THERMAL PRINTER
TSP700II SERIES

Hardware Manual

Federal Communications Commission
Radio Frequency Interference
Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

FCC WARNING
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
For compliance with the Federal Noise Interference Standard, this equipment requires a shielded cable.
For RF interference suppression, if a ferrite core is provided with this device, affix it to the interface cable

Statement of
The Canadian Department of Communications
Radio Interference Regulationst

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
The above statement applies only to printers marketed in Canada.

Trademark acknowledgments
  TSP700II: Star Micronics Co., Ltd.

Notice

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Please access the following URL

http://www.star-m.jp/eng/dl/dl02.htm
for the latest revision of the manual.

1. Unpacking and Installation

1-1. Unpacking

After unpacking the unit, check that all the necessary accessories are included in the package.
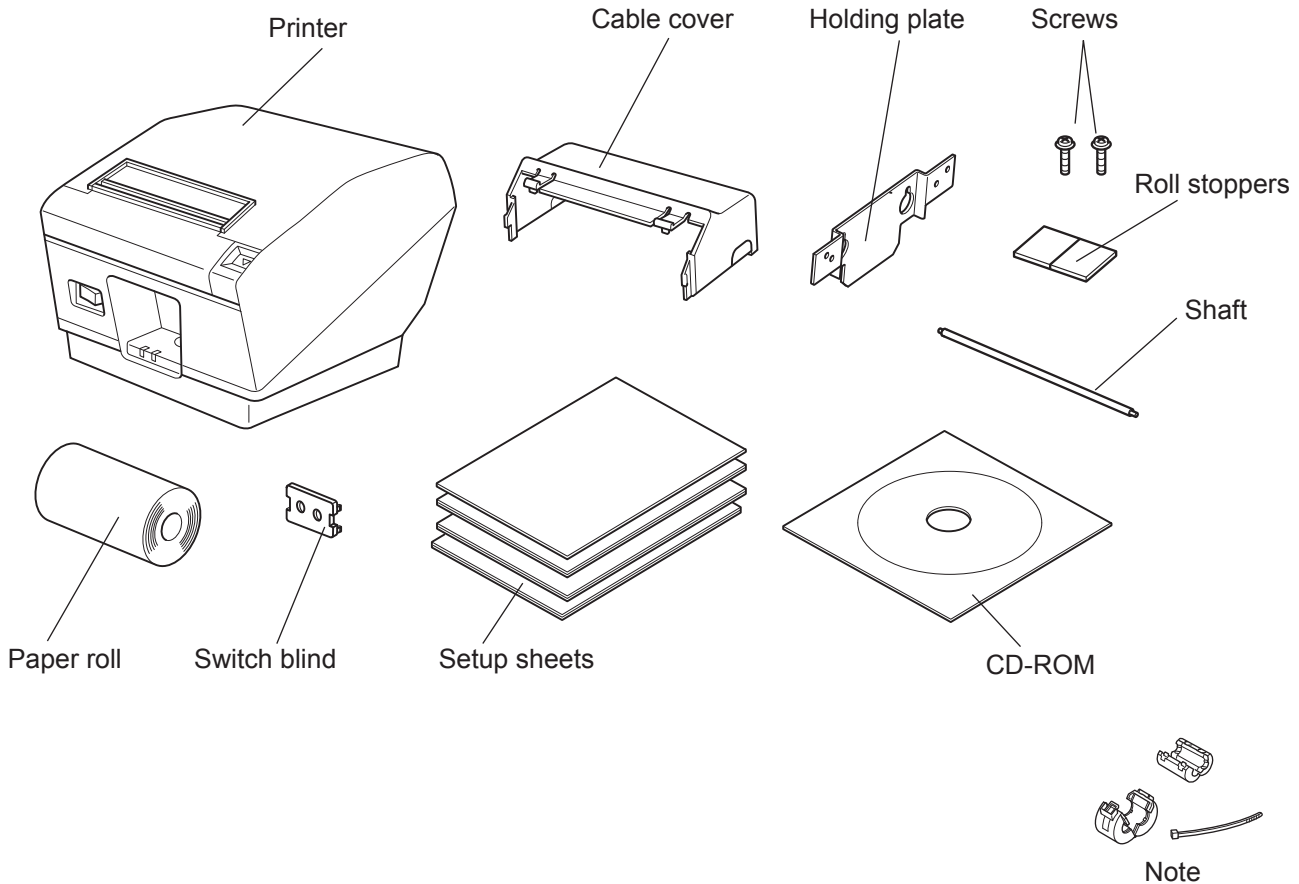
Note: The ferrite core and fastener provided with your printer depend on your printer configuration.

Fig. 1-1 Unpacking

If anything is missing, contact the dealer where you bought the printer and ask them to supply the missing part. Note that it is a good idea to keep the original box and all the packing materials just in case you need to pack the printer up again and send it somewhere at a later date.

1-2. Choosing a place for the printer

Before actually unpacking the printer, you should take a few minutes to think about where you plan to use it. Remember the following points when doing this.

✓ Choose a firm, level surface where the printer will not be exposed to vibration.

✓ The power outlet you plan to connect to for power should be nearby and unobstructed.

✓ Make sure that the printer is close enough to your host computer for you to connect the two.

✓ Make sure that the printer is not exposed to direct sunlight.

✓ Make sure that the printer is well away from heaters and other sources of extreme heat.

✓ Make sure that the surrounding area is clean, dry, and free of dust.

✓ Make sure that the printer is connected to a reliable power outlet. It should not be on the same electric circuit as copiers, refrigerators, or other appliances that cause power spikes.

✓ Make sure that the room where you are using the printer is not too humid.

✓ This device employs a DC motor and switches that have an electrical contact point. Avoid using the device in environments where silicon gas can become volatile.

✓ When disposing of the printer, obey local regulations.

⚠WARNING

✓ Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Immediately unplug the equipment and contact your dealer 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.

2. Parts Identification and Nomenclature

Printer cover

Open this cover to load or replace paper.

Power switch

Used to turn on/off power to the printer.

Control panel

Features LED indicators to indicate printer status and switches to operate the printer.

Cover open lever

Push this lever in the direction of the arrow to open the printer cover.

DK   DC24V

Interface connector

For connection to a host computer.

Peripheral drive connector

Connects to peripheral units such as cash drawers, etc. Do not connect this to a telephone.

Power connector

For connection of the AC adapter. Never unplug the AC adapter while the printer is on.

3. Setup

3-1. Connecting the Cable to the PC

3-1-1. Parallel Interface Cable

Connect the parallel interface cable to a parallel port of your PC.
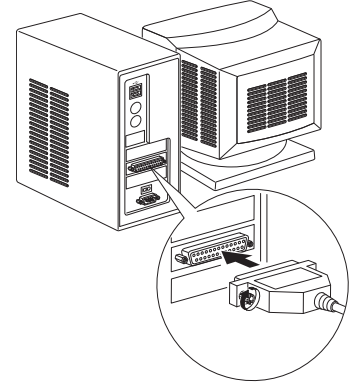
3-1-2. RS-232C Interface Cable

Connect the RS-232C interface cable to a RS-232C port of your PC.
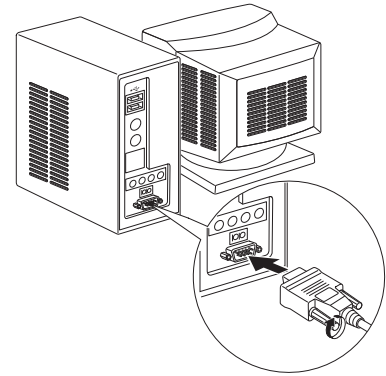
3-1-3. USB Interface Cable

Connect the USB interface cable to a USB port of your PC.
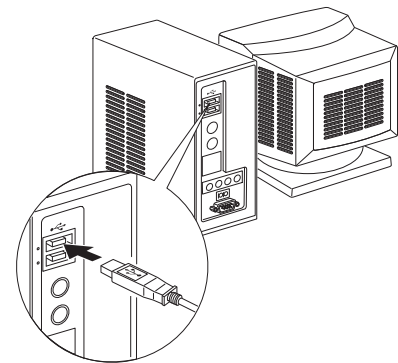
3-1-4. Ethernet Interface cable

Connect the ethernet interface cable to a ethernet port of your PC.
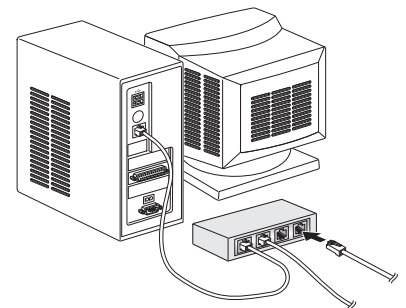
3-2. Connecting the Cable to the Printer

Note that the interface cable is not provided. Please use a cable that meets specifications.

⚠*CAUTION*

> *Before connecting/disconnecting the interface cable, make sure that power to the printer and all the devices connected to the printer is turned off. Also make sure the power cable plug is disconnected from the AC outlet.*

3-2-1. Parallel Interface Cable

(1) Make sure the printer is turn off.
(2) Affix the ferrite core onto the cable as shown in the illustration.
(3) Pass the fastener through the ferrite core.
(4) Loop the fastener around the cable and lock it. Use scissors to cut off any excess.

Ferrite core

5 cm (maximum)

Fastener
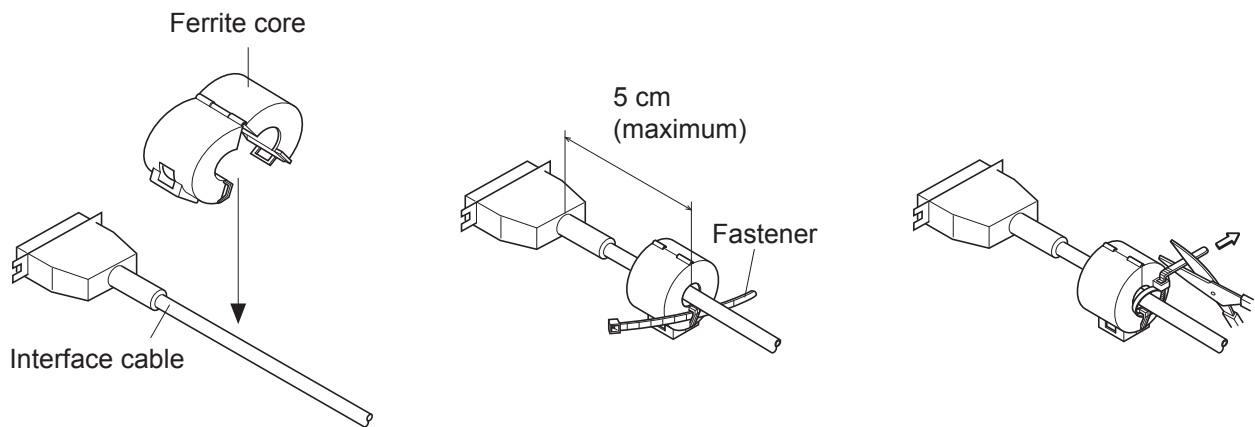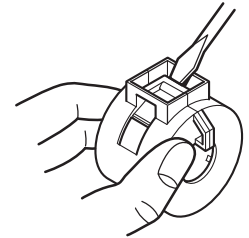
Interface cable

(5) Connect the interface cable to the connector on the rear panel of the printer.
(6) Fasten the connector clasps.

Parallel interface cable
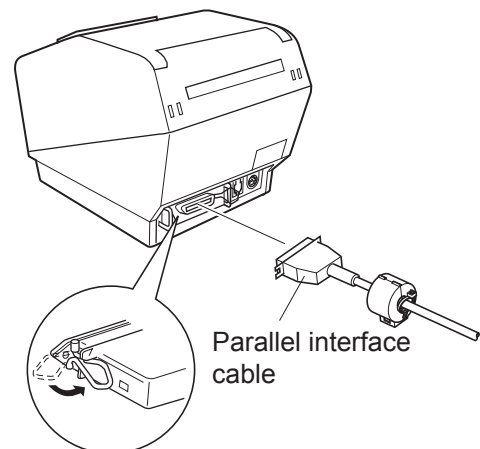
3-2-2. RS-232C Interface Cable

(1) Make sure the printer is turn off.

⚠CAUTION

Before connecting/disconnecting the interface cable, make sure that power to the printer and all the devices connected to the printer is turned off. Also make sure the power cable plug is disconnected from the AC outlet.

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(2) Connect the interface cable to the connector on the rear panel of the printer.
(3) Tighten the connector screws.

RS-232C interface cable
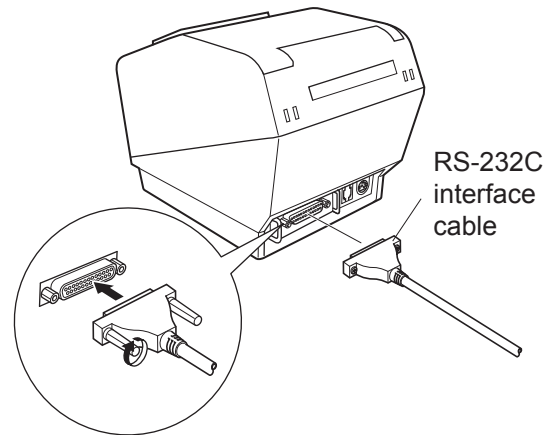
3-2-3. USB Interface Cable

Affix the ferrite core onto the USB cable as shown in the illustration below and make sure to pass the cable through the cable support as shown in the illustration.

4 cm (maximum)
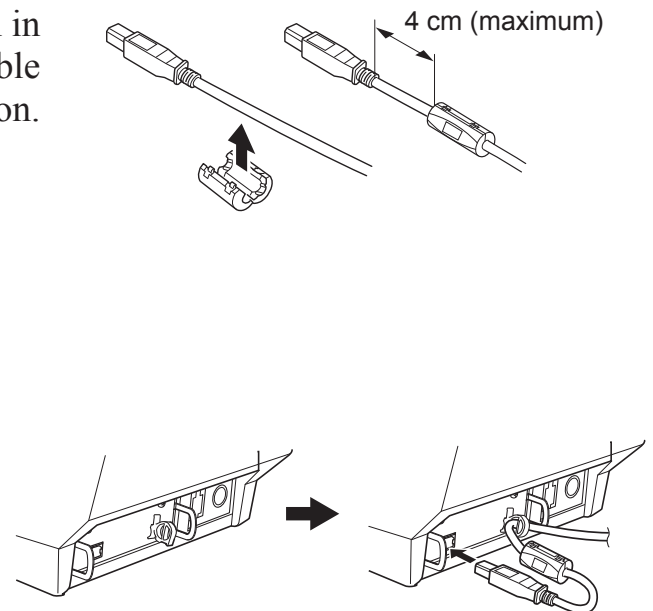
3-2-4. Connecting Ethernet Cable

If a ferrite core is included, install the ferrite core onto the Ethernet cable according to the following procedure to prevent electrical noise.
If a ferrite core is not included, perform steps (1) and (5) only.
When using an Ethernet cable that is 10 m or less, shielded cable is recommended.

(1) Make sure the printer is turned off.
(2) Install the ferrite core onto the ethernet cable as shown in the illustration below.
(3) Pass the fastener through the ferrite core.
(4) Loop the fastener around the cable and lock it. Use scissors to cut off any excess.

