# Service Manual


*B0 Wide-Format Professional Inkjet Printer*

## EPSON Stylus Pro 9000

COLOR IMAGING EPSON

EPSON®

SEIJ98008

***NOTE:***

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# PRECAUTIONS

There are cautionary notes throughout the text to help you avoid personal injury or equipment damage.


**Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by a WARNING heading.**


**Signals a precaution which, if ignored, could result in damage to equipment.**

Always observe the measures listed below when performing repair or maintenance procedures.

## WARNING

1. Always disconnect the product from both the power source and host computer before performing any maintenance or repair procedure.
2. No work should be performed on the unit by persons unfamiliar with basic safety measures dictated for all electronics technicians in their line of work.
3. In performing testing described in this manual, do not connect the unit to a power source until instructed to do so. When the power supply cable must be connected, use extreme caution in working on the power supply and other electronic components.

## CAUTION

1. Repairs on EPSON products should be performed only by an EPSON-certified repair technician.
2. Make certain that the source voltage is the same as the rated voltage listed on the serial number/rating plate. If the EPSON product has a primary AC rating different from the available power source, do not connect it to the power source.
3. Always verify that the EPSON product has been disconnected from the power source before removing or replacing printed circuit boards and/or individual chips.
4. To protect sensitive microprocessors and circuitry, use static discharge equipment, such as anti-static wrist straps, when accessing internal components.
5. Replace malfunctioning components only with those components recommended by the manufacturer; introduction of second-source ICs or other nonapproved components may damage the product and void any applicable EPSON warranty.

## Revision Status

| Revision | Issued Date | Description |
|---|---|---|
| A | 1/26/1999 | Original |
| B | 5/28/1999 | The following chapters are revised:<br>Chapter-1: descriptions for firmware update procedures are corrected.<br>Chapter-2: descriptions for electrical circuit operation are added.<br>Chapter-3: Note on using self-diagnostic mode is added.<br>Chapter-4: instructions on disassembling the ink system components are added.<br>Chapter-5: New tool informaiton is added / “CR Cover position adjustment” procedure is modified. / Paper sensors adjustment is added. |
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| | | |

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CHAPTER

1

# PRODUCT DESCRIPTION

# 1.1 Features

The EPSON Stylus Pro 9000 is an ultra-wide, 6-color ink jet printer with professional color output. It has the same printheads as the EPSON Stylus Color 5000. The EPSON Stylus Pro 9000 provides the following major features and more.

## 1.1.1 Professional Color Printing Features

- Large-size/poster printing
  up to B0-wide paper (1118 cm/44 inches) including print-registration marks
- Excellent Photo-quality printing
  1440 (H) x 720 (V) dpi combined with EPSON's Microdot printing
- High-speed printing
  - 64 nozzles per color (same printhead as the EPSON Stylus Pro 5000)
  - The RISC-CPU and high-speed color raster ASIC quickly process detailed print data
  - A0/Normal Paper: 10 min. approx. (360x360 dpi/Speed)
    A0/Glossy Paper: 30 min. approx. (720x720 dpi/Quality)
    A0/Glossy Paper: 55 min. approx. (1440x720 dpi/SuperFine)
- Low running cost
  - Six separate ink cartridges so you only have to replace the empty ink cartridge (each cartridge holds 220 ml)
  - Auto Rotate feature saves paper by automatically rotating an image if the width is shorter than the height
- Wide compatibility
  The following interface alternatives are available:
  - IEEE-1284 bidirectional parallel interface (supports ECP mode)
  - Macintosh serial interface (approx. 1.8Mbps)
  - One Type-B expansion slot for an optional interface
- User-friendly features:
  - Two roll holders for easy switching between paper types
  - Standard roll-paper cutter
  - Optional roll-paper take-up reel for automatically winding up your long printouts

## 1.1.2 Consumable Products & Options

The following table lists the consumable items and options available for use with the EPSON Stylus Pro 9000.

**Table 1-1. Consumable Products & Available Options**

| Name | Code | Product |
|---|---|---|
| Ink cartridges | T407✶✶✶<br>T410✶✶✶<br>T409✶✶✶<br>T408✶✶✶<br>T412✶✶✶<br>T411✶✶✶ | Black Ink<br>Cyan Ink<br>Magenta Ink<br>Yellow Ink<br>Light Cyan Ink<br>Light Magenta Ink |
| Paper cutter blade | C815131 | Consumable item |
| Roll Feed Spindle 2” | C811021* | For two-inch diameter roll paper |
| Roll Feed Spindle 3” | C811031** | For three-inch diameter roll paper |
| Auto Take-Up Reel Unit | C81508✶<br>C815091 (core only) | Printed roll-paper option |
| Photo Paper (Glossy) | S041225<br>S041224 | 36 in. wide/20.7m long<br>44 in. wide/20.7m long |
| Semigloss Photo Roll Paper | S041222<br>S041223 | 36 in wide/25m long<br>44 in wide/25m long |
| Matte Roll Paper | S041221<br>S041220 | 36 in wide/25m long<br>44 in wide/25m long |
| Photo Quality Ink Jet Paper | S041079<br>S041068/S041045<br>S041069/S041043<br>S041070/S041044 | A2<br>A3<br>A3 Wide/B<br>B |
| Photo Paper | S041142<br>S041143<br>S041156 | A3<br>A3 Wide/B<br>B |
| Photo Quality Glossy Film | S041073<br>S041074<br>S041075 | A3<br>A3 Wide/B<br>B |

**Table 1-1. Consumable Products & Available Options (continued)**

| Name | Code | Product |
|---|---|---|
| Rip Station 5100 PS Server Series | EAI - C850092<br>Other - C850093 | Fiery Adobe® PostScript® 3™ Server |
| Multi-protocol Ethernet interface card | C82362✶ | Type-B 10Base-T |
| 100Mbps Multi-protocol Ethernet interface card | C82363✶ | Type-B 100Base-T |

Note *: Two rolls can be installed at the same time.

Note **: Can only be installed in the upper spindle holder.

