

TM-J9000/J9100

**Technical Reference
Guide**

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TM-J9000/J9100 Technical Reference Guide

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Revision Information

Revision	Page	Altered Items and Contents
Rev. A	All pages	Newly authorized
Rev. B	pp.vii, p.1-2	TMCOMUSB Driver added
Rev. C	All pages	Feeder guide modified
	v	Restriction of Use added
	vii, p.1-2	EPSON TM-J9000/J9100 Driver added
	vii	EPSON TM-J9000/J9100 Driver API Reference Manual added
	vii	EPSON TM-J9000/J9100 Driver .NET API Reference Manual added
	p.1-5	Additional description added for scanning speed
	A-12	Printable area for continuous check reading added
Rev. D	ix	Caution about aerosol sprayers added
	2-2	Control panel modified
	x	Caution for the manual cutter added
Rev. E	ix	The warning regarding aerosol sprayers added for Warnings
	x	The caution regarding aerosol sprayers deleted from Cautions
	2-8	Note regarding ink consumption for print head maintenance
	3-8	Cleaning sheet changed
		Recommended cleaning frequency added
	3-12	Cleaning the TOF Sensor added
Rev. F	All pages	Descriptions of OPOS driver deleted
	Chapter 5	Descriptions changed

About This Manual

Aim of the Manual

This manual was created to provide information on the TM-J9000/J9100 printer for anyone who is developing hardware, installations, or programs. Programmers will also want to consult other documents.

Contents of the Manual

Chapter 1 General Features:	Gives a general description of features, plus specifications.
Chapter 2 Setup:	Has an introduction of control methods and interface connections.
Chapter 3 Operation:	Contains information on setting DIP switches and memory switches, and on error processing for the TM-J9000/J9100.
Chapter 4 Troubleshooting:	Contains useful information for finding the cause of problems.
Chapter 5 Application Development Information:	Provides useful information for programming.
Appendix A Specifications:	Provides more details about the specifications for the TM-J9000/J9100.
Appendix B FAQ:	Lists answers for frequently asked questions.

Key to Symbols

The following symbols are used in the documentation for this product. See the specific warnings and cautions at appropriate points throughout this guide.

WARNING:

Follow warnings carefully to avoid serious bodily injury.

CAUTION:

Observe cautions to avoid minor injury to yourself or damage to your equipment.

Note:

Notes have important information and useful tips on the operation of your printer.

Safety Precautions

This section presents important information to ensure safe and effective use of this product. Please read this section carefully and store it in an accessible location.

WARNING:

- ❑ *Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Continued use may lead to fire or electric shock. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.*
- ❑ *Never attempt to repair this product yourself. Improper repair work can be dangerous.*
- ❑ *Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.*
- ❑ *Be sure to use the specified power source. Connection to an improper power source may cause fire or shock.*
- ❑ *Never insert or disconnect the power plug with wet hands. Doing so may result in severe shock.*
- ❑ *Do not allow foreign matter to fall into the equipment. Penetration by foreign objects may lead to fire or shock.*
- ❑ *If water or other liquid spills into this equipment, unplug the power cord immediately, and then contact your dealer or a Seiko Epson service center for advice. Continued usage may lead to fire or shock.*
- ❑ *Do not place multiple loads on the power outlet (wall outlet). Overloading the outlet may lead to fire.*
- ❑ *Always supply power directly from a standard domestic power outlet.*
- ❑ *Handle the power cord with care. Improper handling may lead to fire or shock.*
 - *Do not modify or attempt to repair the cord.*
 - *Do not place any object on top of the cord.*
 - *Avoid excessive bending, twisting, and pulling.*
 - *Do not place cord near heating equipment.*
 - *Check that the plug is clean before plugging it in.*
 - *Be sure to push the prongs all the way in.*
- ❑ *If the cord becomes damaged, obtain a replacement from your dealer or a Seiko Epson service center.*
- ❑ *Do not use aerosol sprayers containing flammable gas inside or around this product. Doing so may cause fire.*

CAUTION:

- ❑ *Do not connect cables other than as described in this manual. Different connections may cause equipment damage and burning.*
- ❑ *Be sure to set this equipment on a firm, stable, horizontal surface. Product may break or cause injury if it falls.*
- ❑ *Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage, fire, or shock.*
- ❑ *Do not place heavy objects on top of this product. Never stand or lean on this product. Equipment may fall or collapse, causing breakage and possible injury.*
- ❑ *Take care not to injure your fingers on the manual cutter*
 - *When you remove printed paper*
 - *When you perform other operations such as loading/replacing roll paper*
- ❑ *To ensure safety, unplug this product prior to leaving it unused for an extended period.*
- ❑ *Do not use ink cartridges other than those manufactured by EPSON for this unit. Use of other types of ink may damage the printer and voids the warranty.*

Chapter 1

General Features

1.1 Product Models

There are two models of the TM-J9000/J9100 printer. One is the standard model, and the other is the ASF model that can process a maximum of 25 sheets without reloading.

1.1.1 Unpacking

- Printer
- Roll paper
- Exclusive ink cartridge
- User's manual
- Power switch cover
- Feeder guide
- Pocket unit (only for the ASF model)



Note:

The ink cartridge packed with the printer is used for checking printer operation; therefore, the ink supply will not last as long as with a standard cartridge.

A power supply unit is not packed with the printer. Contact your dealer to purchase the EPSON PS-180 power supply unit.

1.1.2 TM-J9000/J9100 Options

The table below shows the options available. Ask your dealer how to obtain these options.

Table 1-1 Printer options

Category	Name	Explanation
Factory options	Auto Sheet Feeder (ASF)	Allows loading of a maximum of 25 sheets. The ASF model has a paper-thickness detector to prevent double-sheet feeding.
Options	DC-21	Power supply cable
	PS-180	EPSON power supply unit
	I/F board	I/F board for using a printer through an I/F other than USB (UB-S01 (serial), UB-P02II (parallel), UB-E02 (Ethernet)).
Consumables	Roll paper	Used for printing
	Ink cartridge	Used for printing

1.2 TM-J9000/J9100 Specifications

Table 1-2 Printer specifications

		TM-J9000	TM-J9100
Print method		Serial ink-jet dot matrix, 64 nozzles × 1 line	Serial ink-jet dot matrix, 64 nozzles × 2 lines
Print resolution		180 × 180 dpi	
Print font	Font	Font A/Font B: 12 × 24/9 × 17 (Can be changed to 11 × 24/8 × 17 using memory switches Msw 8-5, 6, and 7. See Section 2.7.2, "Memory Switches," on page 2-13.	
	Columns (standard)	Font A/Font B Validation/transaction: 62/82 (Can be changed to 67/93 using memory switches Msw 8-5 and 6. See Section 2.7.2, "Memory Switches," on page 2-13. Roll paper: 40/53 (Can be changed to 43/60 by using memory switch Msw 8-7. See Section 2.7.2, "Memory Switches," on page 2-13.	
	Character size (W × H) (standard)	Font A/Font B: 1.69 × 3.38 mm/1.27 × 2.40 mm {0.067 × 0.133"/0.05 × 0.095"}	
	Character type	95 alphanumeric, 48 international characters, 128 × 11 (including a user defined page) graphic	
Print speed		Validation: Font A: Economy mode: 7.5 lps Validation: Font B: Economy mode: 11 lps Roll paper: Font A: Economy mode: 10.1 lps Roll paper: Font B: Economy mode: 14.3 lps	
Paper		Check/Validation/Feeder: Type: Normal Dimensions: (H × W): 68 mm ~ 100 mm × 152 mm ~ 230 mm {2.68 ~ 3.94 × 5.98 ~ 9.06"} (minimum: 68 mm ~ 152 mm {2.68 ~ 5.98"}) Thickness: (only single-ply paper can be used): 0,09 mm ~ 0.13 mm {0.0035 ~ 0.0051"} Roll paper: Type: Normal Width: 76 ± 0.5 mm {2.99 ± 0.02"} Maximum outside roll diameter: 60 mm {2.36"} Spool inside diameter: 10 mm {0.39"} or more	
ASF unit paper supply (only for the ASF model)		Number of sheets that can be loaded: 25 sheets or less (3.5 mm {0.14"} or less) If some sheets are creased, fewer can be loaded.	
Ink cartridge		Exclusive ink cartridge: SJIC8(K)	Exclusive ink cartridge: For color 1: SJIC6(K) For color 2: SJIC7(R), SJIC7(B), SJIC7(G)
Power supply		+24 VDC ± 10%	
Current consumption	Operating	Mean approx. 1.0A (printing alphanumeric characters in Font A) Peak approx. 3.5A	
	Standby	Mean approx. 0.2A	

Table 1-2 Printer specifications

		TM-J9000	TM-J9100
Interfaces		USB 2.0 (needed when using the image scanner), UB series (options: UB-S01/UB-P02II/UB-E02)	
Receive buffer		4KB (fixed)	
Bar codes		UPC-A, UPC-E, JAN13 (EAN13), JAN8 (EAN8), CODE39, ITF, CODABAR (NW7), CODE93, CODE128	
Reliability/life (receipt section)	Mechanism	12,000,000 lines (carriage: 6,000,000 strokes, including those for receipt/validation printing)	
	Print head	1,600,000,000 shots/nozzle (a shot is an energized pulse)	
	MTBF	180,000 hours	
	MCBF	29,600,000 lines	
Reliability/life (check/transaction section)	Mechanism	1,000,000 sheets (including reading checks and cards)	
	ASF	1,000,000 sheets	
	MTBF	180,000 hours	
	MCBF	2,470,000 transactions	
Ink cartridge life		SJIC8: 20,000,000 characters (using font B with EPSON standard print pattern in economy mode)	SJIC6 or SJIC7: 15,000,000 characters (using font B with EPSON standard print pattern in economy mode)
Temperature	Printing	10 ~ 35°C {50 ~ 95°F}	
	Operating	10 ~ 40°C {50 ~ 104°F}	
	Storage	When packed (not ink-filled): -20 ~ 60°C {-4 ~ 140°F} (within 120 hours at -20°C or 60°C {-4 or 140°F}) When ink-filled: -20 ~ 40°C {-4 ~ 104°F}	
Humidity	Printing	20 ~ 80% (non-condensing)	
	Operating	20 ~ 80% (non-condensing)	
	Storage	When packed (ink not filled): 5 ~ 85% With ink filled: 20 ~ 85%	
Overall dimensions (W × D × H) (mm) The parentheses indicate the dimensions not including the protrusion.		310 (236) × 232 × 180 {12.2 (9.29) × 9.13 × 7.09"} (without ASF) 466 (389) × 232 × 180 {18.35 (15.32) × 9.13 × 7.09"} (with ASF)	
Mass (approx.)		5.2 kg {11.5 lb} (with ASF) 4.9 kg {10.8 lb} (without ASF)	

cpi: characters per inch (25.4 mm), lps: lines per second, dpi: dots per inch (25.4 mm)

Chapter 2

Setup

2.1 Part Names

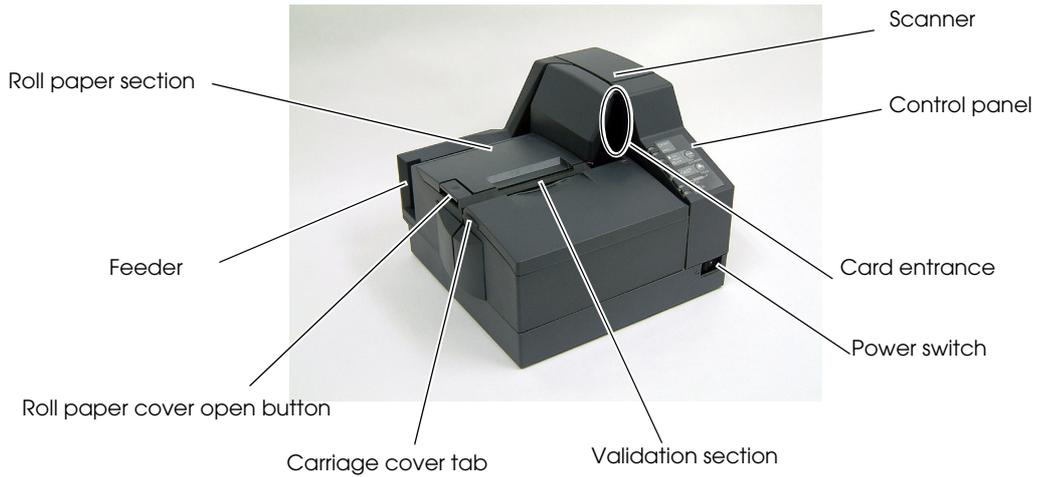


Figure 2-1 Printer front

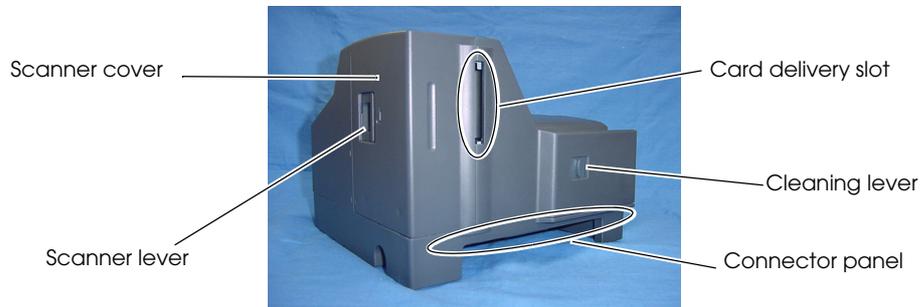


Figure 2-2 Printer back

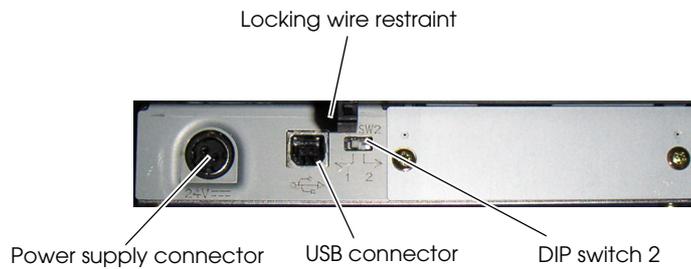


Figure 2-3 Connector panel

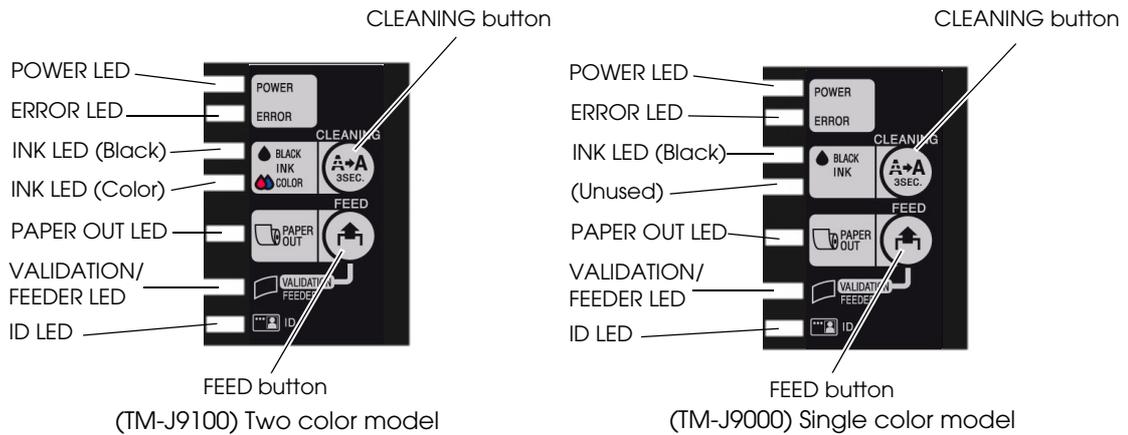


Figure 2-4 Control panel

Table 2-1 LED indicators

Name	Meaning
POWER LED	On: Power is on.
	Off: Power is off.
	Flashing: Printer is operating (powering on, powering off, cleaning). Be sure not to turn off the printer while the POWER LED is flashing.
ERROR LED	On: Printer is offline.
	Off: Printer is online.
	Flashing: Printer is in error status. See Section "4.1, When the ERROR LED is Flashing," (page 4-1).
INK LED	On: ink cartridge is not installed correctly or it is time to replace the ink cartridge. (The printer goes offline, and the ERROR LED comes on.) <i>Note: To insure print quality, some ink remain in the cartridge after the INK LED comes on.</i>
	Off: Ink supply is sufficient.
	Flashing: Ink is low (the printer can continue printing).
PAPER OUT LED	On: Roll paper is nearly out (printing is possible) or out (the ERROR LED is also on).
	Off: Roll paper amount is enough (or roll paper disabled is selected by memory switch Msw 8-4.)
VALIDATAION/FEEDER LED	On: Printer processes slip paper.
	Off: Printer does not process slip paper.
	Flashing: Printer waits for slip insertion or ejection.
ID LED	On: Printer processes card reading.
	Off: Printer does not process card reading.
	Flashing: Printer waits for card insertion or ejection.
CLEANING button	Press and hold for about 3 seconds. Then, the printer starts cleaning the print head. Note: Be sure not to use this button unless printing is faint.
FEED button	Press to feed roll or validation paper (when validation paper is inserted and clamped). When card, slip, or check is selected, paper is not fed.

