CANOSCAN
D660U

SERVICE MANUAL

REVISION 0

Canon

LIST OF SERIAL NUMBER

Order No.	Destination	Serial No.
F91-4811-100	JPN	AZM000001-
F91-4821-100	MLC	MZM000001-
F91-4831-100	CCSI	CZM000001-
F91-4841-100	EUR	DZM000001-
F91-4851-100	UK	EZM000001-
F91-4861-100	CA	FZM000001-
F91-4871-100	CAN/CLA	LZM000001-
F91-4881-100	SPL/CLA	JZM000001-
F91-4889-100	ARGENTINA	RZM000001-
F91-4891-100	HK/KOR	KZM000001-

PREFACE

This service manual contains the basic information necessary for servicing CanoScan D660U image scanner.

The service manual consists of the following chapters.

CHAPTER 1 : GENERAL DESCRIPTIONS
Features, Specifications, Exterior Features, Installation, Customer's Daily Maintenance

CHAPTER 2 : GENERAL OPERATIONS
Basic Operation, Optical System, Image Processing System, Control System, Power Supply

CHAPTER 3 : MECHANICAL SYSTEM
Externals, Drive System, Optical System, PCB, FAU

CHAPTER 4 : MAINTENANCE AND SERVICING
Periodical Replacement Parts, Consumable Parts Durability, Periodical Servicing, Special Tools, Solvents and Lubricants

CHAPTER 5 : TROUBLESHOOTING
Initial Check, Troubleshooting, Location of Electrical Parts, Canon Scanner Test

CHAPTER 6 : PARTS CATALOG
Accessory, Main Body

APPENDIX : GENERAL CIRCUIT DIAGRAM, MAIN PCB CIRCUIT DIAGRAM, CCD DRIVE PCB CIRCUIT DIAGRAM, BUTTON PCB CIRCUIT DIAGRAM, FAU BUTTON PCB CIRCUIT DIAGRAM

The information in this service manual is subject to change as the product is improved. All relevant information in such cases will be provided by the service information bulletins.

A thorough understanding of the CanoScan D660U, based on the service manual and service information bulletins, is vital to the serviceman in maintaining the product quality and performance, and in locating and repairing the cause of malfunctions.

CONTENTS

CHAPTER 1 : GENERAL DESCRIPTIONS

CHAPTER 2 : GENERAL OPERATIONS

CHAPTER 3 : MECHANICAL SYSTEM

CHAPTER 4 : MAINTENANCE AND SERVICING

CHAPTER 5 : TROUBLESHOOTING

CHAPTER 6 : PARTS CATALOG

APPENDIX

CHAPTER 1

GENERAL DESCRIPTIONS

I. FEATURES

CanoScan D660U is a flatbed image scanner with 600 x 1200 dpi resolution incorporating the following features.

1. Film Adapter Unit (FAU) is bult in the scanner for scanning negative and positive films.

2. Canon's proprietary VAROS (Variable Refraction Optical System) technology allows 1200 dpi resolution in the horizontal scanning direction when using FAU to scan films.

3. High-performance CCD and cold cathode fluorescent lamp used as light source achieve high speed and high signal-to-noise ratio image quality. The lamp has high reliability.

4. The one-touch start button starts the accompanying software, and the FAU button allows easy film scan.

5. Color gradation is naturally expressed by reading at 14 bits per RGB channel and outputting at 8 bits.

6. The scanner is easily connected to the host computer through a USB interface.

II. SPECIFICATIONS

Main Unit

Type   : Flatbed image scanner

Reading Unit

Light source   : Cold cathode fluorescent lamp
Max. scan area   : 216 x 297 mm (Reflective document)
                                          24 x 36 mm (Film)
Image output   : RGB 8 bits per channel (Input 14 bits)
Resolution   : 600 x 1200 dpi
       (When scanning films) :1200 x 1200 dpi
Scan time   : 120 sec. (Color document/A4/600 dpi)
                                           80 sec. (Grayscale document/A4/600 dpi)
                                          120 sec. (Negative film/35mm/1200 dpi)
                                           60 sec. (Positive film/35mm/1200 dpi)
Resolution conversion   : 1200/600/300/150/75 dpi (Horizontal)
                                          1200/600/300/150 dpi (Vertical)

Interface

Interface   : USB

Others

Operating environment   : Temperature : 10 to 35 degrees
                                          Relative humidity : 10 to 90%RH
                                          Air pressure : 645 to 1013 hPa
Power consumption   : 15 W (During operation)
                                          5 W (During standby)
                                          1.5 W (During suspend)
Dimensions   : 260 (Width) x 440 (Depth) x 98 (Height) mm
Weight   : 2.6 kg

Specifications are subject to change without prior notice.
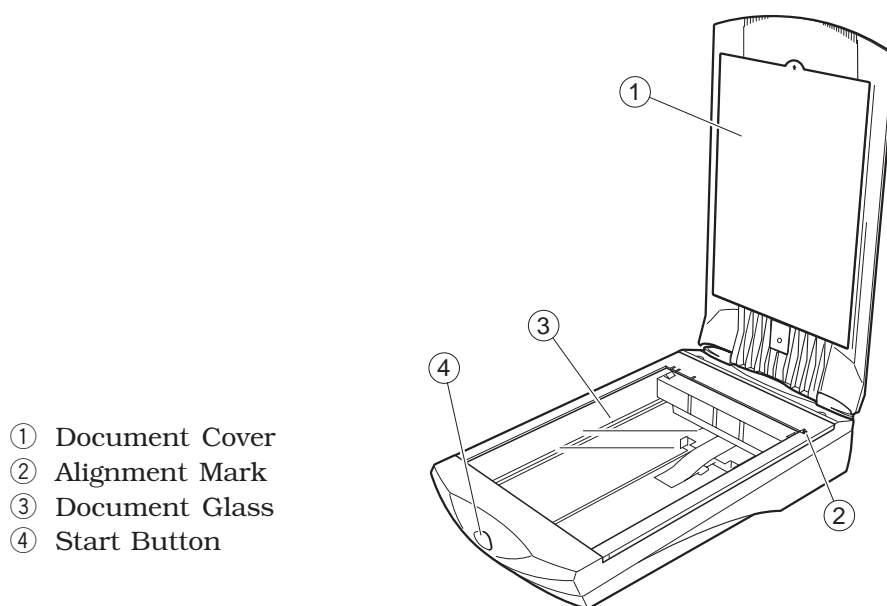
III. EXTERIOR FEATURES

A. Front View

① Document Cover
② Alignment Mark
③ Document Glass
④ Start Button

Figure 1-1

B. Rear View

① Power Connector
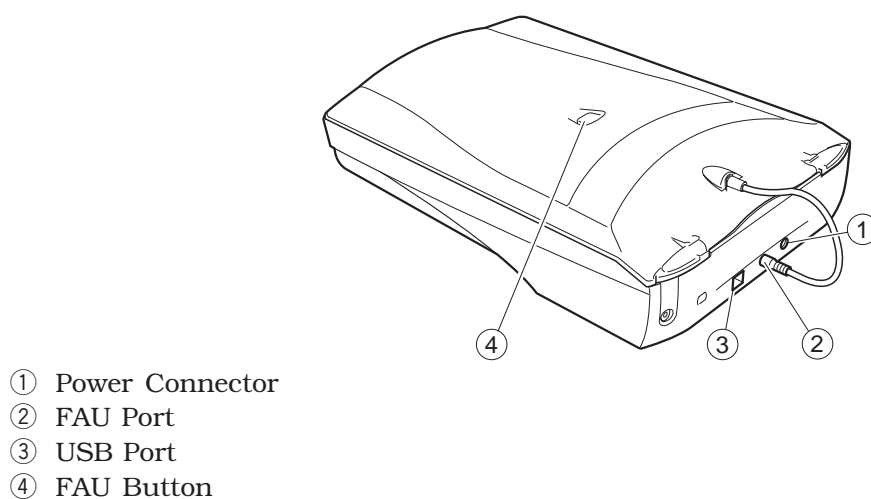② FAU Port
③ USB Port
④ FAU Button

Figure 1-2

IV. INSTALLATION

A. Installation Conditions

The following installation conditions are required.

1. Ambient temperature should be between 10 and 35 degrees, and relative humidity between 10% and 90%RH. Avoid location near water faucets, boilers, humidifiers, or refrigerators.

2. Avoid location subject to open flame, dust, or direct sunlight. If it is installed near a window, hang a curtain to block direct sunlight.

3. The room should be well ventilated.

4. Install on a sturdy and level desk, etc.

5. Moving a scanner from a cold place to a warm place may cause condensation on the metal parts, resulting in a faulty operation. Give the scanner at least one hour to adjust to the room temperature before unpacking.

B. Unlocking the Scanning Unit

The scanner is shipped with the scanning unit locked by the carriage lock to prevent a damage during transport. Unlock the scanning unit before using the scanner.
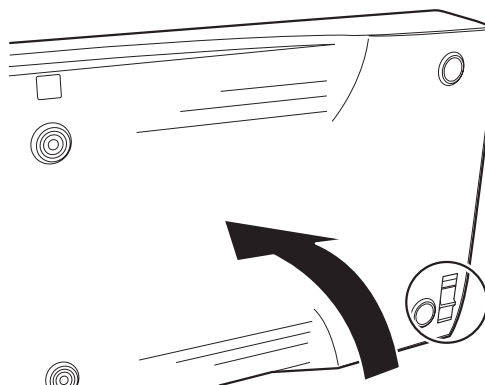
1) Turn the scanner over.