# 1.2 SPECIFICATIONS

## PRINT SPECIFICATIONS

Print method: On-demand MACH (Multi-layer Actuator Head) ink jet E-MACH type

Nozzle configuration: Black: 64 nozzles
Color: 320 nozzles/64 nozzles for each color (Yellow, Magenta, Cyan, Light Magenta, and Light Cyan)

Print direction: Bi-directional with logic seeking
(high-speed return and skip only)

Print speed: See the following table:

**Table 1-2. Print Speed**

| Print Mode | A0 Print Time | Environment |
|---|---|---|
| Matte Paper | Approx. 15 min. | • Speed selected in printer driver<br>• 720 x 360 dpi<br>• Mode = Bi-D/FOL/300cps |
| Glossy Paper | Approx. 30 min. | • Quality selected in printer driver<br>• 720 x 720 dpi<br>• Mode = Bi-D/FOL/300cps |
| Glossy Paper | Approx. 55 min. | • Advanced Photo selected in printer driver<br>• 1440 x 720 dpi<br>• Mode = Bi-D/4-pass FOL/300cps |

Control code: ESC/P Raster (commands are not open to public)

## PAPER-FEED SPECIFICATIONS

Feeding method: Friction feed

Line spacing: 1/6 or 1/720” programmable

Paper loading: Roll paper (two 2-inch rolls can be loaded at the same time)
Single sheets loaded one at a time

Paper volume: 2” core roll paper = diameter of paper wound on roll of less than 103mm (4.05”)
3” core roll paper = diameter of paper wound on roll of less than 150mm (5.9”)
Single sheets = one sheet at a time

Feed speed: 200 ± 10 ms (when feeding at 1/6”)
2.5”/second (when continuously feeding)

## PAPER SPECIFICATIONS

Size, roll paper

{*Minimum paper requirements*}
Paper meeting the requirements described below can be used with this printer, but neither the feeding nor printout quality is guaranteed.

- •Paper Size = Width 297~1118mm (8.27~44.02”)
  Length 720mm~45m (28.35~1771.65”)
- •Roll Size = 2” or 3” core
  paper thickness = 103mm or less (4.05”) (two 2” rolls)
  150mm or less (5.9”) (one 3” roll)
- •Paper Thickness = 0.08~0.5mm (0.003~0.019”)

{*Normal paper*}
For paper meeting the following requirements, the feeding operation only is guaranteed.

- •Paper Size = Width 297~1118mm (8.27~44.02”)
  Length 720mm~45m (28.35~1771.65”)
- •Roll Size = 2” or 3” spindle
  paper thickness = 103mm or less (4.05”) (two 2” rolls)
  150mm or less (5.9”) (one 3” roll)
- •Paper Thickness = 0.08~0.11mm (0.003~0.0043”)
- •Paper Weight = 64~90gf/$m^2$ (17~24 lb.s)
- •Paper Quality = Normal paper, recycled paper

*1: Use at normal room temperature
(15~25°C (59~77°F)
40~60% humidity)

*2: The printer exerts between 300~500gf to peel off the rear edge of roll paper from the core

*3: Paper feeding is normal until the rear edge of the paper separates from the core. At the point where the rear edge is free, print quality is not guaranteed.
- •Upper spindle = last 400mm (15.75”) not guaranteed
- •Lower spindle = last 300mm (11.8”) not guaranteed

{*Special paper*}
For special paper meeting the following requirements, the feeding operation and print quality are optimized.

**Table 1-3. Special Paper Specifications**

| Paper | Code | Paper Size | Roll Size |
|---|---|---|---|
| Matte Paper | S041220 | 44” x 25m | 2” core/ paper thickness (radius) of 103mm or less |
| | S041221 | 36” x 25m | |
| Semigloss Photo Paper | S041223 | 44” x 25m | |
| | S041222 | 36” x 25m | |
| Photo Paper Glossy | S041224 | 44” x 25m | |
| | S041225 | 36” x 25m | |

*1: Use at normal room temperature
(15~25°C (59~77°F)
40~60% humidity)

*2: Paper feeding is normal until the rear edge of the paper separates from the core. At the point where the rear edge is free, print quality is not guaranteed.
- •Upper spindle = last 400mm (15.75”) not guaranteed
- •Lower spindle = last 300mm (11.8”) not guaranteed

Size, single sheets

{*Minimum paper requirements*}
Paper meeting the requirements described below can be used with this printer, but neither the feeding nor printout quality is guaranteed.

**Table 1-4. Usable Single Sheet Paper Specifications**

| Size | Dimensions (W x H) | Size | Dimensions (W x H) |
|---|---|---|---|
| B0 Wide | 1118 x 1580mm | A2 | 420 x 594mm |
| B0 | 1030 x 1456mm | A3 Wide/B | 329 x 483mm |
| B1 | 728 x 1030mm | A3 | 297 x 420mm |
| B2 | 515 x 728mm | ANSI E | 34 x 44” |
| B3 | 364 x 515mm | ANSI D | 22 x 34” |
| A0 Wide | 914 x 1292mm | ANSI C | 17 x 22” |
| A0 | 841 x 1189mm | ANSI B | 11 x 17” |
| A1 | 594 x 841mm | | |

Paper Thickness: 420~728mm (16.54~28.66”) long paper = 0.08~1.5mm (0.003~0.059”)
728~1580mm (28.66~62.2”) long paper = 0.08~0.5mm (0.003~0.019”)

{*Normal paper*}
For paper meeting the following requirements, only the feeding operation is guaranteed.
Paper Thickness = 0.08~0.11mm (0.003~0.0043”)
•Paper Weight = 64~90gf/$m^2$ (17~24 lb.s)
Paper Quality: Normal, recycled paper
*1: Load short edge first (portrait)

{*Special paper*}
For special paper meeting the following requirements, the feeding operation and print quality are optimized.

**Table 1-5. Special Paper Specifications**

| Size | Dimensions (W x H) | SuperFine *1 | PhotoPrint Paper 2 | Glossy Film |
|---|---|---|---|---|
| A3 | 297 x 420mm | OK | OK | OK*2 |
| A3 Wide | 329 x 483mm | OK | OK | OK |
| A2 | 420 x 594mm | OK | - | - |

Notes:
*1: Print quality optimized when printing uni-direction printing
*2: Japan only

Printable area: See the following illustration and table for details.