2.2 Power Switch and Power Switch Cover

Press the power switch to turn the printer on or off.

A power switch cover, included in the box with the printer, is intended to prevent the power switch from being pressed accidentally. To use the cover, place it over the power switch. When you need to use the switch to turn power on or off, insert a pointed object into one of the holes in the power switch cover, and press the switch.



Note:

Never open a cover or turn off the printer while the POWER LED is flashing.



WARNING:

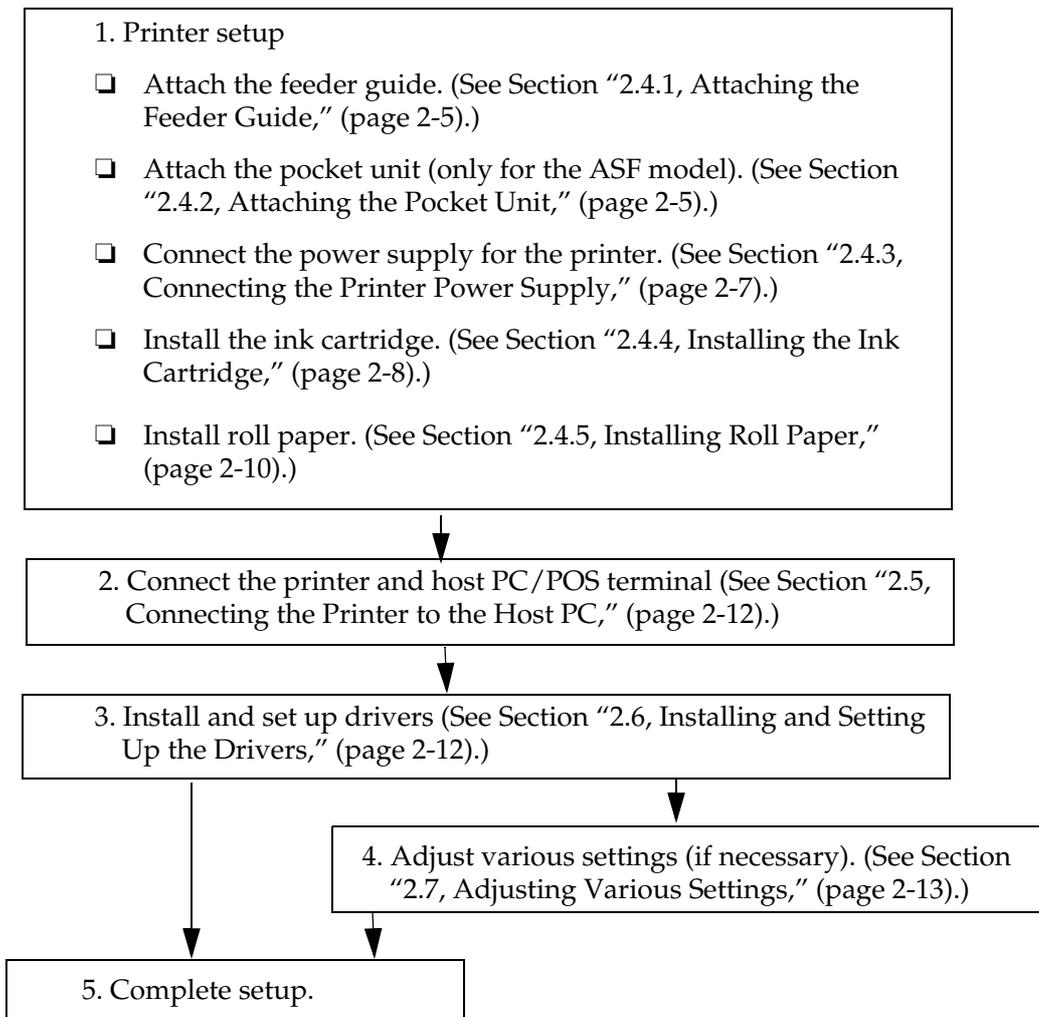
If a machine failure has occurred while the power switch cover is attached, unplug the power cable immediately. Continued use may result in a fire hazard.

When the printer is stored or not in use for an extended period, turn off the power switch and disconnect the power cord.

2.3 Setup Flow

To get the best performance from your printer, you need to make appropriate settings based on your environment.

The setup flow is as follows:



Note:

Install the printer horizontally.

2.4 Printer Setup

2.4.1 Attaching the Feeder Guide

You can make sure a check is inserted straight by using the feeder guide.

Attach the feeder guide as described in the steps below:

1. Hold the edge of the feeder guide carefully.
2. Insert the dowels of the feeder guide into the holes inside the printer; then bring it down until it stops as shown in the illustration below.

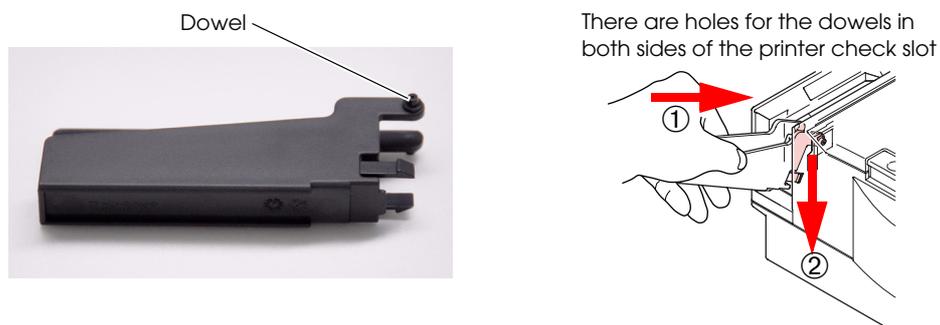


Figure 2-5 Attaching the feeder guide



Note:

With the ASF model, be sure to attach the feeder guide; otherwise, you cannot load multiple sheets.

2.4.2 Attaching the Pocket Unit

The pocket unit is packed with the printer model with the auto sheet feeder (ASF) function. Follow the steps below to attach it.

1. Push down the pocket cover on the left of the printer to remove it.



Figure 2-6 Removing the pocket cover



Note:

To attach the pocket cover, push it up.

2. Check that the ejection lever is open. If it is closed, open it.

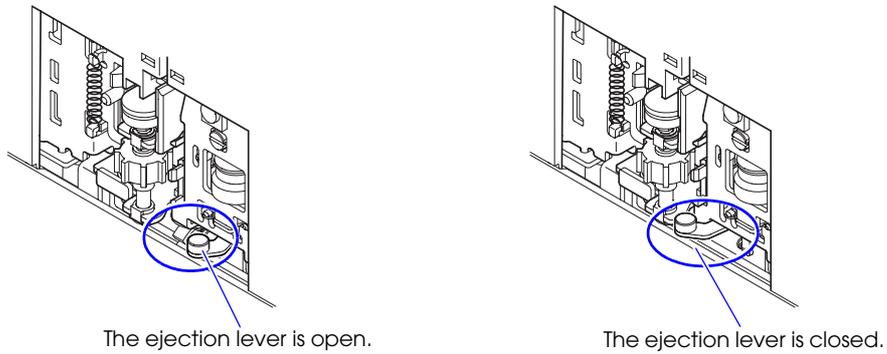


Figure 2-7 Ejection lever positions



Note:

Be sure not to injure your fingers on the lever.

3. Position the pocket as shown in the illustration below, and push it into the printer until it clicks into place.

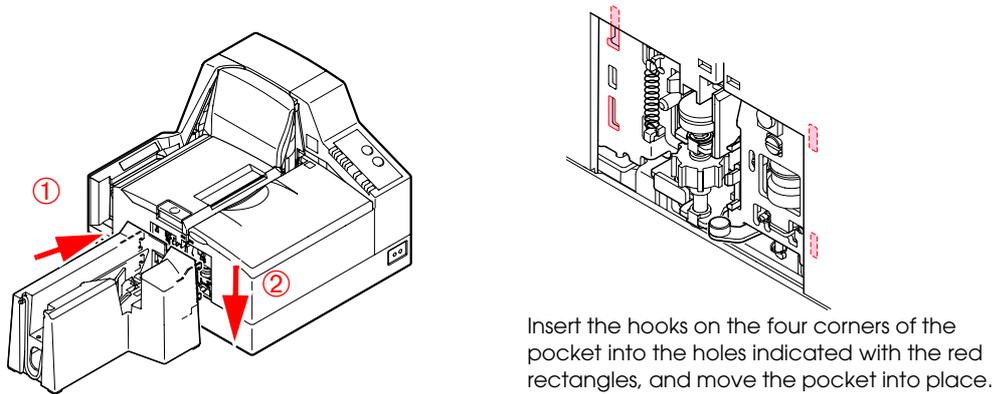


Figure 2-8 Installing the pocket unit

4. Extend the stopper of the pocket unit. The attachment is now completed.

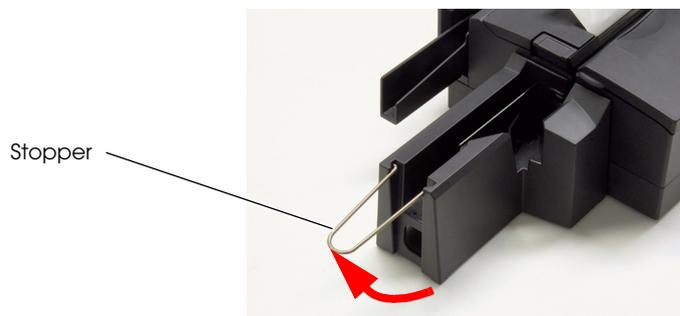


Figure 2-9 Pocket unit stopper

 **Note:**

To remove the pocket unit, place the printer vertically as shown in the illustration below. Then, while pushing up the lever on the bottom of the pocket unit, push the pocket unit backward. Finally, pull it up to remove it.

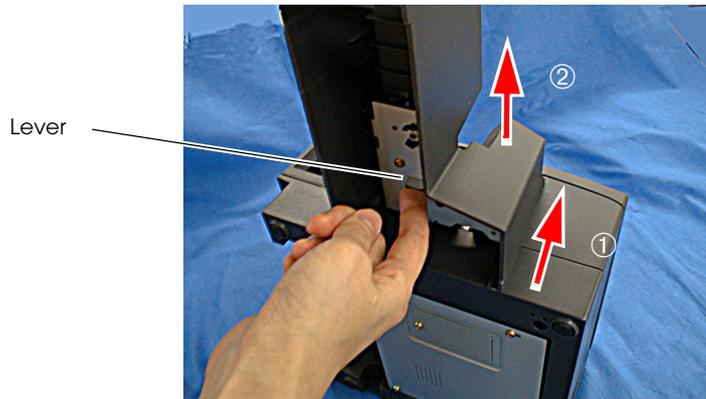


Figure 2-10 Removing the pocket unit

2.4.3 Connecting the Printer Power Supply

 **WARNING:**

Be sure to use the EPSON PS-180 power supply unit. Using an incorrect power supply unit may cause fire or electrical shock.

1. Make sure the printer's power switch is turned off.
2. Check the label on the power supply to make sure the voltage required by the power supply matches your electrical outlet.
3. Plug the DC power cable into the power supply connector.

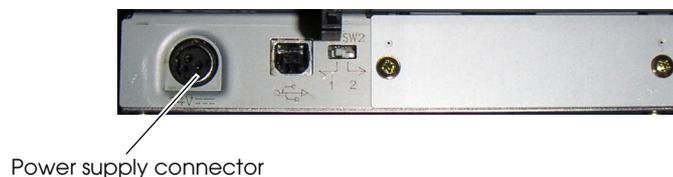


Figure 2-11 Connector for the power supply

 **Note:**

To remove the DC power cable, make sure the power supply's power cord is not plugged into the electrical outlet; then grasp the connector at the arrow and pull it straight out.

4. Turn on the power with the power switch. The POWER LED will come on.

2.4.4 Installing the Ink Cartridge

CAUTION:

Be sure to use genuine EPSON ink cartridges to give the printer the best performance. Using ink not manufactured by EPSON may damage your printer.

The TM-J9100 has two separate cartridges, one for black and one for color ink (either red, green, or blue.) Therefore, the TM-J9100 has two INK LEDs, one for black and one for color.

Note:

Cartridge yields vary based on such factors as type of item printed, print settings, paper type, frequency of use, and temperature.

To insure print quality, some ink remains in the cartridge after the INK LED comes on.

When the ink cartridge is installed for the first time, the printer uses ink to prepare for printing.

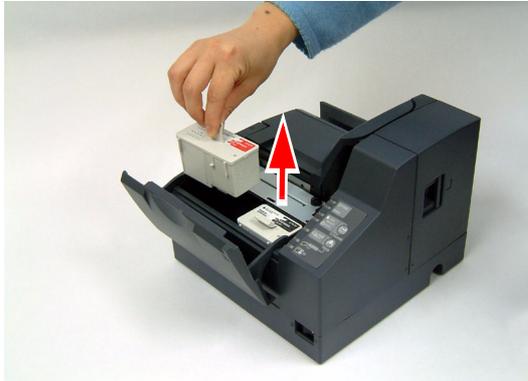
Ink is used for print head maintenance. For the TM-J9100, both black and colored inks are used for print head maintenance.

1. Check that the printer power is turned on. If it is not turned on, plug in the power supply cable and press the power switch on the front bottom-right of the printer.
2. Open the ink cartridge cover using the tab.



