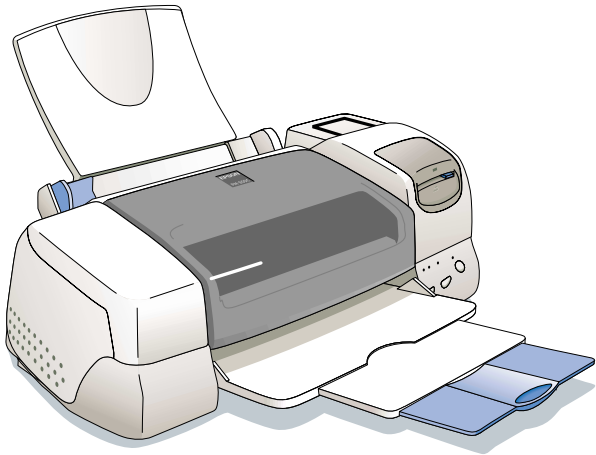# SERVICE MANUAL

Color ink jet printer

EPSON Stylus PHOTO 875DC

COLOR IMAGING
EPSON

EPSON®

Notice:

- All rights reserved. No part of this manual may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SEIKO EPSON CORPORATION.

- The contents of this manual are subject to change without notice.

- All effort have been made to ensure the accuracy of the contents of this manual. However, should any errors be detected, SEIKO EPSON would greatly appreciate being informed of them.

- The above not withstanding SEIKO EPSON CORPORATION can assume no responsibility for any errors in this manual or the consequences thereof.

EPSON is a registered trademark of SEIKO EPSON CORPORATION.

General Notice: Other product names used herein are for identification purpose only and may be trademarks or registered trademarks of their respective owners. EPSON disclaims any and all rights in those marks.

PRECAUTIONS

Precautionary notations throughout the text are categorized relative to 1)Personal injury and 2) damage to equipment.

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

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

The precautionary measures itemized below should always be observed when performing repair/maintenance procedures.

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.
2. NOWORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.
3. WHEN PERFORMING TESTING AS DICTATED WITHIN 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 POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE VOLTAGES 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 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. IN ORDER 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 BY THE MANUFACTURE; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NONAPPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.

PREFACE

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of EPSON Stylus PHOTO 875DC. The instructions and procedures included herein are intended for the experienced repair technicians, and attention should be given to the precautions on the preceding page. The chapters are organized as follows:

CHAPTER 1.   PRODUCT DESCRIPTIONS

Provides a general overview and specifications of the product.

CHAPTER 2.   OPERATING PRINCIPLES

Describes the theory of electrical and mechanical operations of the product.

CHAPTER 3.   TROUBLESHOOTING

Provides the step-by-step procedures for troubleshooting.

CHAPTER 4.   DISASSEMBLY AND ASSEMBLY

Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 5.   ADJUSTMENTS

Provides Epson-approved methods for adjustment.

CHAPTER 6.   MAINTENANCE

Provides preventive maintenance procedures and the lists of Epson-approved lubricants and adhesives required for servicing the product.

APPENDIX

Provides the following additional information for reference:

- *EEPROM Address Map*
- *Connector Pin Assignments*
- *Component Layout*
- *Exploded Diagrams*
- *Electrical Board Circuit Diagrams*

Revision Status

Revision	Issued Date	Description
A	March 01, 2000	First Release

Table of Contents

MAINTENANCE

APPENDIX

PRODUCT DESCRIPTIONS

1.1 Overview

The EPSON Stylus PHOTO 875DC, an easy and low cost photo printer, has the two parts: the built-in card reader part (storage driver) and Stylus PHOTO 870 base printer part. The card reader allows the users to easily print digital camera data to render high photo quality color images.

1.1.1 Features

The EPSON Stylus PHOTO 875DC features the following:

1. Supports PCMCIA (Personal Computer Memory Card International Association) Flash ATA card reader function.

2. Supports Compact Flash, Smart Media, Memory Stick (with PCMCIA Adapter).

3. Printer part and Storage part be connection via the USB hub

4. High color print quality

5. High speed printing

6. Windows/Macintosh exclusive

7. USB connection only high speed transfer
   - Theoretical fastest transfer speed: 1.2MB/s
   - Actual effect transfer speed: Approx. 440KB/s*

   * Pentium 400MHz, Windows98 Second Edition, in the case that read data from the 48MB CF card. Transfer speed depends on the environment of host PC.

8. The storage is recognized to the host as the removable media.

9. The card reader has a write protect function due to DSC media protection.

10. The card reader has the function that acquires media insertion status.

11. The card reader has the function that storage detects the allocated drive.

12. The card reader has the function that acquires the serial number of storage.
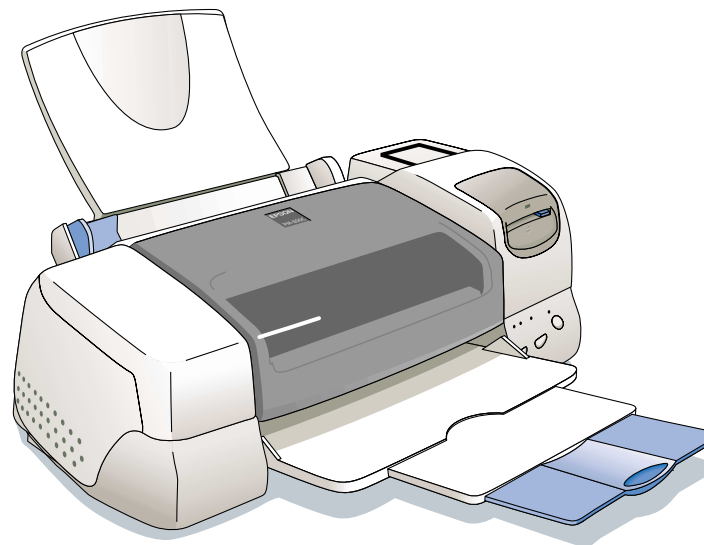
Figure 1-1. EPSON Stylus PHOTO 875DC

1.2 Basic Specifications

This section only provides the basic specifications for the card reader part. For the information on the printer part, please see the EPSON Stylus PHOTO 870/1270 Service Manual.

1.2.1 Basic Specifications for the Card Reader Part

ENVIRONMENT

The following are requirements that must be met to use the USB Mass Storage Class driver.

☐ Operating System:

- Microsoft Windows 98*

- Microsoft Windows 98 Second Edition*

- MacOS 8.5 or later, and MacOS ROM version J1-1.2 or later.

Only the pre-installed OS

☐ USB Hosts:
The USB Host must meet following requirements.

<Windows98 >

- Microsoft Windows 98 is pre-installed on the Host PC that compiles with the PC98 design guide.

- All of USB ports work correctly. (The functionality of the USB Port(s) must be ensured by PC OEM)

< Macintosh >

The following product that was installed MacOS ROM version J1-1.2 or later (USB Service 1.1 or later) is necessary:

- iMac (/A, /B, Color Model)

- PowerMacintosh G3 (Blue & White)

NOTE: *Vacancy memory 1MB over necessary*

REFERENCES

☐ Universal Serial Bus Specification Revision 1.0

☐ USB Mass Storage Class CBI Transport Specification v1.0 RC5

☐ American National Standard for Information Systems - Reduced Block Commands (RBC) T10/1240D

1.2.2 Electric specifications

120 V VERSION

☐ Rated voltage:	AC 100 - 120V
☐ Input voltage range:	AC 99 - 132V
☐ Rated frequency range:	50 - 60Hz
☐ Input frequency range:	49.5 - 60.5Hz
☐ Rated current:	0.4 A
☐ Power consumption:	Approx. 14W (ISO 10561 Letter Pattern) Approx. 4.5 W in standby mode
☐ Energy Star compliant	
☐ Insulation Resistance:	10M ohms min. (between AC line and chassis, DC 500V)
☐ Dielectric strength:	AC 1500V rms. 1minute (between AC line and chassis)

220-240 V VERSION

☐ Rated voltage:	AC 220 - 240V
☐ Input voltage range:	AC 198 - 264V
☐ Rated frequency range:	50 - 60Hz
☐ Input frequency range:	49.5 - 60.5Hz
☐ Rated current:	0.3 A

☐ Power consumption: Approx. 15W (ISO 10561 Letter Pattern)
                     Approx. 4.5W in standby mode
                     Energy Star compliant

☐ Insulation Resistance: 10M ohms min. (between AC line and chassis, DC 500V)

☐ Dielectric strength: AC 1000V rms. 1minute or
                     AC 1200V rms. 1 second (between AC line and chassis)

☐ Safety, EMC

     ■ Safety: UL1950 (UL)
                     CSA C22.2 No.950 (CSA)
                     EN60950 (VDE)

     ■ EMC: FCC Part15 Subpart B Class B
                     CSA C108.8 Class B
                     AS/NZS3548 Class B

     ■ CE marking: Low voltage directive 73/23/EECEN60950
                     EMC Directive 89/336/EEC   EN55022 Class B
                                       EN61000-3-2
                                       EN61000-3-3
                                       EN50082-1
                                       IEC 801-2/801-3/801-4

1.2.3 Reliability

☐ Total print volume: 25,000 pages (A4, Letter)

☐ Printhead life: 3000 million dots/nozzle

1.2.4 Environmental Condition

TEMPERATURE

☐ Operating: 10 to 35°C *3

☐ Non-operating: -20 to 60°C*1
                     1 month at 40°C and 120 hours at 60°C

HUMIDITY

☐ Operating: 20 to 80% RH *2*3

☐ Non-operating: 5 to 85% RH *1*2

1: With shipment container

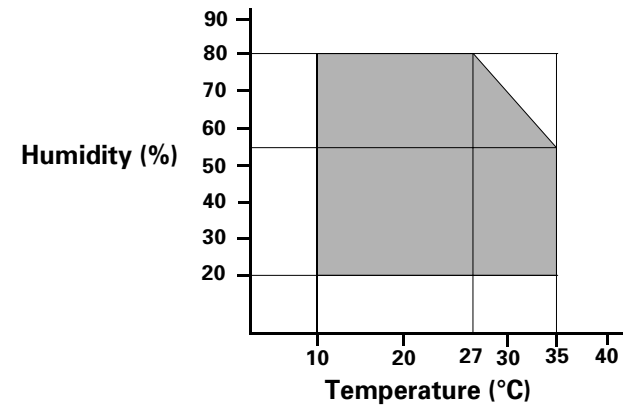*2: Without condensation*

3: See the figuer below for the condition.

Figure 1-2. Temperature/Humidity Range

RESISTANCE TO SHOCK

☐ Operating: 1G, within 1 ms, X, Y, Z directions

☐ Non-operating: 2G, within 2 ms, X, Y, Z directions with
                           shipment contanier

RESISTANCE TO VIBRATION

☐ Operating: 0.15G, 10 - 55Hz, X, Y, Z directions

☐ Non-operating: 0.50G, 10 - 55Hz, X, Y, Z directions with
                           shipment contanier

CAUTION !	■ **When storing the printer, make sure the printhead is capped.** ■ **When transporting the printer, ensure the ink cartridges are installed in the printer and the printhead is capped.** ■ **If the printer power is off with the printhead left uncapped, turn the printer on with the ink cartridges installed, cap the printhead, and turn the printer off.** ■ **Ink freezes at below -4°C. It will be usable again after keeping it for about three hours at 25°C.**

1.3 Interface

### 1.3.1 USB Interface

SPECIFICATIONS

☐ Standard: Based on the following:

■ Universal Serial Bus Specifications Revision 1.0

■ Universal Serial Bus Device Class Definition for Printing Devices Version 1.0 (Printer part)

■ Universal Serial Bus Mass Storage Class CBI Transport Specification v1.0 (Storage part)

☐ Bit rate: 12Mbps (Full Speed Device)

☐ Data encoding: NRZI

☐ Adaptable connector: USB Series B

☐ Recommended cable length: 2 meters

CONNECTOR PIN ASSIGNMENT

Table 1-1. Connector Pin Assignment and Signals

Pin No.	Signal Name	I/O	Function Description
1	VCC	-	Cable power. Max. power consumption is 2mA.
2	-Data	Bi-D	Data
3	+Data	Bi-D	Data, pull up to +3.3 V via 1.5K ohm resistor.
4	Ground	-	Cable ground
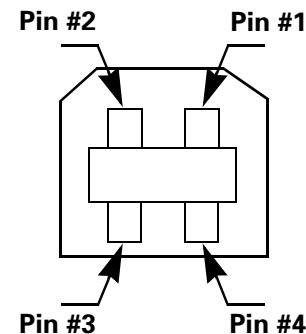
Figure 1-3. USB Pin Assignment

DEVICE ID

The printer sends the following device ID string when it is requested.

☐ When IEEE1284.4 is enabled,

<00H><5EH>

MFG:EPSON;

CMD:ESCPL2,BDC,D4;

MDL:Stylus<SP>Photo<SP>875DC;

CLS:PRINTER;

DES:EPSON<SP>Stylus<SP>Photo<SP>875DC;

☐ When IEEE1284.4 is disabled,

<00H><5AH>

MFG:EPSON;

CMD:ESCPL2,BDC;

MDL:Stylus<SP>Photo<SP>875DC;

CLS:PRINTER;

DES:EPSON<SP>Stylus<SP>Photo<SP>875DC;

NOTE: [00H] denotes a hexadecimal value of zero.

1.3.2 PCMCIA Card Slot

CARD SLOT STANDARD

☐ PCMCIA Type-II card slot x 1

☐ PC Card Standard ('97) compliance

MEMORY CARD

The following memory card is supported.

☐ PCMCIA Flash ATA card

☐ Compact Flash (with PCMCIA adapter)

☐ Smart Media (with PCMCIA adapter)

☐ Memory Stick (with PCMCIA adapter)

VOLTAGE

The following voltage is supported.

☐ 5v

☐ 3.3v/5v

☐ 3.3v

<Restriction item of SONY Memory Stick>

> **CAUTION**
> **!**
>
> **As for the SONY memory stick, the following faulty occurs. Therefore, the restriction on use exists.**

FAULTY CONDITION

1. Carry out the light protect (the LOCK notch) of the memory stick main body.

2. Memory stick is connected to the memory stick PCMCIA adapter (MSAC-PC1/MSAC-PC2).

3. Write protect of the USB Mass Storage driver is canceled.

4. Write data (includes "delete file", "format") from the host (Windows98, Macintosh).

NOTE: *In the case that four aforementioned conditions were included, all the faulty occurs.*

PHENOMENON

Processing ends normally when it wrote data in the media with both WIndows98 and Macintosh. However, all the processing fail actually. Also, the blue screen is displayed, in the case that it is worst.

CAUSE

The cause of this problem is that the combination of the memory stick and PCMCIA adapter are not conforming to the specifications of PCMCIA. It is not able to detect it electrically even if the memory stick is set up to "write protect", although PCMCIA is the possibility specification that detect whether or not is the media of "write protect" electrically.

1.4 Function

For the printer operation, please see the Stylus PHOTO 870/1270 Service Manual.

1.4.1 Card Reader Part Panel Operation

LEVER

☐   Card eject lever

NOTE: *Do not operate while Access LED is lighted.*

INDICATOR

☐   Access LED(Green)

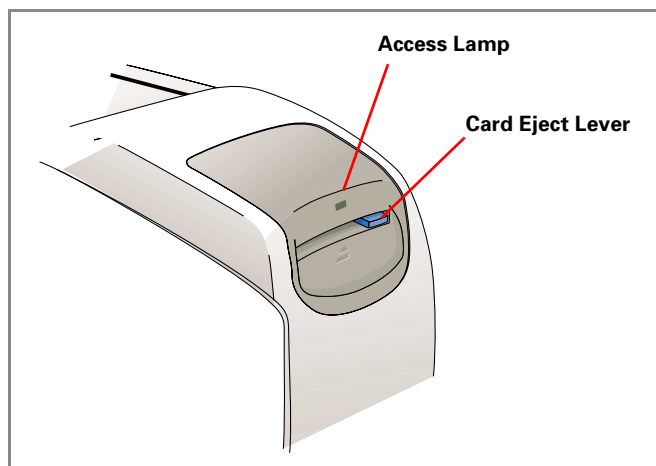   Access LED lights up at the time of read/write of the media.

