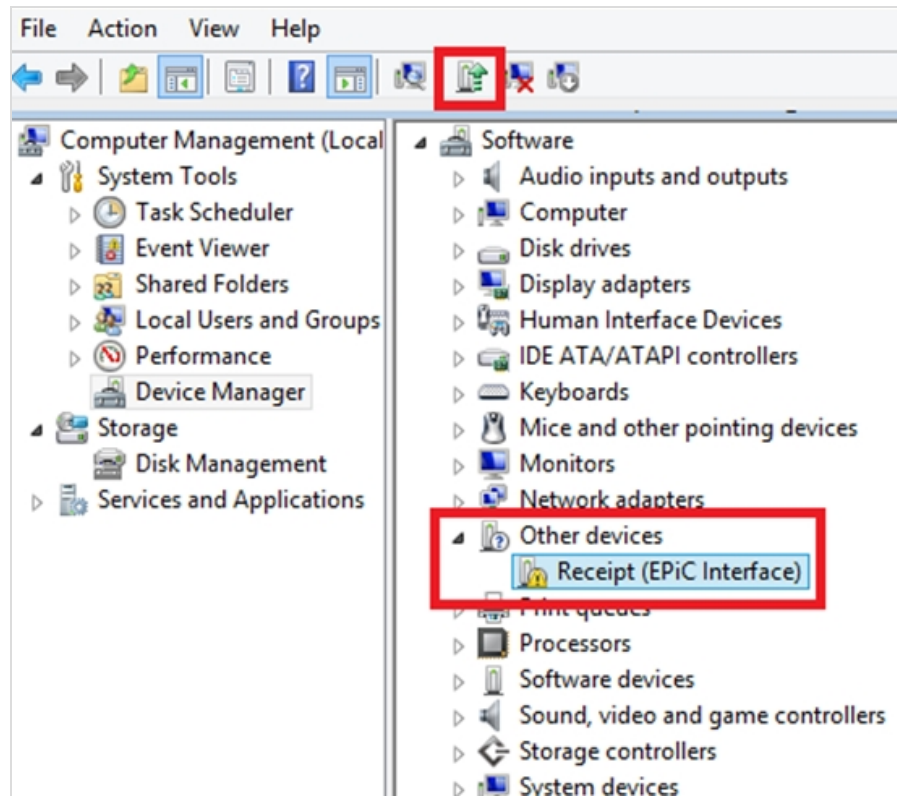
5. Select **Update Driver Software**. The following window is displayed.
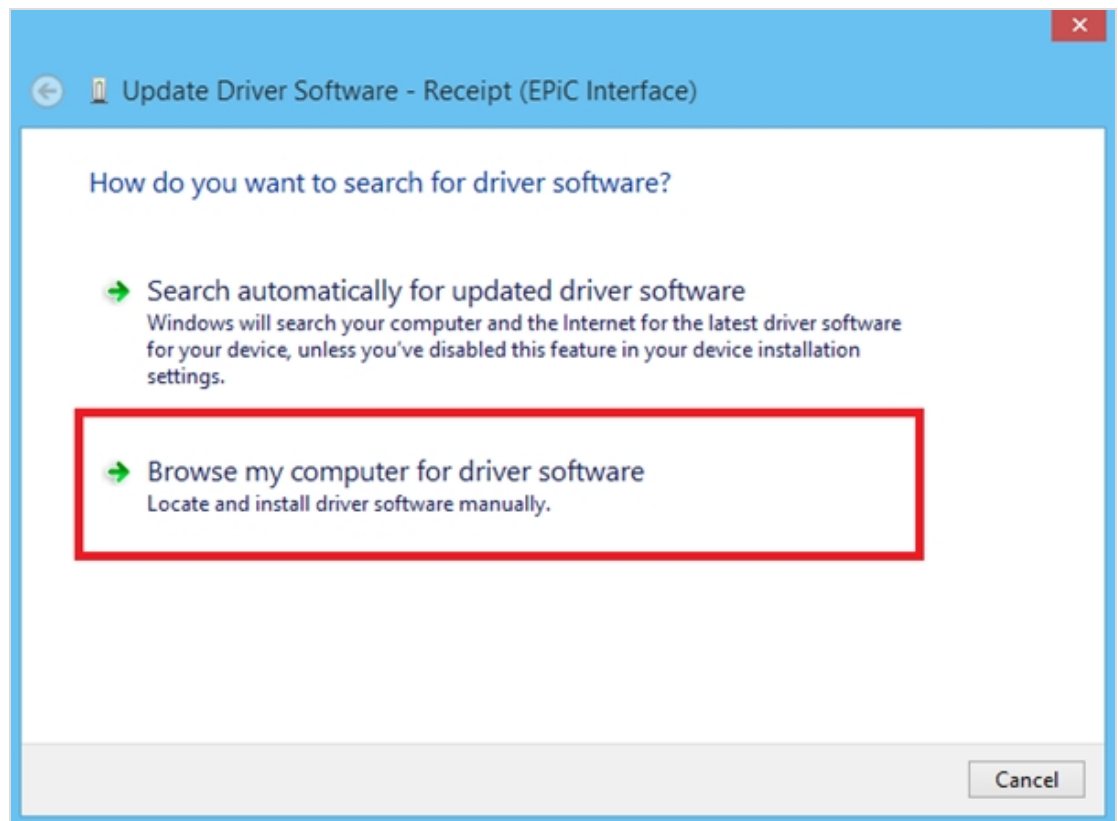
6. Select **Browse my computer for driver software**.
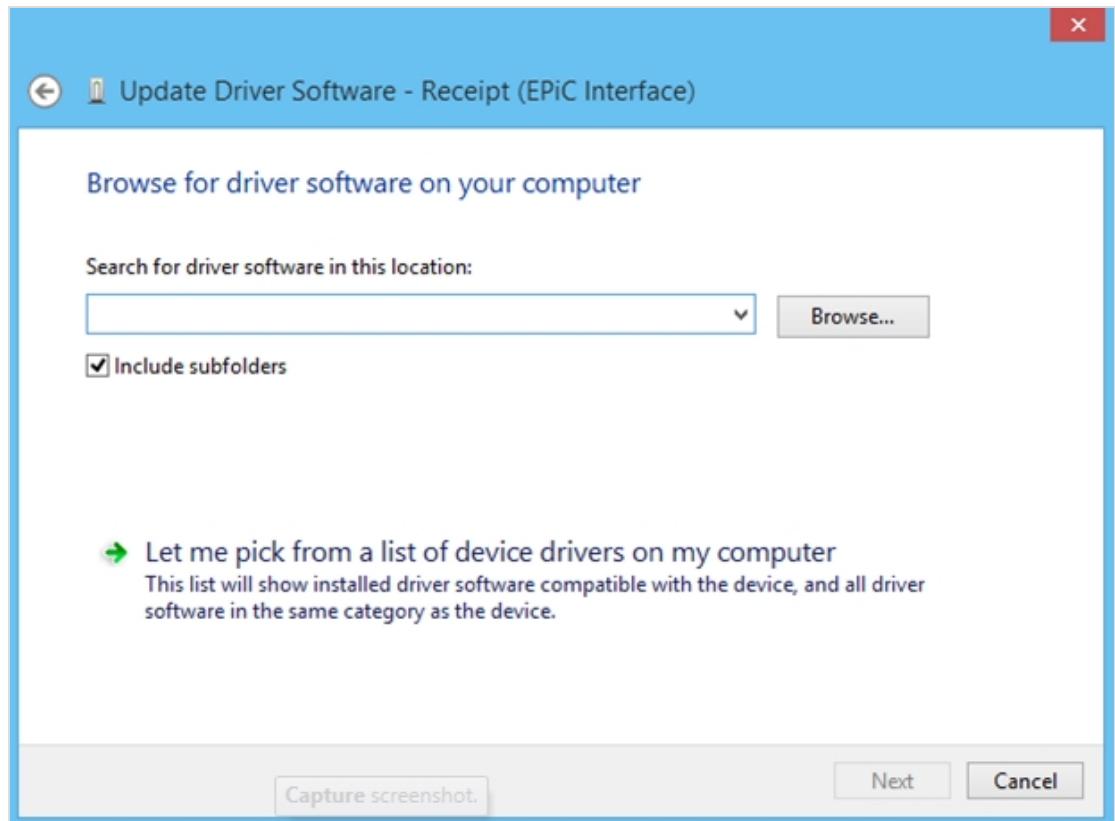
7. Select **Browse**, and then select the **Edgeport Driver** folder.

8. Select **Next**. The system starts installing the USB Virtual COM Port Driver software.
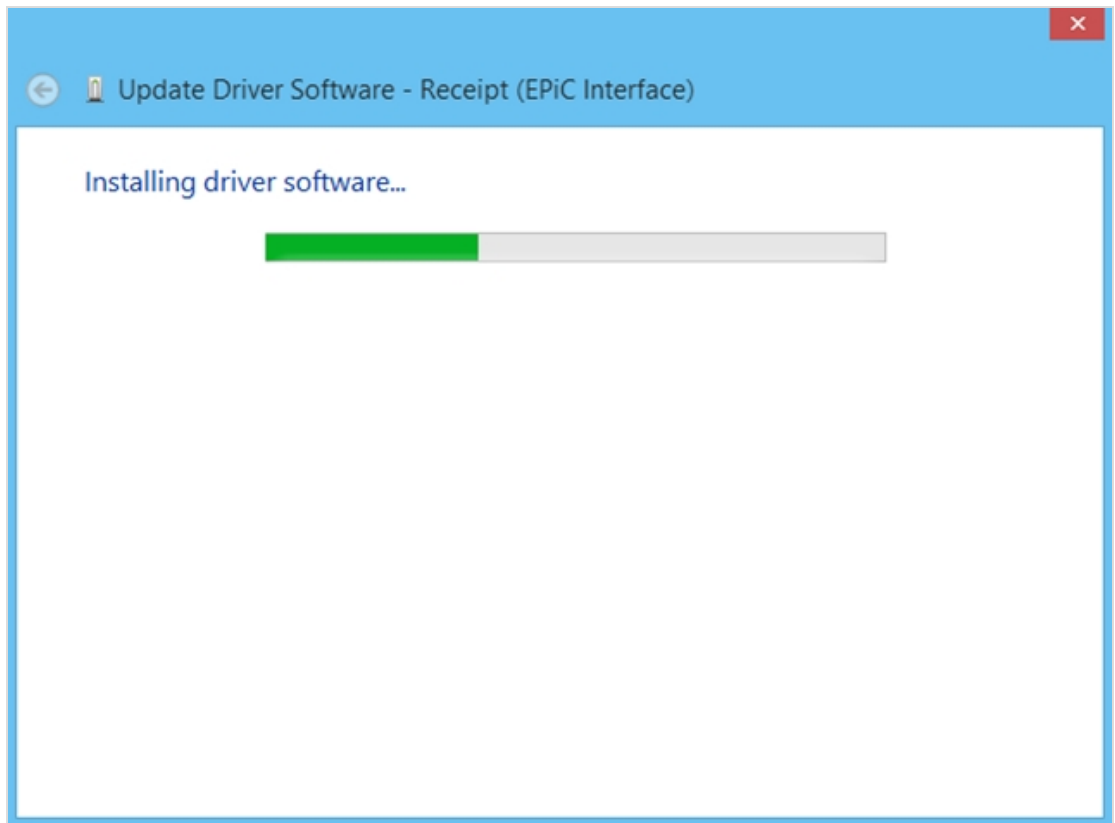
When the installation is complete, the following window is displayed.
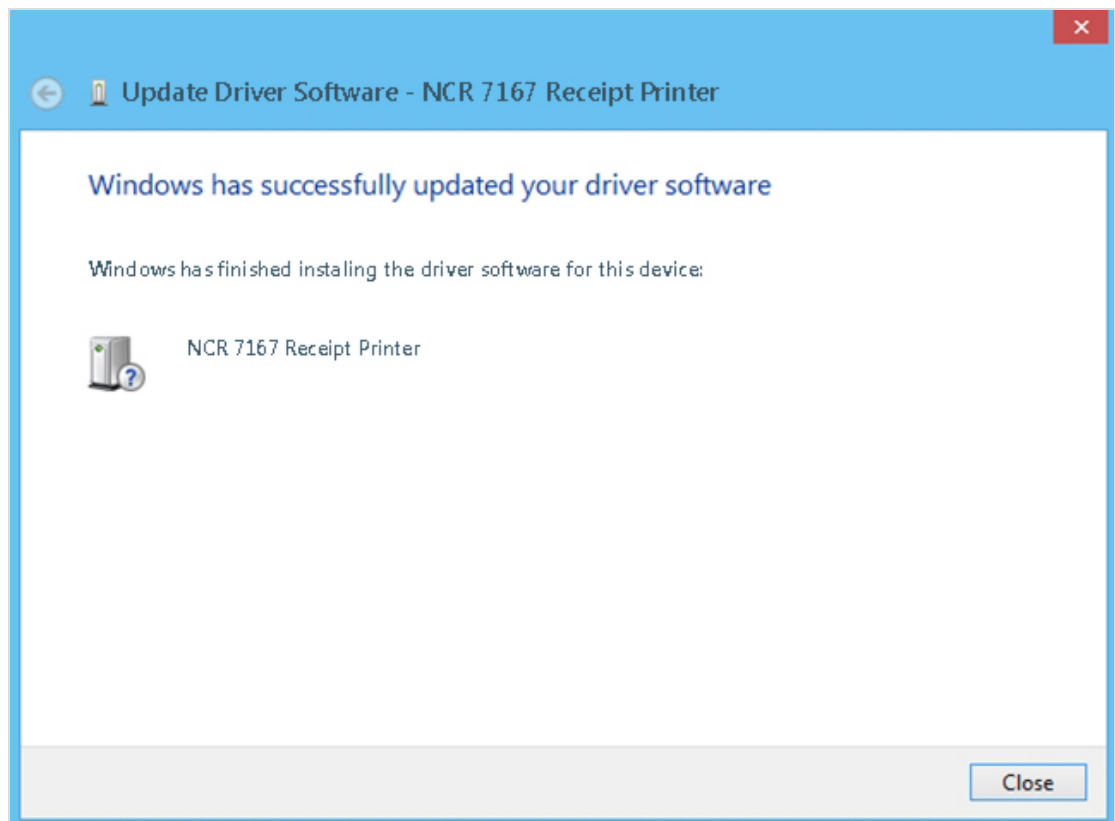
9. Select **Close** to close the window.

Windows 10

To install the USB Virtual COM Port Driver on a Windows 10 system, follow these steps:

1. Plug the printer to the system USB port. The printer then beeps to indicate that the USB device is recognized. The installation progress for the Receipt (EPiC Interface) process is displayed on the Device Setup window.
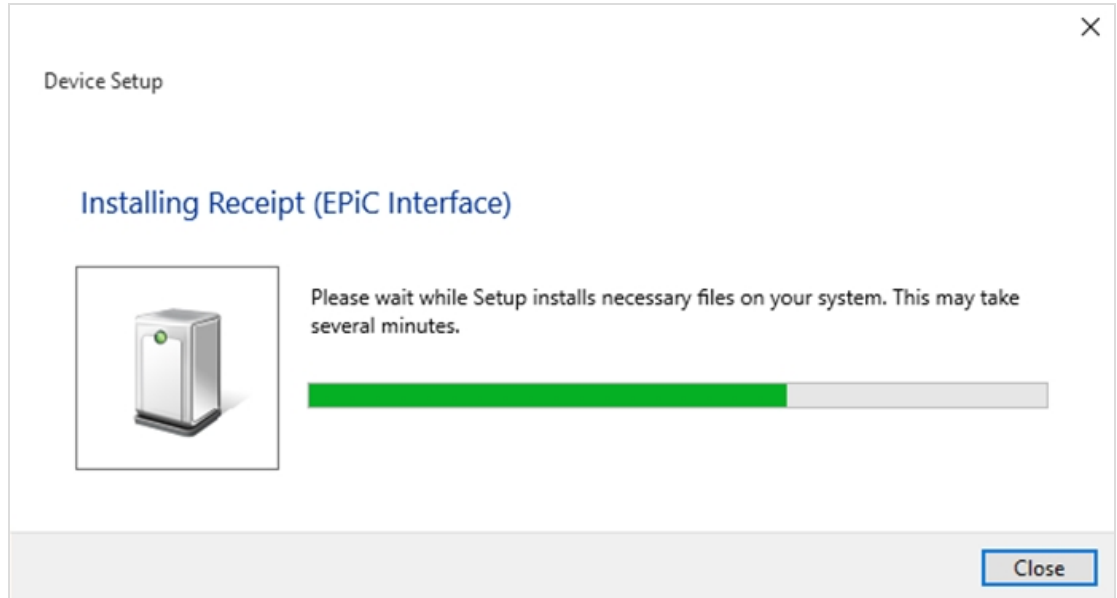
2. Select **Close** to exit the Device Setup window.
3. From the Windows task bar, search for **Computer Management**, then select to open.

4. From the System Tools, select **Device Manager**, then select **Other devices→Receipt (EPiC interface)**.
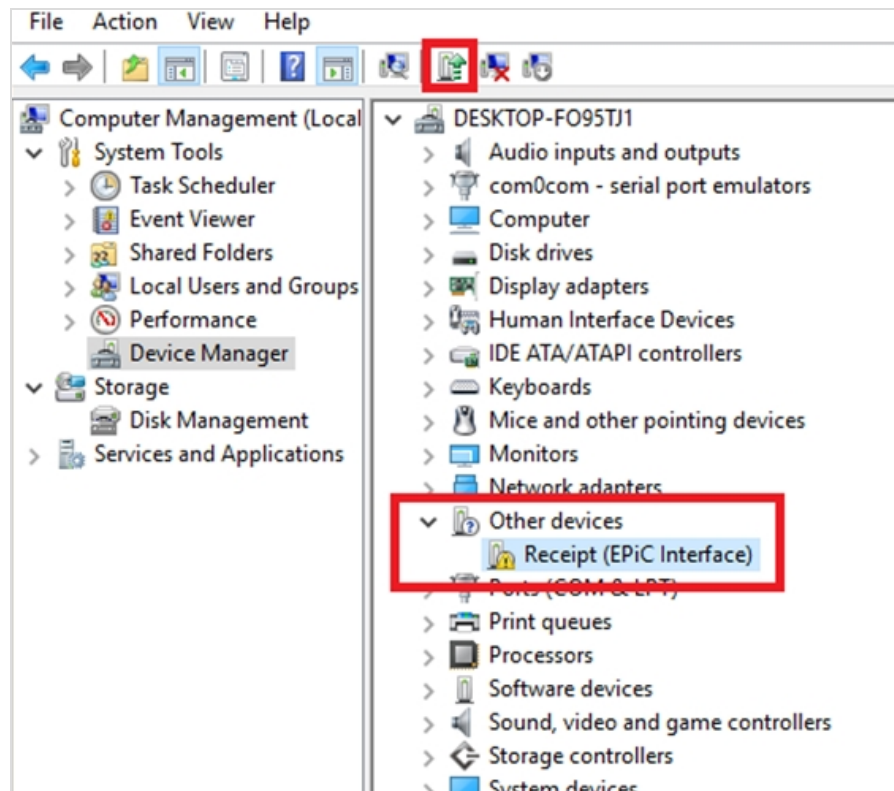
5. Select **Update Driver Software**. The following window is displayed:
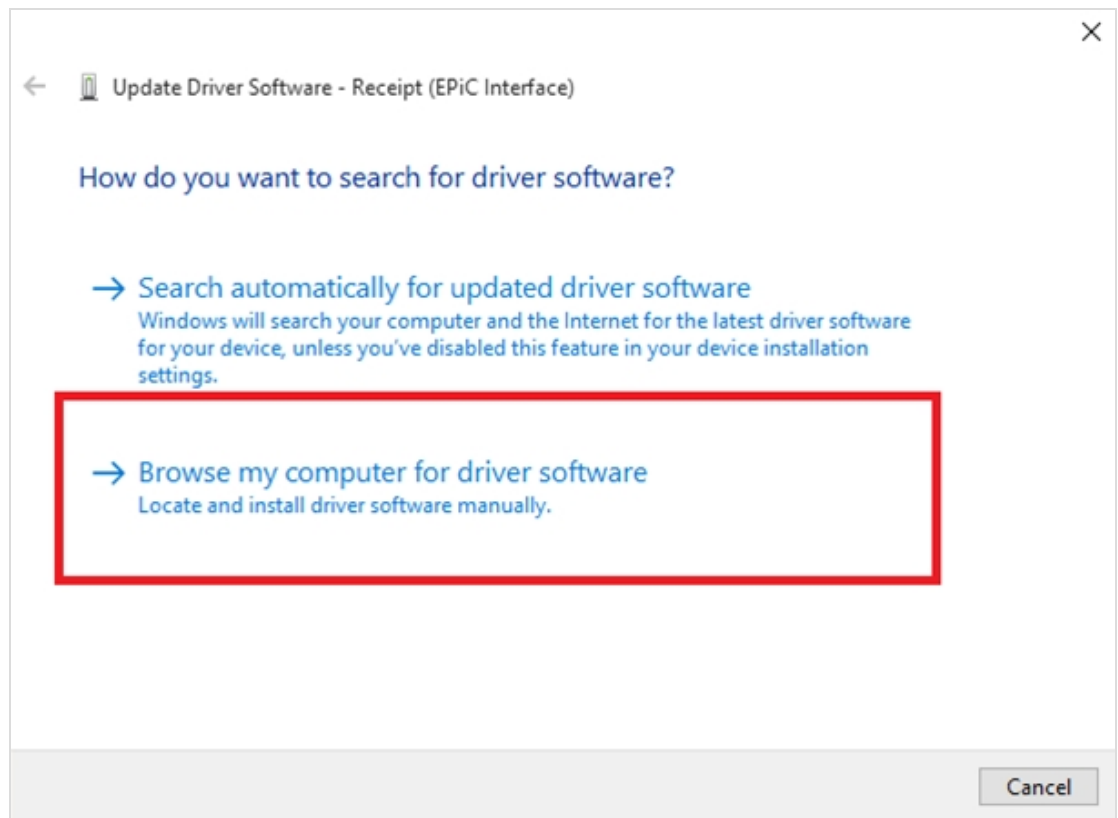
6. Select **Browse my computer for driver software**.
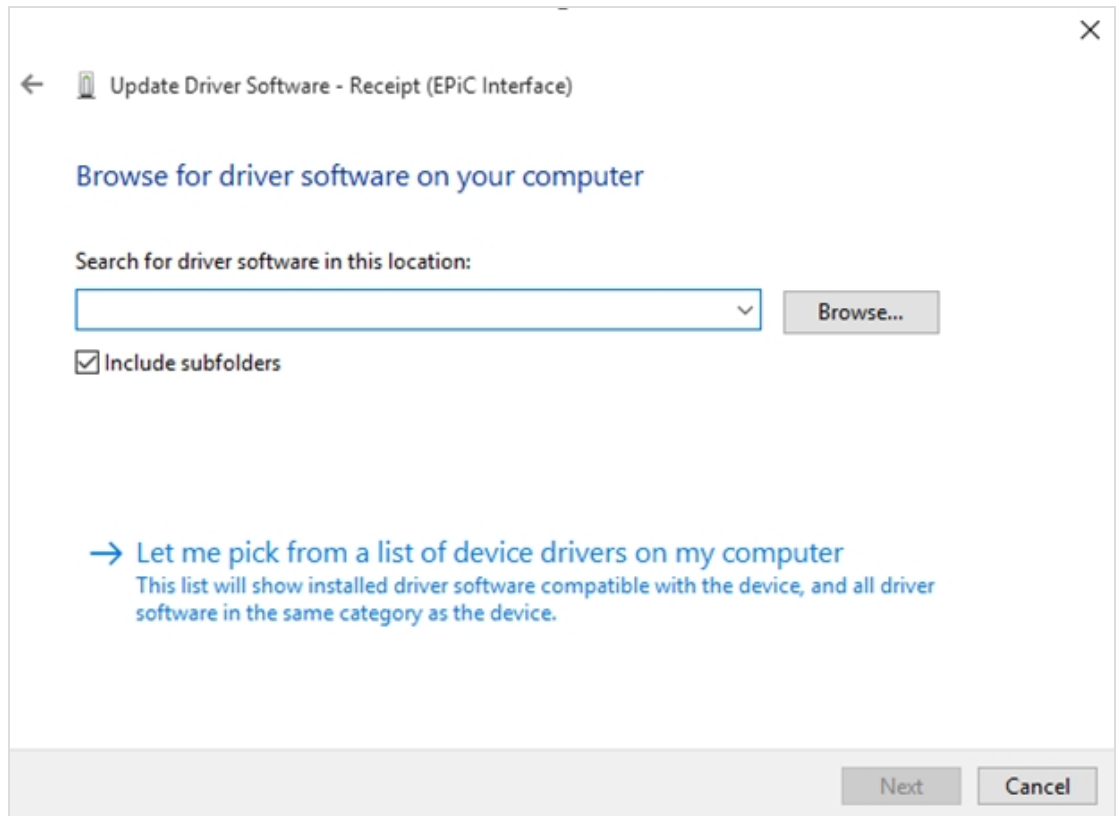
7. Select **Browse**, and then select the **Edgeport Driver** folder.
8. Select **Next**. The system starts installing the USB Virtual COM Port Driver.

When the installation is complete, the following window is displayed.
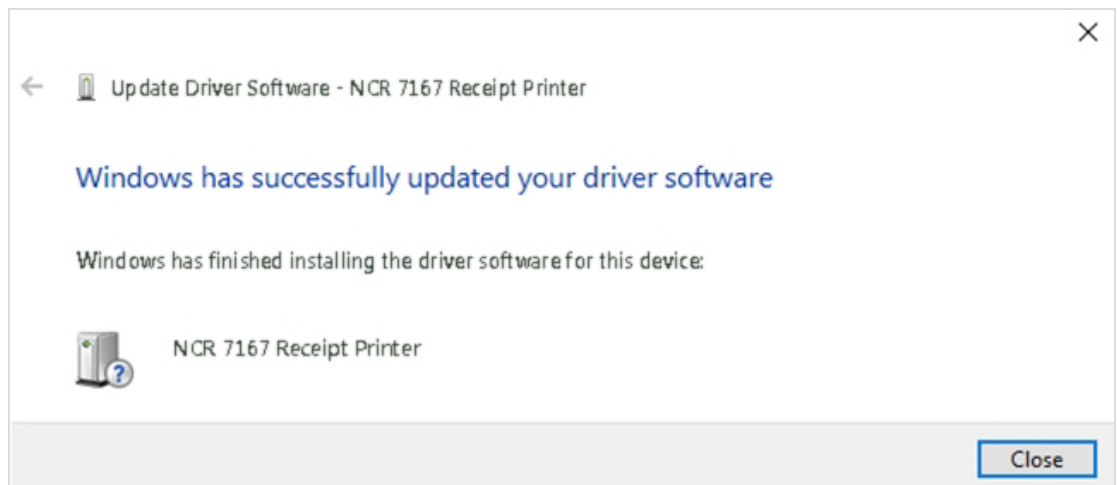
9. Select **Close** to close the window.

Verifying the Installation

Verify that the device drivers were installed correctly.

Windows XP

1. Open the Device Manager window, as you did in *Host Configuration* on page 32.

2. Scroll down to *Universal Serial Bus controllers*.
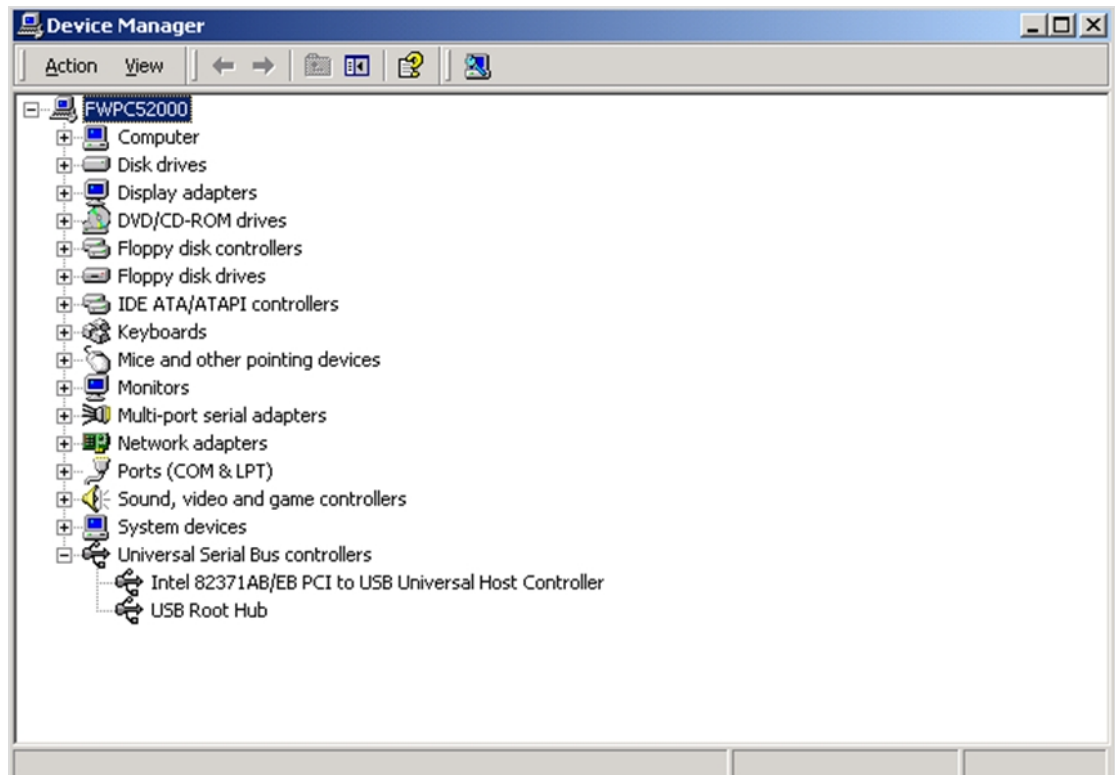
3. To check if EPiC Port is visible, scroll back up to *Ports*.

4. Search for the Edgeport Drivers folder, then run `edgeport.exe`. The following window is displayed.
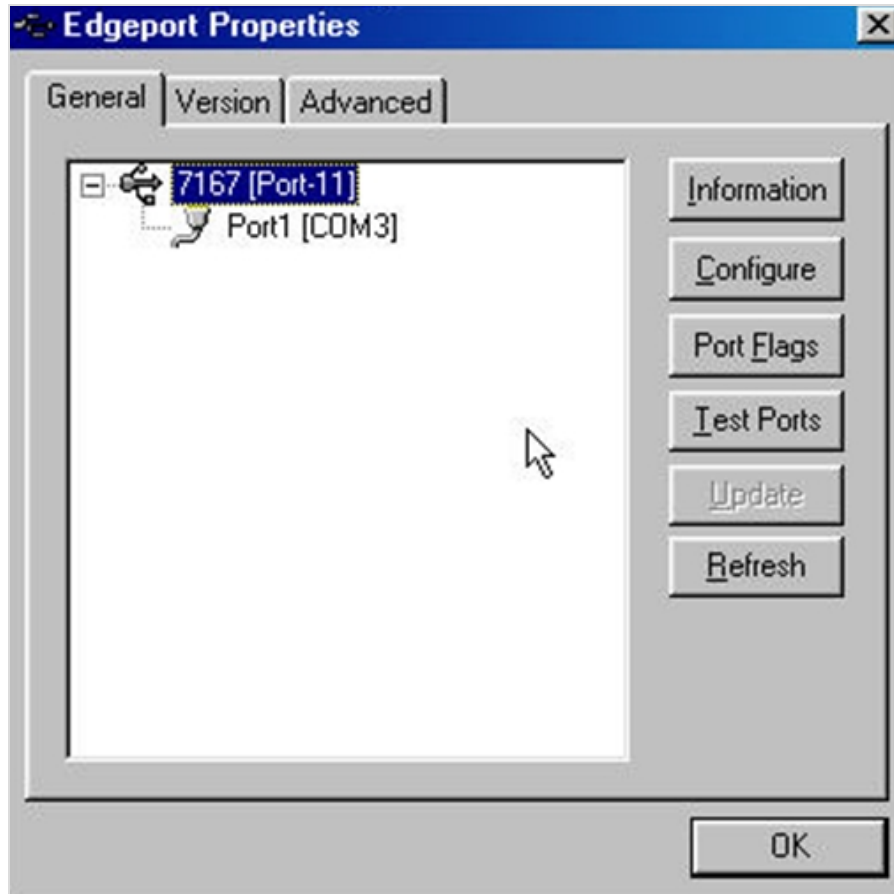
5. Double-click **7167 [Port number]** to view the Port number and COM number. The COM number should match the EPiC Port COM, which is under the available ports in Device Manager.

Note: If the device is missing or is not listed correctly, the installation is unsuccessful. You will need to re-install the drivers.

Windows POSReady 7

To verify the installation of the driver on a Windows POSReady 7 system, follow these steps:

1. Open the Device Manager window.

2. Make sure that the *NCR 7167 Receipt Printer* and the *EPiC Port* are installed.

📝 **Note:** The *NCR 7167 Receipt Printer* is the defined USB VID/PID (Vendor ID/Product ID) of the NCR Multi-Station printers (7167, 7168).
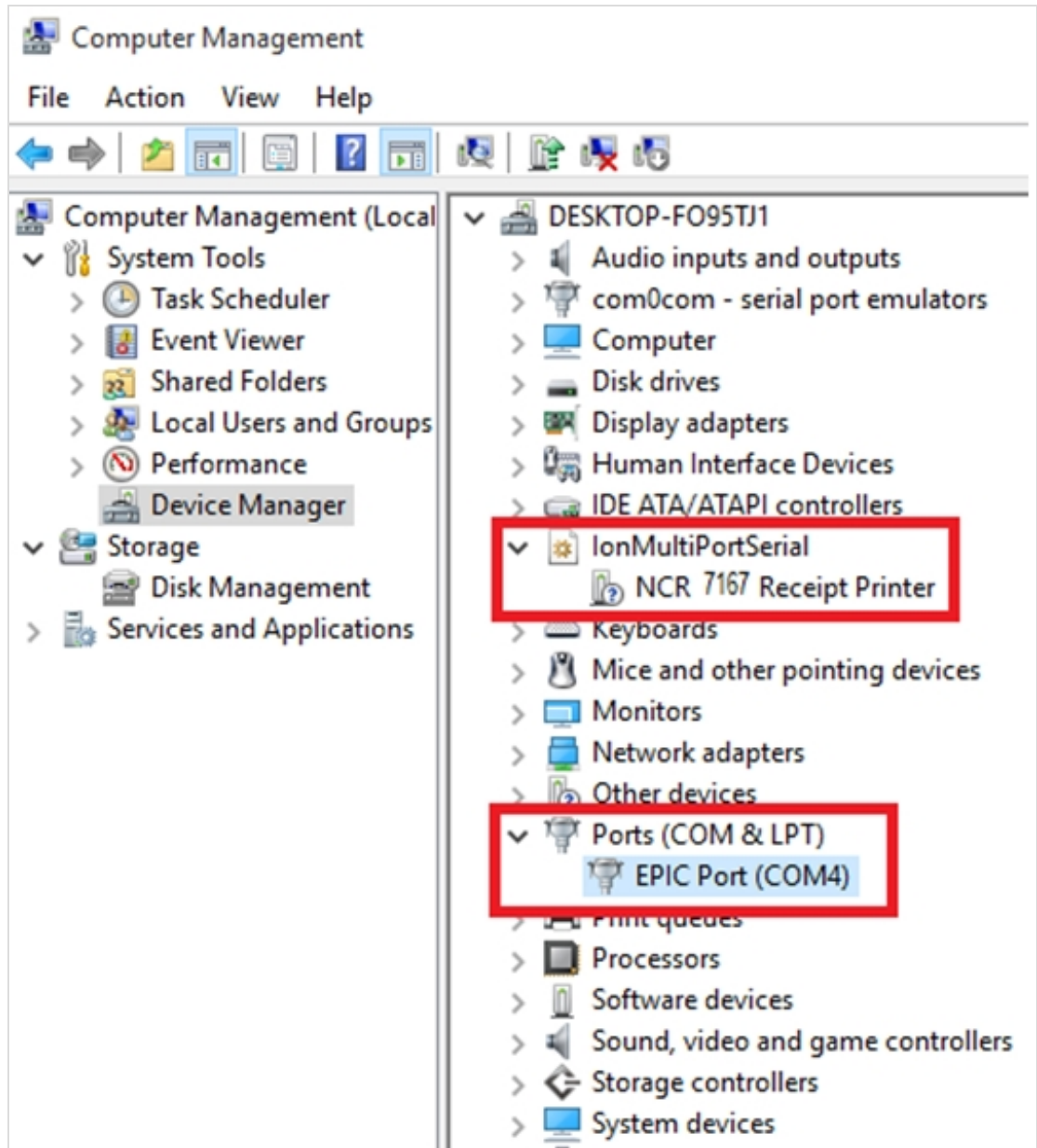
📝 **Note:** If this information is not listed, then the installation was unsuccessful. You need to re-install the drivers.

3. Open the Edgeport utility and make sure the Port is assigned.
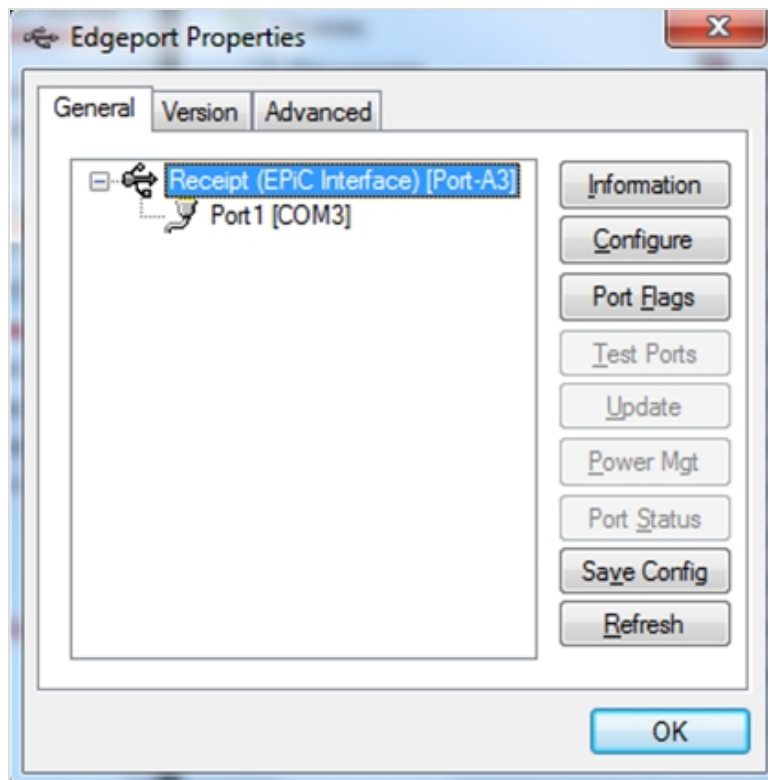
Windows 8

To verify the installation of the driver on a Windows 8 system, follow these steps:

1. Open the Device Manager window.

2. Make sure that the *NCR 7167 Receipt Printer* and the *EPiC Port* are installed.

📝 **Note:** The *NCR 7167 Receipt Printer* is the defined USB VID/PID (Vendor ID/Product ID) of the NCR Multi-Station printers (7167, 7168).
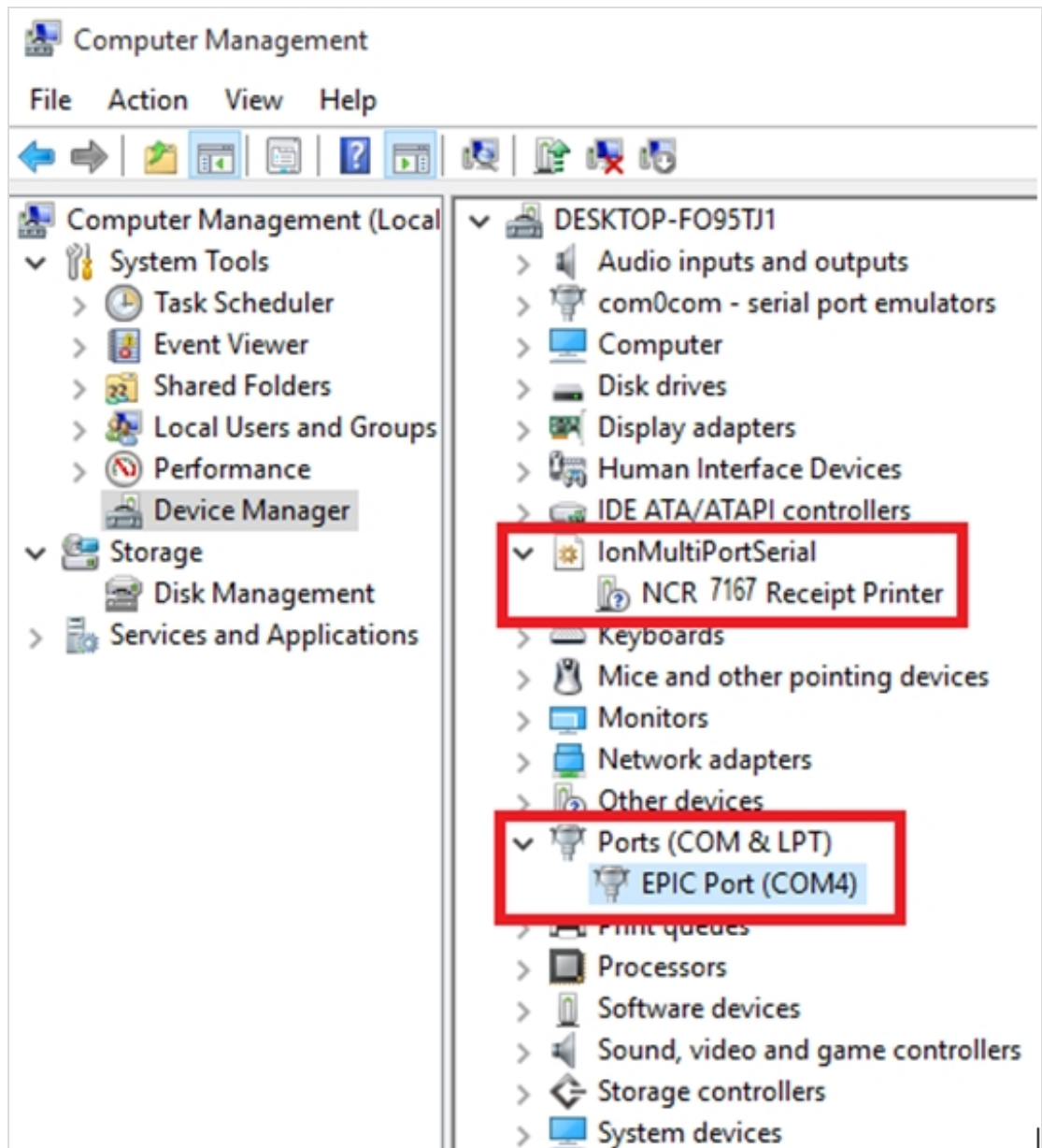
📝 **Note:** If this information is not listed, then the installation was unsuccessful. You need to re-install the drivers.

3. Open the Edgeport utility and make sure the Port is assigned.
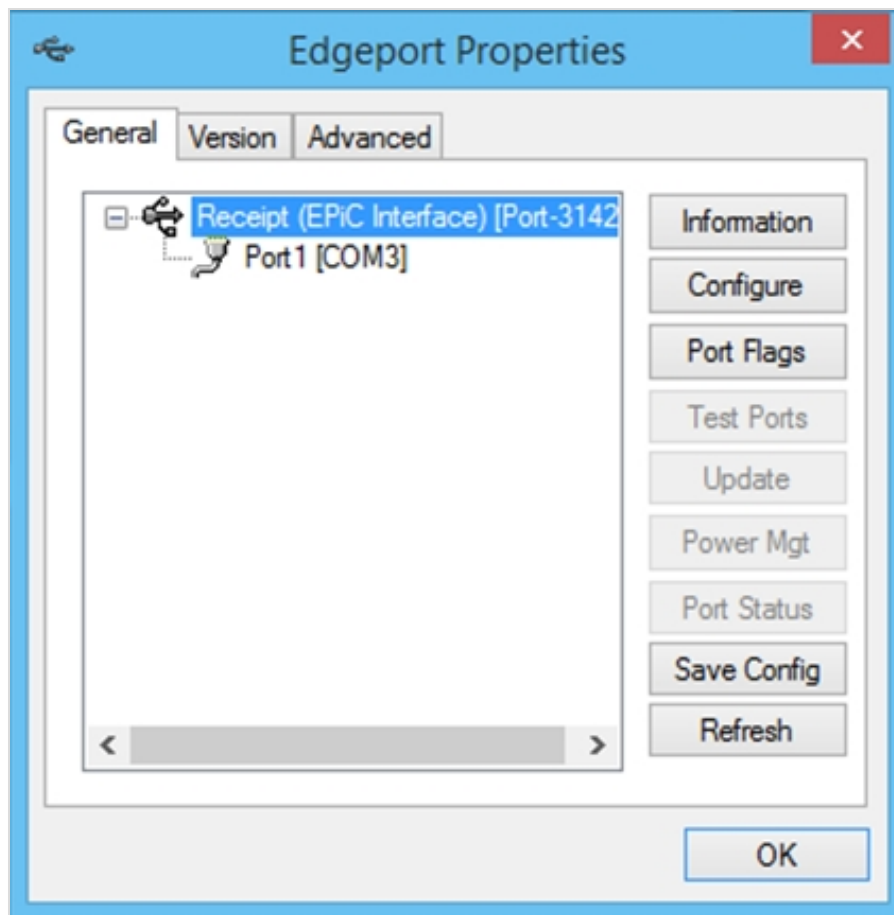
Windows 10

To verify the installation of the driver on a Windows 10 system, follow these steps:

1. Open the Device Manager window.

2. Make sure that the *NCR 7167 Receipt Printer* and the *EPIC Port* are installed.

📝 **Note:** The *NCR 7167 Receipt Printer* is the defined USB VID/PID (Vendor ID/Product ID) of the NCR Multi-Station printers (7167, 7168).
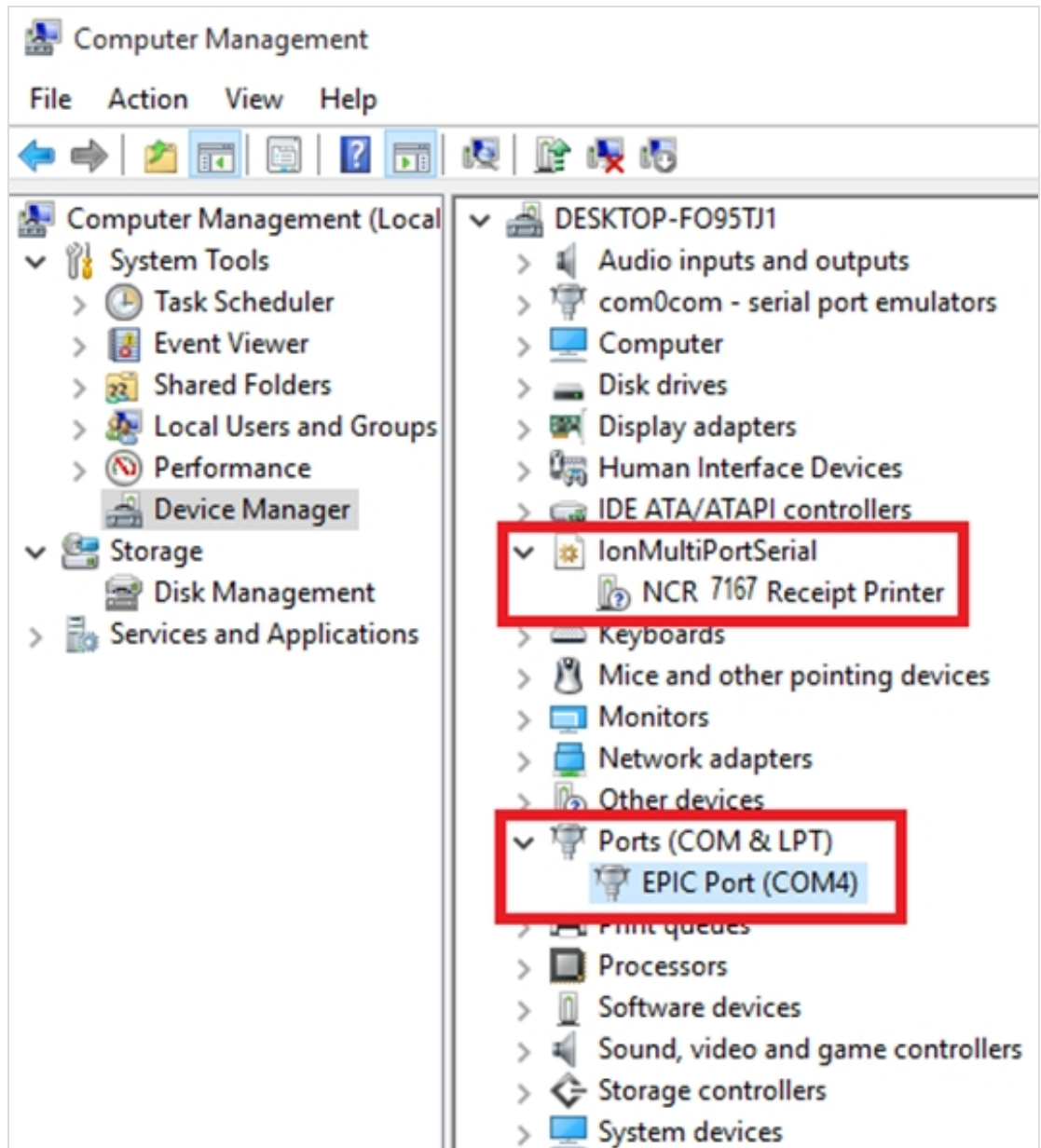
📝 **Note:** If this information is not listed, then the installation was not successful. You need to reinstall the drivers.

3. Open the Edgeport utility and make sure the Port is assigned.
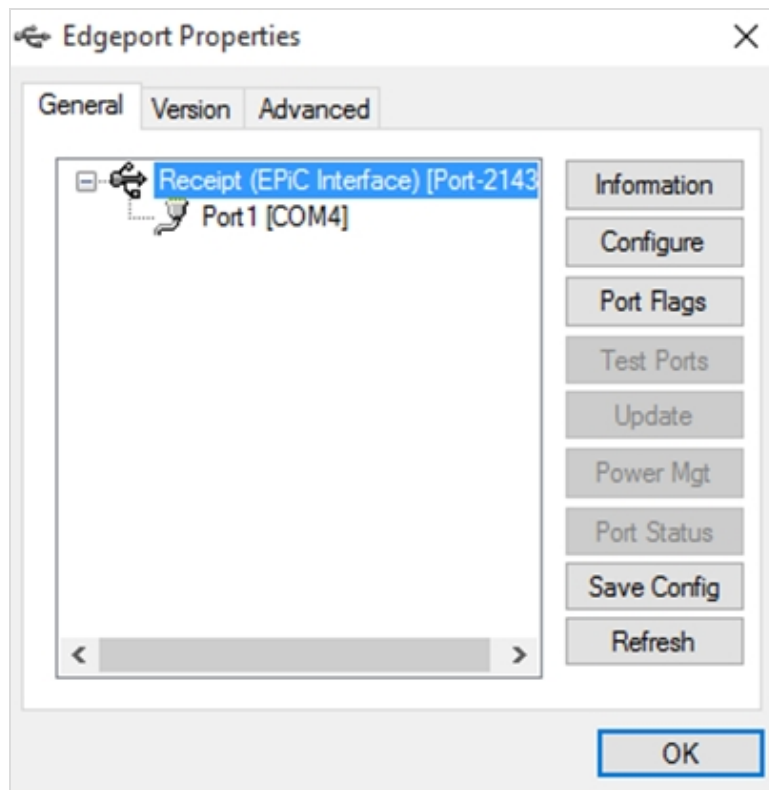
Uninstalling the Drivers

Windows XP

1. Open the Device Manager and make sure *View Devices By Type* is selected.

2. Scroll down to *Universal Serial Bus controllers*, and expand the list by selecting the **+** icon. You should see two entries for your NCR printer.

3. Select the printer name and select **Properties**.

4. Select the **Details** tab, then select **Details** to start the Edgeport utility.

5. Select the **Advanced** tab.

6. Select **Uninstall**, and follow the on-screen instructions.

Windows POSReady 7

To uninstall the USB Virtual COM Port Driver on a Windows POSReady 7 system, follow these steps:

1. Open the Edgeport utility.

2. Select the **Advanced** tab.

3. Select **Uninstall**, and then follow the on–screen instructions.
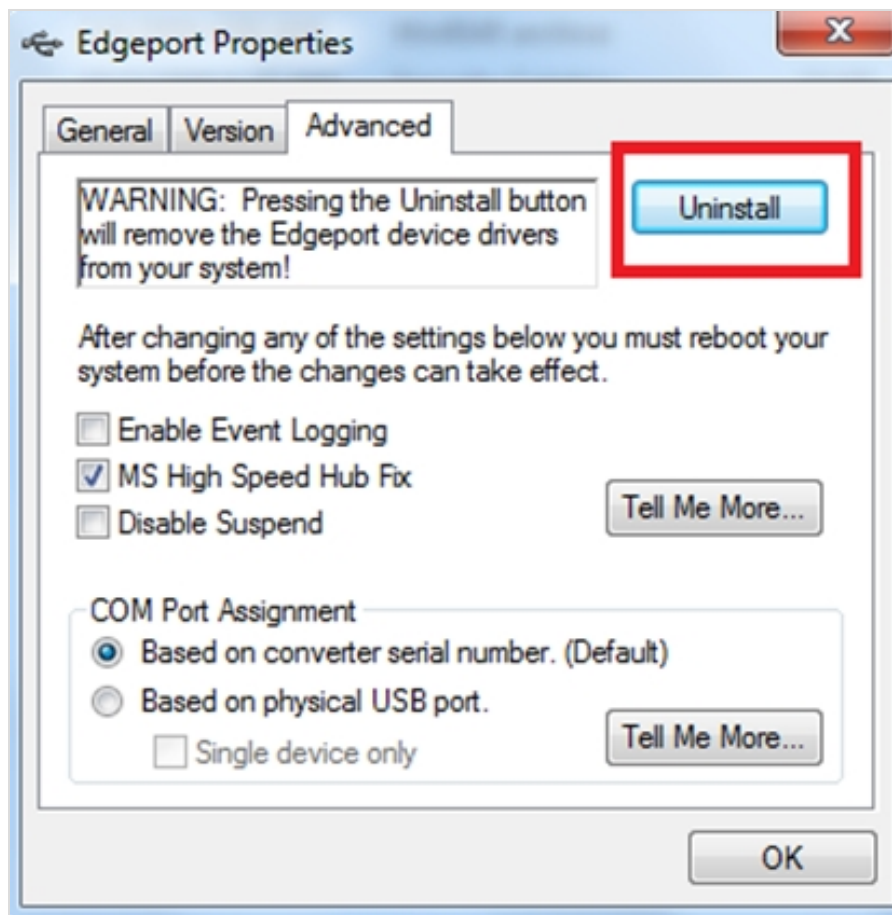
The following window is displayed:
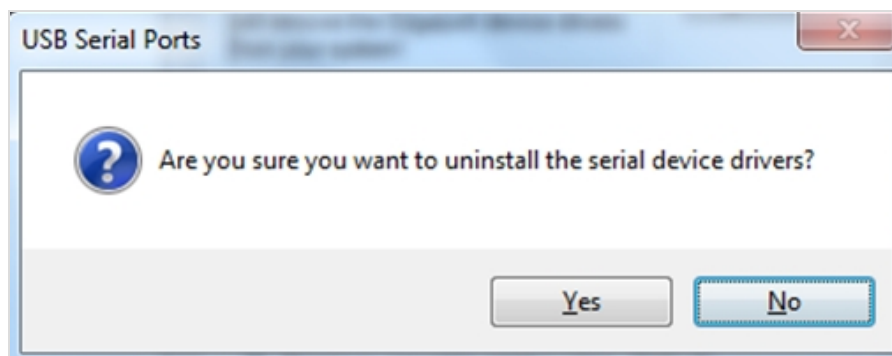
4.   Select **Yes**. The system uninstalls the driver, and then displays the following window:
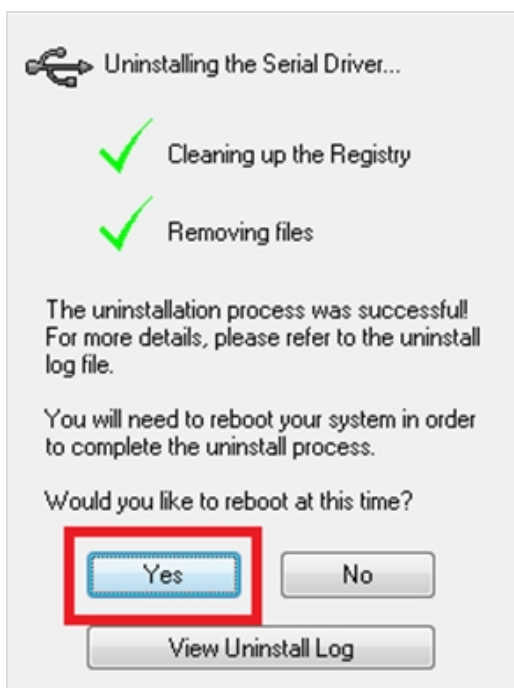
5. Select **Yes** to completely uninstall the driver and to restart the PC.