Figure 2-12 Opening the cartridge cover

3. If there is a used cartridge to remove, hold the knob at the top of the used ink cartridge and lift the cartridge out of the printer. If you are installing ink for the first time, skip this step.



(TM-J9100)

Figure 2-13 Removing a used cartridge

4. Take a new ink cartridge out of its packing and remove the yellow tape.

⚠ CAUTION:

You must not remove any tape on which the EPSON logo is printed.

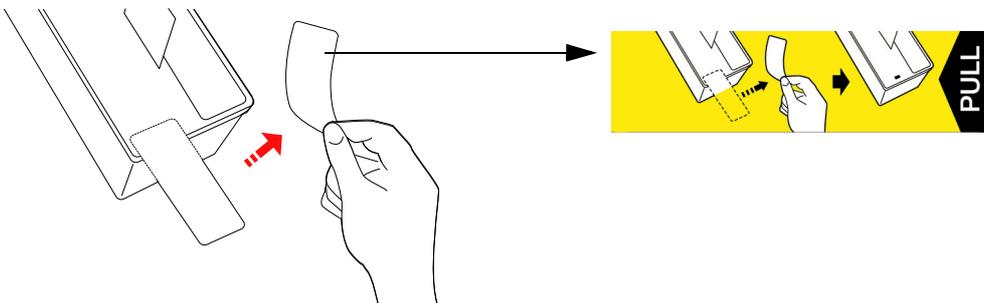


Figure 2-14 Removing the yellow tape

- Carefully insert a new ink cartridge from the top, and push it firmly but gently until it clicks into place. Be sure the insertion direction is correct, as shown in the illustration below.

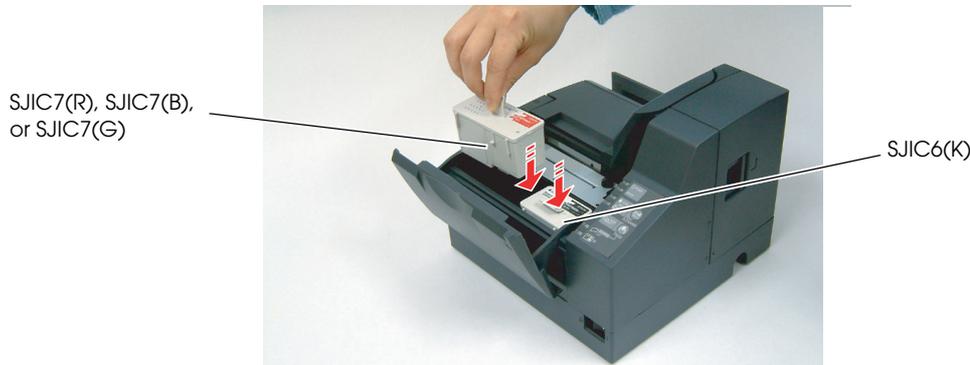


Figure 2-15 Inserting the ink cartridges

- Close the ink cartridge cover firmly until it clicks in place. The INK LED will now be off.
- The printer begins charging the ink supply. This operation lasts approximately 1 minute. (The POWER LED flashes during this operation.)



Note:

Do not turn off the power or open a printer cover while the POWER LED is flashing. This will waste ink, because the printer has to restart the ink charging process.

- When the POWER LED quits flashing and stays on, the printer is ready for printing.

2.4.5 Installing Roll Paper



CAUTION:

Be sure to use the specified roll paper. See Section 1.2, "TM-J9000/J9100 Specifications," on page 1-2.

To avoid injuries and/or machine failure, make sure not to touch anything other than the roll paper when the roll paper cover is open.



Note:

Do not open the roll paper cover during printing or paper feeding.

Do not use paper rolls that have the paper glued or taped to the core, because they might cause a paper jam.

To prevent paper jams, make sure nothing obstructs paper coming out of the paper exit, and do not pull the paper being ejected.

- Turn on the printer power.
- Press the cover open button to open the roll paper cover.

3. If there is a used roll, remove the core. If you are installing paper for the first time, skip this step.
4. Install a new paper roll.



Note:

Note the direction that the paper comes off the roll.

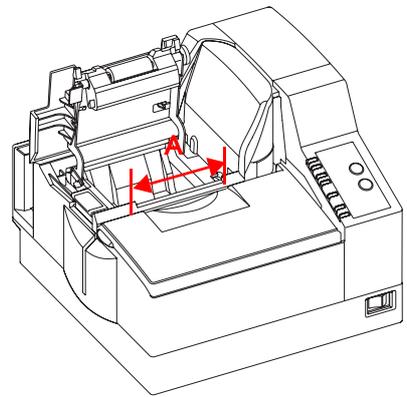


Figure 2-16 Loading paper

5. Pull out the edge of the roll paper within the range "A" on the upper side of the case, as shown in the illustration above. Then close the cover.
6. The printer feeds the paper to remove slack. When the feeding stops, tear off the fed paper with the manual cutter.

2.5 Connecting the Printer to the Host PC

1. Hook the USB cable through the locking wire restraint.
2. Connect the USB cable to the USB upstream connector on the printer control panel.

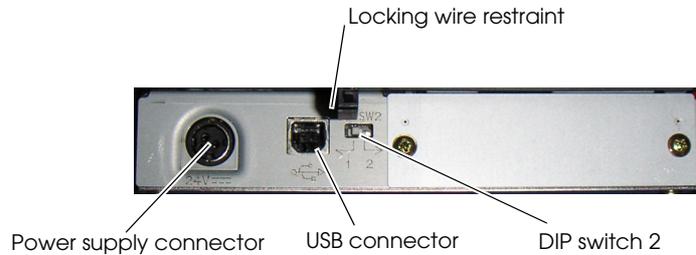


Figure 2-17 Connector panel

3. Connect the other side of the USB cable to the USB downstream connector on the host PC.



Note:

Do not change the DIP switch position from the position shown in the illustration above.

2.6 Installing and Setting Up the Drivers

You need the TM-J9000/J9100 driver to use the printer.



Note:

Ask your dealer how to obtain the driver.

See the manuals for the drivers for installation and setup.

2.7 Adjusting Various Settings

2.7.1 DIP Switches

DIP switch 2 is available on the printer connector panel.

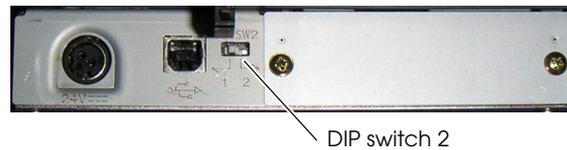


Figure 2-18 Connector panel

2.7.1.1 DIP switch 2 settings

- To the left (as shown in the illustration above): when the USB interface is used.
- To the right: when an interface other than the USB interface is used (ask your dealer for instructions).

2.7.2 Memory Switches

The printer memory switches are software switches. They include Msw1, Msw2, Msw8, customized values, and serial transmission conditions.

You can set the following using the memory switch setting utility (default: On for Msw2-1 only, and off for all other settings).

 **Note:**

You can change settings of the memory switches by any of the following methods:

- Memory switch setting utility.
- The printer's memory switch setting mode (items that can be changed are limited). See Section "2.7.3, Memory Switch Setting Mode," (page 2-16) for the memory switch setting mode.

Ask your dealer how to obtain the memory switch setting utility.

Memory switch settings are stored in the NV memory and are not deleted even if the printer power is turned off.

Table 2-2 Memory switch 1

Switch No.	Function	Off	On	Set by Memory Switch Setting Mode
1	Transmission of power on information	Does not transmit	Transmits	—
2	Reserved	Fixed to Off	—	—
3	Conditions for BUSY	Receive buffer-full or offline	Receive buffer-full	Possible
4	Data processing for errors	Prints “?”	Ignored	Possible
5	Automatic line feed	Disabled	Enabled	Possible
6	Reserved	Fixed to Off	—	—
7*	Pin #6: Selection of reset signal	Not used	Used	Possible
8*	Pin #25: Selection of reset signal	Not used	Used	Possible

*Msw1-7 and Msw1-8 are enabled only when the serial interface is used.

Table 2-3 Memory switch 2

Switch No.	Function	Off	On	Set by Memory Switch Setting Mode
1	Reserved	—	Fixed to On	—
2-8	Reserved	Fixed to Off	—	—

Table 2-4 Memory switch 8

Switch No.	Function	Off	On	Set by Memory Switch Setting Mode
1 ~ 2	Reserved	Fixed to Off	—	—
3*	Error signal is output	Enabled	Disabled	—
4	Paper roll selection	Paper roll enabled	Paper roll disabled	—
5	Validation print columns (for font A/font B)	62/82	67/93	—
6	Endorsement print columns (for font A / font B)	62/82	67/93	—
7	Paper roll print columns (for font A / font B)	40/53	43/60	—
8	Paper roll cover open during printing	Automatically recoverable error	Recoverable error	—

*Msw8-3 is enabled only when the parallel I/F (UB-P02II) is used.

 **Note:**

When Msw8-4 is turned on, the print command and other commands for roll paper are all disabled. Cut sheet commands are enabled. (Installing roll paper enables the self-test only. (See Section “3.7.1, Self-test Printing on Roll Paper,” (page 3-16).”)

Turning on Msw8-5, 6, and 7 increases the number of print columns but also deletes 1 dot of space on the right side of the characters. Therefore, 1 dot on the right end of graphic characters or user-defined characters may not print.

Table 2-5 Customized value

Function	Value	Set by Memory Switch Setting Model
Threshold value for double-sheet feeding detection	0.01 ~ 0.40 mm (default: 0.17 mm)	—

Note: The double-sheet feeding detector is installed only in the ASF model. The “threshold value for double-sheet feeding detection” is effective only for ASF model printers.

If “0” is input for the threshold value, the double-sheet feeding detection is invalid.

Table 2-6 Serial transmission conditions

Function	Value	Set by Memory Switch Setting Mode
Transmission speed	2400 bps	Possible
	4800 bps	
	9600 bps	
	19200 bps (default)	
	38400 bps	
	57600 bps	
	115200 bps	
Parity	None (default)	
	Odd	
	Even	
Handshaking	DTR/DSR control (default)	
	XON/XOFF control	
Data length	7 bits	
	8 bits	

 **Note:**

Settings of the serial transmission conditions are effective only when a serial interface is used. Ask your dealer for information on using a serial interface.

2.7.3 Memory Switch Setting Mode

The following items can be set in the memory switch setting mode:

- Conditions for BUSY (Msw1-3)
- Data processing for receiving errors (Msw1-4)
- Automatic line feed enabled/disabled (Msw1-5)
- Serial I/F pin # 6 or # 25 reset signal enabled/disabled (Msw1-7, 8)
- Serial transmission conditions (serial transmission conditions)
 - Transmission speed
 - Parity selection
 - Handshaking
 - Word length



Note:

Do not turn off the printer power while making settings in memory switch setting mode. Otherwise, new settings will be cleared. After you complete steps in memory switch setting mode correctly, then turn off the printer power.

2.7.3.1 Starting Memory Switch Setting Mode

Start memory switch setting mode by following the procedures below:

1. Open the roll paper cover.
2. Check that roll paper is inserted (insert roll paper regardless of whether roll paper is enabled or disabled by Msw8-4).
3. With the roll paper cover open, press the FEED button and hold it while turning on the power.
4. Check that the POWER, ERROR, and PAPER OUT LEDs are on; then press the FEED button twice.
5. Close the roll paper cover. The printer prints items that can be set by the memory switches and instructions.
6. Set switches by following the instructions.

2.7.3.2 Completing the Memory Switch Setting Mode

When the memory switch setting mode is completed, the settings are stored and the printer starts initializing. When the initialization is completed, the printer is ready for printing.

Chapter 3

Operation

3.1 Using the Card Scanning Function

TM-J9000/J9100 can scan data on the card face in 256 gradations.



Note:
When DIP switch 2 is enabled, this function cannot be used.

The reading method is as follows.

1. Make sure the ID LED of the TM-J9000/J9100 is flashing (wait status for card insertion).



Note:
You must send a command to start card processing to tell the TM-J9000/J9100 to enter the wait status for card insertion.

2. While the ID LED light is flashing, insert the card straight with the reading side of the card facing the carriage cover, with the bottom of the card continuously touching the card slot as shown in the illustration below until it stops.

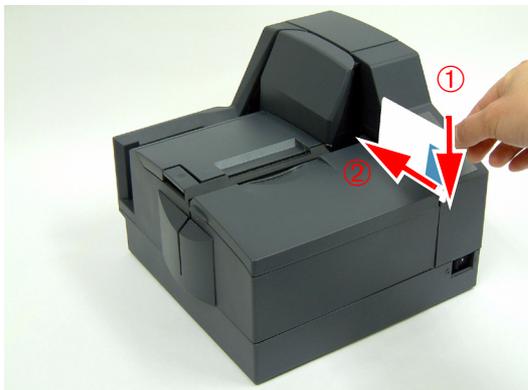


Figure 3-1 Card insertion



Note:
Insert the card with its bottom edge against the printer.

Do not insert anything other than the card. Otherwise, a paper jam or machine failure may result.

3. When the card is pulled into the printer, immediately let go of the card.



Note:

To have the card pulled into the printer, the driver must send a card processing command.

When the card is being pulled into the printer, part of it comes out of the card carrier slit in the back of the printer. Blocking this slit may cause incorrect data reading.

4. The printer first pulls in the card, and then scans and ejects it at the same time.



Note:

While the card is being ejected, do not touch it. Doing so can distort the scanned image.

5. When the scanning and ejecting of the card is completed, the ID LED starts flashing (wait status for card removal).



Note:

When the card scanning is completed, the printer sends the scanned data to its host computer.

6. Make sure the ID LED is flashing, and pull out the card straight.



Note:

Use a flat card. Using a card with a hole, excessive curvature, cracking, folding, or embossing may cause incorrect reading and machine failure (See Section 1.2.1, "Image Scanner Specifications," page 1-4, for card specifications.)

Do not open or close the covers while reading is in progress.

3.2 Using the Validation Function

Follow the procedure below to operate validation printing.



Notes:

Do not open the covers while printing and processing are in progress.

1. Make sure the VALIDATION/FEEDER LED is flashing (wait status for validation paper insertion).



Note:

The driver must send a command to start processing validation paper to make the TM-J9000/J9100 enter the wait status for validation paper insertion. See the driver manual for further information.

2. Make sure the VALIDATION/FEEDER LED is flashing, and from above the validation section, insert a validation sheet straight, while keeping the right side of the sheet along the marked side shown in the following illustration.

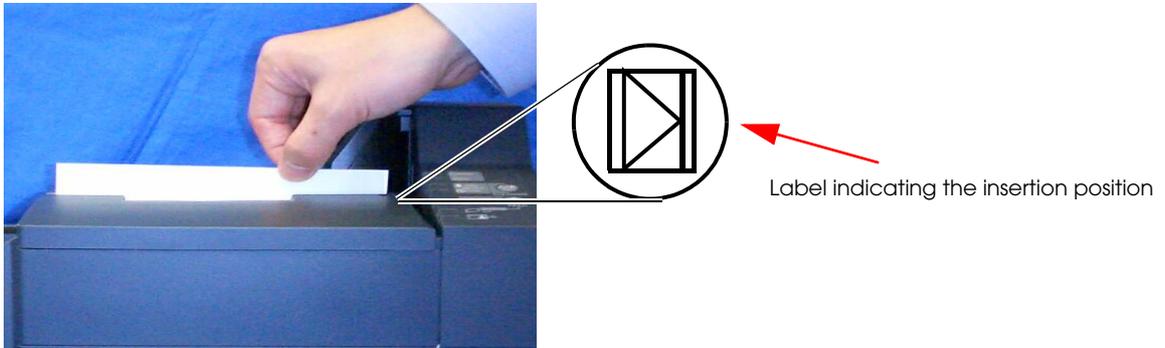


Figure 3-2 Inserting a validation sheet

3. When the validation sheet is inserted into the printer, immediately let go of the paper.
4. The printer prints as it feeds the paper.