Figure 1-3

2) Push the carriage lock to the "Unlock" position.
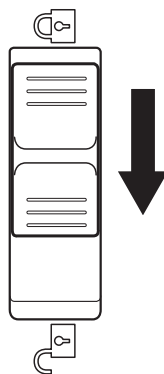
Figure 1-4

3) Return the scanner to its standard position.

Note: Ensure to lock the scanning unit during transport.

C. Connecting to the Host Computer

CanoScan D660U is connected to the USB port on the host computer using a USB cable supplied with the scanner. Refer to the "Getting Started" for details. For connecting the host computer's cables, refer to the manuals for the host computer.

1) Connect the square end of the USB cable to the USB port on the scanner.
2) Connect the rectangular end of the USB cable to the USB port on the host computer.
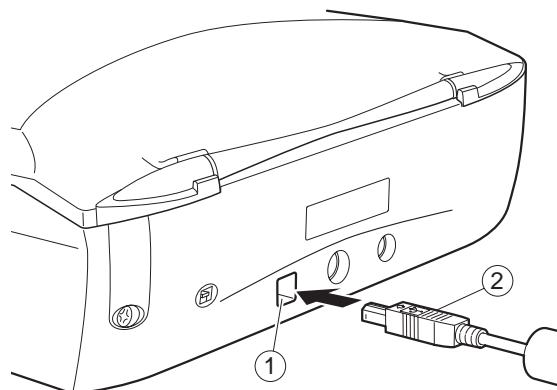
① USB Port
② USB Cable

Figure 1-5

D. Connecting to FAU

Connect the FAU cable (attached to the document cover) to the FAU port on the scanner.
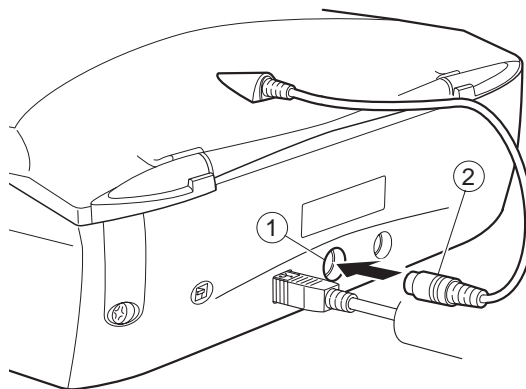
① FAU Port
② FAU Cable

Figure 1-6

E. Connecting to Power Source

1) Connect the supplied AC adapter to the power connector on the scanner.
2) Plug the AC adapter into a power outlet.
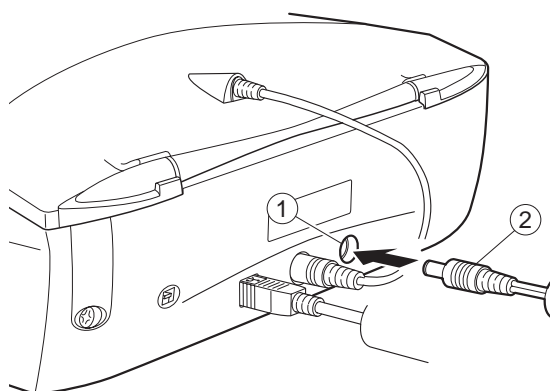
① Power Connector
② AC Adapter

Figure 1-7

F. Scanning a Document

1) Open the document cover.
2) Place a document on the document glass, facing the image side down and aligning the upper
   corner with the alignment mark.
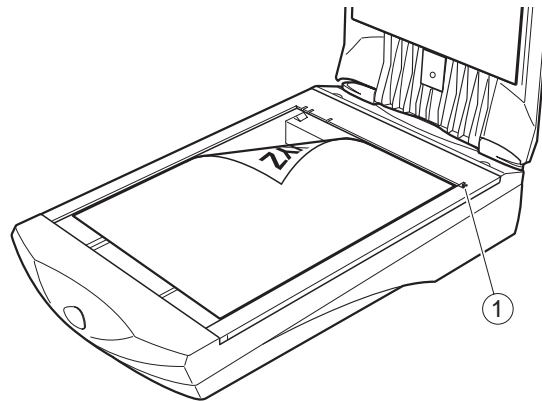
① Alignment Mark

Figure 1-8

3) Close the document cover, caring not to dislodge the document.
4) Send "SCAN" command from the host computer to scan.

V. CUSTOMER'S DAILY MAINTENANCE

Dirt on the document glass or document cover may cause an unclear image or lines on the scanned image. Clean the document glass or document cover following the steps below.

1) Disconnect all cables from the scanner.
2) Wipe a dirt off with a soft clean cloth dampened with water and well wrung.
3) Thoroughly wipe water off with a dry cloth.

CHAPTER 2

GENERAL OPERATIONS

I. BASIC OPERATION

A. Functions

The scanner functions are divided into the following three main systems.

1. Optical system

The optical system exposes a document by the scanning lamp and focuses the reflected light from the document on the CCD by mirrors, a lens and a VAROS unit.

When scanning a film using FAU, turns OFF the scanning lamp to turn ON the FAU lamp, and exposes the film by the FAU lamp and focuses the transparent light from the film on the CCD by mirrors, a lens and a VAROS unit.

2. Image processing system

The image processing system converts the analog image signal focused on the CCD into digital data and performs image processing.

3. Control system

The control system controls the interface with the host computer and the whole operation of the scanner.
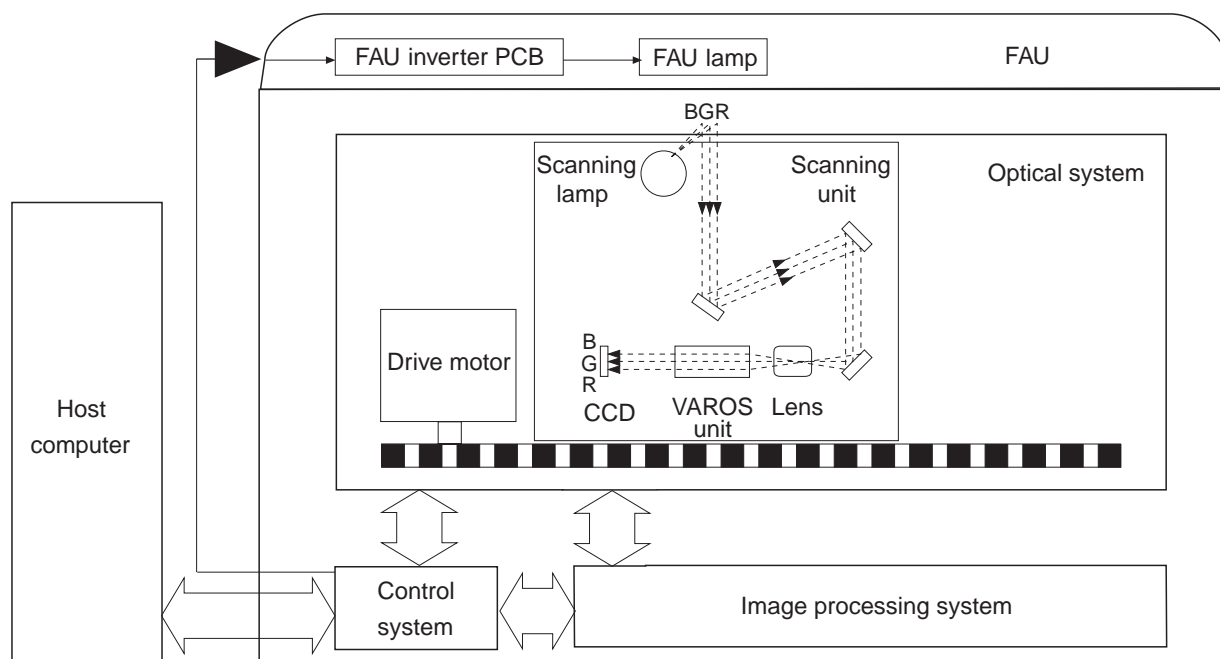
Figure 2-1

B. Outline of Electrical System

CanoScan D660U is not equipped with CPU. The device driver installed in the host computer includes a control program, which functions as CPU.