Windows 8

To uninstall the USB Virtual COM Port Driver on a Windows 8 system, follow these steps:

1. Open the Edgeport utility.

2. Select the **Advanced** tab.

3. Select **Uninstall**, and then follow the on–screen instructions.
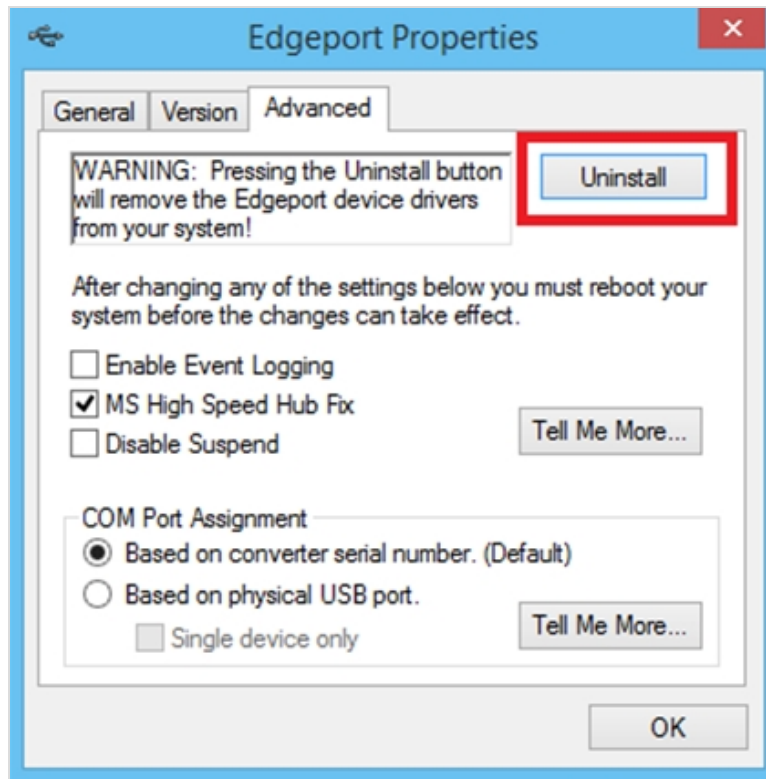
The following window is displayed:
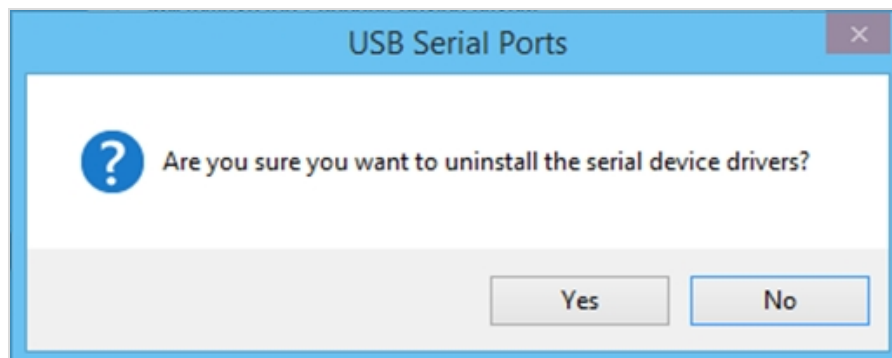
4. Select **Yes**. The system uninstalls the driver, and then displays the following window:

5. Select **Yes** to completely uninstall the driver and to restart the PC.

Windows 10

To uninstall the USB Virtual COM Port Driver on a Windows 10 system, follow these steps:

1. Open the Edgeport utility.

2. Select the **Advanced** tab.

3. Select **Uninstall**, and then follow the on–screen instructions.
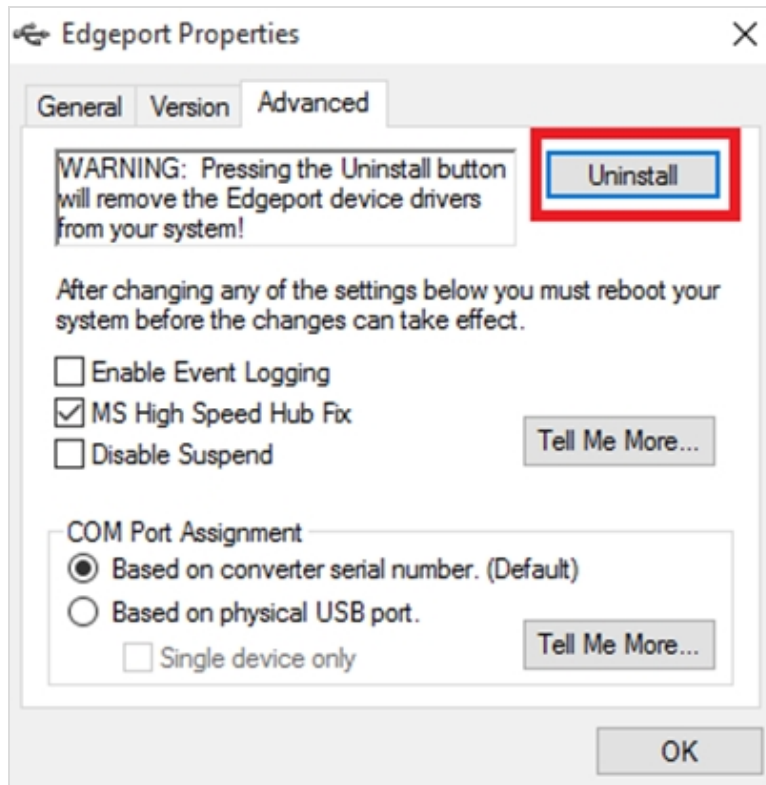
The following window is displayed.
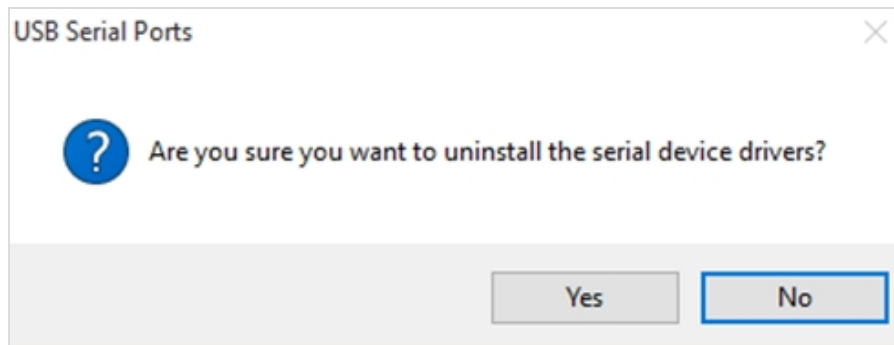
4. Select **Yes**. The system uninstalls the driver, and then displays the following window.
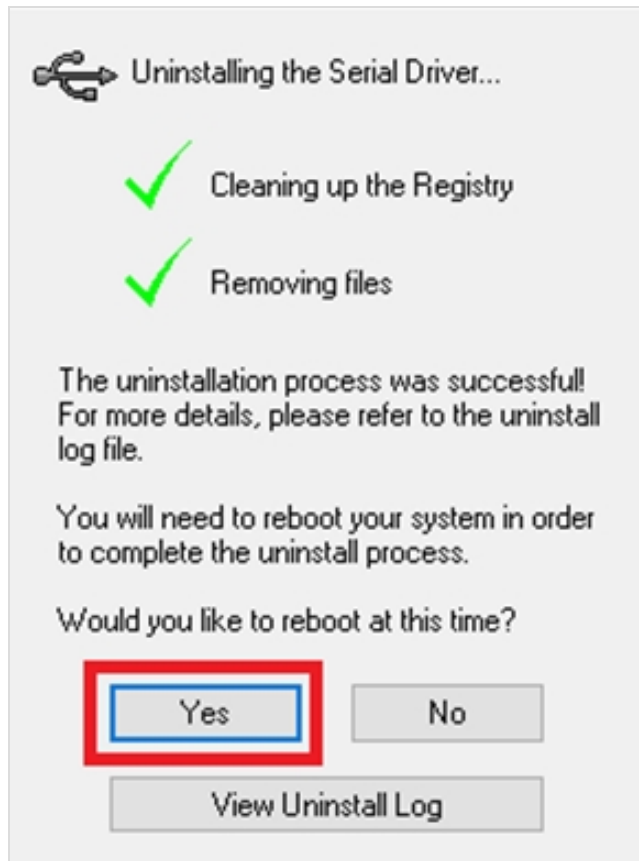
5. Select **Yes** to completely uninstall the driver and to restart the PC.

Configuring Serial Port Number Assignments

This section described how the NCR USB solution assigns serial port numbers, for example, 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 two ways.

The first method is the default method that automatically assigns a serial port number to the printer. The other method requires the user to specify a port number. The next section describes these methods.

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 do the following:

1. Check the assigned serial port by selecting the General tab in the Edgeport utility. You will see an entry for the NCR printer.

2. 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.

1. From the General tab of the Edgeport utility, select the printer and press **Configure**.

2. Follow the directions on the resulting form to assign a new port to the printer.

Setting Switches

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

- To define software and hardware handshaking. For procedures, refer to *Defining Printer Handshaking* on page 72

2-71

- To set variables for several printer functions. For information on setting up the printer, refer to the various printer functions in *Level 1 Diagnostics* on page 1.

- To perform diagnostic tests. For information on setting up the printer, refer to the various printer functions in *Level 1 Diagnostics* on page 1.
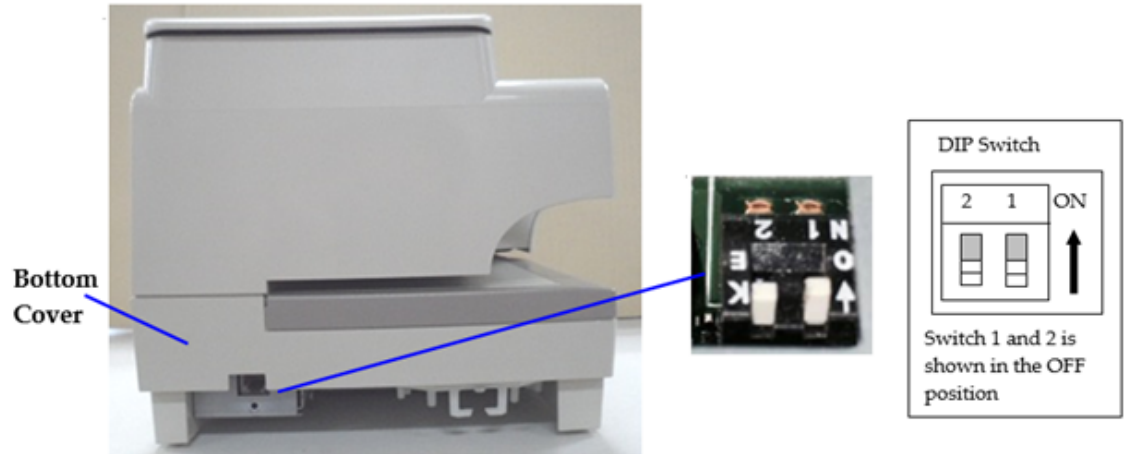
Note: The DIP switches are set to *Off*.

1. Set the switches to the desired settings shown in the table. Use a paper clip or another pointed object to set the switches. The following table describes the DIP switch settings.

DIP Switch Settings		
Switch 1 Settings	**Switch 2 Settings**	**Printer State**
OFF (0)	OFF (0)	Online Mode (default)
ON (1)	OFF (0)	Diagnostic Mode
OFF (0)	ON (1) **Note:** When reflashing the IPL firmware, it is optional to set this switch to ON.	Flash Download Mode
ON (1)	ON (1)	Online Mode Vendor Adjustment Mode

2. Reset the printer. For information, refer to *Resetting the Printer* on the facing page.

Resetting the Printer

To reset the printer, press and hold the receipt printer feed button while doing one of the following actions:

- reconnecting the DC power to the printer

- opening then closing the slip door

Defining Printer Handshaking

USB is a plug-and-play environment. Because of this feature, neither the printer nor the host requires user configuration to work. The NCR solution simulates a serial communication interface. For proper operation, configure handshaking on the printer.

The printer can be configured to use hardware flow control, using DTR/DSR, or software flow control, using XON/XOFF. All other serial communication parameters, such as the baud rate, parity, stop bits, and data bits are ignored.

To define software or hardware handshaking:

1. Open the receipt cover and check whether there is paper in the printer. If there is no paper, insert the paper roll. For more information, refer to *Loading and Changing the Receipt Paper* on page 20.
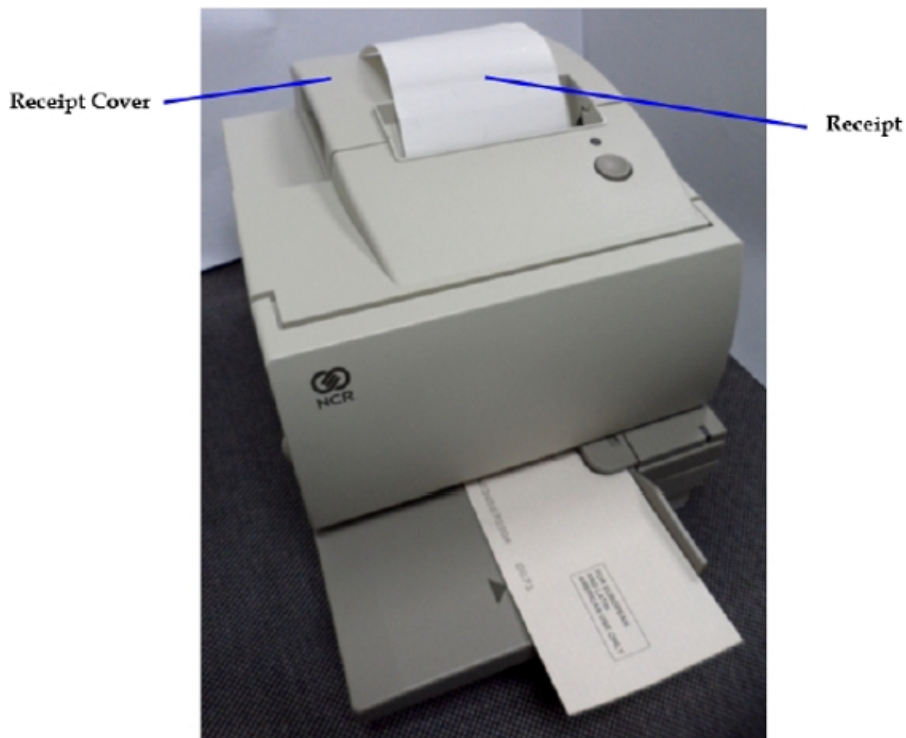
2. Turn the printer so the bottom side of the printer is facing you.
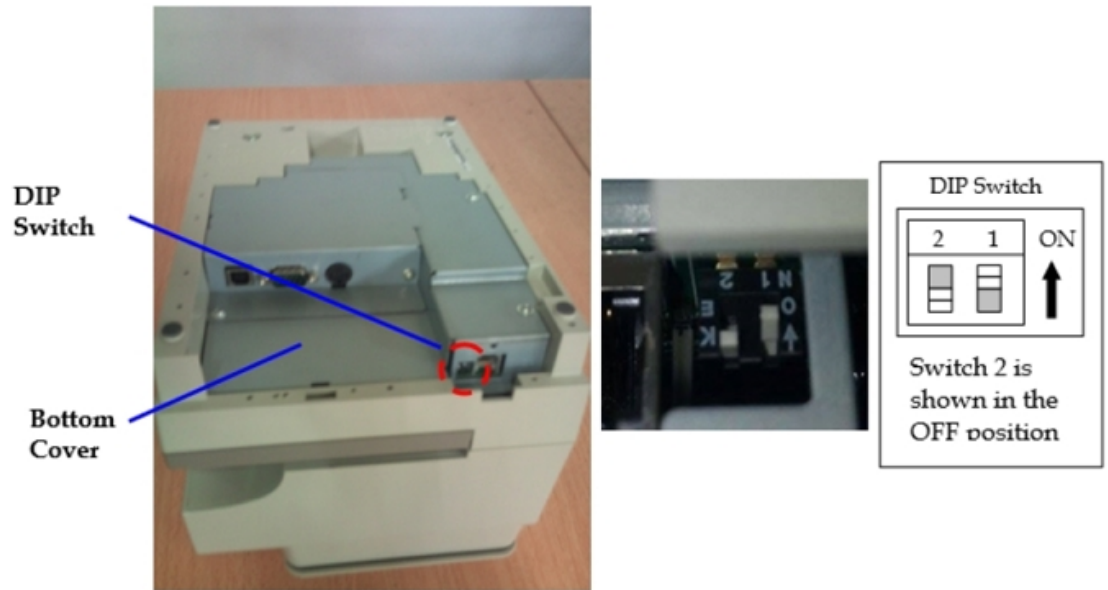
3. Set DIP Switch 1 to the **ON** position (up).

4. Reset the printer. For information, refer to *Resetting the Printer* on the previous page.

Note: The printer beeps, and then prints the current configuration. Select a configuration from the Main Menu on the printout.

```
*** Diagnostics Form ***

Model number          :    7167 xxxx-yyyy-zzzz
Serial number         :    01000011

Boot Firmware
 Revision             :    V018.03
 CRC                  :    948A
 P/N                  :    xxx-xxxxxxx
Flash Firmware
 Revision             :    V67.23
 CRC                  :    8FF6
 P/N                  :    xxx-xxxxxxx
SBCS
 Revision             :    V01.00
DBCS(for receipt)
 Revision             :    R01.00
DBCS(for slip)
 Revision             :    S01.00

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           :    19200
  Data Bits           :    8
  Stop Bits           :    1
  Parity              :    None
  Flow Control             DTR/DSR
  Reception Errors    :    Print '?'
  Receive Buffer      :    4K
  DSR Signal          :    Enabled
  USB Type            :    ION(EPIC)

Diagnostic Mode
```

To enter Printer Configure Menu:
1) Flip DIP switch #1 on
2) Reset the printer by pressing and holding Receipt Feed switch down while disconnecting and reconnecting the power.

```
*** Printer Config Menu ***
```

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

- Short Click : Feed Button is quickly depressed then released.

- Long Click : Feed Button is held down more than 1sec then released.

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

```
************* Main Menu *************
*******************************************

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

Enter code, then hold button down
at least 1 second to validate
```

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

Note: Configuration Menu and **Print Test** samples (display approximately 60% of size).

- To access the sub-menus, follow the instructions on the scrolling menu.

- To select a sub-menu, press the Paper Feed button using one of the following actions:

  - To indicate **Yes**, press and hold the Paper Feed button for more than one second for a long click.

  - To indicate **No**, press the Paper Feed button quickly for a short click.

5. From the Main Menu, select **Set Communication Interface**. The printer scrolls to the first question.

6. Select **RS232/USB**.

7. Skip through the parameters with short clicks, which indicate *No*, until Set Flow Control Method is displayed.

8. Follow the instructions to select either **XON/OFF** or **DTR/DSR**, then skip the remaining communication parameters.

9. **Save** then exit the diagnostic setup.

10. Set DIP switch 1 to **OFF** (down).

11. Reset the printer. For more information, refer to *Resetting the Printer* on page 72. The printer resets with the new selection.

12. To verify the new setting, print a diagnostics form. To print the form, press and hold the paper feed button while closing the top cover.

Chapter 3: **Solving Problems**

Overview

The 7167 Series II printer may experience some problems that would need troubleshooting. For example, the power supply may be interrupted or the thermal print head may overheat. A green LED on the operator panel then lights up to signal 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.

This chapter describes common problems that can be troubleshooted. However, if a problem persists, contact a service representative. For more information, refer to *Contacting a Service Representative* on page 81.

Green LED Does Not Come On/Printer Will Not Print

Problem	What to Do	Reference
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).	*Connecting the Cables* on page 16
Power supply may be defective	If the power supply is plugged in, but does not turn on, you will need to order a new power supply.	*Ordering Other Supplies* on page 9

Green LED Blinking (Slow)

Problem	What to Do	Reference
Receipt paper is low*	There are about **4 ½ ± 3 meters,** (15 ± 10 feet) of paper left. Change the paper soon to avoid running out of paper part way through a transaction.	*Loading and Changing the Receipt Paper* on page 20

Green LED Blinking (Fast)

Problem	What to Do	Reference
Receipt paper is out	Change the paper now. Do not run a transaction without paper as the data may be lost.	*Loading and Changing the Receipt Paper* on page 20
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. **Note:** Contact a service representative if this does not resolve the problem.	*Contacting a Service Representative* on page 81
Paper jam in slip station	Open the front cover and check the slip table and under the carriage. Remove any paper you see. **Note:** If you cannot see a paper jam or other obstruction, contact a service representative.	*Contacting a Service Representative* on page 81
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. **Note:** Contact a service representative if this does not resolve the problem.	*Contacting a Service Representative* on page 81

Problem	What to Do	Reference
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. • If the printer continues to overheat, contact a service representative.	• For the recommended temperature range for operating the printer, refer to *Environmental Requirements* on page 311 • *Contacting a Service Representative* on page 81.
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.	*Contacting a Service Representative* on page 81

Slip or Forms Printing is Light

Problem	What to Do	Reference
Ribbon cassette is worn	Replace the ribbon cassette. **Note:** Contact a service representative if this does not resolve the problem.	• *Installing and Changing the Ribbon Cassette* on page 24 • *Contacting a Service Representative* on page 81

Receipt Printing is Light or Spotty

Problem	What to Do	Reference
Thermal print head may be dirty	Open the receipt cover and clean the thermal print head with cotton swabs and isopropyl alcohol. **Caution:** Do not use the alcohol to clean other parts of the printer. Damage will occur. **Note:** Contact a service representative if this does not resolve the problem.	*Loading and Changing the Receipt Paper* on page 20
	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. For more information, refer to *Ordering Paper and Supplies* on page 7	

LED (Slip Table) Does Not Come On

Problem	What to Do	Reference
Form or check not inserted properly	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. **Note:** Contact a service representative if this does not resolve the problem.	• *Printing in Forms or Checks* on page 26 • *Validating and Verifying Checks* on page 28

Forms Skew or Catch

Problem	What to Do	Reference
Form or check skewing or catching in slip station due to an obstruction or paper jam	Open the front cover and check for any paper jams or obvious obstruction in the slip station. Clear the obstruction or jammed paper. **Note:** Contact a service representative if this does not resolve the problem.	*Contacting a Service Representative* on the next page

MICR Check Reader Not Reading Properly

Problem	What to Do	Reference
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.	*Contacting a Service Representative* on the next page

Other Serious Problems

The following problems all need to be corrected by a qualified service representative. For more information, refer to *Contacting a Service Representative* on the next page.

- Forms not feeding into the slip/forms area properly

- Missing dots in slip or forms printing

- Printer will not cycle or stop when required

- Illegal 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.

- *NCR 7167 Two-Station POS Printer Series II Service Manual* (B005-000-2109). This publication includes the Troubleshooting Guide and the Preventative Maintenance Guide.

Chapter 4: **Diagnostics**

Overview

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)—enables the printer to check the status of these conditions during normal operation.

- Level 3 Diagnostics (Remote)—enables the printer to keep track of counters during normal operation.

- Manufacturing Adjustment—performed in offline mode. Enables changing 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 turned on. Level 0 diagnostics includes the following actions:

- Motors are turned off.

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

Note: If these actions are completed, the green LED on the slip table flashes once. If these actions fail, Level 0 diagnostics stops.

Failure can be detected by the following indicators:

- The printer goes dead.

- The 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.

Successful diagnostics can be detected by the following indicators:

- 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 diagnostics. These values can be changed in level 1 diagnostics. For the functions and their settings, refer to *Level 1 Diagnostics (Setup Mode)* on the facing page.

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 (Setup Mode)

Use the Level 1 diagnostics or setup mode to change the settings for various printer functions and to run certain tests. When changing the settings, keep the following information in mind:

- The settings can only be changed when the printer is in level 1 diagnostics: 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 EEROM.

- Once the settings have been changed and stored in the EEROM, the DIP switches (switch 1 and 2 set to off) must be set back to the online settings for the printer to operate.

⚠️ **Caution:** To avoid accidentally changing the settings for another function or when changing the printer settings, make sure to have the correct settings for that particular function or test. If the settings are accidentally changed, re-enter the setup mode and re-enter the correct settings. For assistance, contact a service representative. For more information, refer to *Contacting a Service Representative* on page 81.

Printer Configuration

Printers are 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 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 in the Configuration Menu:

- Configuring the Printer
- Setting Communication Interface
- Interface Type
- Baud Rate
- Number of Data Bits
- Number of Stop Bits
- Parity
- Flow Control
- Data Reception Errors
- Receive Buffer Size
- DSR Signal

- USB Type

- Setting Diagnostic Modes

- Off, Normal Mode

- Datascope Mode

- Slip Test Mode

- Receipt Test Mode

- MICR Test Mode

- Check Flip Test Mode

- Print Head Test

- Setting Emulation/Software Options

- Printer Emulation

- Printer ID Mode

- Default Lines Per Inch

- Carriage Return Usage

- Asian Mode

- Slip Printing Width

- Receipt Synchronization

- Platen Waiting Time

- PDF417 Max Column Print

- Bar Code Length

- Char 48 Column Print

- Setting Hardware Options

- Receipt Print Mode

- Print Density

- Head Failure Detection

- Maximum Power Option

- Paper Low Sensor

- Paper Width

- Knife Options

- MICR Option

- Check Flip Option

- Color Paper Option

- MICR Dual Pass
- Standby Mode
- Shift to power off
- Setting Default Code Page
- Setting EEPROM to default settings

📝 **Note:** Asian Mode is not supported by models 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:** Practice extreme caution when changing any of the printer settings to avoid changing settings that might affect the performance of the printer.
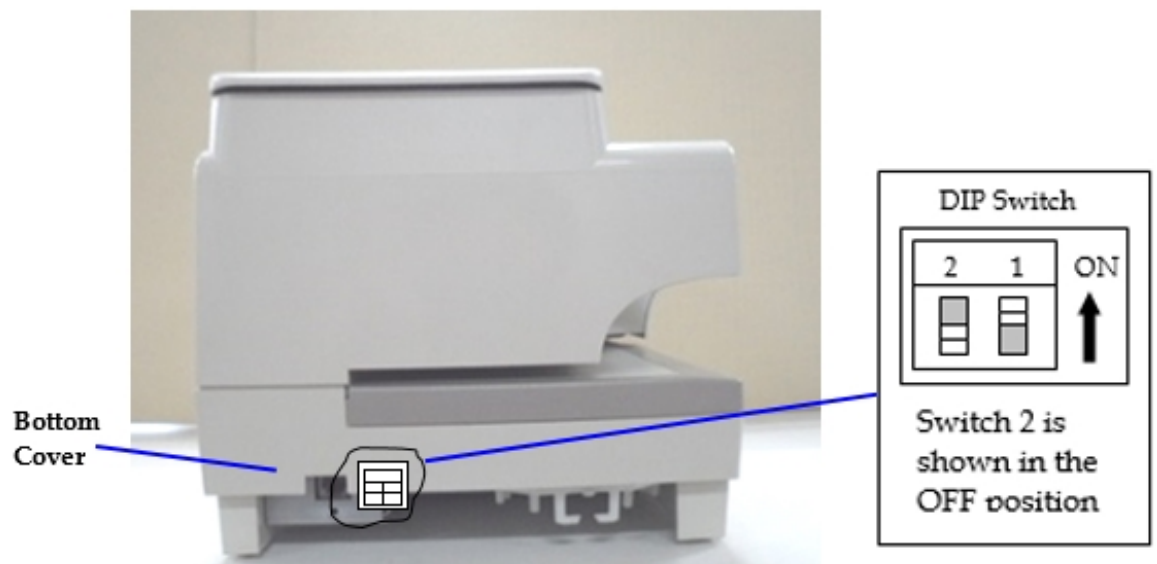
1. Set the DIP Switch:

   - Switch 1 to **On**.
   - Switch 2 to **Off**.

📝 **Note:** For information about the DIP Switch settings, refer to *Setting Switches* on page 70.

2. Reset the printer. To reset the printer, refer to

*** Diagnostics Form ***

Model number	:	7167 xxxx-yyyy-zzzz
Serial number	:	01000011

Boot Firmware
Revision	:	V018.03
CRC	:	948A
P/N	:	xxx-xxxxxxx

Flash Firmware
Revision	:	V67.23
CRC	:	8FF6
P/N	:	xxx-xxxxxxx

SBCS
Revision	:	V01.00

DBCS(for receipt)
Revision	:	R01.00

DBCS(for slip)
Revision	:	S01.00

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	:	19200
Data Bits	:	8
Stop Bits	:	1
Parity	:	None
Flow Control	:	DTR/DSR
Reception Errors	:	Print '?'
Receive Buffer	:	4K
DSR Signal	:	Enabled
USB Type	:	ION(EPIC)

To enter Printer Configure Menu:
3) Flip DIP switch #1 on
4) Reset the printer by pressing and holding Receipt Feed switch down while disconnecting and reconnecting the power.

*** Printer Config Menu ***

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

- Short Click : Feed Button is quickly depressed then released.

- Long Click : Feed Button is held down more than 1sec then released.

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

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

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

Enter code, then hold button down at least 1 second to validate

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

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

3. Use the following printer configuration menu to set general printer parameters:

```
*** Printer Config Menu ***

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

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


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

            ***************
```

4. Use the following configuration menu to select a sub-menu:

```
******** Main Menu ********
******************************

Select a sub-menu:
   -EXIT                              -> 1 Click
   -Print Current                     -> 2 Clicks
   -Configuration
   -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
   -Settings

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

5. Press the Paper Feed button to enter sub-menus and to select options.

   • Use a short click to indicate **No**. For a short click, quickly press then release the Paper Feed button.

   • Use a long click to indicate **Yes**. For a long click, hold down the Paper Feed button for more than one second.

6. When finished, set DIP Switch 1 to **Off** and reset the printer.

Communication Interface Modes

Use the Configuration Menu to set the printer to use an RS-232C serial port. For more information about how to enter the Configuration Menu, refer to *Configuring the Printer* on page 86.

To select a Communication Interface setting, press the Paper Feed button. The number of clicks confirms the setting.

Note: Default settings are marked with asterisks (*).

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 a baud rate 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.

Note: The settings used depends on the software the operator is using and the capabilities of the host computer.

```
** 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 Click
  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

** SET RECEIVE BUFFER SIZE ?
YES   -> Long Click
NO   -> Short Click

4K Bytes *   -> 1 Click
One Line   -> 2 Clicks
8K Bytes   -> 3 Clicks
12K Bytes   -> 4 Clicks

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

```
** SET DSR IGNORE FUNCTION ?
YES       -> Long Click
NO        -> Short Click

Enabled*    -> Long Click
Disabled    -> Short Click


** SET USB INTERFACE TYPE ?
YES       -> Long Click
NO        -> Short Click

ION (EpiC)*        -> 1 Click
NonION (NHPI) *    -> 2 Clicks
NonION (PRTR)      -> 3 Clicks


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

Save Parameters

Use this function to complete one of the following actions:

• Yes—saves the selected communication settings.

• No—returns to the communication settings to select additional options.

Press the Paper Feed button to select an option.

```
Save new parameters ?
  YES              -> Long Click
  NO , MODIFY  -> Short Click
```

Diagnostic Modes

This printer can be set with the following diagnostic modes:

- OFF, Normal Mode—sets the normal operating mode of the printer.

- Datascope Mode—sets the receipt printer to print incoming commands and data in hexadecimal format.

- Slip test Mode—sets the slip printer to print two code pages.

- Receipt Test Mode—sets the receipt printer to print two code pages.

- MICR Test Mode—sets the receipt printer to print all characters recognized by the MICR.

- Check Flip Test Mode—sets the check flip mechanism to flip an inserted check.

- Print Head Test Mode Mode—sets the slip printer to print several lines of rolling ASCII even if the receipt cover is open.

The diagnostic modes are enabled or disabled by using the Configuration Menu. For instructions about how to enter the Configuration Menu, refer to *Configuring the Printer* on page 86.

Note: To select a diagnostic mode, press the Paper Feed button.

```
** 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 enables 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 forth.

To run the Datascope Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Datascope Mode.

2. Enable the Datascope Mode.

3. Exit the Configuration Menu.

4. 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 following illustration:

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

To disable the Datascope Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Datascope Mode.

2. Disable the Datascope Mode.

3. Exit the Configuration Menu.

Slip Test Mode

To run the Slip Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Slip Test Mode.

2. Enable the Slip Test Mode.

3. Exit the Configuration Menu.

4. Insert a slip into the slip station.

5. Push the Paper Feed button. All code pages will be printed.

6. Go to step 2 to repeat this test.

To exit the Slip Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Slip Test Mode.

2. Disable the Slip Test Mode.

3. Exit the Configuration Menu.

Receipt Test Mode

To run the Receipt Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Receipt Test Mode.

2. Enable the Receipt Test Mode.

3. Exit the Configuration Menu.

4. Push Paper Feed button. The receipt station will print all code pages. The test ends with a cut.

5. Go to step 2 to repeat this test.

To disable the Receipt Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Slip Test Mode.

2. Disable the Receipt Test Mode.

3. Exit the Configuration Menu.
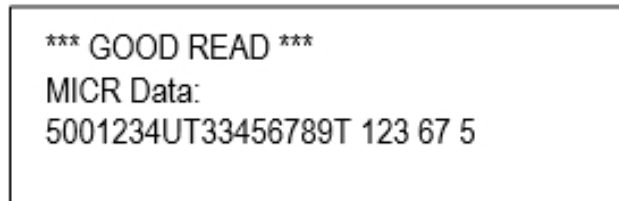
MICR Test Mode

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 check as usual, but instead of transmitting the values to the software it prints on receipt paper.

To run the MICR Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the MICR Test Mode.

2. Enable the MICR Test Mode.

3. Exit the Configuration Menu.

4. Insert a check into the slip station. For more information, refer to *Validating and Verifying Checks* on page 28.

- 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.

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

To disable the MICR Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the MICR Test Mode.

2. Disable the MICR Test Mode.

3. Exit the Configuration Menu.

Check Flip Test Mode

To run the Check Flip Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Check Flip Test Mode.

2. Enable the Check Flip Test Mode.

3. Exit the Configuration Menu.

4. Insert a check, as if validating the check, lengthwise and face down into the slip station. For more information, refer to *Validating and Verifying Checks* on page 28.

> **Note:** A check must be used because if any other slip or form is inserted, the printer will not perform the check flip operation correctly.

Check Orientation
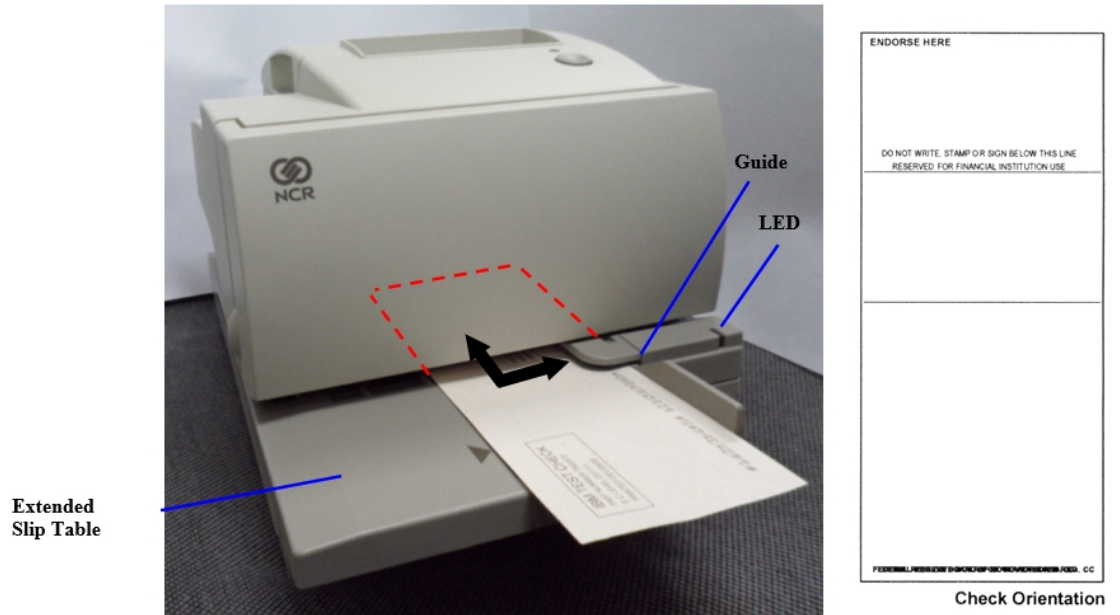
5. Push the Paper Feed button. The check then goes through the flip routine only. No printing takes place.

To disable the Check Flip Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Check Flip Test Mode.

2. Disable the Check Flip Test Mode.

3. Exit the Configuration Menu.

Print Head Test Mode

Print Head Test Mode prints three lines of rolling ASCII characters.

To run the Print Head Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Print Head Test Mode.

2. Enable the Print Head Test Mode.

3. Exit the Configuration Menu.

4. Insert a slip into the slip station.

5. Push the Paper Feed button. Several lines of Rolling ASCII character will be printed.

> **Note:** Printing will take place even when receipt cover is open.

6. To repeat this test, go to step 2.

To disable the Print Head Test Mode, follow these steps:

1. From the Configuration Menu, enter the Diagnostic Mode, and then select the Print Head Test Mode.

2. Disable the Print Head Test Mode.

3. Exit the Configuration Menu.

Save Parameters

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

• To select an option, press the Paper Feed button.

```
Save new parameters ?
  YES             -> Long Click
  NO, MODIFY    -> Short Click
```

Emulation/Software Options

Use the Emulation/Software menu for the following printer settings:

- printer's emulation
- ID mode
- lines per inch
- carriage return usage
- Asian mode
- slip printing width
- receipt synchronization
- platen waiting time
- PDF417 max column print
- compatibility bar code length
- 48 column print

For more information, refer to *Configuring the Printer* on page 86.

To select an Emulation/Software setting, press the Paper Feed button. The number of clicks confirms the setting.

Note: Default settings are marked with asterisk (*).

Printer Emulations

Printer emulations determine the commands that are available to the printer.

1. To select an emulation, press the Paper Feed button.

```
** SET PRINTER EMULATION ?
  YES              -> Long Click
  NO               -> Short Click


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

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

2. Press the Paper Feed button for at least one second to validate the selection.

Printer ID Mode

This function determines which printer ID is currently effective to the printer.

1. To select a printer ID, press the Paper Feed button.

```
** SET PRINTER ID MODE ?
  YES                     -> Long Click
  NO                      -> Short Click


  7158 Native 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
```

2. 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.

1. To select a lines per inch option, press the Paper Feed button.

```
** 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
```

2. 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.

• To select a carriage return usage, press the Paper Feed button.

```
** SET CARRIAGE RETURN USAGE ?
  YES      -> Long Click
  NO       -> Short Click

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

Asian Mode

This function makes it possible for the user to select an Asian character for the printer.

Note: For Asian code pages, only one from either 932, 936, 949, or 950 exists in the firmware. Asian Mode is not supported by model 7167-1035 and 7167-2035.

• To select an Asian Mode, press the Paper Feed button.

```
** SET ASIAN MODE ?
  YES      -> Long Click
  NO       -> Short Click

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

Slip Printing Width

This function makes it possible for the user to select the width of slip printing. When set in the 7158/7156 mode the printer will allow the printer to accept 66 columns of printer but will discard the left-most 21 characters. This setting eliminates changes to applications when migrating to the 7167 printer if data is only being printed in the right 45 columns of the 66 columns on the 7156/7158.

• To select a slip printing width, press the Paper Feed Button.

```
** SET SLIP PRINTING WIDTH ?
  YES      -> Long Click
  NO       -> Short Click

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

Receipt Synchronization

The following commands are the buffered status command:

```
1B 75 0 Transmit Peripheral Device Status
1B 76 Transmit Printer Status
1D 49 n Transmit Printer ID
1D 72 Transmit Status
```

- For Mode1 and Mode2, the command/status sequence is completely the same. The only difference is the printing speed.

  - The printing speed of *Mode1* is same as normal printing (max. 12 ips).

  - The printing speed of *Mode2* is 4 ips (max) in order to prevent the clatter print in the synchronized line mode.

- When *Mode3* is selected, the following command will be available. For more information, refer to *Specifications* on page 306.

  ```
  1F 0A n Get Print Completion
  ```

Note: When *Receipt synchronization* is disabled, printer returns the status for buffered status command immediately after decoding the status command.

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

1. To select a receipt synchronization, press the Paper Feed button.

```
** SET RECEIPT SYNCHRONIZATION ?
  YES       -> Long Click
  NO        -> Short Click

  Enable(mode 1)        -> 1 Click
  Enable(mode 2)        -> 2 Click
  Enable(mode 3)        ->3  Click
  Disabled*             ->4  Click
Enter code, then hold Button DOWN
At least 1 second to validate
```

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

Platen Waiting Time

This function makes it possible for the user to select the wait time that the paper uses for detection.

- To select a platen waiting time option, press the Paper Feed button.

```
** 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
```

PDF417 Max Column Print

This function makes it possible for the user to select the print columns for the PDF417 bar code printing. The selections are 9 or 14 columns. The end result is the height of the bar code printing. The default setting is 9 columns.

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

1. To select a PDF417 max column, press the Paper Feed button.

```
** SET PDF417 MAX COLUMN PRINT ?
  YES      -> Long Click
  NO       -> Short Click

  9 Columns        -> 1 Click
  14 Columns       -> 2 Clicks

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

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

Compatibility Bar Code Length

Set Compatibility Barcode Length using the configuration menu. Answer **No** to the questions printed on the receipt until you are prompted with the instructions for Compatibility Barcode Length.

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

1. To select the compatibility bar code length, press the Paper Feed button.

```
** SET COMPATIBILITY BARCODE LENGTH?
  YES      -> Long Click
  NO       -> Short Click

  Disable          -> 1 Click
  Enable*          -> 2 Clicks

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

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

Char 48 Column Print

Set the Char 48 Column using the configuration menu. Answer **No** to the questions printed on the receipt until you come to the instructions for Char 48 Column Print.

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

1. To select a Char 48 column print option, press the Paper Feed button.

```
** Char 48 Column Print ?
  YES      -> Long Click
  NO       -> Short Click

  OFF*              -> 1 Click
  ON                -> 2 Clicks


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

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

Save Parameters

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

• To select an option, press the Paper Feed button.

```
Save new parameters ?
  YES      -> Long Click
  NO       -> Short Click
```

Hardware Options

Set Receipt Print Mode

Set the receipt print mode using the configuration menu. Select Hardware Options in the Configuration Menu and answer the questions printed on the receipt.

⚠️ **Caution:** Practice extreme caution when changing any of the printer settings to avoid inadvertently changing other settings that might affect the performance of the printer.

• To select the print density, press the Paper Feed button.

```
** SET RECEIPT PRINT MODE ?
  YES        -> Long Click
  NO         -> Short Click

  High Speed Print*    -> Long Click
  High Quality Print   -> Short Click
```

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 0.

⚠️ **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.

1. To select the print density, press the Paper Feed button.

```
** SET PRINT DENSITY ?
  YES        -> Long Click
  NO         -> Short Click

  -11 ~ -15    -> 1 Click
  -6  ~ -10    -> 2 Clicks
  -1  ~ -5     -> 3 Clicks
   0*          -> 4 Clicks
  +1  ~ +5     -> 5 Clicks
  +6  ~ +10    -> 6 Clicks
  +11 ~ +15    -> 7 Clicks

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

> **Note:** If *1 click* is selected, it is printed as follows:

```
-11  -> 1 Click
-12  -> 2 Clicks
-13  -> 3 Clicks
-14  -> 4 Clicks
-15  -> 5 Clicks
```

2. Press the Paper Feed button for at least one second to validate the selection.

Set Power On Head Failure Detection

Set the Power On Head Failure Detection using the configuration menu. Answer **No** to the questions printed on the receipt until you come to the instructions for Power On Head Failure Detection.

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

• To select an option, press the Paper Feed button.

```
** SET POWER ON HEAD FAILURE DETECTION ?
  YES      -> Long Click
  NO       -> Short Click


  On     -> Long Click
  Off*   -> Short Click
```

Maximum Power Option

This function allows the user to set the maximum power for the printer to below available modes.

1. To select an option, press the Paper Feed button.

```
** SET MAX POWER OPTION ?
  YES      -> Long Click
  NO       -> Short Click

  Term Pwr-High*        -> 1 Click
  NCR 75W Ext Pwr       -> 2 Clicks
  Term Pwr-Low          -> 3 Clicks
  NCR 60W Ext Pwr       -> 4 Clicks
```

2. 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.

• To select an option, press the Paper Feed button.

```
** SET PAPER LOW SENSOR OPTION ?
  YES       -> Long Click
  NO        -> Short Click

  Enable PLSensor*      -> Long Click
  Disable PLSensor      -> Short Click
```

Paper Width

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

1. To select the paper width option, press the Paper Feed button.

```
** 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
```

2. 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 is the option is added or removed.

1. To select a knife option, press the Paper Feed button.

```
** SET KNIFE OPTION ?
  YES   > Long Click
  NO    > Short Click



Enable Knife                         *-> 1 Click
Disable Knife                         -> 2 Clicks
Enable Knife with Buzzer (Low)  -> 3 Clicks
Enable Knife with Buzzer (High) -> 4 Clicks
```

2. 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.

- To select an option, press the Paper Feed button.

```
** SET MICR OPTION ?
  YES      -> Long Click
  NO       -> Short Click



  Enable MICR*   -> Long Click
  Disable MIC    -> Short Click
```

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.

- To select an option, press the Paper Feed button.

```
** SET CHECK FLIP OPTION ?
  YES     -> Long Click
  NO      -> Short Click

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

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.

• To select a color paper option, press the Paper Feed button.

```
** SET COLOR PAPER OPTION ?
  YES      -> Long Click
  NO       -> Short Click

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

MICR Dual Pass Option

This function allows the user to set MICR dual pass option either enabled or disabled.

• To select a MICR dual pass option, press the Paper Feed button.

```
** SET MICR DUAL PASS OPTION ?
  YES      -> Long Click
  NO       -> Short Click

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

Set Shift to Standby

Enable/Disable the Standby Mode using the configuration menu. This setting is to enable or disable the standby mode. If it is enabled, the printer shifts to the standby mode in order to save the power consumption when the printer is in the idle mode.

In disable setting, the printer does not shift to the standby mode. When going back from the standby mode, the response of the printer will be slightly delayed compared to the normal mode response.

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

• To select an option, press the Paper Feed button.

```
** SET STANDBY MODE ?
 YES      -> Long Click
 NO       -> Short Click

 Enable    -> Long Click
 Disable*  -> Short Click
```

Set Shift Time to Power Off

Set the Shift Time to Power Off using the configuration menu. Answer **No** to the questions printed on the receipt until you come to the instructions for Shift Time to Power Off.

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

- To select an option, press the Paper Feed button.

```
** SET SHIFT TIME TO POWER OFF ?
 YES              -> Long Click
 NO               -> Short Click

 Enabled (60min)    -> 1 Click
 Enabled (120min)   -> 2 Click
 Enabled (180min)   -> 3Click
 Enabled (240min)   -> 4 Click
 Enabled (300min)   -> 5 Click
 Disabled*          -> 6 Click

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

Save Parameters

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

- To select an option, press the Paper Feed button.

```
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 1256 (Windows Arabic)

- Code page Katakana

- Code page Hungary

- 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.

1. To select a default code page, press the Paper Feed button.

```
** CODE PAGE MENU

  Code Page 437*          -> 1 Click
  Code Page 850           -> 2 Clicks
  Code Page 852           -> 3 Clicks
  Code Page 858           -> 4 Clicks
  More Options            -> 5 Clicks


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

```
Code Page 860          -> 1 Click
Code Page 862          -> 2 Clicks
Code Page 863          -> 3 Clicks
Code Page 864          -> 4 Clicks
More Options           -> 5 Clicks


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


 Code Page 865          -> 1 Click
 Code Page 866          -> 2 Clicks
 Code Page 874          -> 3 Clicks
 Code Page 1252         -> 4 Clicks
 More Options           -> 5 Clicks



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



 Code Page 1256         -> 1 Click
 Code Page Katakana   -> 2 Clicks
 Code Page Hungary     -> 3 Clicks
 Code Page 932          -> 4 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
```

2. 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 communication settings or return to the communication settings to select additional options.

- To select an option, press the Paper Feed button.

```
Save new parameters ?
  YES      -> Long Click
  NO       -> Short Click
```

EEPROM to Default Settings

This selection resets the configuration to the Default Settings.

⚠ **Caution:** Be extremely careful when 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
```

- Press the Paper Feed button for at least one second to validate the selection.

Mfg Adjustment

If it is necessary to change the settings for mechanical, or perform the printer test, use the menu feature. This feature prints instructions on the receipt for selecting and changing any of the functions and parameters. Use caution in making these adjustments.

Mfg Adjustment:

⚠️ **Caution:** Practice extreme caution when changing any of the printer settings to avoid changing other settings that might affect the performance of the printer.

1. Set DIP switch 1 and DIP switch 2 to ON.

2. Power on the printer while holding the Paper Feed Button. The printer will print the current configuration, then cuts the paper to print the Mfg Adjustment Menu.

📝 **Note:** If you do not hold the Paper Feed Button while resetting the printer, it will go to Online Mode.

3. Use the following configuration menu to set mechanical adjustment parameters and to select printer test:

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

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

📝 **Note:** Current settings are marked with an asterisk (*).

```
===== Mfg Adjustment Menu =====

Select a sub-menu:
-       EXIT                            -> 1 Click
-       Sensor Calibration              -> 2 Clicks
-       Left Margin Adjustment(Slip)    -> 3 Clicks
-       Alignment Adjustment(Slip)      -> 4 Clicks
-       Rolling ASCII Print Test(Rcpt)  -> 5 Clicks
-       H Print Test(Receipt)           -> 6 Clicks
-       Duty Check Print Test(Rcpt)     -> 7 Clicks
-       More Options                    ->  10 Clicks

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



Select a sub-menu: (More Options)
-       Rolling ASCII Print Test(Slip)  -> 1 Click
-       H Print Test(Slip)              -> 2 Clicks
-       Duty Check Print Test(Slip)     -> 3 Clicks
-       Continuous Flip Test            -> 4 Clicks
-       Slip Print Test(Cont)           -> 5 Clicks
-       Alternate Print Test            -> 6 Clicks
-       Continuous MICR Test            -> 7 Clicks
-       Print Current Setting           -> 8 Clicks
-       Reset all EEPROM to Default     -> 10 Clicks

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

4. Press the Paper Feed button to enter sub-menus and to select options.

   • Use a short click to indicate **No**. For a short click, quickly press then release the Paper Feed button.

   • Use a long click to indicate **Yes**. For a long click, hold down the Paper Feed button for more than one second.

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

Sensor Calibration

This option calibration applies to all reflective type sensor.

1. To select a sensor calibration option, press the Paper Feed button.

```
** START SENSOR CALIBRATION?

      Return Main Menu    -> Short Click

      Start calibration   -> Long Click
```

2. Take out the paper from slip unit before calibration starts.

3. Press paper feed receipt button to start calibration.

4. After a few seconds, insert the paper into slip unit.

5. The printer will perform calibration on the following sensors.

   - TOF (Top Of Form) Sensor for slip unit.

   - BOF (Bottom Of Form) Sensor for slip unit.

   - FLS (Flip Sensor) Sensor for slip unit if installed.

Note: When the calibration is completed the printer will return to the Mfg Adjustment Menu. If the test is unsuccessful the printer will halt. To recover, reset print and check if sensors are connected and working properly.

6. To review the results of the sensor calibration test, perform *Print Current Setting* on page 124. If the results show all zeros, there is a problem with that sensor. Check to ensure that the sensor is plugged in properly. If so, then replace sensor.

Left Margin Adjustment (Slip)

This option enables the user to adjust the left margin position for the slip unit. The left margin is the distance between the left edge of the slip and the 1st character. However, in making the adjustment it may be easier to adjust to the right edge of the slip. The nominal distance from the right edge to the 1st column is 3.2 mm (0.125 in).

The range of the left value is **–4.76 mm ≤ 0 ≤ 4.76 mm** (0.187 in). The resolution is **1/80 inch** (0.3175 mm).

- To select a left margin adjustment option, press the Paper Feed button.

```
** START LEFT MARGIN ADJUSTMENT?

Return Main Menu          -> Short Click

Start Adjustmet           -> Long Click
```

1. When a long click is selected, insert a form into the printer which will result in the following form to be printed. A short click will return to Mfg Adjustment Menu.

```
+1
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

 +2
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

 +3
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

 +4
  HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
  HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

 +5
   HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
   HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

 +6
    HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
    HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

 +7
     HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
     HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

Left Margin:+5
```

Note: To stop the test, hold the Paper Feed button down. The printer will return to the Mfg Adjustment Menu.

2. Measure from the right edge of the paper to the first column to select the row that is closest to **3.2 mm** (0.125 in). The value printed above this line is to be used in the following step.

```
Left margin adjustment(Slip)
Enter value (Max 7)        -> Short Click
Done adjustment            -> Long Click
```

a. To enter the adjustment value, perform a series of short clicks equal to the value from the previous measurement. In other words, if the value is 3, perform 3 short clicks and then a long click to input the selection.

b. Insert a form into the slip station and a sample print out will be printed with the current selection for verification of the setting for the left margin adjustment. The following menu will be printed on the receipt station.

```
** START LEFT MARGIN ADJUSTMENT?
Return Main Menu            -> Short Click

Start Adjustment            -> Long Click
```

Alignment Adjustment (Slip)

This option enables the user to adjust the alignment for Slip unit. The alignment is the adjustment for bi-directional printing. Sample alignments will be printed and you will select the optimum alignment value and enter this value using short clicks equal to the value of the selection.

The range of value is –0.40 mm (0.015) ≤ 0 ≤ 0.40 mm. The resolution is 1/960 inch (0.0265 mm).

1. To select an alignment adjustment option, press the Paper Feed button.

```
** START ALIGNMENT ADJUSTMENT?
Return Main Menu            -> Short Click

Start Adjustment            -> Long Click
```

2. Press the Paper Feed button to set one of the following:

   • Short Click—returns to the Mfg Adjustment Main Menu.

   • Long Click—starts the adjustment.

Note: To stop the test, hold the Paper Feed Button down. The printer menu returns to the Mfg Adjustment Menu.

```
+1
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

 +2
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
 +3
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

+4
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

+5
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

+6
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

+7
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
+8
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

+9
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH


+10
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

+11
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
 HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH

Current Margin:+7
```

> **Note:** Inspect the print out to determine the best vertical print alignment of the Hs from row to row. The value above the selected H pattern is the number to be used in the following input.

```
Alignment Adjustment(Slip)
  Enter value (Max 11)    -> Short Click
  Done adjustment         -> Long Click
```

3. To enter the adjustment value perform a series of short clicks equal to the value from the previous selection. In other words, if the value is 7, perform 7 short clicks and then a long click to input the selection.

4. Insert a form into the slip station and a sample print out will be printed with the current selection for verification of the setting for the alignment adjustment. The following menu will be printed on the receipt station.

Rolling ASCII Print Test (Receipt, Slip)

This option enables the user to run a rolling ASCII printing test. The printer prints the resident character set in standard pitch continuously.

1. To start or stop the test, press the Paper Feed button.

```
** START ROLLING ASCII PRINT TEST?
  Return Main Menu    -> Short Click
  Start test          -> Long Click
```

2. Press the Paper Feed button to set one of the following:

    *   Short Click—returns to the Mfg Adjustment Main Menu.
    *   Long Click—starts the Rolling ASCII print test.

Rolling ASCII

```
000000001
 !"#$%&'()*+_./012345678:;?@ABCDEFGHIJK
!"#$%&'()*+_./012345678:;?@ABCDEFGHIJKL
"#$%&'()*+_./012345678:;?@ABCDEFGHIJKLM
#$%&'()*+_./012345678:;?@ABCDEFGHIJKLMNO
$%&'()*+_./012345678:;?@ABCDEFGHIJKLMNOP
%&'()*+_./012345678:;?@ABCDEFGHIJKLMNOPQ
&'()*+_./012345678:;?@ABCDEFGHIJKLMNOPQR
'()*+_./012345678:;?@ABCDEFGHIJKLMNOPQRS
()*+_./012345678:;?@ABCDEFGHIJKLMNOPQRST
)*+_./012345678:;?@ABCDEFGHIJKLMNOPQRSTU
```

Note: To stop the test, hold the Paper Feed Button down. The printer will return to the Mfg Adjustment Menu.

H Print Test (Receipt or Slip)

This option enables the user to run an H printing test. The printer prints the *H* character in standard pitch continuously.

1. To start or stop the test, press the Paper Feed button.

    ```
    ** START H PRINT TEST?
       Return Main Menu      -> Short Click
       Start test            -> Long Click
    ```

2. Press the Paper Feed button to set one of the following:

    • Short Click—returns to the Mfg Adjustment Main Menu.

    • Long Click—starts the H print test.

```
000000001
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
```

Note: To stop the test hold the Paper Feed button down. The printer will return to the Mfg Adjustment Menu.

Duty Check Print Test (Receipt, Slip)

This option enables you to run a duty check printing test. The printer prints the 12.5%, 25%, 50% and 100% duty original pattern.

1. To start or stop the test, press the Paper Feed button.

```
** START DUTY CHECK PRINT TEST?

Return Main Menu          -> Short Click

Start test                -> Long Click
```

2. Press the Paper Feed button to set one of the following:

   • Short Click—returns to the Mfg Adjustment Main Menu.

   • Long Click—starts the Duty Check print test.

```
00000001
```
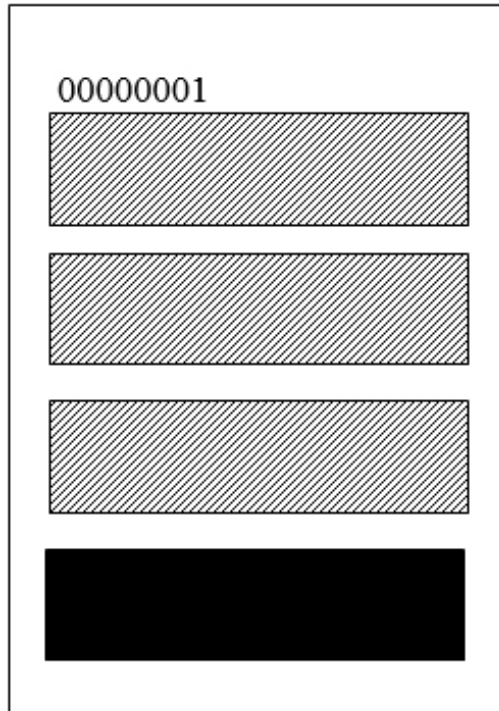


```
For Duty Check Print
Stop and exit test                    -> Short Click
Continue Duty Check Print             -> Long Click
```

3. Press the Paper Feed button for at least one second to validate the selection.

Continuous Flip Test

This option runs the continuous check flip.

1. To select a continuous check flip option, press the Paper Feed button.

```
** START CHECK FLIP TEST?

Return Main Menu          -> Short Click

Start Check Flip Test  -> Long Click
```

2. Press the Paper Feed button to set one of the following:

    •   Short Click—returns to the Mfg Adjustment Main Menu.

    •   Long Click—starts the Continuous Flip test.

3. After a few seconds, insert the paper into slip unit. Printer performs continuous check flip test.

4. To stop the test hold the Paper Feed Button down. The printer will return to the Mfg Adjustment Menu.

Continuous MICR Test

This option runs the continuous micr test.
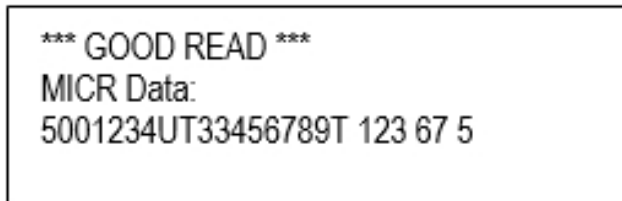
1. To select a continuous MICR option, press the Paper Feed button.

    ** START MICR TEST?

    Return Main Menu -> Short Click

    Start MICR Test -> Long Click

2. Press the Paper Feed button to set one of the following:

    *   Short Click—returns to the Mfg Adjustment Main Menu.

    *   Long Click—starts the MICR test.

3. After a few seconds, insert the check into slip unit. The printer performs continuous MICR test. The results of the MICR read will be printed on the receipt station. The following is an example of a good read.

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

4. To stop the test, hold the Paper Feed button down. The printer returns to the Mfg Adjustment Menu.

Print Current Setting

This option allows you to print current setting on receipt.

1. Enable the Print Current Setting through the Configuration Menu, then exit the Configuration Menu.

2. Press the Paper Feed button to set one of the following:

    *   Short Click—returns to the Mfg Adjustment Main Menu.

    *   Long Click—prints the current setting.

```
*** Current Setting Form ***

Model number              : 7167 –xxxx-xxxx
Serial number             : 12345678

Boot Firmware
  Revision                : V18.03
  CRC                     : 948A
 Flash Firmware
  Revision                : V67.23
  CRC                     : 8FF6
SBCS
   Revision               : V01.00
DBCS
   Revision               : R01.00

Adjustment setting
 Sensor Level (On, Off, TH)
  TOF                     : 0.1V, 2.9V, 2.0V
  BOF                     : 0.1V, 1.9V, 1.3V
  FLS                     : 3.0V, 0.2V, 1.6V
 Left Margin(Receipt)      : 00
 Left Margin(Slip)         : 00
 Alignment(Slip)           : 00
```

EEPROM to Default Settings

This selection resets the configuration to the Default Settings.

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

1. To reset the EEPROM to default values, press the Paper Feed button.

```
** RESET EEPROM TO DEFAULT VALUES   ?
  YES      -> Long Click
  NO       -> Short Click
```

2. Press the Paper Feed button to set one of the following:

- Short Click—returns to the Mfg Adjustment Main Menu without resetting the EEPROM to the default values.

- Long Click—resets the EEPROM to the default values.

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

For more information about other conditions that may occur and how to correct them, refer to *Solving Problems* on page 76.

Status	LED Behavior
Power Off	Off
Firmware Download	Very Fast Blink
Level 0 Diagnostics	Fast Blink
Receipt Paper Low	Slow Blink
Temperature Error	Fast Blink
Voltage Error	Fast 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

Status	LED Behavior
Flip Motor Jam	Fast Blink
Slip Ribbon Carriage Error	Fast Blink
All other states	On

Level 3 Diagnostics

Level 3 diagnostics keep track of the following tallies and print them on the receipt during the receipt test. Refer to sample print tests in the previous 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**

Overview

To print a receipt, first run a program on the host computer. This program translates the data from the host computer to a language that the printer can understand. This program must command the printer exactly how to print each character. This chapter describes the steps for creating the program or modifying an existing one.