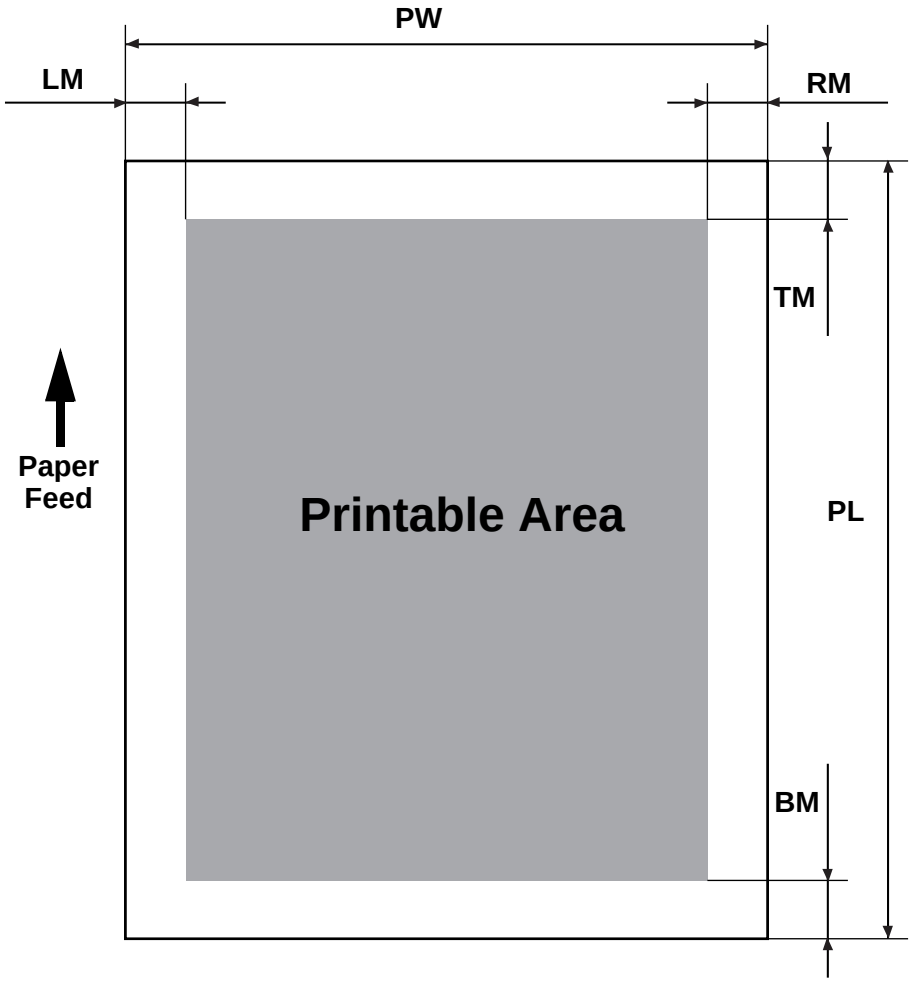


**Figure 1-1. Printable Area**

**Table 1-6. Printable Area**

| Heading | Roll Paper | Cut Sheets |
|---|---|---|
| PW (width) | 297 ~ 1118mm (8.27 ~ 44.02”) | 297 ~ 1118mm (8.27 ~ 44.02”) |
| PL (length) | 720mm ~ 45m (8.27~1771.65”) | 420~1580mm (16.54~62.2”) |
| LM (left margin) | 3mm/15mm* (0.12~0.59”) | 3mm |
| TM (top) | 3mm/15mm* | 3mm |
| RM (right) | 3mm/15mm* | 3mm |
| BM (bottom) | 3mm/15mm* | 14mm |

Note: *The size of the margin is determined by the control panel setting.

There are three margin settings on the control-panel;

- 3mmAll margins are set to 3mm
- 15mmAll margins are set to 15mm
- T/B 15mmTM and BM are 15mm, while LM and RM are 3mm

**Table 1-7. Print Area/Margin Optimization for Roll Paper**

| To Optimize for | Select this setting |
|---|---|
| largest printable area and decrease chance of paper rubbing printheads | Top/Bottom 15mm |
| exact paper size and decrease chance of paper rubbing printheads | 15mm |
| largest printable area and exact paper size | 3mm |

Paper Release Lever: {*Release lever is up*}
The feed path is open and you can load, remove or change the position of paper in the feed path.
{Release lever is down}
The feed path is closed and loaded paper is locked in place. You can print on the loaded paper.
(It is not possible to change the lever position during printing.)

## ELECTRICAL SPECIFICATIONS

**Table 1-8. Electrical Specifications**

| | 100V Model | 220-240V Model |
|---|---|---|
| Rated voltage range | AC100~240V | |
| Input voltage range | AC90~264V | |
| Rated frequency range | 50 to 60Hz | |
| Input frequency range | 49 to 61Hz | |
| Rated current | 1.0A | 0.5A |
| Power consumption | operating = 100W or less<br>standby mode = 30W or less | |
| Insulation resistance | 10MΩ minimum (between AC line and chassis, DC 500 V) | |
| Dielectric strength | AC 1.0KVrms per minute<br>AC 1.2KVrms per second | |
| Current leakage | 0.25mA maximum | |

## CONFORMITY/SAFETY APPROVALS

Safety Standards:

| | |
|---|---|
| US Model | UL 1950, CSA 22.2 No. 950 |
| European Model | EN60950 (VDE) |

EMC:

| | |
|---|---|
| US Model | FCC part 15 subpart B class B<br>CSA C108.8 class B |
| European Model | EN 55022 (CISPR Pub. 22) class B<br>EN 61000-3-2<br>EN 61000-3-3<br>EN 50082-1<br>IEC 801-2<br>IEC 801-3<br>IEC 801-4 |
| Australian Model | AS/NZS 3548 class B |

International Energy Star Compliant
(EPA MOU2.1 Category Large Format Printer)

## RELIABILITY

Useful life: Printer = 18,000 pages at B1 size
Printheads = 2,000,000,000 dots/nozzle
Cutter = 2,000 times

## ENVIRONMENTAL SPECIFICATIONS

Temperature/Humidity: See the following table.

**Table 1-9. Temperature & Humidity**

| Condition | Temperature | Humidity | Notes |
|---|---|---|---|
| Operating | 15~35°C (59~95°F) | 30~80% | • Less than a month at 40°C (104°F)<br>• Less than 120 hours at 60°C (140°F)<br>• Without condensation |
| Storage | -20~40°C (-4~104°F) | 20~85% | |
| Transportation | -20~60°C (-4~140°F) | 5-85% | |

Notes:

1) When storing the printer, make sure the printheads are in the home, capped, position.
2) Before transporting the printer, remove the ink cartridges and turn the ink valves screws to the closed position. Also make sure the printheads are in the home, capped, position. After transporting the printer, install new ink cartridges.
3) When the temperature drops below -15°C (5°F), the ink in the cartridges and printheads freezes. The ink thaws completely after three hours at 25°C (77°F).