(5) Connect the interface cable to the connector on the rear panel of the printer.
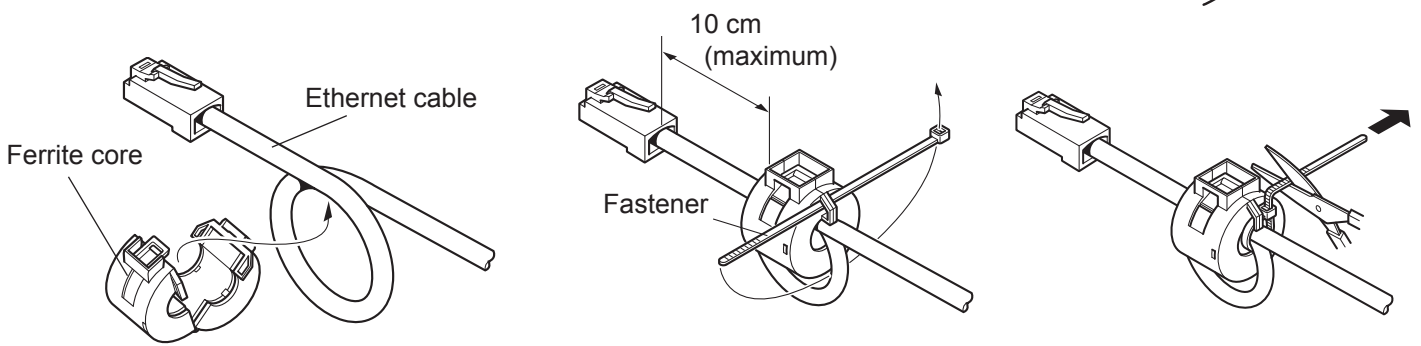
Ethernet interface board
IFBD-HE05

Ethernet interface board
IFBD-HE07
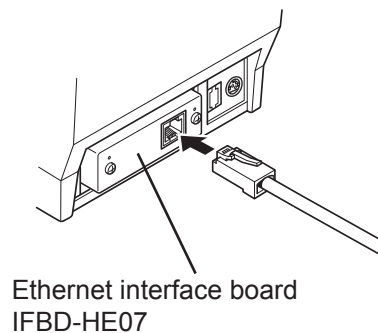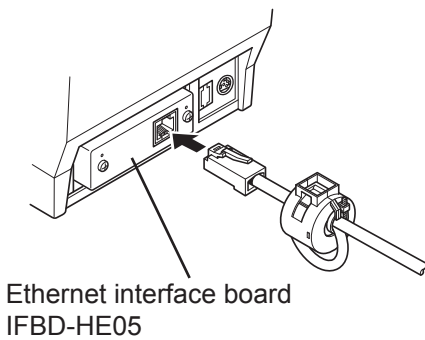
Link disconnection detection feature
The Ethernet interface model is equipped with a link discon nection detection feature. If the printer is turned on when an Ethernet cable is not connected to it, the POWER and ERROR lamps are simultaneously turned on and off at 2-second in tervals to indicate the disconnection.
Be sure to connect the Ethernet cable from a PC or hub to the printer, and then turn the printer on.

3-3. Installing the Printer Software

Here is the procedure for installing the printer driver and utility software, which are stored on the supplied CD-ROM.
The procedure applies to the Windows operating systems shown below.

- Windows XP (SP2 or later)
- Windows Vista
- Windows 7

(1) Turn ON the power to your PC to start Windows.
(2) Insert the supplied CD-ROM (Drivers and Utilities) into the CD-ROM drive.
(3) Follow the instructions that appear on the screen.
(4) The dialog shown in the illustration indicates that the procedure has been completed.
Click "Finish".
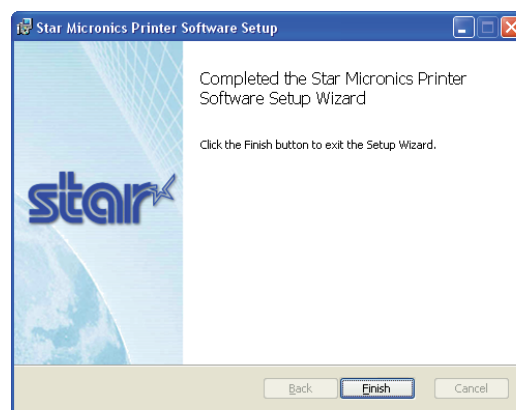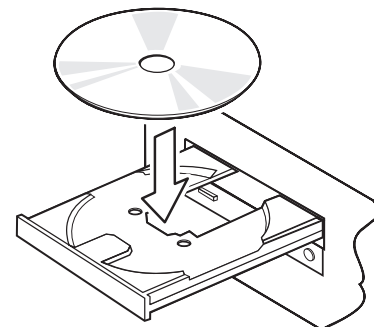
The dialog that appears on the screen varies with your system. This completes the installation of the printer software. A message will appear, prompting you to restart. Restart Windows.

3-4. Connecting the Optional AC Adapter

Note: Before connecting/disconnecting the AC adapter, make sure that power to the printer and all the devices connected to the printer is turned off. Also make sure the power cable plug is disconnected from the AC outlet.

(1) Connect the AC adapter to the power cable.
Note: Use only the standard AC adapter and power cable.

(2) Connect AC adapter to the connector on the printer.
(3) Insert the power cable plug into an AC outlet.
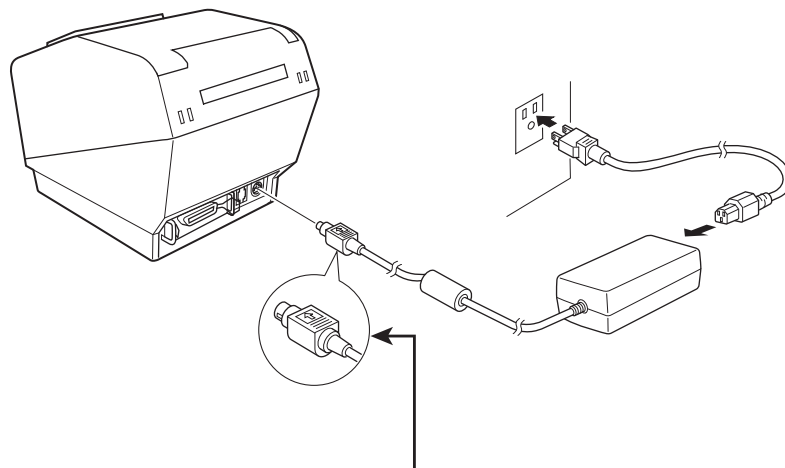
⚠CAUTION

When disconnecting the cable, take hold of the cable connector to pull it out. Releasing the lock makes it easy to disconnect the connector.
Pulling the cable excessively could cause damage to the connector.

3-5. Turning Power On

Make sure that the Power cord has been connected as described in 3-4.

Turn ON the power switch located on the front of the printer.
The POWER lamp on the control panel will light up.

Power switch
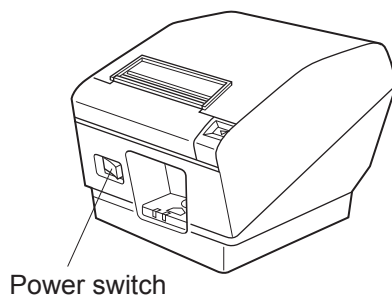
⚠*CAUTION*

> *We recommend that you unplug the printer from the power outlet whenever you do not plan to use it for long periods. Because of this, you should locate the printer so that the power outlet it is plugged into is nearby and easy to access.*
> *When an Switch blind is affixed to the printer above the power switch, the ON/OFF marks of the power switch may be hidden. If this occurs, remove the power cord from the outlet to turn the printer OFF.*

3-6. Connecting to a Peripheral Unit

You can connect a peripheral unit to the printer using a modular plug. See "Modular plug" on page 60 for details about the type of modular plug that is required. Note that this printer does not come with a modular plug or wire, so it is up to you to obtain one that suits your needs.

⚠*CAUTION*

Make sure that the printer is turned off and unplugged from the AC outlet and that the computer is turned off before making connections.

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(1) Connect the peripheral drive cable to the connector on the rear panel of the printer.

⚠*CAUTION*

Do not connect a telephone line into the peripheral drive connector. Failure to observe this may result in damage to the printer.
Also, for safety purposes, do not connect wiring to the external drive connector if there is a chance it may carry peripheral voltage.

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(2) Connect the ground wire. (Europe only)
Take out the screw shown in the figure below, then fasten the ground wire terminal to the place where the screw was removed and tighten the screw.
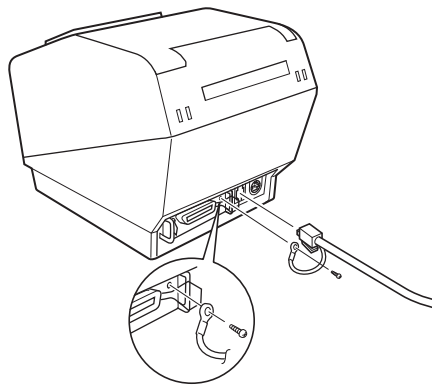
3-7. Loading the Paper Roll

Be sure to use paper roll that matches the printer's specification.
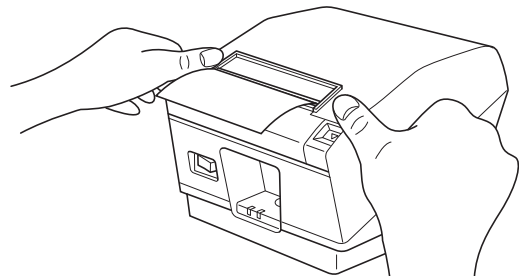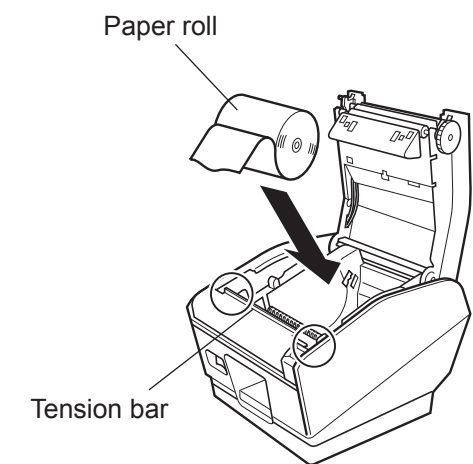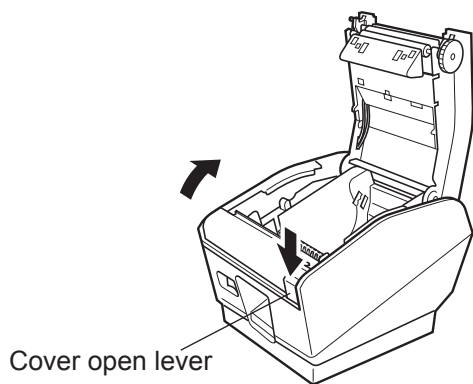
① Push the cover open lever and open the printer cover.

Cover open lever

② Set the paper roll in the direction as shown, and pull on the leading edge of the paper towards you.

Paper roll
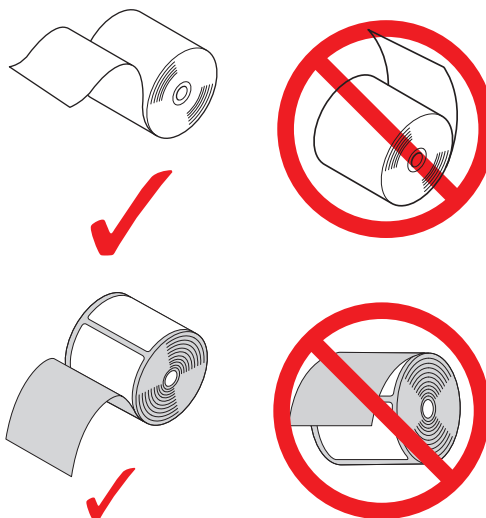
Tension bar

Note: Make sure not to pass the paper under the tension bar. In the following condition, remove the tension bar unit and change the adjustment lever position in accordance with the procedures described in paragraphs 3-7-1 and 3-7-2:
  • Paper thickness between 100 μm and 150 μm, or paper width of 57.5 mm on the vertical/wall-mount layout

Note: When using a paper roll with an 82.5 mm width, remove the paper roll holder in accordance with the procedure described in paragraph 3-7-3.

③ Push both sides as shown in order to close the printer cover.

Note: When closing the printer cover, make sure both sides close firmly, not just one side.

3-7-1. Removing the Tension Bar

When using thermal paper roll, the tension bar unit may or may not be necessary, depending on the paper thickness, paper width, or the installation layout. If the tension bar unit is unnecessary, remove it in accordance with the procedure indicated below. The tension bar unit is unnecessary when using full-face thermal label paper roll or thermal label paper roll (tack label paper).

Installation layout	Horizontal			Vertical/wall-mount		
Paper width (mm)	82.5	79.5	57.5	82.5	79.5	57.5
Paper thickness between 65 μm and 100 μm	Necessary	Necessary	Necessary	Necessary	Necessary	Unnecessary
Paper thickness between 100 μm and 150 μm	Unnecessary	Unnecessary	Unnecessary	Unnecessary	Unnecessary	Unnecessary
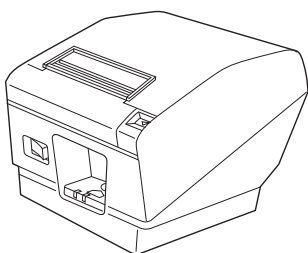
Horizontal
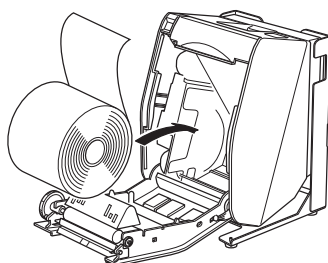
Vertical
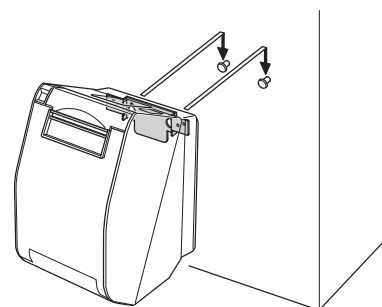
Wall-mount
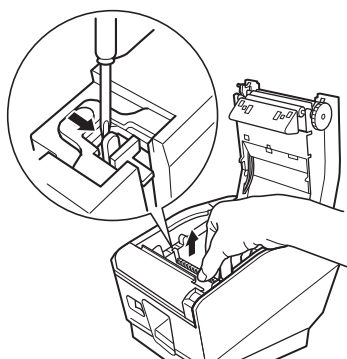
Use a flat head screwdriver as shown to remove the clips at both ends of the tension bar. Then, remove the tension bar unit.

3-7-2. Changing the Adjustment Lever Position

The adjustment lever position must be changed in accordance with the paper thickness. It is factory-set to position ①. When using paper thickness between 100 and 150 μm, change the adjustment lever position in accordance with the procedure below.
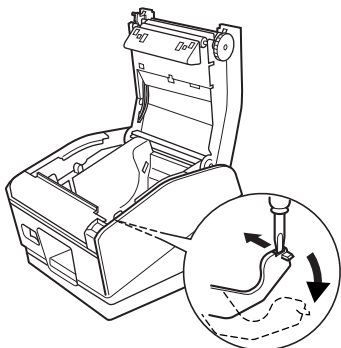
As shown, use a flat head screwdriver to move the adjustment lever inward. Then, lower the adjustment lever to the position in which the protrusion on the adjustment lever engages with the hole in the frame.