Note:

To print using the TM-J9000/J9100, the driver must send a printing command.

5. When printing is completed, paper is ejected upward, and then the VALIDATION/FEEDER (cut sheet) LED flashes (indicating wait status for paper removal).



Note:

To eject a sheet using the TM-J9000/J9100, the driver must send a printing command.

After printing on the validation sheet, it is recommended to eject the paper. If the printer executes a paper release instead, the paper contacts the print head and gets dirty.

6. Pull the paper straight out.



Note:

When printing on validation paper using this printer, do not use any of the following types of paper. Doing so may cause a paper jam, leading to paper damage and printer failure.

- Carbon paper or other multi-ply paper
- Curled or bent paper (especially at the corners), warpage, or wrinkles
- Paper with a paper clip, staple, adhesive tape, or other foreign materials attached
- Paper smaller than 68 mm (height) × 152 mm (width) {2.68" × 5.98"}
- Paper larger than 100 mm (height) × 230 mm (width) {3.94" × 9.06"}

3.3 Using Checks

The TM-J9000/J9100 is capable of performing the following four actions on a check in a single pass: reading MICR characters, image scanning on both the face and back of a check, and printing a transaction record.

The following is the brief description of the steps of operation.



Notes:

Do not open the covers while printing and processing are in progress. Otherwise skewed paper feeding or abnormalities of MICR character reading or image reading, or a paper jam might occur.

1. Insert a check into the feeder section.
2. The printer pulls in the check, reads the magnetic characters, and scans the images of the face and back.
3. Paper feeding stops in the validation section, and the printer prints the transaction record.
4. The printer either feeds the check to the outlet, or enters the wait status for check removal.

The following sections describe inserting/removing a check, and printer operations.



Notes:

You can use the driver to omit any of the four parts of the operation: reading the magnetic characters, scanning of the face/back image of a check, and printing a transaction record in the validation section.

Do not use any of the following types of paper. Doing so may cause a paper jam, leading to paper damage and machine failure.

- Carbon paper or other multi-ply paper
- Paper with a curl or bend (especially on the corners), warpage, or wrinkles
- Paper with a paper clip, staple, adhesive tape, or other foreign materials attached
- Paper that has been torn.
- Paper smaller than 68 mm (height) × 152 mm (width) {2.68" × 5.98"}
- Paper larger than 100 mm (height) × 230 mm (width) {3.94" × 9.06"}

3.3.1 Using Checks with an ASF Model

With the ASF model, attaching the feeder guide and pocket unit allows insertion of a maximum of 25 checks at a time in the printer.

 **Note:**

See Section 2.4.1, “Attaching the Feeder Guide,” page 2-5, and Section 2.4.2, “Attaching the Pocket Unit,” page 2-5, for attachment of the feeder guide and pocket unit.

1. Align the checks on the bottom right corner before you insert them into the feeder guide.



Figure 3-3 Aligning checks

 **Note:**

Align the right sides of the sheets neatly at the bottom-right corner as shown in the image above before insertion to feed them one by one. If the sheets are not aligned on the right side, they may not be fed or a paper jam or incorrect feeding of multiple checks may result.

2. Insert the checks in the feeder guide as far as possible so that the right edge of the checks reaches the insertion position indicated by the label on the feeder.
3. Checks are pulled from the feeder guide one by one into the printer, and fed to the validation section. During this process, reading of MICR characters and image scanning of the check face and back are completed.

 **Notes:**

To start this process, the driver must send the check-processing command.

If the UIB (I/F board) is enabled with the DIP switch (DIP switch 2 on the connector panel is set 2, to the right), the check face/back image scanning function is not usable.

4. The transaction record is printed in the validation section.

 **Note:**

For the printer to print the transaction record, the driver needs to send the command.

5. After printing is completed, the check is ejected into the pocket. The next check is then pulled into the printer, and the same process is repeated.



Note:

The driver needs to send a command to eject checks into the pocket and to pull the next check into the printer.

6. When the entire processing of the checks loaded in the feeder guide is completed, remove the checks piled up in the pocket.



Note:

Opening the roll paper cover during scanning stops scanning and causes a cut-sheet ejection error. If this occurs, open the scanner cover, remove the sheet, and then send an error recovery command from the application.

Opening the carriage cover or scanner cover during scanning returns an error for the image. However, sending an error recovery command is unnecessary, because the printer does not produce an error.

3.3.2 Using Checks in the Non-ASF Model

To process checks in the non-ASF model checks, insert one check at a time.

1. Make sure the VALIDATION/FEEDER LED is flashing (wait status for check insertion).



Note:

The driver must send the command to start processing to cause the TM-9000/9100 enter the wait status for check insertion.

2. Make sure the VALIDATION/FEEDER LED is flashing, and insert a check straight with its face (the side on which MICR characters are printed) facing the front of the printer, continuously touching the printer with the bottom of the check.
3. When the check slot detects the check, the roller located there starts rotation, and the VALIDATION/FEEDER LED goes on.

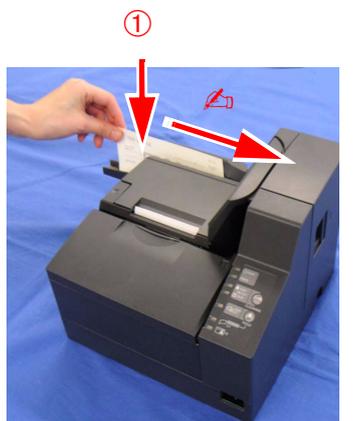


Figure 3-4 Inserting a check

4. When the check is pulled into the printer, immediately let go of the check.

5. The check is pulled into the printer and conveyed to the validation section. During this part of the process, reading MICR characters, and face/back image scanning are completed.



Note:

To start this processing, the driver must send a check-processing command.

6. The transaction record is printed in the validation section.



Note:

To print the transaction record, the driver needs to send out the command.

7. After printing is completed, the check is ejected from the left side of the printer; or the VALIDATION/FEEDER LED flashes, and the printer enters the wait status for check removal. If the printer enters the wait status, remove the check upward from the validation section to complete the entire process.



Note:

For the printer to enter the wait status for check removal, the command must be included in the driver setting, or the driver must send out the command.



Note:

If the roll paper cover is opened while scanning is in progress, scanning stops and the printer detects a cut-sheet ejection error. If this occurs, open the scanner cover, remove the check, and send the error recovery command from the application.

If the carriage cover or scanner cover is opened during scanning, an abnormal image reading result is returned. However, sending the error recovery command to the printer is unnecessary, because the printer does not detect an error.

3.4 Replacing Roll Paper

See Section 2.4.5, "Installing Roll Paper," page 2-10.

3.5 Replacing the Ink Cartridge

See Section 2.4.4, "Installing the Ink Cartridge," page 2-8.

3.6 Maintenance

3.6.1 Cleaning the MICR Unit

Dirt on the MICR unit may cause frequent MICR character reading errors. Insert a cleaning sheet in the feeder section, and clean the MICR unit every 6 months or every 100,000 passes. Make sure to use the following sheet, or consult to your dealer.

- ❑ KIC Products "Waffletechnology cleaning card (Part No. KW2663-CS2B15WS EPSON TM-J9100 WAFFLE WS CLEANING CARDS 15/BOX)."



Note:

Do not use sticky cleaning sheets. Doing so may cause a paper jam and machine failure.

Whenever you clean the MICR mechanism, also clean the TOF sensor. (See "Cleaning the TOF Sensor" on page 3-12 for details.)

It is recommended to clean the MICR unit once per week or once every 2,000 checks for good reading results.

3.6.1.1 Cleaning Method 1

Clean the MICR unit with the following steps.

1. Send the MICR cleaning command from the application.
2. Insert a cleaning sheet. With ASF model printers, insert the cleaning sheet until the printer starts pulling it in, as you pull the cleaning lever on the back of the printer.

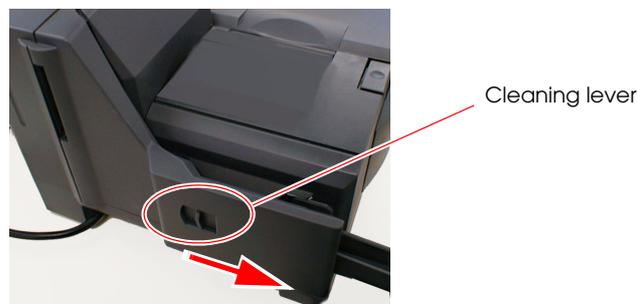


Figure 3-5 Pulling the cleaning lever forward



Note:

Be sure to discard the used cleaning sheet.

Hold the cleaning lever in the pulled position until the cleaning sheet is fed into the validation section. Not doing so may cause a paper jam.

3. When the cleaning sheet is ejected from the left side of the validation section, the entire cleaning process is completed. You can use the printer as usual.

3.6.1.2 Cleaning Method 2

When the application cannot enable the MICR cleaning command, you can use the following alternate cleaning procedure.

 **Note:**

Because this method requires turning off the printer, sending the MICR cleaning command from the application is recommended whenever possible.

Clean the MICR unit with the following steps.

1. Turn off the printer.
2. Open the roll paper cover, and turn on the printer with the CLEANING button pressed down.
3. Press the CLEANING button once, and close the roll paper cover.
4. Insert a cleaning sheet. With ASF model printers, insert the cleaning sheet until the printer starts pulling it in, as you pull the cleaning lever on the back of the printer.



With the ASF model



With the non-ASF model, insert the check as described in Section 3.3.2, "Using Checks in the Non-ASF Model," page 3-6.

Figure 3-6 Inserting a cleaning sheet

 **Note:**

Make sure to discard used cleaning sheets.

Hold the cleaning lever in the pulled position until the cleaning sheet is fed into the validation section. Not doing so may cause a paper jam.

If you want to check recognition results after cleaning the MICR unit, you need to develop an application so that your own system can check the recognition results.

3.6.2 Cleaning the Image Scanner

If the glass part of the scanner gets soiled from ink or dust, the quality of the scanned image may deteriorate. Clean the glass every 6 months or every 100,000 passes.

Clean the glass with the following steps.

1. Put your fingers on the pocket on the right side of the printer, unlock the scanner cover, and remove it upward.

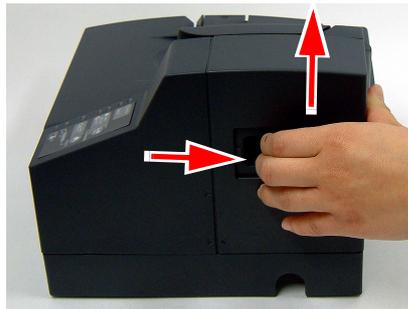


Figure 3-7 Removing the scanner cover

2. Put your fingers on the tab marked “Pull Open,” and pull down the scanner unit.

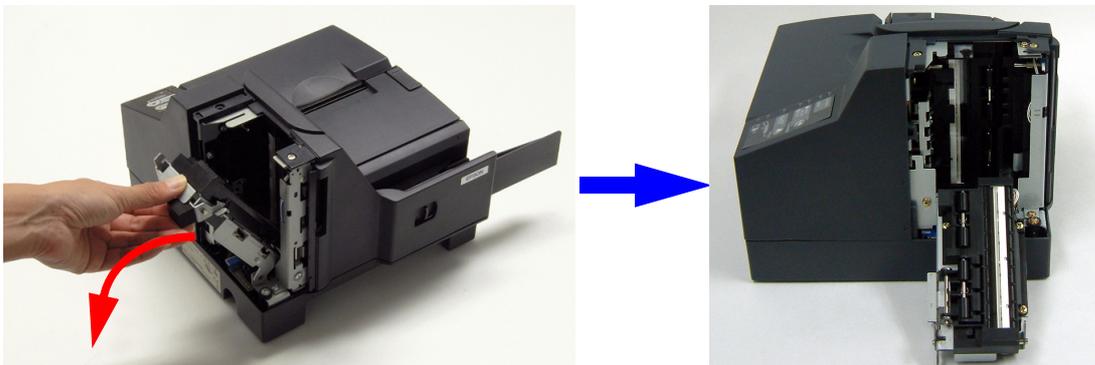


Figure 3-8 Opening the scanner unit



Note:

When pulling down the scanner unit, avoid knocking it against the table or anything else to protect it from an excessive impact.

To protect the scanner unit, do not leave it open for any longer than necessary.

3. Wipe the black part of the glass and the rollers, shown in the illustration below, with a soft cloth lightly moistened in alcohol.

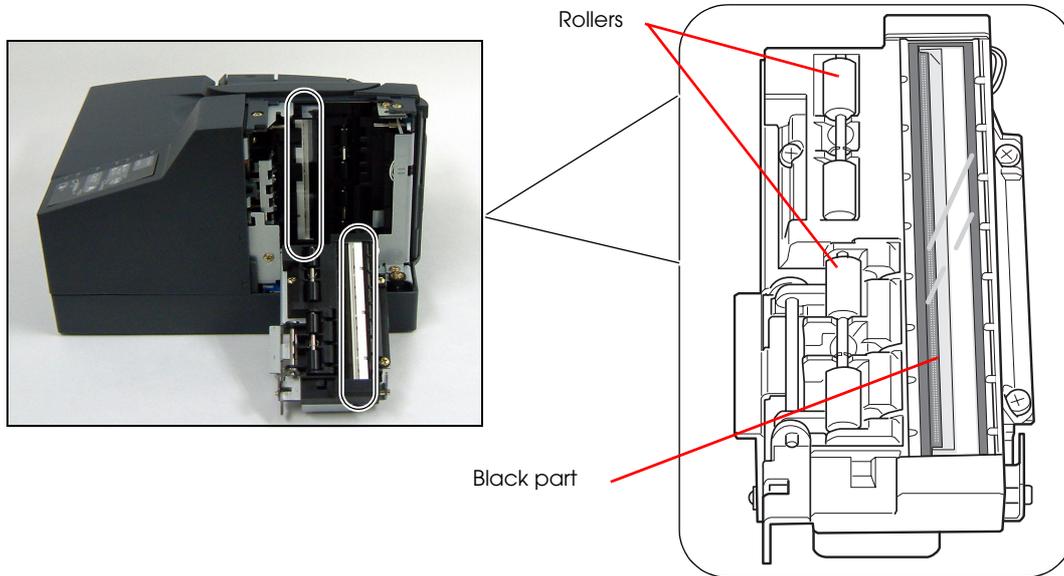


Figure 3-9 Glass and rollers to be cleaned

⚠ CAUTION:

Do not use a synthetic detergent, benzene, water, or other liquid for cleaning. Doing so results in a stain.

