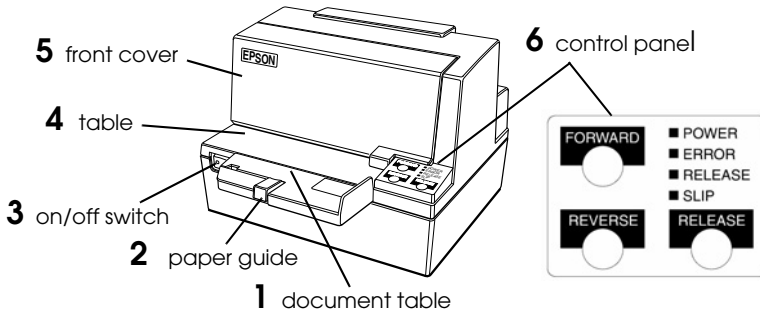


TM-U590/U590P

**User's Manual / Bedienungsanleitung
Gebruikershandleiding / Manuel d'utilisation
Manual do utilizador / Manual del usuario
Manuale dell'utente**

Printer Parts



DIP Switch Tables

Serial

SW	Function	ON	OFF
1-1	Data receive error	Ignored	Prints "?"
1-2	Receive buffer	69 bytes	4 KB
1-3	Handshaking	XON/XOFF	DTR/DSR
1-4	Data word length	7 bits	8 bits
1-5	Parity check	Enabled	Disabled
1-6	Parity selection	Even	Odd
1-7	See "Transmission speed" table.		
1-8			

SW	Function	ON	OFF
2-1	Handshaking (BUSY condition)	Buffer full	Offline or buffer full
2-2	Customer display	Connected	Not connected
2-3, 2-4	Undefined	—	—
2-5, 2-6	Internal use. Do not change. Fixed to OFF.		
2-7	I/F Pin 6 reset	Enabled	Disabled
2-8	I/F Pin 25 reset	Enabled	Disabled

Parallel

SW	Function	ON	OFF
1-1	Auto line feed	Enabled	Disabled
1-2	Receive buffer	69 bytes	4 KB
1-3 ~ 1-8	Undefined	—	—

SW	Function	ON	OFF
2-1	Handshaking (BUSY condition)	<input type="checkbox"/> Buffer full <input type="checkbox"/> Reading data	<input type="checkbox"/> Offline <input type="checkbox"/> Buffer full <input type="checkbox"/> Reading data
2-2	Reserved. Fixed to OFF. Do not change.		
2-3, 2-4	Undefined	—	—
2-5 ~ 2-7	Reserved. Fixed to OFF. Do not change.		
2-8	I/F Pin 31 reset	Fixed to ON. Do not change.	

Transmission speed (bps: bits per second)

1-7	1-8	Speed
ON	ON	2400 bps
OFF	ON	4800 bps
ON	OFF	9600 bps
OFF	OFF	19200 bps

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Standards and Approvals

The following standards are applied only to the printers that are so labeled. (EMC is tested using the Epson power supplies.)

Europe:	CE marking
North America:	FCC/ICES-003 Class A
Oceania:	AS/NZS CISPR22 Class A

WARNING

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

The connection of a non-shielded printer interface cable to this printer will invalidate the EMC standards of this device.

You are cautioned that changes or modifications not expressly approved by Seiko Epson Corporation could void your authority to operate the equipment.

CE Marking

The printer conforms to the following Directives and Norms:

Directive 2004/108/EC	EN 55022 Class A
	EN 55024
	IEC 61000-4-2
	IEC 61000-4-3
	IEC 61000-4-4
	IEC 61000-4-5
	IEC 61000-4-6
	IEC 61000-4-8
	IEC 61000-4-11
Directive 90/384/EEC	EN 45501

Safety Precautions

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

FCC Compliance Statement For American Users

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.

For Canadian Users

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

**WARNING:**

Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Continued use may lead to fire. 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 or fire.

Be sure to use the specified power source. Connection to an improper power source may cause fire.

Do not allow foreign matter to fall into the equipment. Penetration by foreign objects may lead to fire.

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.

Do not use aerosol sprayers containing flammable gas inside or around this product. Doing so may cause fire.

**CAUTION:**

Do not connect cables in ways other than those mentioned in this manual. Different connections may cause equipment damage and burning.

Be sure to set this equipment on a firm, stable, horizontal surface. The 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 or fire.

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.

To ensure safety, unplug this product before leaving it unused for an extended period.

Caution Labels

The caution labels on the product indicate the following precautions.