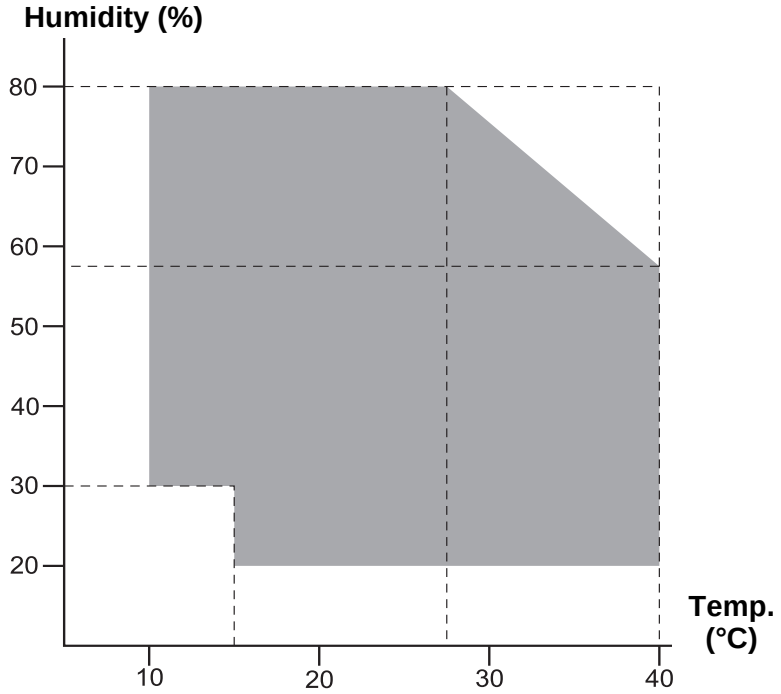


**Figure 1-2. Print Temperature and Humidity**

Resistance to

Vibration & Shock: See the following table.

**Table 1-10. Vibration & Shock Resistance**

| Condition | Vibration Resistance | Shock Resistance | Notes |
|---|---|---|---|
| Operating | 0.15G 10~55Hz | 1G less than 1ms | X/Y/Z direction |
| Storage | 0.50G 10~55Hz | 2G less than 2ms | |

## INK CARTRIDGE SPECIFICATIONS

| | |
|---|---|
| Shape: | Each ink cartridge is uniquely shaped so the cartridges cannot be inserted in the wrong slots. |
| Ink colors: | Black, Cyan, Magenta, Yellow, Light Cyan, Light Magenta |
| Ink volume: | 220 ± 5 ml |
| Ink avail. for printing: | 190 ± 14ml |
| Print capacity: | A0 = approx. 28 pages at 720dpi and 40% coverage<br>A0 = approx. 11 pages at 720dpi and 100% coverage |
| Dimensions: | 25.1 x 260 x 105.3mm (WxDxH) |
| Weight: | Approx. 370~385g (cartridge only) |
| Effective period: | 2 years from production (in the sealed packaging) plus time used (at room temp.) |
| Storage temperature: | See the table below. |

**Table 1-11. Ink Cartridge (Environmental) Specifications**

| Situation | Temperature | Notes |
|---|---|---|
| Transporting | -30~60°C (-22~140°F) | • Less than month at 40°C (104°F)<br>• Less than 120 hours at 60°C (140°F) |
| Storage | -30~40°C (-22~104°F) | Less than a month at 40°C (104°F) |
| Installed | -20~40°C (-4~104°F) | Less than a month at 40°C (104°F) |

- **Do not refill or reuse cartridges; they are consumable items.**
- **Do not use ink that beyond its expiration date. See above.**
- **To use ink that has been frozen [below 5 °F (-15 °C)], let it thaw at least 3 hours at room temperature.**

## ACOUSTIC NOISE

Approximately 50 dB

## CONTROLLER SPECIFICATIONS

| | |
|---|---|
| CPU: | 32 bit RISC-CPU (SH7043) 33Mhz |
| ROM: | [Program]<br>CPU Internal = 128KB ROM<br>External = 1MB (Flash ROM/4Mbit x 2)<br>[Font] not-installed (Windows/Macintosh required) |
| RAM: | 18MB (fixed)<br>(16MB: SIMM/2MB: IC18,19) |
| Interface: | [Standard]<br>IEEE1284 Bidirectional Parallel Interface<br>Macintosh Serial Interface<br>Type-B Card Slot (x1) for optional interface |

## CUTTER SPECIFICATIONS

| | |
|---|---|
| Attributes: | Consumable item that is replaced by the user, and it is made of very hard steel, so the blade can easily be chipped. |
| Life: | Can cut well over 2,000 pages, but the actual wear-and-tear depends on the type and thickness of the paper used.<br>The cutter life can be determined by manually using it to cut a piece of normal paper. If the cutter easily cuts the paper, it is OK.<br>The cutter position is determined by the carriage cover position; see “Carriage Cover Height Adjustment” on page 139 and “Cutter Position Adjustment” on page 140 for more information. |

## PRINTER DIMENSIONS & WEIGHT

Dimensions: 1688 x 699 x 1259mm (WxDxH)
(66.46 x 27.52 x 49.57 inches)

Weight: 96Kg (211.91 lb.s)
Printer alone = 74Kg (163.32 lb.s)
Stand = 22Kg (48.59 lb.s)

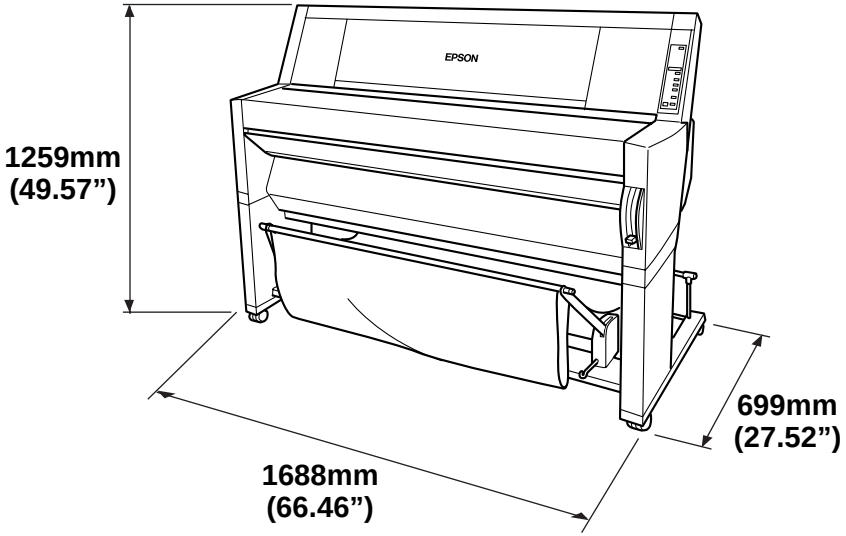


**Figure 1-3. Printer Dimensions**

# 1.3 Control Panel

This section describes the control panel, the buttons, the lights, and the way you make settings.]