Note: Do not use position ②.
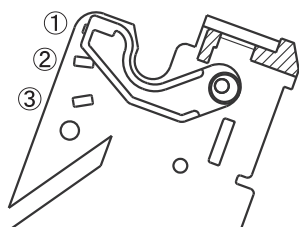
Position ①
Paper thickness
between 65 μm and 105 μm
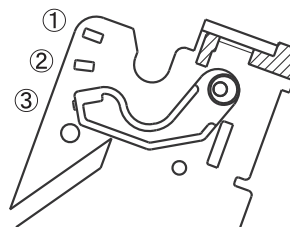
Position ③
Paper thickness
between 105 μm and 150 μm

3-7-3. Removing the Paper Roll Holder

When using a paper roll with an 82.5 mm width, remove the paper roll holder as shown. When using a paper roll with a 57.5 mm width, remove the paper roll holder, and install the paper roll holder into the other groove. In either case, change the setting at memory switch #4. For instructions on setting the memory switch, refer to the separate Specifications Manual.

Note: After using a paper roll with a width of 57.5 mm, do not change to a paper roll with a width of 79.5 or 82.5 mm. This is because the printer head has deteriorated as a result of a portion of the head having been in direct contact with the platen.
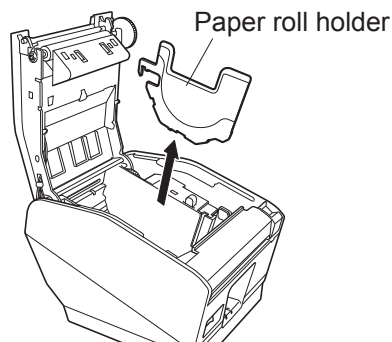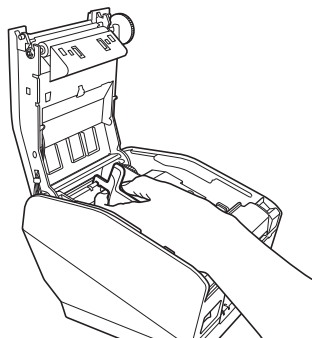
Paper roll holder

Caution Symbol

This symbol is placed near the thermal head to indicate that it may be hot. Never touch the thermal head immediately after the printer has been used. Let the thermal head cool for a few minutes before touching it. Never touch the thermal head with your hands because it can generate static electricity, which can damage the device in the thermal head.

This symbol is placed near the peripheral drive connector.
Do not connect this to a telephone.

⚠ *WARNING*

1) *Do not touch the cutter blade.*
   - *There is a cutter inside the paper outlet slot. Not only should you not put your hand in the paper outlet slot while printing is in progress, never put your hand into the outlet even when printing is not in progress.*
   - *The printer cover can be opened when replacing the paper. However, since the cutter blade is on the inside of the printer cover, be careful not to place your face or hands too close to the cutter blade.*
2) *During and immediately after printing, the area around the thermal head is very hot. Do not touch it, as you could be burned.*

⚠ *CAUTION*

1) *Do not operate the cover open lever while pressing on the printer cover with your hand.*
2) *Do not push the cover open lever and open the printer cover when printing is in progress or when the auto cutter is operating.*
3) *Do not push out paper while the printer cover is closed.*
4) *The heating element and the driver IC of the thermal head are easily damaged. Do not touch them with metal objects, sandpaper, etc.*
5) *Printing quality may suffer if the thermal head heating element becomes soiled by being touched with your hands. Do not touch the thermal head heating element.*
6) *There is a risk of damage to the driver IC of the thermal head from static electricity. Never directly touch the IC.*
7) *The printing quality and working life of the thermal head cannot be guaranteed if any paper other than that recommended is used. In particular, paper containing [Na+, K+, C1-] may drastically reduce the working life of the thermal head. Please exercise caution.*
8) *Do not operate the printer if there is moisture on the front surface of the head from condensation, etc.*
9) *A printed piece of thermal paper may become electrically charged. If the printer is placed vertically or mounted on a wall, the cut piece of paper may stick to the printer, instead of falling. Beware that this could cause a problem if you use a stacker that stores the pieces of paper that fall freely.*

10) *Do not change the paper width during use. The thermal printing head, rubber roller, and cutter wear differently according to the paper width. This can cause the printing or cutter movement to malfunction.*

11) *Do not transport the printer with its cover open and holding it by the cover.*

12) *Do not forcibly pull on the interface cable, power cable, or cash drawer cable that is connected. To detach a connector, make sure to grasp it at the connector portion, without applying excessive stress on the connector at the printer.*

⚠*Notes on Using the Auto Cutter*

1) *To print after a cut, feed 1 mm (8-dot line) or more of paper.*

2) *If the cutter is not in its home position after an error, first eliminate the cause of the error; then, turn the power back ON.*

3) *If the printer is placed horizontally, the use of the partial cut is recommended. If you use the full cut, the cut pieces of paper may fall into the paper outlet passage, causing a paper jam as a result of cutting multiple pieces of paper. Therefore, do not use the full cut if the printer is placed horizontally.*

4) *If you use the full cut, make sure to remove the piece of paper after each cut.*

5) *Do not attempt to remove the paper during a cut, as this can cause a paper jam.*

4. Attaching the Accessories

The following accessories are necessary when mounting the printer to a wall.
• Holder plate and two flangeless screws

The following accessories do not necessarily have to be attached. Attach it if necessary.

• Cable cover
• Switch cover

4-1.　Attaching the Holder Plate

- The holder plate is attached to the printer using the included screws and is hooked onto screws that are installed into the wall.
- The screws on the wall are not included.
  Use commercially available screws (4 mm diameter) that are suitable for the wall material (wood, steel beam, concrete, etc.).
- The printer's weight is approximately 2.4 kg when the largest diameter roll paper is loaded.
  Use screws on the wall that have both shear strength and pulling-out strength to withstand a force of at least 12 kgf (118 N).

Precautions regarding installation

⚠ *CAUTION*

This caution indicates information that, if ignored, could lead to personal injury or property damage.

- *Be sure to have qualified personnel install the specified screws and printer to the wall.*
  Star is not responsible for any accidents or injuries that occur as a result of improper installation, misuse, or modifications.
  Especially when installing the printer at a high location, make sure that the printer is securely installed to the wall.
  If the printer is not installed securely and falls, personal injury or damage to the printer may result.
- *Make sure that the mounting surface and installation screws are strong enough to install the printer.*
  Securely install the printer so that the weight of the printer and any connected cables will not cause the printer to fall.
  Otherwise, personal injury or damage to the printer may result.
- *Do not install the printer in an unstable location or a location that is exposed to vibration and shocks.*
  If the printer falls, personal injury or damage to the printer may result.

4-1. Attaching the Holder Plate

(1) Attach the shaft to the printer.

Shaft

Push in the left and
right ends of the shaft.
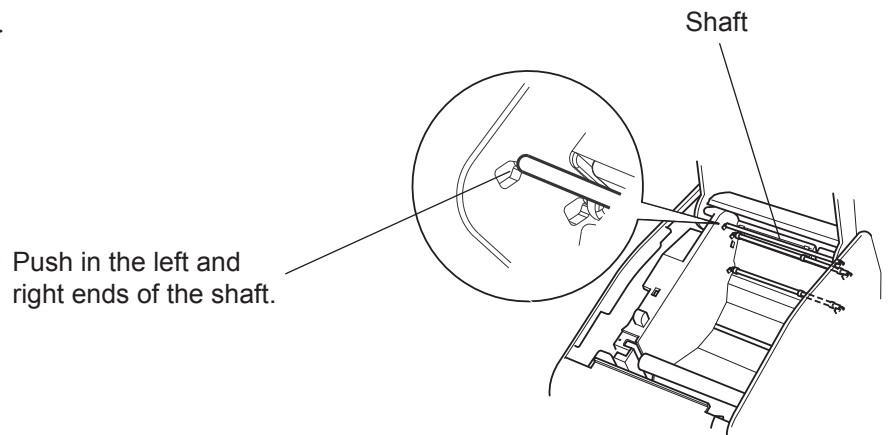
(2) Wipe the area into which the rubber feet will be affixed in order to remove any grime; then, affix the roll stoppers. The positions for affixing them will vary depending on the paper width.
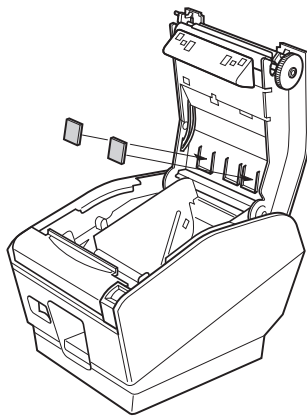
82.5 or 79.5 mm width
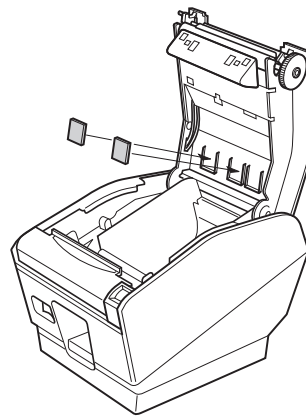
57.5 mm width

(3) Use a regular screwdriver to remove the clips at both ends of the bar to remove the tension bar unit.
Note: If the paper witdth is 79.5 or 82.5mm and the paper thickness is less than 100μm, you do not need to remove the tension bar unit.
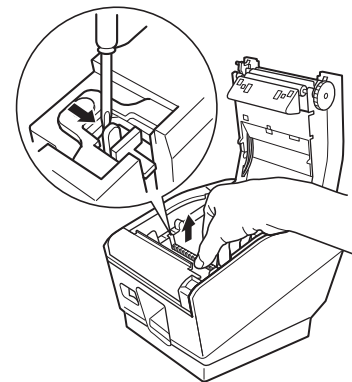
(4) Attach the holding plate to the printer. Then tighten the two screws that were supplied to secure it in place.
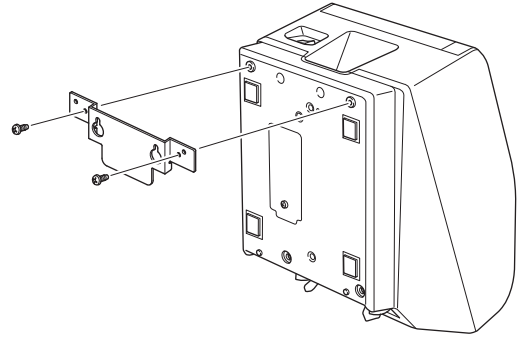
(5) Position the printer over the screws, etc., on the wall and then slide it downward to set it in place.

⚠*CAUTION*

The weight of the printer, including a roll of paper with the largest diameter, is approximately 2.4 kg. The screws installed in the wall must have both a shear and tensile strength capable of withstanding a load of 12 kgf (118 N) or more.
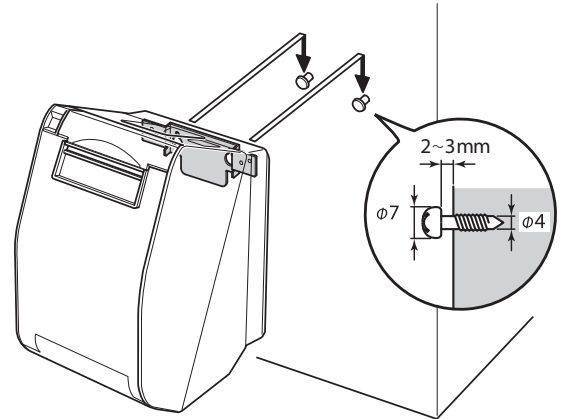
(6) Push the cover open lever, and open the printer cover.

(7) Insert the paper roll as shown.
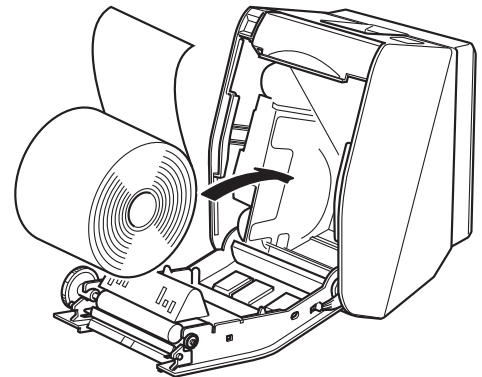
(8) To change the Paper Near End Sensor setting from "Horizontal" to "Vertical", change the MSW (Memory Switch) A-9 from "OFF (0)" to "ON (1)" as shown below.
① Open the printer cover, then turn the power on while holding the FEED button. Continue holding down the FEED button until the POWER lamp and the ERROR lamp begin flashing.
② The printer will change the MSWA-9 setting (Horizontal/Vertical) when these have flashed for three seconds.
③ Run the Self-test Printing to make sure that MSWA-9 is "ON (1)"

4-2. Attaching the Cable Cover

Attach the cable cover as shown in the illustration.
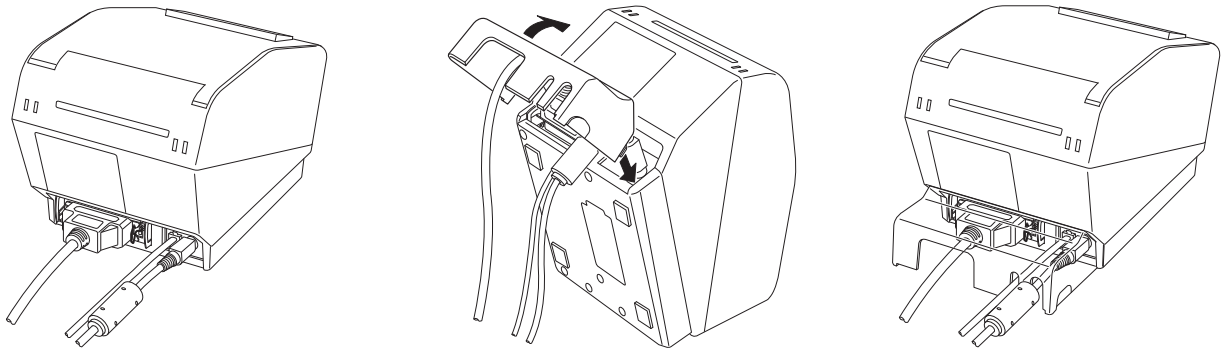
4-3. Switch Blind Installation

It is not necessary to install the switch blind. Only install it if it is necessary for you. By installing the switch blind, the following become possible.

- Preventing the power switch from being operated by mistake.
- Ensuring that other people can not easily operate the power switch.

Install the switch blind as shown in the diagram below.
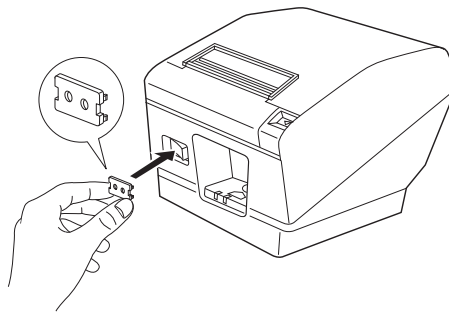
The power switch can be turned ON (I) and OFF (O) by inserting a narrow instrument (ball penetc.) in the holes in the switch blind.

5. Consumable Parts and AC Adapter

When consumable parts have run out, use those specified in the table below.

Note: Access the following URL for the information of the recommended paper.

http://www.star-m.jp/eng/dl/dl02.htm

Make sure that the AC adapter specified in the table is used.

Use of consumable parts or AC adapter which are not specified in the table may result in damage to the printer, fire or electric shock.

5-1. Thermal Paper Roll

(1) Paper roll specification

Width: 79.5±0.5 mm or 82.5±0.5 mm or 57.5±0.5 mm

Outer roll diameter: ø100 mm or less

Take up paper roll width: $80^{+0.5}_{-1}$ mm or $83^{+0.5}_{-1}$ mm or $58^{+0.5}_{-1}$ mm

Thickness: 65~150 µm

Core outer/inner diameter

Paper thickness	Core outer	Core inner
65~75 µm	ø18±1 mm	ø12±1 mm
65~75 µm	ø32±1 mm	ø25.4 mm
75~150 µm	ø32±1 mm	ø25.4 mm

Printed surface: Outer edge of roll

Tail end handling: Do not use paste or glue to secure the paper roll or its core.
Do not fold the tail end of the paper.