**WARNING:**

Do not connect a telephone line to the drawer kick-out connector or the display module connector; otherwise, the printer and the telephone line may be damaged.

**CAUTION:**

During printing or after printing, the print head can be very hot.

Restriction of Use

When this product is used for applications requiring high reliability/safety, such as transportation devices related to aviation, rail, marine, automotive, etc.; disaster prevention devices; various safety devices, etc.; or functional/precision devices, etc.; you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety, such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care, etc., please make your own judgment on this product's suitability after a full evaluation.

Downloading Drivers, Utilities, and Manuals

Drivers, utilities, and manuals can be downloaded 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/>

Unpacking

The following items are included with the standard specification printer. If any item is damaged, contact your dealer.

- Printer
- Power switch cover
- Ribbon cassette

Note:

When you lift the printer, be sure to hold the bottom of the printer to prevent damage.

Control Panel

FORWARD button

Press to feed slip paper forward one line; hold down to feed slip paper forward continuously.

REVERSE button

Press to feed slip paper in reverse one line; hold down to feed slip paper in reverse continuously.

RELEASE button

Press to release slip paper.

POWER LED

Lights when the printer is on.

ERROR LED

Lights to indicate that the printer is offline, except when feeding paper using the FORWARD or REVERSE buttons, and during a self test. Flashes to indicate an error.

RELEASE LED

Lights to indicate that you can insert slip paper.

SLIP LED

Lights after power on. Flashes while waiting for slip insertion and removal. Off while the printer is ejecting a slip.

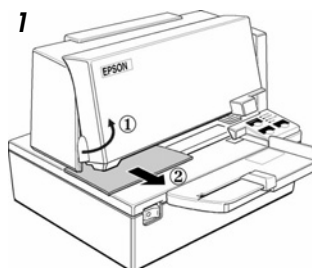
Removing the Damper

The printer is protected for shipping by a transportation damper that you must remove before you turn on the printer.

Open the printer by pulling the tab on the front cover, and remove the damper shown in illustration 1.

Note:

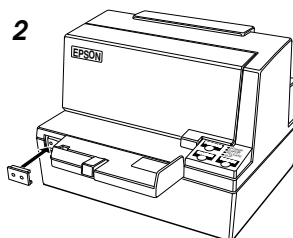
Reinstall the damper before shipping.



Using the Power Switch Cover**WARNING:**

If an accident occurs with the power switch cover attached, unplug the power cord immediately. Continued use may cause fire.

The enclosed power switch cover keeps the power switch from being pressed accidentally. To use the cover, install it as shown in illustration 2.



Installing the Ribbon Cassette

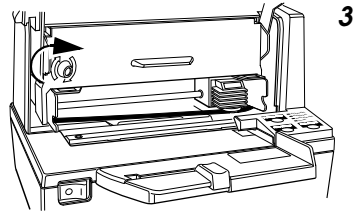
Use the EPSON ERC-31 ribbon cassette. The use of any ribbon cassettes other than those approved by Epson may damage the printer and will void the warranty.



CAUTION:

Never turn the ribbon cassette's feed knob in the opposite direction of the arrow marked on the cassette; otherwise the ribbon cassette may be damaged.

1. Turn the printer on, and open the front cover by pulling up the tab on the left side.
2. Be sure the print head is on the right side.
3. If a ribbon is already installed, remove it by grasping the end of the tab and removing it from the printer.
4. Turn the cassette knob on the cartridge in the direction of the arrow 2 or 3 times to remove any slack.
5. Insert the ribbon, and rotate the cassette knob 2 or 3 more times, as shown in illustration 3.
6. Make sure the ribbon has no wrinkles or creases and is installed below the print head as shown on the label inside the printer.

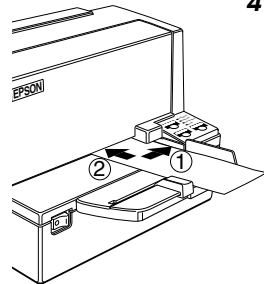


Inserting Slip Paper

Note:

Use only slip paper that matches the specification. Do not use wrinkled or curled paper.

1. When the SLIP LED flashes, insert slip paper, using the right edge of the slip paper inlet as a guide (see illustration 4).
2. When you insert the slip into the inlet as far as it will go, the sensor detects the slip, the SLIP LED changes from flashing to on, and the printer draws the paper in and prints it.
3. After printing is complete, the SLIP LED goes off, and you can remove the slip.