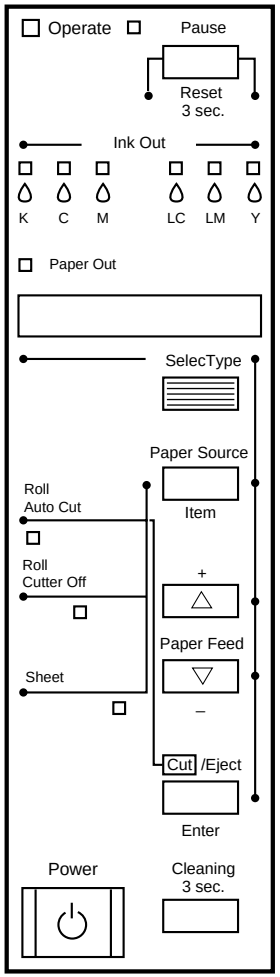


**Figure 1-4. Control Panel**

## BUTTONS

All of the buttons on the control panel, and their functions, are described below.

### Table 1-12. Control Panel Buttons & Functions

| Button (Second function) | Function (Normal) | SelecType Function | Power-On Function |
|---|---|---|---|
| Power | Power on/off | N/A | N/A |
| Pause (Reset) | • Switch - online/off-line<br>• Reset (press for three seconds | N/A | Maintenance mode |
| SelecType | Enters SelecType mode (when printer is in Standby mode) | Selects menu or major category | N/A |
| Cut/Eject (Enter) | Selects *1<br>• Auto Cut<br>• Cutter Off<br>• Sheet | Confirm and save value | |
| Paper Feed ↑ | Feeds paper backward *2 | Cycles backward/ increases value | |
| Paper Feed ↓ (-) | Feeds paper forward *3 | Cycles forward/ decrease value | |
| Paper Source (Item) | Selects paper source | Selects item or minor category | |
| Cleaning | Cleans both heads if pressed for three seconds | N/A | |
| Paper Source Cut/Eject Paper Feed ↓ | N/A | | Maintenance Mode 2 |
| Paper Source Cut/Eject Cleaning | N/A | | Firmware Update Mode |

Notes:

1: Interrupts ink drying and runs the specified operation.

2: 1.27cm/second paper feed for 2 seconds after key is pressed.
7.62cm/second paper feed if pressed for over two seconds.
Maximum feed of 20cm with one press of the button.

3: 1.27cm/second paper feed for 2 seconds after key is pressed.
7.62cm/second paper feed if pressed for over two seconds.

## LED INDICATORS

### Table 1-13. LED Indicators

| LED | Status | Condition |
|---|---|---|
| Operate | • On<br>• Flashing | • Power on<br>• Receiving data or performing power-down sequence |
| Paper Out | • On<br>• Flashing | • No paper loaded<br>• Paper jam |
| Pause | • On<br>• Flashing | • Printer ready<br>• Performing head cleaning or the printer is in ink drying phase. Also flashes during ink charging operation. |
| Ink Out Y | • On<br>• Flashing | • Ink out*<br>• Ink low |
| Ink Out LM | • On<br>• Flashing | • Ink out*<br>• Ink low |
| Ink Out LC | • On<br>• Flashing | • Ink out*<br>• Ink low |
| Ink Out M | • On<br>• Flashing | • Ink out*<br>• Ink low |
| Ink Out C | • On<br>• Flashing | • Ink out*<br>• Ink low |
| Ink Out K | • On<br>• Flashing | • Ink out*<br>• Ink low |
| Paper Source (Auto Cut) | On | Roll paper will automatically be cut. |
| Paper Type (Cut Off) | On | Roll paper will not be cut. (When using the optional Take-up Roller, you need to select this setting.) |
| Paper Type (Single Sheet) | On | Single sheet printing mode. |

Note: *Also occurs if no cartridge is installed or the wrong cartridge is installed.

## 1.3.1 Control Panel Messages

Printer status and error messages appear on the control panel display. The table below lists the messages by order of importance.

**Table 1-14. LCD Messages**

| Display Message | Meaning |
|---|---|
| Service Call nnnnnnnn *2 | Fatal error |
| Maintenance Call nnnn *3 | Printer requires maintenance from qualified service person (such as replace waste ink tank) |
| Wait *1 | Resetting Timer IC<br>Clearing NVRAM<br>Performing reset operation<br>Performing ink sequence operation<br>Initializing the printer<br>Dealing with initial paper operation |
| Switching Power Off | Preparing to shut down. |
| Install Ink Cartridge | Replacing ink cartridge. |
| Cover Open | The cover is open. |
| Option I/F Card Error | A Type-B interface error has occurred. |
| Lower Release Lever | Paper Release lever is in the release position. |
| Load xxx Paper | Wrong paper loaded. |
| Paper Jam | Paper is caught inside the printer. |
| Paper Not Cut | Printer did not cut the paper (when Auto Cut selected) |
| Paper Skew | Paper was fed at an angle, and the printer stopped to prevent printing the page offcentered. |
| Paper Out | End of roll or sheet (or the paper detect sensor may have dust or grime blocking its operation) |
| Reload Paper | Paper check error |
| Compartment Open | Replacing ink cartridge |
| Replace Cartridge | An ink cartridge is empty |
| Press Pause Button | Waiting for paper initialize start trigger |
| Pause | Pause state. |

**Table 1-14. LCD Messages (continued)**

| Display Message | Meaning |
|---|---|
| Ink Drying xx *1 | Printer waits xx minutes before the next print job to allow ink on previous print job time to dry. |
| Ink Low | Prepare a replacement cartridge for the color ink indicated. |
| Printing *1 | Processing print data. |
| Ready *1 | Can receive and print data. |
| Reset | In the process of re-initializing. |
| Restart Printer | Turn the printer off and turn it on again. |

Notes:

*1: If the printer's platen gap setting is set to Thick, a "W" will appear in the last space on the LCD display.

*2: See "Service Errors" on page 25.

*3: See "Maintenance Errors" on page 24.

## 1.3.2 Control Panel Settings

To access the control panel settings, press the SelecType button while the printer is not printing. The printer enters the SelecType mode and cannot print. The following table lists LCD display messages in SelecType mode.

**Table 1-15. Control Panel Settings**

| Display Message | Menu |
|---|---|
| SelecType Menu | SelecType menu, page 22 |
| Test Print Menu | Test Print Menu, page 23 |
| Printer Status Menu | Printer Status Menu, page 23 |
| Paper Settings Menu | User Paper Settings, page 23 |
| Cutter Replacement Menu | Cutter Replacement Menu, page 24 |
| Head Alignment Menu | Gap Adjustment Menu, page 24 |

Selecting a menu provides you with detailed options.