Interface

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

The printer and the host communicates only when the interface parameters are matched and the proper protocol is used. For more information about the protocol for the RS-232C interface, refer to *RS-232C Interface* on page 131.

Sending Commands

Once the communication link is established, commands can be sent to the printer. Commands are sent to the printer using any of the following:

- DOS
- BASIC

Note: This section does not take into account the necessary protocol, but is meant as a general introduction about how the printer functions.

Using DOS to Send Commands

One way of sending commands to the printer is to send them directly from DOS.

Example:

Command	Description
`COPY CON: COM1:`	Each key press has a corresponding Hex code. This command sets up the computer to send the corresponding Hex code of the key pressed to the RS-232C communication port COM1 after the COPY mode is exited. If the printer is connected to COM1, then the data goes to the printer.

To exit the COPY mode:

- Type `CTRL Z`, and then press ENTER. 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.

Example:

Command	Description
`LPRIN CHR$(&H0A)`	This command sends the hexadecimal number `0A` to the printer, which causes the printer to print the contents of its print buffer. Previously sent commands instruct the printer exactly how this data should be printed on the paper.
`LPRIN CHR$(&H12); "ABC"; CHR$(&H0A)`	This command sends the Hex numbers `12 41 42 43 0A` to the printer. This command causes the printer to set itself to double wide mode (12), load the print buffer with "ABC" (41 42 43), and finally, print (0A). The communication link between the BASIC program output and the printer must match.

RS-232C Interface

The RS-232C interface uses either of the following protocols:

- XON/XOFF—sends a particular character back and forth between the host and the printer to regulate the communication.

- DTR/DSR—changes in the DTR/DSR signal coordinate the data flow.

The RS-232C version of the 7167 offers the standard options which can be selected in the Diagnostic mode. For more information, refer to *Communication Interface Modes* on page 89.

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 enable 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 sends 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 explains that with a pause of 50 milliseconds after each line, the transmit time equals or exceeds the print time, which slows 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 explains that with no delay between lines, the transmit time is much less than the print time, which enables 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

Char./Line	Lines/Receipt	Transmit Time: (9600 Baud)	Transmit Time: (19.2 K Baud)	Print Time
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. To send data at the appropriate times, the application on the host computer must monitor the communication link as described in the following flowchart.

Note: 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.
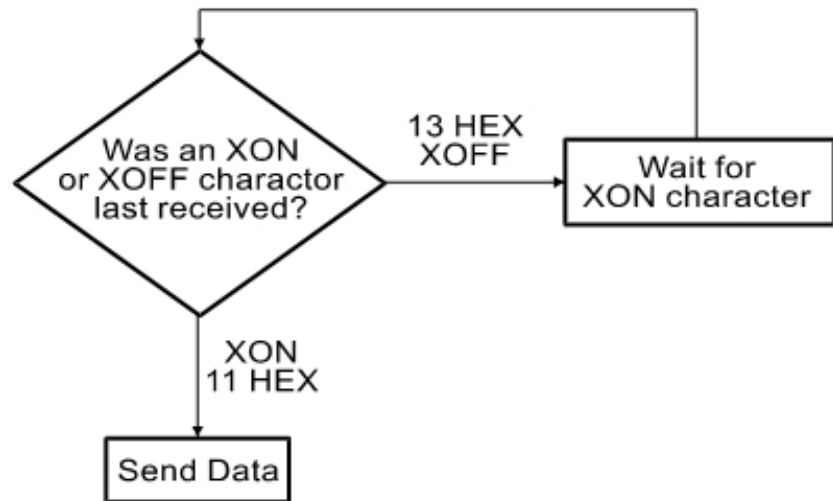
XON character = Hex 11.

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.
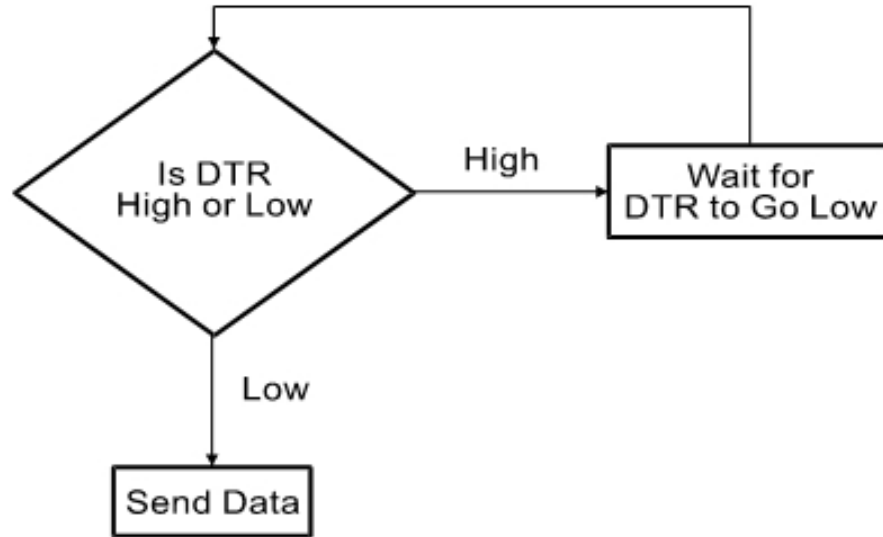
RS-232C Technical Specifications

This section describes the pin settings for the connectors and the RS-232C interface parameters. The RS-232C parameters can be selected in the Diagnostic mode. For the position of the DIP switches, refer to *Communication Interface Modes* on page 89. The RS-232C parameters must match those of the host.

Connectors

RS-232C Communication Connector Pin Assignments

The follow image displays the RS-232C communication connector and pin assignments. The connector is a 9-pin male D-shell connector and is located in the hollowed cavity under rear part of the printer.

Function   Pin Numbers   Function

Logic Ground 5
DTR 4
TXD 3
RXD 2
Not Used 1

9 Not Used
8 CTS
7 RTS
6 DSR

Shell - Frame Ground

Printer View (Male)
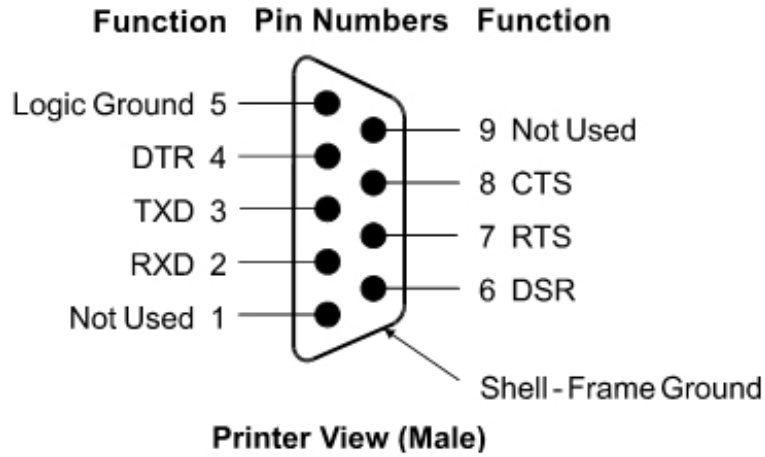
RS-232C 9-Pin to 9-Pin Cable Diagram

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

RS-232C 9 Pin to 9 Pin Cable

9 Pin Male Connector

9 Pin Male Connector

7167 Series II Printer

Host

RS-232C 9 Pin to 9 Pin Cable

9 Pin Female   9 Pin Female

DCD1 ——— 1DCD
RxD2 ——— 2RxD
TxD3 ——— 3TxD
DTR4 ——— 4DTR
LGND5 ——— 5LGND
DSR6 ——— 6DSR
RTS7 ——— 7RTS
CTS8 ——— 8CTS
SHLD ——— SHLD
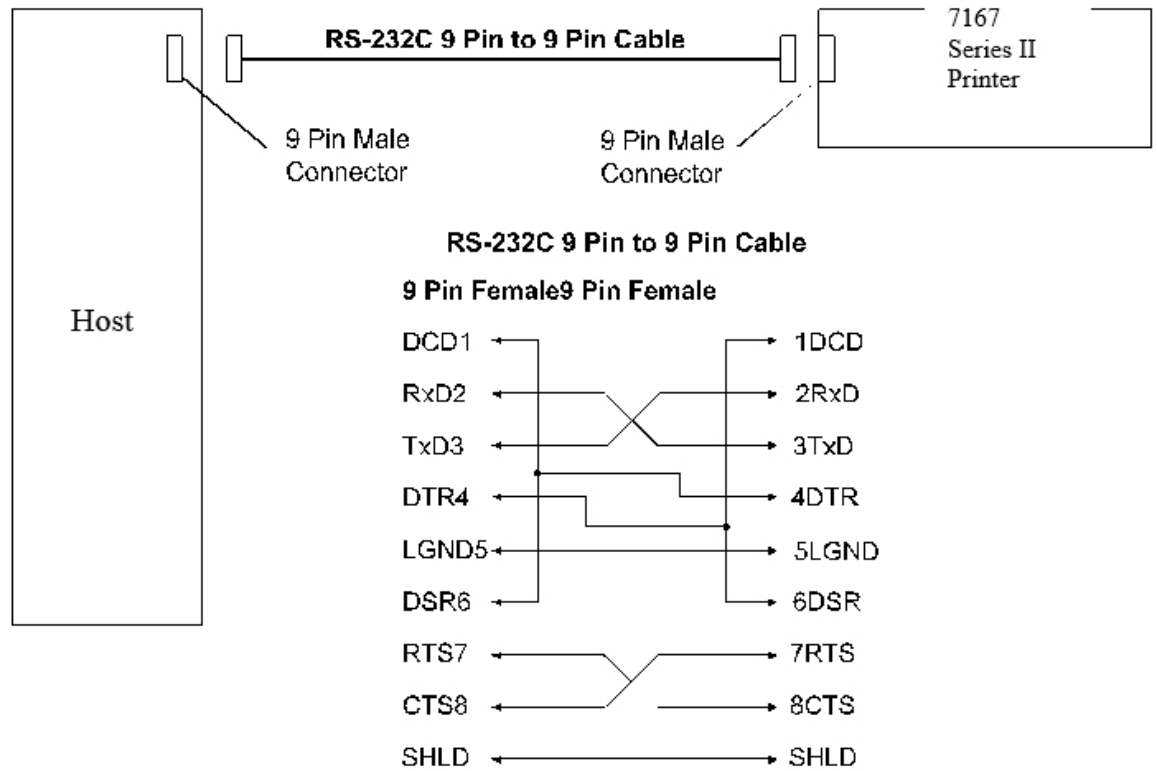
Other Connector Information

USB Cable Connector

The following image is for the USB Type B communication connector and pin assignment.
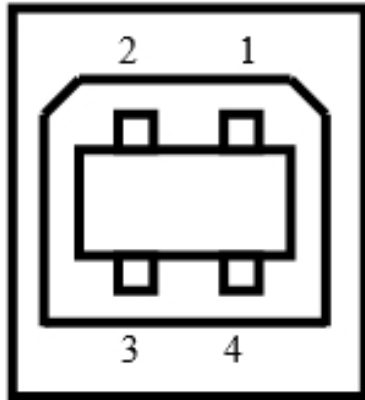
Printer View End

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

Power Cable Connector

The following image displays the power cable connector and pin assignments. The power cable connector is a 3-pin DIN plug and is located in the hollowed cavity under the rear part of the printer.

Printer View End (Female)

Cash Drawer Connector and Pin Assignments

The following image displays the pin out designation for the cash drawer connectors. The table provides the pinout assignments for cash drawers one and two. The cash drawer connectors are located at the rear part of the printer.
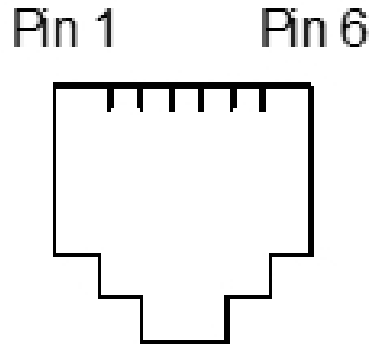
Pin Number	Cash Drawer 1 Connector	Cash Drawer 2 Connector (Optional)
1	Frame Ground	Frame Ground
2	Drawer 1 Solenoid	Drawer 2 Solenoid (Optional by jumper: J13-2 to J14-2)
3	Drawer 1 & 2 Status Switch	Drawer 2 Status Switch
4	+24 Volts (to Solenoid +)	+24 Volts (to Solenoid +)
5	Drawer 2 Solenoid	Drawer 2 Solenoid
6	Ground (Status Switch Return)	Ground (Status Switch Return)

Note: For Cash Drawer 2, use the cash drawer Y-cable. For more information, refer to *Ordering Other Supplies* on page 9.

Switch Settings

The DIP switches are located on the PC board at the back of the printer. For more information, refer to *Setting Switches* on page 70. The switches are used to put the printer into various modes for printer configuration set up.

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**

Command Conventions

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 are listed and described but identified as *not implemented*. If the printer receives one of these *not implemented* commands, the command and its supporting operands are discarded. Any other data bytes, including unrecognized commands, are sent to the print buffer as data, and the printer attempts 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 command names.

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

Note: 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 models 7167-1035 and 7167-2035. These two models do not support commands in ***bold italics***.

By Command Code

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

Hexadecimal Command Codes and Operands	Command Name
09	Horizontal Tab
0A	Print and Feed Paper One Line
0C	Print and Return to Standard Mode
0C	Print and Eject Slip
0D	Print and Carriage Return
10	Clear Printer
10 04 *n*	Real Time Status Transmission (DLE Sequence)
10 05 *n*	Real Time Request to Printer (GS Sequence)
11	Close Form
12	Select Double-Wide Characters
13	Select Single-Wide Characters
14 *n*	Feed *n* Print Lines
15 *n*	Feed *n* Dot Rows
16 *n*	Add *n* Extra Dot Rows
17	Print
18	Open Form

Hexadecimal Command Codes and Operands	Command Name
18	**Cancel Print Data in Page Mode**
19	Perform Full Knife Cut
1A	Perform Partial Knife Cut
1B (+ *.bmp)	**Download BMP Logo**
1B 07	Generate Tone
1B 0C	**Print Data in Page Mode**
1B 12	Select 90 Degree Counter-Clockwise Rotated Print
1B 14 *n*	Set Column
1B 16 *n*	Select Pitch (Column Width)
1B 20 *n*	Set Character Right-Side Spacing
1B 21 *n*	Select Print Modes
1B 24 *n1 n2*	Set Absolute Starting Position
1B 25 *n*	Select or Cancel User-Defined Character Set
1B 26 3 *c1 c2...dn*	Define User-Defined Characters
1B 27 *m a0 a1 a2 d1 ... dm*	Write to User Data Storage
1B 2A *m n1 n2 d1 ... dn*	Select Bit Image Mode
1B 2B *n*	Select or Cancel Unicode (UTF-16) Mode
1B 2D *n*	**Select or Cancel Underline Mode**
1B 32	Set Line Spacing to 1/6 Inch
1B 33 *n*	Set Line Spacing
1B 34 *m a0 a1 a2*	Read from User Data Storage
1B 3A 30 30 30	Copy Character Set from ROM to RAM
1B 3C	Return Home
1B 3F *n*	Cancel User-defined Characters
1B 40	Initialize Printer

Hexadecimal Command Codes and Operands	Command Name
1B 43 *n*	Set Slip Paper Eject Length
1B 44 *n1,n2,… nk 00*	Set Horizontal Tabs
1B 45 *n*	Select or Cancel Emphasized Mode
1B 47	Select Double Strike (7156 Emulation)
1B 48	Cancel Double Strike
1B 49 *n*	**Set or Cancel Italic Print**
1B 4A *n*	Print and Feed Paper
1B 4B *n*	Print and Reverse Feed Paper
1B 4C	**Select Page Mode**
1B 4C *n1 n2 d1…dn*	Select Double Density Graphics (7156 Emulation)
1B 52 *n*	**Select International Character Set**
1B 53	**Select Standard Mode**
1B 54 *n*	**Select Print Direction in Page Mode**
1B 55 *n*	Select or Cancel Unidirectional Printing Mode
1B 56 *n*	Select or Cancel 90 Degrees Clockwise Rotated
1B 57 *n1, n2,…n8*	**Set Printing Area in Page Mode**
1B 59 *n1 n2 d1…dn*	Select Double Density Graphics
1B 5B 7D	Switch to Flash Download Mode
1B 5C *n1 n2*	Set Relative Print Position
1B 61 *n*	Select Justification
1B 63 30 *n*	Select Receipt or Slip for Printing; Slip for MICR Read
1B 63 31 *n*	Select Receipt or Slip for Setting Line Spacing
1B 63 34 *n*	Select Sensors to Stop Printing
1B 63 35 *n*	Enable or Disable Panel Buttons
1B 64 *n*	Print and Feed *n* Lines

Hexadecimal Command Codes and Operands	Command Name
1B 63 37 *n*	Enable or Disable Slip Paper End Feeding Stop
1B 65 *n*	Print and Reverse Feed *n* Lines
1B 66 *m n*	Set Slip Paper Waiting Time
1B 69	Perform Full Knife Cut
1B 6A *k*	Read from Non-Volatile Memory
1B 6D	Perform Partial Cut
1B 70 *n p1 p2*	Generate Pulse to Open Cash Drawer
1B 72 *n*	Select Print Color
1B 73 *n1 n2 k*	Write to Non-Volatile Memory (NVRAM)
1B 74 *n*	**Select International Character Set**
1B 75 0	Transmit Peripheral Device Status
1B 76	Transmit Printer Status
1B 77 01	Read MICR Data and Transmit
1B 77 46	**Check Flip**
1B 77 50	Define Parsing Format, Save in NVRAM
1B 77 52	Reread MICR Data
1B 77 70	Define Parsing Format, Do not Save Permanently
1B 7B *n*	Select or Cancel Upside Down Printing Mode
1C	Select Slip Station
1C 21 n	***Select print modes for Kanji characters***
1C 2D n	***Turn underline mode ON/OFF for Kanji***
1C 32 c1 c2 d1…dn	***Define user-defined Kanji characters***
1C 53 n1 n2	***Set Kanji character spacing***
1c 57 n	***Set quadruple mode ON/OFF for Kanji***
1D 00	Request Printer ID
1D 01	Return Segment Number Status of Flash Memory

Hexadecimal Command Codes and Operands	Command Name
1D 02 *n*	Select Flash Memory Sector to Download
1D 03 *n*	Real Time Request to Printer (DLE Sequence)
1D 04 *n*	Real Time Status Transmission (GS Sequence)
1D 05	Real Time Printer Status Transmission
1D 06	Get Firmware CRC
1D 07	Return Microprocessor CRC
1D 0E	Erase the Flash Memory
1D 0F	Return Main Program Flash CRC
1D 10 *n*	Erase Selected Flash Sector
1D 11 *al ah cl ch d1...dn*	Download to Active Flash Sector
1D 1E 1F	Baseline State Request
1D 14 *n*	Reverse Feed *n* Lines
1D 15 *n*	Reverse Feed *n* Dots
1D 1F *n*	Enable / Disable Unsolicited Status Update
1D 21 *n*	**Select Character Size**
1D 22 *n*	Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts
1D 22 55 *n1 n2*	**Flash Allocation**
1D 23 *n*	Select the Current Logo (Downloaded Bit Image)
1D 24 *nL nH*	**Set Absolute Vertical Print Position in Page Mode**
1D 28 6B *pL pH cn fn n1 n2*	QR Code: Select the model
1D 28 6B *pL pH cn fn n*	QR Code: Select the size of module
1D 28 6B *pL pH cn fn n*	QR Code: Select the error correction level
1D 28 6B *pL pH cn fn m d1...dk*	QR Code: Store the data in the symbol storage area

Hexadecimal Command Codes and Operands	Command Name
1D 28 6B *pL pH cn fn m*	QR Code: Print the symbol data in the symbol storage area
1D 28 6B *pL pH cn fn m*	QR Code: Transmit the size information of the symbol data in the symbol storage area
1D 2A *n1 n2 d1…dn*]	Define Downloaded Bit Image
1D 2F *m*	Print Downloaded Bit Image
1D 3A	**Start or End Macro Definition**
1D 40 *n*	Erase User Flash Sector
1D 42 *n*	**Select or Cancel White/Black Reverse Print Mode**
1D 48 *n*	Select Printing Position for HRI Characters
1D 49 *n*	Transmit Printer ID
1D 49 40 *n*	Transmit Printer ID, Remote Diagnostics Extension
1D 4C *nL nH*	Set Left Margin
1D 50 *x y*	Set Horizontal and Vertical Minimum Motion Units
1D 56 *m*	Select Cut Mode and Cut Paper
1D 56 *m n*	Select Cut Mode and Cut Paper
1D 57 *nL nH*	Set Printing Area Width
1D 5C *nL nH*	**Set Relative Vertical Print Position in Page Mode**
1D 5E *r t m*	**Execute Macro**
1D 61 *n*	Select or Cancel Unsolicited Status Update
1D 66 *n*	Select Pitch for HRI Characters
1D 68 *n*	Select Bar Code Height
1D 6B *m d1…*	**Print Bar Code**

Hexadecimal Command Codes and Operands	Command Name
1D 6B *m n d1...dn*	Print Bar Code
1D 72 *n*	Transmit Status
1D 77 *n*	Select Bar Code Width
1D FF	Reboot Printer
1E	Select Receipt Station
1F 04 *n*	Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap
1F 05 *n*	**Select Superscript or Subscript Modes**
1F 11 *[m n],[m n]...[m n]* *0FFH*	Printer Setting Change
1F 1A 02	Execute Head Failure Detection
1F 0A	Get Print Completion
1F 56	Send Printer Firmware Version
1F 74	**Print Test Form**

Hexadecimal Command Codes and Operands	Command Name

By Function

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

Printer Function Commands

Hexadecimal Command Code and Operands	Command
10	Clear Printer
11	Close Form
18	Open Form
19	Perform Full Knife Cut
1A	Perform Partial Knife Cut
1B 07	Generate Tone
1B 3C	Return Home
1B 40	Initialize Printer
1B 43 *n*	Set Slip Paper Eject Length
1B 63 30 *n*	Select Receipt or Slip for Printing; Slip for MICR Read
1B 63 31 *n*	Select Receipt or Slip for Setting Line Spacing
1B 63 34 *n*	Select Sensors to Stop Printing
1B 63 35 *n*	Enable or Disable Panel Buttons
1B 63 37 *n*	Enable or Disable Slip Paper End Feeding Stop
1B 66 *m n*	Set Slip Paper Waiting Time
1B 69	Perform Full Knife Cut
1B 6D	Perform Partial Knife Cut
1B 70 *n p1 p2*	Generate Pulse to Open Cash Drawer
1C	Set Slip Station
1D 56 *m*	Select Cut Mode and Cut Paper
1D 56 *m n*	Select Cut Mode and Cut Paper

Hexadecimal Command Code and Operands	Command
1E	Select Receipt Station
1F 74	Print Test Form

Vertical Positioning and Print

Hexadecimal Code and Operands	Command
0A	Print and Feed Paper One Line
0C	Print and Return to Standard Mode/Print and Eject Slip
0D	Print and Carriage Return
14 *n*	Feed *n* Print Lines
15 *n*	Feed *n* Dot Rows
16 *n*	Add *n* Extra Dot Rows
17	Print
1B 32	Set Line Spacing to 1/6 Inch
1B 33 *n*	Set Line Spacing
1B 4A *n*	Print and Feed Paper
1B 4B *n*	Print and Reverse Feed Paper
1B 64 *n*	Print and Feed *n* Lines
1B 65 *n*	Print and Reverse Feed *n* Lines
1D 14 *n*	Reverse Feed *n* Lines
1D 15 *n*	Reverse Feed *n* Dots
1D 50 *x y*	Set Horizontal and Vertical Minimum Motion Units

Horizontal Positioning Commands

Hexadecimal Code and Operands	Command
09	Horizontal Tab
1B 14 *n*	Set Column
1B 24 *n1 n2*	Set Absolute Starting Position
1B 44 *n1,n2,... nk 00*	Set Horizontal Tabs
1B 5C *n1 n2*	Set Relative Print Position
1B 61 *n*	Select Justification
1D 4C *nL nH*	Set Left Margin
1D 57 *nL nH*	Set Printing Area Width

Print Characteristic Commands

Hexadecimal Command Code and Operands	Command
12	Select Double-Wide Characters
13	Select Single-Wide Characters
1B 12	Select 90 Degree Counter-Clockwise Rotated Print
1B 16 *n*	Select Pitch (Column Width)
1B 20 *n*	Set Character Right-Side Spacing
1B 21 *n*	Select Print Modes
1B 25 *n*	Select or Cancel User-Defined Character Set
1B 26 *s c1 c2 d1...dn*	Define User-Defined Characters
1B 2D *n*	**Select or Cancel Underline Mode**
1B 3A 30 30 30	Copy Character Set from ROM to RAM
1B 3F *n*	Cancel User-Defined Characters
1B 45 *n*	Select or Cancel Emphasized Mode

Hexadecimal Command Code and Operands	Command
1B 47	Select Double Strike (7156 emulation Mode)
1B 47 *n*	Select Double Strike (7158/7167 Native Modes)
1B 48	Cancel Double Strike
1B 49 *n*	**Select or Cancel Italic Print**
1B 52 *n*	**Select International Character Set**
1B 55 *n*	Select or Cancel Unidirectional Printing Mode
1B 56 *n*	Select or Cancel 90 Degrees Clockwise Rotated Print
1B 72 *n*	Select Print Color
1B 74 *n*	Select International Character Set
1B 7B *n*	Select or Cancel Upside Down Printing Mode
1D 21 *n*	**Select Character Size**
1D 42 *n*	**Select or Cancel White/Black Reverse Print Mode**
1F 05 *n*	**Select Superscript or Subscript Modes**
1B 2B *n*	Select or Cancel Unicode (UTF-16) Mode

Graphics Commands

Hexadecimal Command Code and Operands	Command
1B (+*.bmp)	Download BMP Logo
1B 2A *m n1 n2 d1...dn*	Select Bit Image Mode
1B 4C *n1 n2 d1...dn*	Select Double-Density Graphics (in 7156 Emulation Mode)
1B 59 *n1 n2 d1...dn*	Select Double-Density Graphics

Hexadecimal Command Code and Operands	Command
1D 23 *n*	Select Current Logo (Downloaded Bit Image)
1D 2A *n1 n2 d1...dn]*	Define Downloaded Bit Image
1D 2F *m*	Print Downloaded Bit Image
1F 04 *n*	Convert 6 Dots/mm Bitmap to 8 Dots/mm Bitmap

Status Commands

Hexadecimal Command Code and Operands	Command
1B 75 0	Transmit Peripheral Device Status
1B 76	Transmit Printer Status
1D 49 *n*	Transmit Printer ID
1D 49 40 *n*	Transmit Printer ID, Remote Diagnostics Extension
1D 72 *n*	Transmit Status
1F 56 *n*	Send Printer Software Version
1F 1A 02	Execute Head Failure Detection
1F 0A	Get Print Completion

Real Time Commands

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

Hexadecimal Code and Operands	Command
1D 04 *n*	Real Time Status Transmission (GS Sequence)
1D 05	Real Time Printer Status Transmission

Unsolicited Status Update

Hexadecimal Code and Operands	Command
1D 61 *n*	Select or Cancel Unsolicited Status Update
1D 11 FF *n*	Baseline State Request
1D 1F *n*	Enable/Disable Unsolicited Status Update

Bar Code Commands

Hexadecimal Command Code and Operands	Command
1D 48 *n*	Select Printing Position for HRI Characters
1D 66 *n*	Select Pitch for HRI Characters
1D 68 *n*	Select Bar Code Height
1D 6B *m d1...dk* 00 or 1D 6B *m n d1...dn*	Print Bar Code
1D 77 *n*	Select Bar Code Width
1D 28 6B *pL pH cn fn n1 n2*	QR Code: Select the model
1D 28 6B *pL pH cn fn n*	QR Code: Set the size of module
1D 28 6B *pL pH cn fn n*	QR Code: Select the error correction level
1D 28 6B *pL pH cn fn m d1...dk*	QR Code: Store the data in the symbol storage area
1D 28 6B *pL pH cn fn m*	QR Code: Print the symbol data in the symbol storage area
1D 28 6B *pL pH cn fn n1 n2*	QR Code: Select the model

Page Mode Commands

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

Macro Commands

Code (Hexadecimal)	Command
1D 3A	**Start or End Macro Definition**
1D 5E *r t m*	**Execute Macro**

MICR Check Reader Commands

MICR Reading

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

MICR Parsing

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

Check Flip Command

Hexadecimal Command Code and Operands	Command
1B 77 46	**Check Flip Command**

User Data Storage Commands

Hexadecimal Command Code and Operands	Command
1B 27 *m a0 a1 a2 d1 ... dm*	Write to User Data Storage
1B 34 *m a0 a1 a2*	Read from User Data Storage
1B 6A *k*	Read from Non-Volatile Memory
1B 73 *n1 n2 k*	Write to Non-Volatile Memory (NVRAM)
1D 22 *n*	Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts
1D 22 55 *n1 n2*	Flash Allocation
1D 40 *n*	Erase User Flash Sector
IF 11 *[m n],[m n]...[m n]* 0FFH	Printer Setting Change

Asian Character Commands

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

Flash Download Commands

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

Comparison Chart

The 7156 printer has a 6 dots/mm head while the 7167 printer has an 8 dots/mm head. This difference in their physical appearance causes a difference in their behavior. Where the 7156 made movements in *n*/152 inch increments, the 7167 makes *n*/203 inch movements. The following table describes a comparison between the two models.

Command	Description	Difference between a 7156 and a 7167 configured in 7156 Emulation Mode.
15 *n*	Feed *n* Dot Rows	This command moves the paper on the receipt in *n*/203 inch steps instead of *n*/152 inch steps.
16 *n*	Add *n* Extra Dot Rows	The dot rows will be measured in *n*/203 inches versus *n*/152 inches.
1B 20 *n*	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 *n1 n2*	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 *s c1 c2 n1 d1…nn dn*]	Define User–Defined Character Set	Since the dots on the new print head are smaller, user-defined characters that were used on the previous printer 7156 printer will appear smaller on the 7156 printer.
1B 2A *m n1 n2 d1…dn*	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 *n*	Set Line Spacing	This command uses *n* 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.

Command	Description	Difference between a 7156 and a 7167 configured in 7156 Emulation Mode.
1B 4A *n*	Print and Feed Paper	This command uses *n* 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 59 *n1 n2 d1…dn*	Select Double-Density Graphics	In 7156 Emulation Mode, the printer scales the graphics to provide the best match.
1B 5C *n1 n2*	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 *n*	Select Justification	This command does true dot resolution alignment for centering versus character-aligned centering.
1D 2A *n1 n2 d1…dn*	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 7156 printer.
1D 2F *m*	Print 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 7156 printer.

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 table 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 the communication interface, regardless of the 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.

Name	Name of 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, for example, incompatible commands.
Related Information and Notes	Describes related information and notes for this command, for example, 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

This command 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)
```

Exception

A DLE command followed by a `04` or `05` is interpreted as a *real time command*. Refer to

Close Form

ASCII	DC1
Hexadecimal	11
Decimal	17

This command 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, which is the 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 by opening 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

This command cuts the receipt, leaving **0.20 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 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

This command cuts the receipt, leaving **0.20 in** (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)
```

Exception
Line Feed is executed first if the buffer is not empty. This command is executed by cutting the receipt regardless of which station is selected.

Generate Tone

ASCII	ESC BEL
Hexadecimal	1B 07
Decimal	27 7

This command enables 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

This command 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. 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

The following are the default settings.

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

This command clears the print line buffer and resets the printer to the default settings for the startup configuration. Refer to the default settings above.

Note: 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.

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 Head

ASCII	ESC c 0 *n*
Hexadecimal	1B 63 30 *n*
Decimal	27 99 48 *n*
Value of *n*	• 0—Reserved • 1, 2, 3—Receipt selected • 4—Slip selected
Default of *n*	1

This command selects the station for printing. When the slip station is selected, the printer waits based on the slip waiting time setting, which is `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)
```

Exception

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—Reserved • 1, 2, 3—Select receipt • 4—Select Slip
Default of *n*	1

This command 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 (`16n`)

Example:

This statement selects the slip station for line spacing commands:

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

Exception

When *n* is out of range, the supporting operands of this command are discarded.

Select Sensors to Stop Printing

ASCII	ESC c 4 *n*
Hexadecimal	1B 63 34 *n*
Decimal	27 99 52 *n*
Default value of *n*	0

If this bit of *n* is 1	Function
Bit 0 or bit 1	Stop Receipt on Receipt Low
Bit 4	Stop Slip if Training Edge Uncovered
Bit 5	Stop Slip if Leading Edge Uncovered

This command determines which sensor stops printing on the receipt station. The command does not affect the paper out sensor on the receipt station, which automatically stops 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 yield hexadecimal 21 and binary 00100001:

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

Note: 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 value of *n*	0

This command 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 can return a no response result.

Example:

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

Note: 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 value of *n*	0

This command enables or disables 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)
```

Note: When either the trailing edge sensor or the leading edge sensor does not sense the paper the printer recongnizes 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 or *m*	Minutes
Value of *n*	Tenths of seconds

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

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

Example:

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

Generate Pulse to Open Cash Drawer

ASCII	ESC p *n p1 p2*
Hexadecimal	1B 70 *n p1 p2*
Decimal	27 112 *n p1 p2*
Values of *n*	• 0, 48—Drawer 1 • 1, 49—Drawer 2
Range of *p1*	0–255
Range of *p2*	0–255

This commands 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)
```

Note: The off-time is the delay before the printer performs the next operation. The recommended time for NCR cash drawers is 110 msec on time. Refer to cash drawer specifications for required on and off times.

Select Slip Station

ASCII	FS
Hexadecimal	1C
Decimal	28

This commands 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 also selects the slip station.

Example:

```
MSComm1.Output = Chr$(&H1C)
```

Exception

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*
Values	• *m*—selects the mode as described in the table. • *n*—determines the cutting position only if *m* is 65 or 66.

m	Feed and Cut Mode
0, 48	Full cut (no extra feed). Partial cut on the 7158/7167.

m	Feed and Cut Mode
1, 49	Partial cut (no extra feed).
65	Feeds paper to cutting position + (n times vertical motion unit), and cuts the paper completely.
66	Feeds paper to cutting position + (n times vertical motion unit), and performs a partial cut.
Range	• m—0, 48; 1, 49, but when used with n—65, 66 • n—0-255
Default Values	• m—0 • n—0

This command 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.

Formula

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)
```

Exception

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

Select Receipt Station

ASCII	RS
Hexadecimal	1E
Decimal	30

This command 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 also selects the receipt station.

Example:

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

Print Test Form

ASCII	US t
Hexadecimal	1F 74
Decimal	31 116

This command prints the current printer configuration settings on the receipt and is disabled in page mode.

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

Vertical Positioning and Print Commands

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

Print and Feed Paper One Line

ASCII	LF
Hexadecimal	0A
Decimal	10

This command prints one line from the buffer and feeds paper one line.

Example:

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

Note: *Carriage Return + Line Feed* prints and feeds only one line.

Print and Eject Slip

ASCII	FF
Hexadecimal	0C
Decimal	12

This command 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)
```

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

Print and Carriage Return

ASCII	CR
Hexadecimal	0D
Decimal	13

This command prints one line from the buffer and feeds paper. 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 a print command.

Example:

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

Note: For more information, refer to Carriage Return Usage in Diagnostics.

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—156 Emulation Mode
	0–255—7158 Native Mode and 7167 Native Mode

This commands feeds paper *n* lines at the current line height without printing, and is ignored 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*	• *n*/203 inch—for receipt • *n*/72 inch—for slip
Range of *n*	0–127—7156 Emulation Mode
	0– 255—7158 Native Mode and 7167 Native Mode

This command feeds paper *n* dot rows without printing, and the 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*	
	Receipt	**Slip**
Value of *n*	*n*/203 inch	*n*/72 inch
Range of *n*	0–12	
Default	3	3

This command 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 describes the relationship between the number of lines per inch and each extra dot row added for both the receipt and slip stations.

Receipt Station		
Extra Rows	**Lines Per Inch**	**Dot Rows**
0	8.47	24
1	8.13	25
2	7.81	26
3	**7.52**	**27**
4	7.25	28
5	7.00	29
6	6.77	30
7	6.55	31
8	6.35	32
9	6.16	33

Receipt Station		
Extra Rows	**Lines Per Inch**	**Dot Rows**
10	5.98	34
11	5.81	35
12	5.64	36

Slip Station		
Extra Rows	**Lines Per Inch**	**Dot Rows**
0	10.29	7
1	9.00	8
2	8.00	9
3	**7.20**	**10**
4	6.55	11
5	6.00	12
6	5.54	13
7	5.14	14
8	4.80	15
9	4.50	16
10	4.24	17
11	4.00	18
12	3.79	19

Example:

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

Print

ASCII	ETB
Hexadecimal	17
Decimal	23

This command prints one line from the buffer, feeds paper on one line, and executes `LF` on the receipt and 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)

This command 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	• For Receipt: **0.13 inch** (3.37 mm or 7.52 lines per inch, 3 extra dot rows) • For Slip: **14 inch** (7.2 lines per inch, 3 extra dot rows)

This command 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.

Note: For more information, refer to the description in *Set Horizontal and Vertical Minimum Motion Units* on page 179.

Print and Feed Paper

ASCII	ESC J *n*
Hexadecimal	1B 4A *n*
Decimal	27 74 *n*
Value of *n*	Slip Station—*n*/144 inches
	Receipt Station—*n*/360 inches, depends on the emulation
Range of *n*	0–255

This command 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 enables the printer to print on the last line of the slip, which is at 0.59 inches from the trailing edge and still retains 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)
```

Note: For more information, refer to the description of the commands in *Set Horizontal and Vertical Minimum Motion Units* on page 179.

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

This command prints one line from the buffer and feeds the paper *n*/144 of an inch on the slip station.

Example:

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

Note: 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
	Note: 0 is interpreted as 1 on the receipt station.

This command 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*	Number of lines on the slip station to be reverse fed.
Range of *n*	0–255

This command 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 7156 Native Mode

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

Example:

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

Reverse Feed *n* Dots

ASCII	GS NAK *n*
Hexadecimal	1D 15 *n*
Decimal	29 21 *n*
Value of *n*	*n* dots at 1/72 inch
Range of *n*	• 0–127—7156 Emulation Mode • 0–255—7158 Native Mode or 7167 Native Mode

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

Example:

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

Set Horizontal and Vertical Minimum Motion Units

ASCII	GS P *x y*
Hexadecimal	1D 50 *x y*
Decimal	29 80 *x y*
Values	• *x*—Horizontal • *y*—Vertical
Range	• *x*—0–255 • *y*—0–255
Default	• *x*—203 • *y*—203

This command 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)
```

Exception

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.

Horizontal Tab

ASCII	HT
Hexadecimal	09
Decimal	9

This command 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. The 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. 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** • 1–44 (Standard, 80 mm) • 1–56 (Compressed, 80 mm) • 1–32 (Standard, 58 mm) • 1–42 (Compressed, 58 mm)	**Slip** • 1–45 (Standard) • 1–55 (Compressed)
Default of *n*	1	

This command 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)
```

Exception

The command cannot be used with Single-Density 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.

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

This command 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 (standard pitch) or 8 (compressed pitch). The example shows how to calculate column 29 (10 dots per column) as the absolute starting position.

28 x 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)
```

Note: This command is also used in the graphics mode. Refer to *Graphics Commands* on page 206 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* on page 179.

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, and so forth) for normal print.

This command sets up to 32 horizontal tab positions, *n* columns from column one, but does not move the print position. Refer to 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 are 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.

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

Example:

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

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 and 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 and high-byte word orientation.

This command moves the print starting position to 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 (standard pitch) or 10 (compressed pitch). The example shows how to set the relative position two columns in standard pitch (10 dots per column) to the left of the current position.

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

  65,536 – 20 = 65,516

  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 (standard pitch) or 8 (compressed pitch). The example shows how to set the relative position two columns in standard pitch (10 dots per column) to the right of the current position.

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

  20 / 256 = 0, remainder of 20

  n1 = 20

  n2 = 0

Example:

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

Note: 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 *Set Horizontal and Vertical Minimum Motion Units* on page 179.

Compatibility Information (7167 receipt vs 7156 receipt)

There is a difference in the normal behavior of this command in 7158 Native Mode or 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 back up 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 Series II 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 the advantage of the application 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)

This command specifies the alignment of the characters, graphics, logos, and bar codes on the receipt station.

Example:

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

Note: The command is valid only when it is added 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)

This command sets the left margin of the printing area. The left margin is set to (((nH X 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. Refer to *Set Printing Area Width* on the next page 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. Refer to the illustration below.

Printable area: 576 dots for 80 mm width, 424 dots for 58 mm width

←——Left margin——→   ←————Printing area width————→
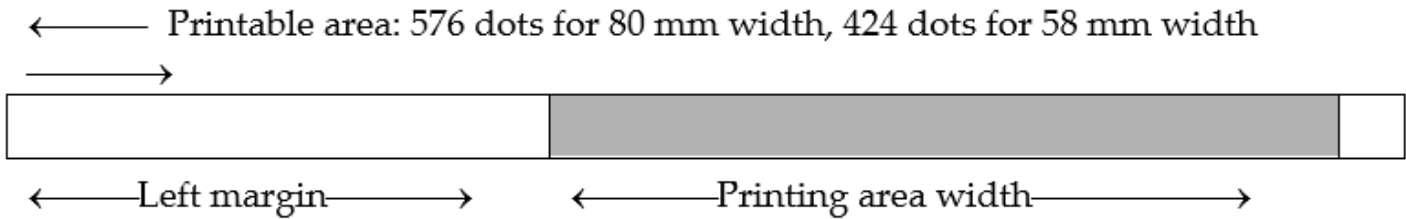
Formulas

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 X 256) + 150.

Example:

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

Exception

The command is effective only at the beginning of a line. This command is also ignored if the line buffer is not empty, and affects only 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)

This command 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 X 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).

Note: Refer to *Set Left Margin* on page 186 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 X 256) + 150.
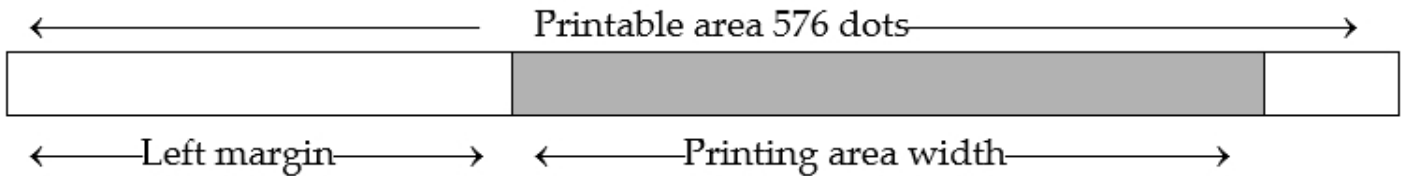
Example:

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

Exception

This command is effective only at the beginning of a line. This command is ignored if the line buffer is not empty, and only affects 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. Refer to 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

This command 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

This command 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

This command 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)
```

Exception

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. For more information, refer to *Summary of Rotated Printing* on page 205.

Select Pitch (Column Width)

ASCII	ESC SYN *n*
Hexadecimal	1B 16 *n*
Decimal	27 22 *n*
Value of *n*	• 0—Standard Pitch (Default) • 1—Compressed Pitch

This command 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 32 for 58 mm paper	15.6	45	13.9
Compressed	56 for 80 mm paper 42 for 58 mm paper	20.3	55	17.1

Example:

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

Note: For descriptions of character pitches (print modes), refer to *Printing Specifications* on page 306.

Set Character Right-Side Spacing

ASCII	ESC SP *n*
Hexadecimal	1B 20 *n*
Decimal	27 32 *n*
Range of *n*	0–32
Default	0

This command 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.

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

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

Example:

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

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

Select Print Modes

ASCII	ESC ! *n*
Hexadecimal	1B 21 *n*
Decimal	27 33 *n*
Value of *n*	Pitch selection (standard, compressed, double high, or double wide)

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

Note:
- Bits 1, 2, 6 are not used.
- [1]Standard and compressed pitch cannot be used together in the same line.
- [2]Double-high characters cannot be used with normal characters in the same line.

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

This command selects the print mode–standard, compressed, double high, or double wide.

Example:

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

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 (Default) • 1—User-defined (RAM character set) • 2—Code Page 850
Range	0–2
Default	0 (Code Page 437)

This command selects the character set. When an undefined RAM character is selected, the Code Page 437 character is used. Refer to *Printing Specifications* on page 306 for the character sets.

Example:

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

Define User-Defined Characters

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

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

Defining User-Defined Characters
Defines and enters downloaded characters into RAM.
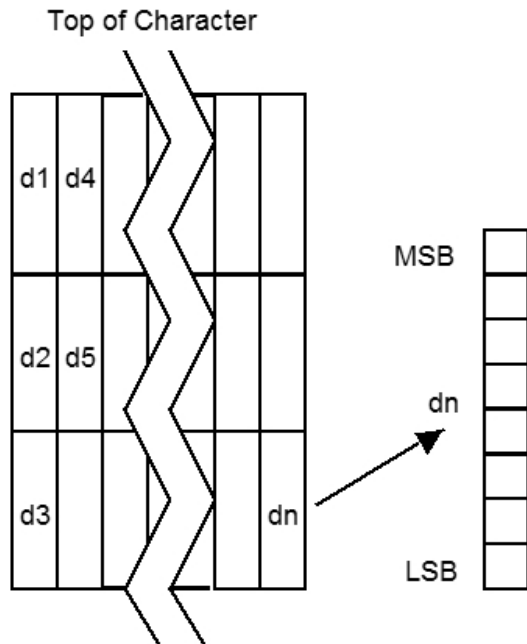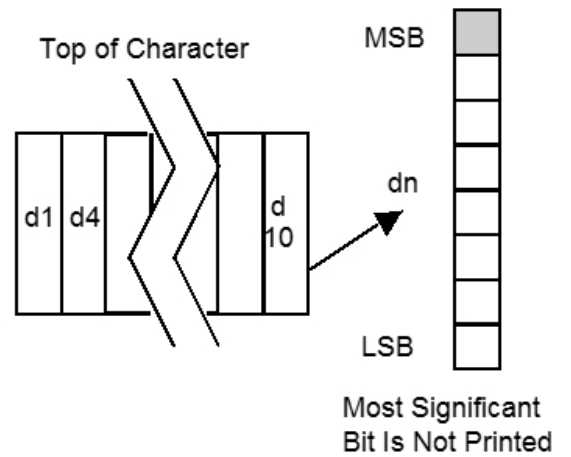
Values and Ranges
Receipt

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 x $n1$. 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 *d*1 ... *d*n

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

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

Overlapped dots are not printed.

The data must containe [(c2 - c1) x 12] bytes

Note: For more information, refer to *Select Memory Type (SRAM/Flash) Where to Save Logos or User-Defined Fonts* on page 284.

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)

This command 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 Modes command (1B 21) turn underline on and off in the same way.

Example:

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

Exception
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

This command 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)
```

Note: 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

This command 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)
```

Exception

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)

This command starts or stops emphasized printing. 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 in the same direction as the first to ensure accuracy of the overprint. The printing speed decreases due to the second printing pass.

Example:

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

Note: Only the lowest bit of *n* is effective. Emphasized printing cannot be used with bit-images or downloaded bit-images. This command and the Select Print Mode 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

This command turns double strike mode on for the slip station and is identical to Emphasized mode command. 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)
```

Note: 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.

Cancel Double Strike

	7156 Emulation
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 **Note:** When 0 and 1 are the Least Significant Bit, LSB
Default	0 (Off)

This command 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)
```

Exception

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 or 27 116 *n*	
	7158 Native Mode and 7156 Native Mode	7156 Emulation
Value of *n*	• 0—Code Page 437 US English • 1—Code Page 850 Multilingual • 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 • 10—Code Page 1256 Windows Arabic • 20—Code Page Katakana • 21—Code Page 874 Thailand • 22—Code Page 864 Arabic • 127—Hungary • 128—Code Page 932 Kanji **Note:** This code page is not supported by 7167-1035 and 7167-2035. • 129—Code Page 936 Simple Chinese • 130—Code Page 949 Korean • 131—Code Page 950 Traditional Chinese	• 0—Code Page 437 • 1—Code Page 850
Default	0 (Code Page 437)	

This command selects the character set to be used. See *Printing Specifications* on page 306 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)
```

Note: This command may also be known as Select Character Code Table.

Select Character Code Table

Refer to the previous command, *Select International Character Set* on the previous page.

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)

This command 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-diretcional 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

This command rotates characters 90 degrees clockwise. The command remains in effect until the printer is reset or the Clear Printer (`0x10`) command is received. Refer to *Summary of Rotated Printing* on page 205.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H56) & Chr$(n)
```

Select Print Color

ASCII	ESC r *n*
Hexadecimal	1B 72 *n*
Decimal	27 114 *n*
Value of *n*	• 0—Black • 1—2nd Color
Default	0 (Monochrome)

This command selects color printing. Color printing is valid for characters, graphics, logos and bar codes.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H72) & Chr$(n)
```

Exception
This 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)

This command 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. Refer to *Summary of Rotated Printing* on page 205.

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H7B) & Chr$(n)
```

Exception
The command is valid only for receipt station.

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

This command 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)

Character Height Selection		
Hex	**Decimal**	**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)
```

Exception

If *n* is out of the defined range, this command is ignored. This command is valid only for the receipt station and available only 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 • 1—On **Note:** Only the lowest bit is used.
Range of *n*	0 - 255
Default of *n*	0 (Off)

This command turns on White/Black reverse printing mode. This command is only available in 7194 Native Mode and 7197 Series II 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)
```

Exception
This command is valid only on the receipt station and available only in 7158 Native Mode and 7167 Native Mode.

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)

This command 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)
```

Exception

This command is ignored if *n* is out of the specified range. This is only available in 7158 Native Mode and 7167 Native Mode.

Select or Cancel Unicode(UTF-16) Mode

ASCII	ESC + *n*
Hexadecimal	1B 2B *n*
Decimal	27 43 *n*
Value of *n*	• 0—not select (Normal code) • 1—selected (Uni-code(UTF-16))
Default	0 (normal code)

This command starts or stops as specified by Unicode(UTF-16).

Note: In Unicode mode, characters are specified as follows.

```
ESC + 1 <nL> <nH> ESC + 0
```

<nL><nH> can range in value from 0 to 65535; however, the character that can be specified is limited to an existing character.

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. They may also be mixed on the same line.

Upside Down (1B 7B n)	Rotated CW (1B 56 n)	Rotated CCW (1B 12)	Resulting Output
Canceled	Canceled	Cleared	A B C
Canceled	Set	X	ⱯꞠƆ
Set	Canceled	X	∀ B Ɔ
Set	Set	X	Ɔ B ∀
X	X	Set	∀ B Ɔ

The following print modes cannot be mixed on the same line:

• Standard and compressed pitch

• Vertical (normal) and rotated

• Right-side up and upside down

• 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

This command 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 downloaded bit image. The downloaded BMP file can be printed by using the Print Downloaded Bit Image (`1D 2F m`) command.

Example:

```
MSComm1.Output = Chr$(&H1B)
Open bitmapfile For Binary As filehandle.
filecontent = Input(LOF(filehandle), filehandle)
MSComm1.Output = filecontent & vbLf
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 and only available in 7158 Native Mode and 7167 Native Mode.

Note: For more information, refer to `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*

This command 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. Refer to 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.

Receipt Station Values

Value of m	Mode	No. of Dots (Vertical)	No. of Dots (Horizontal)	Number of Dots/Line
0	8 Dot Single Density	8 (68 DPI)	0-288 (101DPI, 80mm) 0-212 (101DPI, 58mm)	8x288 (80mm) 8x212 (58mm)
1	8 Dot Double Density	8 (68 DPI)	0-576 (203DPI, 80mm) 0-424 (203DPI, 58mm)	8x576 (80mm) 8x424 (58mm)
32	24 Dot Single Density	24 (203 DPI)	0-288 (101DPI, 80mm) 0-212 (101DPI, 58mm)	24x288 (80mm) 24x212 (58mm)
33	24 Dot Double Density	24 (203 DPI)	0-576 (203DPI, 80mm) 0-424 (203DPI, 58mm)	24x576 (80mm) 24x424 (58mm)

Slip Station Values

Value of m	Mode	No. of Dots (Vertical)	No. of Dots (Horizontal)	Number of Dots/Line
0	7 Dot Single Density	7 (72 DPI)	224 (69.5DPI)	7 x 224
1*	7 Dot Single Density	7 (72 DPI)	224 (69.5DPI)	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 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 **Note:** Printed left to right (8-dot mode); Printed down then across (24-dot mode).

Formulas

8 Dot Single Density $n1 + (256 \times n2)$

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

8-Dot Single-Density Mode—Receipt and Slip
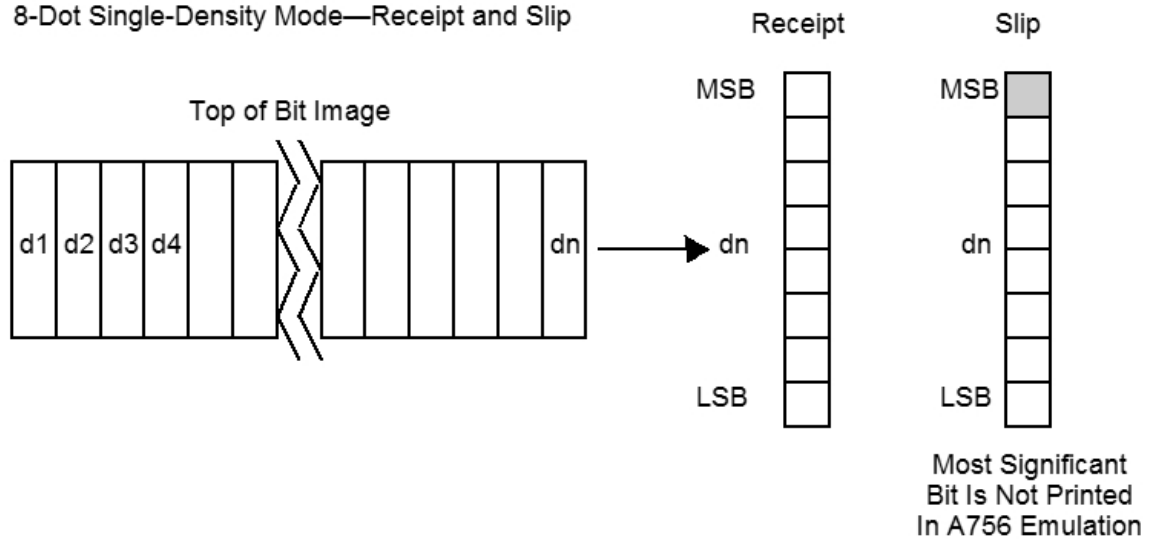
24-Dot Single-Density Mode—Receipt Only

Top of Bit Image
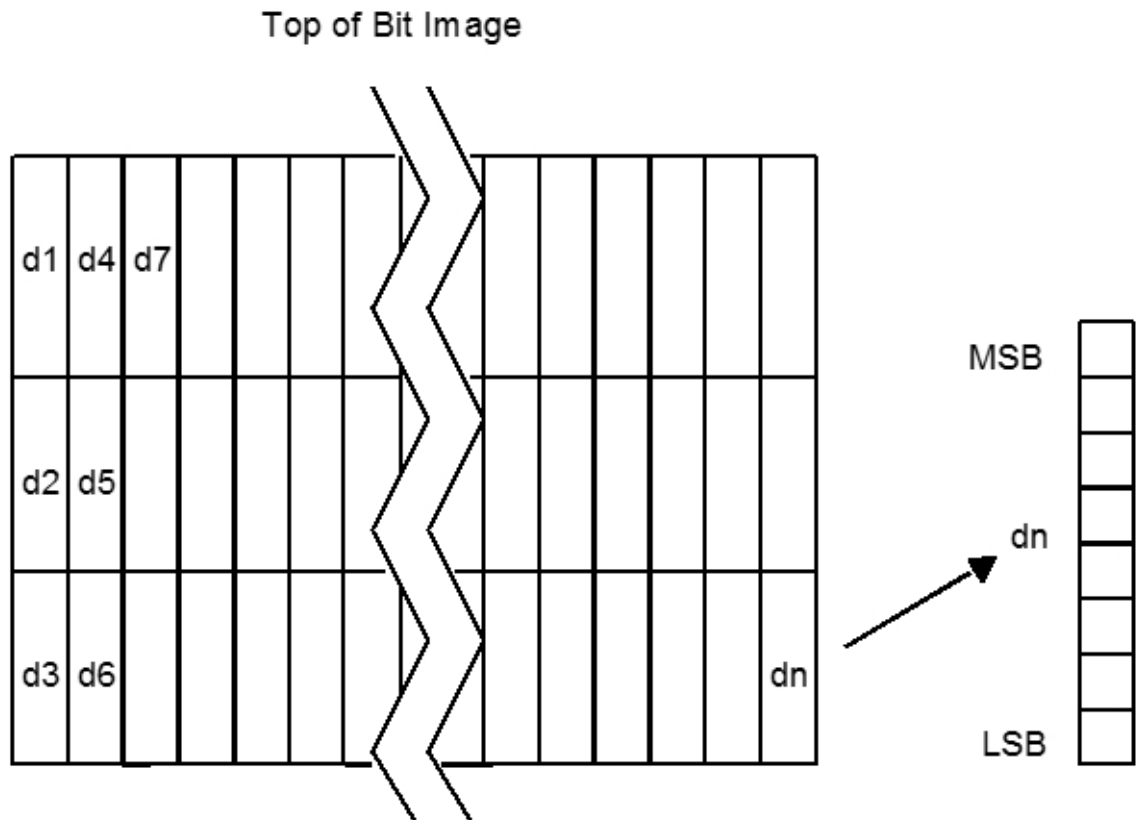
Select Double-Density Graphics

ASCII	ESC Y *n1 n2 d1...dn* or ESC L *n1 n2 d1...dn*
Hexadecimal	1B 59 *n1 n2 d1...dn* or 1B 4C *n1 n2 d1...dn*
Decimal	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)

This command enters one line of 7 (slip in 7156 mode) or 8-dot single-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

This command 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 n*1 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 *n1*	Value of *n2*	Value of *d*
1-72 (8 x *n1* = 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:
$n = 8 \times n1 \times n2$ ($n1 \times n2$ must be less than or equal to 4608).

This command 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 Mode, 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.