Troubleshooting

No lights on the control panel

Check that power supply cables are plugged into the printer, the power unit, and power outlet correctly.

The printer sounds like it is printing, but nothing is printing

Check that the ribbon cassette is installed correctly.

Replace the ribbon cassette.

The ERROR light is flashing, and nothing is printing

Turn the printer off, and check for a paper jam.

If the printer has been printing for awhile, the print head may be too hot. This corrects itself when the print head cools down.

Turn the printer off, and after 10 seconds, turn it back on. If there is still a problem, contact a qualified servicer.

A line of dots is missing in the printout

The print head may be damaged. Contact a qualified service person for repair.

Removing Jammed Paper



CAUTION:

Do not touch the print head because it can be very hot after printing.

Do not move the print head carriage.

1. Turn the printer off and open the front cover.
2. Open the front cover and remove the jammed paper.

TM-U590/TM-U590P Specifications

Printing method	Serial impact dot matrix, 9-pin vertical line, wire pitch 0.353 mm {1/72"}}
Printing direction	Bidirectional, minimum distance printing
Characters per line (default)	9 × 9 font: 66; 7 × 9 font: 88; 5 × 9 font: 66
Character structure	Font A: 9 × 9, 3-dot spacing (half dots) Font B: 7 × 9, 2-dot spacing (half dots) Font C: 5 × 9, 1-dot spacing (normal dots)
Character size	Font A: (9 × 9) 1.6 × 3.1 mm {0.06 × 0.12"} Font B: (7 × 9) 1.3 × 3.1 mm {0.05 × 0.12"} Font C: (5 × 9) 1.6 × 3.1 mm {0.06 × 0.12"}}
Number of characters	Alphanumeric characters: 95; International characters: 32; Extended graphics: 128 × 10 (with one space page)
Print speed	Font A: (9 × 9) = 233 characters/second Font B: (7 × 9) = 311 characters/second Font C: (5 × 9) = 233 characters/second
Paper feed speed	Approximately 60.3 ms/line, 4.23 mm {1/6"} feed; 86.4 mm/s, {approximately 3.4"/s } (continuous feeding)
Line spacing (default)	4.23 mm {1/6"}}
Paper specifications	Paper types: Normal, carbon-copy, and pressure-sensitive Paper sizes: 70 × 70 mm to 210 × 297 mm {2.76 × 2.76" to 8.27 × 11.69"}}

Paper thickness	Single-ply: 0.09 to 0.2 mm {0.0035 to 0.0079"} Copy paper: Maximum 5 sheets (original + 4 copies) Backing paper: 0.06 to 0.15 mm {0.0023 to 0.0059"} Copy and original: 0.04 to 0.07 mm {0.0015 to 0.0028"} Carbon paper: Approximately 0.035 mm {0.0014"} Total thickness: 0.30 mm {0.0118"} or less (for any combination from a single original to an original + 3 copies); 0.36 mm {0.0141"} or less (for any combination from a single original to an original + 4 copies) Pressure-sensitive paper: Maximum 5 sheets (original + 4 copies) Backing paper: 0.06 to 0.15 mm {0.0023 to 0.0059"} Copy and original: 0.06 to 0.075 mm {0.0023 to 0.003"} Total thickness: 0.24 mm {0.0094"} or less (original to original + 3 copies); 0.30 mm {0.0118"} or less (original + 4 copies)
Number of copies	Original + 4 copies at 20 to 45°C {68 to 113°F} Original + 1 to 3 copies at 5 to 45°C {41 to 113°F}
Ribbon cassettes	ERC-31
Interfaces (compatible)	RS-232 serial or IEEE 1284 parallel, RS-485 (dealer option)
Receive buffer	69 bytes or 4 KB
DKD function	2 drives
Power supply¹	+ 24 VDC ± 10%
Current consumption (at 24V)	Operating: Mean: Approximately 1.9 A Peak: Approximately 8 A Standby: Mean: Approximately 0.3 A
MTBF	180,000 hours
MCBF	29 million lines
Temperature	Operating: 5 to 45°C {41 to 113°F} Storage: -10 to 50°C {14 to 122°F}, except paper
Humidity	Operating: 10 to 90% RH Storage: 10 to 90% RH, except paper
Overall dimensions	185 × 252 × 266 (including a document table) mm {7.28 × 9.92 × 10.47"} (H × W × D)
Weight (mass)	Approximately 5 kg {11 lb}

*1: Be sure to use a safety-standards-applied power source that meets the following specifications.
Rated output: 24 V/2.0 A or more, Maximum output: 240 VA or less