### SELECTYPE MENU

**Table 1-16. SelecType Menu**

| Display Message | Item | Notes |
|---|---|---|
| PLATEN GAP | Auto<br>Thick | Adjusts the platen gap. (Normally, leave set to Auto.) |
| PAGE LINE | ON<br>OFF | When Auto Cut Off is selected on the control panel, this setting determines whether a line for manual cutting is printed. |
| INTERFACE | Auto<br>Parallel<br>MAC<br>Option | Determines which interface the printer checks for data. Auto continuously checks all interfaces and is good for normal use. |
| PARALLEL INTERFACE | Compatible<br>ECP | Determines the data transfer rate when using this interface.(Normally, leave set to Compatibility.) |
| CODE PAGE | PC437<br>PC850 | Character code setting. (PC437: expanded graphics/PC850: multi-lingual) |
| ROLL PAPER MARGIN | Top/Bottom 15mm<br>15mm<br>3mm | Roll sheet margin setting.<br>• Top/Bottom 15mm*: the top and bottom margins = 15mm while left and right margins = 3mm<br>• 15mm: all margins = 15mm<br>• 3mm all margins = 3mm |
| INITIALIZE PANEL | Run | Initialize control panel setup values |

Notes:

* The printed image is the same size as a printed image using the 3mm setting; however, the printer adds 12mm of paper clearance (for a total margin of 15mm) to the top and bottom edges to make paper feeding more stable and to prevent the paper from rubbing the printheads.

Also, the underlined item equals the default.

## TEST PRINT MENU

**Table 1-17. Test Print Menu**

| Display Message | Item | Notes |
|---|---|---|
| NOZZLE CHECK PATTERN | Print | Check the printout, any missing lines mean the nozzle(s) are clogged. |
| STATUS SHEET | Print | Prints the current printer settings. |

## PRINTER STATUS MENU

All consumable items and maintenance parts either run out of their contents or wear out. To determine how much contents (ink) or useful life remains, compare the message and value shown on the control panel display to the corresponding value below and the messages in the table below.

| | |
|---|---|
| E*****F | 100~81% full/life remaining |
| E**** F | 80~61% full/life remaining |
| E*** F | 60~41% full/life remaining |
| E** F | 40~21% full/life remaining |
| E* F | 20~1% full/life remaining (generates a warning) |
| E F | Less than 1% full/life remaining (generates an error) |

**Table 1-18. Printer Status Menu**

| Display message | Meaning |
|---|---|
| VERSION | Shows the firmware version. |
| INK REMAINING (C) | Shows the amount of remaining ink - Cyan |
| INK REMAINING (M) | Shows the amount of remaining ink - Magenta |
| INK REMAINING (LC) | Shows the amount of remaining ink - Light Cyan |
| INK REMAINING (LM) | Shows the amount of remaining ink - Light Magenta |
| INK REMAINING (Y) | Shows the amount of remaining ink - Yellow |
| INK REMAINING (K) | Shows the amount of remaining ink - Black |
| CUTTER LIFE | Shows the remaining useful life of the cutter |
| TOTAL PRINTS | Shows the total number of printed documents |

**Table 1-18. Printer Status Menu (continued)**

| Display message | Meaning |
|---|---|
| WASTE INK | Maintenance information |
| CR MOTOR | Maintenance information |
| PF MOTOR | Maintenance information |
| HEAD UNIT | Maintenance information |
| CLEANING UNIT | Maintenance information |

## USER PAPER SETTINGS

**Table 1-19. User Paper Settings Menu**

| Display Message | Item | Notes |
|---|---|---|
| PAPER NUMBER | Standard<br>1~4 | Select Standard for Epson special paper. Select the appropriate number for thick paper. |
| THICKNESS PATTERN | Print | Prints a pattern to detect the paper thickness. If “Paper Number” is set to “Standard”, this message does not appear. |
| PAPER THICKNESS NO. | 1~17 | If “Paper Number” is set to “Standard”, this message does not appear. |
| DRYING TIME | 0~30 Minutes | Determines the length of time the printer allows the ink to dry. When printing on roll paper, the printer will wait the specified time after printing |

Note: The underlined item equals the default.

## CUTTER REPLACEMENT MENU

The following table includes the steps/messages that must be followed to replace the cutter.

**Table 1-20. Cutter Replacement Messages**

| Display Message | Item | Notes |
|---|---|---|
| CUTTER REPLACEMENT | Execute | Prepare a replacement cutter and |
| OPEN LOWER COVER | - | Open the front cover. |
| REPLACE CUTTER | - | Remove the old cutter and install a new one. |
| CLOSE LOWER COVER | - | Close the front cover. The printer is ready. |

## GAP ADJUSTMENT MENU

**Table 1-21. Platen Gap Adjustment Menu**

| Display Messages | Item | Notes |
|---|---|---|
| ADJUSTMENT PATTERN | Print All<br>Print #1~12 | Selects which patterns to print. (All patterns or selected patterns only.) |
| SELECT #1-12 | 1~4~7 | Choose a pattern from #1 to #12. |
| PAPER THICKNESS | Standard<br>0.0~1.6mm | Select the thickness, to 0.1mm, of the paper you are using to check the platen gap. Normally, leave set to Standard. |

Note: The underlined item equals the default.

## 1.3.3 Maintenance Errors

There are several consumable parts in the printer, and the printer employs separate counters to keep track of each one. The "Maintenance Req. 0100" message appears on the display to warn that the Waste Ink pads are about 99% full and need to be replaced soon.

The printer can continue to print even though the "Maintenance Req. 0100* message appears instead of the "Ready" or "Printing" message. However, when the waste ink counter determines the Waste Ink pads are 100% full, the "Service Req 00000100" message appears and the printer can no longer print.

To clear the Maintenance error, perform the following.

Replace: The following seven items are need to be replaced.

- Waste Ink Pads (R/L)
- Pump Assembly
- Cap Assembly
- F Box (R/L)
- Cleaner, Head


**The above mentioned seven items are available as a kit.**

**Description: MAINTENANCE KIT**
**Parts code: 1048434**

Required Adjustments: The following adjustments are need to be performed after replacing the corresponding items.

- Waste Ink Counter Clear
(See "Maintenance Mode 2" on page -26.)

- Cleaner Counter
(See "Maintenance Mode 2" on page -26.)

- Cutter Position Adjustment
(See "Cutter Position Adjustment" on page 140.)

## 1.3.4 Service Errors

When “Service Req nnnnnnnn” appears on the LCD display, a fatal error requiring a service technician has occurred. The nnnnnnnn indicates what needs to be fixed to return the printer to a working state.