Analog Image signal read by the CCD are converted into digital data by ASIC. The converted digital data are image-processed by the ASIC, and the ASIC temporarily stores the data in the buffer RAM, and outputs to the host computer via USB port.
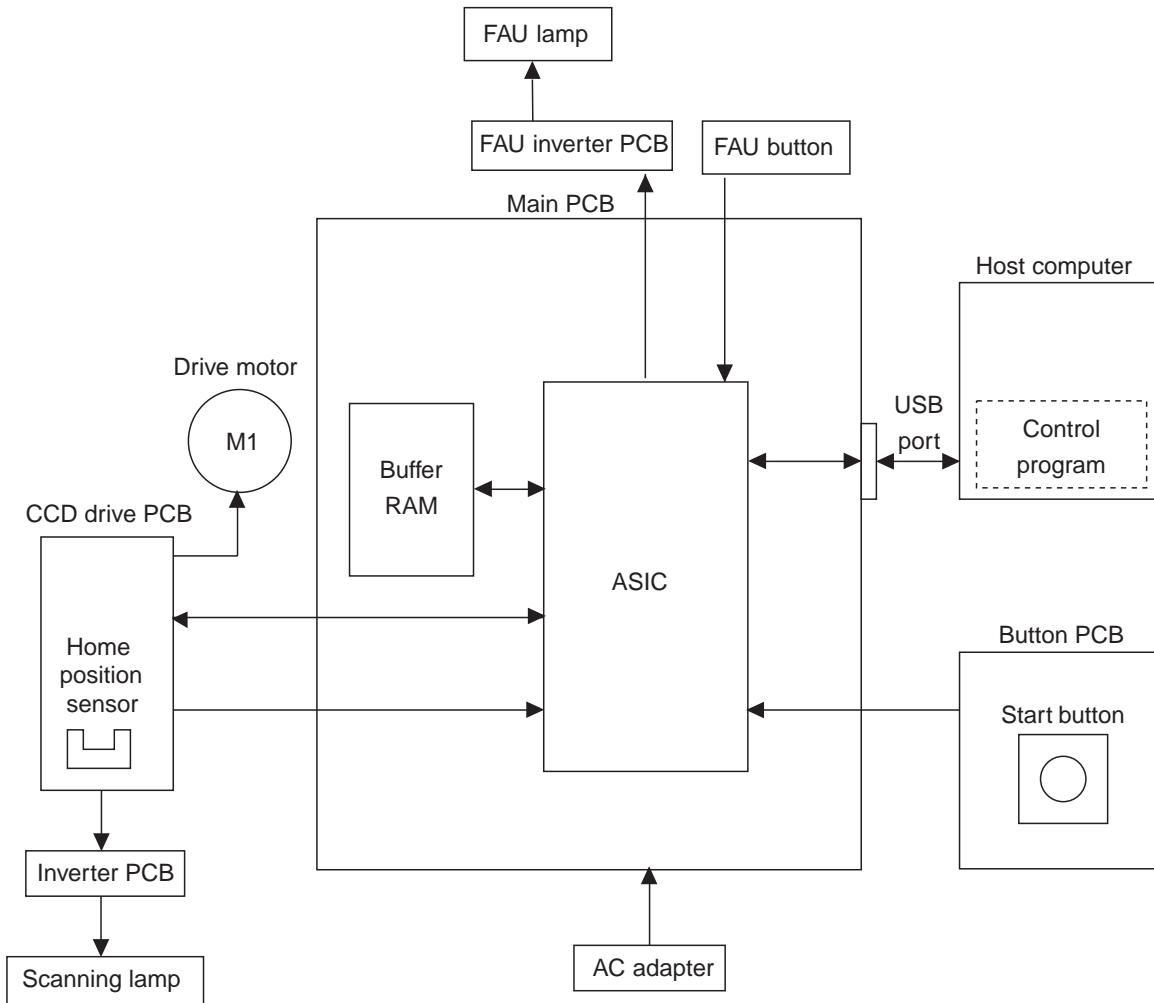
Figure 2-2

C. Main PCB Input and Output
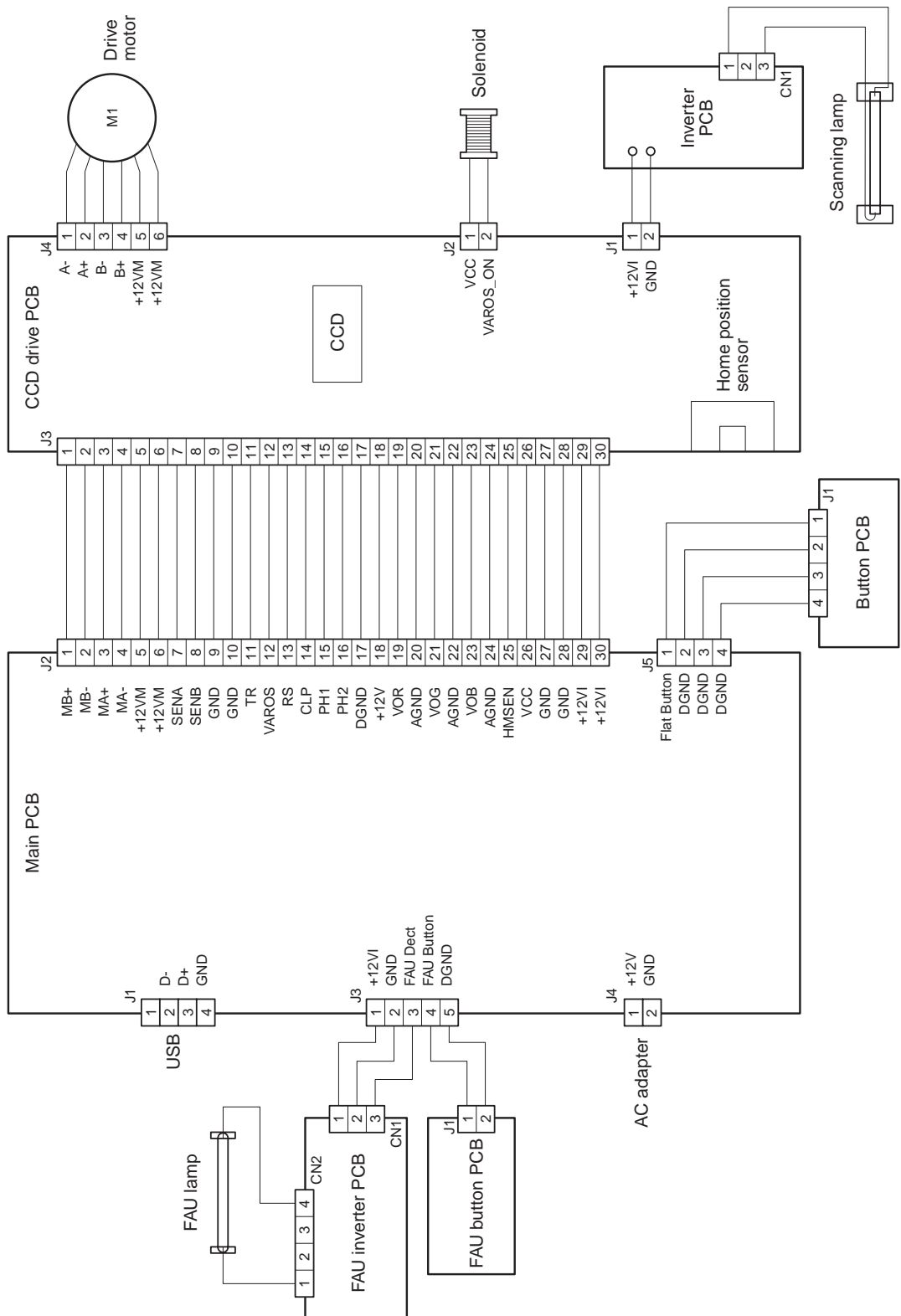
Figure 2-3

D. Basic Sequences

The basic sequences of the scanner is divided into the power ON sequence, calibration sequence, and document scanning sequence.

1. Power ON sequence
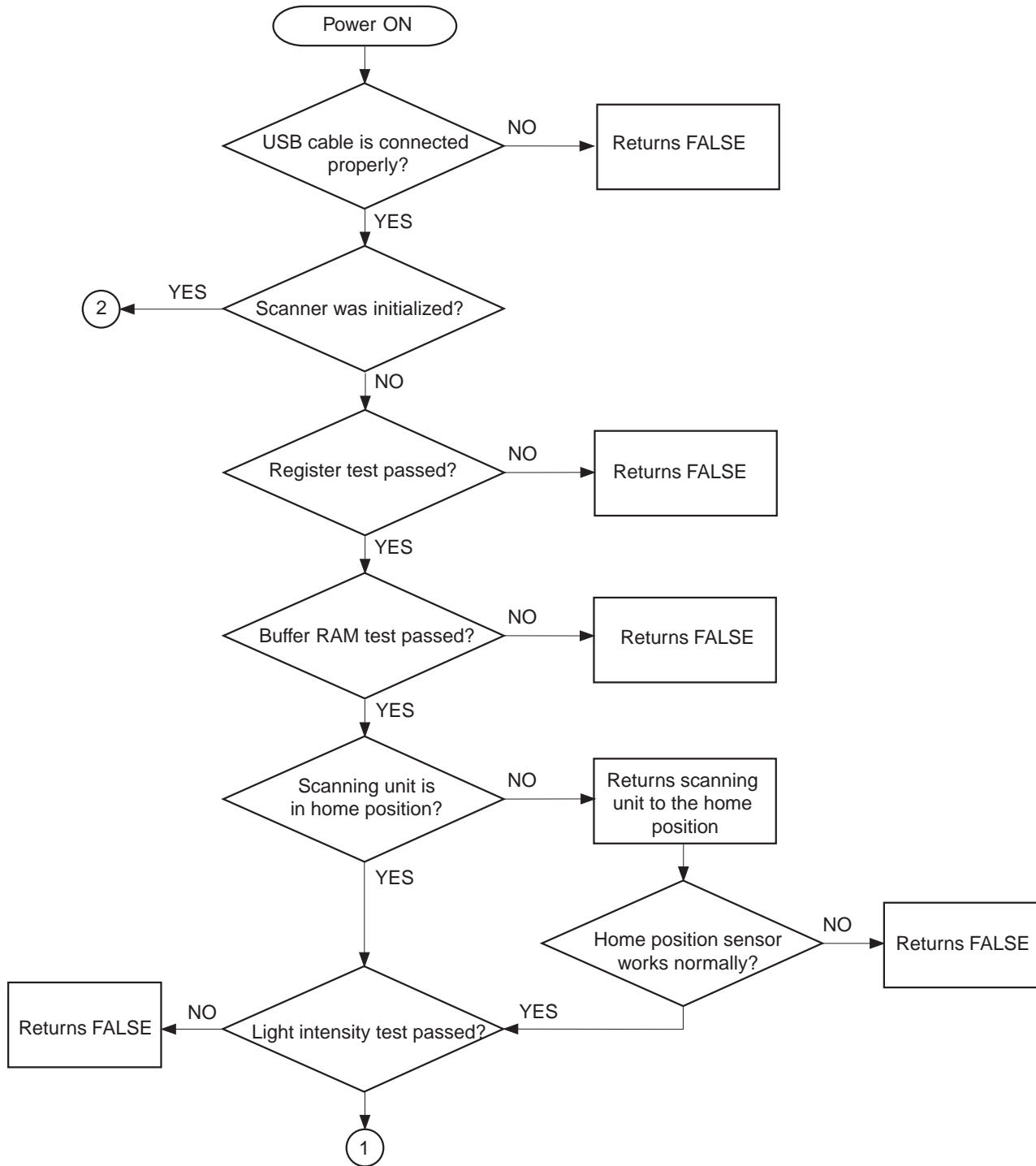
<Light intensity test error>
Initializes the scanner again up to 30 sec.