Figure 1-4. Card Reader Part Control Panel

1.4.2 Card Reader Driver Function (Windows)

1.4.2.1 Drive form

The card reader is recognized to OS as the removable disk drive, and its drive name is allocated.

1.4.2.2 Card information acquisition

This function acquires the insertion condition of the PCMCIA card from the card reader and informs the application software of it. Information acquisition uses USB Control/Bulk transfer when API is called.

1.4.2.3 Drive name acquisition

The application software can acquire drive name assigned for the card read by using acquisition API. Also, if multiple cared readers exist on USB, the application software can acquire each pair of serial number and drive name.

1.4.2.4 Correspondence language

It corresponds to seven country of OS (Japanese, English, French, Italian, German, Spanish, Portuguese).

1.4.2.5 [Read Only mode] function

When [Read Only mode] is selected (default), the driver operates the media inserted to the card reader as the "Write Protect".

1.4.2.6 [Write to Disk mode] function

The following function is supported in [Write to Disk mode].

1.   Read/Write for long file name (8+3 characters or more)
2.   Format (correspondence only the logic format by OS)
3.   Delete file
4.   Change file attribute
5.   Make file
6.   Rename file

7. Make folder

8. Delete folder

9. Rename folder

1.4.2.7 Switching to [Write to Disk mode]

☐ Switching between [Read Only mode] and [Write to Disk mode] is bidirectionally possible.

☐ Switching between the [Read Only mode] and [Write to Disk mode] is implemented in condition without a media being inserted. Mode change is carried out by executing the application software "EPSON USB RW Switcher". The result comes into effect at the time of the next media insertion.

☐ Since the [Read Only mode] driver and [Write to Disk mode] driver are the same driver, installation is unnecessary.

☐ The mode information is preserved to Windows Registry. Mode change is done by referring to the registry when the host is powered on.

☐ Registry entry that controls this mode is as follows.

HKEY_LOCAL_MACHINE¥Enum¥ESDI¥EPSON___PM800DCSTORAGE

The key is as follows:

Readonly (Binary, 00 = [Write to Disk mode], 01 = [Read Only mode])

1.4.2.8 USB Descriptor change function

This function rewrites USB Descriptor of the card reader by using the API. The item that rewrites is as follows.

1. iProduct strings (UNICODE, maximum 23 characters)

2. iSerialNumber strings (UNICODE, maximum 12 characters)

1.4.2.9 Correspondence file system

The file system that corresponds is as follows.

1. FAT (VFAT)

2. FAT32

1.4.3 Card Reader Driver Function (Macintosh)

1.4.3.1 Drive form

The card reader is recognized to OS as the removable disk drive.

1.4.3.2 Card information acquisition

This function acquires the insertion condition of the PCMCIA card from the card reader and can notify the application software of it. Information acquisition uses USB Control/Bulk transfer when API is called.

1.4.3.3 Disk information acquisition

The application software can acquire the following information regarding the card reader by using the API.

1. Volume Reference Number

2. Driver Reference Number

3. Volume Name

4. Serial Number of the Card Reader

Also, when multiple card readers exist on USB, the application software can acquire each pair of the serial number and disk name.

1.4.3.4 Drive information acquisition

The application software can acquire the following information regarding the card reader by using the API.

1. Write Protect Status

2. USB String descriptor, iManufacturer strings (product maker)

3. USB String descriptor, iProduct strings (product name)

4. USB String descriptor, iSerialNumber strings (serial number)

1.4.3.5 Correspondence language

It corresponds to seven language of OS (Japanese, English, French, Italian, German, Spanish, Portuguese).

1.4.3.6 [Read Only mode] function

When [Read Only mode] is selected (default), the driver operates the media that is inserted to the card reader as the "Write Protect".

1.4.3.7 [Write to Disk mode] function

The following function is supported in [Write to Disk mode].

1. Read/Write for long file name (8+3 characters or more)
2. Format
3. Delete file
4. Change file attribute
5. Make file
6. Rename file
7. Make folder
8. Delete folder
9. Rename folder
10. Memory of the Folder condition (location, size etc)*

NOTE: *Not able to acquire the information that is whether the file is opened by the restriction of File Exchange of the MacOS 8.5.1 belonging.*

1.4.3.8 Switching to [Write to Disk mode]

☐ Switching between [Read Only mode] and [Write to Disk mode] is bidirectionally possible.

☐ Mode change is implemented in condition without the media being mounted. The mode change is carried out by the implementation of the application software "EPSON USB RW Switcher".

☐ The change result comes into effect at the time of the next media mounting.

☐ The mode information is stored to the initial setting file (EPSON PhotoStarter pref).

1.4.3.9 Media insertion / removal

☐ The icon and volume name (untitled, etc.) are displayed on the desktop when the PCMCIA media is inserted into the card reader.

☐ In the case that the media is removed, the disk should be un-mounted without fail. (Drag the icon on the desktop in the garbage can, or Click [Eject] on [Special] menu.)

☐ When the un-mounting is carried out normally, the message "The memory card can be removed from the card drive. Please remove the memory card." is displayed and the icon disappears from the desktop.

> **CAUTION**
> ⚠
>
> - **In the case that media is removed without un-mounting, the warning message is displayed immediately. At this time, replace the media in the drive immediately. There is the possibility that the system becomes unstable and the data be lost if the media is not replaced in the drive.**
> - **In the case that USB cable is pulled out without un-mounting, the warning message is displayed immediately. At this time, reconnect the cable to the port immediately. There is the possibility that the system becomes unstable and also the data be lost if the cable is not reconnected to the port.**

1.4.3.10 Media format

Media can be formatted when the [Write to Disk mode] is selected. The format that initializes the media differs depending on the condition of the current media format, as shown in the table below:

Table 1-2. Initialization Format

Current Format	Initialization possibility format
Unformated	Mac OS standard, Mac OS expansion*1, DOS
Mac OS	Mac OS standard, Mac OS expansion*1, DOS*2
DOS	Mac OS standard*3, DOS

*1: For the media of 32MB over, the Mac OS expansion format can be also selected.

*2: The media that was initialized with iMac or G3 can select the DOS format.

*3: In the case that File Exchange is ineffective (OFF), a Mac OS standard format can be selected.

1.4.3.11 Icon

An icon is displayed to the desktop when a media is mounted. Note the exclusive icon is only displayed for HFS format media. For DOS format media, a Mac OS standard icon is used.

1.4.3.12 Correspondence file system

1.   FAT(VFAT)*

2.   HFS

3.   HFS+ (32MB or more)

*: File Exchange is used.

1.4.3.13 Display in the expansion manager

If "EPSON USBStorageClass1" is selected by the expansion manager, the following character strings are displayed as an item information.

EPSON USBStorageClass1
This USB driver is necessary to use the EPSON Stylus Photo series PCMCIA card driver.

1.5 Outer Case Specifications

DIMENSIONS

☐ Stacker (open):   483 mm (W) x 613 mm (D) x 302 mm (H)

☐ Stacker (closed):   483 mm (W) x 407 mm (D) x 302 mm (H)

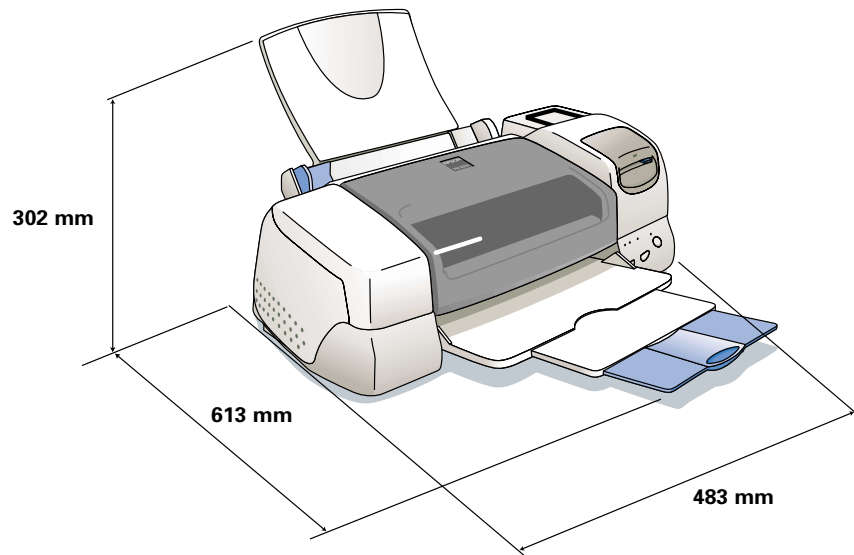***NOTE:*** *With a paper support installed*

WEIGHT

Approximately 6.4 kg

Figure 1-5. External Dimension

OPERATING PRINCIPLES

2.1 Overview

The EPSON Stylus PHOTO 875DC consists of the printer part and card reader part. The printer part is the same as for the Stylus PHOTO 870. So this manual only refers to the operating principles of the card reader part.

2.1.1 Card Reader Part

The figure below summarizes the card reader part.
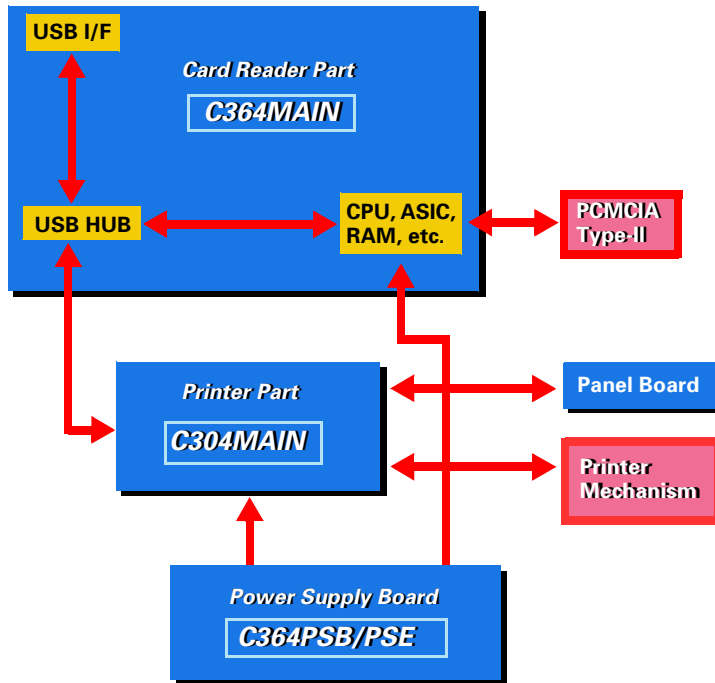
Figure 2-1. Block Diagram of the Stylus PHOTO 875DC
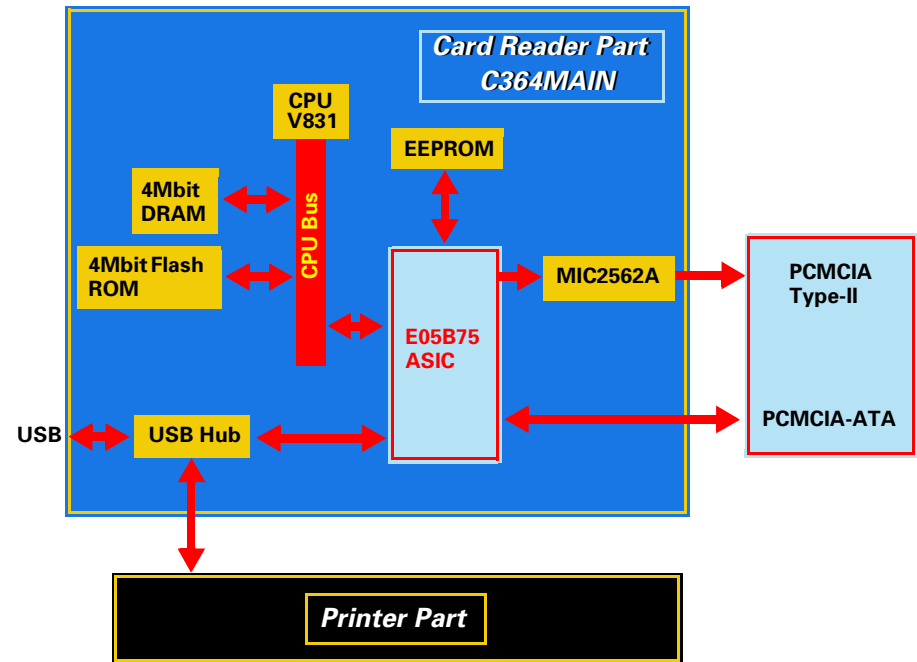
Figure 2-2. Block Diagram for the Card Part

The major elements in the card reader part are as shown in the following table.

Table 2-1. Major Elements in the Card Reader Part

Name	IC	Functions
CPU (V831)	IC1	160-pin PGFP, operating at 33.0MHz (internally 99MHz). • USB storage class target • PCMCIA control
ASIC (E05B75)	IC2	A 208-pin PGFP, operating at 33 MHz (48MHz for USB). • USB storage class • PCMCIA interface • 16-bit DATA BUS V831 interface • EEPROM interface • Mac. serial interface • 2 LED drive boards • 1 universal input port
MIC2562A	IC6	PCMCAI socket power controller • 14-pin S.O. package
MBM29LV400TC/BC	IC8	4Mbit flash ROM • 48-pin TSOP • Powered by 3.3V single power source • Can be cleared by chip bulk or sector unit. • Program
MSM51V4265E-60	IC4	4Mbit DRAM with the 2CAS-type page access function • 44-pin TSOP • Powered by the 3.3V single power source • Various buffers • Work area
AT93C46-10S-2.7	IC10	1Kbit (x16) EEPROM • 8-pin SOP • Powered by 3.3V single power source • Stores the device ID • Stores the panel information

Table 2-1. Major Elements in the Card Reader Part (continued)

Name	IC	Functions
TUSB2043	IC5	4-port hub IC • 32-pin TQFP • 3.3V-operative self power mode • Integrates a transceiver that complies with the Universal serial bus specifications Rev.1.

2.1.2 Power Supply Board

C364PSB/PSE, the power supply board of this printer, features the following:

☐ Logic line: +5V ± 5%, 0.95A
+3.3V ± 5%, 0.85A

☐ Drive line: +42V ± 5%, 0.4A (maximum 1.4A)

☐ Power supply control in the secondary power switch

■ The secondary side switching operation allows the printer to keep supplying power to the both logic and drive lines for at least 30 seconds after the printer power is turned off.

■ If the AC plug is disconnected from the AC socket while the printer power is on, voltage for the logic line is kept for at least 256ms.

2.1.3 USB Hub

2.1.3.1 Overview

The USB hub of this printer features the following:

☐ Complies with the Universal serial bus specifications Rev. 1.0.

☐ Not powered from the Vbus.

☐ Self-powered hub

☐ Two ports are used as the down stream ports. (Other two are not used.)

☐ Stand-alone type hub without CPU's control

☐ Vendor ID/product ID is built up to allow future support availability.

2.1.3.2 Hub Port Connection

When connecting to the USB, the hub IC (TUSB2043A) lets the printer recognize the device in the following order:

1. Hub IC
2. Printer part
3. Card reader part

2.1.4 Printer Circuit Operation

The printer circuit operation of this printer is the same as for the Stylus
PHOTO 870 except for the points below:

☐ Power supply circuit
   The card reader part is powered by the printer's
   power supply board.