**Table 1-22. Service Error Code List**

| Service Code | Explanation |
|---|---|
| 00000100 | Waste ink pads are full and need to be replaced. *1 (Replace the unit and reset the counter.) |
| 00000101 | Ink tubes |
| 00010000 | PF Motor Encoder Check error |
| 00010001 | PF Motor out of step |
| 000100002 | PF Motor overcurrent |
| 000100003 | PF Motor in-position time-out error |
| 000100004 | CR Motor Encoder Check error |
| 000100005 | CR Motor out of step |
| 000100006 | CR Motor overcurrent |
| 000100007 | CR Motor in-position time-out error |
| 000100008 | Servo interrupt watchdog time-out error |
| 000100009 | System interrupt watchdog time-out error |
| 00010000A | CR origin sensor error |
| 00010000B | PF origin sensor error |
| 00010000C | PG origin sensor error |
| 00010000D | Cover sensor error (00) |
| 00010000E | Cover sensor error (01) |
| 00010000F | CR motor PWM output error |
| 000100010 | PF motor PWM output error |
| 000200000 | NVRAM Error |
| 000200001 | Internal RAM Check Error |

**Table 1-22. Service Error Code List (continued)**

| Service Code | Explanation |
|---|---|
| 000200002 | SRAM Check Error |
| 000200003 | DRAM Check Error |
| 100000004 | CPU Vector 4 - General illegal instruction |
| 100000006 | CPU Vector 6 - Slot illegal instruction |
| 100000006 | CPU Vector 9 - CPU address error |
| 10000000A | CPU Vector 10 - DMAC\DTC address error |
| 10000000B | CPU Vector 11 - Watchdog time-out error |
| 1000000** | CPU Vector 32~63 |


**When replacing the following parts to clear “Service Req. 00000100” error, you need to clear the corresponding counter using “Maintenance Mode 2”.**

**[Effective parts]**

- **Waste Ink Pads (right/left)**
- **F Box (left/right)**
- **Pump Assembly**
- **Cap Assembly**
- **Cleaner, Head**

**[Effective counters]**

- **Init. Waste Ink**
- **Init. Cleaning Unit**


**The above mentioned parts are also available as a KIT.**

**Description: MAINTENANCE KIT**
**Parts code: 1048434**

## 1.3.5 Service Related Printer Settings

When the printer is not functioning properly, there are three modes that help you detect what is wrong and can help you fix the problem. These modes are “Maintenance Mode”, “Maintenance Mode 2”, and “Self-Diagnostic Mode”. To enter a mode, press and hold down the appropriate button (described below) while turning on the printer.

CAUTION

**The following explanations regarding control panel service functions and for service and support purposes only, none of this information is to be shared with the end user.**

### MAINTENANCE MODE

Power-on button: Pause

| Message | Item | Explanation |
|---|---|---|
| Hex Dump | Print | Prints the print data in hexadecimal form |
| Language | English<br>Japanese | Determines which language is used to display messages on the LCD display. |

### MAINTENANCE MODE 2

Power-on button: Paper Source + Cut/Eject + Paper Feed ↓

| Message | Item | Explanation |
|---|---|---|
| INIT. ALL | Execute | Initializes NVRAM, Timer, life counters, and mechanical counters |
| INIT. NVRAM | Execute | Initializes NVRAM |
| INIT. TIMER | Execute | Initializes timer |
| INIT. CR MOTOR | Execute | Initializes CR Motor counter (after replacing ink tubes) |
| INIT. PF MOTOR | Execute | Initializes PF Motor counter |
| INIT. HEAD UNIT | Execute | Initializes Head unit counter |
| INIT. CLEANING UNIT | Execute | Initializes cleaning unit counter |
| INIT. TOTAL PRINTS | Execute | Initializes total print counter |
| INIT. INK | Execute | Initializes ink counter |
| INIT. WASTE INK | Execute | Initializes waste ink counter |
| DETECT INK LABEL | ON<br>OFF | Determines whether the Ink ID sensor checks the Ink ID label on the ink cartridge. |

### SELF-DIAGNOSTIC MODE

Power-on button: Paper Feed ↓ + Cut/Eject + Cleaning

This mode is used primarily for replacing worn-out printer parts and adjustment operations. For details, see Chapter 5, "Adjustment".

## 1.3.6 Firmware Update

The firmware contained on the Main Board is Flash ROM; therefore if you need to replace the Main Board or update the firmware, select one of the following methods.

CAUTION

- **If for any reason power is cut off during the update operation (using either method), restart the update operation to return the printer to normal status.**
- **Use the following PC card for update.**
  **Name: #F725 Flash Memory Card**
  **Code: 1050073**

### UPDATING THE FIRMWARE VIA THE PC

1. Make sure the PC is connected to the printer using the parallel port. Compatible mode connection only.
2. While pressing and holding the following buttons, turn on the printer. Paper Source + Cut/Eject + Cleaning
3. From the PC, send the firmware-update file to the printer using the following command. At the DOS prompt, enter

   **copy *(filename)* prn:**

CHECK POINT

**The firmware data file for downloading via the PC is XXXXXXXX.MOT (Motrola format data).**

4. “Update complete” appears indicating the Flash ROM has been properly updated.
5. Turn the printer off and back on.

### UPDATING THE FIRMWARE VIA MEMORY CARD

For details on this operation, see Chapter 5, "Adjustment".

1. Copy firmware data file to the PC card.

CHECK POINT

**The firmware data file to be copied to the PC card is XXXXXXXX.BIN (Binary format data).**

2. Make sure the printer is off.
3. Remove the access cover towards the rear of the Paper Guide U, and insert the Flash memory card containing the updated firmware into the card slot (CN20).
4. Turn the printer on.
5. “Update complete” appears indicating the Flash ROM has been properly updated.
6. Turn the printer off, remove the memory card, and turn the printer back on.

## 1.3.7 Jumper Settings

The factory default settings for jumper and DIP switch on the Main Board (C277MAIN) are as follows.

**Table 1-23. Jumper Settings**

| Type | Number | Setting |
|---|---|---|
| Jumper | JP1 | Shorted |
| Jumper | JP2 | Shorted |
| DIP-SW | SWD1 “1” (1-4) | OFF (Open) |
| DIP-SW | SWD1 “2” (2-3) | OFF (Open) |

# 1.4 Interfaces

The EPSON Stylus Pro 9000 is equipped with parallel and Macintosh serial interfaces and a card slot for an optional Type-B interface. This section provides information on each interface.