(2) Effective Print Width

Paper Width (mm)	Right / Left Margin (mm)	Effective Print Width (mm)	Number of Print Columns (12 × 24 Font)
79.5 ± 0.5	4	72	48
82.5 ± 0.5	Left -2 to 1, Right 1.5 to 3	80	53
57.5 ± 0.5	Left 3, Right 2.5 / Left 3, Right 2.5 / Left 4, Right 3.3	52.5 / 52.0 / 50.8	35 / 34 / 33

Left Margin — Effective Print Width — Right Margin
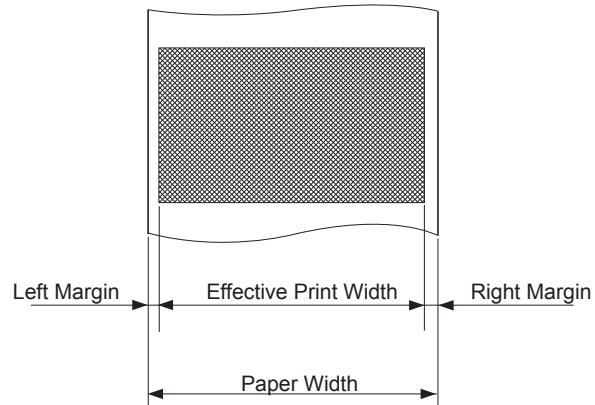
Paper Width

5-2. Full-Face Thermal Label Paper Roll

(1) Label paper specification

Backing paper width:	79.5±0.5 mm or 82.5±0.5 mm
Outer roll diameter:	ø100 mm or less
Take up paper roll width:	$80^{+0.5}_{-1}$ mm or $83^{+0.5}_{-1}$ mm
Thickness:	Max. 150 μm
Core outer/inner diameter:	core inner diameter ø25.4±1 mm/core outer diameter ø32±1 mm
Printed surface:	Outer edge of roll
Tail end handling:	Do not use paste or glue to secure the paper roll or its core. Do not fold the tail end of the paper.

(2) Effective Print Width

Paper Width (mm)	Right / Left Margin (mm)	Effective Print Width (mm)	Number of Print Columns (12 × 24 Font)
79.5 ± 0.5	4	72	48
82.5 ± 0.5	Left -2 to 1, Right 1.5 to 3	80	53

Left Margin   Effective Print Width   Right Margin

Paper Width

5-3. Thermal Label Paper Roll (Tack Label Paper)

(1) Label paper specification

Backing paper width:	79.5±0.5 mm or 82.5±0.5 mm
Outer roll diameter:	ø100 mm or less
Take up paper roll width:	$80^{+0.5}_{-1}$ mm or $83^{+0.5}_{-1}$ mm
Thickness:	Max. 150 μm
Core outer/inner diameter:	core inner diameter ø25.4±1 mm/core outer diameter ø32±1 mm
Printed surface:	Outer edge of roll
Tail end handling:	Do not use paste or glue to secure the paper roll or its core.
	Do not fold the tail end of the paper.

(2) Effective Print Width

Paper Width (mm)	Right / Left Margin (mm)	Effective Print Width (mm)	Number of Print Columns (12 × 24 Font)
76 ± 0.5	3	70	46
79 ± 0.5	3	73	48

- Detailed Diagrams of Recommended Tack Label Specifications

Tack label

ø32 ± 1

ø25.4 ± 1

ø100 MAX

80 $^{+0.5}_{-1.0}$
(Rolled dimension)

Paper tube

Release paper (backing paper)
Base material (label paper)

30 – 295
(Label length)

5

(1.75)

Printing direction

76 ± 0.5 (Label width)

79.5 ± 0.5 (Backing paper width)

Black mark (back of diagram)

1 $^{+1.0}_{-0.8}$

15 MIN

1.75 ± 0.5

PCS: 0.90 minimum

5 ± 1.0

35 – 300
(Black mark pitch)
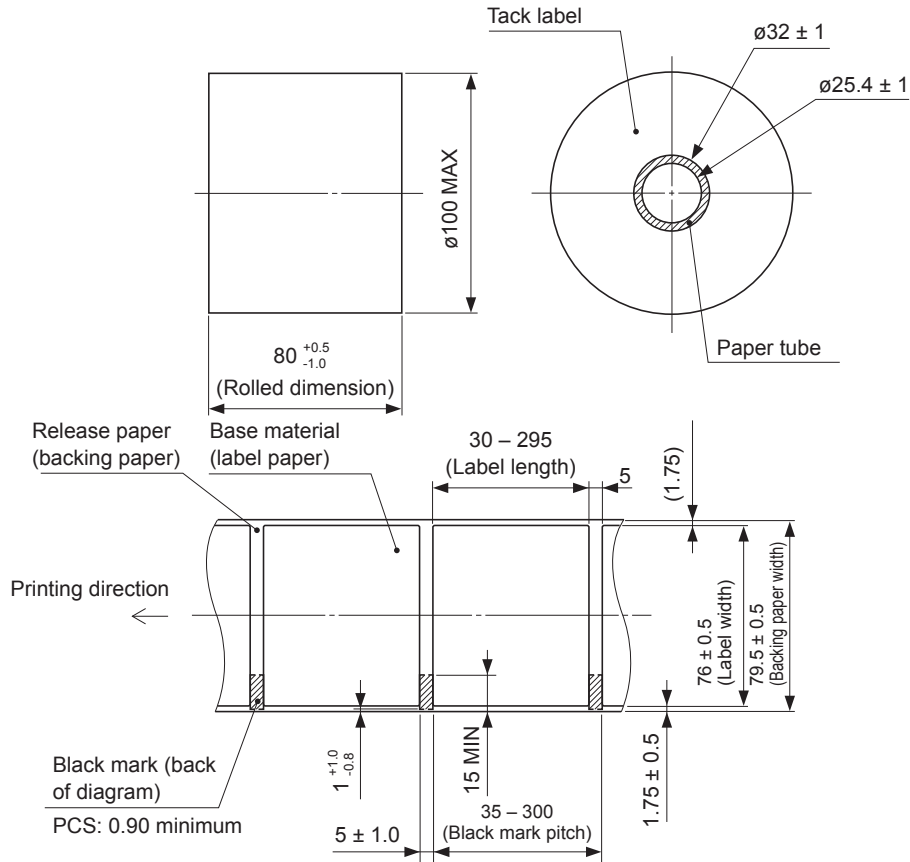
[Details of recommended tack label specifications (for 79.5 mm backing paper)]

Tack label

ø32 ± 1

ø25.4 ± 1

ø100 MAX

83 $^{+0.5}_{-1.0}$
(Rolled dimension)

Paper tube

Release paper (backing paper)
Base material (label paper)

30 – 295
(Label length)

5

(1.75)

Printing direction

79 ± 0.5 (Label width)

82.5 ± 0.5 (Backing paper width)

Black mark (back of diagram)

1 $^{+1.0}_{-0.8}$

15MIN

1.75 ± 0.5

PCS: 0.90 minimum

5 ± 1.0

35 – 300
(Black mark pitch)
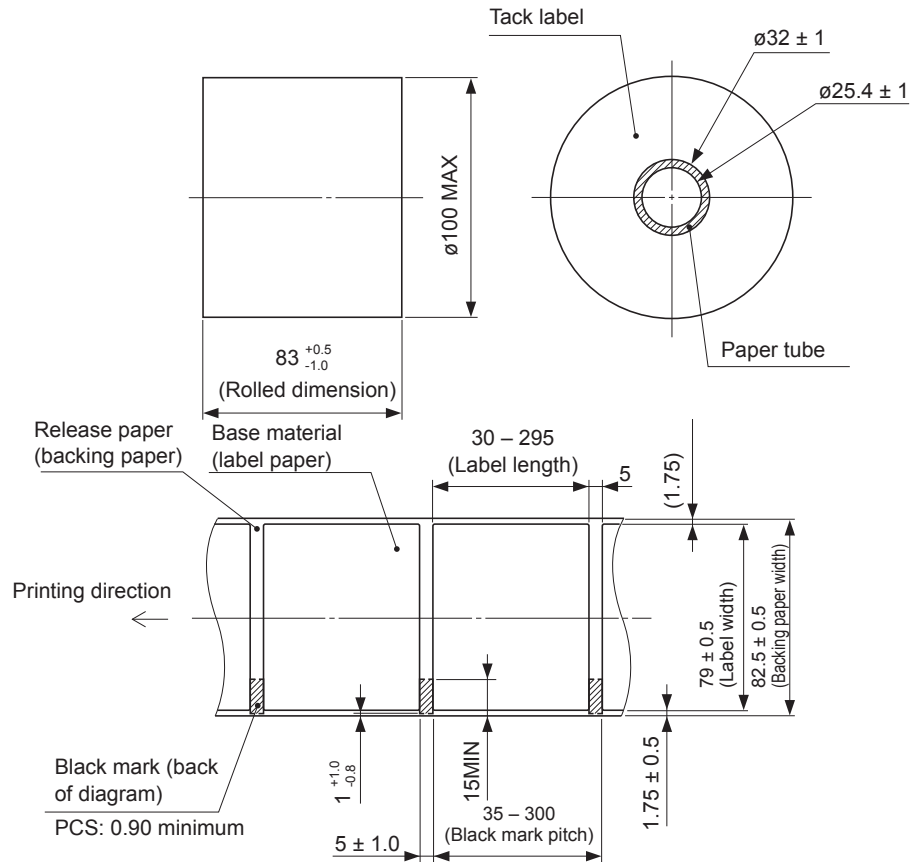
[Details of recommended tack label specifications (for 82.5 mm backing paper)]

• Detailed Diagram of Effective Printing Range

70 (effective printing width:
46 characters with font A)
Dot numbers 39 – 598

3 (Left margin) 3 (Right margin)

Effective printing range

4.5 (Top margin)

Minimum settable top margin when paper is fed using back-feed.

*

22.5 – 287.5 (Effective printing length)

30 – 295 (Label length)

35 – 300 (Black mark pitch)

3 (Bottom margin)

1.75 ± 0.5   76 ± 0.5 (Label width)   (1.75)

79.5 ± 0.5 (Backing paper width)

79.5 mm backing paper

73 (effective printing width:
48 characters with font A)
Dot numbers 39 – 622

3 (Left margin) 3 (Right margin)

Effective printing range

4.5 (Top margin)

Minimum settable top margin when paper is fed using back-feed.

*

22.5 – 287.5 (Effective printing length)

30 – 295 (Label length)

35 – 300 (Black mark pitch)

3 (Bottom margin)

1.75 ± 0.5   79 ± 0.5 (Label width)   (1.75)

82.5 ± 0.5 (Backing paper width)

82.5 mm backing paper

• Cut Position / Printing Line / Black Mark Sensor's Positional Relationship
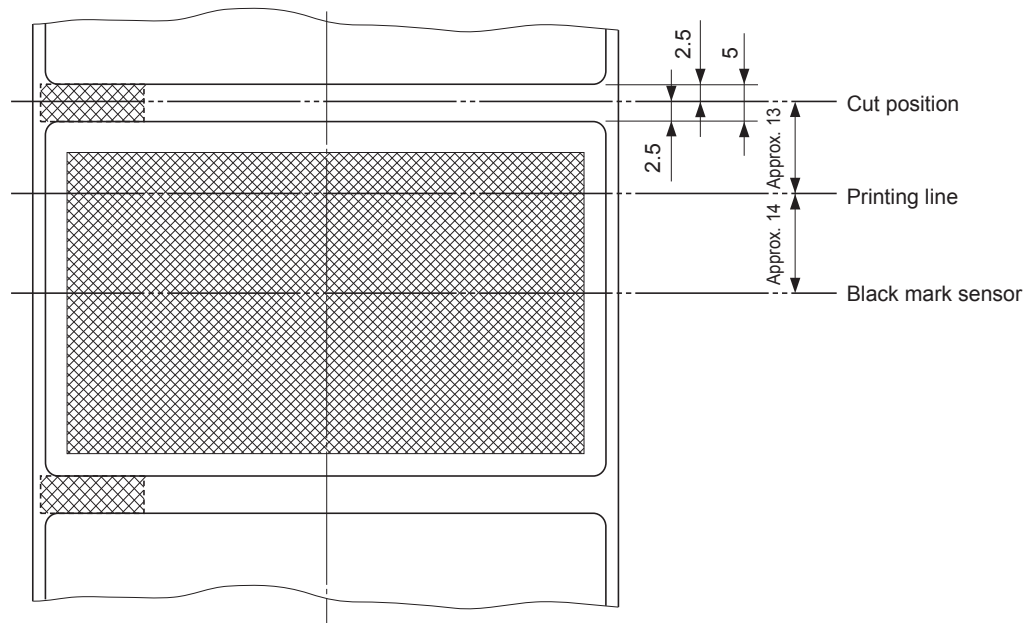
5-4. AC adapter (option)

AC adapter which are not specified may result in damage to the printer, fire or electric shock.

Model name: PS60A-24 series
Input: 100 to 240 V AC, 50/60 Hz
Output: DC24±5%, 2.0 A (5.0 A Load 10 sec. Max.)

6. Control Panel and Other Functions

6-1. Control Panel
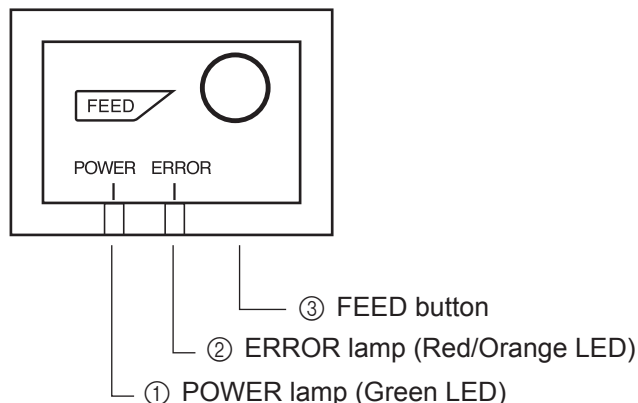
① POWER lamp (Green LED)
When the printer is online, power lamp is ON and ERROR lamp is OFF.
② ERROR lamp (Red/Orange LED)
Indicates various errors in combination with POWER lamp.
③ FEED button
Press the FEED button to feed paper roll.

6-2. Errors

1) Recoverable errors

Error Description	POWER Lamp	ERROR Lamp	Recovery Conditions
Head high temperature detection	Flashes at 0.5-second intervals	OFF	Automatically recovered after the print head has cooled.
Cover open error	ON	ON (Red)	Automatically recovered by closing the printer cover.
Paper out error	ON	ON (Orange)	Automatically recovered by loading a new paper roll, then closing the printer cover.
Paper near end	ON	Flashes orange lamp at 1 second intervals	Indicators show that the paper end is approaching, but the printer continues to print.
Black mark paper size error	ON	ON (Orange)	Recovered by loading a new paper roll, then closing the printer cover.
Paper cut error	OFF	Flashes red lamp at 0.125 second intervals	Recovered if the cutter returns to the home position after turning the power OFF and ON. (See Notes 1 and 2.)
Link disconnection detection*1	Flashes at 2-second intervals	Flashes at 2-second intervals	Connect an Ethernet cable. For details, see section 3-2-5, "Ethernet Interface Cable."