Refer to the illustration for the Print Downloaded Bit Image command (`1D 2F`) for a representation of the bit image.
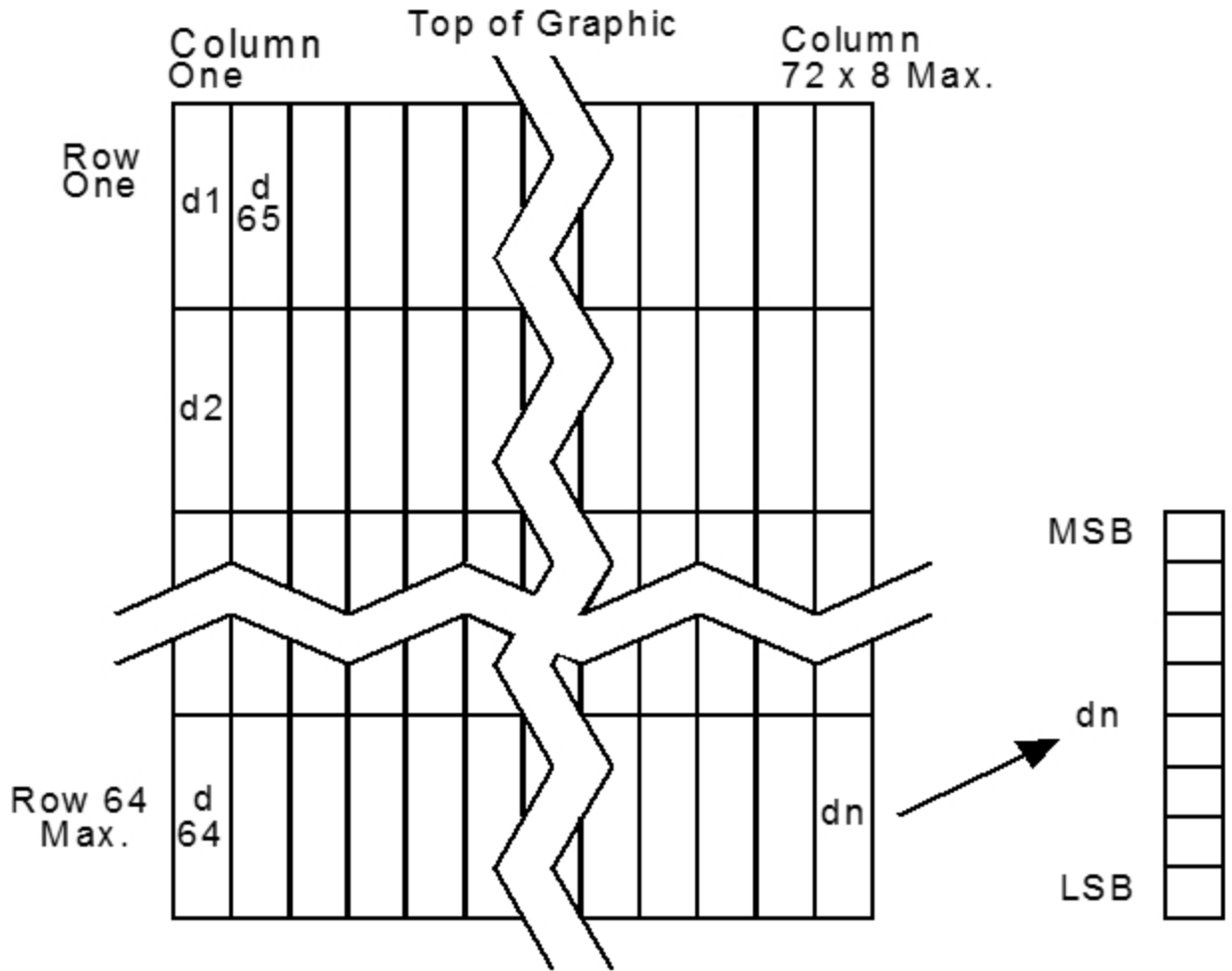
Exceptions

Refer to the illustration for the Print Downloaded Bit Image command (1D 2F) for a representation of the bit image.

Note: Refer to `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 reference.

Print Downloaded Bit Image

ASCII	GS / *m*
Hexadecimal	1D 2F *m*
Decimal	29 47 *m*
Value and range of *m*	

Value of *m*	Print Mode	Vertical DPI1	Horizontal DPI*
0	Normal Wide	203	203
1	Double Wide	203	101
2	Double High	101	203
3	Quadruple	101	101

Note: Dot density measured in dots per inch

This command 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.

Refer to the illustration for a representation of the bit image.
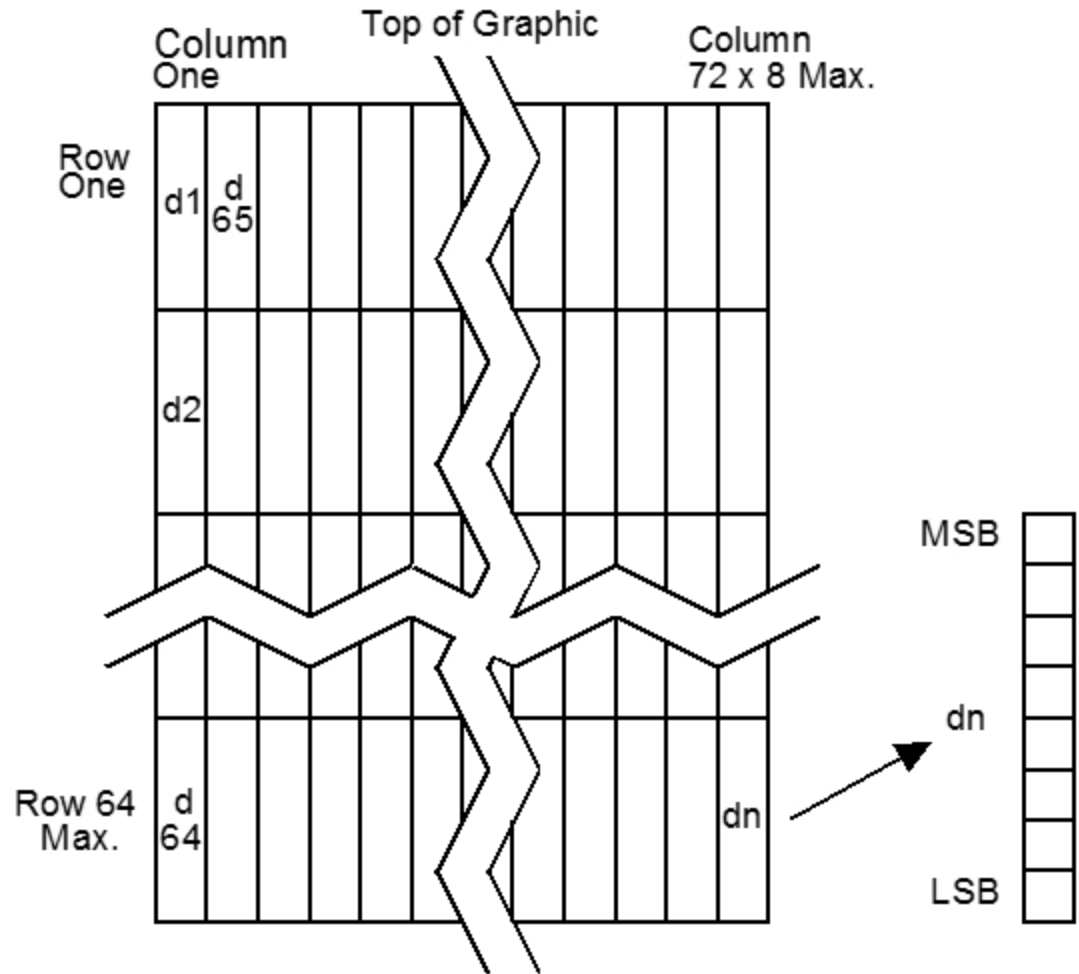
Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H2F) & Chr$(m)
```

Note: Refer to `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 of *n*	• 0—Off
	• 1—On
Default	0 (Off)

This command selects or cancels the 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 Series II 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. The following are brief descriptions of each of these methods:

- **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 that 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. 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.

For more information on these status commands, refer to *Recognizing Data from the Printer* on page 233. This section describes which 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. The commands are stored in the data buffer of the printer as they are received, and are handled by the firmware in the order in which they are received.

When a fault occurs, the printer goes busy at the RS-232C interface and does 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 resumes processing the data in its receive buffer.

Transmit Peripheral Device Status

ASCII	ESC u 0
Hexadecimal	1B 75 0
Decimal	27 117 0

	Bit 0	Bit 1
Return Value	1—Drawer 1 closed	1—Drawer 2 closed
	0—Drawer 1 open	0—Drawer 2 open
	(Bits 2-7 are not used)	

This command transmits the 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

This command sends status data to the host computer. The printer sends one byte to the host computer when it is not busy or in a fault condition. In DTR/DSR protocol, the printer waits for DSR = SPACE.

Status Byte (RS-232C)			
Bit	Function	0 Signifies	1 Signifies
0	Receipt Paper	Ok	Low
1	Receipt Cover or Front Cover	Closed	Open
2	Receipt Paper	Ok	Out
3	Knife or Slip	Ok	Jam
4	Always Zero		
5	Slip Leading Edge Sensor	Not Covered	Covered
6	Slip Trailing Edge Sensor	Not Covered	Covered
7	Thermal Head Temp or Voltage	Ok	Out of Range

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H76)
```

Note: Refer to *Real Time Commands* on page 233 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

This command 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)

N	Printer ID	Specification	ID (hexadecimal)
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.

Bit	Off/On	Hex	Decimal	Function
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*
Value of *n*	Refer to table
Range of *n*	32–255 (not all defined but reserved)

This command 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 in this section 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 n			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

Value of n			Remote Diagnostic Item	Function
ASC	**Hex**	**Dec**		
!	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
#	23	35	Serial #	Return Serial #, preceded by n to identify The 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
K	4B	75	SBCS (for Receipt) version, 4 digit ASCII	Return SBCS (for Receipt) version, a total of 6 bytes
O	4F	79	SBCS (for Slip) version, 4 digit ASCII	Return SBCS (for Slip) version, a total of 6 bytes
S	53	83	DBCS (for Receipt) version, 4 digit ASCII	Return DBCS (for Receipt) version, a total of 6 bytes

Value of n			Remote Diagnostic Item	Function
ASC	Hex	Dec		
W	57	87	DBCS (for Slip) version, 4 digit ASCII	Return DBCS (for Slip) version, a total of 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 n to identify Printer returns 10 bytes in above example: â00010000<CR>
ä	84	132	Knife cut tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
à	85	133	Knife cut tally	Write to NVRAM, and print on receipt to verify
å	86	134	Knife cut tally	Clear knife cut tally to 0
ç	87	135	Knife cut tally	Return knife cut tally, returns 10 bytes
ê	88	136	Slip character tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
ë	89	137	Slip character tally	Write to NVRAM, and print on receipt to verify
è	8A	138	Slip character tally	Clear slip character tally to 0
ï	8B	139	Slip character tally	Return slip character tally, returns 10 bytes

Value of n			Remote Diagnostic Item	Function
ASC	Hex	Dec		
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
a̲	A6	166	Flash cycles tally	Clear Flash cycles cut tally to 0
o̲	A7	167	Flash cycles tally	Return Flash cycles cut tally, returns 10 bytes
¿	A8	168	Knife jams tally, 8 digit ASCII numeric, max 99,999,999	Write to NVRAM
⌐	A9	169	Knife jams tally	Write to NVRAM, and print on receipt to verify
¬	AA	170	Knife jams tally	Clear Knife jams tally to 0

Value of n			Remote Diagnostic Item	Function
ASC	**Hex**	**Dec**		
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
¡	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
	B7	183	Slip lines tally	Return Slip Lines tally, returns 10 bytes
	B8		Dot Failure Information(-2 Warning Dot) on tally, 3 digit ASCII numeric	Write to Flash Rom max 999
	B9		Dot Failure Informationon tally	Write to Flash Rom and print on receipt to verify
	BA		Dot Failure Information on tally	Clear Dot Failure Information(-2 Warning Dot) on tally to 0.
	BB		Dot Failure Information on tally	Return Dot Failure Information(-2 Warning Dot) on tally, a total of 5 bytes.
	BC		Dot Failure Information(-1 Warning Dot) on tally, 3 digit ASCII numeric	Write to Flash Rom max 999

Value of n			Remote Diagnostic Item	Function
ASC	Hex	Dec		
	BD		Dot Failure Information	Write to Flash Rom and print on receipt to verify.
	BE		Dot Failure Information	Clear Dot Failure Information(-1 Warning Dot) on tally to 0.
	BF		Dot Failure Information	Return Dot Failure Information(-1 Warning Dot) on tally, a total of 5 bytes.
	C0		Dot Failure Information(0 Warning Dot) on tally, 3 digit ASCII numeric	Write to Flash Rom max 999
	C1		Dot Failure Information on tally	Write to Flash Rom and print on receipt to verify
	C2		Dot Failure Information on tally	Clear Dot Failure Information(0 Warning Dot) on tally to 0.
	C3		Dot Failure Information on tally	Return Dot Failure Information(0 Warning Dot) on tally, a total of 5 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 • 5, 53 = printer other status

This command 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.

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	00	Slip leading edge sensor: paper present.
	On	20	32	Slip leading edge sensor: no paper.
6	Off	00	0	Slip leading edge sensor: paper present.
	On	40	64	Slip leading 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.

Cash Drawer Status (*n* = 2 or *n* = 50)				
Bit	**Off/On**	**Hex**	**Decimal**	**Status for Transmit Status**
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	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. Until the trailing edge sensor becomes uncovered the value reported will be 6, because there are at least 6 line remaining. There can be 7 or 8 lines remaining when the slip line spacing has been set to less than 7.2 lines per inch.

Flash Memory Status (n = 4 or n = 52)				
Bit	**Off/On**	**Hex**	**Decimal**	**Status for Transmit Status**
0	Off	00	0	Undefined. Fixed to off.
1	Off	00	0	Undefined. Fixed to off.
2	Off On	00 04	0 4	User data storage write successful. User data storage write failed. Specified area not erased.

Flash Memory Status (n = 4 or n = 52)				
Bit	**Off/On**	**Hex**	**Decimal**	**Status for Transmit Status**
3	Off On	00 08	0 8	Flash logo area adequate. Definition stored. Flash logo area not adequate for recent definition.
4	Off	00	0	Not used. Fixed to off.
5	Off On	00 20	0 32	No thermal user-defined characters written to Flash. Thermal user-defined characters written to Flash.
6	On	04	64	No impact user-defined characters written to Flash Impact user-defined characters written to Flash.
7	Off	00	0	Not used. Fixed to off.

Printer other status (*n* = 5 or *n* = 53)				
Bit	**Off/On**	**Hex**	**Decimal**	**Status for Transmit Status**
0	Off On	00 01	0 1	No Thermal Head Print Failure. Thermal Head Print Failure.
1	Off	00	0	Not used. Fixed to off.
2	Off	00	0	Not used. Fixed to off.
3	Off	00	0	Not used. Fixed to off.
4	Off	00	0	Not used. Fixed to off.
5	Off	00	0	Not used. Fixed to off.
6	Off	00	0	Not used. Fixed to off.
7	Off	00	0	Not used. Fixed to off.

Range of *n*:	• 1–5
	• 49–53

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H72) & Chr$(n)
```

Exception

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

This command allows the printer to return 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. For example, for 1.234.56 (8 bytes), the boot version is 1.23 and the Flash version is 4.56.

Example:

```
MSComm1.Output = Chr$(&H1F) & Chr$(&H56)
```

Execute Head Failure Detection

ASCII	US SUB *02 00*
Hexadecimal	1F 1A *02 00*
Decimal	31 26 *02 00*
Response	Result of the Head Failure Detection (3 bytes)

Response format table (3 bytes)		
Description	**Byte #1**	**Byte #2 and #3**
No Error	0x06	0x00, 0x00
Head Failure	0x15	Counter for number of dots damaged • First Byte—lower byte of the counter • Second Byte—higher byte of the counter

The printer executes the Head Failure Detection and the printer returns the result of the detection (3 bytes) after finishing the failure detection. The first byte shows the result (OK/NG) and the second and third bytes show the number of dots damaged in the error case. In no error case, those bytes are null.

Get Print Completion

ASCII	US LF *n*
Hexadecimal	1F 0A *n*
Decimal	31 10 *n*
Value of *n*	Identifier of print data. **Example:** • 0x00 for PFM • 0x01-0xFF for Print line identifier
Range of *n*	0x00 ≤ *n* ≤ 0xFF
Response	Print completion for specified print data

This command sends the print completion status of the print data specified by *n* to the host computer.

Response format table (2bytes)		
Description	**Byte #1**	**Byte #2**
Print line status	`0xAA`	*n*: `0x01` – `0xFF`: Identifier of print data
PFM – power failure message status	`0xAA`	`0x00`
Printer Error	`0x66`	*n*: `0x01` – `0xFF`: Identifier of print data

Note: Byte #1 `0xAA` represent Print Completion.

The printable data sent before this command is identified by the parameter of this command. This command specifies ID for print data sent before this command. And the printer returns the print completion status with ID. Therefore, a host can know which data was completed.

If the printer returns the `0x66` as the first byte response, it means the printer cannot print data due to an error condition. In this case, the printer erases all printable data. The printer does not return any response for the remaining Get Print Completion commands. Once it returns the error status for this command, it retains the plural Get Print Completion commands. The printer erases not only the print data but also the retained Get Print Completion commands in the printer when an error response is returned. If the printer receives this command when it retains printable data, it starts printing by force like receiving LF+CR.

Exception

If the printer powered OFF during the transaction then after the power on the printer will respond (`0xAA0x00`) to the PFM message.

Limitations

- This command is available when *Receipt Synchronization* setting is *Enabled (mode3)*.

- This command is effective in RS-232C interface mode only.

- This command is effective in the line mode and is ignored in the page mode.

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 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	Binary
ESC v	1B 76	0	0	0	0	0	x	x	x	Binary
GS l *n*	1D 49 *n*	0	x	x	0	x	x	x	x	Binary
GS *r n*	1D 72 *n*	0	x	x	0	x	x	x	x	Binary

Real-Time Response		Response Recognized By:							
ASCII	**HEX**								
GS EOT *n*	1D 04 *n*	0	x	x	1	x	1	0	Binary
DLE EOT *n*	10 04 *n*	0	x	x	1	x	1	0	Binary
GS ENQ	1D 05	1	x	x	x	x	x	x	Binary
XON		0	0	0	1	0	0	1	Binary
XOFF		0	0	0	1	0	1	1	Binary

Real Time Commands

The following 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 data buffer of the printer 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, thermal print head overheat, and so forth.

The Real Time commands are implemented in two ways to correct these problems. Both implementations offer the same functionality; the choice if the user depends on the current usage of the 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

The following situations must be understood when using real time commands:

- The printer executes the Real Time command upon receiving it and will transmit status regardless of the condition of the DSR signal.

- 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.

- 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 cannot 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 be filled 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 as the second byte in its GS sequence.

Note: 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 buffer when it goes busy.

Real Time Status Transmission

ION USB or RS232		
	GS Sequence **Standard/Ethernet**	**DLE Sequence** **Standard/Ethernet**
ASCII	GS EOT *n*	DLE EOT *n*
Hexadecimal	1D 04 *n*	10 04 *n*
Decimal	29 4 *n*	16 4 <u>*n*</u>

ION USB or RS232		
	GS Sequence **Standard/Ethernet**	**DLE Sequence** **Standard/Ethernet**
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 • 6—Transmit error other status	

Standard USB	
ASCII	Since this command is used by Control transfer, the command strings are not defined.
Hexadecimal	14 01 *n* (bRequest=0x14, wValue=0x01 *n*)
Decimal	20 01 *n*
Value of *n*	• 0—Universal Printers for FSD • 1—Transmit printer status • 2—Transmit RS-232C busy status • 3—Transmit error status • 4—Transmit receipt paper status • 5—Transmit slip paper status • 6—Transmit error other status

This command 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. Using either produces the same result.

Example:

```
Comm1.Output = Chr$(&H1D) & Chr$(&H04) & Chr$(n)
```

Exception

This 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 On	00 04	0 4	One or both cash drawers open Both cash drawers closed
3	Off On	00 08	0 8	Not busy at the RS-232C interface 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 On	00 04	0 4	Both receipt and cassette doors closed Receipt or cassette door open
3	Off On	00 08	0 8	Paper Feed Button is not pressed Paper Feed Button is pressed
4	On	10	16	Fixed to On
5	Off On	00 20	0 32	Printing not stopped due to paper condition Printing stopped due to paper condition
6	Off On	00 40	0 64	No error condition 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 On	00 04	0 4	Slip paper selected Receipt paper selected
3	Off On	00 08	0 8	Not waiting for slip Waiting for slip
4	On	10	16	Fixed to On
5	Off On	00 20	0 32	Slip leading edge sensor: paper preset Slip leading edge sensor: no paper
6	Off On	00 40	0 64	Slip trailing edge sensor: paper preset Slip trailing edge sensor: no paper
7	Off	00	0	Fixed to Off

6=Transmit error other status				
Bit	**Status**	**Hex**	**Decimal**	**Function**
0	Off	00	0	Fixed to Off
1	On	02	2	Fixed to On
2	Off On	00 04	0 4	Slip paper selected Receipt paper selected
3	Off	00	0	Not used. Fixed to off.
4	On	10	16	Not used. Fixed to on.
5	Off	00	0	Not used. Fixed to off.
6	Off	00	0	Not used. Fixed to off.
7	Off	00	0	Not used. Fixed to off.

Real Time Request to Printer

ION USB or RS232		
	GS Sequence	**DLE Sequence**
ASCII	GS ETX *n*	DLE ENQ *n*
Hexadecimal	1D 03 *n*	10 05 *n*
Decimal	29 3 *n*	16 5 *n*
Value of *n*	• 1—Recover and restart • 2—Recover and clear buffers • 3—Cancel slip waiting	

Standard USB	
ASCII	Since this command is used by Control transfer, the command strings are not defined.
Hexadecimal	15 02 *n* (bRequest=0x15, wValue=0x02 *n*)
Decimal	20 02 *n*
Value of *n*	• 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:

This setting 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:

This setting 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:

This setting 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:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H03) & Chr$(n)
```

Note: 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

ION USB or RS232	
ASCII	GS ENQ
Hexadecimal	1D 05
Decimal	29 5

Standard USB	
ASCII	Since this command is used by Control transfer, the command strings are not defined.
Hexadecimal	05 05 (bRequest=0x05, wValue=0x05 0x00)
Decimal	05 05

This command 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)
```

Unsolicited Status Update Validation

The Host uses this command to determine if the device supports USU.

ASCII	GS *a x*
Hexadecimal	1D 61 *x*
Decimal	29 97 *x*
Value of *x*	0–FF

Response To Host (Hex): 1A, 9F, 1F

If the printer responds to the Unsolicited Status Update Validation message with this 3-byte response message, then the printer firmware supports the Unsolicited Status Update messages. If there is no response or the printer responds with some other sequence of bytes, then the printer does not support the Unsolicited Status Updates messages.

Enable/Disable Unsolicited Status Update

This request tells the printer to start or stop reporting Unsolicited Status Updates.

ASCII	GS US *n*
Hexadecimal	1D 1F *n*
Decimal	29 31 *n*
Value of *n*	0 or 1

Where *n* defines the action to be taken by the firmware.

n = 0 —tells the printer to stop sending Unsolicited Status Updates to the host.

n = 1— tells the printer to start sending Unsolicited Status Updates to the host upon change of a sensor or state.

Baseline State Request

This request tells the printer to send an Unsolicited Status Update message for all Sensors and States supported by the firmware. This allows the Application, Driver, or Control to establish an initial picture of the state of the printer.

ASCII	GS RS US
Hexadecimal	1D 1E 1F
Decimal	29 30 31

Unsolicited Messages

The following is the general message structure for the Unsolicited Status Update messages:

The Unsolicited Message will always consist of at least three bytes. The top 4 bits (7, 6, 5, 4) of each byte will be an identifier that when compared to the bytes before and after it, will identify the byte as part of the three-byte Unsolicited Status Update (USU) message. The remaining 4 bits (3, 2, 1, 0) will contain the information that is being passed to the host from the printer.

The lower 4 bits of the first two bytes, when examined as continuous bits of a single number, identify the sensor or state for which USU message is reporting a change. The lower 4 bits of the last byte will identify the state that is being reported to the host.

BIT							
7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Byte (1) 1	0	0	1	x	x	x	x
Byte (2) 1	0	1	0	y	y	y	y
Byte (3) 1	0	1	1	z	z	z	z

The host can determine if any unsolicited 3-byte sequence from the printer is a USU message by checking the upper 4 bits of the three bytes received. If the upper 4 bits match those of the USU message, then the remaining lower 4 bits are to be interpreted as the information bits of a USU message.

The information bits of a USU message are to be interpreted as follows:

• The lower 4 bits of Byte (1) and Byte (2) should be combined in the following manner to constitute an identifier value in the range of 0–255.

• This *identifier* then determines how the host should interpret the *state value* of the lower 4 bits of Byte (3).

Combined Bits from Byte (1) and Byte (2) in high bit to low bit order:

Identifier Value by Bit Definition							
7	6	5	4	3	2	1	0
x	x	x	x	y	y	y	y

Status Update Messages Defined

The following table defines the sensor or state information specified by each identifier value, and the meaning of the information in the lower 4 bits of the 3rd byte for that identifier value. In cases where there are two different messages that refer to the same RTC response bit, separate USU messages should be sent if the printer firmware can distinguish between the events. If the firmware does not have separate sensors, then a USU message should be chosen to send when either event is encountered.

Identifier Value (Hex)	Description of sensor or state RTC Sensor Bit if Applicable for 7167 Series II/ 7197 (Note: RTC might be different for other printers)	State Value	Meaning
1	Receipt Paper Exhaust Sensor	1	No paper available for printing
	RTC Response (10 04 04) – Bit 6	0	Paper available for printing
2	Receipt Paper Low Sensor	1	Paper has reached low threshold limit
	RTC Response (10 04 04) – Bit 3	0	Paper has been replenished
5	Slip leading edge sensor	1	Paper Present
	RTC Response (10 04 05) – Bit 5	0	No Paper
6	Slip trailing edge sensor	1	Paper Present
	RTC Response (10 04 05) – Bit 6	0	No Paper
7	Paper Station Selected	1	Slip Paper Selected
	RTC Response (10 04 05) – Bit 2	2	Receipt Paper Selected

Identifier Value (Hex)	Description of sensor or state RTC Sensor Bit if Applicable for 7167 Series II/ 7197 (Note: RTC might be different for other printers)	State Value	Meaning
		3	Reserved
8	Slip Paper Waiting State	1	Waiting for Slip Paper
	RTC Response (10 04 05) – Bit 3	0	Not waiting for Slip Paper
9	Cash Drawer 1 (Both, if printer cannot determine.)	1	Drawer Open
	RTC Response (10 04 01) – Bit 2	0	Drawer Closed
A	Cash Drawer 2 (if printer can determine drawer 2)	1	Drawer Open
		0	Drawer Closed
B	RS-232 Interface Status	1	Busy due to Error or Flow Control
	RTC Response (10 04 01) – Bit 3	0	Printer in Normal state
C	Receipt Paper Door on Print Mechanism	1	Door Open
	RTC Response (10 04 02) – Bit 2	0	Door Closed
D	Slip Cassette Door	1	Door Open
	RTC Response (10 04 02) – Bit 2	0	Door Closed
E	Paper Feed Button	1	Pressed
	RTC Response (10 04 02) – Bit 3	0	Not Pressed
F	Print Stopped due to Error Condition	1	Stopped
	RTC Response (10 04 02) – Bit 5	0	Returned to Normal
10	Error Condition	1	Error Detected
	RTC Response (10 04 02) – Bit 6	0	No Error
11	Slip Flip Jam	1	Jam Error on Slip Flip

Identifier Value (Hex)	Description of sensor or state RTC Sensor Bit if Applicable for 7167 Series II/ 7197 (Note: RTC might be different for other printers)	State Value	Meaning
	RTC Response (10 04 03) - Bit 2	0	Normal State
12	Slip Motor Jam	1	Motor in Jam state
	RTC Response (10 04 03) - Bit 2	0	Normal State
13	Knife Condition	1	Knife in Error Condition
	RTC Response (10 04 03) – Bit 3	0	Normal State
14	Unrecoverable Error	1	Unrecoverable Error Encountered
	RTC Response (10 04 03) – Bit 5	0	Printer has been Reset
15	Thermal Print Head Temperature	1	Out of operating range
	RTC Response (10 04 03) – Bit 6	0	Normal operating range
16	Power Supply Voltage	1	Out of operating range
	RTC Response (10 04 03) – Bit 6	0	Normal operating range
17	Thermal Print Head Failure	1	Thermal print head failure
	RTC Response (10 04 03) – Bit 4	0	Normal operating range
1E	Flip Mechanism Door State	1	Door Open
	No RTC equivalent	0	Door Closed
FA	Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes.		

Identifier Value (Hex)	Description of sensor or state RTC Sensor Bit if Applicable for 7167 Series II/ 7197 (Note: RTC might be different for other printers)	State Value	Meaning
FB	Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes.		
FC	Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes.		
FD	Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes.		
FE	Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes.		
FF	Reserved for future use which might include defining additional bytes to extend the message structure beyond the existing 3 bytes.		

Printer Firmware Implementation Considerations

The printer firmware will constantly monitor the states listed above. Once the *Enable USU* command has been received, from that time forward until the *Disable USU* command is received, the printer firmware should transmit a USU message anytime there is a change to a state. When multiple messages need to be transmitted, there should be a delay of at least 100ms between messages.

The current state of the USU mechanism Enabled or Disabled should be maintained in the non-volatile memory. If the printer is reset or power-cycled, and the USU mechanism is in the Enabled state based on the value in non-volatile memory, the printer should transmit the current status of all Sensor and State information in the same manner it does in response to a *Baseline State Request*. This transmission should be performed once the power-up initialization of the printer has been completed, and the communications channel has been established.

The purpose of the transmission after power-up is to handle the case of the printer entering an error state that requires a reset, or power-cycle of the printer to correct it. Unless the current status of Sensor and State information is transmitted to the host, the controlling software on the host might be unaware of any changes in status resulting from the reset or power-cycle. The host software would remain in an error state unless it polled the printer for status information.

Bar Code Commands

The following sections describe the commands for the printing of bar codes in the order of their hexadecimal codes.

Note: The 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 (Default) • 1—Above the bar code • 2—Below the bar code • 3—Both above and below the bar code

This command 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)

This command selects standard or compressed font for printing Bar Code characters.

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

This command 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

	First Variation	**Second Variation**
ASCII	GS k *m d1...dk* NUL	GS k *m n d1...dn*
Hexadecimal	1D 6B *m d1...dk* 00	1D 6B *m n d1...dn*
Decimal	29 107 *m d1...dk* 0	29 107 *m n d1...dn*
	0—End of command.	
Values	String terminated with NUL Character • *m*—0 – 6, 10 • *d*—32 – 126 (see the table) • *n*—1 – 255 (see the table)	Length of byte specified at beginning of string • *m*—65 - 73, 75-82 (see the table) • *d*—0-127 (see the table) • *n*—1-255 (see the table)

This command 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 bar code 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. 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.

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.

First Variation

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) $d1 = dk = 42$ (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

M	Bar Code	D	n, Length
76	GS1 DataBar Omnidirectional	48–57	Fixed Length: 13
77	GS1 DataBar Truncated	48–57	Fixed Length: 13
78	GS1 DataBar Stacked	48–57	Fixed Length: 13
79	GS1 DataBar Stacked Omnidirectional	48–57	Fixed Length: 13
80	GS1 DataBar Limited	48–57 [However d1= 48, 49]	Fixed Length: 13
81	GS1 DataBar Expanded	32–34, 37–47, 48–57, 58–63, 65–90, 95, 97–122, 123 [However d1 = 40, 48 <= d2 <= 57, 48 <= d3 <= 57 when 48 <= d1 <= 57, 48 <= d2 <= 57]	Variable length (2–70)

M	Bar Code	D	n, Length
82	GS1 DataBar Expanded Stacked	32–34, 37–47, 48–57, 58–63, 65–90, 95, 97–122, 123 [However d1 = 40, 48 <= d2 <= 57, 48 <= d3 <= 57 when 48 <= d1 <= 57, 48 <= d2 <= 57]	Variable length (2–70)

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* is specified.

Exceptions

- Illegal data cancels this command.

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

- In case of 7167, PDF417 and Code 93 are only available in 7158 Mode. PDF 417 and GS1 DataBar format cannot be printed on the slip. Barcodes on the Slip are always right-justified.

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

This command sets the bar code width to *n* dots.

Formulas

- **n + 1/8 mm** (n + 1/203 inch) for receipt.

- **n + 1/5.7 mm** (n + 1/144 inch) for slip.

Note: Slip module sizing: n must be even (it is rounded up if odd) and the size of modules is **n = 1/5.7 mm** (n = 1/144 inch).

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&H77) & Chr$(n)
```

QR Code: Select the model

ASCII	GS (*k pL pH cn fn n1 n2*
Hexadecimal	1D 28 6B *pL pH cn fn n1 n2*
Decimal	29 40 107 *pL pH cn fn n1 n2*
Values of *pL,pH*	*pL*, *pH* specify (*pL* + *pH* × 256) as the number of bytes after *pH* (*cn*, *fn*, and[parameters]). (*pL* + *pH* × 256) = 4 So (*pL* = 4, *pH* = 0)
Value of *cn*	49
Value of *fn*	65
Value of *n1*	• 49—Selects model 1 Code conversion processing. • 50—Selects model 2 conversion processing. • 200—Select Micro QR Code.
Value of *n2*	0
Default	• *n1*—50 • *n2*—0

This command selects the model for QR Code.

QR Code: Set the size of module

ASCII	GS (*k pL pH cn fn n*
Hexadecimal	1D 28 6B *pL pH cn fn n*
Decimal	29 40 107 *pL pH cn fn n*
Values of *pL,pH*	*pL*, *pH* specify (*pL* + *pH* × 256) as the number of bytes after *pH* (*cn*, *fn*, and *[parameters]*). (*pL* + *pH* × 256) = 3 So (*pL* = 4, *pH* = 0)
Value of *cn*	49
Value of *fn*	67
Range of *n*	1-16
Default	• *n1* = 50 • *n2* = 0

This command sets the size of the module for QR Code as *n* dots. The user must secure the quiet zone (left, right, upward, and downward space areas defined by the QR Code symbol specifications) for QR Code printing. Quiet zone is defined as 4 cells in standard and MicroQR code versions.

Note: The recommended module size is 4 dots and over. But if *n* = 4, this printer cannot print maximum data bar code because the bar code width will be over the printable width. So, the default value of *n* is defined to 3 in this version.

QR Code: Select the error correction level

ASCII	GS (k*pL pH cn fn n*
Hexadecimal	1D 28 6B *pL pH cn fn n*
Decimal	29 40 107 *pL pH cn fn n*
Values of *pL,pH*	*pL*, *pH* specify (*pL* + *pH* × 256) as the number of bytes after *pH* (*cn*, *fn*, and *[parameters]*). (*pL* + *pH* × 256) = 3 So (*pL* = 3, *pH* = 0)
Value of *cn*	49
Value of *fn*	69
Value of *n*	• 48—select error correction level L 7 % • 49 —Select error correction level M 15 % • 50—Select error correction level Q 25 % • 51—Select error correction level H 30 % • When model1 or model2 selected n=48,49,50,51 • When microQR selected n=48,49,50
Default *n*	48

This command selects the error correction level for QR Code.

Note: In MicroQR, it is not printed error correction level = *H* at the time of the choice. *Symbol versionM1* in microQR. Select error correction level=*L*.

QR Code: Store the data in the symbol storage area

ASCII	GS (*k pL pH cn fn m d1…dk*
Hexadecimal	1D 28 6B *pL pH cn fn m d1…d*
Decimal	29 40 107 *pL pH cn fn m d1…dk*
Range of *pL*	4 - 255, Here 4 ≤ (*pL* + *pH* × 256)≤ 7092
Range of *pH*	0 -27,
Value of *cn*	49
Value of *fn*	80
Value of *m*	48
Range of *d*	0 – 255
Value of *k*	(*pL* + *pH* × 256) – 3

This command stores the QR Code symbol data (*d1…dk*) into the symbol storage area (RAM).

QR Code: Print the symbol data in the symbol storage area

ASCII	GS (*k pL pH cn fn m*
Hexadecimal	1D 28 6B *pL pH cn fn m*
Decimal	29 40 107 *pL pH cn fn m*
Values of *pL,pH*	*pL*, *pH* specify (*pL* + *pH* × 256) as the number of bytes after *pH* (*cn*, *fn*, and *[parameters]*). (*pL* + *pH* × 256) = 3 So (*pL* = 3, *pH* = 0)
Value of *cn*	49
Value of *fn*	81
Value of *m*	48

This command encodes and prints the QR Code symbol data in the symbol storage area.

Note: User must secure the quiet zone (left, right, upward, and downward space areas defined by the QR Code symbol specifications) for QR Code printing. In case of 7167, QR Code format cannot be printed on the slip.

QR Code: Transmit the size information of the symbol data in the symbol storage area

ASCII	GS (*k pL pH cn fn m*
Hexadecimal	1D 28 6B *pL pH cn fn m*
Decimal	29 40 107 *pL pH cn fn m*
Values of *pL,pH*	*pL*, *pH* specify (*pL* + *pH* × 256) as the number of bytes after *pH* (*cn*, *fn*, and *[parameters]*). (*pL* + *pH* × 256) = 3 So (*pL* = 3, *pH* = 0)
Value of *cn*	49
Value of *fn*	82
Value of *m*	48

This command allows the printer to transmit the size information for the encoded QR Code symbol data in the symbol storage area.

Description	Hex	Decimal	Data
Header	37	55	1 byte
Identifier	36	54	1 byte
Horizontal size	30–39	48–57	1–5 bytes
Separator	1F	31	1 byte
Vertical Size	30–39	48–57	1–5 bytes
Separator	1F	31	1 byte
Fixed Value	31	49	1 byte
Separator	1F	31	1 byte
Other information	30 or 31	48 or 49	1 byte
NULL	00	0	1 byte

Note: From the table above, *Other information* represents the possibility of printing the QR Code.

Other Information

- `0x30` - Printing is possible
- `0x31` - Printing is impossible

Horizontal and vertical sizes are specified as ASCII value of received byte. They can be obtained by following equations:

• Horizontal size = Number of cells in *Horizontal Direction* × *Symbol size* specified by the command `1D 28 6B 03 00 31 43` *n*.

• Vertical size = Number of cells in *Vertical Direction* × *Symbol size* specified by the command `1D 28 6B 03 00 31 43` *n*.

Example: If Symbol size is specified as 10 by the command of `1D 28 6B 03 00 31 43 n` and number of pixel in horizontal direction is 21, then horizontal size will be 10 * 21=210. So the output of the printer will be `37 36 32 31 30 1f 32 31 30 1f 31 1f 30 00`.

Page Mode Commands

Page Mode is one of two modes, which the 7167 Series II 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

In this mode, 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)
```

Exception
This command is enabled only in Page Mode.

Cancel Print Data in Page Mode

ASCII	CAN
Hexadecimal	18
Decimal	24

This command 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)
```

Exception
This command is only used in Page Mode.

Print Data in Page Mode

ASCII	ESC FF
Hexadecimal	1B 0C
Decimal	27 12

This command 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)
```

Exception
This command is enabled only in Page Mode.

Select Page Mode

ASCII	ESC L
Hexadecimal	1B 4C
Decimal	27 76

This command 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)

It is possible only to set values for the following commands in Page Mode. These commands are not executed.

4. Select or Cancel 90 Degree Clockwise Rotation (1B 56)

5. Select Justification (1B 61)

6. Select or Cancel Upside Down Printing (1B 7B).

7. Set Left Margin (1D 4C)

8. Set Print Area Width (1D 57)

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H4C)
```

Exceptions

The command is enabled only when it is 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

This command 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)
```

Exception
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)

Note: A, B, C and D note the direction of print.

This command selects the printing direction and start position in Page Mode. Refer to 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 Print and Return to Standard mode command (0C).
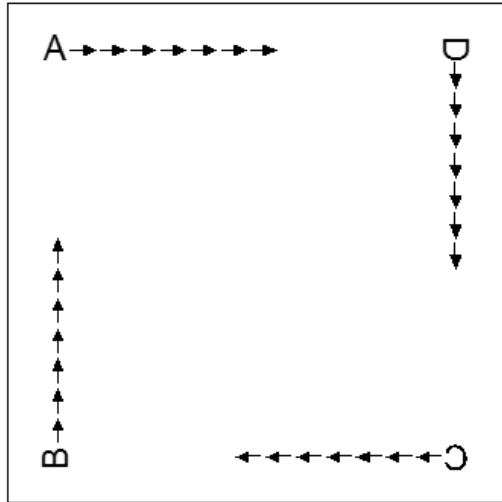
Default
0 (Upper left corner proceeding across page to the right)

Example:

```
MSComm1.Output = Chr$(&H1B) & Chr$(&H54) & Chr$(n)
```

Exception
This command is valid only in Page Mode and 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

This command 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, and can be developed in the printer's page buffer before being printed by the Print and Return to Standard mode command (0C).

The defaults are equal to 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.

- x0 = [(n1 + n2 x 256) x (horizontal direction of the fundamental calculation pitch)]

- y0 = [(n3 + n4 x 256) x (vertical direction of the fundamental calculation pitch)]

- dx = [(n5 + n6 x 256) x (horizontal direction of the fundamental calculation pitch)]

- dy = [(n7 + n8 x 256) x (vertical direction of the fundamental calculation pitch)]

Keep the following notes in mind for this command:

- The fundamental calculation pitch depends on the vertical or horizontal direction.

- The maximum printable area in the x direction is 576/203 inches.

- 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*

Formula

[(nL + nH x 256) x (vertical or horizontal motion unit)] inches.

This command 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)
```

Exception

This command is effective only in Page Mode. If the [(`nL` + `nH` x 256) x (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*

This command 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 x 256) x 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 x 256 = n
```

When pitch n is specified to the movement upward (negative direction), use the complement of 65536.

When pitch *n* is specified to the movement upward:

```
nL + nH x 256 – 65536 – N
```

Exception

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

Macro 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

This command 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.

This command 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

This command 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

This command 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. For more information, refer to *Parsing Parameter String Options* on the next page. Together with this command, send the parse data that is to be the default parse string at printer power-on. If no parameters are selected, parsing is not performed.

d1 through *dn* isd 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.

Refer to the 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 the parsing format. For more information, refer to *Parsing Parameter String Options* on the next page. 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-on.

d1 through *dn* is 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.

Refer to the parsing examples.

Note: 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	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

Other Parameters		
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 describe various sample formats that can be used assuming they meet the 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

Command	Description	Final
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, which means greater than or equal to `0x20`, with the exception of a non-ASCII character enclosed in single quotes as a field separator. This exception applies both to parameter specifications sent from application to printer, and to MICR data returned from printer to application.

Parameters are positiona. 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. The following 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 **Note:** As specified in the parsing parameters string		
Country Code **Note:** As specified in the parsing parameters string		

Check Serial Number

Parsing the Check Serial Number

Most banks print the check serial number in three easily recognizable spots. The printer firmware searches 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

The check serial number is the number bracketed by "on us" symbols in the auxiliary "on us" field.

```
occcccco txxxxxxxxt xxxxxxxo
```

Otherwise, the check serial number are the three or more digit numbers 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 .

```
txxxxxxxxt xxxxxxxo cccc
txxxxxxxxt xxxxxxxo 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.

```
txxxxxxxxt cccc xxxxxxxo
txxxxxxxxt cccc-xxxxxxxo
txxxxxxxxt cccc xxxxxxxo 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:

```
txxxxxxxxt ccc-xxxxxxxxxxoxxxx
txxxxxxxxt xxx-xxxxxxxxxxocccc
```

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:

```
txxxxxxxxt ccccxxxxxxxxxo
```

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:

```
txxxxxxxxt xxx-ccc-xxxxxxxxxo
```

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
```

This command 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:

t123456780t12349876543210o

where:

- 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:

t22137-632t001 6042202o927540

where:

- 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
```

This command 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

This command 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*	Number of bytes to be written (Exception: 0 refers to 256 bytes)
Range of *m*	0–255
Value of *a*	3-byte address (*a0* is high byte address)
Range of *a*	0–255
Value of *d*	Data to be written
Range of *d*	0–255

This command writes *m* bytes of data (*d1…dm*) to the User Data Storage Flash Page at the address specified. The printer waits for *m* bytes of data following the 3-byte address, *(a0 a1 a2), 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 command above 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*	Number of bytes to be read (Exception: 0 refers to 256 bytes)
Range of *m*	0–255
Value of *a*	3-byte address (a0 is high byte address)
Range of *a*	0–255

This command reads *m* bytes of data from the User Data Storage Flash Page at the address *(a0 a1 a2)* 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)

This command 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	27 112 *n1 n2 k*
Value of *n1*	1st Byte
Value of *n2*	2nd Byte
Range of *k*	20–63 (decimal)

This command writes 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

This command 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)

  This setting 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)

  This setting 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)

  This setting 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)

  This setting 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 of *n1*	1 (see below)
Default Value of *n2*	1 (see below)

where:

- *n1*—the number of 64k sectors used for logos and user-defined characters.

- *n2*—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 saved across power cycles.

n1 + *n2* <= 6 (3M)

The 7167 Series II 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 is command is available only 7158 NAtive Mode and 7167 Native Mode.

Erase User Flash Sector

ASCII	GS @ *n*
Hexadecimal	1D 40 *n*
Decimal	29 64 *n*
Value of *n*	49–50

This command 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]* 0FFH
Hexadecimal	1F 11 *[m n], [m n]...[m n]* 0FFH
Decimal	31 17 *[m n], [m n]...[m n]* 0FFH

Values of m, n:			
m	**Function**	*n*	**Function**
(Hex)		**(Hex)**	
10	Interface type	00	RS232/USB
		01	RS232C
		02	USB

Values of m, n:			
m	**Function**	**n**	**Function**
(Hex)		**(Hex)**	
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
		02	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	4K Byte
		01	One line
		02	8K Bytes
		03	12K Bytes
18	DSR signal option	00	Enable DSR signal
		01	Disable DSR signal

Values of m, n:			
m	Function	*n*	Function
(Hex)		(Hex)	
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
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 (7158/7156 Mode)
25	Receipt synchronization	00	Enable Synchronization Mode2
		01	Disable Synchronization
		02	Enable Synchronization Mode1
		03	Enable Synchronization Mode3
26	Platen Waiting Time	00	No Extra Time
		01	Extra 1 second
		02	Extra 2 seconds
27	PDF417 Print Column	00	9 Columns
		01	14 Columns

Values of m, n:			
m	Function	*n*	Function
(Hex)		(Hex)	
30	Print density	F1	-15
		F2	-14
		F3	-13
		F4	-12
		F5	-11
		F6	-10
		F7	-09
		F8	-08
		F9	-07
		FA	-06
		FB	-05
		FC	-04
		FD	-03
		FE	-02
		FF	-01
		00	00
		01	+01
		02	+02
		03	+03
		04	+04
		05	+05
		06	+06
		07	+07
		08	+08
		09	+09

Values of m, n:			
m	Function	*n*	Function
(Hex)		(Hex)	
		0A	+10
		0B	+11
		0C	+12
		0D	+13
		0E	+14
		0F	+15
31	Paper Low sensor option	00	Enable Paper Low Sensor
		01	Disable Paper Low Sensor
32	Paper width	00	80 mm
		01	58 mm
33	Knife option	00	Enable knife
		01	Disable knife
		02	Enable knife with Buzzer(Low)
		03	Enable knife with Buzzer(High)
34	MICR option	00	Enable MICR
		01	Disable MICR
36	Max Power option	00	Term Pwr-High
		01	NCR 75W Ext Pwr
		02	Term Pwr-Low
		03	NCR 60W Ext Pwr
37	Color Paper option	00	One Color Paper
		01	Two Color Paper
38	MICR dual pass option	00	Enable Dual Pass
		01	Disable Dual Pass

Values of m, n:			
m	**Function**	**n**	**Function**
(Hex)		**(Hex)**	
3F	48 Column Print	00	OFF
		01	ON
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) **Note:** Not supported by 7167-1035 and 7167-2035.
		0E	Hungary
		0F	1256
46	Extra Upper Space Reduction in Eco utility	00	Disable
		01	Enable
47	Extra Lower Space Reduction in Eco utility	00	Disable
		01	Enable
48	Line Space Reduction in Eco utility	00	Disable
		01	Enable

Values of m, n:			
m	Function	*n*	Function
(Hex)		(Hex)	
49	Line Feed Reduction in Eco utility **Note:** If Line feed reduction setting is changed more than one times in one receipt, the last setting is valid.	00 01 02 03 04	Disable Reduce 100% Reduce 25% Reduce 50% Reduce 75%
4A	Barcode Height Reduction in Eco utility	00 01 02 03	Disable Reduce 25% Reduce 50% Reduce 75%
4B	Registered Logo Removal in Eco utility	00 01	Disable Enable
4C	Double Height Font Reduction in Eco utility	00 01	Disable Enable
4D	Bold Font Reduction in Eco utility	00 01	Disable Enable
4E	Double Width Font Reduction in Eco utility	00 01	Disable Enable
4F	White/Black Reverse Printing Reduction	00 01	Disable Enable
50	EEPROM default setting	00	EEPROM default setting

Values of m, n:			
m	**Function**	**n**	**Function**
(Hex)		**(Hex)**	

57	ECO function disable/enable in Eco utility
	
	Note:
	• If this setting is Enabled, all Eco function settings are available.
	• If this setting is Disabled, Eco function settings are not available except for the following settings:
	  • Enable Stand-by Mode
	  • Enable Off Mode
	  • Speed Reduction
	  • Density Reduction
		00
		01
			Disable
			Enable

58	Space Character Line in Eco utility	00 01	Character Line Feed
68	USB Interface Type	00 01 02	ION (Epic) NonION (NHPI) NonION (PRTR)
7F	Compatibility Barcode Length	00 01	Disable Enable
80	Receipt Print Mode	00 01 02	High Speed Print High Quality Print Eco Print

Values of m, n:			
m	**Function**	**n**	**Function**
(Hex)		**(Hex)**	
81	Power-On Thermal Head Failure Detection Mode	00	Disable
		01	Enable
82	Shift time to Standby mode (Enable Stand-by Mode in Eco utility)	00	Disable
		01	Enable
83	Shift time to Power-off (enable Off Mode in Eco utility)	00	Disabled
		01	60min
		02	120min
		03	180min
		04	240min
		05	300min

This command sets 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, but the printer waits for the data until terminator code 0FFH.

Example:

The following command would set the communication baud rate to 115,200 bps.

```
MSComm1.Output = Chr$(&H1F) & Chr$(&H06)
```

Asian Character Commands

Select print modes for Kanji characters

ASCII	FS ! *n*
Hexadecimal	1C 21 *n*
Decimal	28 33 *n*
Value of *n*	The character attribute for Asian character

Bit	Off/On	Hex	Decimal	Function
0	Off	00	0	Standard Pitch (24H x 24V)
	On	01	1	Compress Pitch (20H x 24V)
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

This command selects character attribute for Asian characters.

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 –`, but it does not relate to character size.

Example:

```
MSComm1.Output = Chr$(&H1C) & Chr$(&H21) & Chr$(n)
```

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)

This command turns underline mode on or off for Asian characters.

All characters can be underlined, including character right side spacing. Underline can be selected by `FS !` and `ESC –` also, if 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*	Specifies the beginning Asian character code
Value of *c2*	Specifies the end Asian character code
Value of *d*	Image data
Value of *n*	Size of image data: • *n*=72 bytes (for standarad pitch in Receipt Station) • *n*=60 bytes (for compressed pitch in Receipt Station-Character Set 932 only) • *n*=32 bytes (for standard or compressed pitch in Slip Station)

Range of c1,c2	• Japanese (CP932):
	F0 ≤ c1 ≤ F9
	40 ≤ c2 ≤ 7E
	80 ≤ c2 ≤ FC
	• Korean (CP949):
	c1 = C9
	c1 = FE
	A1 ≤ c2 ≤ FE
	• Simplified Chinese (CP936):
	A1 ≤ c1 ≤ A7
	40 ≤ c2 ≤ 7E
	80 ≤ c2 ≤ A0
	AA ≤ c1 ≤ AF
	A1 ≤ c2 ≤ FE
	F8 ≤ c1 ≤ FE
	A1 ≤ c2 ≤ FE
	• Traditional Chinese (CP950):
	81 ≤ c1 ≤ A0
	FA ≤ c1 ≤ FE
	40 ≤ c2 ≤ 7E
	80 ≤ c2 ≤ FE
	C7 ≤ c1 ≤ C8
	A1 ≤ c2 ≤ FE

This command defines and enters downloaded characters into RAM.

The user-defined character will be cleared by `ESC @` or powering off the 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

Receipt				
	936, 949, 950		932	
	80mm	58mm	80mm	58mm
Standard 1byte	1	1	1	0
Standard 2byte	2	2	2	0
Compressed 1byte	-	-	0	0
Compressed 2byte	-	-	0	0

Slip	
Standard 1byte	1
Standard 2byte	2
Compressed 1byte	1
Compressed 2byte	2

This command sets the character right-side spacing for Asian characters.

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)

This command selects or cancels the quadruple mode for Asian characters. `FS !` and `GS !` also have control over character size. This latest received command is effective.

Example:

```
MSComm1.Output = Chr$(&H1C) & Chr$(&H57) & Chr$(n)
```

Flash Download Commands

These commands are used to load firmware into the printer.

The commands are listed in numerical order according to their hexadecimal codes. Each command is described and the hexadecimal, decimal, and ASCII codes are listed.

There are three ways to enter the Download Mode:

• Powering the printer up with DIP Switch 2 up.

• While the printer is running normally. Use the command Switch to Flash Download Mode to leave normal operation and enter the Download Mode.

• 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

This command puts the printer in Flash Download Mode, to prepare the printer 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

This command returns `ACK (06 hex) + 12 bytes` ASCII string describing the Flash Memory Boot Sector Firmware part number, for example, 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

This command 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)
```

Exception
This command is 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)

This command 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)
```

Exception
This command is available only in Download Mode.

Get Firmware CRC

ASCII	GS ACK
Hexadecimal	1D 06
Decimal	29 6

This command 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, and transmits 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

This command teturns 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

This command 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)
```

Exception
This command is available only in Download Mode.