## SERIAL INTERFACE

**Table 1-24. Serial Interface**

| | Description |
|---|---|
| Transmission mode | Based on RS-423 |
| Synchronization | Synchronous |
| Transfer speed | About 1.8 Mbps |
| Data format | Start bit: 1 bit<br>Data bit: 8 bits<br>Parity bit: None<br>Stop bit: 1 bit |
| Handshaking | X-ON/X-OFF, DTR protocol |
| Adaptable connector | 8-pin mini-DIN |
| Recommended I/F cable | Apple system peripheral-8 cable (M0197) |

**Table 1-25. Pin Assignment**

| Pin No. | Signal Name | I/O | Description |
|---|---|---|---|
| 1 | SCLK | O | Synchronous clock signal |
| 2 | CTS | I | Clear To Send |
| 3 | TXD- | O | Transmit Data (-) |
| 4 | SG | I | (Signal Ground) |
| 5 | RXD- | I | Receive Data (-) |
| 6 | TXD+ | O | Balanced Transmit Data (+) |
| 7 | DTR | O | Data Terminal Ready |
| 8 | RXD+ | I | Balanced Receive Data (+) |

- ☐ X-ON/X-OFF, DTR protocol:

**Table 1-26. X-On/X-Off and DTR Protocol**

| State | Buffer Space | X-ON/X-OFF | DTR |
|---|---|---|---|
| Busy | Less than 3072 bytes | Send X-OFF code | OFF |
| Ready | More than 5120 bytes | Send X-ON code | ON |

## PARALLEL INTERFACE

### Table 1-27. Parallel Interface - Compatibility Mode

| Item | Description |
|---|---|
| Transmission mode | 8-bit parallel, IEEE-1284 compatibility mode |
| Synchronization | By STROBE pulse |
| Handshaking | By BUSY and $\overline{\text{ACKNLG}}$ signal |
| Logic Level | TTL compatible level (IEEE-1284 Level 1 device) |
| Connector | 57-30360 (Amphenol) or equivalent 36-pin |
| **Note 1:** Use a twisted-pair cable.<br>**Note 2:** The BUSY signal is set high before setting the -ERROR signal low or the PE signal high. The BUSY signal remains high until all these signals return to their normal state. | |

The BUSY signal is high:

- During data entry
- When the input data buffer is full
- When the -INIT signal is low, or during hardware initialization
- During a printer error
- When the parallel interface is not selected

The ERROR signal is low when there is a:

- Printer hardware error (fatal error)
- Paper-out error
- Paper-jam error
- Ink-out error

***NOTE:*** *The PE signal is high during a paper-out error.*

### Table 1-28. Connector Pin Assignments - Forward Channel

| Pin No. | Signal Name | Return Pin | In/ Out | Functional Description |
|---|---|---|---|---|
| 1 | STROBE | 19 | I | Data reception pulse, 0.5uS or greater pulse width required. Usual state is HIGH, and reads data after going to LOW state. |
| 2-9 | DATA0~7 | 20-27 | I | The DATA0 through DATA7 signals represent data bits 0 to7, respectively. Each signal is at high level when data is logical 1 and low level when data is logical 0. These signals are used to transfer the 1284 extensibility request values to the printer. |
| 10 | ACKNLG | 28 | O | When LOW the printer has finished preparing to receive signals and can accept data. Pulse width is about 1uS or 3uS Printer clock signal. |
| 11 | BUSY | 29 | O | HIGH means the printer cannot receive data. This occurs when the printer is receiving data or when the printer is in an error state. |
| 12 | PE | 28 | O | HIGH means no paper is loaded. (LOW means an error.) |
| 13 | SLCT | 28 | O | Always HIGH. Pulled up to +5V via 1.0Kohm |
| 14 | AFXT | 30 | I | Not used |
| 15 | NC | | | Not connected |
| 16 | GND | | | Ground for twisted pair return |
| 17 | Chassis | | | Ground for frame/body |
| 18 | Logic H | | | Pulled up to +5V via 3.9Kohm |
| 19-30 | GND | | | Ground for twisted pair return |
| 31 | -INIT | 30 | I | Pulse width of 50uS or more means LOW pulse, and the falling edge of LOW signal causes the printer to initialize. |
| 32 | ERROR | 29 | O | LOW means printer error |
| 33 | GND | ---- | ---- | Ground for twisted pair return |
| 34 | NC | ---- | ---- | Not connected |
| 35 | +5V | ---- | O | HIGH during normal operation. Pulled up to +5V via 1.0Kohm |
| 36 | SLCTIN | 30 | I | Not used |

Note: “In/Out” is signal direction as viewed from printer.
The interface condition is normally TTL Level, and each high/low signal takes 0.2uS or less.
The printer only sends data after receiving the ACKNLG confirmation or when the BUSY signal is low.

### Table 1-29. Nibble Mode

| | Description |
|---|---|
| Transmission mode | IEEE-1284 nibble mode |
| Synchronization | Refer to IEEE-1284 specification |
| Handshaking | Refer to IEEE-1284 specification |
| Signal level | TTL level (IEEE-1284 level 1 device) |
| Connector | 57-30360 (Amphenol) or equivalent |
| Data transfer timing | Refer to IEEE-1284 specification |
| Data requests/ device ID | When the printer receives the hexadecimal values 00H or 04H, the printer responds in the following manner:<br>00H: The printer enters reverse channel mode, allowing data to be sent to the host.<br>04H: The printer sends the device ID to the host; the device ID consists of the following strings:<br><00H><4EH><br>MFG: EPSON<br>CMD: ESCPL2, BDC<br>MDL: Stylus[SP]Pro[SP]9000;<br>CLS: PRINTER<br>DES: EPSON[SP]Stylus[SP]Pro[SP]9000<br>***Note:*** *[00H] denotes a hexadecimal value of zero.*<br>*[SP] equals space code 20H* |

### Table 1-30. ECP Mode

| | Description |
|---|---|
| Transmission mode | IEEE-1284 ECP mode |
| Synchronization | Refer to IEEE-1284 specification |
| Handshaking | Refer to IEEE-1284 specification |
| Signal level | IEEE-1284 level 1 device |
| Adaptable connector | 57-30360 (Amphenol) or equivalent |
| Data transfer timing | Refer to IEEE-1284 specification |
| Data requests/ device ID | When the printer receives the hexadecimal values 10H or 14H, the printer responds in the following manner:<br>10H: The printer enters reverse channel mode, allowing data to be sent to the host.<br>14H: The printer sends the device ID to the host; the device ID consists of the following strings:<br><00H><4EH><br>MFG: EPSON<br>CMD: ESCPL2, BDC<br>MDL: Stylus[SP]Pro[SP]9000<br>CLS: PRINTER<br>DES: EPSON[SP]Stylus[SP]Pro{SP]9000<br>***Note:*** *[00H] denotes a hexadecimal value of zero.*<br>*[SP] equals space code 20H* |