When the glass part of the scanner is dirty, such as being smeared with oil or grease, wipe it with a cloth lightly moistened in alcohol. When cleaning, be sure not to apply any liquid directly on the glass part of the scanner.

4. Press down the section marked “Close” indicated by the red circle in the image below; then push in the scanner unit until it clicks in place.

✎ Note:

If the scanner unit is not pushed in properly, a cover open offline occurs, and the ERROR LED comes on.

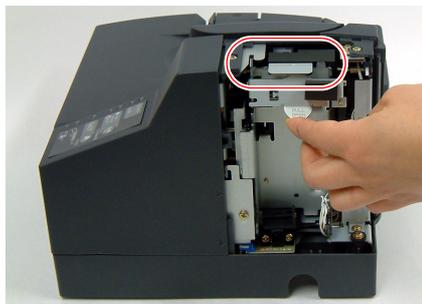


Figure 3-10 Closing the scanner unit

5. To attach the scanner cover, push it down into the connecting part firmly, until it clicks in place.



Figure 3-11 Attaching the scanner cover

3.6.3 Cleaning the TOF Sensor

Paper dust inside the TOF (Top of Form) sensor may disturb TOF detection. Clean the TOF sensor every 6 months or every 100,000 passes by following these steps.

Use KIC Products "Waffletechnology cleaning card (Part No. KW2663-CS2B15WS EPSON TM-J9100 WAFFLE WS CLEANING CARDS 15/BOX)."



Note:

Do not use sticky cleaning sheets. They may cause a paper jam or machine failure. Be sure to dispose of used cleaning sheets.

It is recommended to clean the TOF sensor once per week or once every 2,000 checks.

1. Fold a cleaning sheet into four parts lengthwise.

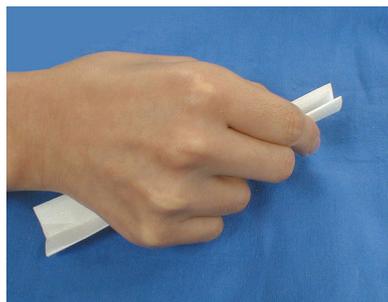


Figure 3-12 Folding the cleaning sheet

- Put your fingers on the pocket on the right side of the printer, unlock the scanner cover, and remove it upward.

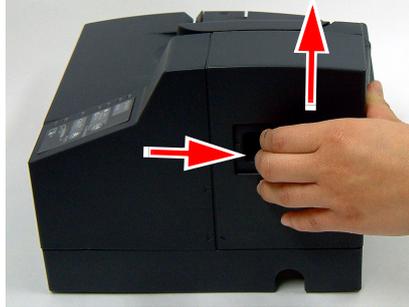


Figure 3-13 Removing the scanner cover

- Put your fingers on the tab marked "Pull Open," and pull down the scanner unit.

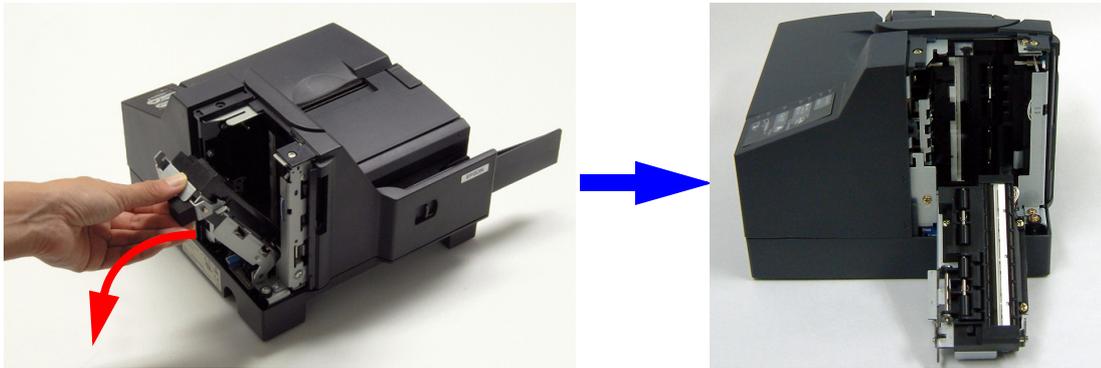


Figure 3-14 Opening the scanner unit



Note:

When pulling down the scanner unit, avoid knocking it against the table or anything else to protect it from an excessive impact.

- With the cleaning sheet in the position shown in the illustration on the left, insert it into the gap between A and B shown in the illustration on the right.

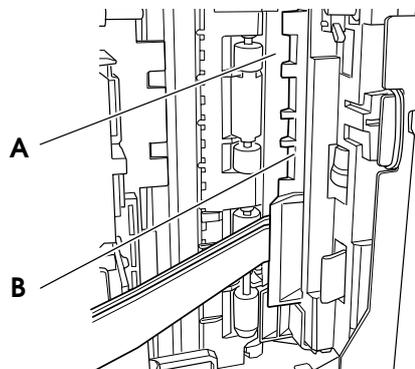
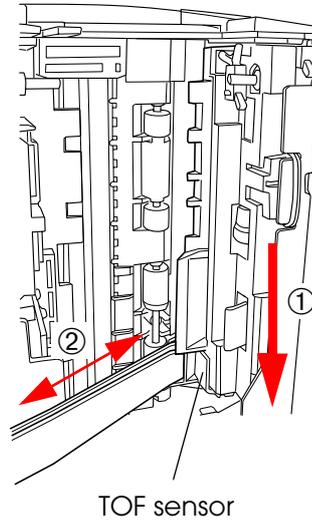


Figure 3-15 Inserting the cleaning sheet

- Slide the cleaning sheet down, and insert the edge into the TOF sensor while moving the sheet back and forth.



- Clean the inside of the TOF sensor by moving the sheet back and forth 4 or 5 times between the edge of the TOF sensor and the point where the cleaning sheet stops.
- Remove the cleaning sheet.
- Press down the section marked "**Close**" indicated by the red circle in the image below; then push in the scanner unit until it clicks in place.



Note:

If the scanner unit is not pushed in properly, a cover open offline occurs, and the ERROR LED comes on.

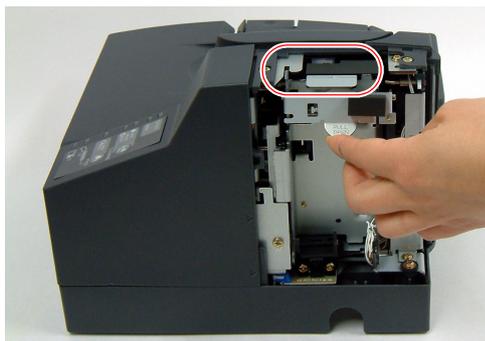


Figure 3-16 Closing the scanner unit

9. To attach the scanner cover, push it down into the connecting part firmly, until it clicks in place.



Figure 3-17 Attaching the scanner cover



Note:
Whenever you clean the TOF sensor, also clean the MICR mechanism. (See “Cleaning the MICR Unit” on page 3-8 for details.)

3.7 Checking Operations

Use the following methods to check whether the printer has been set up correctly.

- ❑ A self-test can verify whether the printer unit has been set up correctly.
- ❑ A test print using the **[property]** menu of the printer can verify whether communication has been established between the printer and the Printer Driver installed in the PC.

This manual describes the steps for printing a self-test.

There are two ways to print a self-test — on roll paper and on a validation sheet.

3.7.1 Self-test Printing on Roll Paper

1. Make sure the printer's power supply is turned off, roll paper is installed, the ink cartridge has sufficient ink, and the roll paper cover, carriage cover, and scanner covers are closed.
2. While pressing down the FEED button, turn on the printer power supply.



Note:

Keep pressing the FEED button until the printer starts printing.

3. After the printer completes the initialization, it prints its current status.

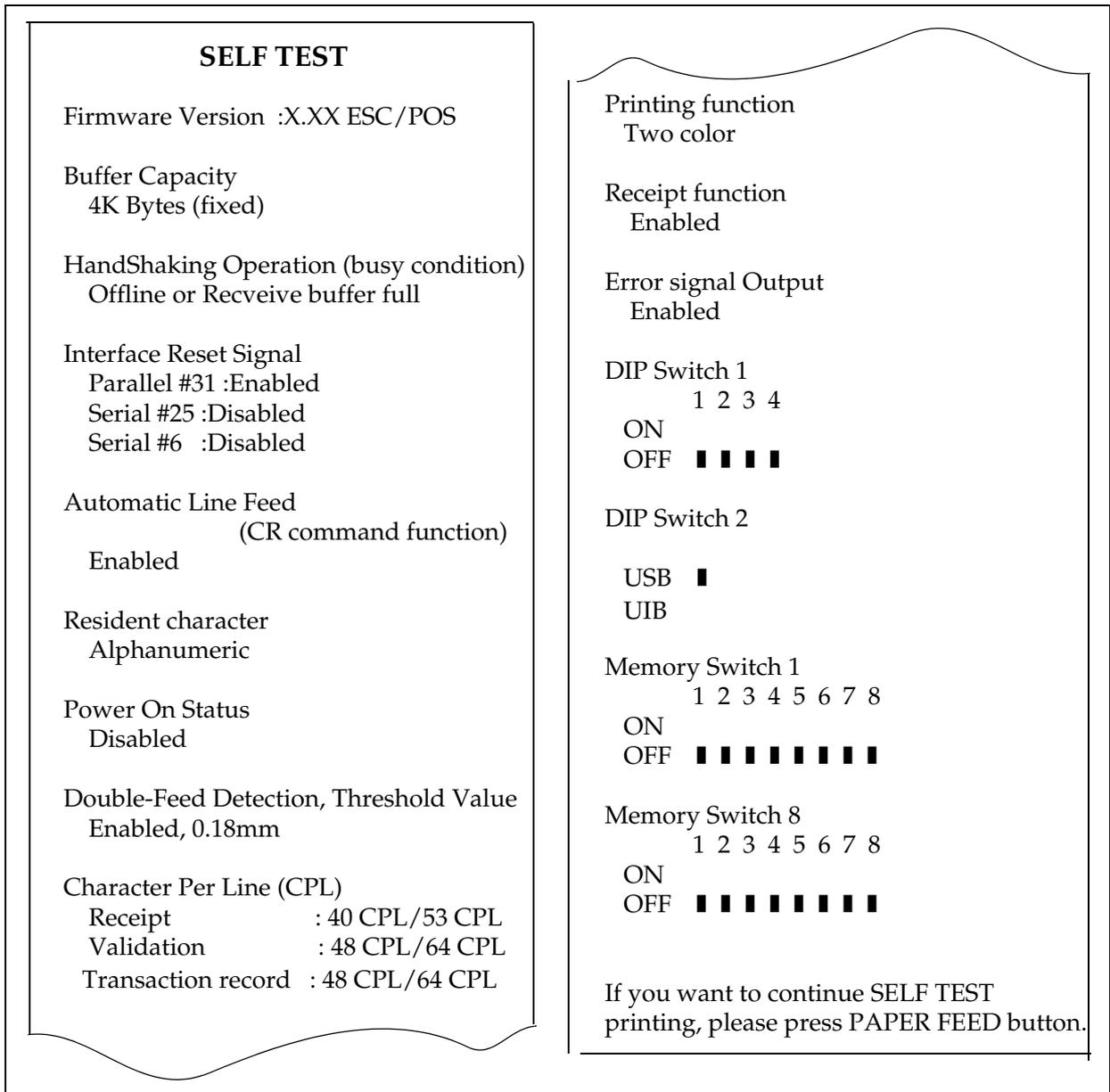


Figure 3-18 Self-test printout sample

4. After the message “**If you want to continue SELF-TEST printing, please press FEED button**” is printed, press the FEED button to print a pattern using the resident characters in the printer.
5. After the pattern printing is completed, the following message is printed.

* * * completed * * *

6. The printer initializes (The POWER LED flashes during initialization). The POWER LED changes from flashing to on when the self-test is complete. The printer can be used as usual.



Note:

Pressing the FEED button while the printer is printing the self-test stops the printing. To restart printing, press the FEED button again.

Because the printer initializes the system after the self-test is completed, frequent self-tests consume extra ink every time the printer repeats system initialization.

3.7.2 Self-test Printing on a Validation Sheet

1. Make sure the printer's power supply is turned off.
2. Turn on the printer's power supply while holding down the CLEANING button.



Note:

Keep pressing the CLEANING button until the VALIDATION/FEEDER LED starts flashing.

3. After the VALIDATION/FEEDER LED status flashing, insert a validation sheet.
4. The printer starts printing the self-test.



Note:

The printed content is the same as on roll paper. (See Section 3.7.1, "Self-test Printing on Roll Paper," page 3-16.)

5. If the entire self-test has not been printed on the first validation sheet, the printer enters the wait status for paper insertion after the first sheet is removed, and automatically restarts self-test printing after a new sheet is inserted. To end self-test printing, turn off the printer power supply when the printer has stopped printing.

Chapter 4

Troubleshooting

4.1 When the ERROR LED is Flashing

Confirm the LED flashing patterns by referring to the table below, and try the recovery methods.

Table 4-1 Identifying and correcting errors

Category	ERROR	Description	ERROR LED flashing pattern 	Recovery
Errors that recover automatically	Roll paper cover open error (when "automatic recovery error" is selected by Msw 8-8.)	A roll paper cover open was detected during printing on roll paper.		Automatically recovers when the roll paper cover is closed.
	Head high/low temperature error	The temperature detected does not meet head driving conditions. (*1)		Wait until the head temperature returns to normal. Automatically recovers when the temperature goes to the normal value.
Recoverable errors	Carriage home position detection error	A carriage home position was not detected.		Recovers by sending the error recovery command from the driver.
	Carriage out of phase detection error	The carriage is out of phase.		Recovers by sending the error recovery command from the driver.
	Cut-sheet ejection error	A cut sheet was not ejected even after a certain amount of feeding was tried.		Recovers by sending the error recovery command from the driver after removing error causes.
	Roll paper cover open error (when "recoverable error" is selected by Msw 8-8.)	A roll paper cover open was detected during printing.		Recovers by sending the error recovery command from the driver with all the covers and units closed. (*2)

(*1) The head high/low temperature error is in the expected range of temperature changes and it is not a failure.

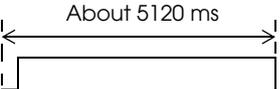
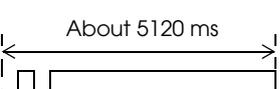
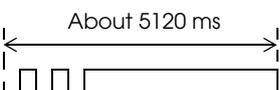
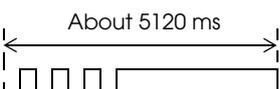
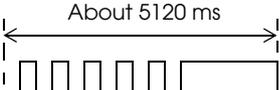
(*2) "All the covers" includes the roll paper cover, carriage cover, scanner cover, and scanner unit.

When paper or a card is jammed, remove it, and send the error recovery command. If the recovery command is sent with paper or a card still jammed, the printer goes in the error status again immediately after error recovery. (See Section 4.2, "When Paper/Card is Jammed," on page 4-3 for removal of jammed paper.)

 **Note:**

When paper other than roll paper is selected as the paper source, if the error recovery command is sent, the printer releases the sheet and waits for the sheet to be removed.