Return Main Program Flash CRC

ASCII	GS SI
Hexadecimal	1D 0F
Decimal	29 15

This command 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

This command 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)
```

Exception

This command is only available 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*

This 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 *n* (for number of data bytes)	Range of Address (*al ah*)	Range of Count (*cl ch*)
((ch * 256) + cl)	2000-FFFF (hexadecimal)	0001-0400 (hexadecimal)

Range
The addresses run from 0 to 64K.

Exception
This command is available only in Download Mode.

Reboot the Printer

ASCII	GS (SPACE)
Hexadecimal	1D FF
Decimal	29 255

This command ends the load process and reboots the printer. Before executing this command, the printer should have firmware loaded and external switches set to the runtime settings. Application software for downloading should prompt the user to set the external switches and confirm before sending this command. If the downloading was started from a diagnostic, the reboot will cause the printer to reenter download state unless the external switches are changed.

Example:

```
MSComm1.Output = Chr$(&H1D) & Chr$(&HFF)
```

Appendix A: **Specifications**

Printing Specifications

	Thermal Receipt Station	Slip Station
Print head	• Fixed 576 Print Elements Direct • Thermal Fixed Head Line of Dots	• Bi-directional • Logic Seeking • Serial Dot Matrix • Ribbon Cassette Forms Insertion
Character Cell	• Standard: 13 x 24 Dots • Compressed: 10 x 24 Dots	• Standard: 10 x 7 Dots • Compressed: 10 x 7 Dots
Character Size	0.0525-inch Wide by 0.092-inch High	0.057-inch Wide by 0.097-inch High
Character Spacing	15.25 characters per inch (horizontal)	
Character Pitch	• 15.6 characters per inch (Standard) • 20.3 characters per inch (Compressed)	• 13.9 characters per inch (Standard) • 17.1 characters per 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)

	Thermal Receipt Station	Slip Station
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 • Space page	Code Page: • 437 • 850 • 852 • 860 • 863 • 865 • 858 • 866 • 1252 • Katakana • 874 • 862 • 864 • Space page
Speed	• **12 inches per seccond** (304.8 millimeter per second), • Depend on Line Spacing	• 300 character per second at 13.9 cpi • Depending on # of Columns (40-column width)
Print Order	Descending	Descending

	Thermal Receipt Station	**Slip Station**
Line Spacing	• 7.52 lines per inch (default) • 8.47, 8.13, 7.81, 7.25, 7.00, 5.98 lines per inch and variable lines per inch.	• 7.2 lines per inch (default) • 10.3, 9.0, 8.0, 6.5, 6.0, lines per inch and variable lines per inch.
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
Paper Diameter	80 mm Max.	Not Applicable
Paper Length	**83 Meters** (273 feet)	• Side Insertion: 8.0 Inches (Min.) • Front Insertion: 2.75 Inches (Min.)
Paper Width	• **80 mm +0.5mm /-1.2mm** (3.15 Inches +0.02Inches/-0.047 Inches) • **58 mm +0.5mm / -1mm** (2.28 Inches +0.02Inches/-0.039)	• Side Insertion: 8.0 Inches (Min.) • Front Insertion: 2.0 Inches (Min.)
Paper Thickness	Not Applicable	**0.406 mm** (0.016 Inch)
Printable Area	2.83 Inches (Max.)	3.22 Inches (Max.)

Power Requirements

The 7167 printer receives power either from a host computer (integrated) or from a separate in–line power supply (remote) which can be purchased separately. Models receiving power from a power supply use one cable for communication and a separate cable for power.

Power from Host

The host computer must provide a +24V supply to the printer.

Note: Voltage variation in the 24 V line may be within 21.6 V and 30.8 V.

Surge protection must be provided. To do this, place a 3.2 Ampere time delay fuse on the +24V line. Based on the Host Terminal Series, a specific printer power mode must be selected.

NCR Terminal Power–Low Mode (Term Pwr–Low)

This mode must be selected when the printer is attached to an NCR terminal that is powered by an external power brick.

Example: 7600, 7601, 7610, 7611, and so forth.

Voltage	Station	Maximum Current	
		Printing time (Peak)	**Transaction Time (RMS)**
24 Volts Minimum: 21.6 Volts	Slip: 11.5 Dots/Character	6.4 Amperes	1.8 Amperes
	Slip: 15 Dots/Character	10.0 Amperes	1.6 Amperes
	Slip: Graphics	10.0 Amperes	2.7 Amperes
	Receipt: Graphics	8.7 Amperes	3.0 Amperes
	Receipt: 20% Character	5.2 Amps	1.7 Amps

NCR Terminal Power–High Mode (Term Pwr–High)

This mode can be selected when the printer is attached to an NCR terminal with an internal power supply.

Example: 7403, 7459, 7606, 7616, and so forth.

		Maximum Current	
Voltage	Station	Printing time (Peak)	Transaction Time (RMS)
24 Volts Minimum: 21.6 Volts	Slip: 11.5 Dots/Character	6.4 Amperes	1.8 Amperes
	Slip: 15 Dots/Character	10.0 Amperes	1.6 Amperes
	Slip: Graphics	10.0 Amperes	2.7 Amperes
	Receipt: Graphics	9.1 Amperes	3.5 Amperes
	Receipt: 20% Character	6.8 Amperes	2.0 Amperes

Power from External Power Supply

The external power supply must provide a +24V line of power to the printer. Surge protection must be provided. To do this, place a 2.0 Ampere time delay fuse on the +24V line.

A specific power mode is selected based on available external power supply. When NCR 75W external power supply is used, select **(NCR 75W Ext Pwr)** mode.

Station	Voltage	Maximum Current (RMS)		Peak Current
		Printing	Printing Cycle	
Receipt	24 V ± 10%	4.5 A	3.5 A	9.1 A
Slip	24 V ± 10%	2.5 A	1.8 A	6.4 A

Station	Voltage	Maximum Current (RMS)		Peak Current
		Printing	Printing Cycle	
Receipt	24 V ± 10%	4.5 A	3.5 A	9.3 A
Slip	24 V ± 10%	2.5 A	1.8 A	6.4 A

When NCR 60W external power supply is used, select **(NCR 60W Ext Pwr)** mode.

Environmental Requirements

Operating Temepreature	**5°C to 50°C** (40°F to 120°F), models with knife
	5°C to 50°C (40°F to 120°F), models with no knife
Operating Humidity	10% to 90%

Note: 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) or Mean Time Between Failure (MCBF) for the items indicated.

Item	MCBF
Thermal Receipt Printer	52 Million Print Lines
Impact Slip Printer	30 Million Print Lines
Impact Print head	200 Million Characters
Electronics	1,100,000 On time Hours
Communication Board	25,000,000 Hours
Control Panel Board	2,100,000 Hours
Knife	1 Million Cuts
MICR Check Reader	500,000 Reads
Flip	500,000 Flips
Power Supply	200,000 On-time Hours
Flip Mechanism	500,000 MCBF

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

Dimensions and Weight

Item	Dimension/Weight
Height	**186 mm** (7.32 in.)
Height with Cover Open	**283.7 mm** (11.2 in.)
Width	**192 mm** (7.56 in.)
Depth	**260 mm** (10.24 in.)
Depth with Extended Slip Table	**312 mm** (12.28 in.)
Weight	**4.50 Kg** (10.0 lbs), Flip Model
	4.25 Kg (9.4 lbs), Non-Flip Model

Density of Receipt Print Lines

When the receipt station prints high density print lines (text or 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 minute continuous printing	50% of 1 minute continuous printing	20% of 1 minute continuous printing
40%	50% of 1 minute continuous printing	25% of 1 minute continuous printing	10% of 1 minute continuous printing
100%	20% of 1 minute continuous printing	10% of 1 minute continuous printing	3% of 1 minute continuous printing

Appendix B: Print Characteristics

Character Size

This section shows the dot pattern for characters printed on the receipt station.

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: Compressed pitch uses fewer dots horizontally than standard pitch.

Standard Pitch

11 Dots
1.38 mm
.054 in.

13 Dots
1.63 mm
.064 in.

19 Dots
2.38 mm
.094 in.

24 Dots
3.00 mm
.118 in.
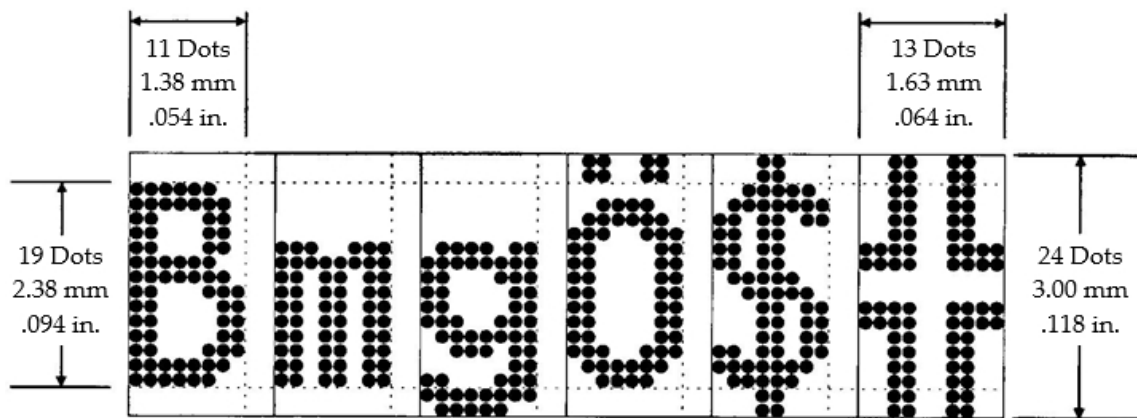
B - Upper Case
m - Lower Case
g - With Descender

Ö - With Ascender
$ - Both Ascender and Desender
✱ - Graphic Symbol

203 DPI, 15.6 CPI Pitch (Standard)

Compressed Pitch

8 Dots 1.00 mm .039 in.				10 Dots 1.25 mm .049 in.

19 Dots
2.38 mm
.094 in.

24 Dots
3.00 mm
.118 in.

B - Upper Case   Ö - With Ascender
m - Lower Case $ - Both Ascender and Decsender
g - With Descender   # - Graphic Symbol

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.
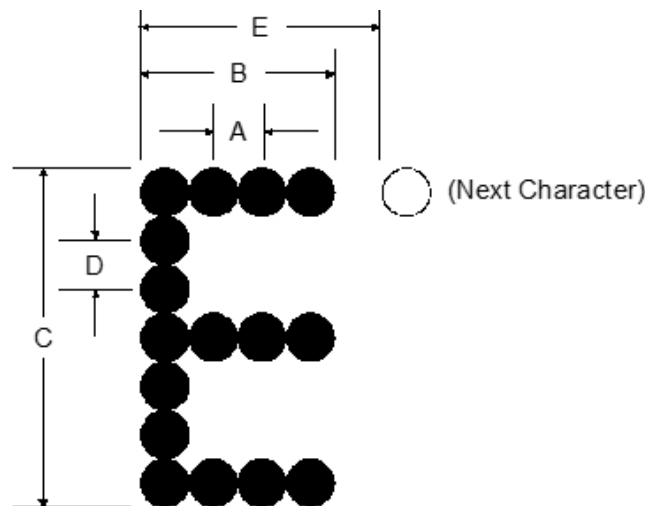
(Next Character)

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	**0.366 mm** (0.0144 in.)	**0.30 mm** (0.0117 in.)
B	**1.45 mm** (0.057 in.)	**1.24 mm** (0.049 in.)
C	**2.46 mm** (0.097 in.)	
D	**0.353 mm** (0.0139 in.)	
E	**1.83 mm** (0.072 in.)	**1.49 mm** (0.0585 in.)

Column   1 2 3 4 5 6 7 8*9*10*1 2 3 4 5 6 7

(Next Row)

D x EDR Value
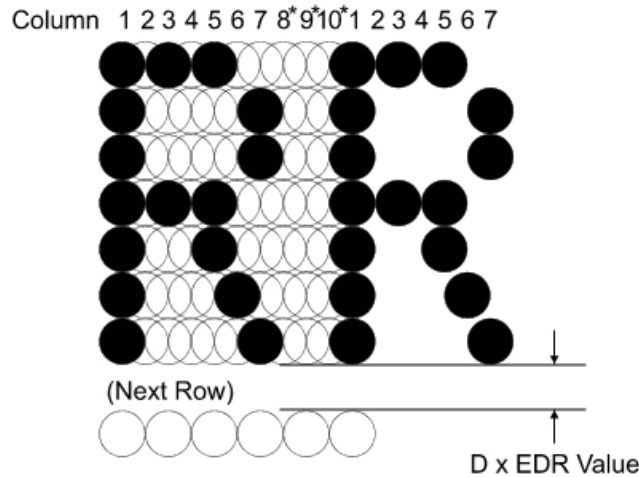
* Colunms 8, 9, and 10 are for graphics or for certain special characters

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.
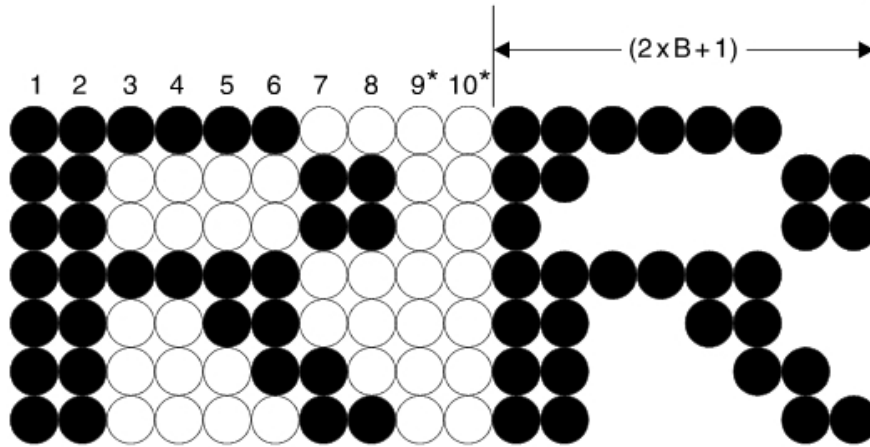
* Columns 9 and 10 for certain special characters

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.
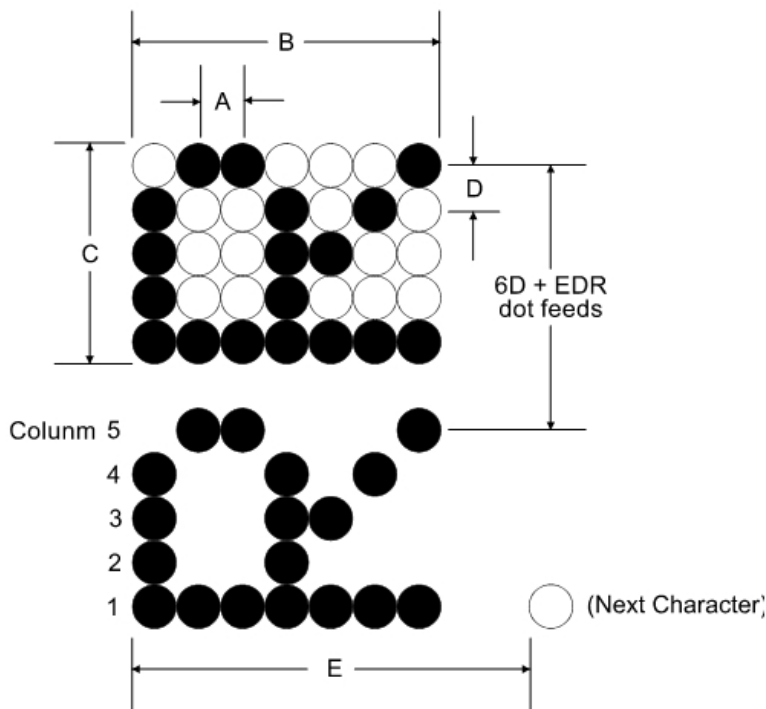
Dimension	Horizontal Pitch (6.95 CPI, 33 Columns)
A	**0.366 mm** (0.0144 in.)
B	**2.56 mm** (0.100 in.)
C	**1.75 mm** (0.069 in.)
D	**0.353 mm** (0.0139 in.)
E	**3.66 mm** (0.144 in.)

Print Zones

This section shows the printable area for the receipt station.

Receipt Station

For 80-mm Paper

The receipt station centers characters (standard pitch and compressed pitch) and graphics on a receipt with a width of **80mm** (3.15 inches).

- 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, 0.133 inches) for characters (with three extra dot rows). See the following illustration (not to scale).
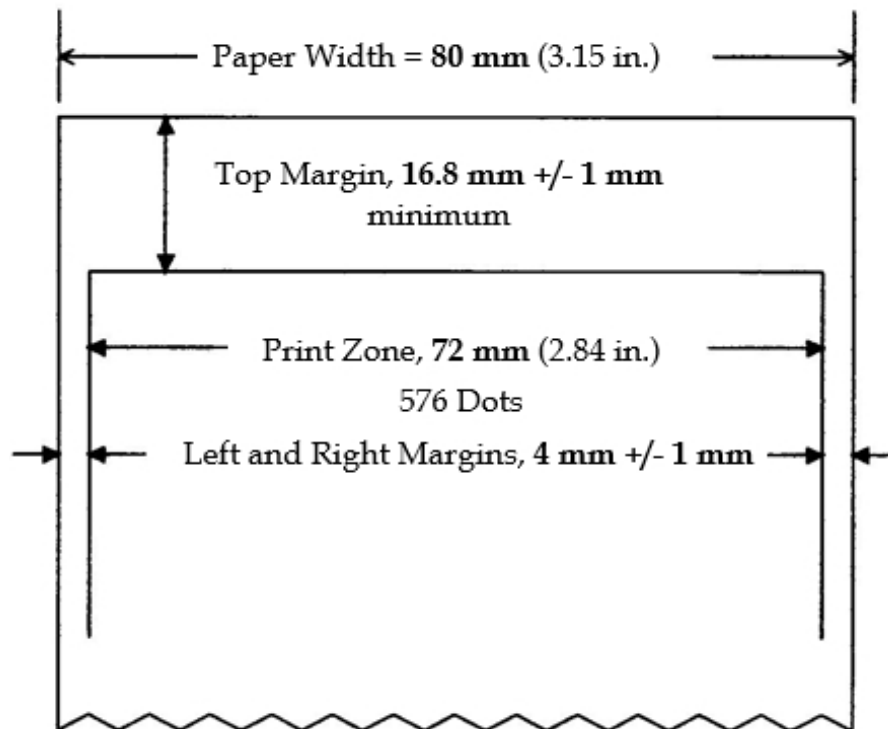
For 58-mm Paper

The receipt station centers characters (standard pitch and compressed pitch) and graphics on a receipt with a width of **58mm** (2.28 inches).

- 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, 0.133 inches) for characters (with three extra dot rows). See the following illustration (not to scale).
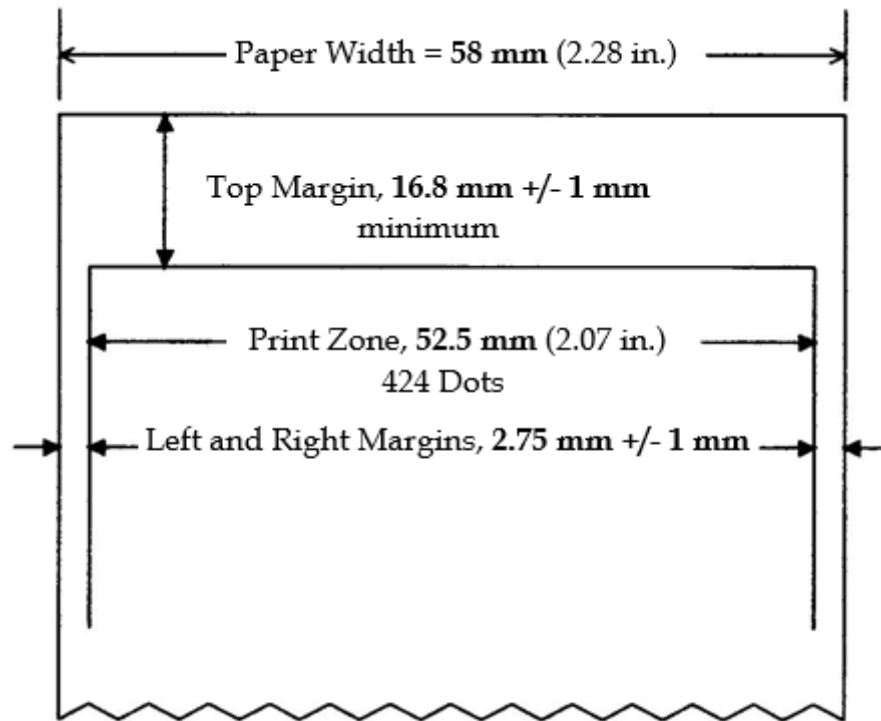
Slip Station

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** (0.097 in). With three-dot spacing, the print line height is **3.53 mm** (0.139 inches). Refer to 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.

Paper Width: Not Restricted

Top Margin, **16 mm** (0.63 in.) minimum
(Without Reverse Feed)
No Top Margin with Reverse Feed

Print Zone, **82.2 mm** (3.24 in.)

Left and Right Margins, **3.2 mm** (0.125 in.)

Bottom Margin: **15.0 mm** (0.59 in.)
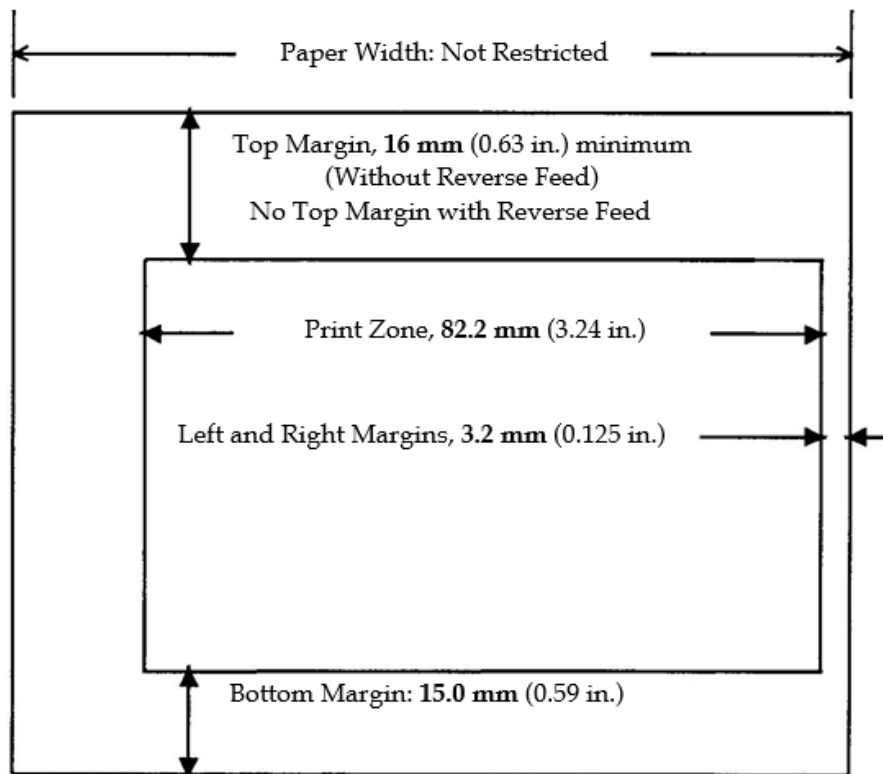
Slip Form Parameters

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.
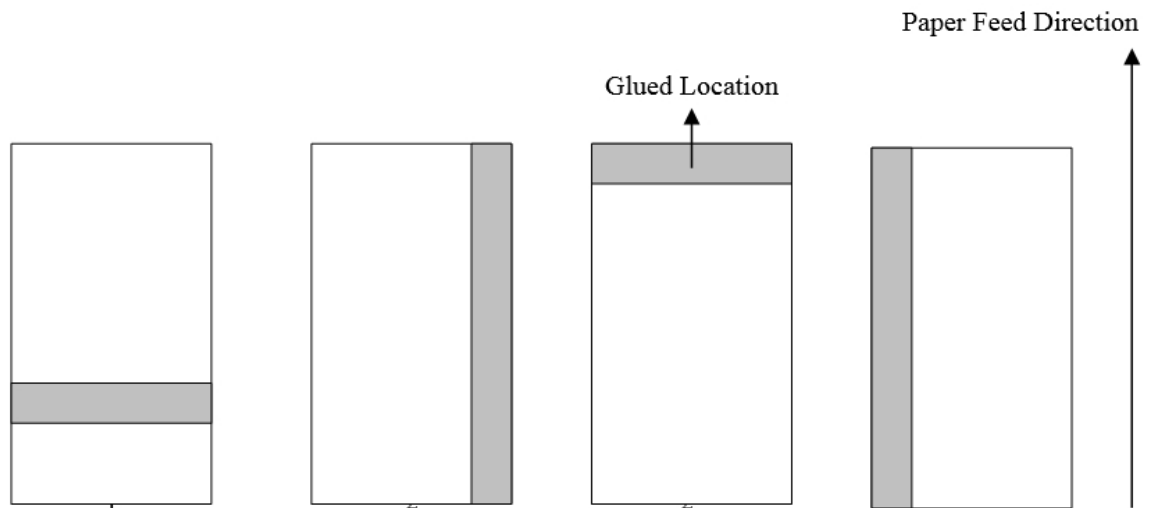
1. Form construction for glued edges.

2. Bottom edge of form should not be glued. 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 multi-ply 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

152.40 mm (6.00 in.) wide x **69.85 mm** (2.750 in.) high

Business

222.25 mm (8.75 in.) wide x **93.14 mm** (3.667 in.) 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 expecially 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.
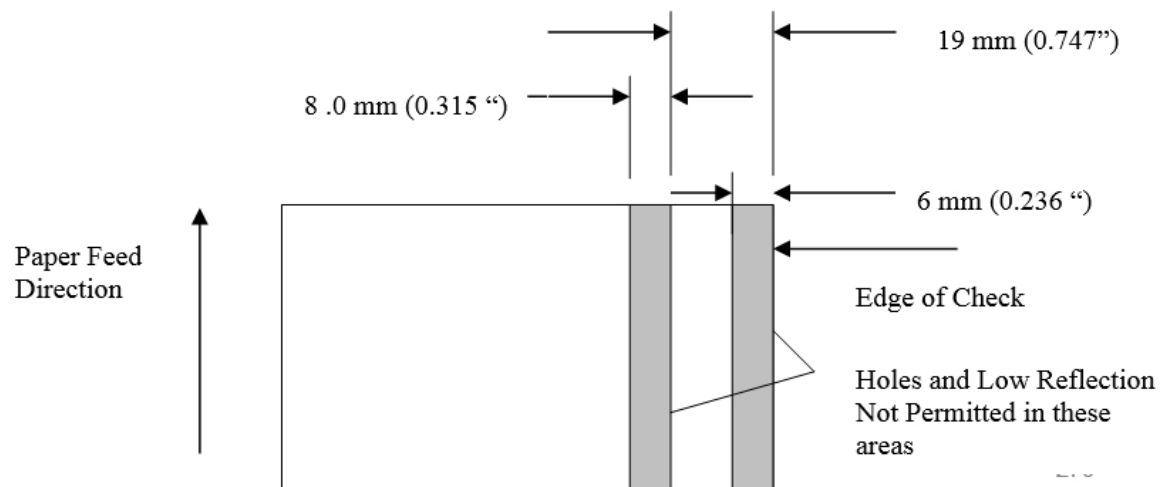
Appendix C: Lean Receipt Utility

Overview

This feature applies only to receipt station and not on slip station. Use this feature to reduce paper waste and power consumption during printing. Select one of the following ECO features:

- dedicated utility, which is NCR Lean Receipt utility

- command

Note: For more information, refer to the *NCR Printer Lean Receipt Utility Owners Guide* from the NCR web site, *http://www5.ncr.com/support/support_drivers_ patches.asp?Class=External\Peripherals\Printer\LeanReceiptUtility\display*.

Appendix D: **Reflashing the Printer Firmware**

Overview

Use the Flash Utility to flash the firmware and the font files to the printer.

Note: For more information, refer to the *NCR Printer Flash Utility Owners Guide* from the NCR web site, *http://www5.ncr.com/support/support_drivers_ patches.asp?Class=External\Peripherals\Printer\FlashUtility\display*.

Appendix E: **Character Sets**

Overview

The following pages show the character sets.

- 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 1256 (Windows Arabic)
- Code Page Katakana
- Code Page Hungary
- Code Page 932 (MS Japan)
- Space Page
- Code Page 936
- Code Page 949
- Code Page 950

Code Page 437

Code Page 437.

```
      2 3 4 5 6 7 8 9 A B C D E F

00      0 @ P ` p Ç É á ⋮ └ ╨ α ≡
01    ! 1 A Q a q ü æ í ▓ ┴ ╤ β ±
02    " 2 B R b r é Æ ó ▓ ┬ ╥ Γ ≥
03    # 3 C S c s â ô ú │ ├ ╙ π ≤
04    $ 4 D T d t ä ö ñ ┤ ─ ╘ Σ ⌠
05    % 5 E U e u à ò Ñ ╡ ┼ ╒ σ ⌡
06    & 6 F V f v å û ª ║ ╞ ╓ µ ÷
07    ' 7 G W g w ç ù º ╗ ╟ ╫ τ ≈
08    ( 8 H X h x ê ÿ ¿ ╣ ╚ ╪ Φ °
09    ) 9 I Y i y ë Ö ⌐ ╢ ╔ ┘ Θ •
0A    * : J Z j z è Ü ¬ ║ ╩ ┌ Ω ·
0B    + ; K [ k { ï ¢ ½ ╗ ╦ █ δ √
0C    , < L \ l | î £ ¼ ╝ ╠ ▄ ∞ ⁿ
0D    - = M ] m } ì ¥ ¡ ╜ ═ ▌ φ ²
0E    . > N ^ n ~ Ä ₧ « ╛ ╬ ▐ ε ■
0F    / ? O   o ⌂ Å ƒ » ┐ ╧ ▀ ∩
```

Code Page 850

Code Page 850.

```
        2 3 4 5 6 7 8 9 A B C D E F

00      0 @ P ` p Ç É á ░ └ ð Ó
01    ! 1 A Q a q ü æ í ▒ ┴ Ð ß ±
02    " 2 B R b r é Æ ó ▓ ┬ Ê Ô ‗
03    # 3 C S c s â ô ú │ ├ Ë Ò ¾
04    $ 4 D T d t ä ö ñ ┤ ─ È õ ¶
05    % 5 E U e u à ò Ñ Á ┼ ı Õ §
06    & 6 F V f v å û ª Â ã Í µ ÷
07    ' 7 G W g w ç ù º À Ã Î þ ¸
08    ( 8 H X h x ê ÿ ¿ © ╚ Ï Þ °
09    ) 9 I Y i y ë Ö ® ╣ ╔ ┘ Ú ¨
0A    * : J Z j z è Ü ¬ ║ ╩ ┌ Û ·
0B    + ; K [ k { ï ø ½ ╗ ╦ █ Ù ¹
0C    , < L \ l | î £ ¼ ╝ ╠ ▄ ý ³
0D    - = M ] m } ì Ø ¡ ¢ = ¦ Ý ²
0E    . > N ^ n ~ Ä × « ¥ ╬ Ì ▬ ■
0F    / ? O _ o ⌂ Å ƒ » ┐ ¤ ▀ ´
```

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	đ	Ó	-
01	!	1	A	Q	a	q	ü	Ĺ	í	▒	┴	Đ	ß	˝
02	"	2	B	R	b	r	é	ĺ	ó	▓	┬	Ď	Ô	˛
03	#	3	C	S	c	s	â	ô	ú	│	├	Ë	Ń	˘
04	$	4	D	T	d	t	ä	ö	Ą	┤	─	ď	ń	¨
05	%	5	E	U	e	u	ů	Ľ	ą	Á	┼	Ň	ň	§
06	&	6	F	V	f	v	ć	ľ	Ž	Â	Ă	Í	Š	÷
07	'	7	G	W	g	w	ç	Ś	ž	Ě	ă	Î	š	¸
08	(	8	H	X	h	x	ł	ś	Ę	Ş	╚	ě	Ŕ	°
09	)	9	I	Y	i	y	ë	Ö	ę	╣	╔	┘	Ú	¨
0A	*	:	J	Z	j	z	ő	Ü	¬	║	╩	┌	ŕ	·
0B	+	;	K	[	k	{	ő	Ť	ź	╗	╦	█	Ű	ű
0C	,	<	L	\	l	|	î	ť	ć	╝	╠	▄	ý	Ř
0D	-	=	M	]	m	}	Ź	Ł	ş	Ż	=	Ţ	Ý	ř
0E	.	>	N	^	n	ˉ	Ä	×	«	ż	╬	Ů	ţ	■
0F	/	?	O		o	□	Ć	č	»	┐		¤	▀	

Code Page 858

```
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 ð O -
01  ! 1 A Q a q ü æ í ▓ ⊥ Ð ß ±
02  " 2 B R b r é Æ ó ▓ ┬ Ê Ô ‗
03  # 3 C S c s â ô ú │ ├ Ë Ò ¾
04  $ 4 D T d t ä ö ñ ┤ ─ È õ ¶
05  % 5 E U e u à ò Ñ Á ┼ € Õ §
06  & 6 F V f v å û ª Â ã Í µ ÷
07  ' 7 G W g w ç ù º À Ã Î þ ¸
08  ( 8 H X h x ê ÿ ¿ © ╚ Ï Þ °
09  ) 9 I Y i y ë Ö ® ╣ ╔ ┘ Ú ¨
0A  * : J Z j z è Ü ¬ ║ ╩ ┌ Û ·
0B  + ; K [ k { ï ø ½ ╗ ╦ █ Ù ¹
0C  , < L \ l | î £ ¼ ╝ ╠ ▄ ý ³
0D  - = M ] m } ì Ø ¡ ¢ = ¦ Ý ²
0E  . > N ^ n ~ Ä × « ¥ ╬ Î ■
0F  / ? O _ o ⌂ Å ƒ » ┐ ¤ ■ ´
```

Code Page 860

Code Page 860.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00		0	@	P	`	p	Ç	É	á	▒	└	╨	α	≡
01	!	1	A	Q	a	q	ü	À	í	▒	┴	╤	β	±
02	"	2	B	R	b	r	é	È	ó	▓	┬	╥	Γ	≥
03	#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
04	$	4	D	T	d	t	ã	õ	ñ	┤	─	╘	Σ	⌠
05	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
06	&	6	F	V	f	v	Á	Ú	ª	╢	╞	╓	µ	÷
07	'	7	G	W	g	w	ç	ù	º	╖	╟	╫	τ	≈
08	(	8	H	X	h	x	ê	Ì	¿	╕	╚	╪	Φ	°
09	)	9	I	Y	i	y	Ê	õ	Ò	╣	╔	┘	Θ	∙
0A	*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
0B	+	;	K	[	k	{	Í	¢	½	╗	╦	█	δ	√
0C	,	<	L	\	l	|	Ô	£	¼	╝	╠	▄	∞	ⁿ
0D	-	=	M	]	m	}	ì	Ù	¡	╜	=	▌	φ	²
0E	.	>	N	^	n	~	Ã	Pt	«	╛	╬	▐	ε	■
0F	/	?	O	_	o	⌂	Â	Ó	»	┐	╧	▀	∩	

Code Page 862

Code Page 863

Code Page 863.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00		0	@	P	`	p	Ç	É	¦	▒	└	╨	α	≡
01	!	1	A	Q	a	q	ü	È	´	▓	┴	╤	β	±
02	"	2	B	R	b	r	é	Ê	ó	▉	┬	╥	Γ	≥
03	#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
04	$	4	D	T	d	t	Â	Ë	¨	┤	─	╘	Σ	⌠
05	%	5	E	U	e	u	à	Ï	¸	╡	┼	╒	σ	⌡
06	&	6	F	V	f	v	¶	û	³	╢	╞	╓	µ	÷
07	'	7	G	W	g	w	ç	ù	¯	╖	╟	╫	τ	≈
08	(	8	H	X	h	x	ê	¤	Î	╕	╚	╪	Φ	°
09	)	9	I	Y	i	y	ë	Ô	⌐	╣	╔	┘	Θ	•
0A	*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
0B	+	;	K	[	k	{	ï	¢	½	╗	╦	█	δ	√
0C	,	<	L	\	l	|	î	£	¼	╝	╠	▄	∞	ⁿ
0D	-	=	M	]	m	}	‗	Ù	¾	╜	═	▌	φ	²
0E	.	>	N	^	n	~	À	Û	«	╛	╬	▐	ε	■
0F	/	?	O	_	o	⌂	§	ƒ	»	┐	╧	▀	∩	

Code Page 864

Code Page 864

Code Page 865

```
Code Page 865.

        2 3 4 5 6 7 8 9 A B C D E F

00        0 @ P ` p Ç É á ░ └ ╨ α ≡
01    ! 1 A Q a q ü æ í ▒ ┴ ╤ ß ±
02    " 2 B R b r é Æ ó ▓ ┬ ╥ Γ ≥
03    # 3 C S c s â ô ú │ ├ ╙ π ≤
04    $ 4 D T d t ä ò ñ ┤ ─ ╘ Σ ⌠
05    % 5 E U e u à ò Ñ ╡ ┼ ╒ σ ⌡
06    & 6 F V f v å û ª ╢ ╞ ╓ μ ÷
07    ' 7 G W g w ç ù º ╖ ╟ ╫ τ ≈
08    ( 8 H X h x ê ÿ ¿ ╕ ╚ ╪ Φ °
09    ) 9 I Y i y ë Ö ⌐ ╣ ╔ ┘ Θ ∙
0A    * : J Z j z è Ü ¬ ║ ╩ ┌ Ω ·
0B    + ; K [ k { ï ø ½ ╗ ╦ █ δ √
0C    , < L \ l | î £ ¼ ╝ ╠ ▄ ∞ ⁿ
0D    - = M ] m } ì Ø ¡ ╜ = ▌ φ ²
0E    . > N ^ n ~ Ä ₧ « ╛ ╬ ▐ ε ■
0F    / ? O _ o ⌂ Å ƒ ¤ ┐ ╧ ▀ ∩
```

Code Page 866

Code Page 866.

```
      2 3 4 5 6 7 8 9 A B C D E F

00      0 @ P ` p A P a ░ L �025 p Ё
01    ! 1 A Q a q б C б ▒ ┴ ╤ с ё
02    " 2 B R b r В Т в ▓ ┬ ╥ т Є
03    # 3 C S c s Г У г │ ├ ╙ у є
04    $ 4 D T d t Д Ф д ┤ ─ ╘ ф Ї
05    % 5 E U e u Е Х е ╡ ┼ ╒ х ї
06    & 6 F V f v Ж Ц ж ╢ ╞ ╓ ц Ў
07    ' 7 G W g w З Ч з ╖ ╟ ╫ ч ў
08    ( 8 H X h x И Ш и ╕ ╚ ╪ ш °
09    ) 9 I Y i y Й Щ й ╣ ╔ ┘ щ ∙
0A    * : J Z j z К Ъ к ║ ╩ ┌ ъ ·
0B    + ; K [ k { Л Ы л ╗ ╦ █ ы √
0C    , < L \ l | М Ь м ╝ ╠ ▄ ь №
0D    - = M ] m } Н Э н ╜ = ▌ э ¤
0E    . > N ^ n ~ О Ю о ╛ ╬ ▐ ю ■
0F    / ? O _ o ∆ П Я п ┐ ╧ ▀ я ▪
```

Code Page 874

Code Page 874.

The table shows the character map for Code Page 874 with columns 2 3 4 5 6 7 8 9 A B C D E F and rows 00 through 0F.

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00		0	@	P	`	p				฿	ก	ั	เ	๐
01	!	1	A	Q	a	q			ก	ห	ม	่	แ	๑
02	"	2	B	R	b	r			ข	ฬ	ย	า	โ	๒
03	#	3	C	S	c	s			ฃ	ฮ	ร	ำ	ใ	๓
04	$	4	D	T	d	t			ค	ฐ	ฤ	ิ	ไ	๔
05	%	5	E	U	e	u			ฅ	ฑ	ล	ี	ๅ	๕
06	&	6	F	V	f	v			ฆ	ฒ	ฦ	ึ	ๆ	๖
07	'	7	G	W	g	w			ง	ณ	ว	ื	็	๗
08	(	8	H	X	h	x			จ	ด	ศ	ุ	่	๘
09	)	9	I	Y	i	y			ฉ	ต	ษ	ู	้	๙
0A	*	:	J	Z	j	z			ช	ถ	ส	ฺ	๊	๚
0B	+	;	K	[	k	{			ซ	ท	ห		๋	๛
0C	,	<	L	\	l	|			ฌ	ธ	ฬ	์	์	฿
0D	-	=	M	]	m	}			ญ	น	อ		์	฿
0E	.	>	N	^	n	‾			ฎ	บ	ฮ	์	์	
0F	/	?	O	_	o	◌			ฏ	ป	ฯ	฿	๏	

Code Page 1252

```
Code Page 1252.

        2 3 4 5 6 7 8 9 A B C D E F

00      0 @ P ` p €     ° À Ð à ð
01    ! 1 A Q a q   ` ¡ ± Á Ñ á ñ
02    " 2 B R b r , ´ ¢ ² Â Ò â ò
03    # 3 C S c s ƒ " £ ³ Ã Ó ã ó
04    $ 4 D T d t „ " ¤ ´ Ä Ô ä ô
05    % 5 E U e u … · ¥ µ Å Õ å õ
06    & 6 F V f v † ¦ ¶ Æ Ö æ ö
07    ' 7 G W g w ‡ ˜ § · Ç × ç ÷
08    ( 8 H X h x ^ ¨ ¨ ¸ È Ø è ø
09    ) 9 I Y i y ‰ ™ © ¹ É Ù é ù
0A    * : J Z j z Š š ª º Ê Ú ê ú
0B    + ; K [ k { ‹ › « » Ë Û ë û
0C    , < L \ l | Œ œ ¬ ¼ Ì Ü ì ü
0D    - = M ] m } ½ Í Ý í ý
0E    . > N ^ n ˜ Ž ž ® ¾ Î Þ î þ
0F    / ? O _ o ~ Ÿ ¯ ¿ Ï ß ï ÿ
```

Code Page 1256

```
Code Page 1256

      2 3 4 5 6 7 8 9 A B C D E F

00    0 @ P ` p €  ل     °  ˜  ذ  à  ّ
01  ! 1 A Q a q پ  ‘  ،  ±  ء  ر  á  ْ
02  " 2 B R b r ‚  ’  ¢  ²  آ  ز  â  ٍ
03  # 3 C S c s ƒ  "  £  ³  أ  س  ء  ٌ
04  $ 4 D T d t „  "  ¤  ´  ؤ  ش  ن  ô
05  % 5 E U e u …  ·  ¥  µ  ﺇ  ص  ه  ٓ
06  & 6 F V f v †  –  ¦  ¶  ئ  ض  و  ٕ
07  ' 7 G W g w ‡  —  §  ·  ا  ط  ç  ÷
08  ( 8 H X h x ˆ  ک  ¨   ب  ظ  è  ٘
09  ) 9 I Y i y ‰  ™  ©  ۱  ة  ع  é  ù
0A  * : J Z j z Š  ڑ  ه  ª  ت  غ  ê  ·
0B  + ; K [ k { ‹  ›  «  »  ث  ـ  ë  û
0C  , < L \ l | Œ  œ  ¬  ¼  ج  ـ  ى  ü
0D  - = M ] m } گ   -  ½  ح  ف  ي  ·
0E  . > N ^ n ~ ژ   ®  ¾  خ  ق  î  ·
0F  / ? O _ o  ڈ  ں  ¯  ¿  د  ك  ï  ·
```

Code Page Katakana

```
Code Page KATAKANA.

      2 3 4 5 6 7 8 9 A B C D E F

00      0 @ P ` p _ ⊥   ─ タ ミ ニ メ
01    ! 1 A Q a q _ ⊤ ° ア チ ム ヒ 円
02    " 2 B R b r ■ ┤ 「 イ ツ メ ± 年
03    # 3 C S c s ■ ├ 」 ウ テ モ ┤ 月
04    $ 4 D T d t ■ _ 、 エ ト ャ ◣ 日
05    % 5 E U e u ■ ─ ・ オ ナ ユ ◤ 時
06    & 6 F V f v ■ │ ヲ カ ニ ヨ ◥ 分
07    ' 7 G W g w ■ │ ア キ ヌ ラ ◢ 秒
08    ( 8 H X h x │ ┌ イ ク ネ リ ♦ 〒
09    ) 9 I Y i y │ ┐ ウ ケ ノ ル ♥ 市
0A    * : J Z j z ▌ └ エ コ ハ レ ♦ 区
0B    + ; K [ k { ▐ ┘ オ サ ヒ ロ ♣ 町
0C    , < L \ l | █ ┌ ヤ シ フ ワ ● 村
0D    - = M ] m } █ \ ユ ス ヘ ン 0 人
0E    . > N ^ n ~ █ ＼ ヨ セ ホ ゛ / ⚘
0F    / ? O _ o △ ┼ ノ ッ ソ マ ゜ \
```

Code Page 932

Code page 932

```
20      ! " ♯ $ ‰ & ' ( ) * † , - . /
30    0 1 2 3 4 5 6 7 8 9 : ; < = > ?
40    @ A B C D E F G H I J K L M N O
50    P Q R S T U V W X Y Z [ ¥ ] ^ _
60    ` a b c d e f g h i j k l m n o
70    p q r s t u v w x y z { | }
80
90
A0        ｡ ｢ ｣ ､ ･ ｦ ｧ ｨ ｩ ｪ ｫ ｬ ｭ ｮ ｯ
B0    ｰ ｱ ｲ ｳ ｴ ｵ ｶ ｷ ｸ ｹ ｺ ｻ ｼ ｽ ｾ ｿ
C0    ﾀ ﾁ ﾂ ﾃ ﾄ ﾅ ﾆ ﾇ ﾈ ﾉ ﾊ ﾋ ﾌ ﾍ ﾎ ﾏ
D0    ﾐ ﾑ ﾒ ﾓ ﾔ ﾕ ﾖ ﾗ ﾘ ﾙ ﾚ ﾛ ﾜ ﾝ ﾞ ﾟ
E0
F0
```

Code Page 932-81

Code page 932-81

```
40    ― 、 。 ， ． ・ ： ； ？ ！ ゛ ゜ ´ ` ¨
50    ^ ‾ _ ヽ ヾ ゝ ゞ 〃 仝 々 〆 〇 ― ― ‐ ／ ＼ ～
60    ～ ‖ | … ‥ ' ' " " ( ) 〔 〕 [ ] { 
70    } 〈 〉 《 》 「 」 『 』 【 】 ＋ － ± ×
80    ÷ ＝ ≠ < > ≦ ≧ ∞ ∴ ♂ ♀ ° ′ ″ ℃ ¥
90    ＄ ¢ £ ％ ＃ ＆ ＊ ＠ § ☆ ★ ○ ● ◎ ◇ ◆
A0    □ ■ △ ▲ ▽ ▼ ※ 〒 → ← ↑ ↓ 〓
B0                                ∈ ∋ ⊆ ⊇ ⊂ ⊃ ∪ ∩
C0                                ∧ ∨ ¬ ⇒ ⇔ ∀ ∃
D0                                      ∠ ⊥ ⌒ ∂ ∇ ≡
E0    ≒ ≪ ≫ √ ∽ ∝ ∵ ∫ ∬
F0    Å ‰ ♯ ♭ ♪ † ‡ ¶                          ○
```

Code Page 932-82

```
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              ぁ
A0    あぃいぅうぇえぉおかがきぎくぐけ
B0    げこごさざしじすずせぜそぞただち
C0    ぢっつづてでとどなにぬねのはばぱ
D0    ひびぴふぶぷへべぺほぼぽまみむめ
E0    もゃやゅゆょよらりるれろゎわゐゑ
F0    をん
```

Code Page 932-83

```
Code page 932-83

40    ァアィイゥウェエォオカガキギクグ
50    ケゲコゴサザシジスズセゼソゾタダ
60    チヂッツヅ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    ムメモャヤュユョヨラリルレロヮワ
90    ヰヱヲンヴヵヶ                      A
A0    Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ
B0    Σ Τ Υ Φ Χ Ψ Ω                    α
C0    β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ
D0    σ τ υ φ χ ψ ω
E0
F0
```

Code Page 932-87

Code page 932-87

```
40  ①②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭⑮⑯
50  ⑰⑱⑲⑳ Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ Ⅷ Ⅸ Ⅹ     ′ ″
60  ㌔ ㌍ ㌣ ㌦ ㌘ ㌢ ㌟ ㌤ ㌜ ㌍ ㌕ ㌋ ㌏ ㌢ ㌶ ㍉ ㍊ ㍍ ㎜
70  cm km mm g kg cc m³           平成
80      ″ „ No. K.K. Tel ㊤ ㊥ ㊦ ㊧ ㊨ ㈱ ㈲ ㈹ 明治 大正 昭和
90  ≒ ≡ ∫ § Σ √ ⊥ ∠ ∟ ⊿ ∵ ∩ ∪
A0
B0
C0
D0
E0
F0
```

Code Page 932-84

Code page 932-84

```
40  А Б В Г Д Е Ё Ж З И Й К Л М Н О
50  П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю
60  Я
70  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 ы ь э
90  ю я                           ─
A0  │ ┌ ┐ ┘ └ ├ ┬ ┤ ┴ ┼ ─ │ ┌ ┐ ┘ └
B0  ├ ┬ ┤ ┴ ┼ ├ ┬ ┤ ┴ ┼ ├ ┬ ┤ ┴ ┼
C0
D0
E0
F0
```

Code Page 932-87

Code page 932-87

Code Page 932-88

Code page 932-88

Code Page 932-89

```
Code page  932-89

40  院陰隱韻吋右宇烏羽迂雨卯鵜窺丑碓
50  臼渦嘘唄欝蔚鰻姥厩浦瓜閏噂云運雲
60  荏餌叡営嬰影映曳栄永泳洩瑛盈穎頴
70  英衛詠鋭液疫益駅悦謁越閲榎厭円
80  園堰奄宴延怨掩援沿演炎焔煙燕猿縁
90  艶苑薗遠鉛鴛塩於汚甥凹央奥往応押
A0  旺横欧殴王翁襖鴬鴎黄岡沖荻億屋憶
B0  臆桶牡乙俺卸恩温穏音下化仮何伽価
C0  佳加可嘉夏嫁家寡科暇果架歌河火珂
D0  禍禾稼箇花苛茄荷華菓蝦課嘩貨迦過
E0  霞蚊俄峨我牙画臥芽蛾賀雅餓駕介会
F0  解回塊壊廻快怪悔恢懐戒拐改
```

Code Page 932-8A

```
Code page  932-8A

40  魁晦械海灰界皆絵芥蟹開階貝凱劾外
50  咳害崖慨概涯碍蓋街該鎧骸浬馨蛙垣
60  柿蛎鈎劃嚇各廓拡撹格核殻獲確穫覚
70  角赫較郭閣隔革学岳楽額顎掛笠樫
80  橿梶鰍潟割喝恰括活渇滑葛褐轄且鰹
90  叶椛樺鞄株兜竃蒲釜鎌噛鴨栢茅萱粥
A0  刈苅瓦乾侃冠寒刊勘勧巻喚堪姦完官
B0  寛干幹患感慣憾換敢柑桓棺款歓汗漢
C0  澗潅環甘監看竿管簡緩缶翰肝艦莞観
D0  諌貫還鑑間閑関陥韓館舘丸含岸巌玩
E0  癌眼岩翫贋雁頑顔願企伎危喜器基奇
F0  嬉寄岐希幾忌揮机旗既期棋棄
```

Code Page 932-8B

```
Code page  932-8B

40   機帰毅気汽畿祈季稀紀徽規記賁起軌
50   輝飢騎鬼亀偽儀妓宜戯技擬欺犠疑祇
60   義蟻誼議掬菊鞠吉吃喫桔橘詰砧杵黍
70   却客脚虐逆丘久仇休及吸宮弓急救
80   朽求汲泣灸球究窮笈級糾給旧牛去居
90   巨拒拠挙渠虚許距鋸漁郷魚亨享京供
A0   侠僑兇競共凶協匡卿叫喬境峡強彊怯
B0   恐恭挟教橋況狂狭矯胸脅興蕎郷鏡響
C0   饗驚仰凝尭暁業局曲極玉桐粁僅勤均
D0   巾錦斤欣欽琴禁禽筋緊芹菌衿襟謹近
E0   金吟銀九倶句区狗玖矩苦躯駆駈駒具
F0   愚虞喰空偶寓遇隅串櫛釧屑屈
```

Code Page 932-8C

```
Code page  932-8C

40   掘窟沓靴轡窪熊隈粂栗繰桑鍬勲君薫
50   訓群軍郡卦袈祁係傾刑兄啓圭珪型契
60   形径恵慶慧憩掲携敬景桂渓畦稽系経
70   継繋罫茎荊蛍計詣警軽頚鶏芸迎鯨
80   劇戟撃激隙桁傑欠決潔穴結血訣月件
90   倹倦健兼券剣喧圏堅嫌建憲懸拳捲検
A0   権牽犬献研硯絹県肩見謙賢軒遣鍵険
B0   顕験鹸元原厳幻弦減源玄現絃舷言諺
C0   限乎個古呼固姑孤己庫弧戸故枯湖狐
D0   糊袴股胡菰虎誇跨鈷雇顧鼓五互伍午
E0   呉吾娯後御悟梧檎瑚碁語誤護醐乞鯉
F0   交佼侯候倖光公功効勾厚口向
```

Code Page 932-8D

```
Code page 932-8B

40  機烖毅気汽畿祈季稀紀徽規記貴起軌
50  輝飢騎鬼亀偽儀妓宜戯技擬欺犠疑祇
60  義蟻誼議掬菊鞠吉吃喫桔橘詰砧杵黍
70  却客脚虐逆丘久仇休及吸宮弓急救
80  朽求汲泣灸球究窮笈級糾給旧牛去居
90  巨拒拠挙渠虚許距鋸漁禦魚亨享京供
A0  侠僑兇競共凶協匡卿叫喬境峡強彊怯
B0  恐恭挟教橋況狂狭矯胸脅興蕎郷鏡響
C0  饗驚仰凝尭暁業局曲極玉桐粁僅勤均
D0  巾錦斤欣欽琴禁禽筋緊芹菌衿襟謹近
E0  金吟銀九倶句区狗玖矩苦躯駆駈駒具
F0  愚虞喰空偶寓遇隅串櫛釧屑屈
```

Code Page 932-8C

```
Code page 932-8C

40  掘窟沓靴轡窪熊隈粂栗繰桑鍬勲君薫
50  訓群軍郡卦袈祁係傾刑兄啓圭珪型契
60  形径恵慶慧憩掲携敬景桂渓畦稽系経
70  継繋罫茎荊蛍計詣警軽頸鶏芸迎鯨
80  劇戟撃激隙桁傑欠決潔穴結血訣月件
90  倹倦健兼券剣喧圏堅嫌建憲懸拳捲検
A0  権牽犬献研硯絹県肩見謙賢軒遣鍵険
B0  顕験鹸元原厳幻弦減源玄現絃舷言諺
C0  限乎個古呼固姑孤己庫弧戸故枯湖狐
D0  糊袴股胡菰虎誇跨鈷雇顧鼓五互伍午
E0  呉吾娯後御悟梧檎瑚碁語誤護醐乞鯉
F0  交佼侯候倖光公功効勾厚口向
```

Code Page 932-8D

```
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構江洪浩
60  港溝甲皇硬稿糠紅紘絞綱耕考肯肱腔
70  膏航荒行衡講貢購郊酵鉱砿鋼閤降
80  項香高鴻剛劫号合壕拷濠豪轟麹克刻
90  告国穀酷鵠黒獄漉腰甑忽惚骨狛込此
A0  頃今困坤墾婚恨懇昏昆根梱混痕紺艮
B0  魂些佐叉唆嵯左差査沙瑳砂詐鎖裟坐
C0  座挫債催再最哉塞妻宰彩才採栽歳済
D0  災采犀砕砦祭斎細菜裁載際剤在材罪
E0  財冴坂阪堺榊肴咲崎埼碕鷺作削咋搾
F0  昨朔柵窄策索錯桜鮭笹匙冊刷
```

Code Page 932-8E

```
Code page 932-8E

40  察拶撮擦札殺薩雑皐鯖捌錆鮫皿晒三
50  傘参山惨撒散桟燦珊産算纂蚕讃賛酸
60  餐斬暫残仕仔伺使刺司史嗣四士始姉
70  姿子屍市師志思指支孜斯施旨枝止
80  死氏獅祉私糸紙紫肢脂至視詞詩試誌
90  諮資賜雌飼歯事似侍児字寺慈持時次
A0  滋治爾璽痔磁示而耳自蒔辞汐鹿式識
B0  鴫竺軸宍雫七叱執失嫉室悉湿漆疾質
C0  実蔀篠偲柴芝屡蕊縞舎写射捨赦斜煮
D0  社紗者謝車遮蛇邪借勺尺杓灼爵酌釈
E0  錫若寂弱惹主取守手朱殊狩珠種腫趣
F0  酒首儒受呪寿授樹綬需囚収周
```

Code Page 932-8F

Code page 932-8F

```
40   宗就州修愁拾洲秀秋終繡習臭舟蒐衆
50   襲讐蹴輯週酋酬集醜什住充十従戎柔
60   汁渋獣縦重銃叔夙宿淑祝縮粛塾熟出
70   術述俊峻春瞬竣舜駿准循旬楯殉淳
80   準潤盾純巡遵醇順処初所暑曙渚庶緒
90   署薯薯藷諸助叙女序徐恕鋤除傷償勝
A0   匠升召哨商唱嘗奨妾娼宵将小少尚庄
B0   床廠彰承抄招掌捷昇昌昭晶松梢樟樵
C0   沼消渉湘焼焦照症省硝礁祥称章笑粧
D0   紹肖菖蒋蕉衝裳訟証詔詳象賞醤鉦鍾
E0   鐘障鞘上丈丞乗冗剰城場壌嬢常情擾
F0   条杖浄状畳穣蒸譲醸錠嘱埴飾
```

Code Page 932-90

Code page 932-90

```
40   拭植殖燭織職色触食蝕辱尻伸信侵唇
50   娠寝審心慎振新晋森榛浸深申疹真神
60   秦紳臣芯薪親診身辛進針震人仁刃塵
70   壬尋甚尽腎訊迅陣靭笥諏須酢図厨
80   逗吹垂帥推水炊睡粋翠衰遂酔錐錘随
90   瑞髄崇嵩数枢趨雛据杉椙菅頗雀裾澄
A0   摺寸世瀬畝是凄制勢姓征性成政整星
B0   晴棲栖正清牲生盛精聖声製西誠誓請
C0   逝醒青静斉税脆隻席惜戚斥昔析石積
D0   籍績脊責赤跡蹟碩切拙接摂折設窃節
E0   説雪絶舌蝉仙先千占宣専尖川戦扇撰
F0   栓栴泉浅洗染潜煎煽旋穿箭線
```

Code Page 932-91

```
Code page 932-91

40  繊羨腺舛船薦詮賎践選遷銭銑閃鮮前
50  善漸然全禅繕膳糎噌塑岨措曾曽楚狙
60  疏疎礎祖租粗素組蘇訴阻遡鼠僧創双
70  叢倉喪壮奏爽宋層匝惣想捜掃挿掻
80  操早曹巣槍槽漕燥争痩相窓糟総綜聡
90  草荘葬蒼藻装走送遭鎗霜騒像増憎臓
A0  蔵贈造促側則即息捉束測足速俗属賊
B0  族続卒袖其揃存孫尊損村遜他多太汰
C0  詑唾堕妥惰打柁舵楕陀駄騨体堆対耐
D0  岱帯待怠態戴替泰滞胎腿苔袋貸退逮
E0  隊黛鯛代台大第醍題鷹滝瀧卓啄宅托
F0  択拓沢濯琢託鐸濁諾茸凧蛸只
```

Code Page 932-92

```
Code page 932-92

40  叩但達辰奪脱巽竪辿棚谷狸鱈樽誰丹
50  単嘆坦担探旦歎淡湛炭短端簞綻耽胆
60  蛋誕鍛団壇弾断暖檀段男談値知地弛
70  恥智池痴稚置致蜘遅馳築畜竹筑蓄
80  逐秩窒茶嫡着中仲宙忠抽昼柱注虫衷
90  註酎鋳駐樗瀦猪苧著貯丁兆凋喋寵帖
A0  帳庁弔張彫徴懲挑暢朝潮牒町眺聴脹
B0  腸蝶調諜超跳銚長頂鳥勅捗直朕沈珍
C0  賃鎮陳津墜椎槌追鎚痛通塚栂掴槻佃
D0  漬柘辻蔦綴鍔椿潰坪壷嬬紬爪吊釣鶴
E0  亭低停偵剃貞呈堤定帝底庭廷弟悌抵
F0  挺提梯汀碇禎程締艇訂諦蹄逓
```

Code Page 932-93

Code page 932-93

```
40  邸鄭釘鼎泥摘擺敵滴的笛適鏑溺哲徹
50  撤轍迭鉄典填天展店添纏甜貼転顛点
60  伝殿澱田電兎吐堵塗妬屠徒斗杜渡登
70  菟賭途都鍍砥砺努度土奴怒倒党冬
80  凍刀唐塔塘套宕島嶋悼投搭東桃梼棟
90  盗淘湯涛灯燈当痘裃等答簡糖統到董
A0  蕩藤討騰豆踏逃透鐙陶頭騰闘働動同
B0  堂導憧撞洞瞳童胴葡道銅峠鴇匿得徳
C0  涜特督禿篤毒独読栃橡凸突椴届鳶苫
D0  寅酉瀞噸屯惇敦沌豚遁頓呑曇鈍奈那
E0  内乍凪薙謎灘捺鍋楢馴縄畷南楠軟難
F0  汝二尼弐迩匂賑肉虹廿日乳入
```

Code Page 932-94

Code page 932-94

```
40  如尿韮任妊忍認濡禰祢寧葱猫熱年念
50  捻撚燃粘乃廼之埜嚢悩濃納能脳膿農
60  覗蚤巴把播覇杷波派琶破婆罵芭馬俳
70  廃拝排敗杯盃牌背肺輩配倍培媒梅
80  楳煤狽買売賠陪這蝿秤矧萩伯剥博拍
90  柏泊白箔粕舶薄迫曝漠爆縛莫駁麦函
A0  箱硲箸肇筈櫨幡肌畑畠八鉢溌発醗髪
B0  伐罰抜筏閥鳩噺塙蛤隼伴判半反叛帆
C0  搬斑板氾汎版犯班畔繁般藩販範釆煩
D0  頒飯挽晩番盤磐蕃蛮匪卑否妃庇彼悲
E0  扉批披斐比泌疲皮碑秘緋罷肥被誹費
F0  避非飛樋簸備尾微枇毘琵眉美
```

Code Page 932-95

Code page 932-95

```
40    鼻柊稗匹疋髭彦膝菱肘弼必罷簸逼桧
50    姫媛紐百謬俵彪標氷漂瓢票表評豹廟
60    描病秒苗錨鋲蒜蛭鰭品彬斌浜瀕貧賓
70    頻敏瓶不付埠夫婦富冨布府怖扶敷
80    斧普浮父符腐膚芙譜負賦赴阜附侮撫
90    武舞葡蕪部封楓風葺蕗伏副復幅服福
A0    腹複覆淵弗払沸仏物鮒分吻噴墳憤扮
B0    焚奮粉糞紛雰文聞丙併兵塀幣平弊柄
C0    並蔽閉陛米頁僻壁癖碧別瞥蔑箆偏変
D0    片篇編辺返遍便勉娩弁鞭保舗鋪圃捕
E0    歩甫補輔穂募墓慕戊暮母簿菩倣俸包
F0    呆報奉宝峰峯崩庖抱捧放方朋
```

Code Page 932-96

Code page 932-96

```
40    法泡烹砲縫胞芳萌蓬蜂褒訪豊邦鋒飽
50    鳳鵬乏亡傍剖坊妨帽忘忙房暴望某棒
60    冒紡肪膨謀貌貿鉾防吠頬北僕卜墨撲
70    朴牧睦穆釦勃没殆堀幌奔本翻凡盆
80    摩磨魔麻埋妹昧枚毎哩槙幕膜枕鮪柾
90    鱒桝亦俣又抹末沫迄侭繭麿万慢満漫
A0    蔓味未魅巳箕岬密蜜湊蓑稔脈妙粍民
B0    眠務夢無牟矛霧鵡椋婿娘冥名命明盟
C0    迷銘鳴姪牝滅免棉綿緬面麺摸模茂妄
D0    孟毛猛盲網耗蒙儲木黙目杢勿餅尤戻
E0    籾貰問悶紋門匁也冶夜爺耶野弥矢厄
F0    役約薬訳躍靖柳薮鑓愉愈油癒
```

Code Page 932-97

```
Code page 932-97

40   諭輪唯佑優勇友宥幽悠憂揖有柚湧涌
50   猶猷由祐裕誘遊邑郵雄融夕予余与誉
60   與預傭幼妖容庸揚摇擁曜楊様洋溶熔
70   用窯羊燿葉蓉要謡踊遥陽養慾抑欲
80   沃浴翌翼淀羅螺裸来莱頼雷洛絡落酪
90   乱卵嵐欄濫藍蘭覧利吏履李梨理璃痢
A0   裏裡里離陸律率立葎掠略劉流溜琉留
B0   硫粒隆竜龍侶慮旅虜了亮僚両凌寮料
C0   梁涼猟療瞭稜糧良諒遼量陵領力緑倫
D0   厘林淋燐琳臨輪隣鱗麟瑠塁涙累類令
E0   伶例冷励嶺怜玲礼苓鈴隷零霊麗齢暦
F0   歴列劣烈裂廉恋憐漣煉簾練聯
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40   蓮連錬呂魯櫓炉賂路露労婁廊弄朗楼
50   榔浪漏牢狼篭老聾蝋郎六麓禄肋録論
60   倭和話歪賄脇惑枠鷲亙亘鰐詫藁蕨椀
70   湾碗腕
80
90                                                           式
A0   丐丕个丱丶丼丿乂乖乘亂亅豫亊舒弍
B0   于亞亟亠亢亰亳亶从仍仄仆仂仗仞仭
C0   仟价伉佚估佛佝佗佇佶侈侏侘佻佩佰
D0   侑佯來侖儘俔俟俎俘俛俑俚俐俤俥倚
E0   倨倔倪倥倅伜俶倡倩倬俾俯們倆偃假
F0   會偕偐偈做偖偬偸傀傚傅傈傴傲
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40	僉僊傳僂僖僞僥僭僣僮價僵儉儁儂儖
50	儕儔儚儡儺儷儼儻儿兀兒兌兔兢競兩
60	俞兮冀冂同册冉冏寅冑冕冖冤冠冢冩
70	冪冫决冱冲冰况冽凅凉凛几處凩凭
80	凰凵凾刄刋刔刎刧刪刮剠剎剏到剋剌
90	剞剔剪剴剩剳剿剽剱劍劌劔劒劈劑辨辧
A0	劬劭劼劵勁勍勗勞勣勦飭勠勳勵勸勹
B0	匆匈甸匍匐匏匕匚匣匯匱匱匚區卆卅
C0	世卉卍凖卞卩厄夗卻卷厂厖厠厦厥厮
D0	厰厶參簒雙叟曼燮叮叨叭叺吁吽呀听
E0	吭吼吮吶吩吝呎咏呵咎呟呱呷呰咒呻
F0	咀呶咄咐咆哇咢咸咥咬哄哈咨