*1 Ethernet interface model only
Note:
1) If the cutter doesn't return to the home position or doesn't perform the initial movement, it cannot be recovered.
2) If the paper is jammed, turn the power off, clear the jammed paper, then turn the power ON.

2)   Non-recoverable errors

Error Description	POWER Lamp	ERROR Lamp	Recovery Conditions
Flash access error	OFF	Flashes Orange lamp at 0.5-second intervals	This is not a recoverable error.
EEPROM error	OFF	Flashes Red lamp at 0.75-second intervals	This is not a recoverable error.
SRAM error	OFF	Flashes Orange lamp at 1-second intervals	This is not a recoverable error.
Head thermistor error	OFF	Flashes Red lamp at 1.5-second intervals	This is not a recoverable error.
Power voltage error	OFF	Flashes Orange lamp at 2-second intervals	This is not a recoverable error.

Note:
1) If a non recoverable error occurs, turn the power OFF immediately.
2) When Power supply error occurs, there is a possibility that the power supply unit has a trouble.
   For other non recoverable errors, please consult the dealer for repairs.

6-3. Self-Printing

6-3-1. Test Printing

Place the thermal paper roll on the printer.
Turn the power ON while holding the FEED button depressed. The printer will run a test print according to the Ver. No., DIP switch settings, and memory switch settings, etc.

```
*** TSP700II Ver1.0

Interface : Parallel

-- Dip Switch 1 --
 Sw    123456789A
 On    **********
 Off

-- Dip Switch 1 Detail --
 1  = Emulation : Star Line/T
 5  = INIT Reset : Enable
 6  = BUSY : All
 7  = ASB : Invalid
 9  = P.Mode : Standard

-- Memory Switch --
     FEDCBA9876543210  HEX.
     0000000000
<1>  0000000000000000  0000
<2>  0000000000000000  0000
<3>  0000000000000000  0000
```

6-3-2. Hexadecimal Dump Mode

Place the thermal paper roll on the printer.
Open the printer cover, then turn the power on while holding the FEED button.
When the cover is closed, "*** HEX DUMP PRINTING ***" is printed, and the printer enters the Hexadecimal Dump Mode.
Each of the signals sent from the computer to the printer will be printed out in hexadecimal code. This function allows you to check if a control code sent to the printer by the program being used is correct or not. The final line is not printed if its data is less than one full line. However, if the FEED button is pushed, the final line is printed. To turn off the mode, it is necessary to turn off the printer completely.

```
*** HEX DUMP PRINTING ***

00 01 02 03 04 05 06 07      ........
08 09 0A 0B 0C 0D 0E 0F      ........
10 11 12 13 14 15 16 17      ........
18 19 1A 1B 1C 1D 1E 1F      ........
20 21 22 23 24 25 26 27       !"#$/&'
28 29 2A 2B 2C 2D 2E 2F      ()*+,-./
30 31 32 33 34 35 36 37      01234567
38 39 3A 3B 3C 0A            89:;<.
```

7. Adjusting the Near-end Sensor

Use the following procedure to adjust the near-end sensor so it is compatible with the size of paper roll you are using.
However, for vertical or wall-mount use, keep the adjuster fixed to level 3, without changing its position.

① Open the printer cover.
② Determine the diameter of the paper roll you are using and find the required setting in the table below.
③ Insert the tip of a ballpoint pen or similar object into the hole of the adjuster, and then push and side the adjuster to the desired setting.
When changing the setting, make sure that the position of the hole is aligned with the alignment mark indicated by the arrow.

Near-end sensor
(vertical/wall-mount
layout)

Near-end sensor
(horizontal layout)

(Level 1)   (Level 2)   (Level 3)
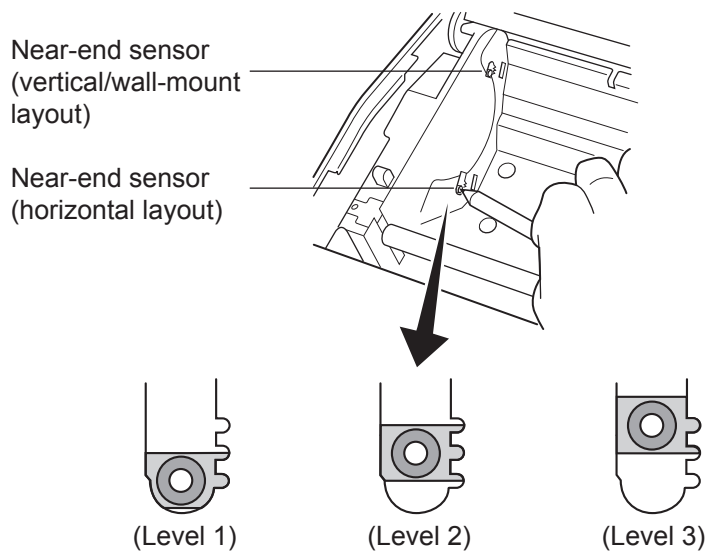
Adjustment value according to the paper you are using

Paper thick-ness (μm)	When using the paper roll with a core whose inside diameter (A):ø12, outside diameter (B):ø18					
	Detected diameter (C) (Approx. mm)			Remained paper length (Approx. m)		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
65	ø23	ø27	ø31	2.5	4.9	7.7
75				2.1	4.2	6.7

Paper thick-ness (μm)	When using the paper roll with a core whose inside diameter (A): ø25.4, outside diameter (B):ø32					
	Detected diameter (C) (Approx. mm)			Remained paper length (Approx. m)		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
65	ø36	ø40	ø44	2.8	6.4	10.4
75				2.4	5.5	9.0
85				2.1	4.9	7.9
95				1.9	4.4	7.1
105				1.7	4.0	6.4
130				1.4	3.2	5.2
150				1.2	2.8	4.5

Paper roll core
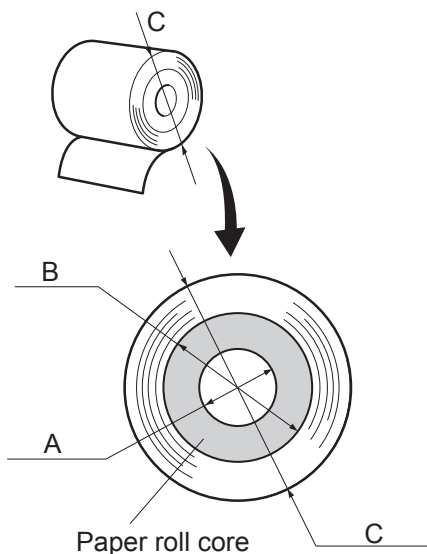
Note:
1) The adjuster is factory-set at level 1 on the horizontal layout and level 3 on the vertical/wall-mount layout.
2) The control switch or the memory switch A may be used to switch between the horizontal and vertical (wall-mount) layouts. For instructions on setting the memory switch, refer to the separate Specifications Manual.
3) The detected diameter and remained paper length given above are calculated values, and there may be some variances depending on the rolled state of the paper or the actual mechanism.
4) If thick paper is used (paper thickness between 100 μm and 150 μm), the paper roll may loosen and cause variances in the detected values. Therefore, set the adjustor to Level 3 for horizontal layout.

8. Preventing and Clearing Paper Jams

8-1. Preventing Paper Jams

The paper should not be touched during ejection and before it is cut.
Pressing or pulling the paper during ejection may cause a paper jam, paper cutting failure or line feed failure.

8-2. Removing Paper Jam

If a paper jam occurs, clear it as described below.
(1) Set the power switch to off to turn off power to the printer.
(2) Push the lever toward you to open the printer cover.
(3) Remove the jammed paper.
   Note 1: To prevent parts such as the thermal head or the rubber roller from damage or deformation, do not forcibly pull on the paper with the printer cover closed.
   Note 2: If label paper gets jammed, the glue from the labels could stick to the parts. If this occurs, make sure to wipe them clean of the glue.
(4) Position the paper roll straight and close the printer cover gently.
   Note 1: Make sure that the paper is positioned straight. If the printer cover is closed with the paper skewed, a paper jam may result.
   Note 2: Lock the printer cover by pressing down on the sides. Do not try to close it by pressing down on the centre. The cover may not lock properly.
(5) Set the power switch to on to turn on power to the printer. Make sure that the ERROR LED is not lit.
   Note: While the ERROR LED is lit, the printer will not accept any commands such as the print command, so make sure that the printer cover is locked properly.
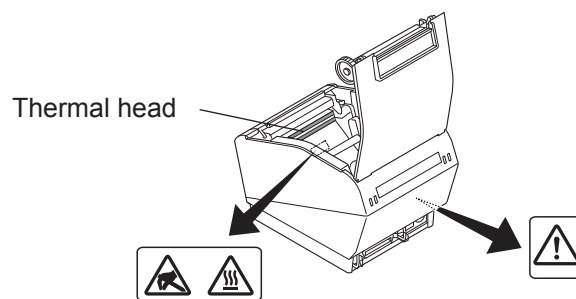
Thermal head

Caution Symbol

This symbol is placed near the thermal head to indicate that it may be hot. Never touch the thermal head immediately after the printer has been used. Let the thermal head cool for a few minutes before touching it. Never touch the thermal head with your hands because it can generate static electricity, which can damage the device in the thermal head.

This symbol is placed near the peripheral drive connector.
Do not connect this to a telephone.

9. Periodical Cleaning

Printed characters may become partially unclear due to accumulated paper dust and dirt. To prevent such a problem, paper dust collected in the paper holder and paper transport section and on the surface of the thermal head must be removed periodically.

Such cleaning is recommended to be carried out once six month or one million lines. If the printer uses label paper, clean it on a monthly basis or after printing approximately 200,000 lines.

9-1. Cleaning the Thermal Head

To remove the dark paper dust that has accumulated on the thermal head surface, wipe it clean with cotton swab (or soft cloth) dipped in alcohol (ethanol, methanol, or isopropyl alcohol). If the printer uses label paper, wipe it clean of the glue that may have accumulated.

> **Note 1:** The thermal head is easily damaged, so clean it with a soft cloth, taking care not to scratch it.
> **Note 2:** Do not attempt to clean the thermal head immediately after printing, when the thermal head is hot.
> **Note 3:** Beware of the risk of damaging the thermal head as a result of static electricity that may be created during cleaning.
> **Note 4:** Turn the power ON only after the alcohol has dried completely.

9-2. Cleaning the Rubber Roller

Use a dry, soft cloth to wipe off the dust that may have accumulated on the rubber roller.

9-3. Cleaning the Sensors and the Surrounding Areas

Clean the sensors (mainly the reflector type sensors) of debris, dust, paper particles, glue, etc. that may have accumulated.

9-4. Cleaning the Paper Holder and the Surrounding Area

Clean the paper holder of debris, dust, paper particles, glue, etc. that may have accumulated.

Thermal head

Sensors

Rubber roller
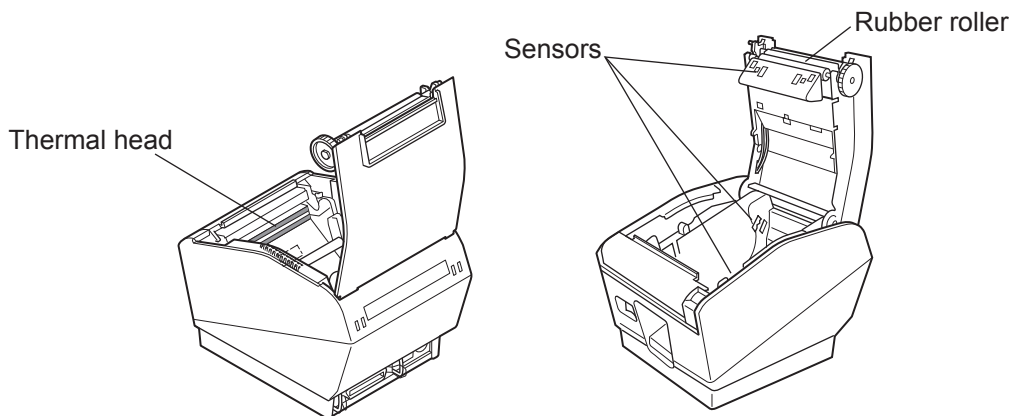
10. Specifications

10-1. General Specifications

(1) Printing method   Direct line thermal printing
(2) Print speed   Max. 2000 dots/sec. (250 mm/sec.)
(3) Dot density   203 dpi: 8 dots/mm (0.125 mm/dot)
(4) Printing width   Max. 80 mm
(5) Number of print columns   53 (12 × 24 dots)
(6) Paper roll   Refer to chapter 4 for details on the recommended paper roll.
Paper width: 79.5 ± 0.5 or 82.5 ± 0.5 or 57.5 ± 0.5 mm
Roll diameter: ø100 mm or less
(7) Overall dimension   147 (W) × 213 (D) × 148 (H) mm
(8) Weight   Approx. 1.75 kg
(9) Noise Approx.   55 dB

147 mm

213 mm

148 mm
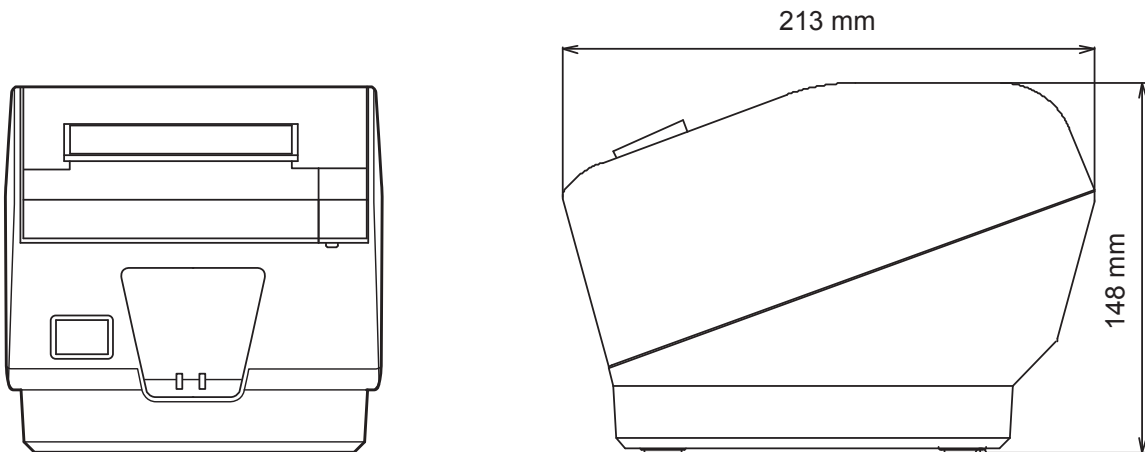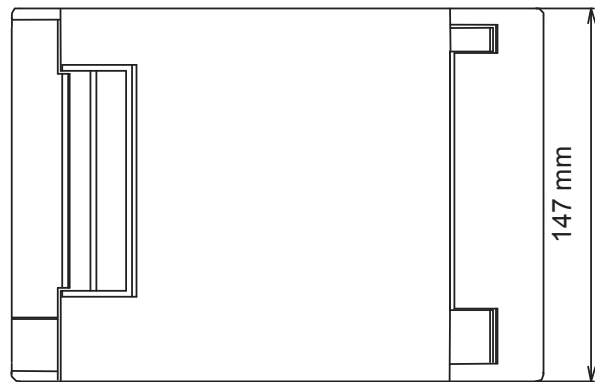
10-2. Auto Cutter Specifications

(1) Cutting frequency   Max. 20 cuts per minute
(2) Thickness of paper   0.065 ~ 0.15 mm

10-3. Interface

RS-232C serial interface/Two-way parallel interface (IEEE1284)/USB interface/Ethernet interface/Wireless LAN Interface

10-4. Electrical Characteristics

(1) Input Voltage   DC 24 V±5%
(2) Current Consumption (DC 24 V at room temperature)

        Standby: Approx. 0.15 A
        ASCII printing: Approx. average 1.8 A
           (Approx. 17.5% printing rate)
        100% print duty: Approx. peak 11.9 A
           (Solid printing):   Approx. average 5.0 A
           (Continuous solid printing should be 10 seconds or less.)