Figure 2-4-1

①

Home position sensor
works normally? —NO→ Returns FALSE

YES

Scan start position
was detected? —NO→ Returns FALSE

YES

Writes in register that
"scanner was initialized"

②

Returns TRUE

Standby
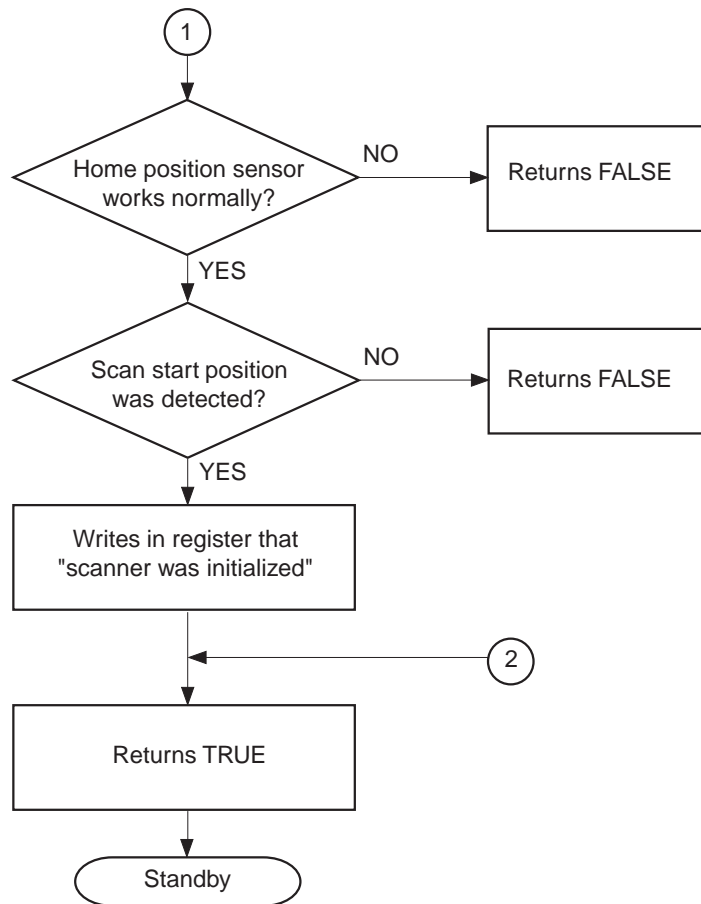
Figure 2-4-2

2. Calibration sequence

```
                        ┌──────────────┐
                        │   Standby    │
                        └──────┬───────┘
                               │ ◄──────────────────────────────┐
                               ▼                                 │
                          ╱─────────╲          NO                │
                         ╱  White     ╲ ───────────────────────► │
                         ╲ shading     ╱
                          ╲ data is   ╱
                           ╲required?╱
                             │
                             │ YES
                             ▼
                   ┌──────────────────────┐
                   │ Initializes buffer   │
                   │ RAM control          │
                   └──────────┬───────────┘
                              │ ◄──────────────────────┐
                              ▼                         │
                   ┌──────────────────────┐    ┌──────────────────┐
                   │ Obtains 1 line of    │    │ Moves scanning   │
                   │ data to buffer RAM   │    │ unit forward     │
                   └──────────┬───────────┘    │ 9 lines          │
                              │                 └────────▲─────────┘
                              ▼                          │
                         ╱──────────╲        NO          │
                        ╱  9 lines of ╲ ─────────────────┘
                        ╲ data was     ╱
                         ╲ obtained?  ╱
                             │
                             │ YES
                             ▼
                   ┌──────────────────────┐
                   │ Returns scanning     │
                   │ unit to the home     │
                   │ position             │
                   └──────────┬───────────┘
                              │ ◄──────────────────────┐
                              ▼                         │
                         ╱──────────╲       NO          │
                        ╱ White       ╲ ────────────────┘
                        ╲ shading data  ╱
                        ╱ is transmitted╲
                        ╲ to host       ╱
                         ╲ computer?   ╱
                             │
                             │ YES
                             ▼
                        ┌──────────────┐
                        │   Standby    │
                        └──────────────┘
```
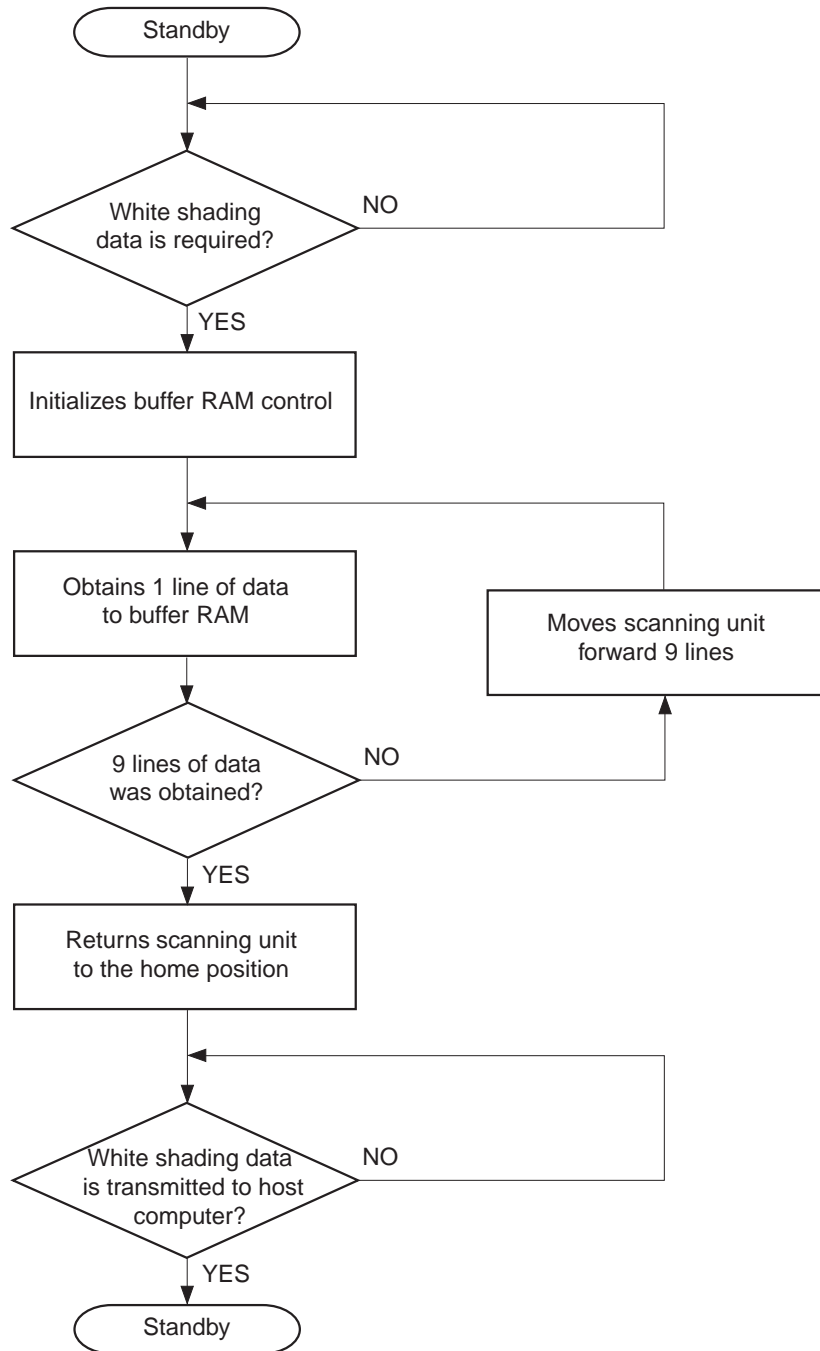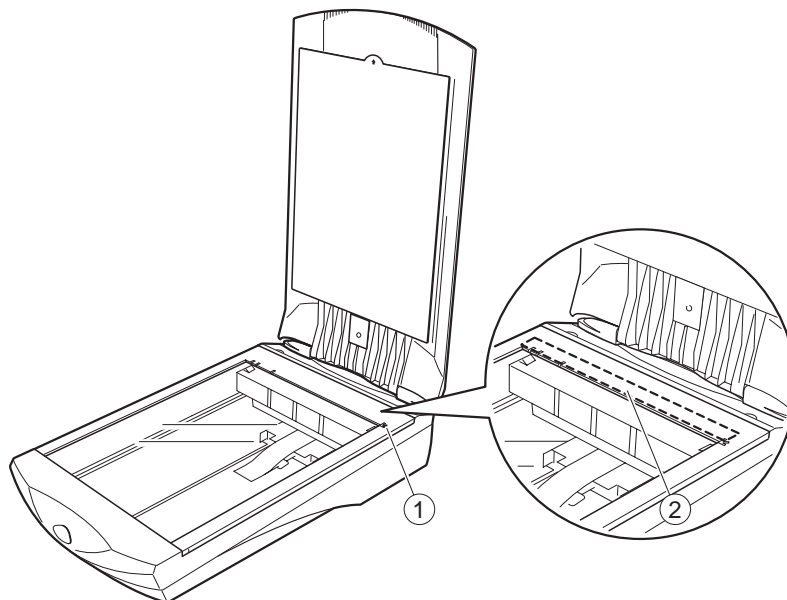
Figure 2-5

1) Home position test

   Checks if the scanning unit operates normally. When the scanner is powered ON, the scanning unit automatically moves to the home position. This is also a scan start position.