Code Page 932-9A

Code page 932-9A

40	咫哂咤咾咼哘哥哦唏唔哽哮哭哺哢唸
50	唏啝喸售啜啅啖啗唹哦喚啞啻啾喙喀
60	咯啾喘喞單啼喃喩喇喨嗚嗅嗟嗄嗜嗤
70	嗔嘔嗷嘖嗾嗽嘛嘩噎噐營嘴嘶嘲嘸
80	噫噤嘮噪嗥噬噪噫噬嘰嚠嚆嚀嚊嚀嚏
90	嚔嚏嚥嚮嚶嚴囂嚼囗囮囶囷囹圀囿圄
A0	國圉圈國圍菅圜圦圷圸坎圻址坏坩垈
B0	坫坡坿垉垓垠垳垤垪垰埃埆埔埒埓堊
C0	埖埣堋堙堝塲堡塢塋塰毀塒堽塹墅墹
D0	墟墫墺壞墻墸墮壅壓壑壗壙壘壥壜壤
E0	壟壯壺壹壻壺壽夂夊敻夛梦夥夬夭夲
F0	夸夾竒奕奐奎奚奘奢奠奧奬奩

Code Page 932-9B

```
Code page  932-9B

40   奸妁妝倭佞妣妲姆姨姜妍姙姚娥娟娑
50   娜娉娚婀婬婉娵娶婢婪媚媢媟嫋嫂媽
60   媤�嫦媄媺婳嫻嬌嬋嬰嬲嫐嬪嬤鼻嬾孃
70   孅孀子孕孚孛孥孩孰孳孵學孝孺宀
80   它宦宸宽寇崔寠寐寤寶寢寞寥寫寰寶
90   寶尅將專對尓尠尢尨尸尹屁屆屎屐屐
A0   屏屛屬屮山屶屹岌岑岔妛岫岻岶岼岷
B0   岾峅岾峙峩峽峺峭嶌峪峴峺崗嵜崟崛
C0   崑崔崢崚崙崘崟凸嵳嵋兎嵳嶂嵴嵂嵴
D0   嶝嶬嶮嶦嶷嶹嶼嶮嶶嵼巐帋巛巫已
E0   巵帚帚帙帑帛帶帷帳帷帳幀帽帼帷帷幄幢
F0   幤幇干并幺麼广庠厠厩廎廏廐
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Code Page 932-9C

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Code page  932-9C

40   廖廣廝廚廛廢廡廨廩廬廱廳廰廴廸廾
50   弃弉彝彞弋弒弖弩弭弸弻弾彁彎弯彑
60   彖彗彙彡彭彳彷彿徃徊很徑徇從徙
70   徘徠徨徭徼忖忻忤忸忱忝悳忰怡怊
80   怙怐怩怎怱恠怕怫怦快怺恚恁恪恛怐
90   恊恆恍恣恃恤恂恬恫恙悁悍悝悃悚悄
A0   悛悧悷悃悁悪悮悳悵悴悷悽惆惓惔
B0   惘惆惷惶惷愀愍惴惺愃愡惻惱愆惶惷
C0   愍愧愾愼愰愨愴愡愬愱愰惨愬惭慂
D0   愽愺愯愽慟慍愷愷惷愾愬愫愫愬愺
E0   愽憮憊憮懋憒愝愴惷愾愬愬悰惼愺
F0   懺懴憑懽懼慵戀戈戉成戍戔戞戛
```

Code Page 932-9D

Code page 932-9D

```
40  憂戡截戮戰戲戳扁扎扞扣扛扠扢扤扣
50  抉找抒抓抖拔抉抔拗拑抻摰拿拆擔拈
60  拜拌拊拂拇抛拉挌拮拱挧挂挈抾挌捐
70  挾捍搜捏袚掎掀撤捶掣掏掉捏捯捫
80  捩掾揩揀揆揣揉插揶揄搖搴搆搓搦搶
90  攝搗搰搏摧摯摶摎攬撕撓撥撩撈撼據
A0  擒擅擇撻擘擂擱舉擧擠擡攜攢擥擭
B0  擴攔攘攀擽攤攢攪攣攫攴攵攷收攸
C0  敗效敖敕敍敘敝敝敲敫斂斃變斗斛斫
D0  斷旆旃旁旄旌旒旛旙无旡旱杲昊昃旻
E0  杳昵昶昴昜晏晄晉晁晰晝晤晧晨晟晰
F0  晰暃暈暎暉暄暘暝曁暹曉暾曣
```

Code Page 932-9E

Code page 932-9E

```
40  曚瞭曖曛曠昿曦曩曰曵曷朏朖朞朦朧
50  霸朮束朶杁朸朷杆杞杠杙杣朸枉杰杺
60  杼枌枋枅枡枅枷柯枴柬枳柩枸柤柞
70  柝柢柮枹柎柆柧檜枲框栩桀栲桎
80  梳栫桙档梗桿梟梏梭椛條梛梃橋栗梍
90  梵椢桴椏梍桾棊槞棘楓楙楜椌椚椡
A0  棧椶樓椒椄棗梽椥棹棠椪椡棶椡棁梬
B0  椪榲楷棋楸椵楔椽楮椹椑橡梣椰楡楞
C0  楝楹楪楡榮槐橙槁槝楯榾椹椋椏椴樂
D0  椏椻椌椈榜榕榴椴椰樂椿椹橖棐椹椹
E0  樅椵榧椵椵榑樊樒椵椵椵橄椵橲椵楅
F0  橲椵橙橦橈橫橋椵椵椵橄椵橲
```

Code Page 932-9F

```
Code page 932-9F

40    樊虁檻櫃榴�檳檸榉槭櫟槤檻櫺櫻欅
50    櫺欄欒欖欝欟欵欷盗欹飲歇歃歉歐歓
60    歔歛歞歡歸歹歿殀殄殃殍殘殕殞殤殫
70    殯殲殱殳殷殼殿毆毋毓毟毬毫毳毯
80    麾氈氓气氛氤氣汞汕汢汪沂沍沚沁沛
90    汾汨汳沒沐泄決泓沽泗泅泝沮沱沾沺
A0    泛泯泙泪洟衍洶洫洽洸洙洵洳洒洌浣
B0    涓浤浚浹涎涕濤涅淹渕淵涵淇淦涸
C0    淆淬淞淌淨淒淅淺淙淤淕淪淮渭渮湍
D0    渙湲湟渾渣湫湶湍湍淳湃渺湎渤滿渝
E0    游溂溪溘滉溷滓溽溯滄溲溷滕滔溥滂
F0    溟潁漑灌灑澗滾漿滲漱滯漲滌
```

Code Page 932-E0

```
Code page 932-E0

40    漾漓滷澆濂滸澁澀濤潜潛潭澂潼潘澎
50    澑濂潦澳潺澡澤潑濆澪濟濕濬瀾澤濱
60    濮濛濤濬濺瀑濤瀏濾濿瀚瀦澀瀘瀟瀾
70    瀾瀲瀾瀰炙炒炯烱炬炸炳炮烟烋烝
80    烙焉烽焜焙煥熙煕煦熆煌煖煬熙燻熄
90    熕熨熬燗燾熾燒燉燔燎熳熸燦燭爆
A0    燬爍爐爛爨爭爬爰爲爻爼爿牀牆牋牘
B0    牴犇犁犁犒犖犢犧犹犲狃狆狄狎狒
C0    狢狠狡狹狷倏猗猊猜猖猝猴猯猩猥猾
D0    奨獏獣獗獪獨獰獸獵戯獺珈玳珎玻珀
E0    珥珮珞瑠琅瑯琥珸珤琺瑕琿瑟璢琱瑜
F0    瑩瑰瑣瑪瑤瑢瑋璞璧瓊瓏瓔珱
```

Code Page 932-E1

Code page 932-E1

```
40  瓠瓣瓩瓸瓮瓲瓰瓱瓸瓷甄甃甌甎甍甕甓
50  甕甕甞甦甬甼甾畊畉畆畛畚畩畤畤畱
60  畫畭畸當疆疇疇疊疉畾疔疚疝疥疣痂
70  疳疳疵疽疸疼疱痃痃痤痧痏痂痾瘂
80  痼痊痰痺痲痳痿痾痾痻瘍瘉瘧瘠瘡瘧瘤瘴
90  瘰瘻痊瘺瘯瘰瘍瘼瘴癇癈癆癘癜癘癆癇
A0  癸癸發皀皃皈皋皎皖皓皙皙皰皰皸皹
B0  皺盂盍盖盒盞盡盥盧盪蘯盻眈眇眄眩
C0  眤眞眥眦眛眷眸睇睚眥睫睛睥睿睾睹
D0  睿瞅瞇瞑瞋瞇瞑瞹瞿瞼瞿瞻瞼矇矍矚矚
E0  矜矣矮矼砌砒礦砠礦硅碎硴碆硼碚碌
F0  碣碵碪碯礎碆碟礫碾碼磅磊磬
```

Code Page 932-E2

Code page 932-E2

```
40  磧磚磽磴磹磽礦磯礬礫祀祠祇祟祚祕
50  祓祺祿禊禝禧禪禪禮禳禹禺秉秕秧秬
60  秡秣稈稍稘稙稠稟稟稱稻稾稷穃穗稱
70  穡穢穩稉穰窩窄窈窗窕窖窘窩竈窰
80  竄竅竅窿竇竈竊竍竏竕竓站竚竝竡竢
90  竦竭竭竍竻笂笆笳笘笙笞笵笨笑筺筺
A0  笄笏笋笙笊筵筥笈筧笮笩筬筲筱筵箍
B0  箍箜箏篏篆箒箏籠箇箋篌篏篏篏篊箴篩
C0  簣簧箆簞籠簣籏簻篁篷簑簀簫簫簣簪簪
D0  簣簽簓簽籀籃籔簾籀籐籐籟籤籠藺籬
E0  粃秕粐粤粭粢粡粞粨粳糵粱粮粹粽粃
F0  糅糂糝糘糜糢糱糯糲糴糴糸紆
```

Code Page 932-E3

Code page 932-E3

Code Page 932-E4

Code page 932-E4

Code Page 932-E5

Code page 932-E5

40	蕼薽蔬蕕薀薤薔薑蒯蔧蕭薔薛藪薇薜
50	蕷蕾薐薢薺蔵薀薨薫藝藥薮藕薷藁蘋
60	蕦蕳蘆蘢薜薿藱庀厊虔號虓虯蚓蚣蚩
70	蚪蚋蚌蚶蚯蛄蛆蚰蛉蜻蚫蚷蛅蝍蚰
80	蛟蛛蛑蜓蚰蜈蜀蠆蛻蛱蜉蚿蛹蜊蝪蜿
90	蜷蜻蜥蜩螫蝙蜩蝸蟀蝎蝴蝗蟲蝥蝙蝚
A0	蝣蝩蝱螢蜺蝴蟄蟋蟊蟀蟶蟒蟄螫螳蟇
B0	蟆蟶蛻蟲蟠蟮蟥蟪蟶蟽蟶蟺蟶蟶矗
C0	蠢蠡蠹蠻蠶變衄衂衒衙衛衢衫袁衾衰
D0	袒衵袗衲袂衫袓袮袍袤袞袿袱袪
E0	袷裔裘裙裝裹裓裼裨襖襤襌褊褓褻
F0	褞褥褪襯襪褻褻褶襤襌褝襠襞

Code Page 932-E6

Code page 932-E6

40	襦襤襯襪襯襴襷襾覃覈覊覓覘覡親覦
50	覯覲觀觖覽覿觀觚觜觝觧觴觸訃訖訐
60	訌訛訝訥訶詁詛詒詆詈詼詭訴詢誅誂
70	誄誨誠誑誥誦誚諠諄諍謡誕諫諳諧
80	諤諟譛諠譚諷諞諛詗誊證證謖謐謗謠
90	謳鞫謦謫謼謨譁譌譏譖譓證譖譚譩譟
A0	譬譯譴譽讀讌讎讓讖讙讚谺豁谿豊
B0	豌豎豐豕豢豬豸豺貂貉貅貊貍貌貔豼
C0	貘戝貭貪貽貲貳貳貶賈賁賤賣賚賽賺
D0	賻贄贅贊贇贏贍贐齎贓赽赬贔贖赧赭走
E0	赳趁趙跂趾趺跏跚跖跌跛跋跪跫跟跣
F0	跼踈跟踉踝踞踐跿踔踟踠踡踐

Code Page 932-E7

Code Page 932-E8

Code Page 932-E9

Code page 932-E9

Code Page 932-EA

Code page 932-EA

Code Page 932-ED

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Code page 932-ED

40    纘騑鎄銈䡄俉炻昱楮鋠舜彌｜乞任公
50    伃俎伈侒侊徇伡俍俠健俿倞倅偰偅儘
60    倜倣兊兏冝冾凬刕刉劦勀勖勾匀匨邵
70    厓厤伋變咜咮咩唭喆塦坥垬埃埇塔
80    塚增墲妛麥奿奭奯妤妹孖寀寍寘寬奈
90    岦崃峵崧嵓崎嵃嵞嵶嶹巐弡弴彧德恣
A0    愆悅悊悕惐惼惲愡愷愰憘或抦揵搋搗
B0    擎敎昀昕昂昉昮昞昤晗晙晴暫晳曻
C0    暲曧㬢胧朗杦朸桇柀柳桃桙桋楨橪榘
D0    楢樀橫檪橆櫔櫬毖沉沔沟泋泚洄涇
E0    浯淲淕淏淸淲渹淊湜渧湠溿澈漸濱澁
F0    瀟瀨炅炫焑焲煜煆煇熈爗爀犰
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Code Page 932-EE

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Code page 932-EE

40    狺獯猪獷珣珉珖珣琲琇珵琦琪瑝琮瑢
50    璉璟瓶畯皂皜皞皛皦益皖矴砡硎硤硫
60    硴礼神祥禔福禎竝竤靖竫箋精絅絘絣
70    綠緒繪緤羨羽茁荢莀菇華蒿菴藝蕙
80    蕫薀薰蘬虵蟎裵訒訷詾誧誾諟諸諶譓
90    諙贈賴贒赶赳軏迆逸達郞都鄕鄧釚釗
A0    釞釭鈥鈶鈶鈆鈴鈊鈺鉀鉮銈鉎鉑鉝鍋
B0    銑鉞鉸鋧鋗鋙鋐鋕鋠銂鋿鍇鍚鍆鍊
C0    鍢鍒鍈鍰鍗鍿鎮鏰鏤鏸鑭鏧閒隯隝隔
D0    隯隍靏霿霼霎靑靗顬顃飯飼餒館駻驎
E0    髙髜髣鬽魵魲鮇鮠鮺鯏鴸鶴鶹黑      i
F0     ii iii iv v vi vii viii ix x ⌐ ¦ ▼ ▼▼
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Code Page 932-FA

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40	i ii iii iv v vi vii viii ix x I II III IV V VI
50	VII VIII IX X ¦ ▼ ▼▼ ㈱ No.Tel ‥ 纊褜鍈銈
60	蓜俉炻昱棈鋹曻彅丨仡仼伀伃伹佖侒
70	侊侚侔俍偀倢俿倞偆偰偂傔僴僘兊
80	兤冝冾凅凡刕劜劦勀勛匀匇匤卲厓厲叝
90	夑奕咜咊咩哿喆坙坥垬埈埇塚增墲夋
A0	奓奛奝奣妤妺孖寀甯寘寬尞岦岺峵崧嵓
B0	﨑嵂崹嵭嶸嶹巐弡弴彧德忞恝悅悅愠
C0	惕愔惖悊惞惈惂惎或戩抦揵摿撝擎敎昀昕
D0	昂昉昮昞昶晗晙晴晳暙暠暲暿曺朎朗
E0	朗枅桒柹栁桄棏栟楨榉榘槢橫橆
F0	橳橾櫢櫤毖氿汜沆汯泚洄涇浯

Code Page 932-FB

Code page 932-FB

40	涖涬淏淸淲淼渹湜渧渼溿澈澵濵瀅瀇瀨
50	瀨炅炫焏焄煜煆煇凞燁燾犱犾猤猪獷
60	珣琪琩珊琸琭琱琤琿瑂瑭璉瑧瓼畯
70	皂皜皞皛皦益皛盍磰畫磤磹礼神
80	祥禔福禛竑竧靖竫箞精絈絽綷綠緒繒
90	罇羨羽茁荢荿菇菶葈蒴蕾薰蘒
A0	蚩蛺襃諷諤譁譧譒諸諶譓讙賰賴贒
B0	赶赳軏逸遧郞都鄕鄧釚釗釞釭釮釤釥
C0	釻釻鈆鈐鈊鈺鈼鉀鈴鉍鉬鉌鉖鉤鉤鉵
D0	鉶銧鉷銶銭釺鋋錡鋆錪錋鋳鋹錂錤鍁
E0	錥鍆鎴鎁鎹鏆鑧鎸閒隆隝隝隝廮靈霳
F0	霻霻靑靕顗顥飯飼餧館馞驎高

Code Page 932-FC

```
Code  page  932-FC

40    高昇鮒分魚戸鮏鮏鮭老鮫鮟煖鵰卓鳥鷂鳥鶴鳥鶹鳥黑
50
60
70
80
90
A0
B0
C0
D0
E0
F0
```

Code Page 936 Simple Chinese

Code Page A440-A4FF

```
A440 - A4FF

40
50
60
70
80
90
A0    ああいいううええおおかがきぎく
B0    ぐけげこごきぎしじすずせぜそぞた
C0    だちぢっつづてでとどなにぬねのは
D0    ばばひぴびふぶぶへべへほぼぼまみ
E0    むめもゃやゅゆょよらりるれろゎわ
F0    ゐゑをん
```

Code Page A140-A1FF

```
A140 - A1FF

40
50
60
70
80
90
A0      、 。 ・ ‐ ˇ ¨ 〃 仝 — 〜 ‖ … ''
B0   "" 〔〕 〈〉 《》「」『』【】 【】
C0   ±×÷∶ ∧∨ΣΠ∪∩∈∷√⊥∥∠
D0   ⌒⊙∫∮ ≡≌≈∽∝≠≮≯≤≥∞∵
E0   ∴♂♀° ′ ″ ℃ $ ○ ¢ £ ‰ § № ☆ ★
F0   ○●◐◇◆□■△▲※→←↑↓ ▬
```

Code Page A540-A5FF

```
A540 - A5FF

40
50
60
70
80
90
A0      ァ ア ィ イ ゥ ウ ェ エ ォ オ カ ガ キ ギ ク
B0      グ ケ ゲ コ ゴ サ ザ シ ジ ス ズ セ ゼ ソ ゾ タ
C0      ダ チ ヂ ッ ツ ヅ テ デ ト ド ナ ニ ヌ ネ ノ ハ
D0      バ パ ヒ ビ ピ フ ブ プ ヘ ベ ペ ホ ボ ポ マ ミ
E0      ム メ モ ャ ヤ ュ ユ ョ ヨ ラ リ ル レ ロ ワ ヮ
F0      ヰ ヱ ヲ ン ヴ ヵ ヶ
```

Code Page A240-A2FF

```
A240 - A2FF

40
50
60
70
80
90
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)(14)(15)(16)(17)(18)(19)(20)①②③④⑤⑥⑦
E0   ⑧⑨⑩      (一)(二)(三)(四)(五)(六)(七)(八)(九)(十)
F0      I  II  III  IV  V  VI  VII  VIII  IX  X  XI  XII
```

Code Page A640-A6FF

```
A640 - A6FF

40
50
60
70
80
90
A0      A  B  Γ  Δ  E  Z  H  Θ  I  K  Λ  M  N  Ξ  O
B0   Π  P  Σ  T  Υ  Φ  X  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
F0
```

Code Page A340-A3FF

```
A340 - A3FF

40
50
60
70
80
90
A0    ! " # ¥ % & '  ( ) ✳ + , - . ∕
B0    0 1 2 3 4 5 6 7 8 9 : ; < = > ?
C0    @ A B C D E F G H I J K L M N O
D0    P Q R S T U V W X Y Z [ \ ] ^ _
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 { | }
```

Code Page A740-A7FF

```
A740 - A7FF

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 Х Ф Ц Ч Ш Щ Ъ Ы Ь 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 ы ь э
F0    ю я
```

Code Page A840-A8FF

```
A840 - A8FF

40
50
60
70
80
90
AO      ã á ã ã ẽ é ẽ ẽ í í í ĩ õ õ õ
BO    ò ũ ú ŭ ù õ ú ŭ ū e o     ń ñ
CO    g           ㄅ ㄆ ㄇ ㄈ ㄉ ㄊ ㄋ ㄌ ㄍ ㄎ ㄏ
DO    ㄐ ㄑ ㄒ ㄓ ㄔ ㄕ ㄖ ㄗ ㄘ ㄙ ㄚ ㄛ ㄜ ㄝ ㄞ ㄟ
EO    ㄠ ㄡ ㄢ ㄣ ㄤ ㄥ ㄦ ㄧ ㄨ ㄩ
FO
```

Code Page AC40-ACFF

```
AC40 - ACFF

40
50
60
70
80
90
AO
BO
CO
DO
EO
FO
```

Code Page A940-A9FF

```
A940 - A9FF

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

Code Page AD40-ADFF

```
AD40 - ADFF

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

Code Page AA40-AAFF

```
AA40 - AAFF

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

Code Page AE40-AEFF

```
AE40 - AEFF

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

Code Page AB40-ABFF

```
AB40 - ABFF

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

Code Page AF40-AFFF

```
AF40 - AFFF

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

Code Page B040-B0FF

```
B040 - B0FF

40
50
60
70
80
90
A0      啊阿埃挨哎唉哀皑癌蔼矮艾碍爱隘
B0      鞍氨安俺按暗岸胺案肮昂盎凹敖熬翱
C0      袄傲奥懊澳芭捌扒叭吧笆八疤巴拔跋
D0      靶把耙坝霸罢爸白柏百摆佰败拜稗斑
E0      班搬扳般颁板版扮拌伴瓣半办绊邦帮
F0      梆榜膀绑棒磅蚌镑傍谤苞胞包褒剥
```

Code Page B440-B4FF

```
B440 - B4FF

40
50
60
70
80
90
A0      础储矗搐触处揣川穿椽传船喘串疮
B0      窗幢床闯创吹炊捶锤垂春椿醇唇淳纯
C0      蠢戳绰疵茨磁雌辞慈瓷词此刺赐次聪
D0      葱囱匆从丛凑粗醋簇促蹿篡窜摧崔催
E0      脆瘁粹淬翠村存寸磋撮搓措挫错搭达
F0      答瘩打大呆歹傣戴带殆代贷袋待逮
```

Code Page B140-B1FF

```
B140 - B1FF

40
50
60
70
80
90
A0    薄雹保堡饱宝抱报暴豹鲍爆杯碑悲
B0  卑北辈背贝钡倍狈备惫焙被奔苯本笨
C0  崩绷甭泵蹦迸逼鼻比鄙笔彼碧蓖蔽毕
D0  毙毖币庇痹闭敝弊必辟壁臂避陛鞭边
E0  编贬扁便变卞辨辩辫遍标彪膘表鳖憋
F0  别瘪彬斌濒滨宾摈兵冰柄丙秉饼炳
```

Code Page B540-B5FF

```
B540 - B5FF

40
50
60
70
80
90
A0    怠耽担丹单郸掸胆旦氮但惮淡诞弹
B0  蛋当挡党档挡刀捣蹈倒岛祷导到稻悼
C0  道盗德得的蹬灯登等瞪凳邓堤低滴迪
D0  敌笛狄涤翟嫡抵底地蒂第帝弟递缔颠
E0  掂滇碘点典靛垫电佃甸店惦奠淀殿碘
F0  叼雕凋刁掉吊钓调跌爹碟蝶迭谍叠
```

Code Page B240-B2FF

```
B240 - B2FF

40
50
60
70
80
90
A0      病并玻菠播拨钵波博勃搏铂箔伯帛
B0      舶脖膊渤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蔡餐参蚕
D0      残惭惨灿苍舱仓沧藏操糙槽曹草厕策
E0      侧册测层蹭插叉茬茶查碴搽察岔差诧
F0      拆柴豺搀掺蝉馋谗缠铲产阐颤昌猖
```

Code Page B640-B6FF

```
B640 - B6FF

40
50
60
70
80
90
A0      丁盯叮钉顶鼎锭定订丢东冬董懂动
B0      栋侗恫冻洞兜抖斗陡豆逗痘都督毒犊
C0      独读堵睹赌杜镀肚度渡妒端短锻段断
D0      缎堆兑队对墩吨蹲敦顿囤钝盾遁掇哆
E0      多夺垛躲朵跺舵剁惰堕蛾峨鹅俄额讹
F0      娥恶厄扼遏鄂饿恩而儿耳尔饵洱二
```

Code Page B340-B3FF

```
B340 - B3FF

40
50
60
70
80
90
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彻澈郴臣辰尘晨
C0   忱沉陈趁衬撑称城橙成呈乘程惩澄诚
D0   承逞骋秤吃痴持匙池迟弛驰耻齿侈尺
E0   赤翅斥炽充冲虫崇宠抽酬畴踌稠愁筹
F0   仇绸瞅丑臭初出橱厨蹰锄雏滁除楚
```

Code Page B740-B7FF

```
B740 - B7FF

40
50
60
70
80
90
A0      贰发罚筏伐乏阀法珐藩帆番翻樊矾
B0   钒繁凡烦反返范贩犯饭泛坊芳方肪房
C0   防妨仿访纺放菲非啡飞肥匪诽吠肺废
D0   沸费芬酚吩氛分纷坟焚汾粉奋份忿愤
E0   粪丰封枫蜂峰锋风疯烽逢冯缝讽奉凤
F0   佛否夫敷肤孵扶拂辐幅氟符伏俘服
```

Code Page B840-B8FF

```
B840 - B8FF

40
50
60
70
80
90
A0      浮涪福袱弗甫抚辅俯釜斧脯腑府腐
B0   赴副覆赋复傅付阜父腹负富讣附妇缚
C0   咐噶嘎该改概钙盖溉干甘杆柑竿肝赶
D0   感秆敢赣冈刚钢缸肛纲岗港杠篙皋高
E0   膏羔糕搞镐稿告哥歌搁戈鸽胳疙割革
F0   葛格蛤阁隔铬个各给根跟耕更庚羹
```

Code Page BC40-BCFF

```
BC40 - BCFF

40
50
60
70
80
90
A0      肌饥迹激讥鸡姬绩缉吉极棘辑籍集
B0   及急疾汲即嫉级挤几脊己蓟技冀季伎
C0   祭剂悸济寄寂计记既忌际妓继纪嘉枷
D0   夹佳家加荚颊贾甲钾假稼价架驾嫁歼
E0   监坚尖笺间煎兼肩艰奸缄茧检柬碱碗
F0   拣捡简俭剪减荐槛鉴践贱见键箭件
```

Code Page B940-B9FF

```
B940 - B9FF

40
50
60
70
80
90
A0      埂耿梗工攻功恭龚供躬公宫弓巩汞
B0   拱贡共钩勾沟苟狗垢构购够辜菇咕箍
C0   估沽孤姑鼓古蛊骨谷股故顾固痼刮瓜
D0   剐寡挂褂乖拐怪棺关官冠观管馆罐惯
E0   灌贯光广逛瑰规圭硅归龟闺轨鬼诡癸
F0   桂柜跪贵刽辊滚棍锅郭国果裹过哈
```

Code Page BD40-BDFF

```
BD40 - BDFF

40
50
60
70
80
90
A0      健舰剑饯渐溅涧建僵姜将浆江疆蒋
B0   桨奖讲匠酱降蕉椒礁焦胶交郊浇骄娇
C0   嚼搅铰矫侥脚狡角饺缴绞剿教酵轿较
D0   叫窖揭接皆秸街阶截劫节桔杰捷睫竭
E0   洁结解姐戒藉芥界借介疥诫届巾筋斤
F0   金今津襟紧锦仅谨进靳晋禁近烬浸
```

Code Page BA40-BAFF

```
BA40 - BAFF

40
50
60
70
80
90
A0      骸孩海氮亥害骇酣憨邯韩含涵寒函
B0   喊罕翰撼捍旱憾悍焊汗汉夯杭航壕嚎
C0   豪毫郝好耗号浩呵喝荷菏核禾和何合
D0   盒貉阂河涸赫褐鹤贺嘿黑痕很狠恨哼
E0   亨横衡恒轰哄烘虹鸿洪宏弘红喉侯猴
F0   吼厚候后呼乎忽瑚壶葫胡蝴狐糊湖
```

Code Page BE40-BEFF

```
BE40 - BEFF

40
50
60
70
80
90
A0      尽劲荆兢茎睛晶鲸京惊精粳经井警
B0   景颈静境敬镜径痉靖竟竞净炯窘揪究
C0   纠玖韭久灸九酒厩救旧臼舅咎就疚鞠
D0   拘狙疽居驹菊局咀矩举沮聚拒据巨具
E0   距踞锯俱句惧炬剧捐鹃娟倦眷卷绢撅
F0   攫抉掘倔爵觉决诀绝均菌钧军君峻
```

Code Page BB40-BBFF

```
BB40 - BBFF

40
50
60
70
80
90
A0      弧虎唬护互沪户花哗华猾滑画划化
B0   话槐徊怀淮坏欢环桓还缓换患唤痪豢
C0   焕涣宦幻荒慌黄磺蝗簧皇凰惶煌晃幌
D0   恍谎灰挥辉徽恢蛔回毁悔慧卉惠晦贿
E0   秽会烩汇讳诲绘荤昏婚魂浑混豁活伙
F0   火获或惑霍货祸击圾基机畸稽积箕
```

Code Page BF40-BFFF

```
BF40 - BFFF

40
50
60
70
80
90
A0      俊竣浚郡骏喀咖卡咯开揩楷凯慨刊
B0   堪勘坎砍看康慷糠扛抗亢炕考拷烤靠
C0   坷苛柯棵磕颗科壳咳可渴克刻客课肯
D0   啃垦恳坑吭空恐孔控抠口扣寇枯哭窟
E0   苦酷库裤夸垮挎跨胯块筷侩快宽款匡
F0   筐狂框矿眶旷况亏盔岿窥葵奎魁傀
```

Code Page C040-C0FF

```
C040 - C0FF

40
50
60
70
80
90
A0      馈愧溃坤昆捆困括扩廓阔垃拉喇蜡
B0   腊辣啦莱来赖蓝婪栏拦篮阑兰澜谰揽
C0   览懒缆烂滥琅榔狼廊郎朗浪捞劳牢老
D0   佬姥酪烙涝勒乐雷镭蕾磊累儡垒擂肋
E0   类泪棱楞冷厘梨犁黎篱狸离漓理李里
F0   鲤礼莉荔吏栗丽厉励砾历利傈例俐
```

Code Page C440-C4FF

```
C440 - C4FF

40
50
60
70
80
90
A0      摹蘑模膜磨摩魔抹末莫墨默沫漠寞
B0   陌谋牟某拇牡亩姆母墓暮幕募慕木目
C0   睦牧穆拿哪呐钠那娜纳氖乃奶耐奈南
D0   男难囊挠脑恼闹淖呢馁内嫩能妮霓倪
E0   泥尼拟你匿腻逆溺蔫拈年碾撵捻念娘
F0   酿鸟尿捏聂孽啮镊镍涅您柠狞凝宁
```

Code Page C140-C1FF

```
C140 - C1FF

40
50
60
70
80
90
A0      痢立粒沥隶力璃哩俩联莲连镰廉怜
B0   涟帘敛脸链恋炼练粮凉梁粱良两辆量
C0   晾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凛赁吝
E0   拎玲菱零龄铃伶羚凌灵陵岭领另令溜
F0   琉榴硫馏留刘瘤流柳六龙聋咙笼窿
```

Code Page C540-C5FF

```
C540 - C5FF

40
50
60
70
80
90
A0      拧泞牛扭钮纽脓浓农弄奴努怒女暖
B0   虐疟挪懦糯诺哦欧鸥殴藕呕偶沤啪趴
C0   爬帕怕琶拍排牌徘湃派攀潘盘磐盼畔
D0   判叛乓庞旁耪胖抛咆刨炮袍跑泡呸胚
E0   培裴赔陪配佩沛喷盆砰抨烹澎彭蓬棚
F0   硼篷膨朋鹏捧碰坯砒霹批披劈琵毗
```

Code Page C240-C2FF

```
C240 - C2FF

40
50
60
70
80
90
A0      隆堃拢陇楼娄搂篓漏陋芦卢颅庐炉
B0    掳卤虏鲁戮碌露路赂鹿潞禄录陆戳驴
C0    吕铝侣旅履屡缕虑氯律率滤绿峦孪孪
D0    滦卵乱掠略抡轮伦仑沦纶论萝螺罗逻
E0    锣箩骡裸落洛骆络妈麻玛码蚂马骂嘛
F0    吗埋买麦卖迈脉瞒馒蛮满蔓曼慢漫
```

Code Page C640-C6FF

```
C640 - C6FF

40
50
60
70
80
90
A0      啤脾疲皮匹痞僻屁譬篇偏片骗飘漂
B0    瓢票撇瞥拼频贫品聘乒坪苹萍平凭瓶
C0    评屏坡泼颇婆破魄迫粕剖扑铺仆菩葡
D0    菩蒲埔朴圃普浦谱曝瀑期欺栖戚妻七
E0    凄漆柒沏其棋奇歧畦崎脐齐旗祈祁骑
F0    起岂乞企启契砌器气迄弃汽泣讫掐
```

Code Page C340-C3FF

```
C340 - C3FF

40
50
60
70
80
90
A0    逶芒茫盲氓忙莽猫茅锚毛矛铆卯茂
B0    冒帽貌贸么玫枚梅酶霉煤没眉媒镁每
C0    美昧寐妹媚门闷们萌蒙檬盟锰猛梦孟
D0    眯醚靡糜迷谜弥米秘觅泌蜜密幂棉眠
E0    绵冕免勉娩缅面苗描瞄藐秒渺庙妙蔑
F0    灭民抿皿敏悯闽明螟鸣铭名命谬摸
```

Code Page C740-C7FF

```
C740 - C7FF

40
50
60
70
80
90
A0    恰洽牵扦钎铅千迁签仟谦乾黔钱钳
B0    前潜遣浅谴堑嵌欠歉枪呛腔羌墙蔷强
C0    抢橇锹敲悄桥瞧乔侨巧鞘撬翘峭俏窍
D0    切茄且怯窃钦侵亲秦琴勤芹擒禽寝沁
E0    青轻氢倾卿清擎晴氰情顷请庆琼穷秋
F0    丘邱球求囚酋泅趋区蛆曲驱屈驱渠
```

Code Page C840-C8FF

```
C840 - C8FF

40
50
60
70
80
90
A0      取娶齲趣去圈颟权醛泉全痊拳犬券
B0   劝缺炔瘸却鹊权确雀裙群然燃冉染瓤
C0   壤攘嚷让饶扰绕惹热壬仁人忍韧任认
D0   刃妊纫扔仍日戎茸蓉荣融熔溶容绒冗
E0   揉柔肉茹蠕儒孺如辱乳汝入褥软阮蕊
F0   瑞锐闰润若弱撒洒萨腮鳃塞赛三叁
```

Code Page CC40-CCFF

```
CC40 - CCFF

40
50
60
70
80
90
A0      獭挞蹋踏胎苔抬台泰酞太态汰坍摊
B0   贪瘫滩坛檀痰潭谭谈坦毯祖碳探叹炭
C0   汤塘搪堂棠膛唐糖倘躺淌趟烫掏涛滔
D0   绦萄桃逃淘陶讨套特藤腾疼誊梯剔踢
E0   锑提题蹄啼体替嚏惕涕剃屉天添填田
F0   甜恬舔腆挑条迢眺跳贴铁帖厅听烃
```

Code Page C940-C9FF

```
C940 - C9FF

40
50
60
70
80
90
A0      伞散桑嗓丧搔骚扫嫂瑟色涩森僧莎
B0   砂杀刹沙纱傻啥煞筛晒珊苫杉山删煽
C0   衫闪陕擅赡膳善汕扇缮墒伤商赏晌上
D0   尚裳梢捎稍烧芍勺韶少哨邵绍奢赊蛇
E0   舌舍赦摄射慑涉社设砷申呻伸身深娠
F0   绅神沈审婶甚肾慎渗声生甥牲升绳
```

Code Page CD40-CDFF

```
CD40 - CDFF

40
50
60
70
80
90
A0      汀廷停亭庭挺艇通桐酮瞳同铜彤童
B0   桶捅筒统痛偷投头透凸秃突图徒途涂
C0   屠土吐兔湍团推颓腿蜕褪退吞屯臀拖
D0   托脱驼陀驮驼椭妥拓唾挖哇蛙洼娃瓦
E0   袜歪外豌弯湾玩顽丸烷完碗挽晚皖惋
F0   宛婉万腕汪王亡枉网往旺望忘妄威
```

Code Page CA40-CAFF

```
CA40 - CAFF

40
50
60
70
80
90
A0      省盛剩胜圣师失狮施湿诗尸虱十石
B0    拾时什食蚀实识史矢使屎驶始式示士
C0    世柿事拭誓逝势是嗜噬适仕侍释饰氏
D0    市恃室视试收手首守寿授售受瘦兽蔬
E0    枢梳殊抒输叔舒淑疏书赎孰熟薯暑曙
F0    署蜀黍鼠属术述树束戍竖墅庶数漱
```

Code Page CE40-CEFF

```
CE40 - CEFF

40
50
60
70
80
90
A0      巍微危韦违桅围唯惟为潍维苇葳委
B0    伟伪尾纬未蔚味畏胃喂魏位渭谓尉慰
C0    卫瘟温蚊文闻纹吻稳紊问嗡翁瓮挝蜗
D0    涡窝我斡卧握沃巫呜钨乌污诬屋无芜
E0    梧吾吴毋武五捂午舞伍侮坞戊雾晤物
F0    勿务悟误昔熙析西硒矽晰嘻吸锡牺
```

Code Page CB40-CBFF

```
CB40 - CBFF

40
50
60
70
80
90
A0     恕刷耍摔衰甩帅栓拴霜双爽谁水睡
B0  税吮瞬顺舜说硕朔烁斯撕嘶思私司丝
C0  死肆寺嗣四伺似饲巳松耸怂颂送宋讼
D0  诵搜艘擞嗽苏酥俗素速粟僳塑溯宿诉
E0  肃酸蒜算虽隋随绥髓碎岁穗遂隧祟孙
F0  损笋蓑梭唆缩琐索锁所塌他它她塔
```

Code Page CF40-CFFF

```
CF40 - CFFF

40
50
60
70
80
90
A0     稀息希悉膝夕惜熄烯溪汐犀檄袭席
B0  习媳喜铣洗系隙戏细瞎虾匣霞辖暇峡
C0  侠狭下厦夏吓掀锨先仙鲜纤咸贤衔舷
D0  闲涎弦嫌显险现献县腺馅羡宪陷限线
E0  相厢镶香箱襄湘乡翔祥详想响享项巷
F0  橡像向象萧硝霄削哮嚣销消宵淆晓
```

Code Page D040-D0FF

```
D040 - D0FF

40
50
60
70
80
90
A0      小孝校肖啸笑效楔些歇蝎鞋协挟携
B0   邪斜胁谐写械卸蟹懈泄泻谢屑薪芯锌
C0   欣辛新忻心信衅星腥猩惺兴刑型形邢
D0   行醒幸杏性姓兄凶胸匈汹雄熊休修羞
E0   朽嗅锈秀袖绣墟戌需虚嘘须徐许蓄酗
F0   叙旭序畜恤絮婿绪续轩喧宣悬旋玄
```

Code Page D440-D4FF

```
D440 - D4FF

40
50
60
70
80
90
A0      浴寓裕预豫驭鸳渊冤元垣袁原援辕
B0   园员圆猿源缘远苑愿怨院曰约越跃钥
C0   岳粤月悦阅耘云郧匀陨允运蕴酝晕韵
D0   孕匝砸杂栽哉灾宰载再在咱攒暂赞赃
E0   脏葬遭糟凿藻枣早澡蚤躁噪造皂灶燥
F0   责择则泽贼怎增憎曾赠扎喳渣札轧
```

Code Page D140-D1FF

```
D140 - D1FF

40
50
60
70
80
90
A0     选癣眩绚靴薛学穴雪血勋薰循旬询
B0     寻驯巡殉汛训讯逊迅压押鸦鸭呀丫芽
C0     牙蚜崖衙涯雅哑亚讶焉咽阉烟淹盐严
D0     研燹岩延言颜阎炎沿奄掩眼衍湮艳堰
E0     燕厌砚雁喑彦焰宴谚验殃央鸯秧杨扬
F0     佯疡羊洋阳氧仰痒养样漾邀腰妖瑶
```

Code Page D540-D5FF

```
D540 - D5FF

40
50
60
70
80
90
A0     铡闸眨栅榨咋乍炸诈摘斋宅窄债寨
B0     瞻毡詹粘沾盏斩辗崭展蘸栈占战站湛
C0     绽樟章彰漳张掌涨杖丈帐账仗胀瘴障
D0     招昭找沼赵照罩兆肇召遮折哲蛰辙者
E0     锗鹧这浙珍斟真甄砧臻贞针侦枕疹诊
F0     震振镇阵蒸挣睁征狰争怔整拯正政
```

Code Page D240-D2FF

```
D240 - D2FF

40
50
60
70
80
90
A0     摇尧遥窑谣姚咬舀药要耀椰噎耶爷
B0   野冶也页掖业叶曳腋夜液一壹医揖铱
C0   依伊衣颐夷遗移仪胰疑沂宜姨彝椅蚁
D0   倚已乙矣以艺抑易邑屹亿役臆逸肄疫
E0   亦裔意毅忆义益溢诣议谊译异翼翌绎
F0   茵荫因殷音阴姻吟银淫寅饮尹引隐
```

Code Page D640-D6FF

```
D640 - D6FF

40
50
60
70
80
90
A0     帧症郑证芝枝支吱蜘知肢脂汁之织
B0   职直植殖执值侄址指止趾只旨纸志挚
C0   掷至致置帜峙制智秩稚质炙痔滞治窒
D0   中盅忠钟衷终种肿重仲众舟周州洲诌
E0   粥轴肘帚咒皱宙昼骤珠株蛛朱猪诸诛
F0   逐竹烛煮拄瞩嘱主著柱助蛀贮铸筑
```

Code Page D340-D3FF

```
D340 - D3FF

40
50
60
70
80
90
A0    印英樱婴鹰应缨莹萤营茨蝇迎赢盈
B0    影颖硬映哟拥佣臃痈膺雍踊蛹咏泳涌
C0    永愚勇用幽优悠忧尤由邮铀犹油游酉
D0    有友右佑釉诱又幼迂淤于盂榆虞愚舆
E0    余俞逾鱼愉渝渔隅予娱雨与屿禹宇语
F0    羽玉域芋郁吁迂喻峪御愈欲狱育誉
```

Code Page D740-D7FF

```
D740 - D7FF

40
50
60
70
80
90
A0    住注祝驻抓爪拽专砖转撰赚篆桩庄
B0    装妆撞壮状椎锥追赘坠缀谆准捉拙卓
C0    桌琢茁酌啄着灼浊兹咨资姿滋淄孜紫
D0    仔籽滓子自渍字鬃棕踪宗综总纵邹走
E0    奏揍租足卒族祖诅阻组钻纂嘴醉最罪
F0    尊遵昨左佐柞做作坐座
```

Code Page D840-D8FF

```
D840 - D8FF

40
50
60
70
80
90
A0      宁刀兀丐廿卅丕亘丞禹孬羃丨禺丿
B0      匕毛夭爻厄氏囟胤馗轂羼癹丶亟鼐也
C0      乿亓芈孛斋頻厂库厝廲厥厮廯厌匸匤
D0      匭匲匬賾卦卤 刂刈刎到剞刬剀剌剙剢
E0      剡剚剦剧制剗剭门閁亻 仃仉仂仨忾仫
F0      伢伛仳伲佤仵伥伧伉亡佞作攸佚佝
```

Code Page DC40-DCFF

```
DC40 - DCFF

40
50
60
70
80
90
A0      坍埙塆埭堀堞埋塄堠塌塬塝墉墚堙
B0      馨鼙懿艹艽芀芏芊苤芨芄萼苣芗芙芫芸
C0      蒂茇荡苊苴芘芷芮苋苌茌芩芴芠芪苁
D0      芐兰苊苡莱苷荤苊苁苜苴苒苘茌苻苓
E0      苇茚茀荃荑莨莒茜蓂荛荜茈莒苘茼菜
F0      莲荞茯茌荇荃荟苟茗荠茭芫荘荜萦
```

Code Page D940-D9FF

```
D940 - D9FF

40
50
60
70
80
90
A0     佟佗伲伽佶伹侑侉侃侏佾佻侪佼侬
B0   侔俦俨俪俅俚俣傳俑俟俸倩偌俳倬候
C0   倮倭俾倜倌倥倨偾偃偕偈偎偬偻偾傧
D0   傩傺僖儆僭僬僦僮儇儋仝氽佘金俎龠
E0   汆籴兮巽黉馘爨冂冋冘冚鬼夙兒亠
F0   兗亳衮袤亵裔裒裘赢赢赢丫沍洌洗
```

Code Page DD40-DDFF

```
DD40 - DDFF

40
50
60
70
80
90
A0     荨莨蒉芙荪苤苻茯荸莳莴莠莪莓莜
B0   苴茶荃荨荽莸荻莘菀莨莺莼菁莫蓣菘
C0   蕙葚蕞菝菽蕺萜荬萑莩腋菟菪萃菸菹
D0   葺菅苑萦苋菡萸荮葚葙葳葳蒈蕈蒉蕙
E0   蕁葆葩荤荽蒎萱葭蓁蒈葶荨蕙蓓蒴蒿
F0   蒺蔺葶蒹蒴蒗蒈蓣葳蔸葸蓥蔟蔹蔺蔺蔺
```

Code Page DA40-DAFF

```
DA40 - DAFF

40
50
60
70
80
90
A0    淞 亠 冡 冥 讠  讦 讧 讪 讴 讵 讷 诂 诃 诋 诏
B0  讪 诒 诓 谏 诖 诘 诙 诜 诟 诠 诤 诨 诩 诮 诰 诳
C0  诶 诹 诼 诿 谀 谂 谄 谇 谆 谏 谑 谒 谔 谕 谖 谙
D0  谛 谘 谝 谟 谠 谡 谥 谧 谪 谫 谮 谯 谰 谲 谵 谶
E0  卩 阝 阢 阡 阱 阪 阽 阼 陂 陉 陔 陟 陧 陬 陲
F0  陴 � 隍 隗 隰 邘 邛 邝 邙 邬 邡 邢 邴 邳 邶
```

Code Page DE40-DEFF

```
DE40 - DEFF

40
50
60
70
80
90
A0    蕺 蔻 蓿 蓼 蕙 蕈 蕨 蕤 蕞 蕺 蕃 蕲 蕻 薤
B0  薨 薇 蕙 薙 薇 薛 薜 薅 蕺 薰 蕲 薬 藜 薹 蕤 薷
C0  藜 薰 廊 廾 弈 弇 夺 夼 奕 奚 奘 匏 尢 尥 尬 尴
D0  扌 扪 扙 抻 拊 拚 拗 拮 挢 拶 挹 挼 捃 掭 揶 捱
E0  捺 掎 掴 掸 掬 掊 捩 掮 掼 撵 揸 揠 搋 搛 搉 揎
F0  搴 揆 搌 搦 搡 撄 摒 摅 搡 搌 撄 搌 撇
```

Code Page DB40-DBFF

```
DB40 - DBFF

40
50
60
70
80
90
A0      邸郜郟郅郴郐郣郇郢郦郪部郗郏郫
B0   郯郿鄄鄂鄅鄃鄆鄇鄒鄚鄞乌奂劢劬劭
C0   劾智劢勔勰叟夒夒乄凵凼乜厶弁奋甙
D0   坕坙堡塾磐壅壑圩圬圪圳圹圯圮坜坼
E0   坂坩垅坫垆坼坻坨坭坶坳垭垤垌垲埏
F0   埘塥垓垠埕埘塌埙塔垸埴垵塆坤埝
```

Code Page DF40-DFFF

```
DF40 - DFFF

40
50
60
70
80
90
A0      摺撷撸搏撺搽撮揪擢攉攥攮弋忒
B0   甙弑卟叱叽叩叨叻吒吖吆吠呒呓呔呖
C0   呃吡呗呆呛咴呷呻呱呤咚咛咄呶呦
D0   咝哐咭哂唤哒唰咦哓哔呲咣哕咻咿哌
E0   哙哚唏咩咪咤哝哏哞唛哧唠哽唔唧唢
F0   唣唏唑唧嗜唪啉喏啭啁喈嗫啐喹
```

Code Page E040-E0FF

```
E040 - E0FF

40
50
60
70
80
90
A0      唷啖啵啶啷唳唎啜喋嗒喃喱喹喏喁
B0   喟啾嗖喑啿嗟嘍嗜喔嗦嗦嗷嗾�ퟞ嗑嚷
C0   啻嗄嗉嗝嗄嗯嘩嗲嗳嗌嘞嗨嗵嗤嗙嘞
D0   嘈嘌喊嘤嘟喉喃嘧嘭嗻嘹嘌嘿嘤嘺噢噞
E0   嚕嚀嘡嘵噪嘹嘖噻噼嗃嘿噘嚷□团囡
F0   囵囹图圃圄圆圉圈帏帙帔帑帱帻帽
```

Code Page E440-E4FF

```
E440 - E4FF

40
50
60
70
80
90
A0      洹浦洌浃洩洇泂洙洎泇浍洮洵泽洌
B0   浒浔泇涑浯涞涠浞涓涔浜浠浼浣渚淇
C0   淅淞渎涿湨浞淦淝淙渖渲渌涮渫湮渲
D0   湫溲湟淑溢湔湞渥湄渺湊溢溇湃澄溥
E0   溧湨涡溷浵湨溘溏滂湨潢溇潇湥潰溻
F0   溧滤潋潴潈滤潊潋澍漸湝淆潼潺瀨
```

Code Page E140-E1FF

```
E140 - E1FF

40
50
60
70
80
90
A0    帷幄幔幛幞幡炱屺岍岐岖岈岘岑岑
B0    岚岜岵岢崒岬岫岱峋岽岷峄峒峤峋峥
C0    崂崃崧崦崮崤崞崤崾崴崽嵬嵛嵯
D0    嵝嵫嵋嵊嵩嵴嶂嶙嶝嶷巅巍彳彷徂徇
E0    徉後徕徙徜徨徭徵徼衢彡犭犰犴犷犸
F0    狃狁狎狍狒狨狯狩狲狴狷狳狲猃猗
```

Code Page E540-E5FF

```
E540 - E5FF

40
50
60
70
80
90
A0    潍澧澹澶濂濡濮潲潴濯瀚灈瀵潸潢
B0    瀹灏宀尢宄宓宥宸甯寤寮寰寰寒
C0    骞辶迓迕迥迮迤迩迦逦迳迫迨逯逋逦逑
D0    逍逑逖逴遒逵逶逭逳遄遴遘遏遛遢
E0    遝遢邂邋邃邈彐彗彖彘尸咫屐屙孱屣
F0    履屦弪弩弭觚觯鬻屮勺妃妍妩妪妁
```

Code Page E240-E2FF

```
E240 - E2FF

40
50
60
70
80
90
A0      狻猗猓猡猊猞猝猕猢猹猥猾猴猸獐
B0   獍獗獠獬獭獾舛夽餐夆夊乞饧饨饩饪
C0   饫饬饰饲饴饵馄馇馊馍馐馑馒馓龙
D0   庑庋庖麻庠廉庵庾库赓廒廛塵廪廉膺
E0   忄忉忖忏忧忮怄忡忤忾怅怆忪忭忸怙
F0   怵怦怛怏怍怩怫怊怿怡怼怱怅恻恺恂
```

Code Page E640-E6FF

```
E640 - E6FF

40
50
60
70
80
90
A0      妗姊妫妞妤姒姐妯姆妾娅娆姝奁姣
B0   姘姹娌娉娲娴娑娣娓娟婧婊婕娼婢婵
C0   胬媪媛婷媸媾嫫媲媛嫔媸嫠嫣嫱嫖嫦
D0   嫘嫜嬉嫒娶嫡嬷嫚孖孥孚孳孽孑孓孢
E0   驵驷驸驹驿驽驸骁骅骈骊骐骒骓骖骘
F0   骜骛镏骗骠骢骣骤骧纟纡纣纥纨纩
```

Code Page E340-E3FF

```
E340 - E3FF

40
50
60
70
80
90
A0    恪悙悙悚悝悞悟悠悡悢患悤悥悦悧
B0  您悩悪悫悬悭悮悯悰悱悲悳悴悵悶悷
C0  悸悹悺悻悼閁閂閃閄閅閆閇閈閉閊開
D0  閌閍閎閏閐閑閒間閔閕閖閗爿片牄冫
E0  汔汕汖汗汘汙汚汛汜汝汞江池污汢汣
F0  汤汥汦汧汨汩汪汫汬汭汮汯汰汱汲汳
```

Code Page E740-E7FF

```
E740 - E7FF

40
50
60
70
80
90
A0    纭纮纴纴绁绂练组绅细织终绉绊
B0  绋绌绍绎经绐绑绒结绔绕绖绗绘给绚
C0  绛络绝绞络绠绡绢绣绤绥绦继绨绩绪
D0  绫绬续绮绯绰绱绲绳维绵幺畿巛甾邕
E0  玎玑玮玕玖玗玘玙玚玛玜玝玞玟玠
F0  玡玢玣玤玥玦玧玨玩玪玫玬玭玮环
```

Code Page F040-F0FF

```
F040 - F0FF

40
50
60
70
80
90
A0      積櫻楠黏馥穰皈皎皓晳晡胅瓠甫鳲
B0   鳶鴇鳩鴣鵏鸕鵴鷗鷟鴯鷟鵠鴨鴬鴪鷗
C0   鴶鴒鶋鵜鴵鵲鵯鴾鵷鴳鵵鵬鷟鴎鶊
D0   鸚鵻鵽鵜鵬鷟鵶鵶鷟鷪广疒疕疜疝疢
E0   疘疙疘疸疒疱疰疢疝疞痃痄痓痉痏痎
F0   痧瘀痱痼瘈瘦瘀瘅瘌瘗瘊瘊瘐瘦瘊瘓
```

Code Page F440-F4FF

```
F440 - F4FF

40
50
60
70
80
90
A0      簟簪簦簸簌簫臾舁舂舄臬舃舡舢舣
B0   舭舯舨舫舸舻舳舴舶舲舰艅艆艎艏艫
C0   衾袅袈袤裟裝豰羟羖羯羰羹籼牧杷枥
D0   枭栖桼綮鄰棕椮候檣梽榍槑槤槵艮曁
E0   羿翊翕翥翡翦翻翩騉糸綮茶縈縡蘪獣
F0   麴赳趄翅越趱掫赭缸豉酊酋酎酏酤
```

Code Page F140-F1FF

```
F140 - F1FF

40
50
60
70
80
90
A0      瘛瘼瘢瘠瘭瘰瘵瘐瘵瘯瘵瘿瘳瘢癚瘲
B0  瘸瘾瘝瘦翊竦癶穹奄窆窈窕窨窑窬窞
C0  窭窳礻礿衲衵衿袂袢裆袷褡裉褯裎裣
D0  裥裱褚褐裨褐裰褡褙褓褛褊褴褴褶裎
E0  褓檡疋胥靯皱矜耒籽籾粗籺籹耗耦楼
F0  糅檽糖鏊耵聃聆聍聒聴甓罿顼顾颀
```

Code Page F540-F5FF

```
F540 - F5FF

40
50
60
70
80
90
A0      酢酡酕酩酯醉醐醒酴酹醌酤醐醍醋
B0  醃醯醪醭醮醢醸醴醾豕豵赱登赹蹙登
C0  趵趿趼趺跄跖跚蹦跞跎跏跛跆跬跷跱
D0  跹跱跻跤踉跽踔踝踟颐跕踖踯蹍蹀踹
E0  踵踽踱蹉蹁踩躔蹒蹊踿蹶蹼蹯蹰踢踬
F0  躄躐蹼蹀豸貂貊狝貘貔斛觖觞觚觜
```

Code Page F240-F2FF

```
F240 - F2FF

40
50
60
70
80
90
A0      頡傾穎頹頷顎顜顄顟頴顠顫鼇虔虔
B0   虬虮蚤廄虼虹蚨蚍蚋蚬蚝蚧蚣蚪蚓蠆
C0   蚶蛄蚵蛎蚰蜒蚱蚯蛉蛏蚴蛩蛱蛲蛭蛳
D0   蛐蜓蛞蛴蛟蛑蜃蜇蛸蜈蜊蜍蜉蜣蜻
E0   蜞蜥蜮蜚螋蛔埸蜱蜩蜷蜿螂蜢螗螓蛹
F0   蜴螣蜻塽螋蝓蝣蝼蛸螠螫螽螯螨蝽
```

Code Page F640-F6FF

```
F640 - F6FF

40
50
60
70
80
90
A0      觚觫觯觜觷觐觺觿雯莲弉霈菲霎藻
B0   霭霰疆齔齟龅龆齕龈龉齜齷电電疊佳
C0   隼隽雎雒齉雔釜鎏鏊鏊鏊銮鑾鑫魠
D0   魴魬魛鮎鲈鮇鮒鲎鮊鮭鮕鮪鮃鮤鲞
E0   鲟鯁鯒鲢鯉鲥鲦鲧鲨鲩鲫鯖鲮鲯鯡鲵
F0   鲲鲲鲵鲶鲷鲺鲻鲼鲽鳄鳅鳆鳇鳊鳋
```

Code Page F340-F3FF

```
F340 - F3FF

40
50
60
70
80
90
A0    塻螈螅螖螗螘蝥螞螛螺蝗蟋蟓蟊蟐
B0    蚌蟊蟛蟪蟠蟮蟭螻蟮蟱蟿蟲蟽缶
C0    罊罈舐竺竽笈笃笄笕笨第笏筇筐筥笙
D0    竿筍笠箭笘筎笾笘箝筆笀筵筌箏筠筬
E0    簆笓筩筱箐笧籆箸箸箝箪算箪箜筠箾
F0    箴箺籃筷箸筺箅箟麃箣箢筄籫箚箆
```

Code Page F740-F7FF

```
F740 - F7FF

40
50
60
70
80
90
A0    鰲鰭鯏鰥鰡鰤鰾鳕鰻鰵鰳鳜鳝鳟鱏
B0    鮏鴃軷軿鞔鞲鞠鞣鞴鞴骱骰骺骾骶骹
C0    骼髁髀髏髂髖髕髁魅魃屍魎魋魊魑飧
D0    屟饕饡饟髟髠髢髻醫髻髭髹髽鬁鬐
E0    戲麿麾廖麂麇廛麇麒麈麕麟黛黜勖點
F0    黟駿駿鰲鰦鰷鰯黔黇黅黼鼹鼷鼽軏鼾鼿
```

Code Page E840-E8FF

```
E840 - E8FF

40
50
60
70
80
90
A0      琛琚瑁瑜瑗瑕瑙瑷瑭瑾瑧瑝瑨瑰瑢璇
B0   璋璞璨璩璐璧瑱璜璺瑶韫韬机杓杞杈杩
C0   枥枇杪杳枘枧杵枨杌枋杷杼桊枛柘
D0   枧枢枰枦枏枬柚枳柝栀柃枸柢栎柁柽
E0   栲栳桠桡桎桢桃桤桫栝柏桦桁桧桀栾
F0   桊桉栩梵楷桴桷梓杪梘楮梦梜梾楟
```