☐ No parallel interface connector is supported but
   art work exists.

☐ USB interface circuit
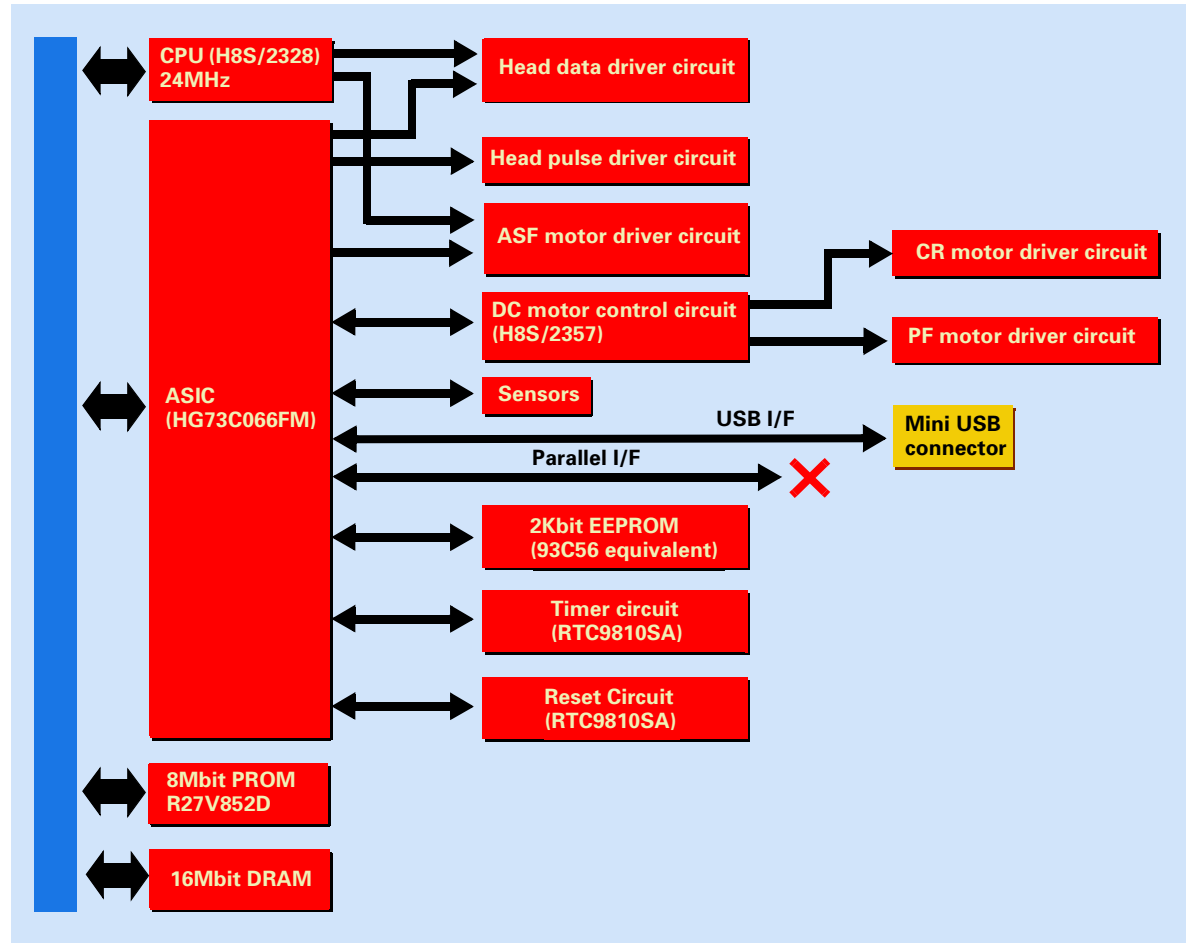   Changed to the interface that connects to the PC
   via the USB hub.

Figure 2-3. Printer Circuit Block Diagram

TROUBLESHOOTING

3.1 Overview

Please see the EPSON Stylus PHOTO 870/1270 Service Manual.

DISASSEMBLY AND ASSEMBLY

4.1 Overview

This chapter describes procedures for disassembling the main components of the EPSON Stylus PHOTO 875DC. Unless otherwise specified, disassembly units or components can be reassembled by reversing the disassembly procedure. Therefore, no assembly procedures are included in this chapter. Precautions for any disassembly or assembly procedure are described under the heading "CAUTION" and "CHECK POINT". Any adjustments required after disassembling the units are described under the heading "REQUIRED ADJUSTMENT".

Since the printer part is common to the Stylus PHOTO 870, this manual only describes the procedures that are specific to Stylus PHOTO 875DC. For the rest of the procedures, please see the Stylus PHOTO 870/1270 Service Manual.

4.1.1 Precaution for Disassembling the Printer

See the precautions given under the heading "WARNING" and "CAUTION" in this section when disassembling or assembling EPSON Stylus PHOTO 875DC.

WARNING

- **Disconnect the power cable before disassembling or assembling the printer.**
- **Wear protective goggles to protect your eyes from ink. If ink gets in your eye, flush the eye with fresh water and see a doctor immediately.**
- **If ink comes into contact with your skin, wash it off with soap and water. If irritation occurs, contact a physician.**
- **A lithium battery is installed on the main board of this printer. Be sure to observe the following instructions when serving the battery:**
  1. **Keep the battery away from any metal or other batteries so that electrodes of the opposite polarity do not come in contact with each other.**
  2. **Do not heat the battery or put it near fire.**
  3. **Do not solder on any part of the battery. (Doing so may result in leakage of electrolyte from the battery, burning or explosion. The leakage may affect other devices close to the battery.)**
  4. **Do not charge the battery. (An explosion may be generated inside the battery, and cause burning or explosion.)**
  5. **Do not dismantle the battery. (The gas inside the battery may hurt your throat. Leakage, burning or explosion may also be resulted.)**
  6. **Do not install the battery in the wrong direction. (This may cause burning or explosion.)**
- **Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacture. Dispose the used batteries according to government's law and regulations.**

4.1.2 Tools

Table 4-1 lists the tools recommended for disassembling, assembling, or adjusting the printer. Use only tools that meet these specifications.
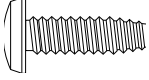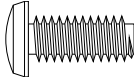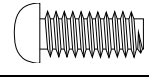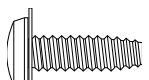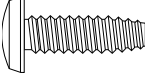
Table 4-1. Tool List

Tools	Commercially Available	Code
(+) Driver No.2	O.K.	B743800200
(+) Driver No.1	O.K.	B743800400
Tweezers	O.K.	B741000100
Hexagon Box Driver (Paired side: 5.5mm)	O.K.	B741700100
Scale PF unit Assembling tool	EPSON exclusive	1050767
Mounting Plate Scale Attachment tool	EPSON exclusive	1051765

CAUTION

!

Risque d'explosion si la pile est remplacée incorrectment. Ne remplacer que par une pile du même type ou d'un type équivalent recommandé par le fabricant. Eliminer les piles déchargées selon les lois et les règles de sécurité en vigueur.

CAUTION

!

- Never remove the ink cartridge from the carriage unless this manual specifies to do so.
- When transporting the printer after installing the ink cartridge, be sure to pack the printer for transportation without removing the ink cartridge.
- Use only recommended tools for disassembling, assembling or adjusting the printer.
- Apply lubricants and adhesives as specified. (See Chapter 6 for details.)
- Make the specified adjustments when you disassemble the printer.
  (See Chapter 4 for details.)
- Once the ink cartridge mounted on the printer is removed, air comes into and creates bubbles in the cartridge. These bubbles clog ink flow and eventually cause printing malfunction. For this reason, If you need to remove any ink cartridges during disassembling, be sure to replace them with new ones.
- Because of the reasons above, make sure to return the printer to the user with new ink cartridges installed.

4.1.3 Specifications for Screws

Table 4-2 shows screw specifications. During assembly and disassembly, make sure that the specified types of screws are used at proper locations, referring to the table below.

Table 4-2. Screw Specifications

Body	Name	Size
	+Bind S-tite (CBS)	M3x6
	+Bind P-tite (CBP)	M3x6
	+Bind P-tite (CBP)	M3x8
	+Bind P-tite (CBP)	M2.5x5
	+Pan head (C.P.)	M3x6
---	+Pan head B-tite Sems	M3X8
	+Bind S-tight Sems (CBS Sems)	M3x6
	+Bind S-tight (CBS)	M3x10
---	+Pan head B-tite Sems	1.7 x 5

4.1.4 Service Checks After Repair

Before returning the printer after servicing, use the check list below, which enables you to keep record of servicing and shipping more efficiently.

Table 4-3. Inspection Checklist for Repaired Printer

Category	Component	Item to check	Is Check Required?
Printer units	Self-test	Is the operation normal?	☐Checked / ☐Not necessary
	On-line test	Was the on-line test successful?	☐Checked / ☐Not necessary
	Printhead	Is ink ejected normally from all nozzles?	☐Checked / ☐Not necessary
	Carriage mechanism	Does the carriage move smoothly?	☐Checked / ☐Not necessary
		Any abnormal noise during movement?	☐Checked / ☐Not necessary
		Any dirt or obstacles around the shaft of carriage guide?	☐Checked / ☐Not necessary
		Is the CR motor at the correct temperature (not over heating)?	☐Checked / ☐Not necessary
	Paper feeding mechanism	Is paper fed smoothly?	☐Checked / ☐Not necessary
		Does paper get jammed?	☐Checked / ☐Not necessary
		Does paper get skew during paper feeding?	☐Checked / ☐Not necessary
		Are papers multi fed?	☐Checked / ☐Not necessary
		Does the PF motor get overheated?	☐Checked / ☐Not necessary
		Abnormal noise during paper feeding?	☐Checked / ☐Not necessary
		Is the paper path clear of all obstructions?	☐Checked / ☐Not necessary
Adjustment	Specified adjustment items	Are adjusted conditions all right?	☐Checked / ☐Not necessary
Lubricant	Specified lubricated item	Is lubrication applied to the specified locations?	☐Checked / ☐Not necessary
		Is the quantity of lubrication adequate?	☐Checked / ☐Not necessary
Function	ROM version	Newest version:	☐Checked / ☐Not necessary
Shipment package	Ink cartridges	are the ink cartridges installed correctly?	☐Checked / ☐Not necessary
	Protection conditions during transport	Is all the pointed parts firmly fixed?	☐Checked / ☐Not necessary
Others	Attached items	Are all attached items from users included?	☐Checked / ☐Not necessary

4.2 Disassembly Procedures

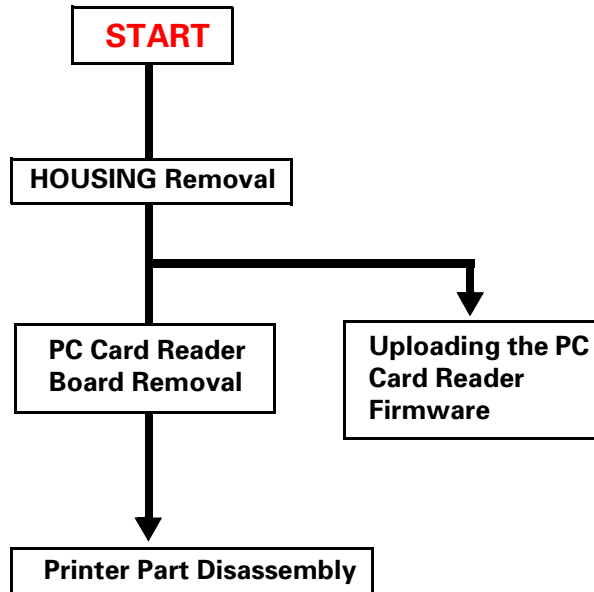The flowchart below shows procedures for disassembly.

```
          ┌─────────────┐
          │    START    │
          └──────┬──────┘
                 │
          ┌──────┴───────────┐
          │ HOUSING Removal  │
          └──────┬───────────┘
                 │
                 ├──────────────────────┐
                 │                      ▼
    ┌────────────────────┐   ┌────────────────────┐
    │   PC Card Reader    │   │  Uploading the PC   │
    │   Board Removal     │   │  Card Reader        │
    └────────┬───────────┘   │  Firmware           │
             │               └────────────────────┘
             ▼
    ┌─────────────────────────┐
    │ Printer Part Disassembly│
    └─────────────────────────┘
```

Figure 4-1. Disassembly Flowchart

4.2.1 HOUSING Removal

Since the printer mechanism itself structures the bottom part, it appears just by removing HOUSING.

1. Set the PG adjust lever to "+".

2. Using the tweezers, release the hook securing HOUSING, SUPPORT, PG COVER to HOUSING and remove HOUSING, SUPPORT, PG COVER from HOUSING.
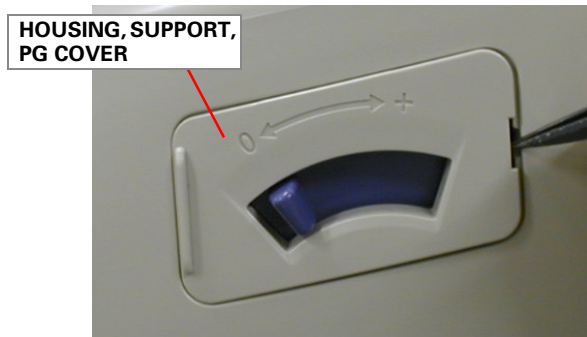

Figure 4-2. HOUSING, SUPPORT, PG COVER Removal

3. Remove the four screws (CBS, 3x10) securing HOUSING. Then, pushing the PG lever inward, remove HOUSING by moving it upward.

CHECK POINT ✔

■ **To remove HOUSING, push it to the rear up and then lift it up.**

■ **When installing HOSING, make sure the PG adjust lever is set to "+".**

■ **When installing HOUSING, ensure the head FFCs are not caught in HOUSING at the back of the printer.**
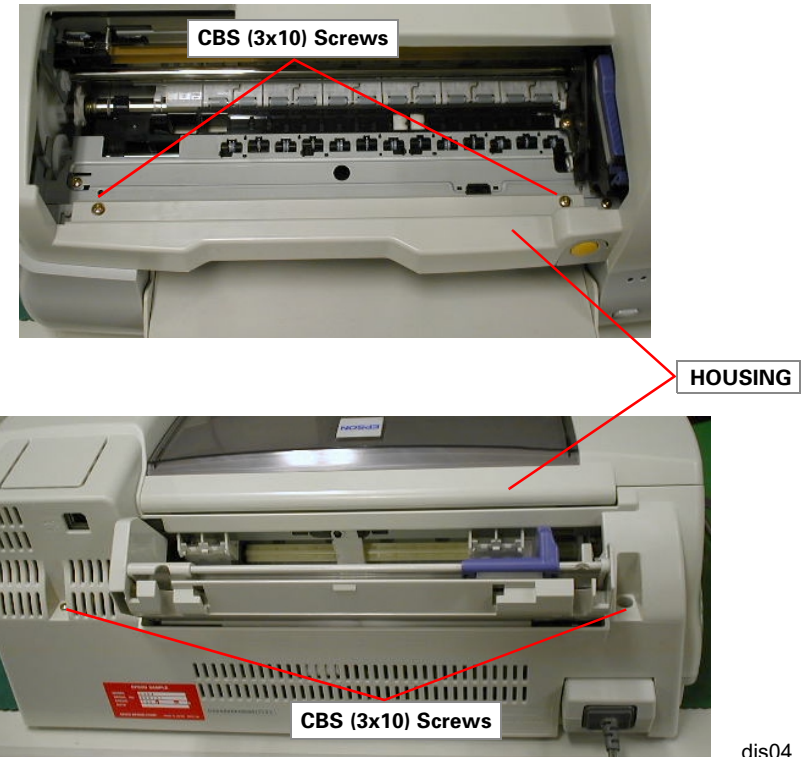
Figure 4-3. HOUSING Removal

4.2.2 C364MAIN Board Removal

1. Remove HOUSING. (Refer to Section 4.2.1.)

2. Remove the three screws (CBS, 3x6) securing HOUSING, SUPPORT, PC CARD.

3. Remove HOUSING, SUPPORT, PC CARD toward the front.

CAUTION

!