(3) Power Connector

Pin No.	Function
1	Drive power (24 V)
2	Signal GND
3	N.C.
Shell	Frame ground

<Viewed from Connector Surface>
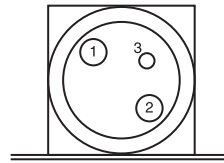
Note:
- When using a printer power supply other than the optional AC adaptor (PS60A-24 series), be sure that the following cautions are observed.
- Use a power supply of DC 24 V ±5% and more than 2.0 A (5.0 A Load 10 sec. Min) with LPS output approved by IEC60950.
- Be careful about installing the printer in an area where there is noise. Take the appropriate measures to protect against electrostatic AC line noise, etc.

10-5. Environmental Requirements

(1) Operating
      Temperature   5°C to 45°C
      Humidity   10% to 90% RH (without condensation)

Operating temperature and humidity range
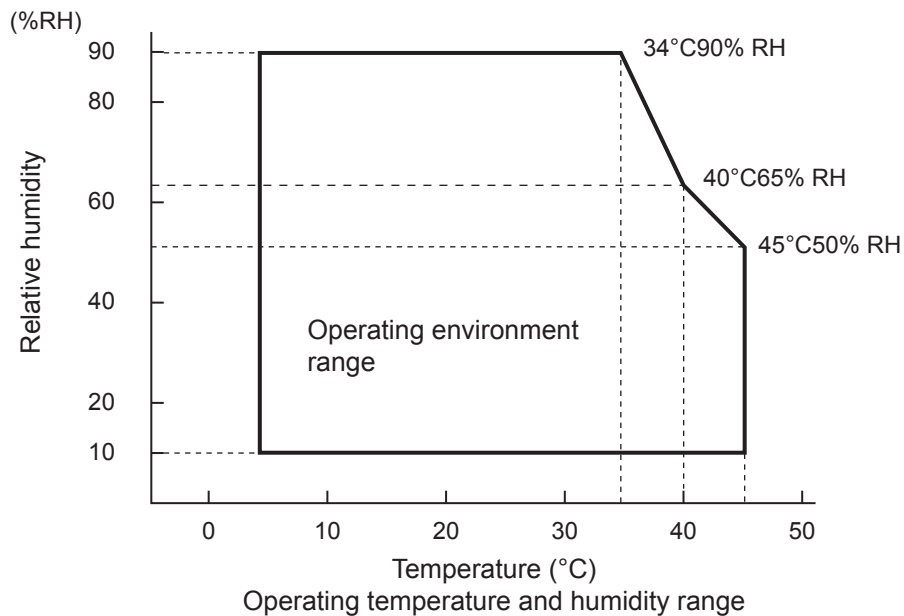
(2) Transport/storage (except for paper)
      Temperature   -20°C to 60°C
      Humidity   10% to 90% RH (without condensation)

10-6. Reliability Specifications

(1) MCBF: 60 million lines
  - Recommended thermal paper (60 μm to 75 μm)
  - Average printing rate: 12.5%
  - Printing density: standard setting
    Note: The Mean Cycles Before Failure (MCBF) with the recommended thermal paper thickness between 75 μm and 150 μm is 25 million lines.
(2) Auto cutter (life)
    Paper width 82.5 mm, 79.5 mm *Including backing paper
  - Paper thickness between 65 μm and 100 μm: 2 million partial cuts, 1.6 million full cuts
  - Paper thickness between 100 μm and 150 μm: 600,000 cuts both partial and full
    Paper width 57.5 mm
  - Paper thickness between 65 μm and 85 μm: 600,000 partial cuts, 500,000 full cuts
    Paper width 82.5 mm, 79.5 mm full-face thermal label paper
  - Paper thickness between 100 μm and 150 μm: 300,000 cuts both partial and full
    Notes:
    1) When using full-face thermal label paper, periodically clean the glue that may have accumulated on the cutter blade.
    2) If glue has accumulated on the cutter blade, it could adversely affect cutting performance.
       * A cutter is said to have reached its life when it has entered the wear failure period.
       * The figures indicated in the reliability specifications above are based on the use of recommended thermal paper. As such, reliability is not guaranteed if non-recommended thermal paper is used.

10-7. Black mark specifications

Reverse side of the paper

Dimension A = 30 to 300 mm

$1\,^{+1}_{-0.8}$ mm

5 ± 1 mm

15 mm or more

2.5 mm

Printing direction

Printing area

Upper margin 14 mm or more

Cut position

The reverse side of the paper is the printing surface.

Bottom margin

(3 mm + dimension A × 3%) or more

\<Remarks\>
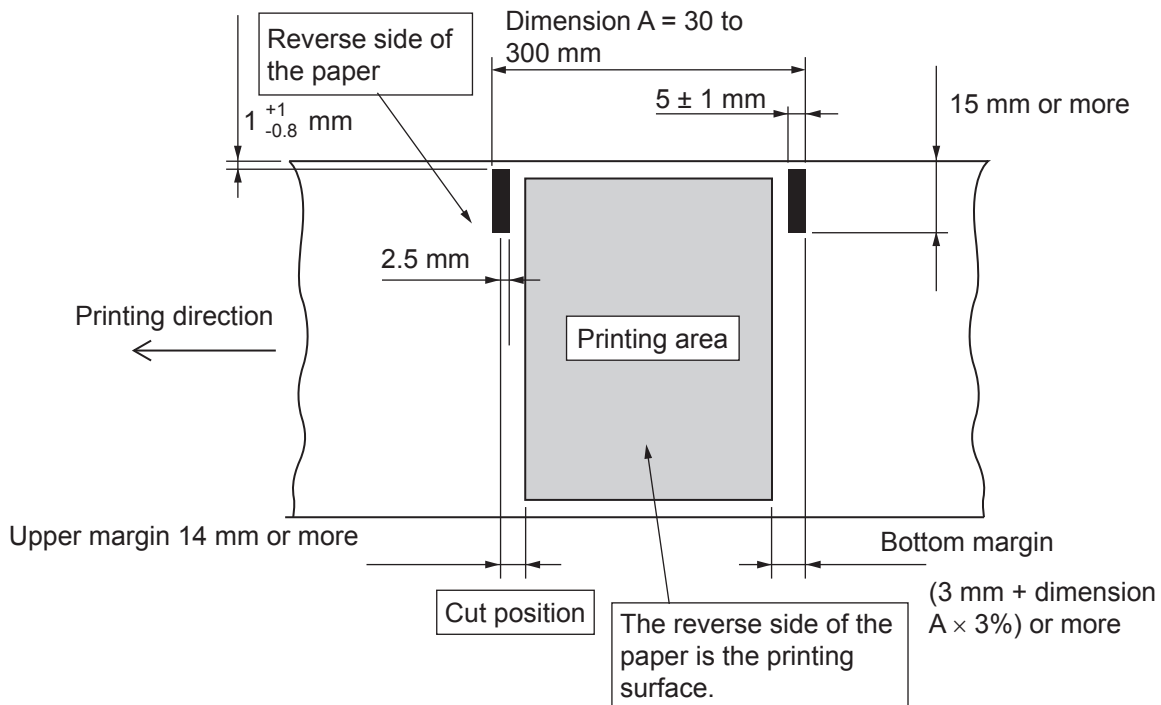
1) The cut position shown above is when the print starting position correct value for Appendix F: memory switch 9 is the default setting.
2) The black mark's PCS value must be 0.90 or more.
3) Note that accuracy of starting printing with the black mark sensor must be within ±2 mm of the standard printing positions, the printing length must be within ±2 mm of the set value in consideration of discrepancies occurring in the processing accuracy of the platen diameter and environmental temperature in the initial state, and a -5% error margin against the set value must be taken into account in consideration of life expectancy and attention paid to the print layout when using pre-printed paper.
4) The printing area must be within the usable range shown in the above diagram when using black marks. With regards to the top margin, approximately 13 mm is established between the print position and the cut position (auto cutter,) and the paper is fed through 1 mm or more (eight dot lines) if printing is performed after the cutting operations, making a total of 14 mm or more for the margin. Ensure that the margin shown in the above diagram is used to prevent the printing area value in the paper feed direction from exceeding the pitch of the black mark. Note that if this margin is not used, it may result in pages being skipped and other defects.
   [Example of the printing area setting]
   \<When the pitch of the black mark (dimension A) is 100 mm\>
   Top margin: 14 mm / bottom margin: 3 mm + (100 mm × 0.03) = 6 mm
   From this, it is clear that the printing area in the paper feed direction must be 80 mm or less.

11. Dip Switch Setting

Two DIP switches are provided at the bottom of the printer, and can be set as given in the table below. Be sure to set the power switch to off before changing the settings. It is recommended to use a pointed item like a pen or flat-blade driver screw to change the settings. The settings will become effective when the power switch is set to on again.

The following is the procedure for changing the settings on DIP switches.

1. Make sure the printer is turned off.

2. Remove the screw from the DIP switch blind. Then take off the DIP switch blind, as shown in the illustration below.
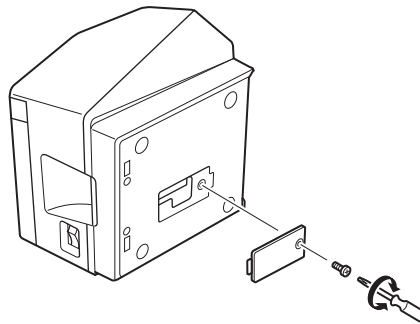
3. Set the switches using a pointed tool, such as a pen or flat-blade screwdriver.

4. Replace the DIP switch blind. Then secure it with the screw.
   The new settings take effect when you turn on the printer.

11-1. Parallel Interface Model

ON
OFF
No. 1 2 3 4 5 6 7 8 9 10
DIP-SW 1

ON
OFF
No. 1 2 3 4
DIP-SW 2

DIP-SW 1

Switch 1-1	Command emulation
ON	Star Mode
OFF	ESC/POS Mode

The factory settings of DIP switch are all on.

The functions of switches 1-2 through 1-10 will change according to the command emulation that has been set using switch 1-1.

(1) Star mode

Switch	Function	ON	OFF
1-1	Command emulation	Always ON	
1-2	Should not be changed (Should be set to on)		
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Pin #31 (INIT) reset signal	Valid	Invalid
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Invalid	Valid
1-8	NSB function *2	Invalid	Valid
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

(2) ESC/POS mode

Switch	Function	ON	OFF
1-1	Command emulation	Always OFF	
1-2	Graphic adjustment	203 DPI	180 DPI
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Pin #31 (INIT) reset signal	Valid	Invalid
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Invalid	Valid
1-8	Should not be changed (Should be set to on)		
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

*1 ASB Function

When this function is enabled, status information is automatically sent to the host whenever the printer status changes (such as when the cover is opened, paper runs out, or an error occurs).
For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode and ESC/POS Mode).

*2 NSB Function

When this function is enabled, status information is sent automatically whenever the printer enters into reverse forwarding mode.
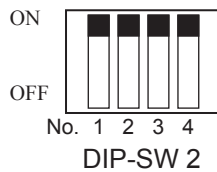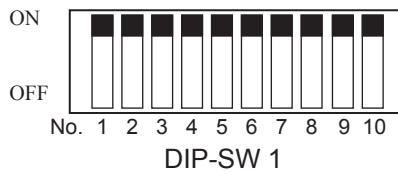For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode).

<div align="center">DIP-SW 2</div>

Switch	Function	ON	OFF
2-1			
2-2	Always ON	Should be set to on	
2-3			
2-4			

The factory settings of DIP switch are all on.

11-2. RS-232C Interface Model

ON / OFF — No. 1 2 3 4 5 6 7 8 9 10 — DIP-SW 1

ON / OFF — No. 1 2 3 4 — DIP-SW 2

DIP-SW 1

Switch 1-1	Command emulation
ON	Star Mode
OFF	ESC/POS Mode

The factory settings of DIP switch are all on.

The functions of switches 1-2 through 1-10 will change according to the command emulation that has been set using switche 1-1.

(1) Star mode

Switch	Function	ON	OFF
1-1	Command emulation	Always ON	
1-2	Should not be changed (Should be set to on)		
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Should not be changed (Should be set to on)		
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Invalid	Valid
1-8	Should not be changed (Should be set to on)		
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

(2) ESC/POS mode

Switch	Function	ON	OFF
1-1	Command emulation	Always OFF	
1-2	Graphic adjustment	203 DPI	180 DPI
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Should not be changed (Should be set to on)		
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Invalid	Valid
1-8	Should not be changed (Should be set to on)		
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

*1 ASB Function
When this function is enabled, status information is automatically sent to the host whenever the printer status changes (such as when the cover is opened, paper runs out, or an error occurs). For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode and ESC/POS Mode).
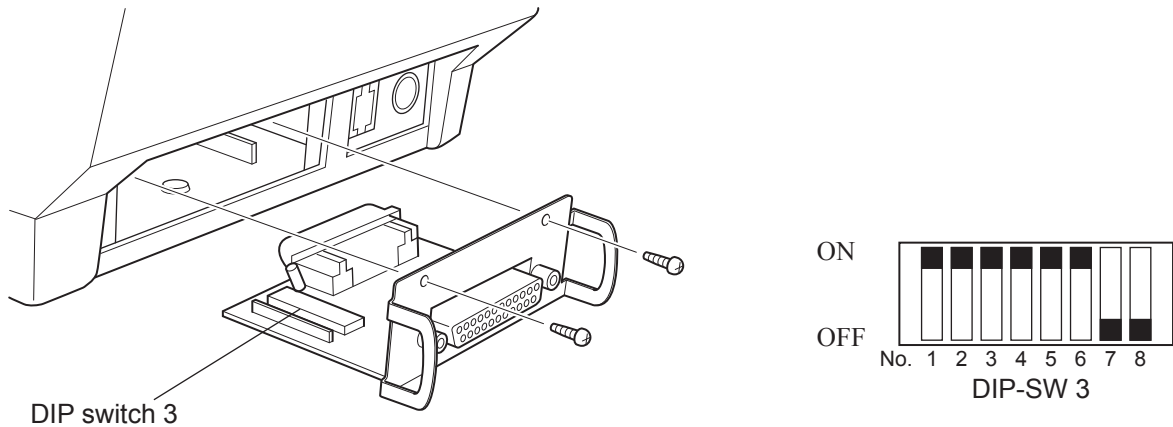
DIP-SW 2

Switch	Function	ON	OFF
2-1	Always ON	Should be set to on	
2-2			
2-3			
2-4			

The factory settings of DIP switch are all on.

The following is the procedure for changing the settings on DIP switch No. 3.
1. Turn off the printer and all components connected to it.
2. Remove the 2 screws.
3. Remove the serial interface board unit.
4. Change the setting of the DIP switches.
5. Replace the serial interface board unit.
   Then secure it with the screws.
6. Turn on the printer and all components connected to it.

DIP switch 3

DIP-SW 3

The factory settings of DIP switch are all on, except for switches 7 and 8.