① Home Position
② White Calibration Plate

Figure 2-6

2) Light intensity test

   Checks if the light intensity of the scanning lamp reaches the standard value. When the scanning lamp lights, the control program reads the light reflected from the white calibration plate with the CCD, and checks if the light intensity into each CCD of red, green, and blue reaches the standard value. If the light intensity is below the standard value, the control program continues the test for up to 30 seconds. If it still does not reach the standard value, the control program returns "FALSE".
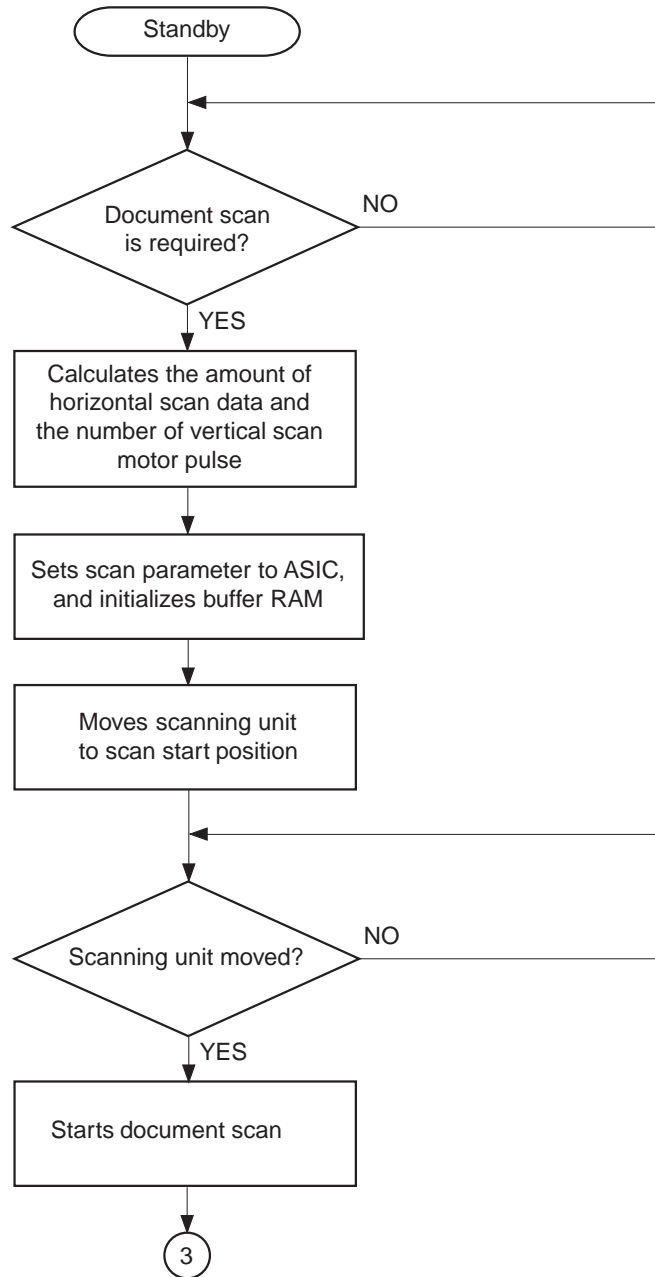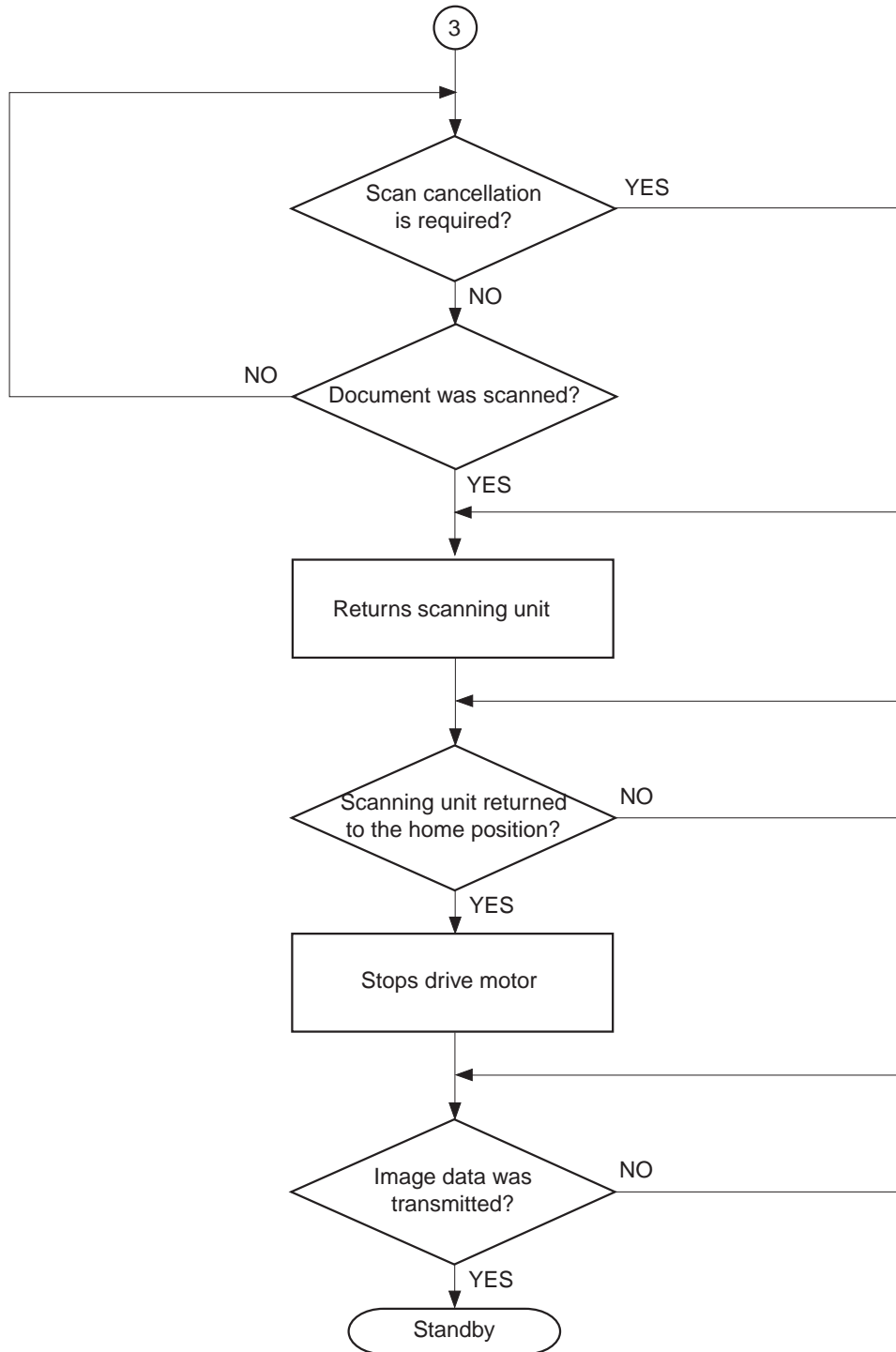
3. Document scanning sequence

```
                    ┌─────────────┐
                    │   Standby   │
                    └─────────────┘
                           │
                           ▼
                       ╱───────╲
                     ╱  Document  ╲        NO
                    ╱  scan is      ╲──────────────┐
                    ╲  required?    ╱              │
                     ╲             ╱               │
                       ╲─────────╱                 │
                           │ YES                   │
                           ▼                       │
              ┌────────────────────────┐           │
              │ Calculates the amount  │           │
              │ of horizontal scan     │           │
              │ data and the number of │           │
              │ vertical scan motor    │           │
              │ pulse                  │           │
              └────────────────────────┘           │
                           │                        │
                           ▼                        │
              ┌────────────────────────┐            │
              │ Sets scan parameter to │            │
              │ ASIC, and initializes  │            │
              │ buffer RAM             │            │
              └────────────────────────┘            │
                           │                        │
                           ▼                        │
              ┌────────────────────────┐            │
              │ Moves scanning unit    │            │
              │ to scan start position │            │
              └────────────────────────┘            │
                           │            ◄───────────┐│
                           ▼                        ││
                       ╱───────╲                    ││
                     ╱           ╲        NO         ││
                    ╱  Scanning    ╲─────────────────┘│
                    ╲  unit moved?  ╱                 │
                     ╲             ╱                  │
                       ╲─────────╱                    │
                           │ YES                      │
                           ▼                          │
              ┌────────────────────────┐              │
              │ Starts document scan   │              │
              └────────────────────────┘              │
                           │                          │
                           ▼                          │
                         ( 3 )                        │
```

Figure 2-7-1

③

Scan cancellation is required?

YES

NO

Document was scanned?

NO

YES

Returns scanning unit

Scanning unit returned to the home position?

NO

YES

Stops drive motor

Image data was transmitted?