Table 4-1 Identifying and correcting errors (continued)

Category	ERROR	Description	ERROR LED flashing pattern  320 ms	Recovery
Unrecoverable errors	Driving circuit error	A driving circuit defect; a thermistor defect; the number for driving the pump is more than the specified number; or a defect of the image scanner sensor.	 About 5120 ms	Ask your dealer for repair. (*3)
	Read/write error	Reading from or writing into memory cannot be completed normally.	 About 5120 ms	Ask your dealer for repair. (*3)
	High voltage error	The power supply voltage is extremely high.	 About 5120 ms	Use EPSON power supply (PS-180). (*3)
	Low voltage error	The power supply voltage is extremely low.	 About 5120 ms	Use EPSON power supply (PS-180). (*3)
	CPU execution error	Defect of the printer circuit board.	 About 5120 ms	Ask your dealer for repair. (*3)
	UIB error	Defective UIB.	 About 5120 ms	Confirm the setting of DIP switch 2 (page 2-13). If this is correct, ask your dealer for repair. (*3)

(*3) When an unrecoverable error occurs, turn off the power immediately.



Note:

When the memory switch (Msw1-3) is set to "BUSY condition" or "buffer full," the printer goes into BUSY status when any of the errors above occur (default setting).

4.1.1 Recovery from Recoverable Errors

When an error categorized as a recoverable error occurs, if the printer is processing paper, remove it, and then send the error recovery command.

- ❑ If paper is left in the validation section, remove the paper that already should have been released, and then send the error recovery command.
- ❑ If paper or a card is left in the scanner section, open the scanner cover/unit and remove it, and then send the error recovery command. (See Section 4.2.1, “When Paper/Card is Jammed in the Scanner Section,” on page 4-3.)
- ❑ If roll paper is jammed, open the roll paper cover, remove the jammed paper, and then send the error recovery command.



Note:

When the error recovery command is sent from any application, the printer initializes in any of the above cases.

When the error recovery command is executed with slips, checks, validation paper, or a card left in the printer, the printer goes into error status again, due to the paper left. Be sure to remove slips, checks, validation paper, or cards from the printer before executing the recovery command.

4.2 When Paper/Card is Jammed

Troubleshooting differs depending on the section where the jam occurs.

4.2.1 When Paper/Card is Jammed in the Scanner Section

1. Lift the scanner cover upward by unlocking the tab on the right side of the printer.

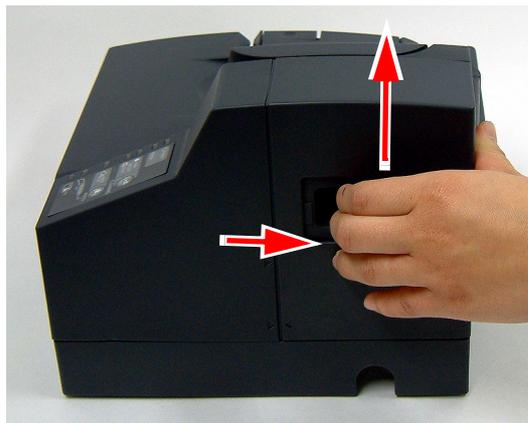


Figure 4-1 Removing the scanner cover

2. Pull down the scanner unit by pulling the tab stamped “Pull Open.”

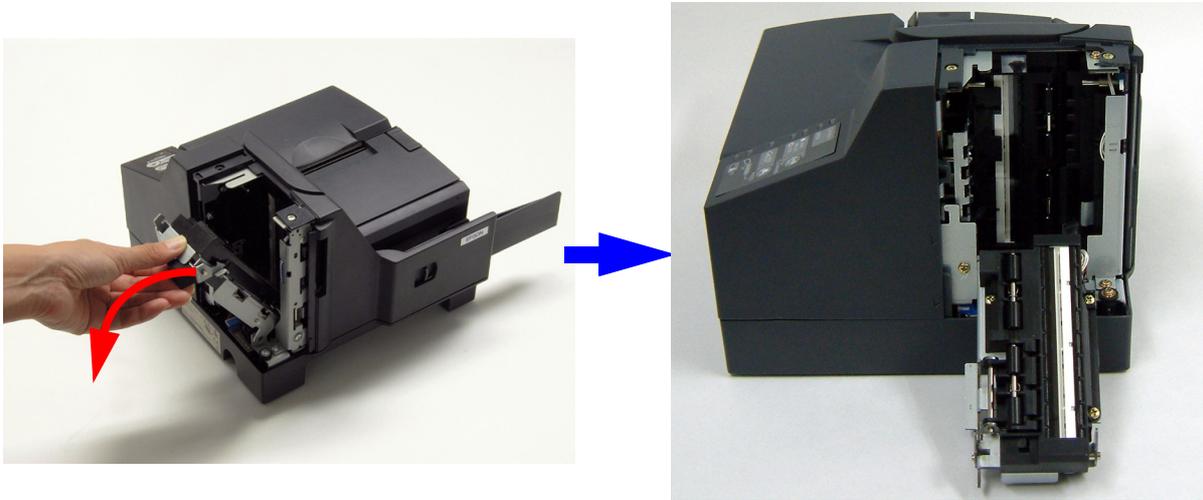


Figure 4-2 Opening the scanner unit



Note:

To protect the scanner unit, do not keep it open for a long period.

When pulling down the scanner unit to protect it from an excessive impact, avoid knocking it against the table or any other object.

3. Remove the jammed paper or card.
4. Push back the scanner unit by pushing the part stamped “Close” (circled in red in the following figure) until it clicks.



Note:

If the scanner unit is not pushed back correctly, a cover open error occurs, and the ERROR LED comes on.

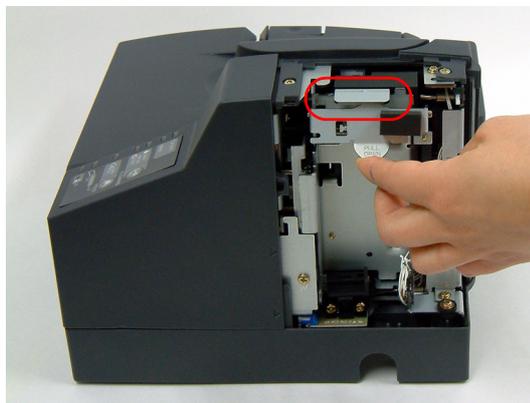


Figure 4-3 Closing the scanner unit

5. To attach the scanner cover, push it down into the connecting part firmly until it clicks in place.



6. Send the error recovery command from the driver to recover the printer from error status.

4.2.2 When Paper is Jammed in the Validation Section

1. Directly remove the jammed paper.
2. Send the error recovery command from the driver to recover the printer from error status.

4.2.3 When Paper is Jammed in the Roll Paper Section

1. Open the roll paper cover by pushing the roll paper cover open button.



2. Remove the jammed paper.
3. Load the roll paper again and close the roll paper cover.
4. Send the error recovery command from the driver to recover the printer from error status.

Chapter 5

Application Development Information

This chapter introduces the structure of software to control the TM-J9000/J9100.

5.1 How to Control

The driver software to control the TM-J9000/J9100 consists of the following;

- ❑ **TM-J9000/J9100 Printer Driver:**
A general Windows printer driver. You can print using the print function of commercially available applications.
- ❑ **TM-J9000/J9100 Driver:**
Application Program Interface (API) to control the scanner and printer function and monitor the status. Programming in a development environment, such as Visual C++, Basic, and so on makes controlling possible. Installed along with the TM-J9000/J9100 Printer Driver.



Note:

The drivers described above cannot be used through an interface other than a USB interface.

5.2 Software and Manuals

Software	Function outlines	Manual
Driver software		
TM-J9000/J9100 Printer Driver	Windows printer driver	-TM-J9000/J9100 Printer Driver User's Manual
TM-J9000/J9100 Driver	APIs for controlling scanner and monitoring status	-EPSON TM-J9000/J9100 Driver API Reference Manual -EPSON TM-J9000/J9100 Driver .NET API Reference Manual
Utility for developer		
TM Flash Logo Utility	NV bitmap registry utility. Makes NV bitmap printing easy.	User's Manual
Memory Switch Setting Utility	Printer setting adjustment utility (memory switches). See Section 2.7.2, "Memory Switches," on page 2-13 for details on the memory switches.	User's Manual
DeleteFiles tool for TM-J9000/J9100 Driver*	This tool can delete LEADTOOLS library which were copied to the system directory by TM-J9000/J9100 Driver installation.	Readme
SetClamp Time Tool for TM-J9000/J9100*	This tool can set up the clamp time (after the printer detects check paper at ASF (Auto Sheet Feeder) until it starts clamp/loading of check paper). The current clamp time is also acquirable.	Readme
TMNet WinConfig	Use for IP address or wireless LAN setting.	-TM Net WinConfig User's Guide -UB-E02 Technical Reference Guide -UB-R02/R03 Technical Reference Guide

*: Included with the TM-J9000/J9100 Driver

5.3 Download

You can obtain the software and manuals from one of the following URLs:

For customers in North America, go to the following web site:

<http://www.epsonexpert.com/> and follow the on-screen instructions.

For customers in other countries, go to the following web site:

<http://www.epson-pos.com/>

Appendix A

Specifications

This versatile ink jet printer has a roll paper printer function for printing receipts, a validation/check function for printing validations and endorsing checks, a MICR-reading function, and a scanner function for both checks and ID cards. This chapter describes the specifications for each of these product functions in detail.

A.1 Printer Statistics

Print method	Serial ink jet dot matrix
Feed method	Friction feed (roll, validation, and paper feeder)
Feed direction	Unidirectional (roll, validation, and paper feeder)
Color availability	TM-J9000 single-color TM-J9100 two-color
Number of nozzles	Single-color: 64 nozzles × 1 line Two-color: 64 nozzles × 2 lines (1 line per color)
Nozzle pitch	0.141 mm {1/180"}
Paper-feed speed (roll, validation)	150 mm/s {5.9"/s} (continuous feeding of roll paper) 35.4 lines per second (lps) at 1/6" line feed
Paper-feed speed (paper feeder)	300 mm/s {11.81"/s} 70.8 lines per second (lps) at 1/6" line feed
Paper-feed speed (auto sheet feeder)	150 mm/s {5.9"/s} 35.4 lines per second (lps) at 1/6" line feed
Line spacing	Default: 4.23 mm {1/6"} Minimum: 0.141 mm {1/180"}
Bar codes	UPC-A, UPC-E, JAN13 (EAN13), JAN8 (EAN8), CODE39, ITF, CODABAR (NW7), CODE93, CODE128
Roll paper supply method	Easy-to-load drop-in mechanism
Number of character sets	Alphanumeric: 95; international: 48; extended graphics: 128 × 11 pages (including one user-defined page)
Paper width	Roll paper: 76 mm {2.99"}; validation/transaction: 152 to 230 mm {5.98" to 9.06"}
Printable width	Roll paper: 67.7 mm {2.67"}; validation/transaction: 105 mm {4.13"}
Printable dots per line horizontally	Roll paper: 480; validation/transaction: 744

Characters per line (See table below.)

Table A-1 Characters per line for roll paper and validation paper

Font selection	Roll paper	Validation/transaction	Characters per 25.4 mm {1 inch} (cpi)
Font A	40	62	15 cpi
Font B	53	82	20 cpi
Font A (memory switch selectable)	43	67	16.3 cpi
Font B (memory switch selectable)	60	93	22.5 cpi

Characters size (See table below.)

Table A-2 Characters sizes for alphanumeric (ANK) and multilingual model printers

Font selection	Standard	Double-height	Double-width	Double-width/ double-height
	W x H mm {"}			
Font A (12 x 24)	1.69 x 3.38 {0.0665" x 0.1331"}	1.69 x 6.77 {0.0665" x 0.2665"}	3.38 x 3.38 {0.1331" x 0.1331"}	3.38 x 6.77 {0.1331" x 0.2665"}
Font B (9 x 17)	1.27 x 2.40 {0.05" x 0.0945"}	1.27 x 4.80 {0.05" x 0.189"}	2.54 x 2.40 {0.1" x 0.0945"}	2.54 x 4.80 {0.1" x 0.189"}
Font A (11 x 24) (memory switch selectable)	1.55 x 3.38 {0.061" x 0.1331"}	1.55 x 6.77 {0.061" x 0.2665"}	3.10 x 3.38 {0.122" x 0.1331"}	3.10 x 6.77 {0.122" x 0.2665"}
Font B (8 x 17) (memory switch selectable)	1.13 x 2.40 {0.0445" x 0.0945"}	1.13 x 4.80 {0.0445" x 0.189"}	2.26 x 2.40 {0.089" x 0.0945"}	2.26 x 4.80 {0.089" x 0.189"}

Lines per sheet (See table below.)

Table A-3 Lines per sheet for validation and transaction paper

		Validation	Transaction
Paper height (minimum)		68 mm {2.68"}	68 mm {2.68"}
Printable dots vertically		193	64
Printable height		27.2 mm {1.08"}	9.03 mm {0.36"}
Printable lines per sheet	Font A (12 x 24) using 4.23 {1/6"} line spacing	6	2
	Font B (9 x 17) using 3.18 {1/8"} line spacing	9	3

Print speed (See table below.)

Table A-4 Print speed

Print control mode	Font	Units	Roll paper	Validation paper
Normal	Font A (6 lpi)	lps	6.3	4.5
	Font B (8 lpi)	lps	8.9	6.5
	Graphics	mm/s {"}/s}	27 mm {1.06"}	21 mm {0.83"}
High speed	Font A (6 lpi)	lps	10.1	7.5
	Font B (8 lpi)	lps	14.3	11.0
	Graphics	mm/s {"}/s}	43 mm {1.69"}	33 mm {1.30"}
Economy	Font A (6 lpi)	lps	10.1	7.5
	Font B (8 lpi)	lps	14.3	11.0
	Graphics	mm/s {"}/s}	43	33

lpi = lines per 25.4 mm {1"} lps = lines per second mm/s {"}/s} = mm per second {" per second}

A.2 MICR Statistics

Reading method	Permanent magnetic bias
Recognition rate	98% or more at 25°C {77°F} (using standard checks)
Check insertion method	Magnetic characters at the bottom of the check face the front of the printer.