DIP-SW 3

Switch	Function	ON	OFF
3-1	Baud Rate	See table below	
3-2			
3-3	Data Length	8 bits	7 bits
3-4	Parity Check	Disabled	Enabled
3-5	Parity	Odd	Even
3-6	Handshake	DTR/DSR	XON/XOFF
3-7	Should not be changed (Should be set to off)	—	—
3-8			

Baud Rate	Switch 3-1	Switch 3-2
4800BPS	OFF	ON
9600BPS	ON	ON
19200BPS	ON	OFF
38400BPS	OFF	OFF

11-3. USB Interface Model
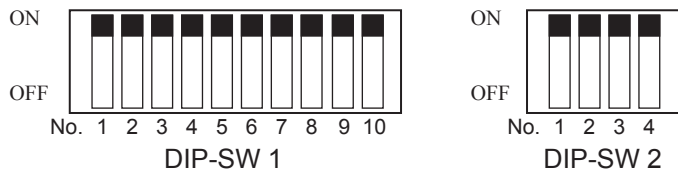
ON ... OFF No. 1 2 3 4 5 6 7 8 9 10 DIP-SW 1

ON ... OFF No. 1 2 3 4 DIP-SW 2

DIP-SW 1

Switch 1-1	Command emulation
ON	Star Mode
OFF	ESC/POS Mode

The factory settings of DIP switch are all on.

The functions of switches 1-2 through 1-10 will change according to the command emulation that has been set using switche 1-1.

(1) Star Line Mode

Switch	Function		ON	OFF
1-1	Command emulation		Always ON	
1-2	Should not be changed (Should be set to on)			
1-3	Should not be changed (Should be set to on)			
1-4	Sensor adjustment		Invalid	Valid
1-5	USB mode		Printer class	Vendor class
1-6	Handshaking conditions (conditions for BUSY)		Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Printer class	Valid	Invalid
		Vendor class	Invalid	Valid
1-8	NSB function *2	Printer class	Valid	Invalid
		Vendor class	Invalid	Valid
1-9	Low-power consumption mode		nvalid	Valid
1-10	Should not be changed (Should be set to on)			

*1 ASB Function
When this function is enabled, status information is automatically sent to the host whenever the printer status changes (such as when the cover is opened, paper runs out, or an error occurs). For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode and ESC/POS Mode).

*2 NSB Function
When this function is enabled, status information is sent automatically whenever the printer enters into reverse forwarding mode.
For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode)

(2) ESC/POS mode

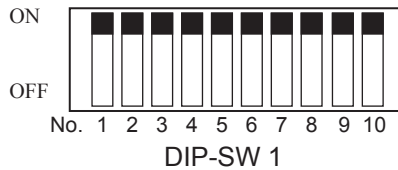| Switch	Function		ON	OFF
1-1	Command emulation		Always OFF	
1-2	Graphic adjustment		203 DPI	180 DPI
1-3	Should not be changed (Should be set to on)			
1-4	Sensor adjustment		Invalid	Valid
1-5	USB mode		Printer class	Vendor class
1-6	Handshaking conditions (conditions for BUSY)		Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Printer class	Valid	Invalid
		Vendor class	Invalid	Valid
1-8	Should not be changed (Should be set to on)			
1-9	Low-power consumption mode		nvalid	Valid
1-10	Should not be changed (Should be set to on)			

*1 ASB Function
When this function is enabled, status information is automatically sent to the host whenever the printer status changes (such as when the cover is opened, paper runs out, or an error occurs). For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode and ESC/POS Mode).

DIP-SW 2

Switch	Function	ON	OFF
2-1	Always ON		Should be set to on
2-2			
2-3			
2-4			

The factory settings of DIP switch are all on.

11-4. Ethernet Interface Model

DIP-SW 1

Switch 1-1	Command emulation
ON	Star Mode
OFF	ESC/POS Mode

The factory settings of DIP switch are all on.

The functions of switches 1-2 through 1-10 will change according to the command emulation that has been set using switch 1-1.

(1) Star mode

Switch	Function	ON	OFF
1-1	Command emulation	Always ON	
1-2	Should not be changed (Should be set to on)		
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Should not be changed (Should be set to on)		
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Valid	Invalid
1-8	NSB function *2	Valid	Invalid
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

(2) ESC/POS mode

Switch	Function	ON	OFF
1-1	Command emulation	Always OFF	
1-2	Graphic adjustment	203 DPI	180 DPI
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Should not be changed (Should be set to on)		
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Valid	Invalid
1-8	Should not be changed (Should be set to on)		
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

*1 ASB Function

When this function is enabled, status information is automatically sent to the host whenever the printer status changes (such as when the cover is opened, paper runs out, or an error occurs).
For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode and ESC/POS Mode).

*2 NSB Function

When this function is enabled, status information is sent automatically whenever the printer enters into reverse forwarding mode.
For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode)

DIP-SW 2

Switch	Function	ON	OFF
2-1			
2-2	Always ON	Should be set to on	
2-3			
2-4			

The factory settings of DIP switch are all on.

■ Initializing Settings

Set the push switch as described below to initialize the setting information.
Push the switch for one to five seconds while running under normal operating mode. The green and red LEDs will flash with a regular pattern. After that, push the switch once again in that state to turn OFF both of the red and green LEDs. This will return the settings of the interface board to their default, or ex-factory, settings. After the interface board has been initialized, the printer will automatically reboot itself.
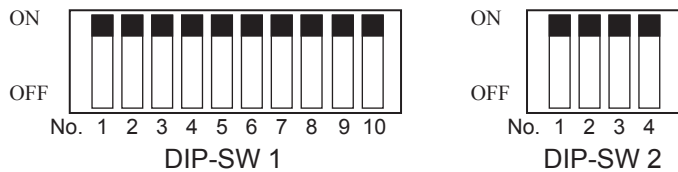
LED

Push Switch
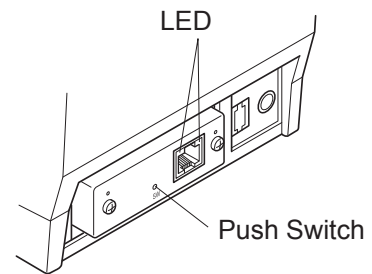
■ LED Display

Green : Lights when other party connection is recognized as 100BASE-TX.
Red : Lights when packets are received.

11-5. Wireless LAN Interface Model

DIP-SW 1

Switch 1-1	Command emulation
ON	Star Mode
OFF	ESC/POS Mode

The factory settings of DIP switch are all on.

The functions of switches 1-2 through 1-10 will change according to the command emulation that has been set using switch 1-1.

(1) Star mode

Switch	Function	ON	OFF
1-1	Command emulation	Always ON	
1-2	Should not be changed (Should be set to on)		
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Should not be changed (Should be set to on)		
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Valid	Invalid
1-8	NSB function *2	Valid	Invalid
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

(2) ESC/POS mode

Switch	Function	ON	OFF
1-1	Command emulation	Always OFF	
1-2	Graphic adjustment	203 DPI	180 DPI
1-3	Should not be changed (Should be set to on)		
1-4	Sensor adjustment	Invalid	Valid
1-5	Should not be changed (Should be set to on)		
1-6	Handshaking conditions (conditions for BUSY)	Offline or receive buffer full	Receive buffer full
1-7	ASB function *1	Valid	Invalid
1-8	Should not be changed (Should be set to on)		
1-9	Low-power consumption mode	Invalid	Valid
1-10	Should not be changed (Should be set to on)		

*1 ASB Function

When this function is enabled, status information is automatically sent to the host whenever the printer status changes (such as when the cover is opened, paper runs out, or an error occurs). For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode and ESC/POS Mode).

*2 NSB Function

When this function is enabled, status information is sent automatically whenever the printer enters into reverse forwarding mode.

For information about automatic status information transmission, refer to the separate Programmer's Manual (Star Line Mode)

DIP-SW 2

Switch	Function	ON	OFF
2-1~2-4	Always ON	Should be set to on	

The factory settings of DIP switch are all on.
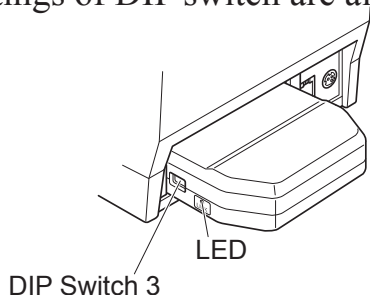
DIP Switch	ON	OFF
3-1	Fixed at OFF	
3-2	Initialize of setting information	—

Change DIP Switch 3-2 to ON initialize the setting information when the power is turned on. The factory settings of DIP switch are all off.

LED Display
    Green :   Lights when pockets are received.

Note:
- This product contains a built-in wireless device and can only be used in the following countries.
  USA, UK, France, Ireland, Belgium, Germany, Austria, Switzerland, Italy, Denmark, Norway, Sweden, Portugal, Spain, Estonia, Finland, Greece, Luxemburg, Netherlands, Canada, Slovakia, Slovenia, Czech, Hungary, Poland, Latvia, and Lithuania.
- This product contains Transmitter Module which conforms to the R&TTE Directive.
- This product contains Transmitter Module FCC ID: M4B6180210.
- This product contains Transmitter Module IC: 5844A-6180210.
- Strictly observe the export control laws of the country for export when exporting this product.

Installing the Ferrite Core (Wireless LAN Model for EU Only)

Install the ferrite core onto the peripheral drive cable to prevent radio interference. Use the ferrite core only for the wireless LAN model in the EU.

① Install the ferrite core onto the peripheral drive cable as shown in the illustration.

Ethernet cable

EU only

Ferrite core
(EU only)
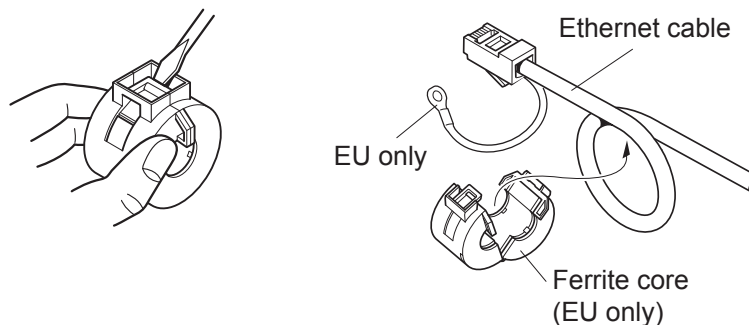
② Pass the fastener through the holes in the ferrite core as shown in the illustration.

10 cm
(Maximum)

Fastener

EU only
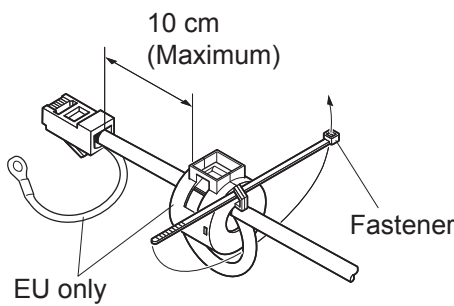
③ Loop the fastener around the cable, and then pull the end of the fastener tightly through its buckle. Use a pair of scissors to cut off the excess end of the fastener.

EU only
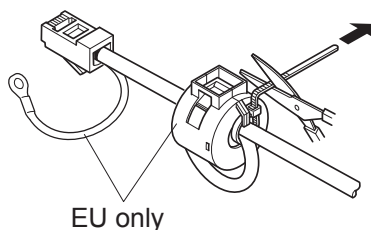
Connecting the peripheral drive cable

Connect the peripheral drive cable to the connector on the printer. Then, connect the other end of the cable to the peripheral drive circuit.

Except for EU

For EU
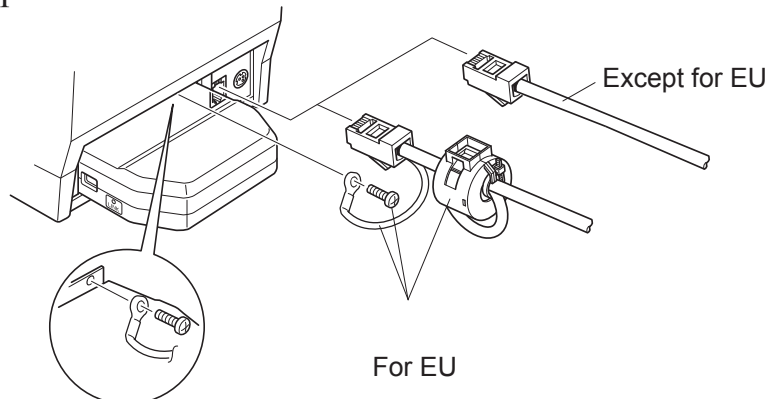
12. Parallel Interface

The two-way parallel interface is compatible with the IEEE1284 compatibility mode and nibble mode. Refer to the separate Specifications Manual for details.

Table of Connection Signals for Each Mode

Pin No.	Direction	Compatibility Mode Signal Name	Nibble Mode Signal Name
1	In	nStrobe	Host Clock
2	In/Out	Data0	Data0
3	In/Out	Data1	Data1
4	In/Out	Data2	Data2
5	In/Out	Data3	Data3
6	In/Out	Data4	Data4
7	In/Out	Data5	Data5
8	In/Out	Data6	Data6
9	In/Out	Data7	Data7
10	Out	nAck	PtrClk
11	Out	Busy	PtrBusy/Data3,7
12	Out	PError	AckDataReq/Data2,6
13	Out	Select	Xflag/Data1,5
14		—	HostBusy
15		—	—
16		Signal GND	Signal GND
17		Frame GND	Flame GND
18	OUT	+5 V	+5 V
19~30		Twisted Pair Return	Twisted Pair Return
31	In	nInit	nInit
32	Out	nFault	nDataAvail/Data0,4
33		External GND	—
34		—	—
35		—	—
36	In	nSelectIn	1284Active
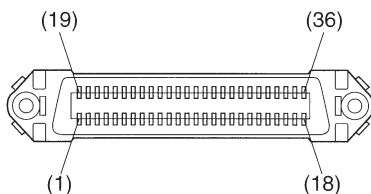
This connector mates with an Amphenol 57-30360 connector

Parallel interface connector (printer side)

13. RS-232C Serial Interface
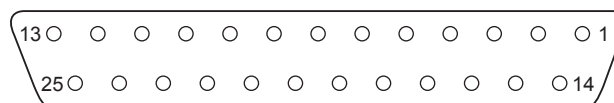
13-1. Interface Specifications

①   Data transmission method: Asynchronous serial interface

②   Baud rate: Selectable from 4800, 9600, 19200, 38400 bps
     (Refer to "11. DIP Switch Setting".)

③   Word length   Start bit: 1 bit
     Data bit: 7 or 8 bits (selectable.)
     Parity bit: Odd, even or none (selectable.)
     Stop bit: 1 bit length

④   Signal polarity   RS-232C
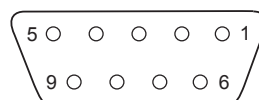   MARK: Logic "1" (–3 V to –15 V)
     SPACE: Logic "0" (+3 V to +15 V)

MARK "1"

| b 0 | b 1 | b 2 | b 3 | b 4 | b 5 | b 6 | (b 7) |

SPACE "0"

A   B   C   D

A: Start bit
B: Data bit
C: Parity bit
D: Stop bit
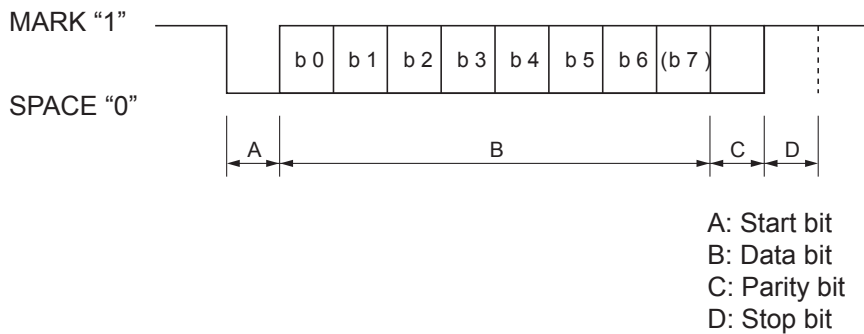
13-2. RS-232C Connector

| Pin No. | | Signal name | Direction | Function |
25 Pin	9 Pin			
1	—	F-GND	—	Frame ground
2	3	TXD	OUT	Transmission data
3	2	RXD	IN	Receive data
4	7	RTS	OUT	Same control as DTR
5	—	N/C		Not used.
—	8	CTS	IN	Same control as DSR

6	6	DSR	IN	**1) STAR Mode**
				 Not used.
				