NO

YES

Standby

Figure 2-7-2

II. OPTICAL SYSTEM

A. Outline

When scanning are flective document, the scanning lamp in the scanning unit exposes the document and focuses the reflected light from the document on the CCD. When scanning a film at 601 dpi or higher using FAU, FAU lamp built in the document cover exposes the film, and optical axis is shifted by a half pixel in the horizontal scanning direction by means of VAROS unit, and the images before and after the optical axis is shifted are composed by the host computer.
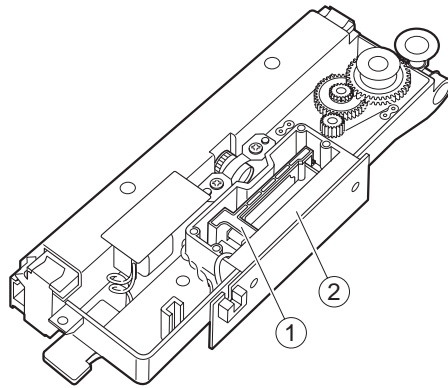
Figure 2-8-1
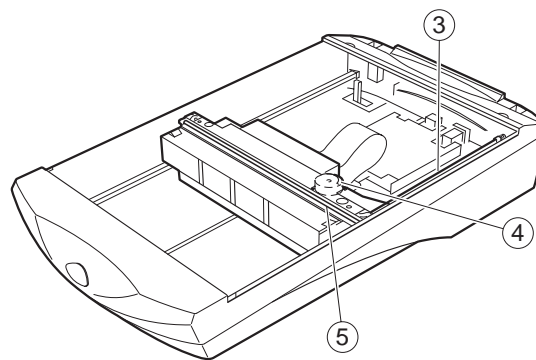
① VAROS Unit
② CCD
③ Belt
④ Drive Motor
⑤ Scanning Lamp

Figure 2-8-2

B. VAROS

1. VAROS operation

VAROS is short for Variable Refraction Optical System. Refraction glass is placed between the CCD and lens, and the direction of the refraction glass is moved to change the optical axis thus changing the scanning position. When the host computer commands 601 dpi or higher resolution to scan a film using FAU, two image data before and after the direction of the refraction glass is moved are composed to make double image data. The resolution when using VAROS is always 1200 dpi regardless of the command from the host computer.

The drive motor runs by the drive signal sent from the ASIC and drives the scanning unit via the belt.
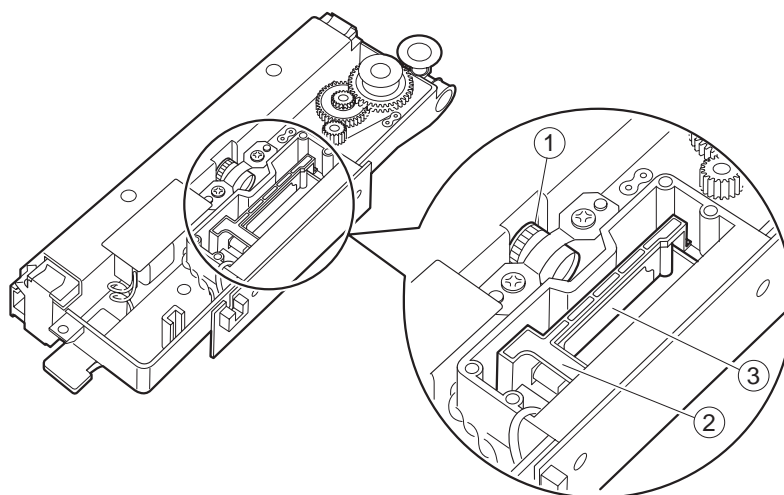
① Lens
② VAROS Unit
③ Refraction Glass

Figure 2-9

2. Scanning by means of VAROS

There placed in order of the CCD, refraction glass, lens, and mirrors in the scanning unit. The refraction glass is equipped with a solenoid to control the direction of the refraction glass. When the host computer commands 601 dpi or higher resolution to scan a film using FAU, the ASIC selects to use VAROS for scanning. Firstly scans before moving the direction of the refraction glass at 600 dpi in the horizontal scanning direction and 1200 dpi in the vertical scanning direction. The scanned image data is stored in the host computer as a temporary data.
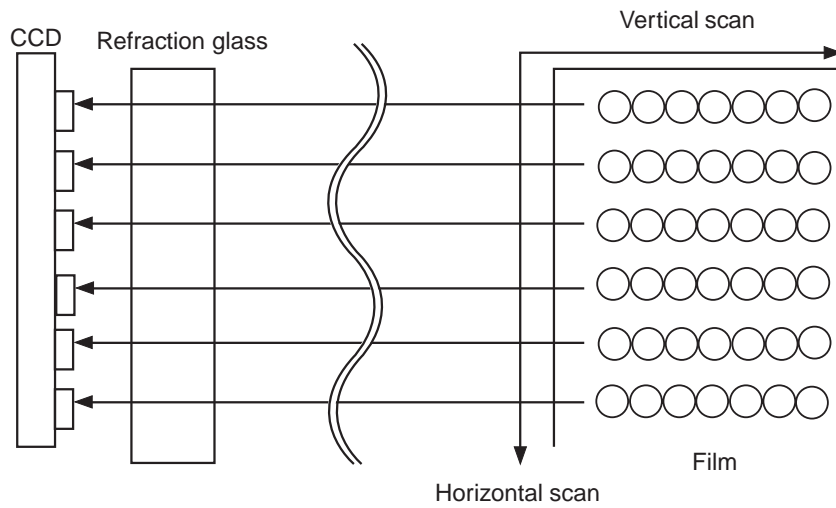
Figure 2-10

After the 1st scan, the ASIC turns signal ON to drive the solenoid to change the direction of the refraction glass. Changing the direction of the refraction glass shifts the optical axis from the CCD to a film by a half pixel. Therefore, the 2nd scan is performed between the pixels of the 1st scan.
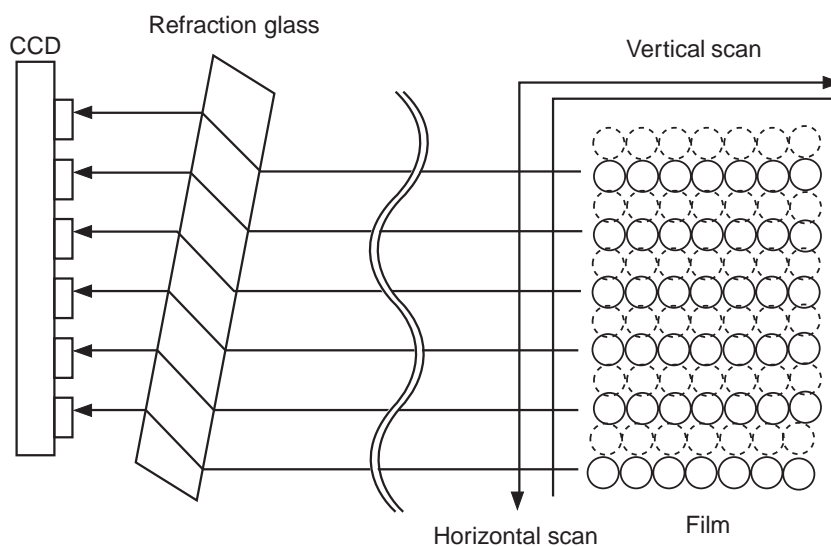
Figure 2-11

These image data are composed in the host computer to output 1200 x 1200 dpi image data. When the ASIC commands between 601 dpi and 1199 dpi, scan is performed at 1200 dpi, then the host computer performs resolution conversion to output the image data conforming to the command by the ASIC.

C. Scanning lamp/FAU lamp lighting circuit

When the scanner is powered ON, the "LAMP ON" signal is set to "H" and turns ON the lamp control circuit to provide +12VI to the inverter PCB to light the scanning lamp.

The scanning lamp exposure control is performed by scanning white calibration plate which is placed outside the image area to feedback on the output. ASIC inputs the pulse signal (LAMP ON) according to the feedbacked signal to the lamp control circuit to generate +12VI.

FAU lamp exposure control is performed by directly feedbacking the output from the FAU lamp. When the host computer commands to use the FAU, ASIC sets "FAU INV" signal to "H". The lamp control circuit provides +12VI to FAU inverter PCB to light the FAU lamp.
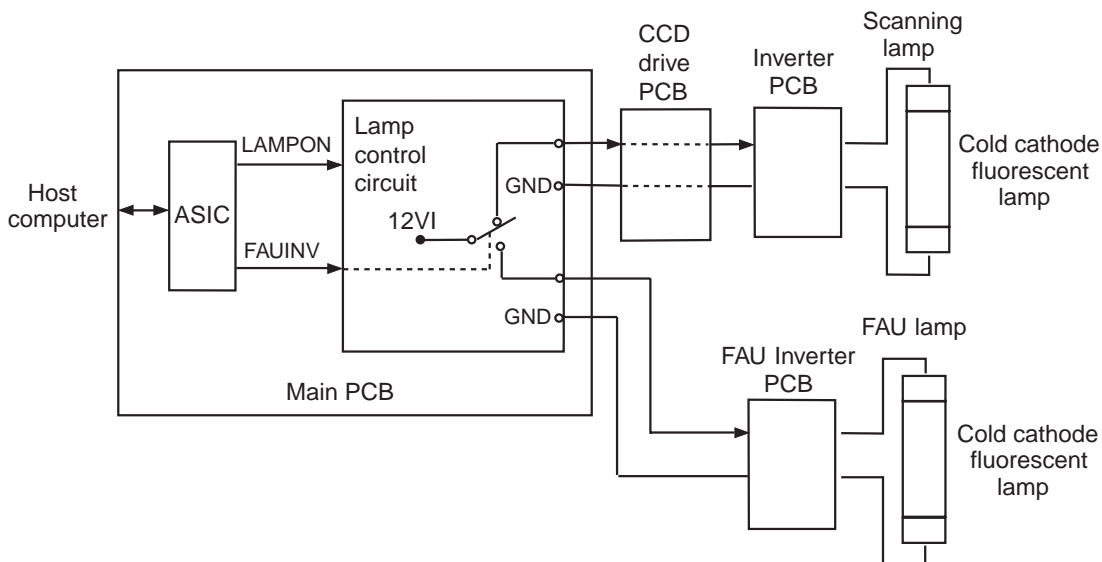
Figure 2-12