A.3 Scanner Statistics

Scanner type	Contact image sensor (CIS)	
Resolution	203 × 203 dpi (dpi = dots per 25.4 mm {1"})	
Gradation	256-level gray scale	
Data transmission format	Raw data	
Scanning area (fixed not settable)	Checks	100* × 238 [†] mm {3.94" × 9.37"} (H × L)
	Cards	60* × 100* mm {2.36" × 3.94"} (H × L)
		* Fixed value [†] Maximum value
Scanning speed	Check	300 mm/s {11.81"/s}
	Cards	120 mm/s {4.72"/s}
Insertion direction	Check	Magnetic characters at the bottom of the check face the front of the printer.
	Card	Face of card faces the receipt printer.
Scanner requirements for check paper	Quality	Normal quality
	Size	68 to 100 × 152 to 230 mm (H × L) {2.7 to 3.94 × 5.98 to 9.06"} (H × L)

Scanner requirements for ID cards	Thickness	0.09 to 0.13 mm {0.0035 to 0.0051"} (single ply only)
	Type	ISO/IEC7810-compliant (except embossing)
	Size	53.92 to 54.18 × 85.47 to 85.90 mm (H × L) {2.12 to 2.13" × 3.36 to 3.38"}
	Thickness	0.5 to 0.884 mm {0.019 to 0.033"}
	Curvature	2 mm {0.078"} or less (ISO/IEC7810)

A.4 Auto Sheet Feeder (ASF)/Pocket Statistics

Maximum number of checks	25, fed one at a time
Paper feed method	Friction feed
Check feed speed	150 mm/s {5.90"/s}
Check paper type	Normal paper
Check size	68 to 100 × 152 to 230 mm (H × L) {2.7 to 3.94" × 5.98 to 9.06"}
Check thickness	0.09 to 0.13 mm {0.0035 to 0.0051"} Thickness of 25 stacked checks: 3.5 mm {0.14"}

A.4.1 Double-feed detection (factory option for printers with ASF only)

Detection method	Reflective photo micro displacement sensor to detect paper thickness
Paper type	Normal single-sheet check paper
Check size	68 to 100 × 152 to 230 mm (H × L) {2.7 to 3.94" × 5.98 to 9.06"}
Check thickness	0.09 to 0.13 mm {0.0035 to 0.0051"}

A.5 Ink Cartridges

Cartridge types	Single-color	SJIC8(K) EPSON-exclusive cartridge (black ink)
	Two-color	SJIC6(K) EPSON-exclusive cartridge (black ink) for color 1 SJIC7(R), SJIC7(B), or SJIC7(G) (red, blue, or green ink) for color 2
Ink expiration date	2 years after manufacture and 6 months after packing is opened (when kept at room temperature)	

A.6 Reliability

Receipt printer section

Mechanism life	12,000,000 lines
Carriage life	6 million strokes, including receipt/validation printing
Print head life	1,600,000,000 shots/nozzle (shots = number of energized pulses of the print head)
MTBF	180,000 hours (before a random failure occurring during the random failure period)
MCBF	29,600,000 lines (average failure interval occurring during the random failure period)

Check transaction section

Mechanism life	1,000,000 sheets (including reading check and ID card)
ASF life	1,000,000 sheets
MTBF	180,000 hours (before a random failure occurring during the random failure period)
MCBF	2,470,000 transactions (average failure interval occurring during the random failure period)

Ink cartridges

Life of ink cartridges	Single-color	20,000,000 characters (SJIC8(K), using font B in economy mode with a standard print pattern)
	Two-color	15,000,000 characters (SJIC6(K), SJIC7(R), SJIC7(B), or SJIC(G), using font B in economy mode with a standard print pattern)

A.7 Memory Characteristics

Receive buffer	4KB (fixed)
User-defined buffer	12KB (for both characters and downloaded bit images)
NV graphics + NV user memory	384KB

A.8 Electrical Characteristics

Power source	PS-180 AC adapter (optional)	
Supply voltage	24 V \pm 10%	
Current consumption	Operating	Mean, approximately 1.0 A (printing alphanumeric characters in font A, all columns)
		Peak, approximately 3.5 A
	Standby	Mean, approximately 0.2 A

A.9 EMI and Safety Standards

Measured using the optional EPSON PS-180 AC adapter.

Europe	CE marking	Directive 89/336/EEC EN55022 Class A EN55024 IEC61000-4-2 IEC61000-4-3 IEC61000-4-4 IEC61000-4-5 IEC61000-4-6 IEC61000-4-8 IEC61000-4-11
	Safety standards	TÜV(EN60950)
North America	EMI	FCC/IECS-003 Class A
	Safety standards	UL60950/CSA C22.2 No. 60950
Japan	EMI	VCCI Class A
Oceania	EMC	AS/NZS 3548/CISPR Class A

A.10 Environmental Conditions

Temperature	Printing	10 to 35°C {50 to 95°F}
	Operating	5 to 40°C {41 to 104°F}
	Storage	-20 to 60°C {-4 to 140°F} (packed without ink) (for less than 120 hours at maximum and minimum extremes)
		-20 to 40°C {-4 to 104°F} (with ink loaded)
Humidity	Printing and operating	20 to 80% RH

Storage

5 to 85% RH (packed without ink)
20 to 85% RH (with ink loaded)

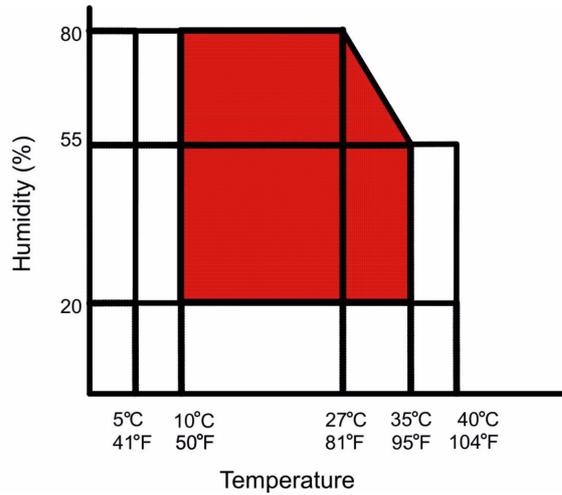


Figure A-1 Temperature and humidity range (shown in red)

Maximum absolute temperature	70°C {158°F} (printer must be kept below this)										
Operating pressure	700 to 1050 hPa (at approximately -20 to 2000 m {-66 to 6562 feet} above sea level)										
Vibration resistance (packed)	<table border="0"> <tr> <td>Frequency</td> <td>5 to 55 Hz</td> </tr> <tr> <td>Acceleration</td> <td>Approximately 19.6 m/s² {2G}</td> </tr> <tr> <td>Sweep</td> <td>10 minutes (half cycle)</td> </tr> <tr> <td>Duration</td> <td>1 hour</td> </tr> <tr> <td>Directions</td> <td>x, y, and z</td> </tr> </table> <p>EPSON has determined that no unexpected conditions will occur during operation after vibration under the limitations above.</p>	Frequency	5 to 55 Hz	Acceleration	Approximately 19.6 m/s ² {2G}	Sweep	10 minutes (half cycle)	Duration	1 hour	Directions	x, y, and z
Frequency	5 to 55 Hz										
Acceleration	Approximately 19.6 m/s ² {2G}										
Sweep	10 minutes (half cycle)										
Duration	1 hour										
Directions	x, y, and z										
Impact resistance	<table border="0"> <tr> <td>Packed</td> <td>dropped from 60 cm {23.6"} high on 1 corner, 3 edges, and 6 surfaces</td> </tr> <tr> <td>Unpacked</td> <td>dropped from 5 cm {2"} high by lifting 1 corner and releasing (for all 4 edges)</td> </tr> </table> <p>EPSON has determined that no unexpected conditions will occur during operation after vibration under the limitations above.</p>	Packed	dropped from 60 cm {23.6"} high on 1 corner, 3 edges, and 6 surfaces	Unpacked	dropped from 5 cm {2"} high by lifting 1 corner and releasing (for all 4 edges)						
Packed	dropped from 60 cm {23.6"} high on 1 corner, 3 edges, and 6 surfaces										
Unpacked	dropped from 5 cm {2"} high by lifting 1 corner and releasing (for all 4 edges)										
Acoustic noise	Operating 50 dB, approximately (ANSI bystander position using roll paper in normal mode)										
Installation direction	Printer must be installed horizontally.										

A.11 Dimensions and Weight

	With ASF	Without ASF
Height	180 mm {7.09"}	180 mm {7.09"}
Width	466 (389) mm {18.3 (15.3)"}	310 (236) mm {12.2 (9.29)"}
Depth	232 mm {9.13"}	232 mm {9.13"}
Weight	Approximately 5.2 kg {11.5 lb}	Approximately 4.9 kg {10.8 lb}

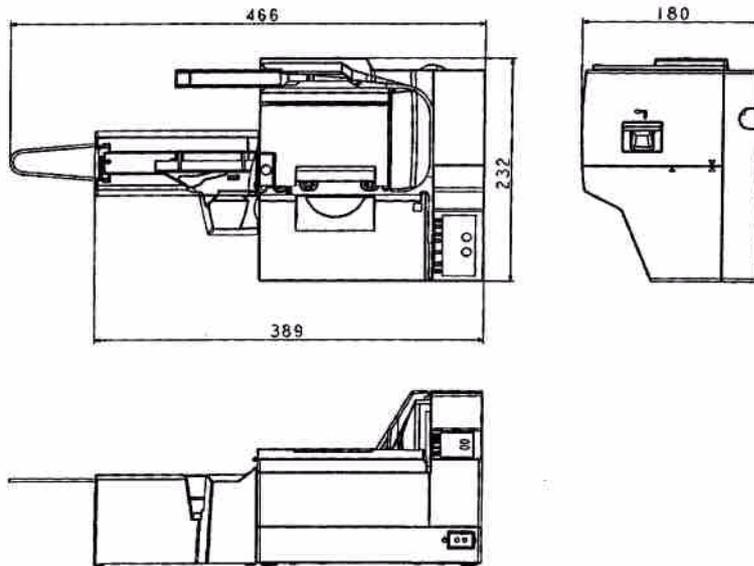


Figure A-2

A.12 Printable Area

This section describes the printable areas for roll paper, validation sheets, or checks.

A.12.1 Printable Area for Roll Paper

The figure below shows the printable area for roll paper and required margins on the sides of the paper.

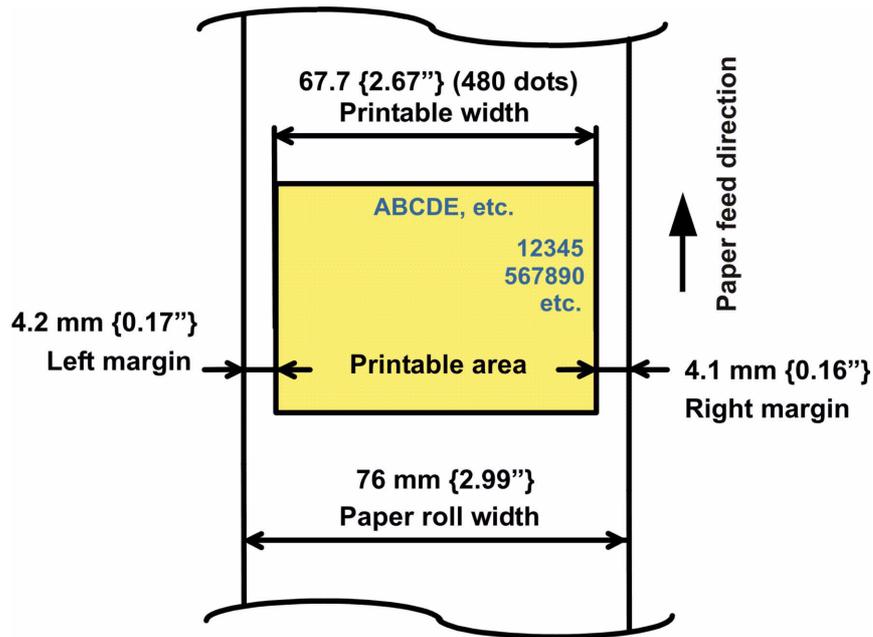


Figure A-3 Printable area for roll paper

The TM-J9000/J9100 uses roll paper with these specifications:

Width	76 mm \pm 0.5 mm {3" \pm 0.02"}
Maximum outside roll diameter	60 mm {2.36"}
Inside diameter of core	10 mm {0.39"} or more
Paper thickness	0.06 to 0.09 mm {0.0026 to 0.0035"}
Paper-end and near-end sensors	2 microswitches (neither is adjustable)

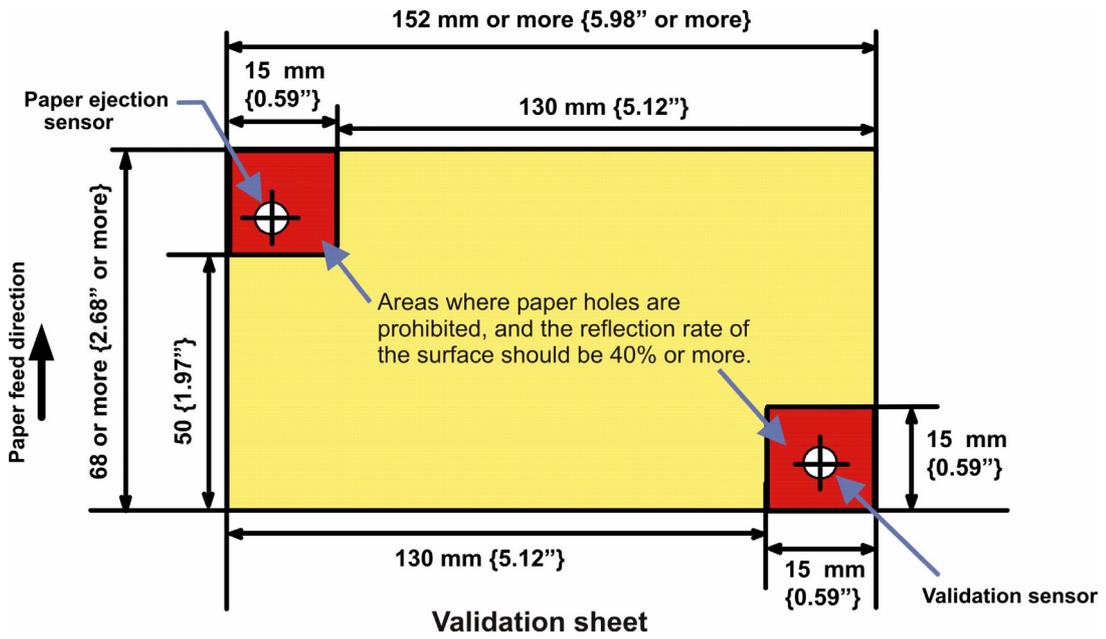


Figure A-5

The figure below shows the area of a slip that cannot contain holes or translucent areas.

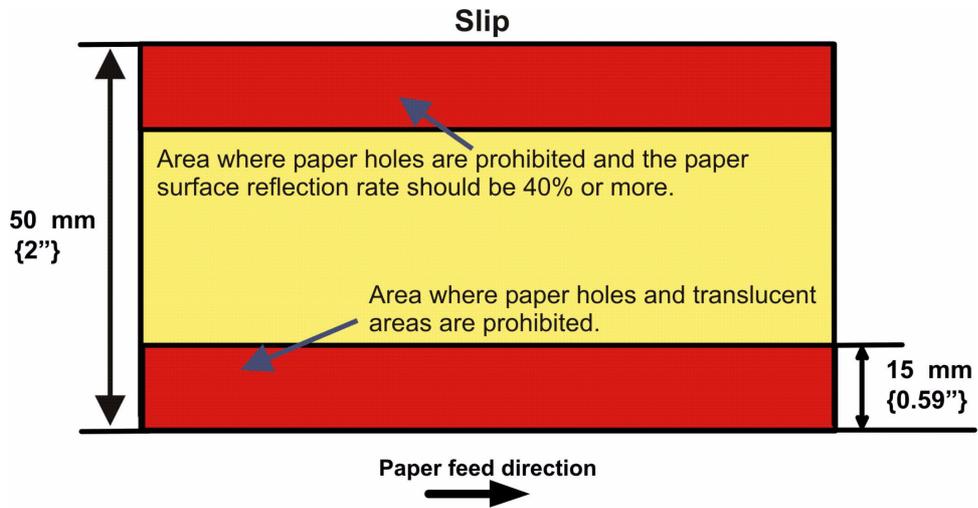


Figure A-6

A.12.3 Printable Area for Endorsements on the Backs of Checks

The figure below shows the printable area for an endorsement on the back of a check in one-by-one check reading.