Since LENS, PC CARD easily comes off, watch out for it when disassembling/assembling HOUSING, SUPPORT, PC CARD.
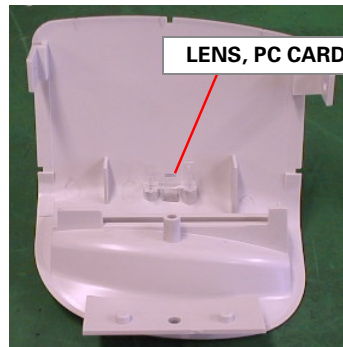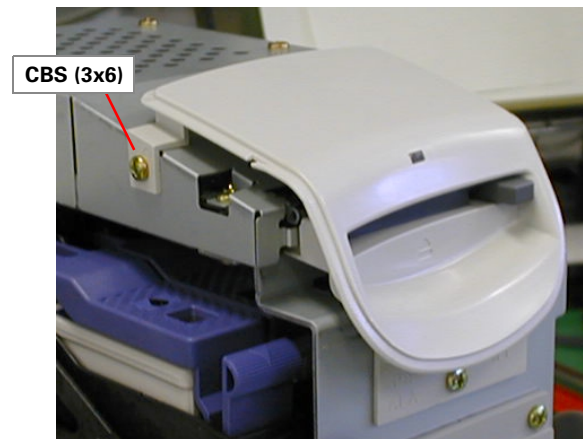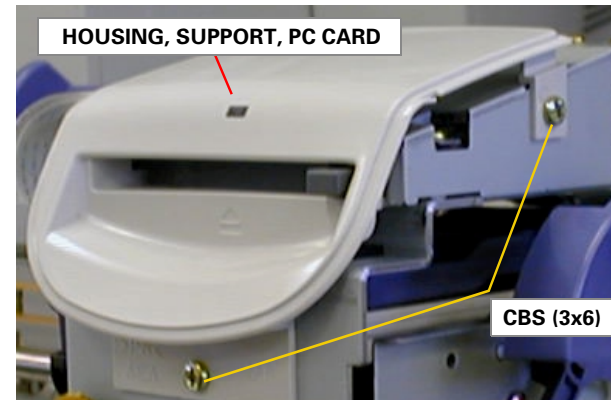

dis06

Figure 4-4. Lens, PC CARD

dis05

Figure 4-5. HOUSING, SUPPORT, PC CARD Removal

4. Remove the seven screws (CBS, 3x6) and the one (CP, 3x4) securing SHIELD PLATE, P/B, TOP.

5. Remove SHIELD PLATE, P/B, TOP.

6. Disconnect the harnesses (for USB and C364PSB/PSE) from the connectors on the C364MAIN Board.
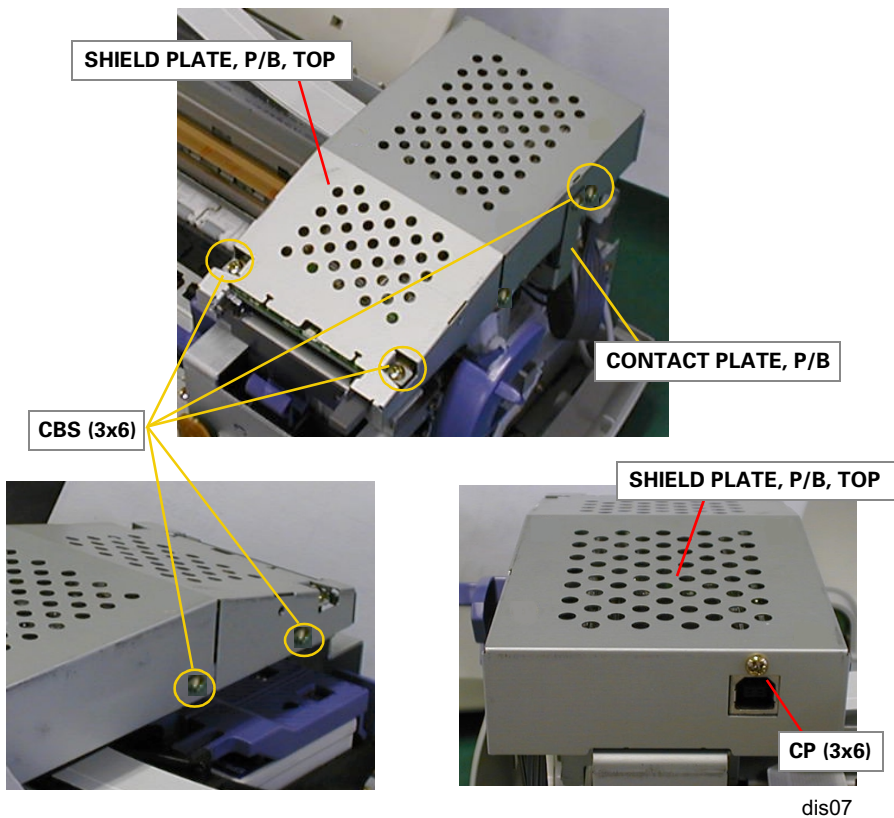
7. Remove the C364MAIN Board.

SHIELD PLATE, P/B, TOP

CONTACT PLATE, P/B

CBS (3x6)

SHIELD PLATE, P/B, TOP

CP (3x6)

dis07

Figure 4-6. HOUSING, SUPPORT, PC CARD Removal

CBS (3x6)

Harness (C364PSB/PSE)
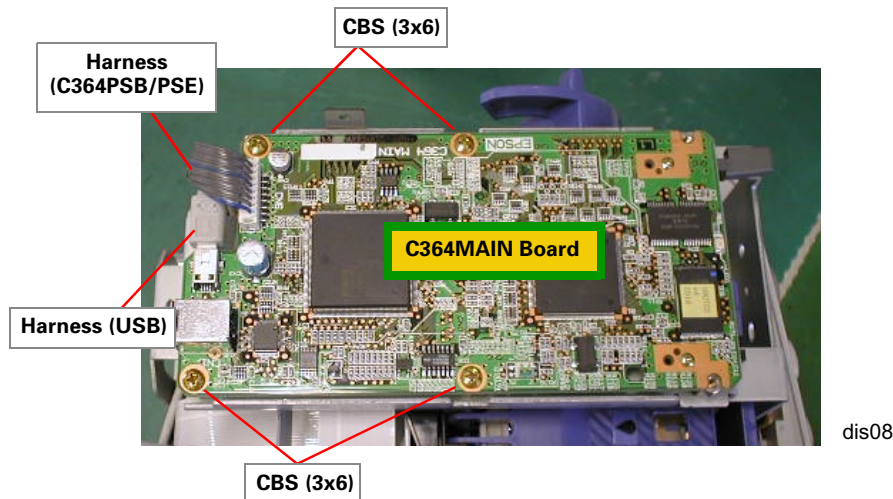
C364MAIN Board

Harness (USB)

CBS (3x6)

dis08

Figure 4-7. C364MAIN Board Removal

4.2.3 C364MAIN Board Unit Removal

This section describes how to separate the C364MAIN Board (card reader part) from the printer part.

1. Remove HOUSING. (Refer to Section 4.2.1.)

2. Remove the C364MAIN Board. (Refer to Section 4.2.2.)

3. Release the harnesses (for USB and C364PSB/PSE) from the locking wire saddle attached to the C364MAIN Board.
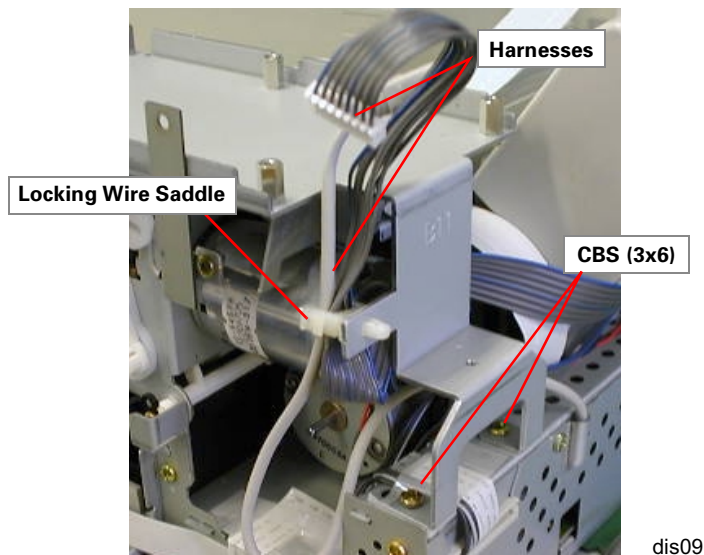

Figure 4-8. C364MAIN Board Removal (1)

4. Remove the four screws (CBS, 3x6) securing the C364MAIN Board Unit. (See Figure 4-8 and Figure 4-9.)
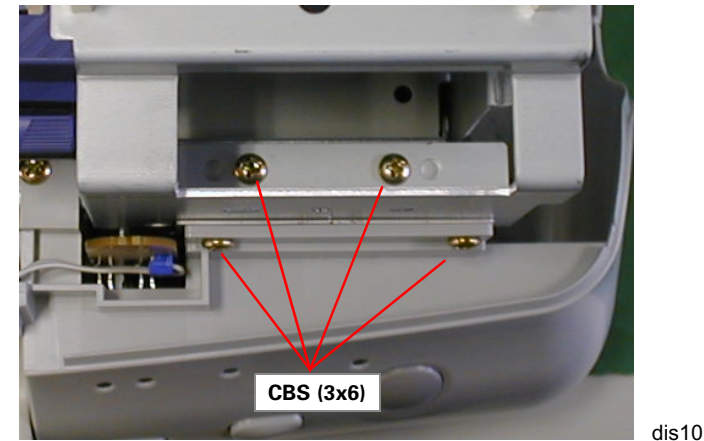

Figure 4-9. C364MAIN Board Removal (2)

5. Remove the two screws (CBS, 3x6) securing the panel unit to the C364MAIN Board.

6. Release the two dowels fixing the C364MAIN Unit to the printer part and the one fixing the panel unit to the C364MAIN Unit, and remove the C364MAIN Unit.

ADJUSTMENT

5.1 Overview

This chapter describes adjustments required after disassembling/ assembling the printer. Since the Stylus PHOTO 875DC has the same printer part as in Stylus PHOTO 870, this manual only provides the service items specific to this product. For other items, please see the Stylus PHOTO 780/1280 Service Manual.

5.1.1 Adjustment Items

The additional adjustment for this product is as shown in the table below. Be sure to follow the procedure as instructed in this manual.

Table 5-1. Adjustment Item

No.	Adjustment	When to perform:
1	USB ID input	When you replace either or both of the C364MAIN and C304MAIN Boards.

The table below lists the type of repair and corresponding adjustments. Be sure to make adjustments in the listed order.

Table 5-2. Type of Repair and Corresponding Adjustments

No.	Type of repair	Required adjustments
1	C364MAIN Board replacement or C304MAIN Board replacement	1. **Head voltage ID input** 2. **Bi-Directional adjustment** 3. **USB ID check/input**

5.1.2 Tools

The table below lists the tools necessary for adjustments:

Table 5-3. Adjustment Tools

Tool	Type of adjustment	Specifications
Thickness Gauge	**Parallelism Adjsutment**	Thickness: 1.14 mm
Microscope	**Backlash Adjsutment**	Magnified ratio: x 15 Minimum scale: 0.1mm
Service Program for Stylus PHOTO 875DC	• Adjustments • Maintenance • Print A4 pattern	3.5- inch 2HD floppy disks

> **CAUTION** ⚠
> - **Never use a deformed (twisted or warped) or rusty thickness gauge.**
> - **Wipe off any dirt, grease, or foreign matter on the thickness gauge before you use it.**

5.2 Adjustment

This section provides adjustment procedures specific to Stylus PHOTO 875DC.

5.2.1 Adjustment Using the Adjustment Program

Each product has its unique information on the main board to maintain its print ability and quality at an optimum level. For this reason, whenever you replace the printer mechanism or main board, you need to write the correct information of the printer mechanism to the main board using the adjustment program.

5.2.1.1 About the Adjustment Program

The adjustment items you can perform using this program are as shown in the table below. Since the printer part of the Stylus PHOTO 875DC is the same as in the Stylus PHOTO 870, the procedures specific to this product are only explained. For the procedures of other adjustments, please see the Stylus PHOTO 870/1270 Service Manual.

Table 5-4. Adjustments Using the Adjustment Program

No.	Main Items	Adjustment items
1	Adjustment	Head voltage ID input
		Head angular adjsutment
		Bi-Directional adjustment
		USB ID check/input (Stylus PHOTO 875DC specific)
		Memory card drive firmware version check
2	Maintenance	Head cleaning
		Initial ink charge
		Protection counter check
		CSIC information
3	Print A4 pattern	Print A4 pattern

5.2.1.2 How to Install the Program

> **CAUTION** ! **Please be sure to run the program on Windows 98 only.**

For the service program to work properly, you have to set up your computer as described below:

- ■ Use Windows 98.
- ■ Use only USB interface as the printer port.