D. Drive Motor Control Circuit

When the host computer sends a command to change scaling/resolution, the ASIC generates the control signal (A^+, A^-, B^+, B^-) and sends the signal to the drive motor via the motor driver. When the host computer changes its command to the ASIC, the ASIC changes its control signal to control the motor driver.
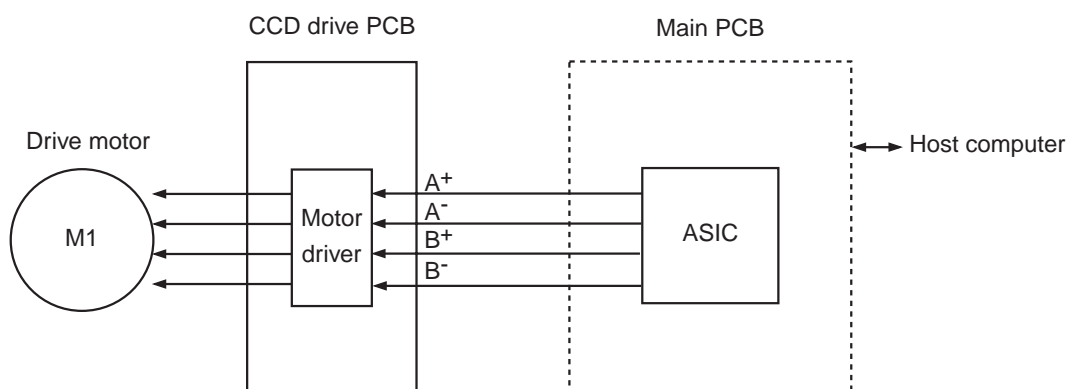
Figure 2-13

III. IMAGE PROCESSING SYSTEM

A. Outline

The image processing system converts analog image signals read by the CCD into digital data, performs various image processing, then outputs the data to the host computer via USB port. Shading correction and gamma correction are performed by the driver software instead of the scanner function.
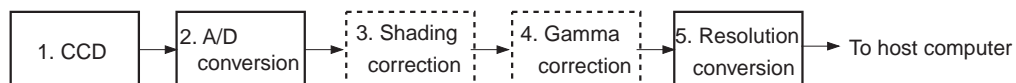
Figure 2-14

B. Image Processing Functions

1. CCD

The ASIC outputs clock signals based on the command from the host computer to the CCD. The scanner uses a 3 line CCD to read the color signals. The 3 line CCD is a single chip photoelectric conversion device which consists of 3 lines of several thousand photosensitive devices, each several microns square, reading for red, green, and blue analog image signals, and of a scanning circuit.
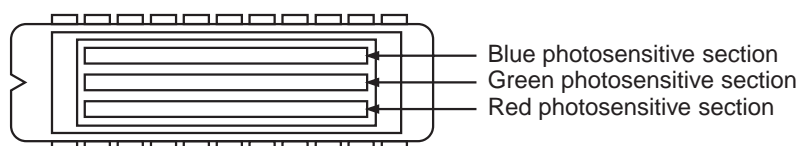
Figure 2-15

2. A/D conversion

Analog image signals output from the CCD are converted into the digital data of 14 bits each by A/D converter in the ASIC in order of red, green, and blue image signals.

3. Shading correction

When the CCD reads a document of even density, the image signal corresponding to each pixel is not uniform for the following reasons.

1) Light intensity of the scanning lamp is not uniform.
2) There is variation in the sensitivity of the light phototransistors.
3) There is a slight output from the light phototransistors even when there is no input.

These variations are corrected by the shading correction. Calibration data is used as standard density data when scanning a document. Scanned image data is compared to the standard density data for the image data correction.

4. Gamma correction

Shading-corrected red, green and blue image data are divided uniformly into 16384 gradations according to the document density. The contrast and density of this image data are adjusted by the gamma correction. The ASIC writes gamma curve specified by the host computer into the buffer RAM before scanning a document. Image scan starts and the image data input to the buffer RAM is converted by the gamma curve data and is output.

5. Resolution conversion

1) Resolution conversion in the horizontal scanning direction
Basic resolution is 600 dpi, and selective at 600 dpi, 300 dpi, 150 dpi, and 75 dpi. Resolution conversion in the horizontal scanning direction is performed by averaging the image data of the basic resolution as shown in Figure 2-16.

$A'=(A+B)/2 \quad C'=(C+D)/2 \quad E'=(E+F)/2$
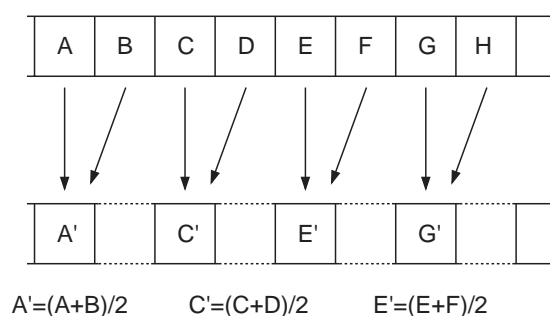
Figure 2-16

2) Resolution conversion in the vertical scanning direction

The ASIC changes the scanning unit moving speed to change the resolution in the vertical scanning direction. When increasing the resolution, the scanning unit moves at a low speed to read more lines as shown in Figure 2-18.
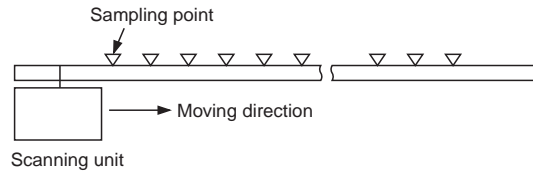
Figure 2-17
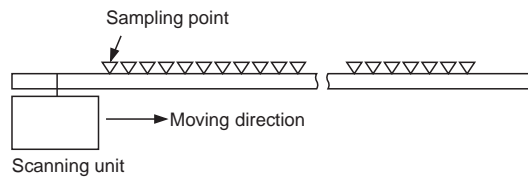
Figure 2-18

When decreasing the resolution, the scanning unit moves at a faster speed to read less lines.
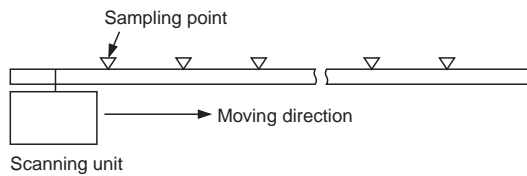
Figure 2-19

IV. CONTROL SYSTEM

A. Outline

CanoScan D660U is not equipped with the CPU and the scanner is controlled by the device driver installed in the host computer. The device driver includes the scanner control program, which sets a command directly to the ASIC to control the scanner.

B. USB Interface

The scanner is connected to the host computer via USB interface. USB (Universal Serial Bus) is the next generation general-purpose input-output interface to connect the computer peripheral devices.

1. Features of USB includes;

* Connects peripheral devices by a tree structure.
* Connects up to 127 devices by a tree structure.
* Connects by 12 Mbps of "full speed mode" or 1.5 Mbps of "low speed mode". The scanner is conforming to "full speed mode".
* Supports hot plug (able to connect/disconnect with the power ON)

2. Connection to USB devices

USB devices are connected to a host computer by a tree structure consisting of device called "node" and "hub" which is a group of "node" as shown in Figure 2-20. The tree structure has the following conditions.
* Able to connect up to 127 "node" and "hub" in total.
* Limited up to 6 layers.
* USB cable must be 5 meters or shorter.
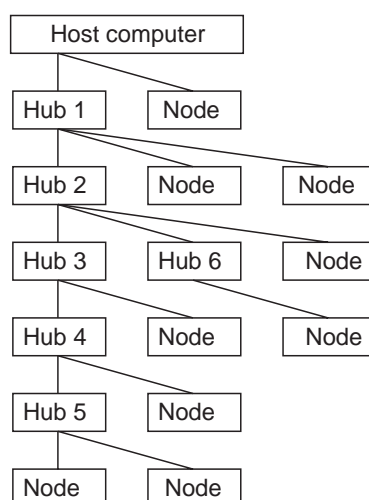
Figure 2-20

USB cable has A plug for connecting to upper layer and B plug for connecting to lower layer.

A Plug   B Plug
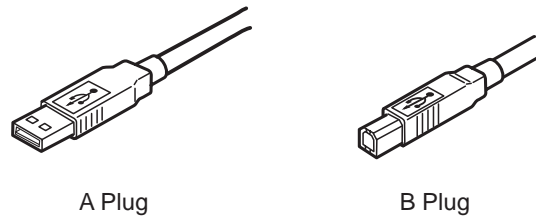
Figure 2-21

3. USB data transfer

USB data is transferred in the following four data structures called "packet".
* Token packet   : Used to start a data transfer
* Handshake packet   : Used to report the status of a data transfer
* Data packet   : Used to send and receive data
* Special packet   : Used for other transfer

USB device may support multiple data transfer endpoints, so there are four types of data transfer protocols.