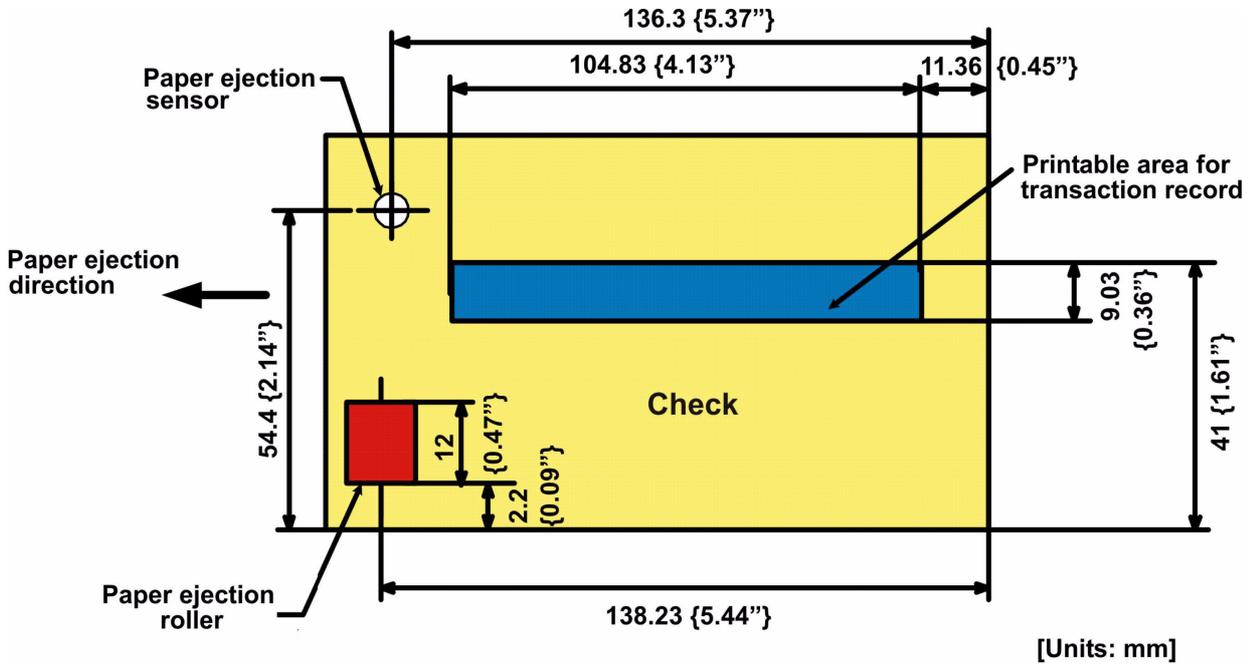


Figure A-7

The figure below shows the printable area for an endorsement on the back of a check in continuous check reading.

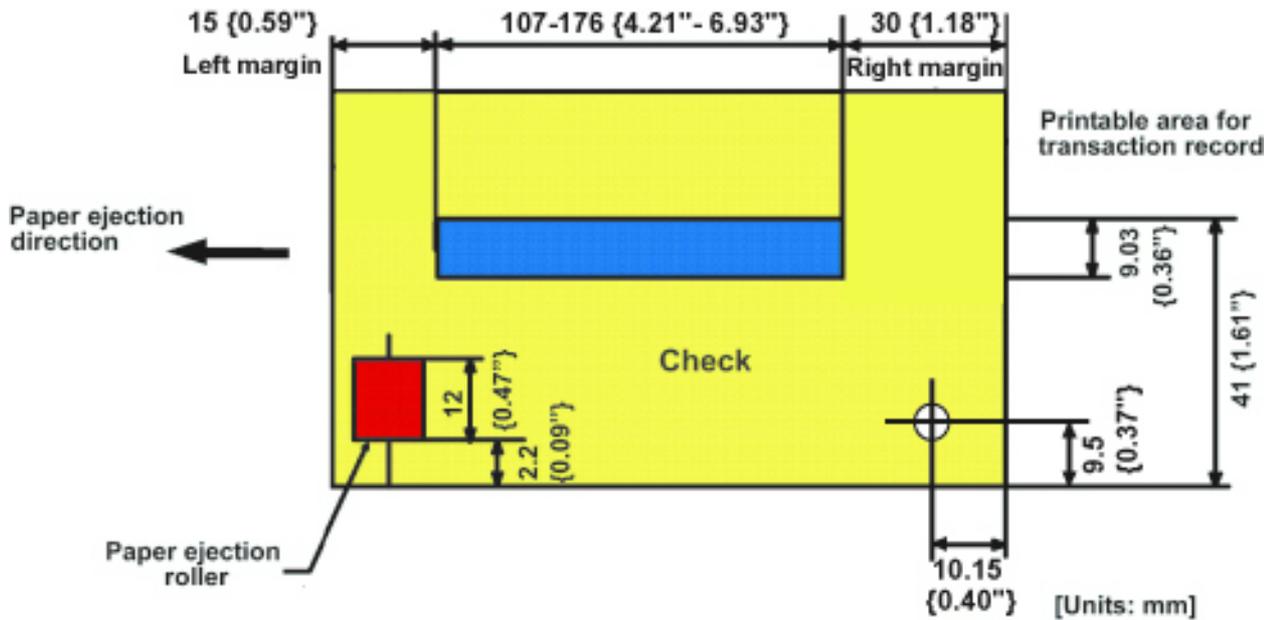


Figure A-8

A.13 Scannable Area

A.13.1 Scannable Area for Checks

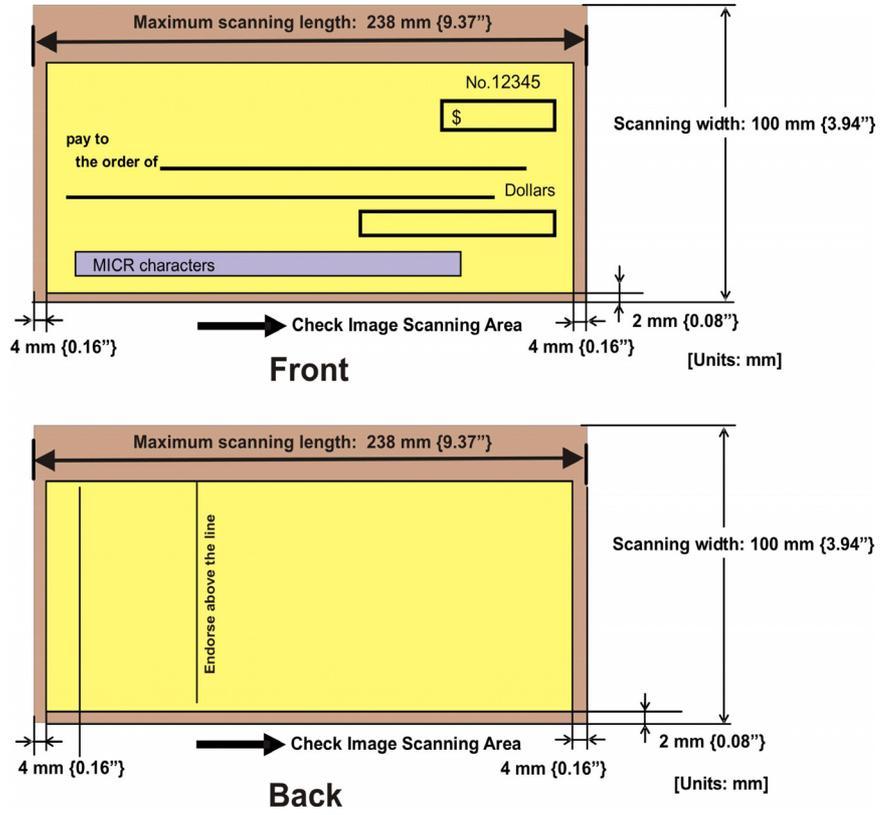


Figure A-9

A.13.2 Scannable Area for a Photo ID Card

The whole area of the card can be scanned. The data width (60×100 mm { 2.36×3.94 "}) includes a border of 2 to 10 mm { 0.08 to 0.39 "} beyond the edges of the card.

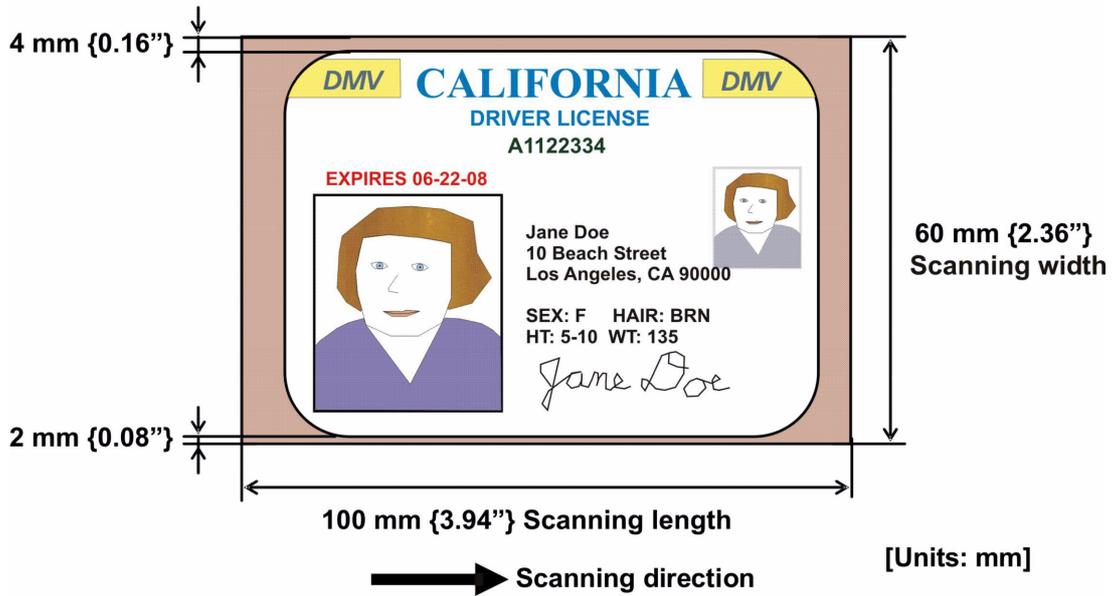


Figure A-10

The figure below shows the part of the card around the mechanical switch sensor that needs to be free of cracks and holes.

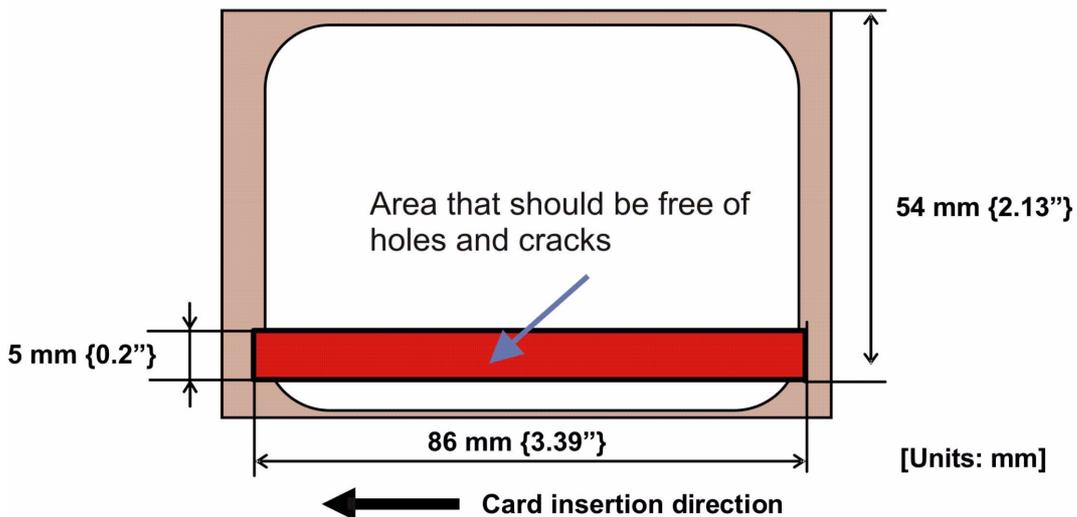


Figure A-11

Appendix B

FAQ

Q1 *If I attach the pocket unit packed with the ASF printer model to the standard model, then can I use the standard model printer as an ASF printer model?*

No, you cannot use the standard printer model as an ASF printer model. The ASF function is a factory installed option; therefore, you cannot use the ASF function even if you attach the pocket unit to the standard printer model.

Q2 *I cannot print on roll paper with paper installed in the validation section. Why?*

When printing on roll paper, you need to remove validation paper from the validation section. This is because the same head is used for printing on both the validation paper and roll paper.

Q3 *If I want to use only functions other than printing on roll paper (MICR, scanner, and transaction printing), what should I do?*

Set Msw8-4 to On (roll paper disabled). The printer does not detect a paper-end even if a paper roll is not installed.

Q4 *How can I control my printer by using ESC/POS commands?*

Use TMCOMUSB to use ESC/POS commands.

Q5 *Can I scan a credit card?*

Do not use any embossed cards. The TM-J9000/J9100 card reader cannot scan such cards. Otherwise, card jams will occur.

Q6 *How often should I do maintenance for the image scanner?*

Approximately every 6 months, clean the image scanner. Refer to Section 3.6.1, "Cleaning the MICR Unit," on page 3-8 and Section 3.6.2, "Cleaning the Image Scanner," on page 3-10 for cleaning procedures.

Q7 *I use only the first ink color, but the second ink color also is consumed. Why?*

Even if you do not use the ink for printing, ink is consumed for cleaning. If you do not use a second ink color for printing, use the TM-J9000 single-color printer.

Q8 *Suddenly there was a sound inside the printer and the printer stopped printing for a while. Why?*

The TM-J9000/J9100 printer calculates accumulated operating time and decides to execute cleaning automatically. When the printer executes cleaning, the POWER LED flashes. Wait until the cleaning is completed. Do not power the printer off during cleaning.

Q9 *How often is ink cleaning executed?*

Ink cleaning is executed at the following times:

- When power is turned on for the first time.
- When an ink cartridge is replaced.
- Whenever power is turned on (initialization).
- When the CLEANING button is pressed.
- When the printer determines that it is time for a cleaning, based on the operating time or the number of lines printed.

Q10 *I want to use my printer with a serial, parallel, or an Ethernet interface. Is there anything that I should keep in mind?*

Please note that the printer cannot scan images if you use any of these interfaces with your printer.

Q11 What is the purpose for the slit of the pocket unit?

The slit is provided so that the pocket unit will not become an obstacle when printing on large validation paper. Validation paper cannot be ejected to the pocket with any commands.



Q12 Part of Page 0 cannot be Printed Using Visual Basic

When using Visual Basic, Page0 (Example: **ä, ú, ë**) cannot be printed.

When programming using Visual Basic, characters between 81h and 9Fh, and E0h and FEh cannot be sent. However, such characters can be sent by using the following procedure.

```
Dim Send_data(0) As Byte
Send_data(0) = &h81 '1 byte of sending data
MSComm1.Output = Send_data
```