Install the program in the order listed below:

1. Insert "Disk1" to the 3.5" floppy disk drive of your computer, and then execute "Setup.exe".

2. As you prompted, insert "Disk2", and the installation is done.

3. Click **SP87510E.exe** icon created in the Adjustment Program folder to execute the program.

> **CAUTION** !
> - ■ **If you leave the printer in a non-printing status for 5 minutes or more, the carriage automatically returns to home position. In this case, you need to re-boot the computer to start the program.**
> - ■ **Do not change the setting for *Font size* in *Display settings*.**
> - ■ **Be sure to connect the printer to a PC with an interface cable before you start the program. Otherwise, the program freezes.**
> - ■ **Do not send any command to the printer during a check pattern print.**
> - ■ **While the service program is running, if the printer is turned off or the interface cable is disconnected, you need to launch the program again.**

5.2.1.3 Starting the Service Program

CAUTION
⚠

- ■ **Make sure any ports other than selected for this program are not used for other Stylus PHOTO 875DCs.**
- ■ **Be careful not to connect four or more printers to the printer ports at a time. The fourth or later printers (ports device EPUSB4 or later) can not be adjusted by this service program. Once a printer is recognized as the fourth or later printer, it will not be adjusted. If it happens, delete that printer's port through Control Panel / System / Device Manager/EPSON Printer Manager.**

1. Start the service program. The start-up window appears. In the window, select the model name and the port used for the printer to be adjusted, and click OK.
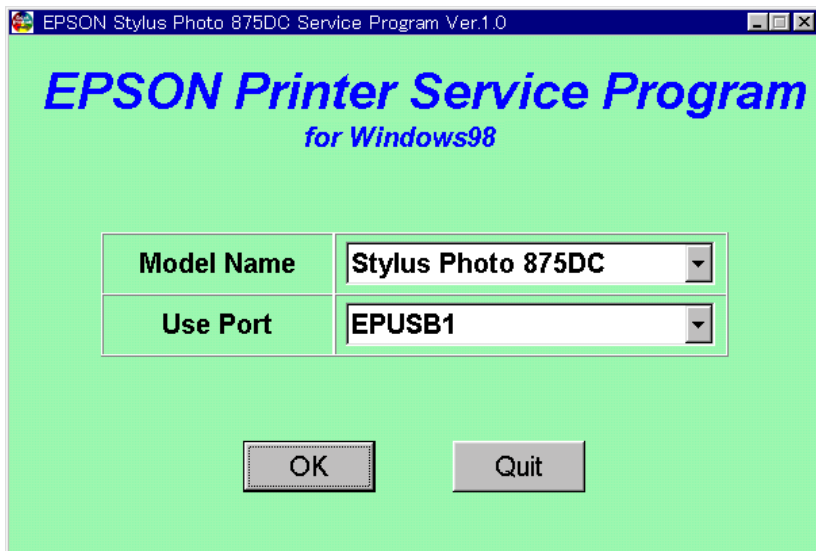
Figure 5-1. Start-up Window

2. The main menu window appears.
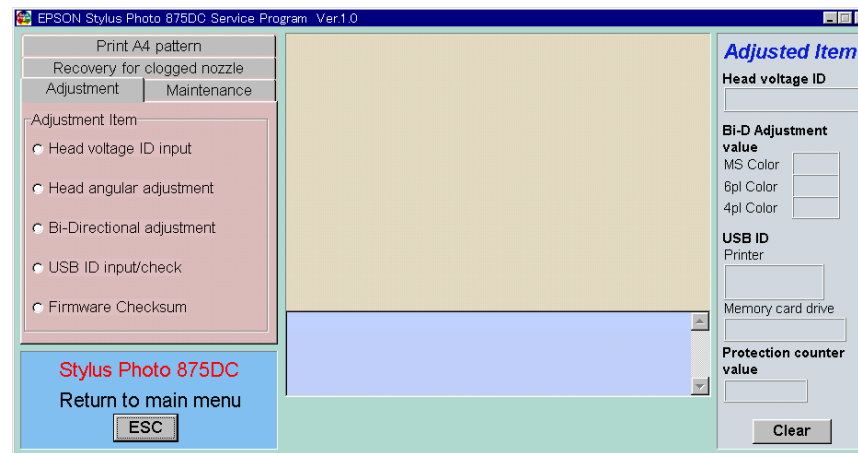
Figure 5-2. Main Menu

5.2.2 USB ID Input

The USB ports of this printer are located on each board of the card reader part and printer part, and each part has its own USB ID. This is because, on Windows 98 and iMac, the USB port driver controls its devices by referring to the USB IDs.

For the reason above, the USB ports of the printer part and card reader part are independently assigned. However, since the printer operates combining the both parts, it need to have the same information in their USB IDs.

So this section describes how to input USB ID by using the service program.

CAUTION **!**	**Input USB ID under any of the following circumstances:** ■ **When you replace either control board:** Since ASP control board does not have a USB ID, you need to get the old board's USB ID by referring to the other board's ID and input it as the USB ID of the new board. ■ **When you replace the both control boards:** Unless you know their USB IDs, you need to input the printer's serial number to let the service program automatically define and store the new USB IDs for the both boards.

1. Start the service program and access the main menu.

2. Select **USB ID input/check** and click **OK**. The USB ID input/check screen appears.
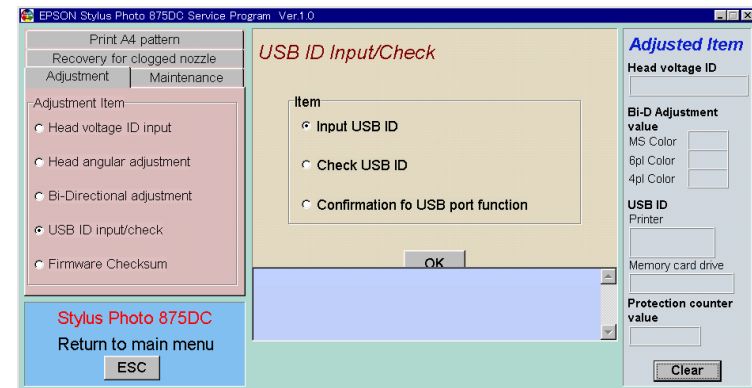

Figure 5-3. USB ID Input/Check Window

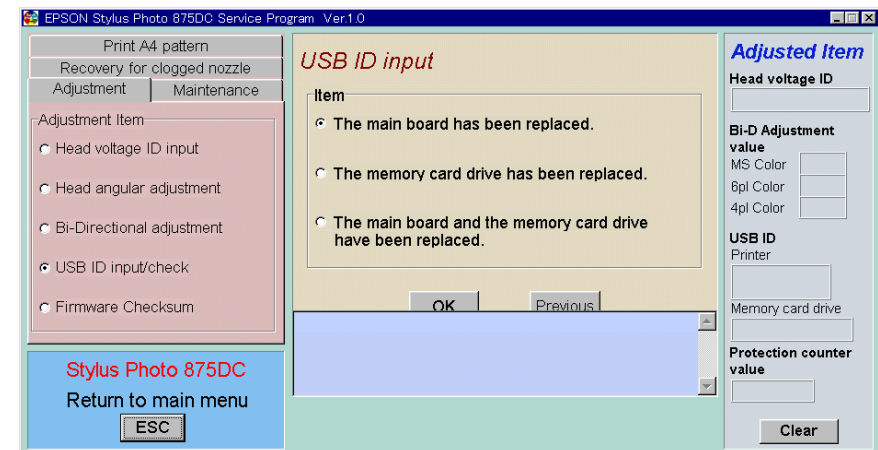3. Select **Input USB ID** and click **OK**. The USB ID input window appears.

Figure 5-4. USB ID Input Window (1)

4. According to the board(s) you replaced, select the item from the list and click **OK**

   ■ If you have replaced control board for the printer part, select the top item. The service program refers to the USB ID of the control board in the card reader part and inputs the corresponding USB ID for the new board.

   ■ If you have replaced control board for the card reader part, select the middle item. The service program refers to the USB ID of the control board in the printer part and inputs the corresponding USB ID for the new board.

   ■ If you have replaced the both boards, the following screen appears.
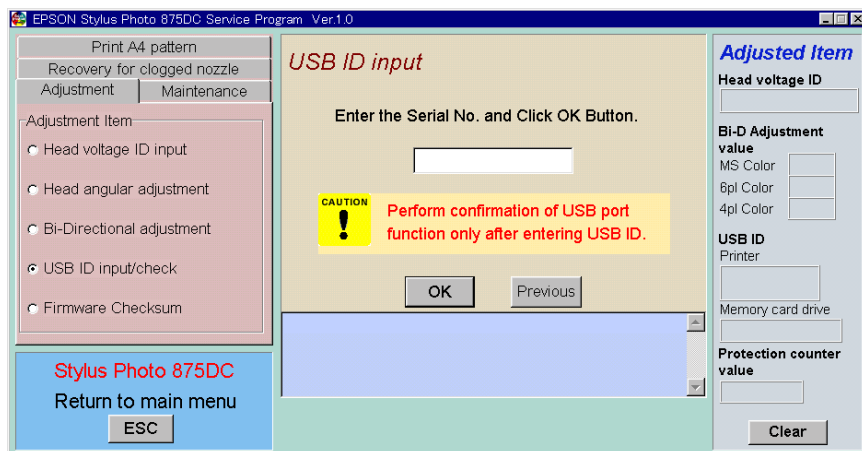
Figure 5-5. USB ID Input Window (2)

5. Get the 10-digit serial number at the back of the printer.

6. Type the serial number in the window and click **OK**. The new USB ID is indicated in the bottom window.

7. Quit the service program.

8. Turn the printer power off.

CAUTION
⚠ If you input USB ID, be sure to quit the service program and turn the printer power off. Otherwise, the new USB ID is not stored in the control board.

9. Turn the printer power back on.

10. Start the service program again.

11. Select **Check USB ID** in the USB ID Input/Check window and click **OK**. Both USB IDs are displayed in the bottom window.
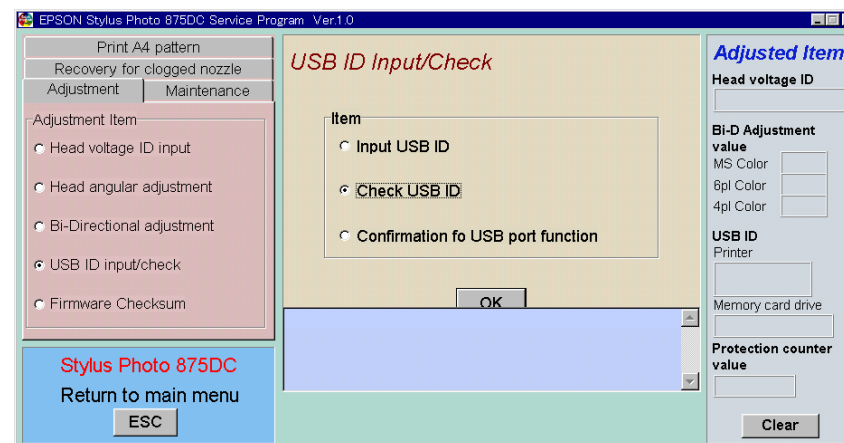

Figure 5-6. USB ID Input Window (3)

12. Select **Confirmation of USB port function** and click OK, and the confirmation of the USB port function window appears. In the window, click OK. If the USB port connection is established properly, A4 pattern will print.

CAUTION
⚠
   ■ Even though you type a wrong serial number, the service program accepts it. Therefore, be sure to type the serial number exactly.
   ■ Setting values are not effective until the printer power is next turned on since they are stored in EEPROM when the printer is turned off.

5.2.3 Memory Card Drive Firmware Uploading

This section describes how to upload the firmware of the card reader. The card reader firmware is stored in the flash ROM on the C364MAIN board.

5.2.3.1 Copying the firmware to the PCMCIA Card

This section provides the procedure for copying the firmware to the CF card of the FAT format.

☐ Tools

■ PC that supports PCMCIA card

■ Compact flash (CF) and PCMCIA card adopter or PCMCIA memory card.

1. Install the CF card to the card adopter or install the memory card to the PC.

2. Turn the PC on.

3. Using Explorer, check that the PCMCIA card is recognized as a removable disk.

4. Using Explorer, copy the firmware to the removable disk.

5. Turn the PC off and remove the card.

> **CAUTION**
> !
>
> **If you transfer the firmware from the card reader of this printer to the memory card, perform the following operation:**
> ■ **Insert the memory card to the card reader. If "EPSON Photo Quicker" starts, press the stop button to terminate it.**

5.2.3.2 Uploading the Memory Card Driver Firmware

☐ Tools

■ PC that operates on Windows98 or the one that supports USB interface.

■ Compact flash (CF) and PCMCIA card adopter or PCMCIA memory card.

1. Remove the Housing. (See Chapter 4/Section 4.2.1.)

2. Remove the "Shield Plate, P/B, Upper" for the card reader. (See Chapter 4/Section 4.2.2.)

3. Set the jumper JP2 on the C364MAIN board as shown below:
    1 - 2 : Short
    3 - 4 : Open
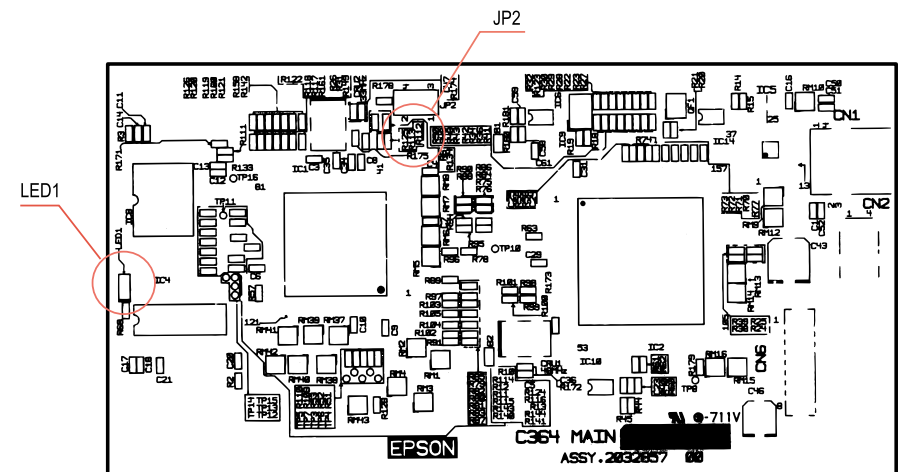
Figure 5-7. JP2 and LED1

4. Disconnect the USB cable.

5. Insert the PCMCIA card that stores the firmware into the PCMCIA slot and then turn the printer power on.

6. Turn the printer power off. The power LED (green lamp) on the panel blinks once and the printer begins to load the firmware to the flash ROM on the card reader. When the power LED starts blinking, it means the writing is done. (It takes about ten seconds for the writing operation to be completed.)

7. When the operation is executed, turn the printer power off.

8. Set the jumper JP2 as shown below:
    1 - 2 : Open
    3 - 4 : Short

9. Mount the "Shield Plate, P/B, Upper" on the card reader.

10. Install the Housing.

5.2.3.3 Checking for the Memory Card Drive Firmware Version

Use this function to check for the memory card drive firmware version.

1. Start the service program and access the main menu window.

2. Select **Firmware Checksum**. The Memory Card Drive Firmware Checksum window appears.
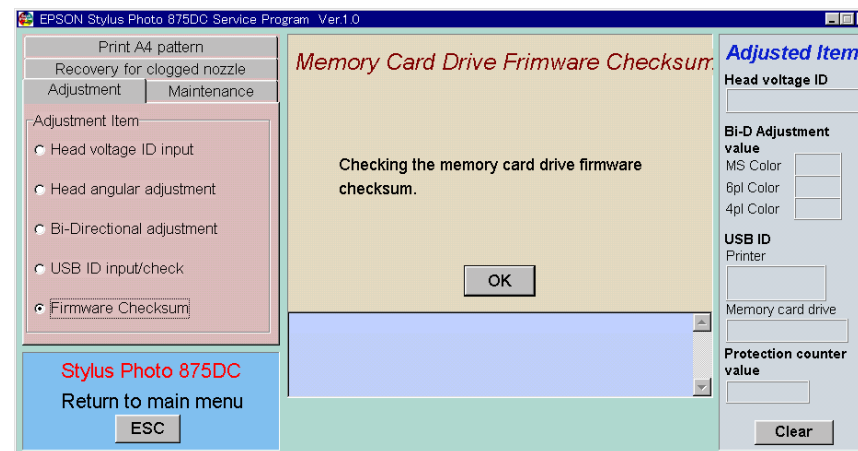
Figure 5-8. Memory Card Drive Firmware Checksum Window

3. Click OK, and the memory card drive firmware version is indicated.

MAINTENANCE

6.1 Overview

Since the printer part of the Stylus PHOTO 875DC is common to the Stylus
PHOTO 870, please see the EPSON Stylus PHOTO 870/1270 Service
manual.

APPENDIX

7.1 Connector Summary

The main components of the printer are as shown below. For information on the printer part, please see the Stylus PHOTO 870/1270 Service Manual.