Code Page EC40-ECFF

```
EC40 - ECFF

40
50
60
70
80
90
A0      膑腈欤欷歃歈歆歇飑讽飓飔飙飚夋
B0   毂彀觳斐斋斓於旆旄旆旌旎旇旃炀炜
C0   炖炝炻炉灶炫炱烨烊焐焓焖焯焱煳煜
D0   煨煅煲煊煸煺熘熳煏熨熠燠燔燧燹燏
E0   爨灬焘煦熏戾庠扁庽扉礻祀袄祉祛祜
F0   袚祚祢祇祠祯祧祺禅禊祥禧禳忑忐
```

Code Page E940-E9FF

```
E940 - E9FF

40
50
60
70
80
90
A0      椤槌椋椁楗棣椐楼椹楠楂楝榄楣榀
B0   榘楸椴榇榱楦槎榉楦楗榇框楞楟榭
C0   楠榛橋槊槟榕槠楣槿楠槭楁櫜槲橄
D0   槌槃橐橛樵槝槽樽槲橘橼槁橧橡橥橼
E0   猷獒殁殂殇殄殒殓殍殚殛殡殪轫轭轱
F0   轲轳轵轶轸轷轺轹轼轾轿辂辄辇辋
```

Code Page ED40-EDFF

```
ED40 - EDFF

40
50
60
70
80
90
A0      怼恕恚恧恁恙恣恧慾憝愿憩怒懋懑
B0   懑聿奉杳浆淼矶矸砀耷砗砒砑砌砭砜
C0   砝破砺砉砟砼砥硁砣砩硐硎硖硗砦硐
D0   硇硌硪硕硋硌碇硥碛硫硅碉碥碜磉
E0   磬磲磴磉磴磲碲龛鸶黻羀肝眄眍盹
F0   眇眈瞢瞀眙眭眦眵眸睐睑睇睃睚睨
```

Code Page EA40-EAFF

```
EA40 - EAFF

40
50
60
70
80
90
A0    辍辋辌辍辎辐戈饮戛戝戡戣戤戥戦
B0  臧瓯瓴瓶瓼瓿甄攴旮旯旰昊昱杲昃昕
C0  昀昺曷昝昴昱昶昵耆晟晔晁晏晖晡晗
D0  晷暄暌暧暝暾瞳曜曦曩贲赍贶贻赀赍
E0  赅赆赈赉赊赍赕赗觇觊觋觌觍觎觏觐
F0  牮犟牝牦牯牾牿犄犋犍犏犒犗犟犟
```

Code Page EE40-EEFF

```
EE40 - EEFF

40
50
60
70
80
90
A0    眭睥睿瞍睽瞀瞌瞑瞟瞠瞰瞵瞀盯畀
B0  畎畋畈畛畲畹畦罘罡罟詈罨罴罱罹羁
C0  罾盍盥蠲钅钆钇钋钊钉钍钏钐钔钗钕
D0  钑钛钜钣钤钫钪钭钬钯钰钲钴钶钷钸
E0  钹钺钼钽钿铄铈铉铊铋铌铍铎铐铑铒
F0  铕铖铗铙铘铛铞铟铠铢铤铥铧铨铪
```

Code Page EB40-EBFF

EB40 - EBFF

```
40
50
60
70
80
90
A0      瓣鞏耄逛義鏈毼毻毿毺毻毰气氕氖
B0 氘氚氙氜氝氞攵敆敉腴牒牗爱虩刖肕
C0 肜肓肼肮肽肱肫肭肴欣胧脉胩胪胛胂
D0 胄胙胍胗胸胝胫胱胴胭脍脎胲胼朕胮
E0 豚胭脞脬脘脲腩腌腓腴腙腚腱腴腩脑
F0 腽腭腧腟腰膈膂膑腠膣腤膙膦膋腺膛
```

Code Page EF40-EFFF

EF40 - EFFF

```
40
50
60
70
80
90
A0      铢铫铮铯铳铴铵铷锊铼铽铿铎锂锆
B0 锇铿铻铓铜铜铟锓铜铘锖锘锈锝锞锟
C0 铟锪锫锩铰锚锬锴锶锷锸锼锿镂锵
D0 锧锸镆锡锛锋锱镒铼镔镖镗镘锞镏锬
E0 铫锞镡镢镤镥镦锎锴镩锸镫锿锢镱镣
F0 镥锺刬矬雉秕秭秣秫秸秾秺稂稞稔
```

Code Page F840-F8FF

```
F840 - F8FF

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

Code Page FC40-FCFF

```
FC40 - FCFF

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

Code Page F940-F9FF

```
F940 - F9FF

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

Code Page FD40-FDFF

```
FD40 - FDFF

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

Code Page FA40-FAFF

```
FA40 - FAFF

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

Code Page FE40-FFFF

```
FE40 - FEFF

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

Code Page FB40-FBFF

```
FB40 - FBFF

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

Code Page FF40-FFFF

```
FF40 - FFFF

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

Code Page 949 Korean

Code Page A140-A1FF

Code Page A240-A2FF

Code Page A340-A3FF

```
A340 - A3FF

40
50
60
70
80
90
A0       ! " # $ % & ' ( ) * + , - . /
B0    0 1 2 3 4 5 6 7 8 9 : ; < = > ?
C0    @ A B C D E F G H I J K L M N O
D0    P Q R S T U V W X Y Z [ ₩ ] ^ _
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 { | }
```

Code Page A440-A4FF

```
A440 - A4FF

40
50                        /
60
70
80
90
A0    ㄱ ㄲ ㄳ ㄴ ㄵ ㄶ ㄷ ㄸ ㄹ ㄺ ㄻ ㄼ ㄽ ㄾ ㄿ
B0    ㅀ ㅁ ㅂ ㅃ ㅄ ㅅ ㅆ ㅇ ㅈ ㅉ ㅊ ㅋ ㅌ ㅍ ㅎ ㅏ
C0    ㅐ ㅑ ㅒ ㅓ ㅔ ㅕ ㅖ ㅗ ㅘ ㅙ ㅚ ㅛ ㅜ ㅝ ㅞ ㅟ
D0    ㅠ ㅡ ㅢ ㅣ    ㄳ ㄴ ㄵ ㄶ ㄺ ㄻ ㄼ ㄽ ㄾ ㄿ ㅀ ㅄ
E0    ㅄ ㅅ ㅆ ㅇ ㄾ ㄶ ㅀ ㄿ ㄼ ㄺ ㅄ ㅆ ㅅ ㅠ ㅛ ㅗ ㅘ ㅙ ㅚ △
F0    ㅇ ㅇ ㅇ ㅘ ㅚ ㅛ ㅇㅇ ㅎ ㅑ ㅒ ㅣ ㅖ ㅖ ㅣ · ·ㅣ
```

Code Page A540-A5FF

```
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        A  B  Γ  Δ  E  Z  H  Θ  I  K  Λ  M  N  Ξ  O
D0     Π  P  Σ  T  Y  Φ  X  Ψ  Ω
E0        α  β  γ  δ  ε  ζ  η  θ  ι  κ  λ  μ  ν  ξ  o
F0     π  ρ  σ  τ  υ  φ  χ  ψ  ω
```

Code Page A640-A6FF

```
A640 - A6FF

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

Code Page A740-A7FF

```
A740 - A7FF

40
50                      .
60
70
80
90
A0      μℓmℓdℓ ℓ kℓccmℓcm m°km fmnmμmmmcm
B0   kmmℓcm m°km ha μgm gkg kt calkcald Bᵐ⁄ₛ ᵐ⁄ₛps
C0   nsμsmspVnVμVmVkVMVpAnAμAmAkApWnW
D0   μWmWkWMWHzkHzMHzGHzTHz Ω kΩMΩpFnFμFmol
E0   cdrad rad⁄ₛ rad⁄ₛsr PakPaMPaGPaWblmlx BqGySv%kg
F0
```

Code Page A840-A8FF

```
A840 - A8FF

40
50
60
70
80
90
A0      ÆĐª Ħ   IJ   Ŀ·Ł ØŒº Þ Ŧ þ
B0   ㄱㄴㄷㄹㅁㅂㅅㅇㅈㅊㅋㅌㅍㅎ가
C0   나다라마바사아자차카타파하ⓐⓑⓒ
D0   ⓓⓔⓕⓖⓗⓘⓙⓚⓛⓜⓝⓞⓟⓠⓡⓢ
E0   ⓣⓤⓥⓦⓧⓨⓩ①②③④⑤⑥⑦⑧⑨
F0   ⑩⑪⑫⑬⑭⑮½⅓⅔¼¾⅛⅜⅝⅞
```

Code Page A940-A9FF

```
A940 - A9FF

40
50
60
70
80
90
A0      æ ɑ́ ɑ̀ ꞃ ı ij ĸ ŀ ´ŀ ø œ ß þ ŧ ŋ
B0   ŋ (ㄱ)(ㄴ)(ㄷ)(ㄹ)(ㅁ)(ㅂ)(ㅅ)(ㅇ)(ㅈ)(ㅊ)(ㅋ)(ㅌ)(ㅍ)(ㅎ)(가)
C0   (나)(다)(라)(마)(바)(사)(아)(자)(차)(카)(타)(파)(하)(a)(b)(c)
D0   (d)(e)(f)(g)(h)(i)(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
```

Code Page AA40-AAFF

```
AA40 - AAFF

40
50
60
70
80
90
A0      ぁ あ ぃ い ぅ う ぇ え ぉ お か が き ぎ く
B0   ぐ け げ こ ご さ ざ し じ す ず せ ぜ そ ぞ た
C0   だ ち ぢ っ つ づ て で と ど な に ぬ ね の は
D0   ば ぱ ひ び ぴ ふ ぶ ぷ へ べ ぺ ほ ぼ ぽ ま み
E0   む め も ゃ や ゅ ゆ ょ よ ら り る れ ろ ゎ わ
F0   ゐ ゑ を ん
```

Code Page AB40-ABFF

```
AB40 - ABFF

40
50                    .
60
70
80
90
A0      ｱ ｧ ｨ ｲ ｩ ｳ ｪ ｴ ｫ ｵ ｶ ガ ｷ ギ ｸ
B0      グ ｹ ゲ ｺ ゴ ｻ ザ ｼ ジ ｽ ズ ｾ ゼ ｿ ゾ ﾀ
C0      ダ ﾁ ヂ ｯ ﾂ ヅ ﾃ デ ﾄ ド ﾅ ﾆ ﾇ ﾈ ﾉ ﾊ
D0      バ パ ﾋ ビ ピ ﾌ ブ プ ﾍ ベ ペ ﾎ ボ ポ ﾏ ﾐ
E0      ﾑ ﾒ ﾓ ｬ ﾔ ｭ ﾕ ｮ ﾖ ﾗ ﾘ ﾙ ﾚ ﾛ ｯ ﾜ
F0      ヰ ヱ ﾝ ヴ ｶ ｹ
```

Code Page AC40-ACFF

```
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 Ь 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 ы ь э
F0      ю я
```

Code Page AD40-ADFF

```
AD40 - ADFF

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

Code Page AE40-AEFF

```
AE40 - AEFF

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

Code Page AF40-AFFF

```
AF40 - AFFF

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

Code Page B040-B0FF

```
B040 - B0FF

40
50
60
70
80
90
A0    가각간갇갈갉갊감갑값갓갔강갖갗
B0    갈갚갛개 객갠 갤갬갭갯갰갱갸갹갼걀
C0    갹걍걔걘걜 거걱건걷걸걺걻검겁것겄검
D0    겆겈겊걸게겐겔겜겝겟겠겡겨격겪견
E0    견겯겷겹것겼겅겿계겐곌곕곗고곡곤
F0    곪곬곯곰곱곳공곶과곽관괄괆
```

Code Page B140-B1FF

```
B140 - B1FF

40
50
60
70
80
90
A0    꽘꽙꽛꽝꽞꽦꽧꽨꽩꽪 꾀 꾁 꾄꾈꾐
B0    꾒꾓꾔꾜꾝꾠꾡꾣 구 국꾸꾼꾿꿀꿂꿃
C0    꿈꿉꿋꿍꿎꿔꿕꿘꿜꿨꿩꿴꿵꿷꿸꿹
D0    뀈뀉뀋뀍뀔뀜뀟그 극근글뀰뀱뀲뀵 긋
E0    긍긔긱긲긴긶긷긹긺긼긾긿깃깆깄까꽈
F0    꽉꽌꽐꽔꽕꽘꽙꽛깜깨깩깬깰깸
```

Code Page B240-B2FF

```
B240 - B2FF

40
50
60
70
80
90
A0    깸깹깻깼깽까깍깔꺼꺽꺾껀껄껌껍껏
B0    껐껑께꼐껜껨껫껭껴껸껼껏껐껼껴꼬
C0    꼭꼰꼲꼳꼴꼼꼿꽁꽂꽃꽈꽉꽐꽔꽝꽤
D0    꽥꽹꽈뀐뀔뀜뀝뀡꼬꾸꼭꾼꿀꿂꿈꿉
E0    꽂꽁꽃꿔꿜꿟꿩꿰꿱꿴꿸꿹꿻꿽꾀꾼
F0    꿸꿈꿉꾸꼬꼭꼰꿀꿂꿈꿉꾸�짓꽁
```

Code Page B340-B3FF

B340 - B3FF

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

Code Page B440-B4FF

B440 - B4FF

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

Code Page B540-B5FF

B540 - B5FF

40
50
60
70
80
90
A0 덧 멍 몇 덮 데 덱 덴 델 뎀 뎁 뎃 뎄 뎅 뎌 뎐
B0 뎔 뎠 뎡 뎨 도 됴 독 돈 돌 돔 돕 돗 돘 돔 돗 동
C0 돛 돝 돠 돤 돨 돼 됐 되 된 될 됨 됩 됫 됴 두 둑
D0 둔 둗 둘 둠 둡 둣 둥 둬 뒀 뒈 뒝 뒤 뒨 뒬 뒵 뒹 뒹
E0 뒤 듄 듈 듐 듕 드 득 든 듣 들 듬 듭 듯 등 듸
F0 디 딕 딘 딛 딜 딥 딥 딧 딨 딩 딫 따 딱 딴 딸

Code Page B640-B6FF

B640 - B6FF

40
50
60
70
80
90
A0 땀 땁 땃 땄 땅 때 땍 땐 땔 땜 땝 땟 땠 땡
B0 떠 떡 떤 떨 떪 떫 떰 떱 떳 떴 떵 떻 떼 떽 뗀 뗄 뗌
C0 뗍 뗓 뗔 뗘 뗙 떠 뗬 또 똑 똔 똘 똥 똬 똴 뙈 뙤 뙧
D0 뙨 뚜 뚝 뚠 뚤 뚫 뚬 뚱 뛔 뛰 뛴 뛸 뜀 뜁 뜅 뜁 뜀
E0 뜍 뜐 뜔 뜰 뜸 뜹 뜻 띄 띈 띌 띔 띕 띠 띤 띨 띰
F0 띱 띳 띵 라 락 란 랄 람 랍 랏 랐 랑 랒 랖 랗

Code PAge B740-B7FF

B740 - B7FF

```
40
50
60
70
80
90
A0      래 랙 랜 랠 램 랩 랫 랬 랭 랴 략 랸 럇 량 러
B0   럭 런 럴 럼 럽 럿 렀 렁 렇 레 렉 렌 렐 렘 렙 렛
C0   렝 려 력 련 렬 렴 렵 렷 렸 렴 례 렌 롑 롓 로 록
D0   론 롤 롬 롭 롯 롱 롸 롼 뢌 뢰 뢴 뢸 룀 룁 룃
E0   룅 료 룐 룔 룜 룟 룡 루 룩 룬 룰 룸 룹 룻 룽 뤄
F0   뤘 뤠 뤼 뤽 뤽 륄 륌 륏 륑 류 륙 륜 륟 률 륨
```

Code Page B840-B8FF

B840 - B8FF

```
40
50
60
70
80
90
A0      룻 룽 르 륵 른 릍 름 릅 릇 릉 릊 릍 릎 릐 리 릭
B0   린 릴 림 립 릿 링 마 막 만 많 맏 말 맑 맘 맙 맛
C0   맛 망 맞 맡 맣 매 맥 맨 맬 맴 맵 맷 맸 맹 맺 먀
D0   먁 먈 먕 머 먹 먼 멀 멈 멉 멋 멍 멎 멜 메 멕 메
E0   멘 멜 멤 멥 멧 멨 멩 며 멱 면 멸 몃 몄 명 몇 몌
F0   모 목 몫 몬 몰 몲 몸 몹 못 몽 뫄 뫈 뫘 뫙 뫼
```

Code Page B940-B9FF

B940 - B9FF

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

Code Page BA40-BAFF

BA40 - BAFF

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

Code Page BB40-BBFF

```
BB40 - BBFF

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

Code Page BC40-BCFF

```
BC40 - BCFF

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

Code Page BD40-BDFF

```
BD40 - BDFF

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

Code Page BE40-BEFF

```
BE40 - BEFF

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

Code Page BF40-BFFF

```
BF40 - BFFF

40
50
60
70
80
90
A0    에 멕 엔 엘 엠 업 엣 멤 여 역 엮 연 열 염 엷 엾
B0    염 엽 없 엿 였 영 옅 옆 옐 예 옌 옐 옘 옙 옛 옜
C0    오 옥 온 올 옭 옮 옰 옳 옴 옷 옹 옻 와 왁 완 왈
D0    왉 왐 왑 왓 왔 왕 왜 왝 완 왬 왯 왬 외 왹 왼 왋
E0    욈 욉 욋 욍 요 욕 욘 욜 욤 욥 욧 용 욯 우 욱 운
F0    욹 욺 욻 욼 욷 울 욹 웍 원 월 웜 웝 원 웡 웨
```

Code Page C040-C0FF

```
C040 - C0FF

40
50
60
70
80
90
A0    웩 웬 웰 웸 웹 웽 위 윅 윈 윌 윔 윗 윙 유 윳
B0    육 윤 율 윰 윳 융 으 윽 은 율 윰 윳 음 읏 읗
C0    용 윶 윷 을 읊 읋 읎 의 읜 월 윔 윗 이 익 인
D0    읽 읾 읿 임 입 잇 있 임 잊 잎 자 작 잔 잖 잘
E0    잚 잠 잡 잣 잤 장 잦 재 잭 잰 잴 잼 잽 잿 쟁
F0    쟈 쟉 쟌 쟎 쟐 쟘 쟝 쟤 쟴 쟼 저 적 전 절 점
```

Code Page C140-C1FF

```
C140 - C1FF

40
50
60
70
80
90
A0      점접것정젖제젝젠젤젬접젯젱져전
B0   절점접젔정제조족존줌줍줍줏좀줒
C0   좆좋좌좍홟잡좟좡좨좼좽죄죈죌죔집
D0   죗죙죠죡죤죵주죽준줄줅줌줍줏중
E0   줘줬줴쥐쥑쥔쥠쥡쥣쥬쥰쥴쥼즈즉
F0   즌즐즘즙즛증지직진짇질짂짐집짓
```

Code Page C240-C2FF

```
C240 - C2FF

40
50
60
70
80
90
A0      징짖짗짚짜짝짠짡짤짧짬짭짯짰짱
B0   째짹짼짷쨈쨉쨋쨌쨍짜짠쌍짜쩍쩐쩔
C0   쩜쩝쩟쩠쩡쩨쩽쩌쩠쪼쭉쭌쭐쭘쭙쭛
D0   쭝쭞쫘쫙쫠쫬쫘쫬쪄쩐쩔쩜쩝쫑쭈쭉
E0   쭌쭐쭘쭙쭝쭤쭸쩽쭈쭂쭘쭣쭝찌찍
F0   찐찔찜찝찡찢찧차착찬찮찰참찹찻
```

Code Page C340-C3FF

```
C340 - C3FF

40
50
60
70
80
90
A0        찻찼찾채책챈챌챔챕챗챘챙챠챤챦
B0     챨챰챵처척천철첨첩첫첬청체첵첸첼
C0     쳄쳉쳇쳉쳐쳔쳤체쳔쳥초촉촌출촘촙
D0     촛총촤촨촬촹최쵠췰췹촷췡쵸춉추
E0     측춘출춤춥춧충취췄췌췐추췬췰췹췹
F0     춋췽츄춘춭춥춯츠측츤츕츕츕춧충
```

Code Page C440-C4FF

```
C440 - C4FF

40
50
60
70
80
90
A0        치칙친칟칠칡침칩칫칭카칵칸칶캄
B0     캄캇캉캐캑캔캘캠캡캣캤캥캬캭캱커
C0     컥컨컬컵컴컵컷컸킁케켁켄켈켐켑켓
D0     켕켜컨켬켬켭켯켰컹케코콕콘콜콤콤
E0     콧콩콰콱콴콸콤쾅쾌쾽쾨퀄쿄쿠콕쿤
F0     쿨쿰쿱쿳쿵쿽퀀퀼큄퀘퀭퀴퀵퀸퀼
```

Code Page C540-C5FF

```
C540 - C5FF
```

```
40
50
60
70
80
90
A0    큄큅큇큈큐큔큩큠크콕콘콢콤콥콩
B0    키킨킨킬킴킵킷킹타탁탄탈탉탐탑탓
C0    탔탕태택랜탤탬탭탯탰탱탸탕터턱턴
D0    털럶텀텁텃텄텀테텐텐텔템텝텟텡텨
E0    텬텼톄톈토톡톤톩톰톱톳통톻톼톽퇘
F0    퇴퇸톗튈토투툭툰툴툼툽툿퉁퉉퉛
```

Code Page C640-C6FF

```
C640 - C6FF
```

```
40
50
60
70
80
90
A0    퉤튀튁튄튈튐튑텅튜튠툴툠퉁트특
B0    튼튿틀틂틈틋틔튄틸틹틻티틴틴틸털
C0    틮틯틥틧팅파팍판팤팥팜팝팟팠팡
D0    패팩팬팰팱팸폐펙펜펠펜펨펩
E0    펑팟팠펑펴펵펜펠펨펩펫포푝푠폭폼
F0    팝팝팠펑펴폐펠펜폣폭폰폴폼폿퐁
```

Code Page C740-C7FF

C740 - C7FF

Code Page C840-C8FF

C840 - C8FF

Code Page C940-C9Ff

C940 - C9FF

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

Code Page CA40-CAFF

CA40 - CAFF

40
50
60
70
80
90
A0 伽佳假價加可呵哿嘉嫁家暇架枷柯
B0 歌珂痂稼苛茄街袈訶買跏軻迦駕刻却
C0 各恪愨殼珏脚覺角閣侃刊墾奸姦干幹
D0 懇揀杆柬桿澗癇看磵稈竿簡肝艮艱諫
E0 間乫喝曷渴碣竭葛褐蝎鞨勘坎堪嵌感
F0 憾戡敢柑橄減甘疳監瞰紺鑑鑒龕

Code Page CB40- CBFF

CB40 - CBFF

40
50
60
70
80
90
A0　　　匾岬甲胛鉀閘剛坰姜岡崗康强彊懷
B0　江畺疆糠絳綱羌腔舡薑襁講鋼降鱇介
C0　价個凱堨憷愾慨改概溉疥皆蓋箇芥蓋
D0　豈鎧開喀客坑更粳羹醋倨去居巨拒据
E0　據舉渠炬祛距踞車遽鉅鋸乾件健巾建
F0　愆楗腱虔寋鍵騫乞傑杰榤儉劍劒檢

Code Page CC40-CCFF

CC40 - CCFF

40
50
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80
90
A0　　　瞼鈐黔劫怯迲偈憩揭擊格橄激膈覡
B0　隔堅牽犬甄絹繭肩見謎遣鵑抉決潔結
C0　缺訣業慊箝縑鉗鐮京俓倞傾儆勁勍卿
D0　坰境庚徑慶憬擎敬景暻更梗涇炅烱璟
E0　璥瓊痙硬綮褧競絅經耕耿脛莖驚輕逕
F0　鏡頃頸驚鯨係啓堺契季屆悸戒桂械

Code Page CD40-CDFF

```
CD40 - CDFF

40
50
60
70
80
90
A0      槃溪界癸磎稽系繫繼計誡豁階鷄古
B0      叩告呱圄姑孤尻庫拷攷故敲薑枯橋沽
C0      痼皐菲稿蒿考股菁苦苽狐藁盎袴誥賈
D0      辜錮雇顧高鼓哭斛曲梏穀谷鵠困坤崐
E0      昆梱棍滾琨袞鯤汨滑骨供公共功孔工
F0      恐恭拱控攻珙空蚣貢鞏串寡戈果瓜
```

Code Page CE40-CEFF

```
CE40 - CEFF

40
50
60
70
80
90
A0      科菓誇課跨過鍋顆廓槨藿郭串冠官
B0      寬慣棺款灌琯瓘管罐菅觀貫關館刮恝
C0      括适侊光匡壙廣曠洸眖狂珖筐胱鑛卦
D0      掛罫乖傀塊壞怪愧拐槐魁宏紘肱轟交
E0      僑咬喬嬌嶠巧攪敎校橋狡皎矯絞翹膠
F0      蕎蛟較轎郊餃驕鮫丘久九仇俱具勾
```

Code Page CF40-CFFF

```
CF40 - CFFF

40
50
60
70
80
90
A0      匜口句咎喁坵垢寇幅�þ懼拘救枸枢
B0   構歐毆毬求溝灸狗玖球醫矩究絿耉臼
C0   舅舊苟衢軀購軀逑邱鈞銶駒驅鳩鷗龜
D0   國局菊鞠蔏麴君窘群裙軍郡堀屈掘窟
E0   宮弓穹窮芎躬倦券勸卷圈拳捲權港眷
F0   厥獗瘚瘚闕机櫃潰詭軌饋句罪歸貴
```

Code Page D040-D0FF

```
D040 - D0FF

40
50
60
70
80
90
A0      鬼龜叫圭查揆槻珪硅窺竅糾葵規赳
B0   逵閨匀均畇筠菌鈞龜橘克剋劇戟棘極
C0   隙僅劤勤勳斤根槿瑾筋芹菫覲謹近饉
D0   契今妗擒昑檎琴禁禽芩衾襟金錦伋
E0   及急扱汲級給亘兢矜肯企伎其冀嗜器
F0   圻基埼夔奇妓畿岐崎己幾忌技旗旣
```

Code Page D140-D1FF

```
D140 - D1FF

40
50
60
70
80
90
A0      壽期杞棋棄機欺氣汽沂淇玘琦琪璂
B0   璣畸襪蓁磯邢祇祈祺箕紀綺覊薺虀肌
C0   記譏豈起錡錤飢饑騎騏騔獻緊佶吉拮
D0   桔金喫儺喇奈娜懦懶犖拿灘羅蘿螺裸
E0   邏那樂洛烙珞落諾酪駱亂卵暖楄煖爛
F0   蘭難黷捏捺南嵐枏楠滴濫男藍襤拉
```

Code Page D240-D2FF

```
D240 - D2FF

40
50
60
70
80
90
A0      納臘蠟衲囊娘廊朗浪狼郎乃來內奈
B0   奈耐冷女年撚秊念恬拈捻寧嬣努勞奴
C0   弩怒擄櫓爐瑙盧老蘆虜路露駑魯鷺碌
D0   祿綠蓼錄鹿論聾弄濃儂壟朧農惱牢磊
E0   腦賂雷尿壘壢樓淚漏累縷陋嫩訥杻紐
F0   勒肋凍凌稜綾能菱陵尼泥匿溺多茶
```

Code Page D340-D3FF

D340 - D3FF

40
50
60
70
80
90
A0 丹覃但覃圍壜象斷且檀段湍短端簟
B0 緞蛋袒鄲鍛撻達獺疸達啖坍憺擔曇淡
C0 湛潭澹痰聃膽萏軍談譚錟蛋醏簪踏遝
D0 膪堂塘幢戇撞樂當糖螳黨代垈垈大對
E0 岱帶待戴擡玳臺袋貸隊黛宅德悳倒刀
F0 到圖堵塗導屠島嶋度徒悼挑掉擣桃

Code Page D440-D4FF

D440 - D4FF

40
50
60
70
80
90
A0 棹櫂淘渡滔濤燾盜睹禱稻萄覩賭跳
B0 蹈逃途道都鍍陶韜饕瀆牘犢獨督禿驚
C0 燾犢墩惇敦旽暾沌焞燉豚頓乭突仝冬
D0 湩動同憧東桐棟洞潼疼瞳童胴董銅兜
E0 斗杜枓逗竇荳讀豆逗頭屯臀芚遁遯鈍
F0 得嶝橙燈登等藤謄鄧騰喇懶�癩羅

Code Page D540-D5FF

D540 - D5FF

40
50
60
70
80
90
A0   蘁螺裸邏樂洛烙珞絡落諾酪駱丹亂
B0 卵欄欒測爛闌鸞剌辣嵐翠攬欖濫藍纜
C0 藍檻覽拉臘蠟廊朗浪狼琅瑯螂郎來崍
D0 徠萊冷掠略亮倆兩涼梁樑粮粱糧良諒
E0 輛量侶侣勵呂廬廈庚旅梠濾礪藜蠣閭
F0 驢騾麗黎力曆歷瀝礫櫟靂憐戀攣漣

Code Page D440-D4FF

D440 - D4FF

40
50
60
70
80
90
A0   棹櫂淘渡滔濤燾盜賭禱稻萄覩賭跳
B0 蹈逃途道都鍍陶韜壽瀆牘犢獨督禿篤
C0 纛犢墩惇敦吨暾沌燉燉豚頓�突仝冬
D0 凍動同懂東桐楝洞湩痋瞳董胴薹銅兜
E0 斗杜科逗竇荳讀豆逗頭屯臀芚遁遯鈍
F0 得燈橙燈蹬等藤謄鄧騰喇懶輇癩羅

Code PAge D540-D5FF

D540 - D5FF

```
40
50
60
70
80
90
A0    蘿螺裸邏樂洛烙珞絡落諾酪駱丹亂
B0    卵欄爛瀾懶蘭鸞剌辣嵐覽攬欖濫籃襤
C0    藍檻覽拉臘蠟廊朗浪狼琅瑯螂郎來崍
D0    徠萊冷掠略亮倆兩涼梁樑粮粱糧良諒
E0    輛量侶僂助呂廬慮庾旅梠濾礪藜蠣閭
F0    驢驪麗黎力曆歷瀝礫轢靂憐戀攣漣
```

Code Page D640-D6FF

D640 - D6FF

```
40
50
60
70
80
90
A0    煉璉練聯蓮輦連鍊冽列劣洌烈裂廉
B0    斂殮濂簾獵令伶囹寧岑嶺怜玲笭羚翎
C0    聆逞鈴零靈領齡例澧禮醴隸勞怒撈擄
D0    櫓潞瀘爐盧老蘆虜路輅露魯鷺鹵碌祿
E0    綠菉錄鹿麓論壟弄朧瀧瓏籠聾儡瀨牢
F0    磊賂賚賴雷了僚寮廖料燎療瞭聊蓼
```

Code Page D740-D7FF

D740 - D7FF

```
40
50
60
70
80
90
A0        逮闌龍疊婁屢樓淚漏瘻累縷蔞褸鏤
B0    陋劉旒柳榴流溜瀏琉瑠留瘤硫膠類六
C0    戮陸侖倫崙淪綸輪律慄栗率隆勒肋凜
D0    凌楞稜綾菱陵俚利厘吏喇履悧李梨浬
E0    梨狸理璃具痢離裡离莉裏裡里釐離鯉
F0    吝潾燐璘藺躪隣鱗麟林淋琳臨霖砬
```

Code Page D840-D8FF

D840 - D8FF

```
40
50
60
70
80
90
A0        立笠粒摩瑪痲碼磨馬魔麻寞幕漠膜
B0    莫邈万卍娩巒彎慢挽晚曼滿漫灣瞞萬
C0    蔓蠻輓饅鰻蛙抹末沫茉襪韤亡妄忘忙
D0    望網罔芒茫葬輞邙埋妹媒寐昧枚梅每
E0    煤寐買賣邁魅脈貊陌驀麥孟氓猛盲盟
F0    萌冪覓免冕勉棉沔眄眠綿緬面麵滅
```

Code Page D940-D9FF

```
D940 - D9FF

40
50
60
70
80
90
A0     蒐冥名命明暝楡渼皿瞑茗�’蜆酩銘
B0  鳴袂侮冒募姆帽慕摸驀暮某模母毛牟
C0  牡瑠眸矛耗芼謀謨貌木沐牧目睦穆
D0  驚歿沒夢朦蒙卯驀妙廟描昴杳渺猫妙
E0  苗錨務巫憮撫无楙武母無瑉敏
F0  繆舞茂蕪畝貿霧鵡墨默們刎吻閔文
```

Code Page DA40-DAFF

```
DA40 - DAFF

40
50
60
70
80
90
A0     汶紊紋閔蚊門雯勿沕物味媚尾嵋彌
B0  微未楣椚漢湄厴米美薇謎迷靡徹峨悶
C0  憫憫敏旻旼民泯玟珉緡閔密蜜謐剝博
D0  拍搏撲朴樸泊珀璞箔粕縛膊舶薄迫雹
E0  骲伴半反叛拌搬攀班槃泮潘班畔瘢盤
F0  盼磐磻礬絆般蟠返頒飯勃拔撥渤潑
```

Code Page DB40-DBFF

```
DB40 - DBFF

40
50
60
70
80
90
A0    駭跋礷鉢鬌魃傲傍坊妨尨尃彷麝放
B0  方旁昉枋榜滂磅紡肪膀舫芳蒡蚌訪謗
C0  邦防胇倍俳北培徘拜排杯湃焙盃背胚
D0  裴裵褙賠轡配陪伯佰皪柏栢白百魄幡
E0  樊煩燔番磻繁蕃藩飜伐筏罰閥凡帆梵
F0  氾汎泛犯範范法砝僻劈擘癖襞躄癬
```

Code Page DC40-DCFF

```
DC40 - DCFF

40
50
60
70
80
90
A0    碧蘗闢霹便卞弁變辨辯邊別瞥縈電
B0  丙倂兵屛幷昞昺柄棅炳瓶病秉竝輧餠
C0  騈保堡報寶普步洑湺潽珤甫菩補褓譜
D0  輔伏僕匐卜宓復服福腹茯蔔複覆輹輻
E0  馥旛本乶俸奉封峯峰捧棒烽熢琫縫蓬
F0  蜂逢鋒鳳不付俯傅剖副否咐埠夫婦
```

Code Page DD40-DDFF

```
DD40 - DDFF

40
50
60
70
80
90
A0      孚孵富府復扶敷釜浮薄父符簿缶腐
B0    腑膚艀芙孳訃負賦購赴趺部釜卓附駙
C0    炅北分吩噴墳奔奮忿憤扮盼汾焚盆粉
D0    糞紛芬賁雰不佛弗彿拂崩朋棚硼繃鵬
E0    丕備匕匪卑妃婢庇悲憊羆批斐枇榌比
F0    憊吡毘沸泌琵痺砒碑秕秘粃緋翡肥
```

Code Page DE40-DEFF

```
DE40 - DEFF

40
50
60
70
80
90
A0      脾臂菲蜚裨誹鄙費鄙非飛鼻頻嬪彬
B0    斌檳殯浜瀕瀕牝玭貧賓頻憑氷聘驞乍
C0    事些仕伺似使俟儓史司嗄嗣四士奢娑
D0    寫寺射巳師徙思撕斜斯栖查梭死沙泗
E0    瀉瀉獅砂社祀祠私篩紗絲肆舍莎簑蛇
F0    裟詐詞謝賜赦辭邪飼騧麝削數朔槊
```

Code Page DF40-DFFF

```
DF40 - DFFF

40
50
60
70
80
90
A0      傘刪山散汕珊產疝算蒜酸霰㲏撒殺
B0   煞薩三參杉森滲荽蓡衫插澁鈒颯上傷
C0   傷償商爽奮孀尚峠常床庠廂想桑橡湘
D0   爽牀狀相祥箱翔裳觴詳象賞霜塞璽賽
E0   嗇嗇穡柬色牲生甥省笙壻堺嶼序庶徐
F0   殼抒攄敍曙曙書栖棲犀瑞笨絮緒署
```

Code Page E040-E0FF

```
E040 - E0FF

40
50
60
70
80
90
A0      胥舒薯西誓逝鋤黍鼠夕奭席惜薔晢
B0   析汐淅潟石碩蓆釋錫仙僊先善蟬宣扇
C0   敾旋渲煽琁瑄璇璿癬禪線繕羨腺膳船
D0   薛蟬詵跣選銑鐥饍鮮卨屑楔泄洩渫舌
E0   薛褻設說雪鱈剡暹殲纖蟾贍閃陝攝涉
F0   燮葉城姓宬性惺成星晟猩珹盛省筬
```

Code Page E140-E1FF

E140 - E1FF

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

40
50
60
70
80
90
A0 聖聲腥誠醒世勢歲洗稅笹細說賣召
B0 嘯塑宵小少巢所掃搔昭梳沼消溯瀟焰
C0 燒甦疏疎瘦笑篠簫來紹蔬蕭蘇訴逍遡
D0 邵銷韶騷俗屬束涑粟續饍贖速孫巽損
E0 蓀遜飧率宋悚松淞訟誦送頌刷殺瀄碎
F0 鎖衰劍修受嗽囚垂壽嫂守岫崗帥愁

Code Page E240-E2FF

E240 - E2FF

40
50
60
70
80
90
A0 戍手授搜收數樹殊水洙漱燧狩獸琇
B0 璹瘦睡秀穗豎粹綏綬繡蓬修茱蒐俟藪
C0 袖誰譬檢邃遂酬銖銹隋隨雖嶲須首
D0 髓鬚叔塾夙孰宿淑潚熟琡璹鷫菽巡徇
E0 循忄旬枸楯橓殉洵淳珣盾瞬筍純脣舜
F0 荀蕣蕣詢諄醇錞順馴州戌術述鷸崇崧

Code Page E340-E3FF

E340 - E3FF

40
50
60
70
80
90
A0 　　嵩瑟膝盈濕拾習褶襲丞乘僧勝升承
B0 昇繩蠅陞侍匙嘶始媤尸屍屎市弒恃施
C0 是時柿柴猜矢示翅蒔蓍視試詩諡豕豺
D0 塒塞式息拭植殖湜熄簑蝕諜軾食飾伸
E0 佚傮呻娠宸慎新晨燼申神紳腎臣莘薪
F0 藎蜃訊身辛辰迅失室實悉審蕁心沁

Code Page E440-E4FF

E440 - E4FF

40
50
60
70
80
90
A0 　　沈深瀋甚芯諶什十拾雙氏亞俄兒啞
B0 娥峨我牙芽莪蛾衙訝阿雅餓鴉鵝堊岳
C0 嶽愕惡愕握樂渥鄂鍔顎鰐鱷安岸按晏
D0 案眼雁鞍顏鮟軋閼暗岩癌庵暗癌
E0 菴闇壓押狎鴨仰央怏昂殃秧鴦厓哀埃
F0 崖愛曖涯碍艾隘靄厄扼掖液縊腋額

Code Page E540-E5FF

```
E540 - E5FF

40
50
60
70
80
90
A0        櫻罌鶯鸚也倻冶夜惹揶椰爺耶若野
B0    弱掠略約若葯耥藥躍亮伴兩涼壤孃惹
C0    揚攘敚暘梁楊橪洋漾煬痒痬禳穰糧羊
D0    良哀諒鑲鐮陽量養圉御於漁瘀樂語馭
E0    魚鰭億憶抑檍臆偃堰彥焉菖諺孽臠俺
F0    儼嚴奄掩淹窵業円予余勵呂女如廬
```

Code Page E640-E6FF

```
E640 - E6FF

40
50
60
70
80
90
A0        旅歟汝濾瑜礖礪與艅茹興轝閭餘曥
B0    閭歟亦力域役易曆歷疫繹譯轢逆驛嚥
C0    壖姸娟宴年延憐戀捐挻撚橪沇沿涎涓
D0    淵演瀍烟然煙煉燃燕璉研硯罜筵緣練
E0    績聯衍軟葽蓮連鉛鍊鳶列劣咽悅涅烈
F0    熱裂說閱厭廉念捻染殮炎焰琰艷蒤
```

Code Page E740-E7FF

```
E740 - E7FF

40
50
60
70
80
90
A0     簾閶龔望暐獷燁葉令圉堂寧嶺嶸影
B0   怜映暎楹榮永泳渶穎澟瀯煐鶯獰玲
C0   瑛瑩瓔盈穎緓羚聆英詠迎鈴鎓零霙靈
D0   領乂倪例刈叡曳汭濊猊睿穢芮藝薉禮
E0   裔醴豫醴銳糠覽預五伍悟傲午吾吳
F0   嗚塢塤奧嵨癰悟惡懊敖旿晤梧污澳
```

Code Page E840-E8FF

```
E840 - E8FF

40
50
60
70
80
90
A0     鳥熬獒翼螺誤鰲鼇屋沃獄玉鈺溫瑥
B0   癰穩縕蘊兀壅摀瓷甕瘫翁鰮雍顒渦瓦
C0   窩窪臥蛙蝸𧏬婉完宛棺椀浣玩琓琬碗
D0   緩甀腕腕莞踠阮頑曰往旺枉汪王倭娃
E0   歪矮外巍巍狠畏了僚偟凹堯夭妖寥
F0   蓼尿嶢拗搖撓撓料曜樂橈燎爥瑤療
```

Code Page E940-E9FF

```
E940 - E9FF

40
50
60
70
80
90
A0        窈窕繇繞耀腰蓼蜺要謠遙遼邀鐃慾
B0    欲浴縛褥辱傆傭冗勇塀塘容庸灜榕涌
C0    湧溶熔瑢用甬聳茸蓉踊蓉鏞龍于佑偶
D0    傴又友右宇寓尤愚憂旴牛玗瑀盂祐禑
E0    禹紆羽芌藕戊迂遇郵釪隅雨穹勖彧旭
F0    昱楠煜稶郁頊云暈櫘殞澐熉耘芸蒷
```

Code Page EA40-EAFF

```
EA40 - EAFF

40
50
60
70
80
90
A0        運隕雲靷蔚鬱亐熊雄元原員圓園垣
B0    媛嫄寃怨愿援沅洹湲源爰猿瑗苑袁轅
C0    遠阮院願鴛月越鉞位偉僞危圍委威尉
D0    慰瞕渭爲韋緯胃萎葦蔿蛜衛褘謂違韙
E0    魏乳侑儒兪劉唯喩孺宥幼幽庾悠惟愈
F0    愉揄攸有杻柔柚柳楡楢油洧流游溜
```

Code Page EB40-EBFF

Code Page EC40-ECFF

Code Page ED40-EDFF

ED40 - EDFF

```
40
50
60
70
80
90
A0      立笠粒仍剩孕荪仔刺容姊姿子字孜
B0   恣慈滋炙煮茲瓷疵磁粢耆自茨蔗藉谘
C0   資雌作勺嚼斫昨灼炸爵綽芍酌雀鵲屍
D0   機殘溲塵岑暫潛蔵替蟄雜丈仗匠場墙
E0   壯獎將帳庄張掌暲杖樟檣獎艢狀獐
F0   璋章粧腸臟臧莊葬蔣薔瘀裝賍醬長
```

Code Page EE40-EEFF

EE40 - EEFF

```
40
50
60
70
80
90
A0      障再哉在宰才材栽梓溨滓災縡裁財
B0   載齋齎爭箏諍錚佇低儲咀姐底抵杵楮
C0   樗沮渚狙猪疽箸紵苧菹薺齏齟貯躇道
D0   邸雎齟勛吊嫡寂摘敵滴狄炙的積笛籍
E0   績翟荻謫賊赤跡蹟迪迹適鏑佃佺傳全
F0   典前剪塡塼箕專廛廑悛戰栓殿氈澱
```

Code Page EF40-EFFF

```
EF40 - EFFF

40
50
60
70
80
90
A0      煎璵田匋畑痶筌箋箭篆纏詮輾轉細
B0   銓錢鏽電順顚餞切截折浙癬竊節絕占
C0   岾店漸点粘霑鮎點接摺蝶丁井亭停偵
D0   呈婭定幀庭廷征情挺政整旌晶晸桯楨
E0   楻正汀淀淨涏湞瀞炡玎玎町睛碇幀程
F0   穽精綎艇訂鞓貞鄭酊釘鉦鋌錠霆靖
```

Code Page F040-F0FF

```
F040 - F0FF

40
50
60
70
80
90
A0      靜頂鼎制劑啼堤帝弟悌提梯濟祭第
B0   臍薺製諸蹄醍除際霽題齊俎兆凋助嘲
C0   弔彫措操早晁曺曹朝條棗槽漕潮照燥
D0   爪璪眺祖祚租稠窕粗糟組繰繰藻蚤詔
E0   調趙躁造遭釣阻雕鳥族簇足鏃存尊卒
F0   拙猝倧宗從惊燋棕淙琮種終綜縱腙
```

Code Page D140-F1FF

F140 - F1FF

40
50
60
70
80
90
A0　　　踪躓鐘鑢佐坐左座挫罪主住侏做姝
B0　賈呪周嗾奂宙州廚畫朱柱株注洲湊澍
C0　炷珠疇籌紵紬綢舟蛛註誅走躊輳週酎
D0　酒鑄駐竹粥俊備准埈寯峻晙樽浚準濬
E0　焌畯竣紊遒遵雋駿苗中仲衆重卽櫛楫
F0　汁葺增憎曾拯柔甑症櫛蒸證贈之只

Code Page F240-F2FF

F240 - F2FF

40
50
60
70
80
90
A0　　　咫地址志持指擊支旨智枝枳止池沚
B0　漬知砥祉祗紙肢脂至芝芷蚳誌識贄趾
C0　遲直稙稷織職膱嗔塵振摺晉晋板榛殄
D0　津溱珍瑨璡唋疹盡眞瞋素縉縝臻蓁袗
E0　診賑軫辰進鎭陣陳震侄叱姪嫉昳桎瓆
F0　疾秩窒膣蛭質跌迭斟朕什執潗緝輯

Code Page F340-F3FF

F340 - F3FF

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

Code Page F440-F4FF

F440 - F4FF

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

Code Page F540-F5FF

F540 - F5FF

```
40
50
60
70
80
90
A0    椒楚樵炒焦硝礁礎秒稍肖艸苔草蕉
B0    貂超酢醋醮促囁燭矗矚觸寸忖村邨叢
C0    塚寵忠憁總聰蔥銃撮催崔最璧抽推
D0    椎楸樞湫皺秋芻萩諏趨追鄒酋醜錐錘
E0    鎚雛騶鰍丑畜祝竺筑築縮蓄蹙軸逐
F0    蓄椿瑃出朮黜充忠沖矗衝衷悴膵萃
```

Code Page F640-F6FF

F640 - F6FF

```
40
50
60
70
80
90
A0    贅取吹嘴娶就炊翠聚脆臭趣醉驟鷲
B0    側仄厠惻測層俼値嘴峙幟恥梔治淄熾
C0    痔痴癡稚稙緇緻置致峙輜雉馳齒則勅
D0    飭親七柒漆侵寢枕沈浸琛砧針鍼蟄秤
E0    稱快他咤唾墮妥惰打拖朶樗舵陀駄駝
F0    倬卓啄坼度托拓擢晫柝濁濯琢琸託
```

Code Page F740-F7FF

F740 - F7FF

```
40
50
60
70
80
90
A0        鑲吞嘆坦彈憚歎灘炭綻誕奪脫探眈
B0    耽貪塔搭榻宕帑湯糖蕩兌台太怠態殆
C0    汰泰答胎苔跆邰颱宅撣澤撢攄兔吐土
D0    討慟桶洞痛簡統通堆槌腿褪退頹偷套
E0    妬投透鬭憝特闥坡婆巴把播擺杷波派
F0    爬羆破龐芭跛頗判坂板版瓣販辦飯
```

Code Page F840-F8FF

F840 - F8FF

```
40
50
60
70
80
90
A0        阪八叭捌佩唄悖敗沛浿牌狽稗覇貝
B0    彭澎烹膨憊便僃兩片篇編翩遍鞭騙貶
C0    坪平枰萍評吠斃幣斃弊斃肺蔽閉陛佈
D0    包匍匏咆哺圃布怖拋抱捕暴泡浦疱砲
E0    胞脯苞葡蒲袍裒逋鋪飽鮑幅暴曝瀑爆
F0    輻俵剽彪慓杓標漂瓢票表豹颮飆驃
```

Code Page F940-F9FF

```
F940 - F9FF
```

```
40
50
60
70
80
90
A0    品稟楓飄豐風馮彼披疲皮被避陂匹
B0  弼必泌秘畢疋篳苾秘乏邊下何厦夏廈
C0  豐河瑕荷蝦賀遐霞鰕嚳學虐謔鶴寒恨
D0  悍旱汗漢瀚瀚罕翰閒閑限韓割轄函含
E0  鹹唅喊檻涵緘艦銜陷鹹合哈盒蛤閤闔
F0  陝亢伉姮嫦巷恒抗杭桁沆港缸肛航
```

Code Page FA40-FAFF

```
FA40 - FAFF
```

```
40
50
60
70
80
90
A0    行降項亥偕咳垓奚孩害懈楷海瀣蟹
B0  解該諧邂駭骸劾核倖幸杏荇行享向嚮
C0  珦鄉響餉饗香噓墟虛許憲櫶獻軒歇險
D0  驗奕爀赫革倪峴弦懸晛泫炫玄玹現眩
E0  眴絃絢縣舷衒見賢鉉顯子穴血頁嫌俠
F0  協夾峽挾浹狹脅脇莢鋏頰亨兄刑型
```

Code Page FB40-FBFF

```
FB40 - FBFF

40
50
60
70
80
90
A0    形洞熒瀅瀅炯熒洐瑩荊鎣衡迥邢鎣
B0    鎣兮鎣惠慧暳憓蹊醯鞋乎互呼壕壺好
C0    姑弧戶�際昊晧亳浩漢湖滸滸潩濩漫瀰狐
D0    琥瑚瓠皓估糊縞胡芦葫薧虎號蝴護豪
E0    鎬頀顥惑或酷婚香混潭瓗魂忽惚笏哄
F0    弘汞泓洪烘紅虹缸鴻化和嬅樺火壽
```

Code Page FC40-FCC

```
FC40 - FCFF

40
50
60
70
80
90
A0    禍禾花華話譁貨靴廓擴攫確碻穫丸
B0    喚奐宦幻患換歡晥梡渙煥環紈還轘鰥
C0    活滑猾豁闊凰幌徨恍光慌慌晃晄梘況
D0    遑滉潢煌璜皇篁簧荒蝗遑隍黃謹回迴
E0    徊恢悔懷晦會檜淮澮灰獪繪膾茴蛔誨
F0    賄劃獲宏橫鐄哮嗃孝效斅曉鴞淆淆
```

Code Page FD40-FDFF

```
FD40 - FDFF

40
50
60
70
80
90
A0    爻肴醻驍侯候厚后吼喉嗅帳後杤煦
B0    珝逅勛勣塤塽煮燕燻薰訓量冕喧暄煊
C0    萱卉喚毀彙徽揮暉輝諱輝麾休攜休哇
D0    戲恤謞鶹羿凶匃洶胸黑昕欣炘痕吃屹
E0    紇訖欠欽歆吸恰洽僉興傳熙喜嘻囍姬
F0    嬉希憙憘戲睎曦熙熹�犠禧稀羲詰
```

Code Page 950 Traditional Chinese

Code Page A440-A4FF

```
A440 - A4FF

40    一乙丁七乃九了二人儿入八几刀刁力
50    匕十卜又三下丈上丫丸凡久么也乞于
60    亡兀刃勺千叉口土士夕大女子孑寸
70    小尤尸山川工己已巳巾干升弋弓才
80
90
A0    丑丐不中丰丹之尹予云井互五亢仁
B0    什仃仆仇仍今介仄元允內六兮公冗凶
C0    分切刈勻勾勿化匹午升卅卞厄友及反
D0    壬天夫太夭孔少尤尺屯巴幻廿弔引心
E0    戈戶手扎支文斗斤方日曰月木欠止歹
F0    毋比毛氏水火爪父爻片牙牛犬王丙
```

Code Page A140-A1FF

A140 - A1FF

Code Page A540-A5FF

A540 - A5FF

Code Page A240-A2FF

```
A240 - A2FF

40  ＼／＼ $ ¥ 〒 ¢ £ ％ ＠ ℃ ℉ $ ％ ＠ mil
50  mm cm km KM m² m² ng kg cc °  尢 氕 毪 敒 皕 皛 觲
60  甤 糰 ＿ ＿ ▬ ▬ ■ ■ ■ ■ ┃ ┃ ┛ ┗ ■ ■
70  ■ ╋ ┻ ┳ ┣ ┫ ┣ ━ ━ ┃ ┃ ┏ ┓ ┗ ┛ ╭
80
90
A0      ╮  ╰ ╯ ＝ ├ ┤ ▲ ▲ ▼ ▼ ／＼ ╳ ○
B0  1 2 3 4 5 6 7 8 9 Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ
C0  Ⅷ Ⅸ Ⅹ ｜ ‖ ‖ ╳ 8 ━ ━ ≡ 文 ╋ ╬ ╫ A
D0  B C D E F G H I J K L M N O P Q
E0  R S T U V W X Y Z a b c d e f g
F0  h i j k l m n o p q r s t u v
```

Code Page A640-A6FF

```
A640 - A6FF

40  共再冰列刑划刎刐劣匈匡匠印危吉吏
50  同吊吐吁吋各向名合吃后吆吒因回団
60  圳地在圭坊圯圩夙多夷夸妄奸妃好她
70  如妁字存字守乇安寺尖屹州帆并年
80
90
A0    式弛忙忖戎戌成戍扣扛托收旱旨旬
B0  旭曲曳有朽朴朱朵次此死氖汝汗汙江
C0  池汐汕污汛汍汎灰牟牝百竹米糸缶羊
D0  羽老考而耒耳聿肉肋肌臣自至臼舌舛
E0  舟艮色艾虫血行衣西阡串亨位住佇佗
F0  倭伴佛何估佐佑伽伺伸佃佔似佀佣
```

Code Page A340-A3FF

```
A340 - A3FF

40    w x y z A B Γ Δ E Z H Θ I K Λ M
50    N Ξ O Π P Σ T Υ Φ X Ψ Ω α β γ δ
60    ε ζ η θ ι κ λ μ ν ξ o π ρ σ τ υ
70    φ χ φ ω ㄅ ㄆ ㄇ ㄈ ㄉ ㄊ ㄋ ㄌ ㄍ ㄎ ㄏ
80
90
A0       ㄐ ㄑ ㄒ ㄓ ㄔ ㄕ ㄖ ㄗ ㄘ ㄙ ㄚ ㄛ ㄜ ㄝ ㄞ
B0    ㄟ ㄠ ㄡ ㄢ ㄣ ㄤ ㄥ ㄦ ㄧ ㄨ ㄩ •   ⼂ ⼁ ⼂
C0
D0
E0       €
F0
```

Code Page A740-A7FF

```
A740 - A7FF

40    作 你 伯 低 伶 余 佝 佈 佚 兌 克 免 兵 冶 冷 別
50    判 利 刪 刨 劫 助 努 劬 匣 即 卵 吝 吭 吞 吾 否
60    呎 吧 呆 呃 吳 呈 呂 君 吩 告 吹 吻 吸 吮 吵 吶
70    吠 吼 呀 吱 含 吟 听 囪 困 囤 囫 坊 坑 址 坍
80
90
A0       均 坎 圾 坐 坏 坼 壯 夾 妝 妒 妨 妞 妣 妙 妖
B0    妍 妤 妓 妊 妥 孝 孜 孛 孝 完 宋 宏 尬 局 屁 尿
C0    尾 岐 岑 岔 岌 巫 希 序 庇 床 廷 弄 弟 彤 形 彷
D0    役 忘 忌 志 忍 忱 快 忸 忪 戒 我 抄 抗 抖 技 扶
E0    抉 扭 把 扼 找 批 扳 抒 扯 折 扮 投 抓 抑 抆 改
F0    攻 攸 旱 更 束 李 杏 材 村 杜 杖 杞 杉 杆 杠
```

Code Page A840-A8FF

```
A840 - A8FF

40   枸枭步每求汞沙沁沈沉沅沛汪决沐汰
50   沌汩沖没汽沃汲汾汴沆汶洹沔沘沂灶
60   灼災灸牟牡牠狄狂玖甫甬男甸皂町矣
70   私秀禿究系罕肖青肝肘肛肚育良芒
80
90
A0      芋芍見角曹谷豆豕貝赤走足身車辛
B0   辰迂迪迅迄巡邑邢邪邦那酉釆里防阮
C0   阱阪阮並乖乳事些亞享京佯依侍佳使
D0   佬供例來侃佰併侈佩佻侖佾侏侑佺兔
E0   兒兕兩具其典冽函刻劵刷刺到刮制剁
F0   劾劻卒協卓卑卦卷卸卹取叔受味呵
```

Code Page AC40-ACFF

```
AC40 - ACFF

40   拯括拾拴挑挂政故斫施既春昭映昧是
50   星昨昱昤曷柿染柱柔某柬架枯柵柩柯
60   柄柑柺柚查枸柏柞柳枰柙柢枱柒歪殃
70   殆段毒毗氟泉洋洲洪流津洌洱泂洗
80
90
A0      活洽派洶洛泵洹洧洸洩洮洵泊洫炫
B0   為炳炬炯炭炸炮炤爰牲牯牴狩狠狡玷
C0   珊玻玲珍珀玳甚甭畏界畎畋疫疤疥疢
D0   疣癸皆皐皈盈盆盃盅省眈相眉眷盾盼
E0   眇矜砂研砌砍祆祉祈祇禹禺科秒秋穿
F0   突竿竽籽紂紅紀紉紇約紆缸美羿耍
```

Code Page A940-A9FF

```
A940 - A9FF

40    咖吥咕咀呻呷咄咒咆呼咐呱呶和咚呢
50    周咋命咎固垃坷坪坩坡坦坤坼夜奉奇
60    奈奄奔妾妻委妹妮姑姆姐姍始姓姊妯
70    妳姒姅孟孤季宗定官宜宙宛尙屈居
80
90
AO      屆岷岡岸岩岫岱岳帘帶帖帕帛帑幸
BO    庚店府底庖延弦弧弩往征佛彼忝忠忽
CO    念忿快怔怯怵怖怪怕怡性怩怫怛或戕
DO    房戾所承拉拌挂抿拂抹拒招披拓拔抛
EO    拈抨抽押拐拙拇拍抵抨抱拘拖拗拆抬
FO    拎放犇於旺昔易昌昆昂明昀香昕昊
```

Code Page AD40-ADFF

```
AD40 - ADFF

40    耐耍耑耶胖胥胚胃胄背胡胛胎胞胤胝
50    致舢芋范茅苣苟苦茄若茂茉荍苗英苔
60    苢苔苑苞荅荀苯苿廈虹虻虺衍衫要勐
70    計訂訃貞負赴赳趴軍軌述迦迢迪迴
80
90
AO      迭迫迤迨郊郎郁郃酋酊重閂限陋陌
BO    降面革韋韭音頁風飛食首香乘乘信倍
CO    做俯倦倥倥倩倖倆值借倚倒們俺俱倜
DO    倨俱倡個候倘俳修倭倪俾倫倉兼冤冥
EO    冢凍凌准凋剖剜剔剛剝匪卿原厝叟哨
FO    唐唔唷唉哥哲唆哺唔哩哭員唉哞哪
```

Code Page AA40-AAFF

```
AA40 - AAFF

40    昇服朋杭枋枕東果杳杷枇枝林杯杰板
50    枉松析杵枚科杼杪杲欣武岐殁㐬氛泣
60    注泳沱泌泥河沽沾沼波沫法泓沸泄油
70    況沮泗泅決沿治泡泛泊沬泯泚泖泠
80
90
A0        炕炎炒炊炙爬爭爸版牧物狀狎狙狗
B0    狐玩玨玫玫玥甽疝疙疚的盂盲直知矽
C0    社祀祁秉私空窀竺糾罔羌芈者肺肥肢
D0    肱股肫肩肴肪肯臥臾舍芳芝芙芭芽芨
E0    芹花芬芥芯芸芊芰苘芷虎虱初表軋迎
F0    返近邵邸邱邶朵金長門皁陀阿阻附
```