				 2) ESC/POS Mode
				 When DIP Switch 3-7 = OFF;
				 A) DTR/DSR communication mode
				 Indicates whether data receive from host is enabled or disabled.
				   Space: Receive enabled
				   Mark: Receive disabled
				 (except when transmitting data by DLE EOT, and GS a)
				 B) X-ON/X-OFF communication mode
				 Status of this signal is not checked.
				 When DIP Switch 3-7 = ON;
				 This is an externally reset signal.
				 A space above 1 ms pulse width engages reset.

7	5	S-GND	—	Signal ground
8~19	1,9	N/C		Not used.

20	4	DTR	OUT	**1) STAR Mode**
				 A) DTR communication mode
				 Indicates whether data receive from host is enabled or disabled.
				   Space: Receive enabled
				   Mark: Receive disabled
				
				 B) X-ON/X-OFF communication mode
				   Always space, except during following conditions:
				     • Period between reset and communication enabled
				     • During self printing

Pin No. 25 Pin	Pin No. 9 Pin	Signal name	Direction	Function

20	4	DTR	OUT	**2) ESC/POS Mode**
				
				A) DTR/DSR communication mode
				
				Indicates whether data receive from host is enabled or disabled.
				
				  Space: Receive enabled
				
				  Mark: Receive disabled
				
				The conditions for BUSY are changed according to the DIP switch settings.

<table>
<tr><th rowspan="2">Printer status</th><th colspan="2">DIP SW 1-6</th></tr>
<tr><th>OFF</th><th>ON</th></tr>
<tr><td>1. During the period from when the power is turned on (including resetting using the interface) to when the printer is ready to receive data.</td><td>BUSY</td><td>BUSY</td></tr>
<tr><td>2. During the self printing.</td><td>BUSY</td><td>BUSY</td></tr>
<tr><td>3. When the cover is open.</td><td>—</td><td>BUSY</td></tr>
<tr><td>4. During the paper feeding by FEED button.</td><td>—</td><td>BUSY</td></tr>
<tr><td>5. When the printer stops printing due to a paper-end.</td><td>—</td><td>BUSY</td></tr>
<tr><td>6. During macro executing standby status.</td><td>—</td><td>BUSY</td></tr>
<tr><td>7. When an error has occurred.</td><td>—</td><td>BUSY</td></tr>
<tr><td>8. When the receive buffer becomes full.</td><td>BUSY</td><td>BUSY</td></tr>
</table>

B) X-On/X-Off Communication Mode

  Always space, except during following conditions:

  • Period between reset and communication enabled

  • During self printing

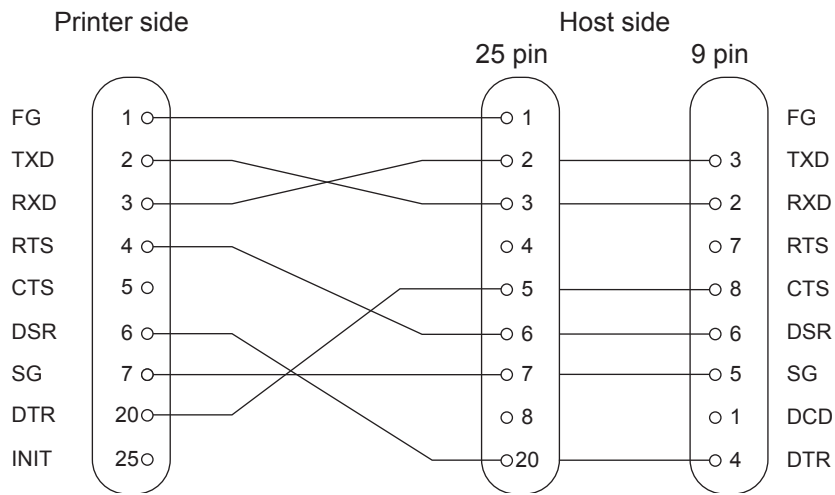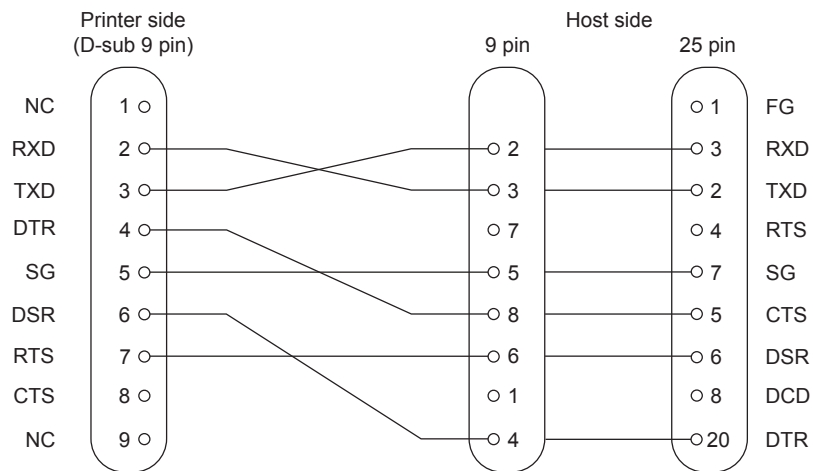| Pin No. 25 Pin	Pin No. 9 Pin	Signal name	Direction	Function
21~24	—	N/C		Not used.

25	—	$\overline{\text{INIT}}$	IN	**_When DIP Switch 3-8 = OFF;_**
				  Status of this signal is not checked.
				When DIP Switch 3-8 = ON;
				  This is an externally reset signal.
				  A space above 1 ms pulse width engages reset.

```
13○  ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○1
25○  ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○14
```
D-sub 25 Pin

```
5○ ○ ○ ○ ○ ○1
9○ ○ ○ ○ ○6
```
D-sub 9 Pin

13-3. Cable Connections

The followings are a recommended interface cable connections.

	Printer side		Host side 25 pin		9 pin	
FG	1		1			FG
TXD	2		2		3	TXD
RXD	3		3		2	RXD
RTS	4		4		7	RTS
CTS	5		5		8	CTS
DSR	6		6		6	DSR
SG	7		7		5	SG
DTR	20		8		1	DCD
INIT	25		20		4	DTR

Note: Use shielded wire less than 3 m in length.

	Printer side (D-sub 9 pin)		Host side 9 pin		25 pin	
NC	1				1	FG
RXD	2		2		3	RXD
TXD	3		3		2	TXD
DTR	4		7		4	RTS
SG	5		5		7	SG
DSR	6		8		5	CTS
RTS	7		6		6	DSR
CTS	8		1		8	DCD
NC	9		4		20	DTR

Note: Use shielded wire less than 3 m in length.

13-4. Electrical Characteristics

Voltage	Data signal	Control signal	Binary status
-3 V to -15 V	Mark	OFF	1
+3 V to +15 V	Space	ON	0

14. USB, Ethernet and Wireless LAN Interface

14-1. USB Interface Specifications

1. General Specification: Conforms to USB 2.0 Specifications
2. Communication Speed: USB Full Speed Mode (12 Mbps)
3. Communication Method: USB Bulk Transmission Mode
4. Power Specifications: USB Self-power Function
5. Connector: USB Up-Stream Port Connector (USB Type-B)

14-2. Ethernet Interface Specifications

1. General Specification: Conforms to IEEE802.3
2. Communication Media: 10 Base-T/100 Base-TX
3. Communication Speed: 10/100 Mbps
4. Protocol: TCP/IP
5. TCP/IP detail: ARP, RARP, BOOTP, DHCP, LPR, #9100, FTP, HTTP, TELNET, TFTP
6. Connector: RJ-45 (8-pin modular)

Note: Factory-set login password for administrator
One of the following protocols may be used for changing the settings on this product: HTTP (web), TELNET, or FTP. To do so, it is necessary to log in using an administrator account for the product.
Use the following administrator account information on HTTP (web), TELNET, or FTP.

    Administrator account name: "root" (required)
    Password: "public" (required)
    The password may be changed after logging in.

14-3. Wireless LAN Interface Specifications

1. General Specification: Conforms to IEEE802.1lb
2. Communication Media: 2.4 GHZ DSSS wireless CF card
3. Communication Speed: 1M/2M/5.5M/11Mbps AUTO Full-Back
4. Protocol: TCP/IP
5. TCP/IP detail: ARP, RARP, BOOTP, DHCP, LPR, #9100, IPP, POP3, HTTP, TELNET, SMTP, SNMP, FTP
6. Operating Channels: North America : 1-11 ch
    Japan : 1-11 ch
    Europe : 1-13 ch

15. Peripheral Unit Drive Circuit

Peripheral unit drive circuit connector only connects to peripheral units such as cash drawers, etc. Do not connect it to a telephone.
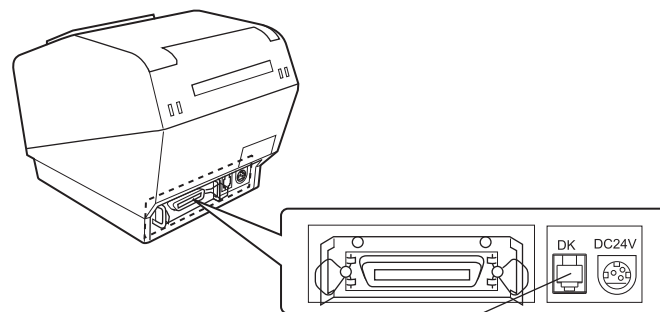Use cables which meet the following specifications.

Peripheral Drive Connector

Pin No.	Signal name	Function	I/O direction
1	FG	Frame ground	—
2	DRD1	Drive signal 1	OUT
3	+24 V	Drive power	OUT
4	+24 V	Drive power	OUT
5	DRD2	Drive signal 2	OUT
6	DRSNS	Sense signal	IN

Drive circuit
The recommended drive unit is shown below.

Modular plug

Modular plug: MOLEX 90075-0007, AMP641337, or BURNDY B-66-4
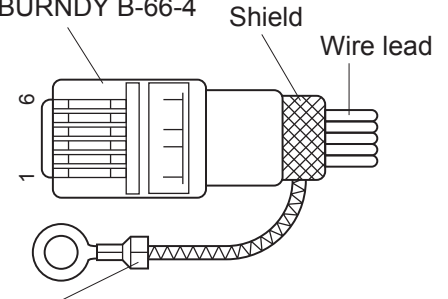
Shield
Wire lead

Separated Ground wire connected to shield (Europe only).

Peripheral drive connector

6-P Modular jack connector

Printer side ← ┊ → User side

– 60 –
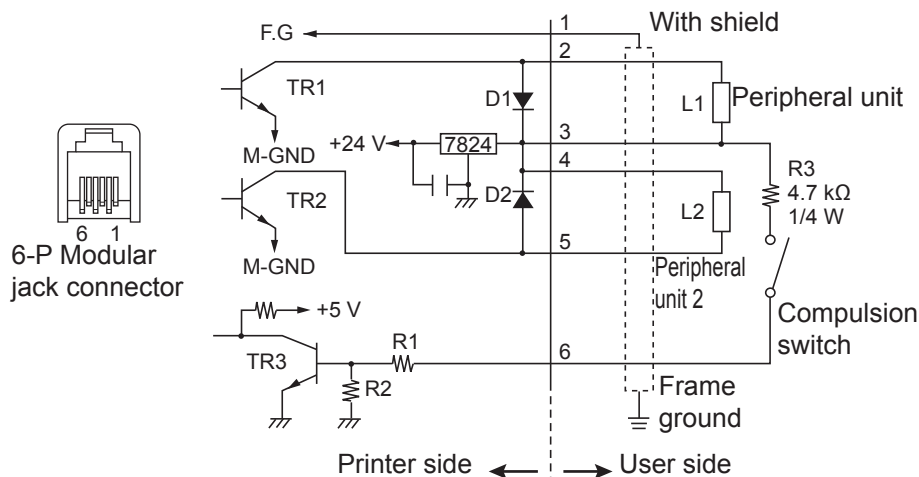
Reference
2SD 1866 Circuit Configuration

R3= 3.5 kΩ
R4= 300 Ω
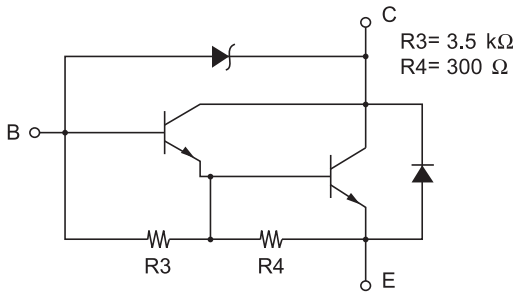
Drive Output: 24 V, Max. 1.0 A
TR1, TR2:   Transistor 2SD 1866 or equivalent
R1=10 kΩ
R2=33 kΩ

Note:
1. Pin 1 must be shield drain wire connected to peripheral device frame ground.
2. It is not possible to drive two drives simultaneously.
3. The peripheral drive duty must satisfy the following:
    ON time / (ON time + OFF time) $\leq$ 0.2
4. Minimum resistance for coils L1 and L2 is 24 Ω.
5. Absolute maximum ratings for diodes D1 and D2 (Ta = 25 °C) are:
    Average Rectified Current Io = 1 A
6. Absolute maximum rating for transistors TR1 and TR2 (Ta = 25 °C) are:
    Collector current Ic = 2 A

16. Memory Switch Settings

Each memory switch is stored in EEPROM. For details on the functions and settings of memory switches, see the separate Specification Manual.
The table below shows the factory settings for the memory switches.

Memory Switch	Hexadecimal Code
0	0000
1	0000
2	0000
3	0000
4	0000
5	0000
6	0000
7	0000
8	0000
9	0000

⚠ WARNING

Changing the memory switch settings can cause the printer to fail to operate correctly.

17. Release History

Rev. No.	Date (Month/Day/Year)	Contents
Rev.1.0	03/15/2007	New Release
Rev.1.1	09/15/2007	Revised the following error on page 13

Rev.1.1 contents:

Revised the following error on page 13

Incorrect

Installation layout	Horizontal	
Paper width (mm)	82.5	79.5
Paper thickness between 100 μm and 150 μm	Necessary	Necessary
Paper thickness between 65 μm and 100 μm	Unnecessary	Unnecessary

Correct

Installation layout	Horizontal	
Paper width (mm)	82.5	79.5
Paper thickness between 65 μm and 100 μm	Necessary	Necessary
Paper thickness between 100 μm and 150 μm	Unnecessary	Unnecessary

Rev. No.	Date (Month/Day/Year)	Contents
Rev.1.2	07/30/2010	Page 7: Added the description about the Ethernet interface board IFBD-HE07.
		Page 56: Added description about RS-232C 9-pin connector.
Rev.1.3	09/22/2011	

URL: http://www.starmicronics.com/support/