- ☐ Card reader part:
  - ■ Main control board: C364MAIN
- ☐ Power supply part:
  - ■ Power supply board: C364PSB/PSE
- ☐ Printer part:
  - ■ Main control board: C304MAIN
  - ■ Panel board: C304PNL

USB I/F
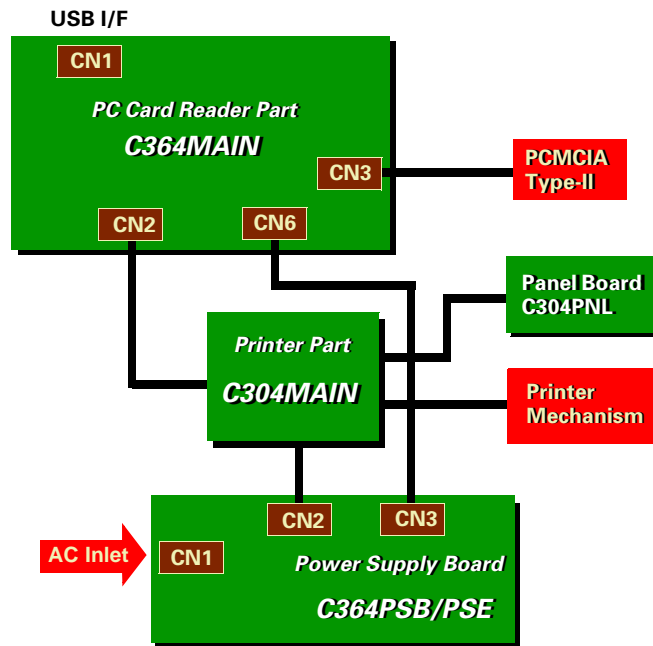
Figure 7-1. Interconnection of the Major Components

See the following tables for the connector

Table 7-1. Connectors

Connector	Function	Table to refer to
C364MAIN		
CN1	USB upstream	
CN2	USB downstream	
CN3	PCMCIA	
CN6	Power input from C364PSB/PSE	
C364PSB/PSE		
CN1	AC power input	
CN2	Power supply to the printer	
CN3	Power supply to C364MAIN	

Table 7-2. CN1 Pin Assignment

Pin Number	Signal Name	Function
1	VCC	Power bus
2	D-	USB signal line
3	D+	USB signal line
4	GND	Ground

Table 7-3. CN2 Pin Assignment

Pin Number	Signal Name	Function
1	VCC	Power bus
2	D-	USB signal line
3	D+	USB signal line
4	GND	Ground

Table 7-4. CN3 Pin Assignment

1, 34, 35, 68	GND	Ground
17, 51	VCC	VCC
18, 52	VPP	VPP
30	CD0	
31	CD1	
32	CD2	
2	CD3	
3	CD4	
4	CD5	
5	CD6	
6	CD7	
64	CD8	
65	CD9	
66	CD10	PCMCIA slot data bus
37	CD11	
38	CD12	
39	CD13	
40	CD14	
41	CD15	
29	CA0	
28	CA1	
27	CA2	
26	CA3	
25	CA4	

Table 7-4. CN3 Pin Assignment (continued)

24	CA5	
23	CA6	
22	CA7	
12	CA8	
11	CA9	
8	CA10	
10	CA11	
21	CA12	
13	CA13	
14	CA14	
20	CA15	PCMCIA slot data bus
19	CA16	
46	CA17	
47	CA18	
48	CA19	
49	CA20	
50	CA21	
53	CA22	
54	CA23	
55	CA24	
56	CA25	
61	/REG	Resistor select
7	/CE1	Card enable
42	/CE2	Card enable
9	/OE	Output enable

Table 7-4. CN3 Pin Assignment (continued)

15	/WE	Write enable
44	/IORD	I/O read
45	/IOWR	I/O Write
58	RESET	Reset
16	RDY	Ready
59	/WAIT	Bus cycle extension
62	BVD2/SPKR	Batttery voltage detection/Audio digital waveform
63	BVD1/ STSCHK	Battery voltage detection/Card status change
60	INPACK	Input port replay
33	WP/IOIS16B	Write protect/I/O port is 16bit
43	VS1	Voltage sense
57	VS2	Voltage sense
36	/CD1	Card detection
67	/CD2	Card detection

Table 7-5. CN Pin Assignment

1, 2	+5V	+5V power source
3, 4	GND	Ground
5, 6	+3.3V	+3.3V power supply
7, 8	GND	Ground

7.2 Circuit Board Component Layout

C364MAIN CONTROL CIRCUIT BOARD

Figure 7-2. Component Layout - C364MAIN

C304MAIN CONTROL CIRCUIT BOARD

Component Side
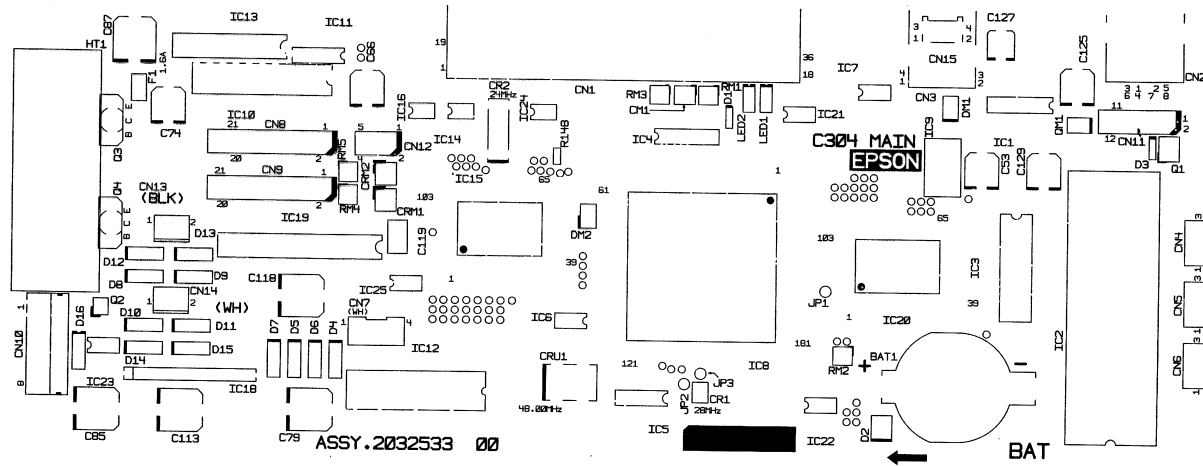
Soldered Side

Figure 7-3. Component Layout - C304MAIN

C364PSB/PSE CIRCUIT BOARD
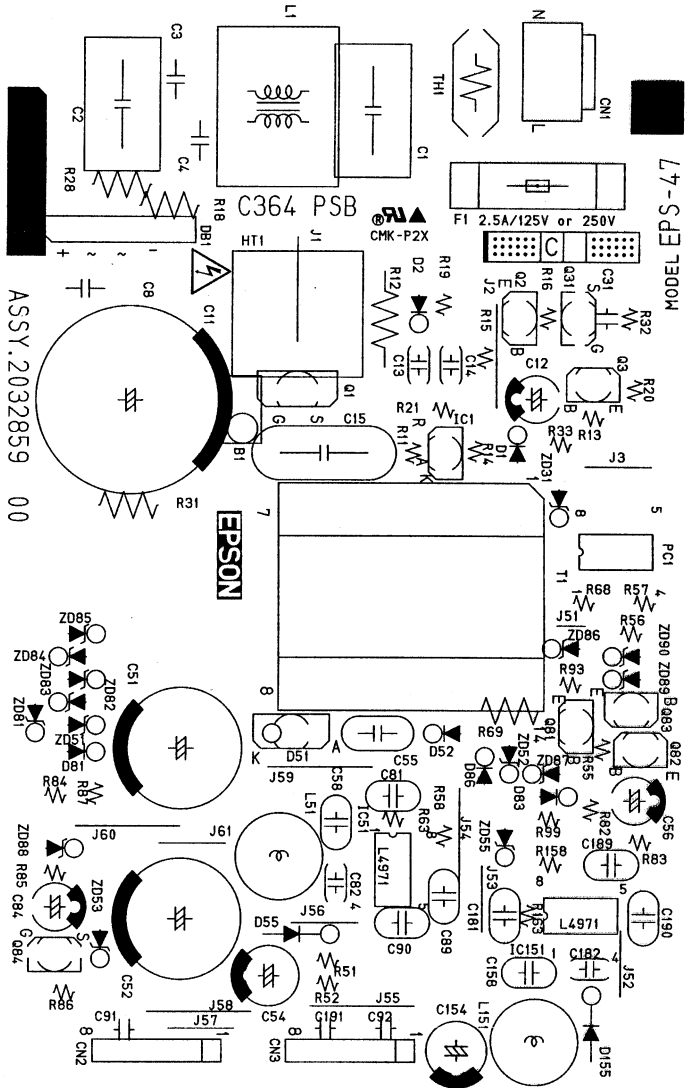
Figure 7-4. Component Layout - C364PSB
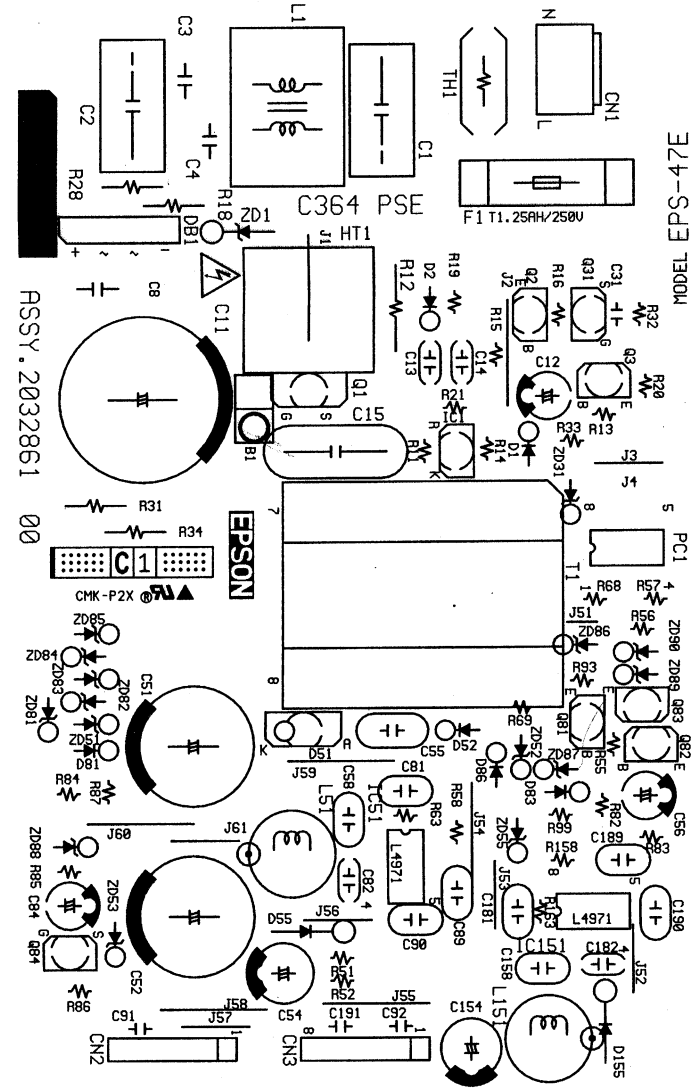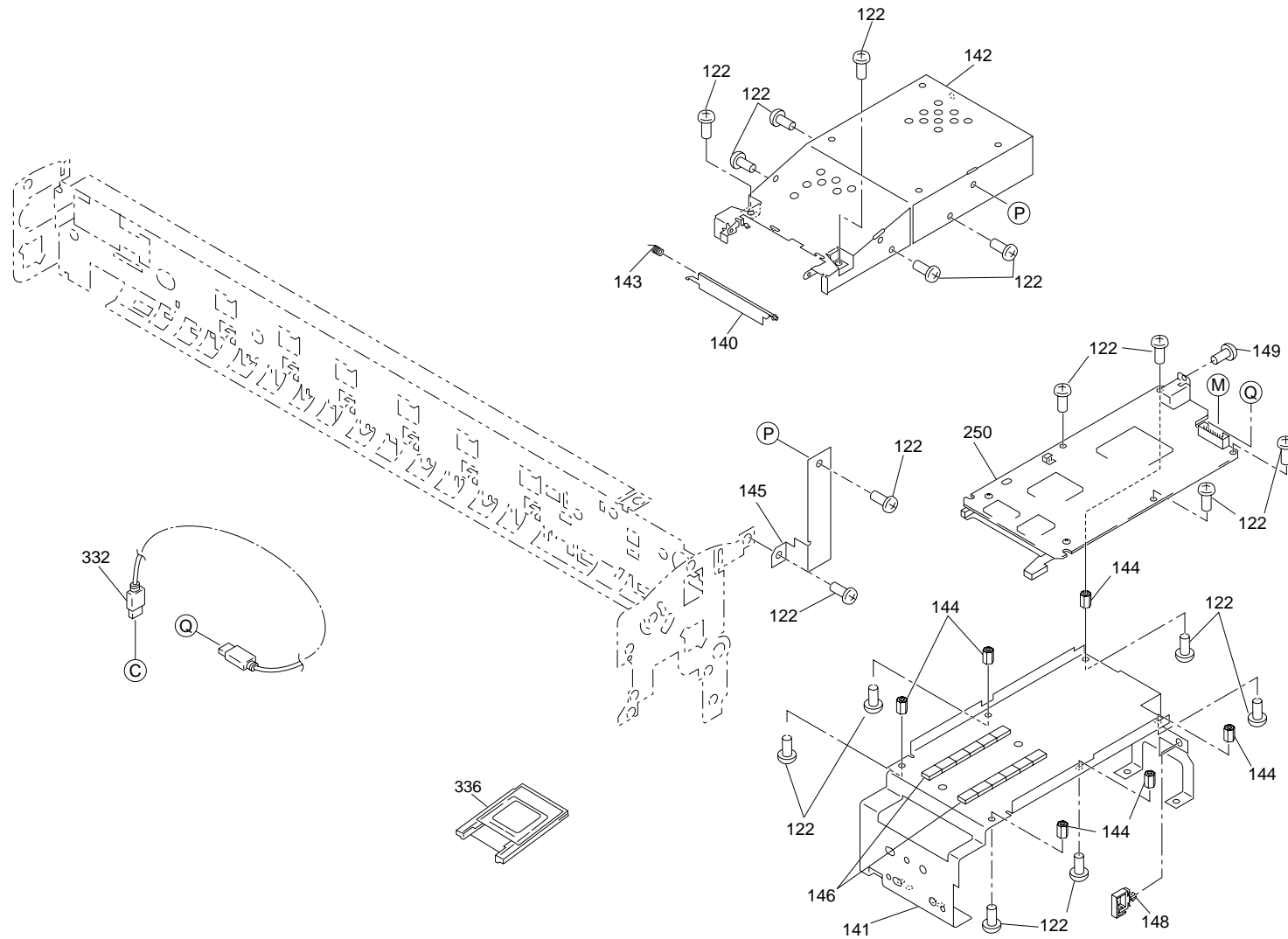