Code Page AE40-AEFF

```
AE40 - AEFF

40    哦唖唕哽唏圇圉埂埔埋埃塿夏套奘奚
50    娑娘娜娟娛娓姬娠娣娩娥娌娉孫尅宰
60    害家宴宮宵容宸射屑展屐峭峽峻峪峨
70    峰島崁峴差席師庫庭座弱徒徑徐恙
80
90
A0        恣恥恐恕恭恩息悄悟悚悍悔悌悅悖
B0    扇拳挈拿捎挾振捕捂捆捏捉挺捐挽挪
C0    挫挨捍捌效敉料旁旅時晉晏晃晒晌晅
D0    晁書朔朕朗校核案框桓根桂桔栩梳栗
E0    桌桑栽柴桐桀格桃株桅栓栘桁殊殉殷
F0    氣氧氤氮氬泰浪涕消涇浦浸海浙涓
```

Code Page AB40-ABFF

```
AB40 - ABFF

40   陂佳雨青非亞亭亮倍僂侯便俠俑俏保
50   促侶俘俟俊俗侮俐俄係俚俎俞倜兗冑
60   冑冠刹剃削前剌剋則勇勉勃勁薊南卻
70   厚叛咬哀咨哎戟咸咦咳哇哂咽咪品
80
90
A0      哄哈咯咫咱咻咩咧咿圉垂型垠垣垢
B0   城垮垓奕契奏奎奐姜姘姿姣姨娃姥姪
C0   姚姦威姻孩宣宦室客宥封屍屏屍屋峙
D0   峒巷帝帥帟幽庠度建弈弭彥很待徊律
E0   徇後徉怒思怠急怎怨恍恰恨恢恆恃恬
F0   恫恪恤扁拜挖按拼拭持拮拽指拱拷
```

Code Page AF40-AFFF

```
AF40 - AFFF

40   浬涉浮浚浴浩涌浞浹涅浥洿烊烘烤烙
50   烈烏爹特狼狹狽狸狷兹斑琉珮珠珪珞
60   畔畝畜奢留疾病症疲疳疸疼疹痂疽皋
70   皰盆盍盅眩真眠眨矩砰砧砸砝破砷
80
90
A0      砥砭砠砟砲祕祐祜祟祖神祝祗祚秤
B0   秣秧租秦秩秘窅窈站笆笑粉紡紗紋紮
C0   素絮純紐紕級紜納紙紛缺罡羔翅翁耆
D0   耘耕耙耗耽耿胱脂胰脅胭胴脆胸胳脈
E0   能脊胼胯臭臬臽舐航舫舨般郪茫荒荔
F0   荊茸荇草茵茴荏茲茹茶茗荀荼茨荃
```

Code Page B040-B0FF

```
B040 - B0FF

40   虔蚊蚪蚓蚤蚩蚌蚣蚜衰衷袁袂衽衹記
50   許討訌訕訊託訓訖訏訑豈豺豹財貢起
60   躬軒軔軌辱送逆迷退迺迴逃追逅迸蚩
70   郡郝郢酒配酌釘針釧釜卟閃院陣陡
80
90
A0       陛陝除陘陸隻飢馬骨高鬥鬲鬼乾偺
B0   偽停假偃偌做偉健偶偎偕偵側偷偏條
C0   偯偱兜冕凰剪副勒務勘動匐匏匙匿區
D0   匾參曼商啪啦啄啞啡啃啊唱啖問啕唯
E0   啤唸售啜唬啁唳啁啗圈國圉域堅堊堆
F0   埠埤基堂培執培夠奢娶婁婉婦婪婀
```

Code Page B440-B4FF

```
B440 - B4FF

40   婷媚婿媒媛媧孳孱孱寒富寓寐尊尋就嵌
50   嵐崴嵇巽幅帽幀嵀幾廊廁廂廄弼彭復
60   循徨惑惡悲悶惠惙愣惺愕情惻備慨惱
70   惿惶愉愀愒戟扉掣掌描捒揩揉揆揍
80
90
A0       插揣提握揖揭揮捶撥揪換揞揚揹敝
B0   敦敢散斑斐斯普晰晴晶晷暑智晾晷曾
C0   替期朝棺椋業棘棄椅楝棵森棧棹棒椄
D0   棣棋棍植椒椎棉棚楮棻款欺欽殘殖殼
E0   毯氮氪氬港游渝渡渲湧湊渠渥渣減湛
F0   湘渤湖涅渭渦湯渴湍渺測湃渝渾滋
```

Code Page B140-B1FF

```
B140 - B1FF

40   娼婢婚婆婊孰寇寅寄寂宿密尉專將屠
50   屜屛崇崆崎崛崖崢麗崩崔崙崤崧崗巢
60   常帶帳帷康庸庶庵庾張強彗彬彩彫得
70   徙從徘御徠徜惠患悉悠您惋悴惦懷
80
90
A0      情悴悵惜悼惘惕惆惟悽惚惇威戛屠
B0   掠控捲掖探接捷捧掘措捱掩掉掃掛捫
C0   推掄授掙採掏排掏掀捻捩捨掠敝敖救
D0   教敗啓敏敘敕敢斜斟斬族旋旌旒晝晚
E0   晤晨晦晞曹曼望梁梯梢梓梵桿桶梱梧
F0   梗械梃棄梭梆梅梔條梨梟梡棕欲殺
```

Code Page B540-B5FF

```
B540 - B5FF

40   溉渙涵潛湄浸渾湟焙焚焦焰無然煮焜
50   牌犄犀猶猥猴猩玨琪琳琢琥琵琶琴琯
60   琛琦琨甥甦畫番痢痛痣痤痘痞瘀登發
70   皖皓皴盜睏短硝硬硯稍稈程稅稀窖
80
90
A0      窗窘童竣等策筆筐筒答筍筋筏筑粟
B0   粥絞結絨紫紮絮絲絡給絢經絳善翔鑫
C0   羹舐罪腕腔腋腑腎脹腆脾腌腓腴舒舜
D0   菩萃菸萍菠菅萋菁華菱萇著萊菰萌菌
E0   菽菲菊奠藝萄菜萁菔莞虛蛟蛙蛭蚵蛛
F0   蛤蛐蛞街裁裂袱罩視註詠評詞証詁
```

Code Page B240-B2FF

```
B240 - B2FF

40    黿毯氫涎涼淳涼液淡洞淤添淺清淇淋
50    涯淑涮淞淹涸混淵淅濜渚涵淚淫淘潅
60    深淮淨淯淄涪淬涿淦烹焉焊烽烯爽牽
70    犁猜猛猖猓猙率琅瑯球理現琍瓠瓶
80
90
A0       瓮甜產略畦畢異疏痔痕疵痊痺皎盉
B0    盒盛眷眾眼眶眸眺硫硃硎祥粟祭移窒
C0    窕笠笨笛第符笙笞笤粒粗粕絆絃統絮
D0    紹絺紬細紳組累終絨缽羞羚翌翎習
E0    耜聊聆脯脖臉脫脩脛脈睿舵舷舶船莎
F0    莞莘莞莢莖莽莫莒莊莓莉荸荷荻茶
```

Code Page B640-B6FF

```
B640 - B6FF

40    詔詛詐詆訴診訶詖象貂貯貼貳貽貴賁
50    賀貴買貶貿貸越超趁跎距跋跚跑趺跛
60    跆軻軸軼軥速連週逸進逯鄂郵鄉鄖酣
70    酥量鈔鈕鈣鈉鈎鈍鈴鈇鈑閔閏開閑
80
90
A0       間閒閔隊階隋陽隅隆隍陲堤雁雅雄
B0    集雇雯雲靭項順須飧飪飯飩飲飭馮馭
C0    黃黍黑亂傭債傲傳僅傾催傷傻傯傺剿
D0    剷剽募勤勢勣滙嗟嗨嗓嗦嗎嗜嗇嗑
E0    嗣嗤嗯嗚嗜嗅嗆嗥嗦園圓塞塑塘塗塚
F0    塔填塌塭塊塢塒塋奧嫁嫉嫌嫣媽媼
```

Code Page B340-B3FF

```
B340 - B3FF

40    莔莧處彪蛇蛀蚶蛄蚵蛆蛋蚱蚯蛉術衰
50    袈被袒袖袍袋覓規訪訝訣訥許設訟訛
60    訢豉豚販賣買貨貪貧赦赦趾趺軛軟這
70    逍遄逗連速逝逐逕逞造透逢迯逛途
80
90
A0       部郭都酗野釵釦釣釧釭釩閉陪陵陳
B0    陸陰陴陶陷陬雀雪雩章竟頂頃魚鳥鹵
C0    鹿麥麻傢傍傳備傑傀傖傘傲最凱割剴
D0    創剩勞勝勛博厥喀喀喧啼喊喝喘喂喜
E0    喪喔喇喋喃喳單喟唾啾喚喻喬喱啾喉
F0    喫喙圍堯堪場堤堰報堡堝堠壹壺壺貴
```

Code Page B740-B7FF

```
B740 - B7FF

40    媳嫂媲嵩嵯幌幹廉廈弒彙徬微愚意慈
50    感想愛惹愁愈慎慌慄慍愫愴愧愍愫愷
60    戡戢搓搾搞搪搭搽搬搏搜搔損搶搖搗
70    搆敬斟新暗暉暇量暖暄暘暍會榔業
80
90
A0       楚楷楠楔極椰概楊槇楣楞楓楹楠楝
B0    楣楂歇歲毀殿毓毽溢溯滓溶滂源溝滇
C0    滅溥滄滓溺溫清準溜滄滔溪溧溴煎煙
D0    煩煤煉照煜煬煦煌煥煞煆煨煸煉猷猷
E0    獅猿猾瑯瑚瑕瑟瑞瑁瑝瑙瑛瑜當畸畹
F0    痰瘁瘋痱痺痿痴痲蠱盟睛睫睦睞督
```

Code Page B840-B8FF

```
B840 - B8FF

40   睹翠睬睜睥睨睢矮碎碰碗碘碌碉硼碑
50   碓硿祺祿榮萬禽稜稚稠稔裸稞窟窠梜
60   節筠筮筧粱粳粤經絹綑綁綏絛罣罩罪
70   署義羨群聖聘肄肆腱腰腸腥腮腳腫
80
90
A0       腹腺腦舅艇蒂蒡落萱葵葦胡葉葬葛
B0   尊萬葡藍葩葭葆虞虜號蛹蜓蜈蛰蜀蛾
C0   蛻蜂蠆蜆蜊衙裟裔裙補裘裝裡裊裕裒
D0   覡解觥該詳試詩詰誇欷詣誠話誅詭詢
E0   詮詬詹詻誓詼詧貊貉賊資賈賄貲賃賂
F0   賅跡跟跨路跳踩跪跤跌躲較載軾輕
```

Code Page BC40-BCFF

```
BC40 - BCFF

40   劇劈劉劍創觭厲嘮嘻嘹嘲嘿嘴嘩噓嘻
50   噗噴嘶嘯嘰墀墟增墳墁墮墩墦爽嬉嫻
60   嬋嫵嬌嬈寮寬審寫層履嶝嶔幢幟幡廢
70   廚廟廝廣廠彈影德徵慶慧慮慝慕憂
80
90
A0       慼慰慫慾憧憐憫憎懦憚憤憔憮憨摩
B0   摯摹撞撲撈撐撣撥撟撕撩撒撮播撫撚
C0   撬撟揮撤敵敷數暮暫暴暱樣樟樃椿樞
D0   標槽模樓樊槳樂樅械樑歐歎殤毅殿漿
E0   潼澄潑潦潔澆潭潛潸潮澎潺潰潤潤潘
F0   滕濤撰潟熟熬熱熨牖犛獎獗瑩璋璃
```

Code Page B940-B9FF

```
B940 - B9FF

40  胖農運遊道逯達逼違遐遇邊過遍違逾
50  遁鄹郡酬酪酩釉鈷鉗鈹鈰鉀鈾鉛鮑鈞
60  鉑鈴鉉鉍鉅鈹鈿鉚閘隘隔隕雍寯雉雎
70  雷電靈霧靖靴靶預頑頓項頌頌飼飴
80
90
A0    鮑飾馳駃馴髟鳩鳶鼎鼓鼠僧僮僥僖
B0  僭僚僕僳僑傭僎僩僥兢凳劃剿厭嗽嘀
C0  嘛嘗嗽嘔嘆嘉嘖嘎嗷嘖嘟嘈嘐嘩團圖
D0  塵塾境墓墊塹堅墺壽夥夢奩奪奩嫡嫦
E0  嫩嫗嫖嫖嫣孵寡寧寡蓼實寨瘦瘩察對
F0  屢嶄嶇嶂幣幕幗幔廓廖弊鱉彰徹慇
```

Code Page BD40-BDFF

```
BD40 - BDFF

40  瑾璀骰齎瘩瘟瘤瘦瘡瘢瘤皺盤瞎瞇瞌
50  瞑瞋磋磅確磊碾磕碼磐稿稼穀稽稷稻
60  窯窩箭箱範箴篆篇篁簾篌糊締練緯緻
70  緘緬緝編緣線緞緩緦緯緲緹罵罷羯
80
90
A0    翩耦腟膜膝膠膚膘蔗蔽蔚蓮蔬蔭蔓
B0  蓧蔣蔡蔔蓬蔥蓿蓬蝴蝶蝠蝦蝸蝨蝙
C0  蝗蝌蝓衛衝褐複褻褓褕褊誼諒談諄誕
D0  請諸課諉諂調誰論諍誶誹誤豌豎豬賠
E0  賞賦賤賬賭賢賣賜質賡赭趟趣踮踐踝
F0  踢踏踩踟踧踞躺輝輛輟輩輦輪輻輞
```

Code Page BA40-BAFF

```
BA40 - BAFF
```


Code Page BE40-BEFF

```
BE40 - BEFF
```

Code Page BB40-BBFF

```
BB40 - BBFF

40    罰翠翡翟聞聚瑩腐膀膏膈膊腿膂滅臺
50    與舔舞猛蓉蕗蓆蕎蒙菈蒲蒜薑莶蓀蓓
60    蒐蒼蓑蕘蜿蜜蜻蜢蜥蜴蜘蝕蜷蜩蜚褂
70    裴裹裸製裨褚裯誦誌語誣認誠誓誤
80
90
A0        說誥諱誘誑誚誧豪貍貌賓賑賒赫趙
B0    趕踢輔輒輕輓辣遠遘遜違遙遨遏逯遛
C0    鄙鄘鄭醇酸酷酴餃銀銅銘銖銘銓衡銨
D0    鉼銑閡閨閩閣閡閣隊障際雌雒鼐韃鞅
E0    韶頗領颯颱餃餅餌餉駁骯骰髦魁魂鳴
F0    鳶鳳窳鼻齊億儀僻僵價儂儈儉儅凜
```

Code Page BF40-BFFF

```
BF40 - BFFF

40    濃澤濁澧澳激滄澶澐澠濆熾燉燐燒燈
50    燕熹燎燙烟燃燄獨璜璣璘環璞瓢甌甕
60    瘴癒瘺盧盥瞠瞞瞟瞥瞪磚磬磧禦積穎
70    穆穌穆窺篝簑築篤翁篡篩簁糕糖縊
80
90
A0        繡縶縛縣縞縝縉縐繧繳翰翱翮耨膳
B0    膩膨臻與艘艙蕊蕙蕈蕨蕩蕃蕉蕭蕪蕞
C0    螃螟螞螢融衡褪褲褥襖褡親襯諦諺諫
D0    諱謀諜諧諮諾謁謂諷諭諳諶諼豫貐貓
E0    賴蹄踱踴蹂踹踵輻輞輨轡辨辦遵遴選
F0    遲遼遺鄰醒錠錶鋸錳錯錢鋼錫錄錚
```

Code Page C040-C0FF

```
C040 - C0FF

40    維錦錡錕錮錙闔隊隨險雕嬰蕗霖霵霓
50    霏靛靜覥鞝頹頸頻額頭頰頤餐館餞錕
60    餡鯪駭駢駱駭骼髻髭鬼鮑鮀鴣鴡鴨鴒
70    鴛獻黔龍龜優償儡儲勵嚎嚀嚕嚕嚇嚇
80
90
A0       嚙壕壓壑壎嬰嬪嬤孺孺屨嶼嶺嶽嶸
B0    幫彌徽應懂懇懦懋戲戴擎擊擘擠擰擦
C0    擬擱擢擤斂斃曙曖檀檔橄檢檜櫛櫅橾
D0    櫟檣檠歜殮氈濘濱濟濠濛濤濫濯澀
E0    濬濰濛濕濮濰燧營燮燦燥燭燬燴澳爵
F0    牆牆獲璱環璦璨癆療癉盪瞳瞪瞰瞵
```

Code Page C440-C4FF

```
C440 - C4FF

40    願顛頵饅饉驚騙鬍鯨鯧鯖鯛鵑鵠鵲鶇
50    鵬麒麗黶麴勸嚨嚷嚶嚴嚼壞孀孃孽寶
60    巉懸懺攘攔攘曦臉槽瀾瀟瀲爐獻瓏瓌
70    癟礦礪礬礫竇競籌籃籍糯糰辮繽繼
80
90
A0       纂罌耀臚艦藻譐躂闥蘆蘋蘇蘊蠔蠕
B0    襤覺觸議譬警譯譟譫巇贍蹇躁躅躂醴
C0    釋鐘鐃鏽闡饊飄饒巉馨騫騰騷顠鰓鰍
D0    鹹麵黨齟齣齡儼儸嚨囁囀囂孈孃孀懼
E0    懾攝攜瀾囊櫻欄欟殲灌爛犧瓔瓊癩矓
F0    籐纏續蠆蘘蘭蘚蠣蠢蠢蠟襪襬覽齬
```

Code Page C140-c1FF

```
C140 - C1FF
```


Code Page C540-C5FF

```
C540 - C5FF
```

Code Page C240-C2FF

```
C240 - C2FF

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

Code Page C640-C6FF

```
C640 - C6FF

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

Code Page C340-C3FF

```
C340 - C3FF

40  鞭韹額顏題頸顙騠馤餿魄發馥騎騍鬃
50  鬆魏魎魍鯊鯉鯽儵系鵑搗鵠駋琴鼬儍
60  嘛壞壢壢寵龐廬懋懷懤惜摰攏曠曝樹
70  櫃櫚櫓瀛瀟瀨瀚瀝瀕瀘爆燦牘犢獸
80
90
A0    獺靈瓊辦疇疆癟癡睩礙禱稜穩簾薄
B0  簸簽簷擄繫巔繹繩繪羅繳䌷襲嬴臁藩
C0  藝藪藕藤藥藷蟻蠅蠍蟹蟾襠襟襖襲譁
D0  譜識證譚譫譏譆譙贈贊蹼蹲蹠蹺蹬蹺
E0  蹴蹣蹻辭邊邈醱醮鏡鏑鏟鏃鏈鏜鏝鏖
F0  鏍鏢鏘鏤鏗鏨鬮隴難霪霧靡鞱韻類
```

Code Page C740-C7FF

```
C740 - C7FF

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

Code Page C840-C8FF

```
C840 - C8FF

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

Code Page CC40-CCFF

```
CC40 - CCFF

40   坨埼夋奇娃妺妉娹姐婶姁玹㘄婔姖姫
50   姤妹姶婴娭抱挛㤢宕屄屇屺㟃岠峇屸
60   岨岬峡岣岭㟢㠻㠽岑岥岶岊岥峖峡
70   㓩㓪竍弤㣺徂徔㣲忞㤀怭怦怙怲恨
80
90
A0      忲怊怗怳㤫怞惆忕怍怉怉怋㤪怤怉
B0   怜㕥㞮抏㧟抇㧍㧊㧊抌㧎担㧔搏挟
C0   㧊敀㫁旒㫎旼㫄㫆晏㫆香旪吸旽昑
D0   盼畄肮枅杭枎㭇柁杻柄㔷构㭇㭇㭇㭇
E0   㭾㭇㭇枸㭇极㭇㭇枔㫐殀㫃㲳㲳沓沭
F0   㲯泮泙㳠泔㲺泼波㳿泂泏㳶洗泭泸
```

Code Page C940-C9FF

```
C940 - C9FF

40  义乜凵匚厂万开毛宁口兀屮彳丏币与
50  乩亓伩仉仈尤匁印厼圠圢及夬尐市旡殳
60  田气爿卅丼仨仁仕仡仝仐刉匦卌圲圣
70  夗夯宁宄尒屍屴仚忊疟厊忔扐戉扐气
80
90
A0      永汃氿氻戈扐玉肉肍阞伎优伓仵伉
B0  伶仾价伈伝佈佗伢伓伻佪沜刟刞刱
C0  姦図匹卍屌呼囷囟圮圫均夼改妣虹妞
D0  妁奸尥孖氶炮氘屺岄屾宂开庄异翁礿
E0  忮忔忏扞扜抌扡扦扢扙扚扚抝旯旮打
F0  杌枋朳机束朼朾气汞汇汜汰汉汔沟
```

Code Page CD40-CDFF

```
CD40 - CDFF

40  泒沠沴炌林杼泞泀泪沷泇沰洰泄泩泑
50  泆炘炅炓炊炄炢炖炂眇炗牪犾猂狖狉
60  猎狒狔狙狌狑玗玡玭玦玢玠玥珘珦顼
70  驼畀甾電疰疳眈眄肝疙矸矼矹砭砒
80
90
A0      矸祂礿耗麦穿芛米紅盯畬肮胕胅肵
B0  胏舠艾芫芫苄芘萝英苧芮芼气芙芴芨
C0  芡苓莰茻芨芶芒虹虬虰虮豖远迂迋迆
D0  迏连沃邴邴邯邳邰邴阹阽阼阺陃俍佚倳
E0  偑俉偘俣俔傳俙俔俥侳俛偑侸俣伭佺俬
F0  剉剜勀勐匰甋厗庲庫厘哐哣唶哇哏
```

Code Page CA40-CAFF

```
CA40 - CAFF

40   洲灼牰犴犹玎甪乩宅网艸芐苀芄芴虍
50   两邙邘邦邛邔邵阢陁阰陀佀伾佢佲体偗
60   佴伋侠佟伯佘佷丗侭伧匉波劋則剾勐
70   劻匊卤卲底庌呿唊吡呔咬吤哑咶咩
80
90
A0       吽哻呴吨呌呇囷囶囻坻垀坔地坋坔
B0   夆奕婲妘妠妗妎妢妐妟妘妌実宒尨尪
C0   岎岏岈岋屾岭毘岹岼屰坙岜忱庋庖庌
D0   庅庍夅牠仏彶弎忈志忭忨忮忳忡忏忣
E0   饮怟恼忻怀怜妃抃扰抎抏抔担扱抆抵
F0   扰扰拐抙扡拎扴攷旰旴旳昊昆杅杇
```

Code Page CE40-CEFF

```
CE40 - CEFF

40   啁苟咣咮哞咶呁哆曡皆咼咢咾吡哞呴
50   坲垎垟垤垌垗塽垬塞垗埧垗垎垏垚豆
60   复夈娒婚姮娥婍姝姯婂姲姶姤娞婑姛
70   婌姳姵婒姪裂褻宄屑峐峘崕峗峋洍荊
80
90
A0       岧峚峇峇峹峻峼峬峈峇峹峬峼峺峚
B0   怦恰豨閈幇庵扅座庇庞庼弅巻彖洒恋
C0   悳恔怦慄恔恓恈悾恉恌恟恇恉恄悤恔
D0   恫恈居屙拳挍挜挎挃挄挘挏挌挢挖
E0   挀挞挋挟抪扷拪战敃斩斿昶昡晽昵易
F0   昪昢昳昫昷昚昮咏昪肸肕枱柲桦枺
```

Code Page CB40-CBFF

```
CB40 - CBFF

40    杙杕朷杈杝杼杍机毒氝氞汸浾洪沄沈
50    洳泆泑汩訨汭沈汤沂泍泒汳浂汻沘灯炮
60    犰犴犵狚狆犹犹狂玕玗玏珋玒町粤疗
70    疜皁祂瓦胢冑肞肔肜芐芏芼莺芑孛
80
90
A0       芋芃芄多迉迊郏邧郯邦邝邲阯陁阰
B0    阮弗佗佼佽饮俐傀佶佴傍侄佷佪侁佲佪個
C0    佾傦伔恬恤佛伜伽佺侂俪佫佮佮采冼冶
D0    刞刲剚剘刜劼剢匋匼匾屖呧咕咁叮呞
E0    咈咶嗠咀咡咖呴呦咍咔哏呔咘咘唞呿
F0    圐圙坏坲坭站块垌坶坪坵坻坳堻坢
```

Code Page CF40-CFFF

```
CF40 - CFFF

40    柜榵柸柘柀枷柅柭柤柛枵柍枳枧柶柚
50    柣柂柏柎柧奈枭枕柆柉柌枯柤柛榜柁
60    柊柃枸柴歁俎殄殳虎毘玺氠豙浹洴洭
70    浬洼涄酒涔洮泑泀洄洙洺洚泐浠浂涘
80
90
A0       洁涛泾浟洏油洇泽浈洈泴泃洐炷炟
B0    炧炅烋炡炴烢烠炯炵炤烞炥烿堃臭猪
C0    狨豬狟狪獼狪狁玅砂珂珈珅玹玶玷玬琈
D0    玿珇珒珮玼珀玴旍瓮畓畇畈疧疪癹盐
E0    眈眃晛敗眊盷盼斫矵妖砆砑砒砅砐砏
F0    矴毒砛砐矿砷毁矤矝秕种耗秖粉窀
```

Code Page D040-D0FF

```
D040 - D0FF

40    突竑竺竺粍籵籹籿籵籿紃紈紁罘羮窐
50    狅耆突耏秄奟胘腓胩肞胈胂胐胅脃胙
60    胜胸胕胢肺胗胦胍舀紅屮苙苾莝芙苊
70    蕀茗荛苦苗苴茵苡苲荚茌荇荼荭荋
80
90
A0      苤莨莓荃茐虷虼虬蚼盍衎衬袘衩衺�
B0    舫舀赹迣迟迮迠邗邽郝郕邞邾邬郎郘
C0    钇钆陜陥耐陪陊陈惊悴惋俶健倰倛倰
D0    倰傳倏倬俶俾倗倜倠倎偡傖偺傎党罸
E0    羴清凄涸凈凎剡劕剕剳剤劙荆剢劻窀屏
F0    哆哱哇哂哧哳咘嗲咚呡唄咺呢唑哈哱
```

Code Page D440-D4FF

```
D440 - D4FF

40    酎酡釕釢釚陕陟隼釘彭邕亂偰偪偡偼
50    偠偓偋偝偲偈偍偂偁偶偢倕僵偟偺侍
60    倄傠傛傒偰傠偣偑渥庹剭剭剬剮勖勧甌
70    廛唴唒嗌唓唑哮唪哝嘰唶唵唎唒啈
80
90
A0      唌唍啥衔哛唪唭唻哩唻圐圔埥埰埬
B0    埶坔埴堀埭壽坰塲埘垍埏薑塽坐堻塘
C0    堐坧埮埼埕填塸埬埩埰塊坭斝婳婼
D0    婕婧婥娸嫩娅娰婳婷婬斐婣娾嫁娧娹
E0    婄娺娵堵娃婍嫐娵婇婵婇嬳娺婄娶娷
F0    孮寋柇厨嶂犛崤崚崃崌崡峽崦峀嵖
```

Code Page D140-D1FF

```
D140 - D1FF

40   唊喱哹唆唂唎唭唋圚圀埌聖埕塃坃塤
50   �埦坲塀堉壔坘埖鋄奜婭婝娭嫧婡
60   媰姬媞娞娳挊宦奢戌尃犀呢岫峿崫猫
70   宰嵐峇帩悅摩廅庝厖悬殆哦怨㤀
80
90
A0       恬悢怷桶悒慉悝囷㥉悛悗悸悝惐㦮
B0   晟㨔犎� 挦捄捅揭捃掶㧯捋捊挬捂掯抯
C0   挴㨡挼揮㧀㨝挃捱摸㨡抄㨝捈敀敆施
D0   施㫙㫕晊晟晭㫙腷脁栟栊桉㭐栳杕椷
E0   栵栖枎棟㭠柠柿桷㭏桃梅㭲枸㮙枻㭸
F0   栢㭶棺染㮪㰣㰦欧㰦欦峙殩殀㮶㲽
```

Code Page D540-D5FF

```
D540 - D5FF

40   嵋峷㠢釜奞帠㡵㡷㡷庺㡾陳庫�)镚衒㥌
50   徜悊愁㥶悾悰悱㦀惔惏㦈㦄愉㦊徘慒
60   悢悾㥵悃㦔愉㪺挽掊拈㨝㨶掞捄擑㨡
70   撖掎搥掇捁据掮掙挩挿搕掁挺挓
80
90
A0       掾搐㩘㩜㩟㩙敊㫉晥晡晲㫙㤱晳胺
B0   㭣㭤㭖桉根栢桐㭐椰㭐桵㭓㭖桵枠杬
C0   楷㭸枱㭥枒㭠㭷㭒椢㭬梛棚㭑桐柏㭥棼
D0   桶棒椒㭥弒蛮㮷㮤㮥欻殃殍㮫㮷甖
E0   淀渲浣㲛㳂涬凌減凍㳆渲㳆㳆㳊㳌淖
F0   㳔㳈湖㳁㳈㳇㳉潛㳋㳌㳌㳍㳏㲛㲜
```

Code Page D240-D2FF

```
D240 - D2FF

40  銑氂氇氈氋氿浣浤浲涃涍浘渑湞浭浯
50  涷浲清湨洴泿湼涚浰浪浂湺涂涘漃沬
60  浹冼浨湾湨涸涧浚滂浌烜烓洮烝烋焦
70  烤炫烒烌烆烔烷炉烆焜焙烰燊粦粁粀
80
90
A0      牷牶玅獦狴狝猇狳狻猁玟珙珥珧玭
B0  玑珣珩珜珒玶珝珇珬珖玲朥皅瓨瓬
C0  牸眕夒疰疸痆疞痄疴瘕泚疕眇盃竚眛眐
D0  眜眒眣眗眕眙睿督昭硭砐砢砵砅砐硯磬
E0  硅砡硃砓砆砱祔祛祐祜祓祒袂祔秙秬
F0  秬秾秖秜秞秣窐穼窅窑窂穼窡畇筙
```

Code Page D640-D6FF

```
D640 - D6FF

40  湀淲涝淐淘澖涴湓焧焌烷焐熰焌焊焘
50  焵焐焺烨焆焓焰焙烶烓燇烮犲犗悘牸
60  瘁犄狝猑猁猊犀狿猏猞狺珸瑅珸玲珺琏
70  珽瑃珨珺珢珵瑔瑵珴珸時會痎瘁痀
80
90
A0      痓痌瘵痼畔甿淉睐眿眭曘盯眴眙眽
B0  瞥眄眳硞硒硨硙硠硌砦硅硐袆裫袾祐褗
C0  袬祫紫亹耗秸粂秮秬穻窒范筇笰箚篖
D0  篑箸笰笝筁簂筍笅等簭笄筕箪笝粔粘
E0  絑柵紵紀紆結紺絅紬紱絁絢紗紿絑絑
F0  紨罿耄羜羝叢翊羜羟羠猴狗婑嫪翊粔
```

Code Page D340-D3FF

```
D340 - D3FF

40  笄笽娑笏筊笧笫筍笒板粑柴粞粗粍粅
50  紽紝紑紣紘絅紓給紒斜紽罜罡罘罠罝
60  眾殺籿翊翇翀眇眈聆胺胲胏胵胱胕臀
70  舁舯舥茳荴荄茭萸堇著苀萱萊茜剕
80
90
A0     萻堇蕡莌芘蔺莜萕荖荥苃伏莟荇苔
B0  荌荓薗荏萹茧荮虓虓虓蚖蚨蚖蚍蚑蚞蚎
C0  蛺蚆蚋蚚蛔蚊蚙蚡蚧蚕蚘蚅蚝蚼蚳蚿
D0  蚏袄袙神衲袎极衿衿裂衮枕枝訋肛陇
E0  豻豿貢赶赳豹豿肝軐帆迆週适迿迻逄
F0  逭逌邔郬鄗鄒郆郊郾邵邵郳都哿邰酐
```

Code Page D740-D7FF

```
D740 - D7FF

40  籿粨眐聏聏脘腋脉脛腥肵胖脞脡脘腅
50  腪腜砛柯舳舺怍舲舭沅蒠蕡萊玓荳茴
60  荴莎苙蓉菁葱茼茡蒌蕣莡堃莛莪莋菱
70  蒟莯菠葷菼莀脊莇蒷嗲莚廈廗蚿蚷
80
90
A0     蚹蛂蛄蚺蚰蚨蚹蚞蚛蚖蚎蛰蚼蛳蚯
B0  蚾衕袉袄袚袢袪袚袑裇袄袘袚袙袱袗
C0  表袤褭袓袎罦蛺舲犕舲試鈔訣鈜頜狆
D0  犯豿貥赾赲赹跰肢跌趴肥軘軞舳軜殷
E0  軠軨迿逋逑逌逺逢郊鄦耶郴郊郶迊鄄
F0  鄘鄀酖酘酚會鈢釬釱釱鈏鈔鈐鈫釪
```

Code Page D840-D8FF

```
D840 - D8FF

40  鈳釷釾釱趴鬧鬨鄐耆隌陫陶隃儁靯丅頏訫
50  氼容傕傮傝傳傣傈傌傎傝傑傤傒傶傹偩傝
60  烷傖傼輇厭厩喑唬嗫嗲嘟嗊喵喓喈喏
70  喵喎煦嗒喤啍冴冎喁呫喕嗁喁圇塪墥
80
90
A0     堙堞埙塥塌埵塈墊堚堌堌塌塌塪塪
B0  塺墿堬塗畀嫣媔媟娑嬇娷媰嫣婼媥媬
C0  媍嫡婎媄嫡婲婎婇婤婲娧媎媏婳媓婺
D0  痲宻寋寋宲宲痳尌尫嵖嵺屸崼嶀喈嶤
E0  嵑帵峧崄施峀慭尵料禕嵤崻崝嵨嵹嵗
F0  桂崴幮幁巇假徥徫溁憲愍愍忢基怒偣
```

Code Page DC40-DCFF

```
DC40 - DCFF

40  軹軛軮軥軴軝軨輇軮軝奎軖軸逭連逯
50  鄆鄌鄄鄑鄠郑郾鄠鄐都鄖鄄鄐酏酤酤
60  酢酊鈁鈒鉄鈈鉳鈦鈃鈌鈀鈒釿釟鈆斜
70  鈗鈗鈥鈤鈒鈗鈅鈖鈗鬧鬨鬧鬧臧陝隈
80
90
A0     陞隃陞雂隹雁雺穼軒軏靯頏颷鈇配
B0  襂纃氎竉偉偈偨儓傒傟侸侵傁偹偨傃
C0  從儧儉儉俠儶劈剤削劉嗃嘸嗌嗜嗛嘖
D0  喝榖嗩嗴嘖柔嗒喋喿喡嗌嗅啮嗲啪嗙
E0  嘀圚塸塳塳墥腟塳塯塮塮塝塘塪塸堐
F0  堻塑鑫塸塿墹塗塳塟塝塱墈塴塘塇
```

Code Page D940-D9FF

```
D940 - D9FF

40  憚偪慪懂傈愓㥛偏憯怷愃客愰偭愢愄
50  愬㞋緊孛拚擅挮挮恛揄撽揆搐摱揶搣
60  撲揵摡撋搽搯撆揄揘撽搐揃摙摬掏擅
70  搢搧皷欨欬欰欯欬焱斌睪斞斷旊旅
80
90
A0      睕晬晻旺晱暘暎晲暜楦楅槙㮰椕椦
B0  椂棱椏槄椒椷楮楱椂椐椺椆棢槇槑槦棷
C0  椻楺椧楍楢楘槸枼楚椋樟椗橾槿楒
D0  榿橣橶枅橺楉棚枛桐椮欿敊欮欯歘桅
E0  殨殕毅毲毷毚毴淼淐淍滭活渦溪渻湅
F0  湢湲湤湪湝湳渙渮湋湥湞湼渚�湞湞
```

DD40-DDFF

```
DD40 - DDFF

40  嬠嬨嬤嬢嫿嬌嬙娶㝩寊瓫尯攡嵍嵥嵨
50  嵊嵲寉尯嶹嶱嶮虝嫁幀幀帍幣廬麻虝
60  廎廇毅溪俆愻傭懶傃怪憒愭愐愠愭愩
70  慎愮戝截戮戯戭睪睪挲搚搒搒搒掩搙
80
90
A0      搤損掸搳掾摑摪掜摯搨摠掲摕摀
B0  搯摑掆搗搤搨撍挈摓摞摷摻敠鶡旂晥
C0  暚暕瞳暫暊暙暔暔瞄睔瞠椾椊槡棲椿
D0  榑榡椹楂楗榿楺槒楛椵楬榑椽椺楛楸
E0  椵楩椆楣槏窫椠楺桳楴槮槤槝槭槬樴
F0  槝槐楿楻桁欿歁歃歇敠敠殐殻毤毷
```

DA40-DAFF

```
DA40 - DAFF

40   溟湜渢泟溰湠湳湫湳湡湰溢湪渧湜溮
50   湝湲湩湦湜湭湡焠焞焯焌焾焤焱耿燒
60   焢焭焗焟焯閦賤焅婘焞焵焵惧獻焱燠
70   獥猱猴猾猲猭獧獢獱猌琮琬琰瑇珗
80
90
A0       琚琡琭珮珺琣琭琩瑛琲瓶甯睃畬痧
B0   瘁痛痦瘦痹痤痧皉皒盍睕睗睄睍睅睨
C0   睎睍睌喬剉硴砝硲砱砤硐硪确舘晢硨
D0   硞硲祴裖禮祮稂稊秤稴稷窭竦竝筊筰
E0   �篑筌笳笴笓笊粲柄粡絅絊絅絸絃絩
F0   絅絪絏絭絜糸綳絙絎絈綀絰絎絣絔罵
```

Code Page DE40-DEFF

```
DE40 - DEFF

40   龀龁龊滺滾滴滺滀溟瀎漛溇溗漛滀浔
50   海滌溼滉溼澄滺滺瀲溲浇瀹濛窞溙滀
60   淮潅瀑滸潲潨漴滱滸溮爐烮烑嬁炓煣
70   焒焰燢煲煸熖煡爆熄煙煋焰焙焞熞焝
80
90
A0       煙炴灮焾犍鞖榠料犁犻源猻猺猀猹
B0   猌瑄瑊瑋瑒瑹瑰瑪瑽瑜瑐瑉瑀瑛瑱瓶
C0   瓩瓱赏魋畹畷晢瘠瘝溇疮痾瘜凓瘌瘦
D0   瘗瘀瀬溇瘫窔皺盇睕晬睉睗睈睕睒晤
E0   睆睙睕稐矴碇碚磅碏砛碕硐窯礁磇砱硐
F0   砰碖竪裸祸祶祼稑稙稙稿稗稸稴稽
```

Code Page DB40-DBFF

```
DB40 - DBFF

40   翠蛾羰羨翎珥珊瑁戠嶼腾腊腒膟腰脽
50   脗脺啞臮載珵鍼焉鵗觧袴乾玭菏萡莛
60   菀萋芫廛卷炎蕐蓮苡菈薹皷茐芙菝芥
70   菘莉蔰莍蒐蔦蕑莱疤蓝菥萑萆葯盍
80
90
A0       蒿蒿菇笛茗萱滇浯麅黄林菗葩萛鬥
B0   蒜蟬蛢螟载蛄蚓螯蜋蛻蜉蛬蚕蟲蛞蜂
C0   峒徘衒裙梳袘袴裍袾裈袼祫袽袰褱裉
D0   覵覎覐舭舣舠舥舭訛敁詀詂詘鉄詅詒
E0   署詑詳詀詼覑敥詘覎賍賁賍竷趷趏趆
F0   趼趏趈跰趵趾趵跕跙跧趵跰軒軣輼
```

Code Page DF40-DFFF

```
DF40 - DFFF

40   稇稐窂窢窅婶宠廛箪筴笛笡笡筵篊筰
50   篍箽箸莉築裡覾縏綆練綒絉縷締綎綄
60   綃緌給綩綄絽絼毃罜霖羄浣羥羧翛
70   燊翛腤胰腘腜腩脛腘腴腰膿殸腧腷
80
90
A0       腄胸臩舭舾觺觯觠羒羠菚萐茈蔦
B0   荰菂萿蓁荿萺萬夒荎柏葴蕆勤酖韨荊
C0   蒥荊菫蚱蕙蔌蓎秋蕐胊菑觔黃菫蓓薵
D0   蓓菜絋葯荿滐菩羨蓉菕蕈菼蓘蚱薔蒦
E0   菽蓋蜋蜋蛛蜡蛺蜺蛵蜊蜎蜎蜓蛑蜣
F0   蛹蛃稉稛稇裞裹装袂裰勮睍鮭鮲鮰
```

Code Page E040-E0FF

```
E040 - E0FF

40    賂鴦鴛鴜觸訕誆诖詡訛詷詶誄詵詥駢
50    萔訜觖簦豐荄狠麋狟獋狄貢觫絁赹趑
60    赽趏趍趌翅趭趒趼跠跬跱跮趾跩跣跢
70    跮跲跫蹳較軿軼軸輅輇輈葦蓥遧邊
80
90
A0        迢遺迮郜郑郦郜鄙鄛郞郪郺酮酯鉈鈺
B0    鈰釪鉦鈳鈧鈸銑鈮鉊鉆鉅鉬鉬鈌鉧鈲
C0    鉛鉾銅鋃鉭鉣鉚銇鉒鈰鉥銘鈲鬨閗開
D0    閗簾隆隡隗雎畢寧容冥靳靮弲靫靳頎頏
E0    頎颴餤鮁鬅軧豹彝軤帆魛馬鴻鼀䳍罣
F0    傲傳僗償傈傲僑僀僤償僬楘僻僣僠
```


Code Page E440-E4FF

```
E440 - E4FF

40    襏褄襴覎覠覭覐獤練躰誳誙誋誃誟詩
50    谽豨豩貯貥脾趏踉赮跬躊跽踊哨踲踆
60    䞋篷跫踄輑輎鞘輅鄲廊鄠郮鄭鄝鄭鄄
70    鄰鄕醐醒酹醢銥鉢鐦鉐鍋鉳銫鉮銏鋝
80
90
A0        鋝鉳銫銥銏鉮鉽銈鋊鉳銧鉶銥鉄銈銈
B0    銧鉻鉊錡銧銉銧銡鉳鐅隊薩駓鞔斡
C0    䩉鞐轡鞀鞇䊷鞄勬靺靫頨颸颻銧餃
D0    䬛飶醍駛駔駀駁䳭雷駁阱鬐髡魦斳魤
E0    豹紅穱門殞魾䲭奱偭僆偆僆僆僆僆
F0    傱健剝劇勵勸嗽嘷嗜嘶噁嗇嗷嗜哌
```

Code Page E140-E1FF

```
E140 - E1FF

40  漸剮剬勘勐匷屬嗒嗎嗦嗤嘆誢喽喊嘓
50  誢嘈哺嗥噲嚏墑塸墐墘塷墁墁坳塲塵
60  墇墑塲塸塛塲塛墔塹鉅滴婷媛婷媭燎
70  嫚嫿嫫婪婆婪嫛嫲嫭嫷嫫嬹媲媲嫷
80
90
A0  痦屐嶂嶮嶢嶒嶛嶙嶭摧唯崣嶚嶗嶟嶲
B0  強嶺幘幀幨嵾鹿蘆庿廈廒謄臮廄麾弴彈
C0  影徹怒慼慁悼愯慳愡愻愩慬憀愬憤懷
D0  懼慥懜慪愒愗旤戧鹹敠摣摛摣挿摨摝
E0  摳摥摡敵摣撆撘摷撗撥撘摠摠搶搯撓
F0  攠捷搗操敚斟暗屬暗暍鞖壑褉糖槡
```

Code Page E540-E5FF

```
E540 - E5FF

40  嗒噗嗔嘽喝嘽嘸嗊嘺圓塲塸橙墠墲值
50  墍墇墲墎爐婷嫁嬬嶀婪嬸嫩嬙嬸嬹嬹
60  嬏屐嶧嶁嶧嶒嶢嶧嶕嶮嶢寱廄麾隋幘嶀
70  幠帱槇廬厰厰廲徉悠慼慭怴幨嶯懰
A0  憚憶憎憿憭愡慪憫懷嶍慈憚戝騺騺撖
B0  撨摞擭撜搘搨摑摜撣搯撺搯搭隊敨敊
C0  敻騺斬暵晦暭暗嶀晒暵梮檽檽槢槢橬橬
D0  橺楗橢槿橼榙檺榑樫檹槲檵檬槊棐橺
E0  槐橚槻槓槳槕槧槙槙檿槸槼槡槚槶禽
F0  歆殯薀帶殤毽氄氄氄龔頴褜漭濣漬瀆
```

Code Page E240-E2FF

```
E240 - E2FF

40    槇樌穀楮榎楺槫楶榎椪楣樏楶槝楑榴
50    榎槑槤槐槃橾椱槵榬橞楙椊槇楷槵桽
60    槉槻柨歃歊歐頽殂殈穀殻髦槃淧淲淑
70    窒浩湗澆淲淲澈溥漚漧淛澪溈澤澳
80
90
A0       濾潸溥淲溝溁溯漼潋滀溄濐潚溌濔
B0    溦澛淭浾澉湼淏濈潗湯熇焧煩熀熅燦
C0    熏熺燵燇熸牄膀犡烱猰猣獮猭瑢璡
D0    瑱瑤瑲璞瓅甄瓹甃睡寘瘖奐瀡瘀瘍瘻
E0    瘏皸瞙睅瞅酸膯瞀瞥辠瞤碲磑磚硪硯
F0    硾硪番礑硁碾碈磇禘禊禋祺褌褆禑
```

Code Page E640-E6FF

```
E640 - E6FF

40    澍澂澌潢潝瀘瀟濶潟濷瀲澂潕稍潄澕潄
50    澔淲瀹漈潄濦潜潜灈懲潔淵澅潣灈
60    溜漆潁潵潂熼熠熚燀熵熵熊熵熷熸松
70    熄燚熳麾犚槊槧獧獞獠猗獏獮獫澂
80
90
A0       獝璇璉璃璆瑽琮璞琷壔瑶甀甃晶癁
B0    瘂瘞瘐瘪癨疢瘍瘲晴甀暭皛瞍襄瘦瞵
C0    磠磌礫磌磴磎磤魂磩磰磉禚癳禑�禍
D0    禛甖穪穽竇宼施筐筗箸莏複籾洪箸榤
E0    縜楺綶縺緥絚絔綑緍綯綑綯緛緤綯緮
F0    縺甖羢羷翰猴翫撥罯翺翼聇聄膣膵
```

Code Page E340-E3FF

```
E340 - E3FF

40  翢襗襣襏襴襶襺襸襽襔襗襮襦襂襩襘簅
50  於簆箐菻萞箌箛箊算箘剳簅筜箖糇糈
60  㶱糂糄糵緂絻績緍綹緅絑緻緄緆緋緌
70  緢絡緁緀緵㮂縈緔線縜緉緊緧㩒綇猱
80
90
A0    糈緎䏍膌胅膃㬵膍臍膌惔㵉㵆萼蒟
B0  㵍薺萁菀菙菙兼荫萘著尊蔇蒲蓴蒝菽
C0  菙菻蒔菅蘷峡植蒯蒻麓㭸紛㭨蔥徒蕉
D0  辇菽㨆菝虞蜳蚝蝗蝎蟱蛛蛾蛼蜡蜥蛄蜄
E0  蛔蠶螺蚌蟈蝼蚼蛤蜼蜓蛻蜱蜱蝂蝓蜺
F0  蜸蜺蟿蟹蠻褉襖褋襴襱褔楊排褧
```

Code Page E740-E7FF

```
E740 - E7FF

40  膊膕膢膤膛鋪艝艜艒艘膣艆蒁菽菋䓚
50  黄菽萎麗族焷萫菽菽蔫㩒莄菽萩蕁蕲蕑
60  蒂蓶蓬蕑蓼蒸蓬蒣蓸蓸蕑莢蔂蕙蓸蔞
70  崔菽蔫菋蒨荏蓯御蒥萫萫溉旂蒒虢
80
90
A0    蝔蝣螬蝏蝸蛬蟸蟑蟓蠁蟼蝶蝡蝻蝆
B0  蠚蝐蝎蝟綣蝓蝻蝐蝮蝙鳌蜻螭蛏頓蟃
C0  蟟衔裲褌褔褋裺褘褙褆褑褎襓規覵
D0  覬觭艖艉誽諆醗酸諑諏諕諧訟誾睥蕡
E0  酥誺誺覻諧㷘睥貏醉蕽䄂蕽賷賷睬睞趍
F0  趨趌趆跂踣蹊踔跕踺踄踖踑跤趺跨跺
```

Code Page E840-E8FF

```
E840 - E8FF

40  踔踜踘踝踡踧踨䠋踤踛踦踣踠踢踡遃
50  遄遘達邀鄑郶郲鄠鄣鄦鄐酟酤酭酴酴
60  醄酻銥鋃鋟鈃鋙鋣鋏鈒鋄鋇鋃鋜鋌
70  鋯錜鋨鋊鋬銚鋼銇鉣鍊鋺鋞鋬銶鉚
80
90
A0      鋑鋐鋈鋉鋻闦闧门閜隫隩雜誓霈霖
B0  靚鞪鞎鞈鞈鞽頫頍頙頩頖顔頼顔颺宼
C0  橃焞莆鎧鍊餕駁駆駜駄駔駎駠駱駘駔
D0  駼駕駊鬂鬇鬠鬢鬃越尵舭紡舡紗納紛
E0  紋紽紨飯鳰鳭鳽鳿鳺鴀不鳹鳩鳩鷹腸鳴
F0  麇黓鼐鼒佇佹倪儃伲傑伲熈匿壑咩噠嘡
```

Code Page EC40-ECFF

```
EC40 - ECFF

40  鯽鮈鮨鮿鮑鮶鮹鮿鮶鮯鮿鮅闧陙
50  雈饕黔霆輯僡鞊韃薜頏頹頮鮿餕餒餕
60  酓敫駒駇厔駅圀駝駈闗駟骹骿骺胯髽髻
70  髹醫濱鮀鮌鮇鮇鮬鮿鮭䰁鮋鮋鮶鮿鮹鮒
80
90
A0      鮒鮑鳬鳿鳭鳿鳰鳿鳿鳫鳿鳿鳿䳓鳿鳱鳿塵
B0  塵塵趏趏黕黕粉鮮魝傏賣儃傮徴傥勚
C0  嚓嘖嘳嘺噗喺嘇嘇嗢塜塏塮墔媔嬥
D0  嫋嫋嬾嬺嫆嬓娶孻嫛寇嬾幬懞徴徻勚
E0  懇懲憒憹懆憍憊懷擯掃橶掫撗撤敳敧
F0  唐旟敫檍橲檪橙檷橺橺櫸橺橺橺橺檢
```

Code Page E940-E9FF

```
E940 - E9FF

40  嘖嘨嘩嘮嘯嘰嘱圍圇塓墩墝墤塨塈塩墼墶
50  墍嫷嫸嫹嫺嫻嫼嫽嫾嫿嫀嫁嫂嫃嶍嶎嶏
60  嶐嶑嶒嶓嶔嶕嶖嶗辥軐鄝幝幞幟幠廙
70  廞廟廠廡廢張徹憨憝愁懞慍慄懷懼憺
80
90
A0    懊憿憼揅揱撗撠撡撢撣撤撥撦揳揵撧
B0  敧敨斠曈暤曎曏暉曑曒曓曔曐膧橄楦
C0  樴榰檨槇橃橀橨檽椾橩榪楩楃橌栯榊
D0  樥橐樿檄楞榅棅樏樇橖楄橝樐橤歔歕
E0  歖歗殞殣殤殥毧毻毷氊氈雍楚洡滀澼渊溉
F0  潞潈潖潗溓溼潐澥澮潭瀆溽溙溛溤溞
```

Code Page ED40-EDFF

```
ED40 - EDFF

40  榘榤橫槇榴橿槸橻橄欷毈殰毹贄榮
50  瀄澗潂瀘灆澍浵湶縠蓁澀潃燵熿燨熸
60  熰煥熮獿獮獲盦瑢瑠瑢璟璉瑢玻瑢瓶
70  瓲瓯氊瞵癃痠瘇痫皤整瞵暉曘眴膌
80
90
A0    眊眐暌熷磳磽磿磻磩磸敐磹磹瑉禫
B0  磯槿穚機稬穑穚欶籥簋籭籭簭籄簜簗
C0  箵簢簀簹簝簹簛簜簹節蓠歓簜糀
D0  縞縒縡縛穎縔縡緫緋縣繰縷桃簹熱緊
E0  縺縼簜審贄狿斁糉腟腜腤腺臅腩腸軧
F0  縷縉腯満薀蒠薨薕熕虇鼔虤萒蓂蒏
```

Code Page EA40-EAFF

```
EA40 - EAFF

40   澢澨澫澬澯澱澰鼗燂燌燣燪燁燵燁燋燔
50   燊燼燖燽燂燖燄燨燀燇燷猻猸猥獬獥
60   獫獪竪瓗瑤瑠瑝瑪璀瓶鑳疢瘭癀癅癙瘳
70   瘼瘵瘝瘰皷盦瞋瞞瞝瞜瞍瞢瞚瞛瞡瞣
80
90
A0        瞗磝硻磙磭磦磤暫磠磢磣磀磡襏襂
B0   糜穆蜃窸窩窵窴窮窲籅蔶蓋篥箢篭篠寠
C0   篔箴箮筚籉筥簹楠穚槇樽樻縒繂緥紃
D0   緋穀縓絹縝縕縚縢縋縶緖繂緣縠緯繂誉
E0   尉罩罬翔罿耪耤聦聬膕膦膀膭膵腙腤膤
F0   膴膲腸膧鮑魴䲦艤鏍鑂菿蕫葄蕓黄蕘
```

Code Page EE40-EEFF

```
EE40 - EEFF

40   預薛薇鼎歞遊蕗薿遍薆亂薤唐奐蕀蔌
50   奓薶薙菶蓮稜菼彭蟆螿蛣蟀蠊蟥蟐蟖蜷
60   蟶蟳螻蟎蜾螈塵蟄蟄蟇蟸螶蟼鑑蚤蟹
70   蟒穚裸襈祼襟褪襖裻裦覬覯覺觲榖誫
80
90
A0        譁誢誤誳誻護謏詥詶齊誉誓謆諑謓
B0   諡謰穀猻猸貅豀貌貽糖蹟跟蹓蹣蹌寋
C0   轒輼遖遊郷酖醢醛醅酱醡醍醯鎝銶鄉
D0   銻鏶鐯鈸銂鍛鍶鋧錣鍑鍻鍭壓鋈鏊鎺
E0   錦鐔鍒鍏鍱鐻鍃鎇鎮鐻姷鎉鍽鎏閝悶
F0   閪閔閮衲陪隈彌琴浜滴罍巽軖靯韃
```

Code Page EB40-EBFF

```
EB40 - EBFF

40  蘇蕺蒤蕁黃萵菛薗蘲蒶蘩稡稍蕎舄蒎猶
50  覆蘪蓨蕒萐蕷萑蒜虪虠虥虦螫蜂螗蠡蛤
60  蜳蚅蜻螿蝒蜈螣蜨蝙蝦蜿蛴蜽贇蝥蛡
70  褔�棍褏裦裟裂褒褭毇裕褲褋褟襞諙
80
90
A0     譚譚諴譄譄讈譄艜諰諈譋謑謚諢詾
B0  諻貆縟豂賝贜贂賭賊赥貞賸趆趕蹖跼躓
C0  蹀蹖腿踢踽踾踰跂軀輨輮輵輴輷軤輨
D0  遠遰逤遵邌鄏鄒郘邴醐酺醍醋鐟錞鐻
E0  鈵鐱鉦鍺鍱鍱錛鍛鍆鉚錁鉚鍋鎝錤鈺鍱
F0  鋺錆銳鋃錗鍱錼鏑鍱鍸錥鉈鍱鍱鐇
```

Code Page EF40-EFFF

```
EF40 - EFFF

40  輰輴輴輯輲鐵頔頥頥頧鋇頄頲鮆鮙鮫鐋
50  鋤餘鐰餭飾飦餩醅醅菲鋂騕駛駿駞駿駻
60  騚駐騢駿鞕鼜鼅鬅鼇魃鮀鮨鮪鮇鮰鮢
70  鮥鮺鮔鮻鮜鮹鮆鴲鴹鵿鴹鵉鴹鴮鴹舌鳥
80
90
A0     鴤鴴鴹鴹鴹霺鴹鴣鴹鼅龘麇鼕黃甡麷
B0  敝鼉齩獄齖齗龠龠齠齤齤嘪嚖嚗齱噆嚙
C0  奐嫂屬鼤殻懭岼攦懋懲憒憒懅懛儫憒慹
D0  懷嫡擄操攟攘攃擼燠旗蒿矇暭晀櫅櫹橲
E0  櫏槢檪檦榈檽櫊榱欨燆毼灒灖濾濩濙
F0  瀫瀀澖瀀瀯瀦濼潹瀒灥灊熷熷熷熷獿
```

Code Page F040-F0FF

F040 - F0FF

Code Page F440-F4FF

F440 - F4FF

Code Page F140-F1FF

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F140 - F1FF
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Code Page F540-F5FF

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F540 - F5FF
```

Code Page F240-F2FF

F240 - F2FF

40	儱懳撢攃攃攂撪坵鬟旋旒暡楷燩㮾楄
50	檻榯橯夔桼虈槤檳棁㰚殨毚親瀧濼灌
60	潊澁瀘溢瀕滤凗瀜驚燹㯄熱熰爐撢撡
70	㡵㣎㩤璗㻫瓙珊㦖瘄瞋瞶曭㩼磻礠
80	
90	
A0	磚礜磧礋禰秎稹幹搆窒簵迊糟槳繐
B0	纏縫繰縷纀絲綝絮緒㜗磬罺羆揀翅羿
C0	瞻腝膿纎艦㣛潭㶵鵠㔣䢦薕蔶邃蕢薤
D0	蕃蘆蘁㡱藜黄劌蕐蔜蕳薇䗈蕇蠃蛵蠎
E0	蟆蝷蠋螯螫螙螲蝡蝶禣褛襛襌襠䘽褙
F0	襝襙覉覝覲覸䚰諓䜋諓䜎譖譔䚸誳

Code Page F640-F6FF

F640 - F6FF

40	蟢蠆蠖蛊録巒𠫼㟽頬禩褖禎㜀諮濤蹉
50	諺䢉䁦晶趫蹦踦䡖䡰巒𨟠鄙鄘𥺤鐘鏢
60	鏝鐩鏈鐼鐤鐍鏱鏬鐸鐲鐱闔䦗闔㦰薇
70	䡵轉頰䮻䮸䮭𩛫餯䮇䮵䮷聰駿驚魆
80	
90	
A0	䏕虌䰝鬃夑鬢䐈䐤鮥䱃鰊鯷鮩鰭鮼
B0	鰤鮹䲏鶴鶹漸殼䳿鳾䲩𪂋鳧䳢鶌鶲鷗
C0	鶺鶴䮻鶯鷥騘䳭鵲鵒䩄夒駤䮡䮵𩣭
D0	夒𩰁𧼘䣛㒼豋㖥㗫䁎嘖㰷孀孁嵝幘竉
E0	攤擦攞攅檟檛檄䏔灘灝澶瀆爜燿㭉㱊
F0	璜璽璜璏㜴暵礵䲧橺橚籫撻錬錢蘆

Code Page F340-F3FF

F340 - F3FF

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

Code Page F740-F7FF

F740 - F7FF

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

Code Page F840-F8FF

F840 - F8FF

Code Page FC40-FCFF

FC40 - FCFF

Code Page F940-F9FF

Code Page FD40-FDFF

Code Page FA40-FAFF

FA40 - FAFF

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

Code Page FE40-FEFF

FE40 - FEFF

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

Code Page FB40-FBFF

```
FB40 - FBFF

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

Code Page FF40-FFFF

```
FF40 - FFFF

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