Figure 7-5. Component Layout - C364PSE

C304PNL CIRCUIT BOARD
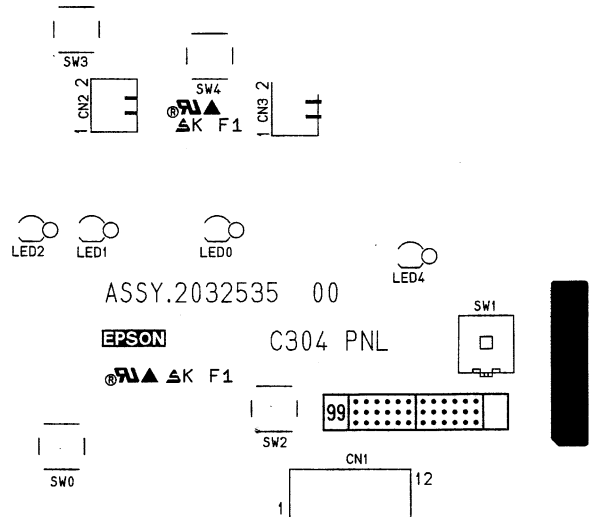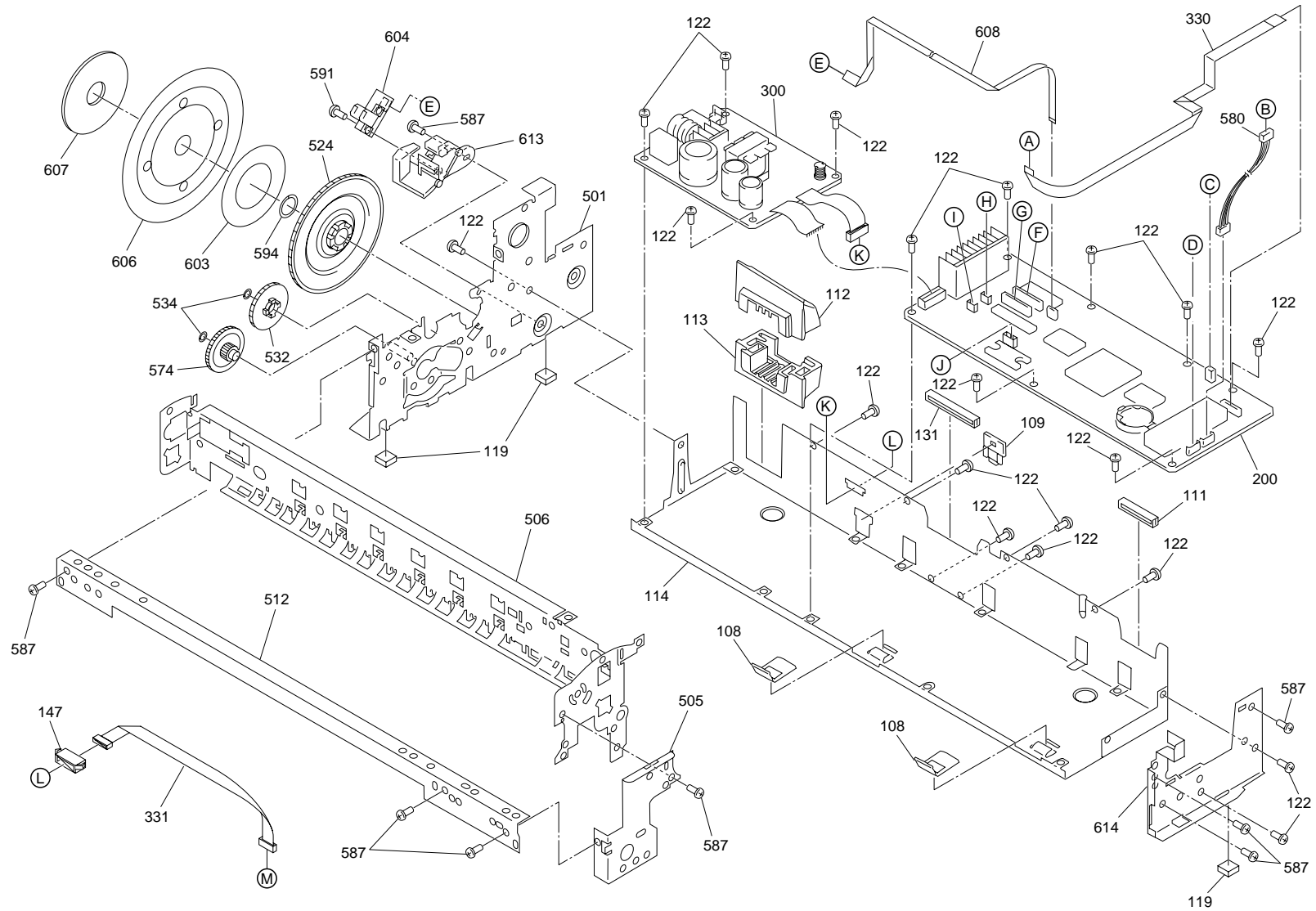

Figure 7-6. Component Layout - C304PNL

7.3 Exploded Diagrams
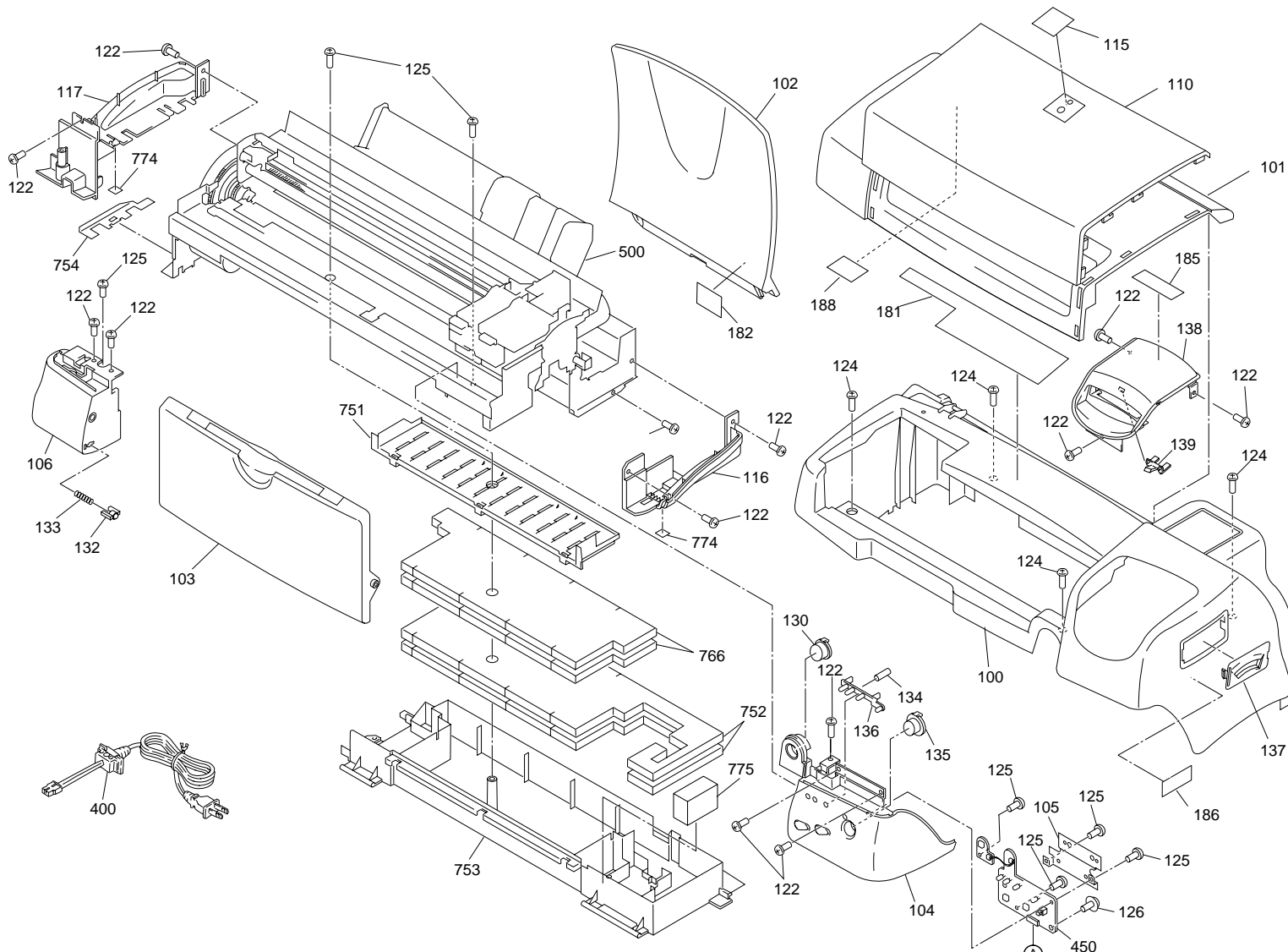
EPSON Stylus PHOTO 875DC Exploded Diagram No.1   Rev. 01   10162

EPSON Stylus PHOTO 875DC Exploded Diagram No.2   Rev. 01   10162

EPSON Stylus PHOTO 875DC Exploded Diagram No.3   Rev. 01   10162

EPSON Stylus PHOTO 875DC Exploded Diagram No.4   Rev. 01   10162

EPSON Stylus PHOTO 875DC Exploded Diagram No.5   Rev. 01   10162
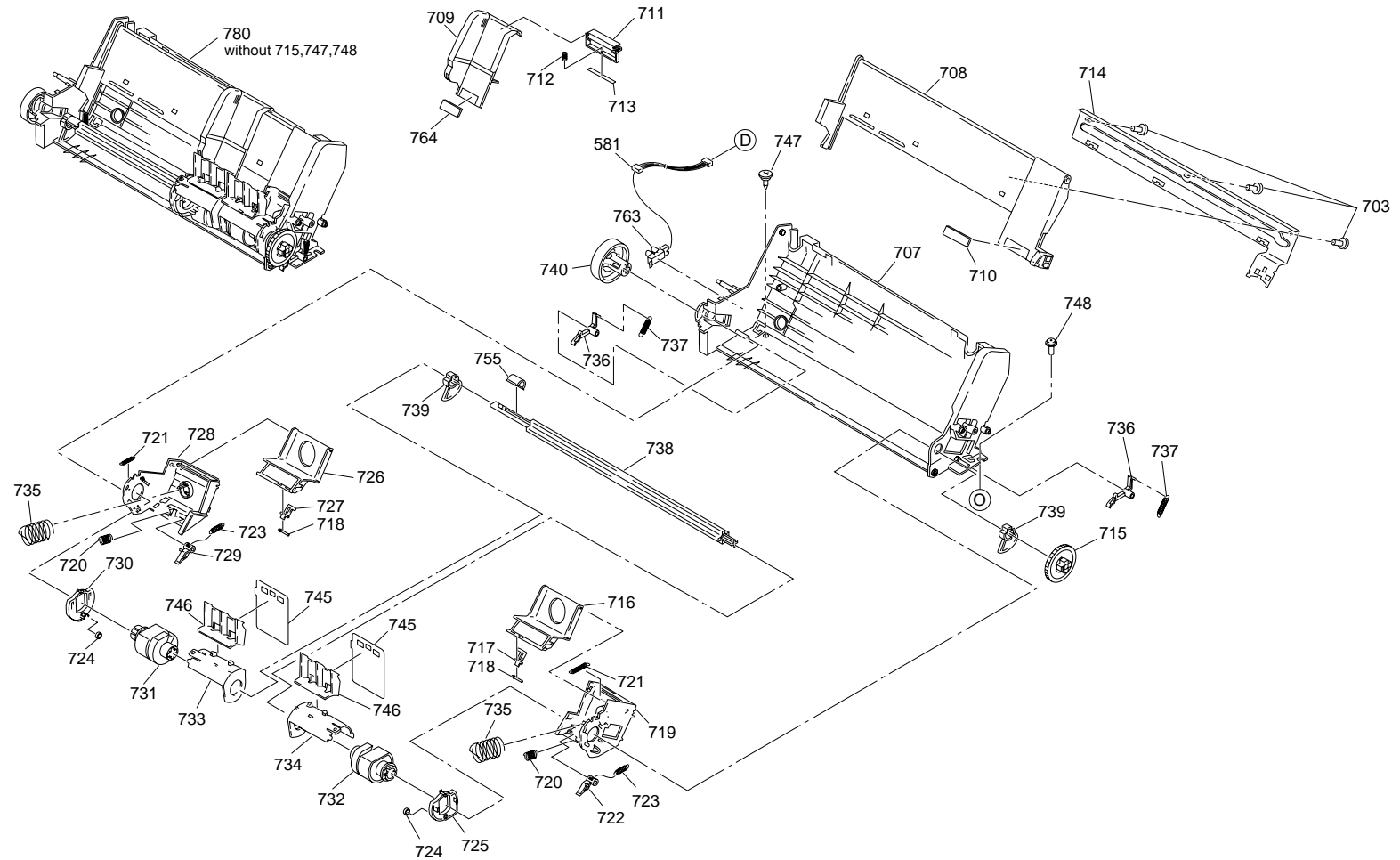
EPSON Stylus PHOTO 875DC Exploded Diagram No.6   Rev. 01   10162

7.4 Electrical Circuit Board Diagrams

See the following pages for the electrical circuit board diagrams below:

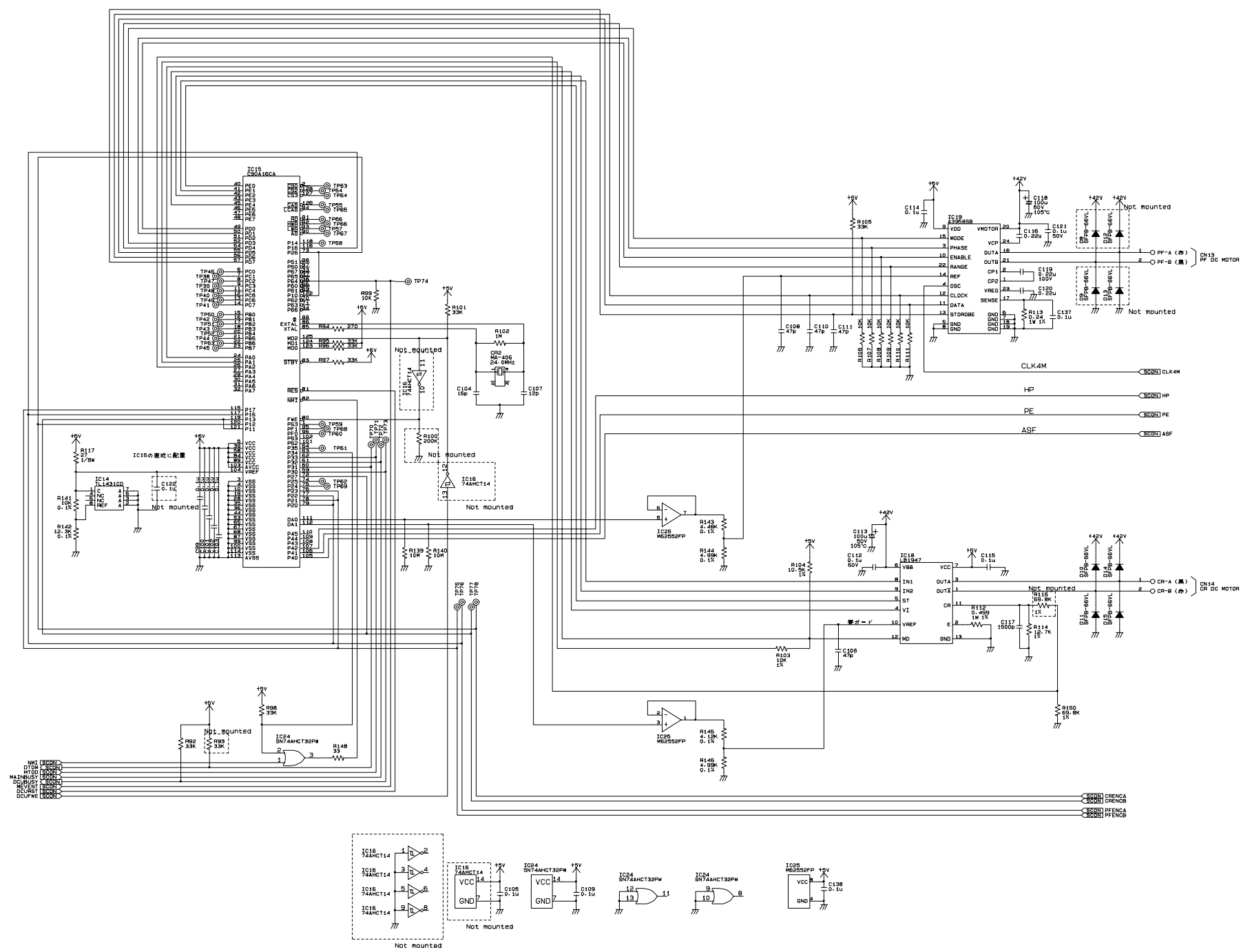- C364MAIN
- C304MAIN (1)
- C304MAIN (2)
- C364PSB
- C364PSE
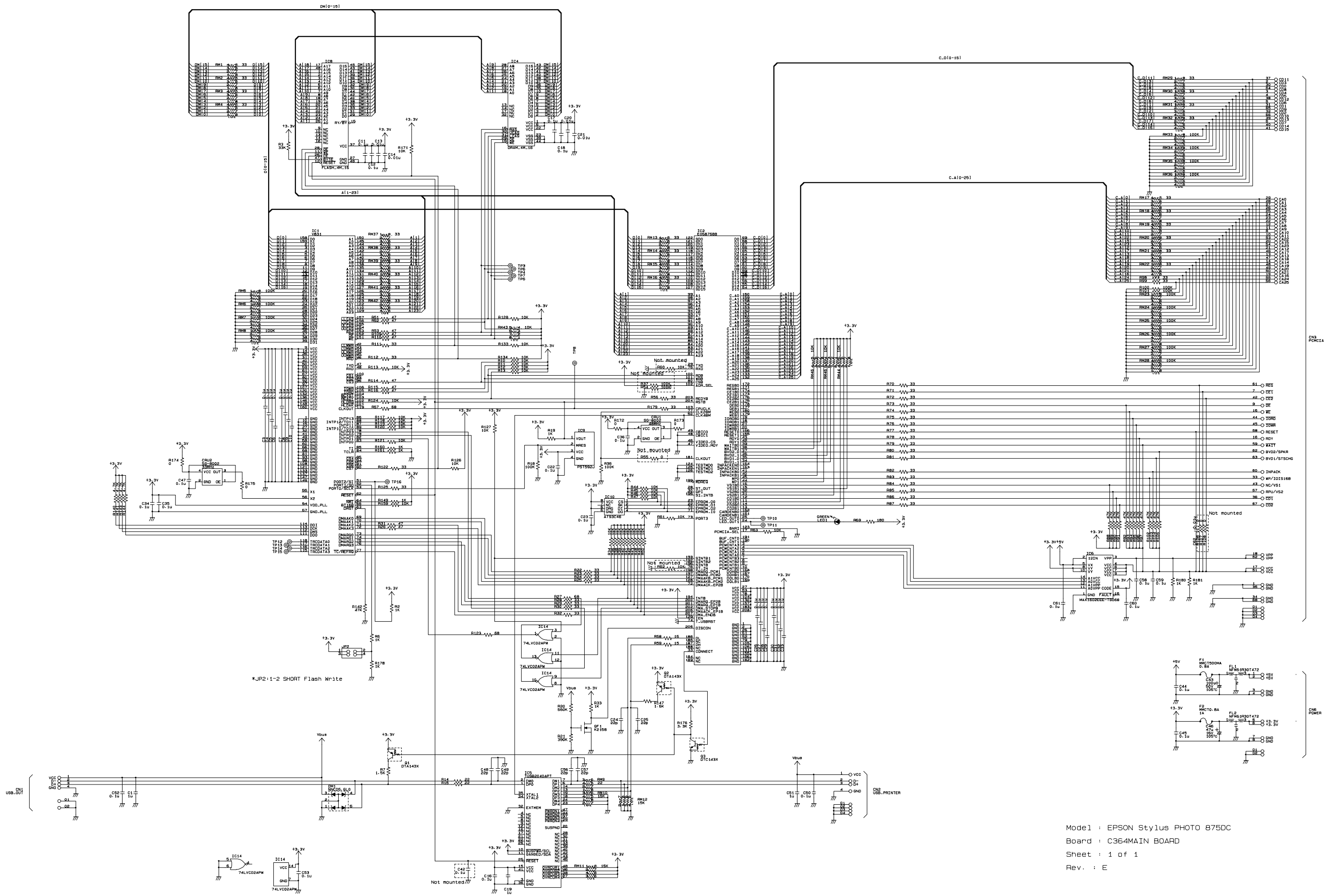
Model : EPSON Stylus PHOTO 875DC
Board : C364MAIN BOARD
Sheet : 1 of 1
Rev. : E
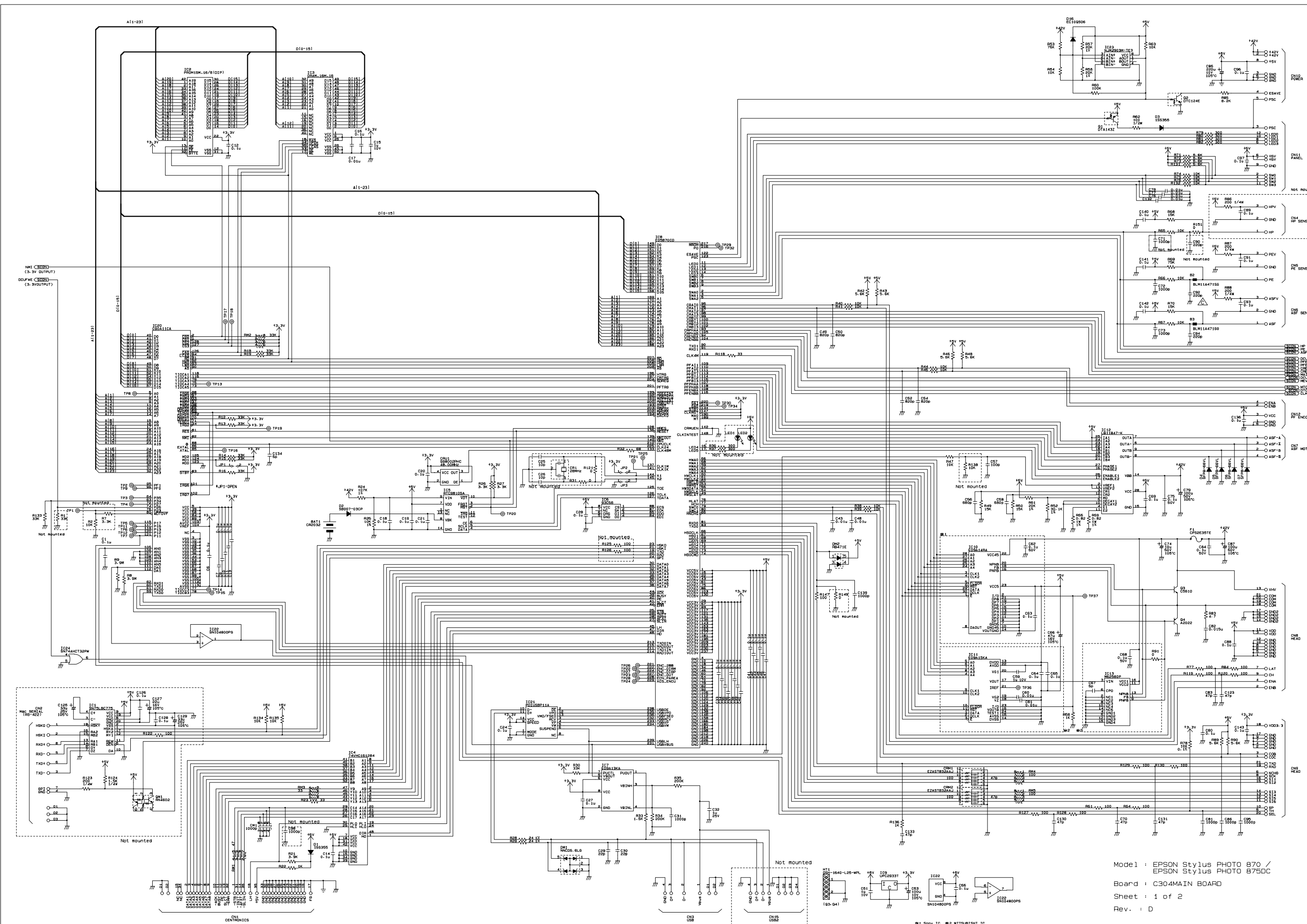
Model : EPSON Stylus PHOTO 870 /
        EPSON Stylus PHOTO 875DC
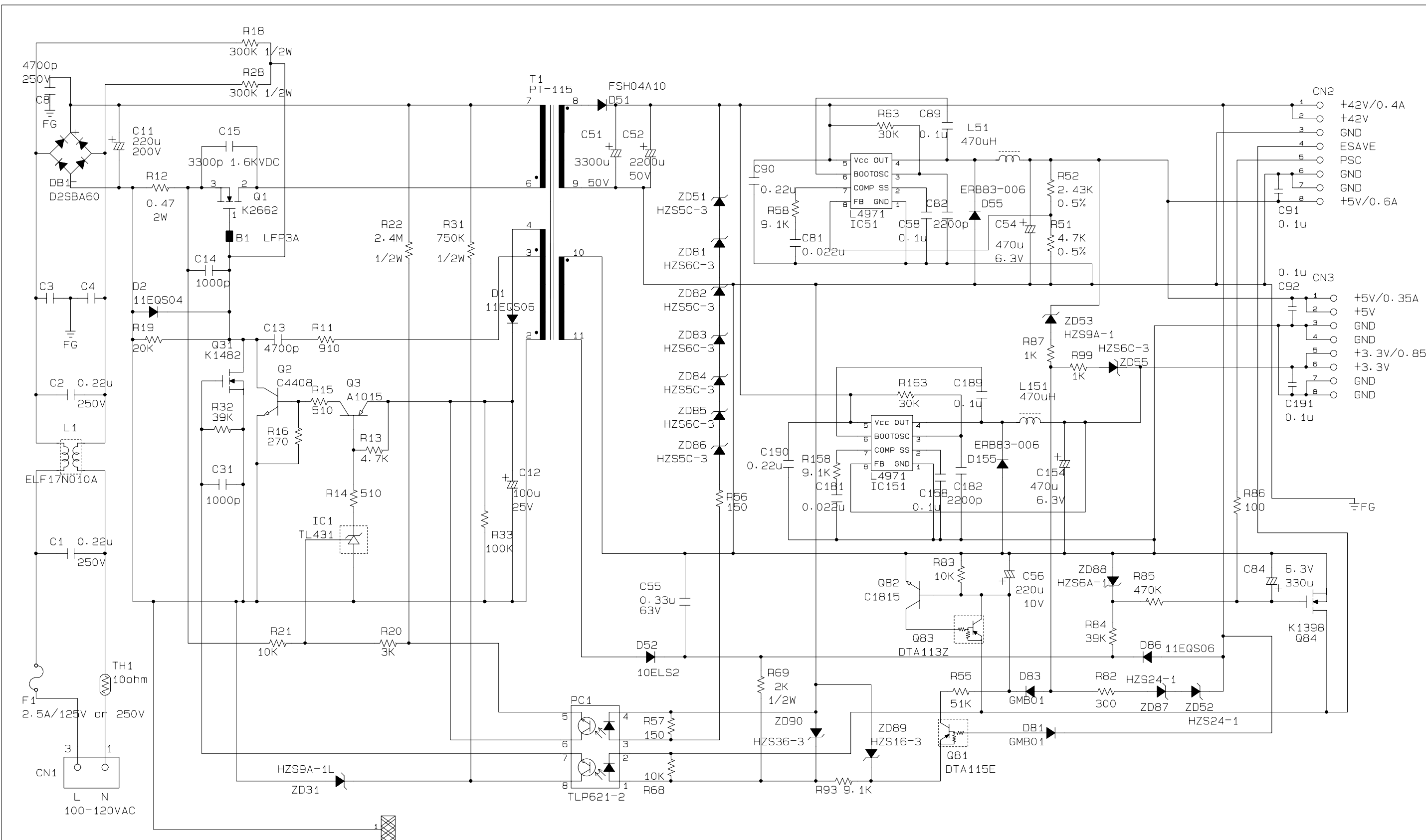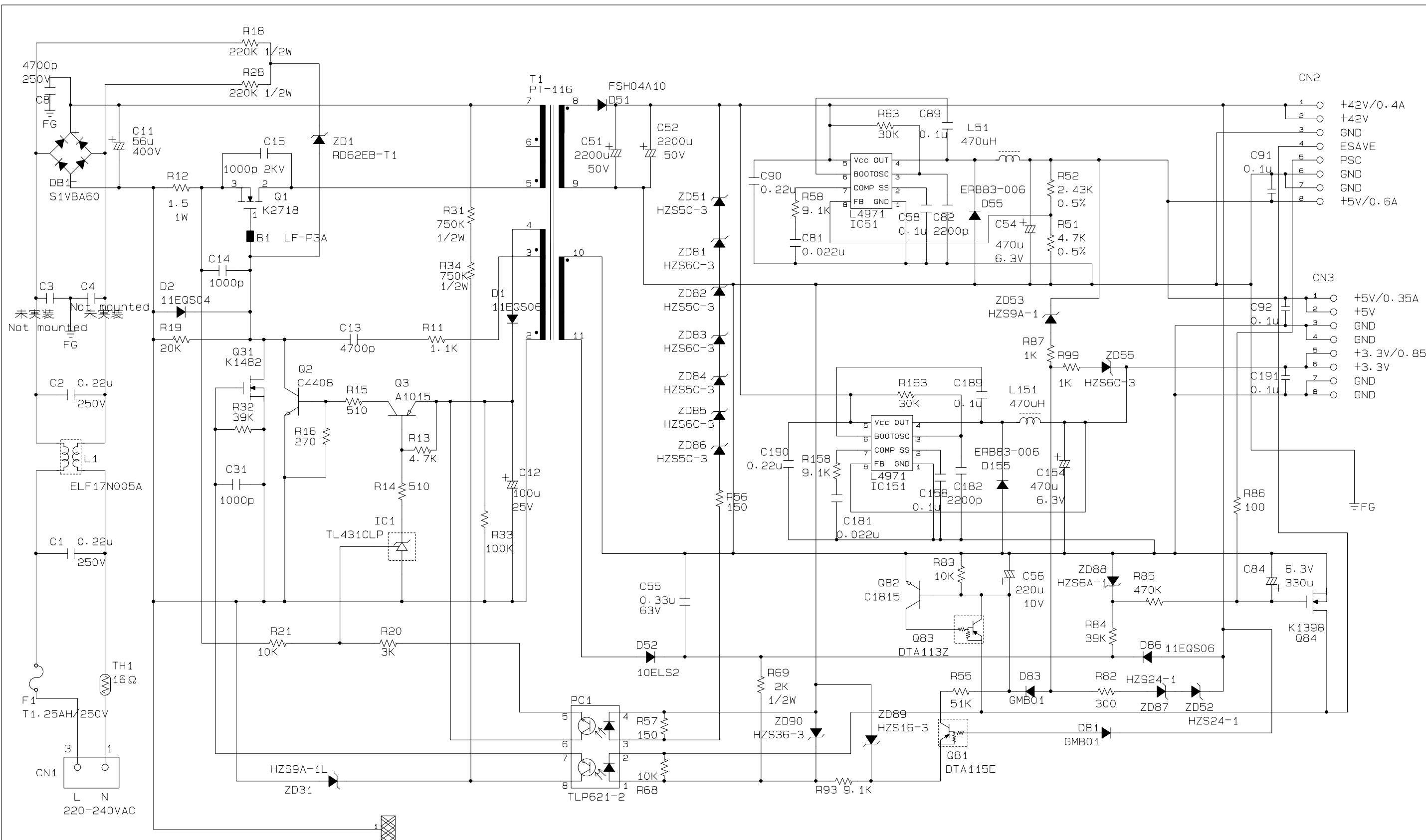
Board : C304MAIN BOARD

Sheet : 2 of 2

Rev. : D

Model : EPSON Stylus PHOTO 875DC

Board : C364PSB BOARD

Sheet : 1 of 1

Rev. : B

Model : EPSON Stylus PHOTO 875DC

Board : C364PSE BOARD

Sheet : 1 of 1

Rev. : B