* Isochronous transfer : Allocates a data transfer time to a device. Highest priority is given but no error is corrected.
* Interrupt transfer   : Periodically transfers data within a specified waiting time. Second priority is given.
* Control transfer   : Used to configure the host computer when USB device is attached/removed.
* Bulk transfer   : Lowest priority is given but larger amounts of data is sequentially transferred to a free bus.

V. POWER SUPPLY

AC adapter is supplied for the scanner power source. The AC adapter converts the AC power into +12VDC. The output DC power is converted into +5VDC in the main PCB. +5VDC is used for the IC in the main PCB. +12VDC is supplied to the CCD and drive motor.

Protection circuit is built-in the main PCB to prevent overvoltage or reverse polarity. The protection circuit is composed of a fuse and zener diode. If overvoltage or reverse polarity is input, the fuse burns to protect a further circuit.
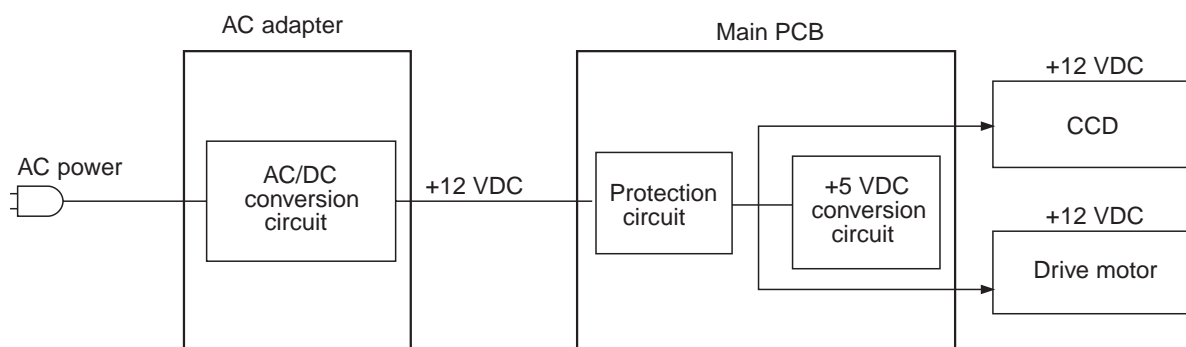
Figure 2-22

CHAPTER 3

MECHANICAL SYSTEM

I. EXTERNALS

When cleaning, checking or repairing inside the scanner, remove the necessary covers using the following procedures.

A. Covers
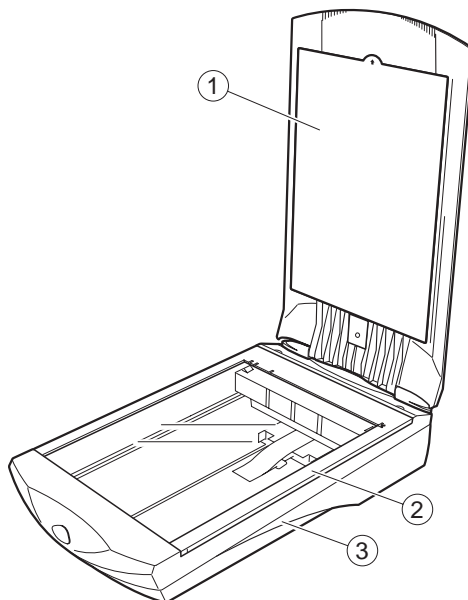
① Document Cover
② Document Glass Unit
③ Base Frame

Figure 3-1

1. Removing the document cover

1) Disconnect the FAU cable.
2) Pull up the hinges to remove the document cover.
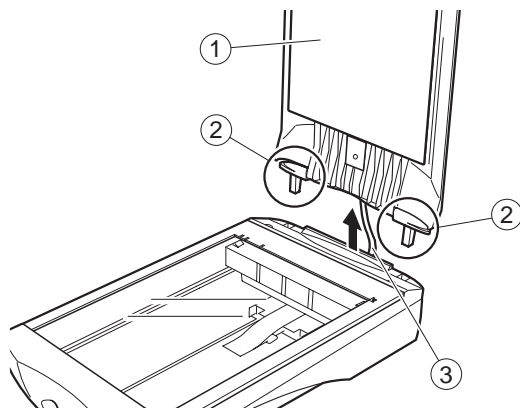
① Document Cover
② Hinge
③ FAU Cable

Figure 3-2

2. Removing the document glass unit

1) Remove the document cover.
2) Unhook the hook on the front of the document glass unit, then lift the hook part.
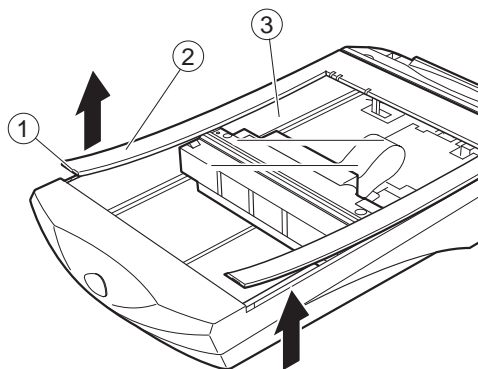
① Hook
② Hook Part
③ Document Glass Unit

Figure 3-3

Note: Take care not to lift the hook part excessively since it is attached to the document glass with a double-sided tape.

3) Unhook the hook on the rear of the document glass unit, then slide the document glass unit forward.
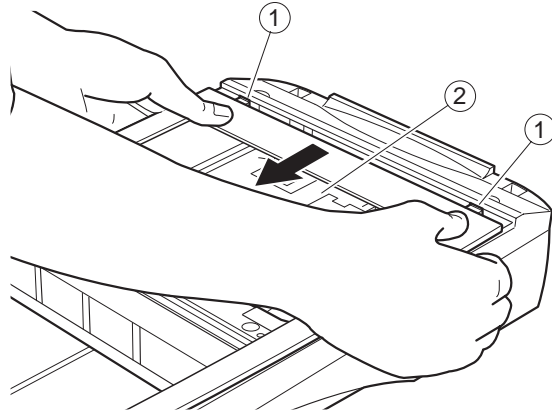
① Hook
② Document Glass Unit

Figure 3-4

4) Lift the rear of the document glass unit.
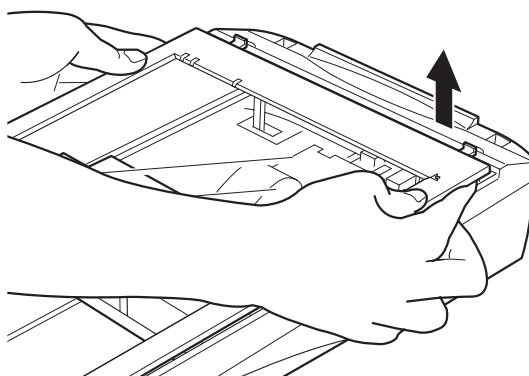
Figure 3-5
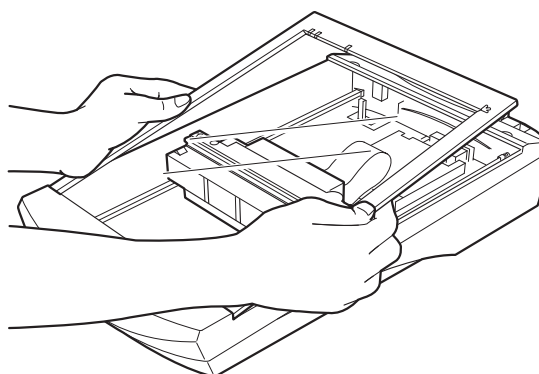
Figure 3-6

Note: Take care not to touch the rear side of the document glass with hand to prevent dirt.

3. Precaution when attaching the document glass unit

1) Attach the document glass unit pressing toward the front of the scanner as a standard position.
2) Take care not to touch the rear of the document glass unit with hand to prevent dirt.
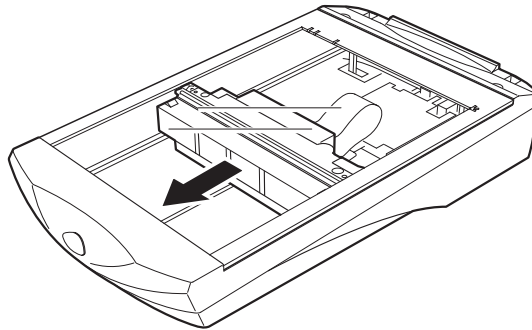
Figure 3-7

II. DRIVE SYSTEM

A. Motor Unit

1. Removing the sliding rod

1) Remove the document cover.
2) Remove the document glass unit.
3) Remove one screw to remove the sliding rod cover.
4) Remove the sliding rod.
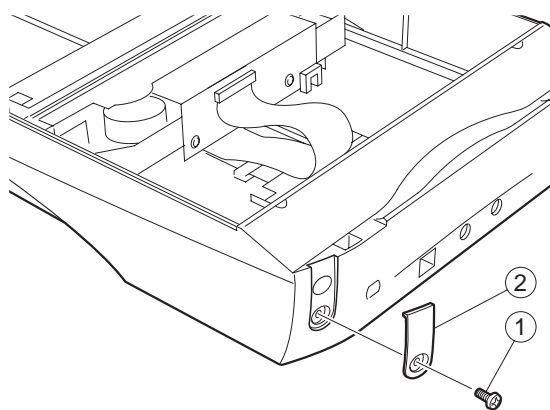
Figure 3-8
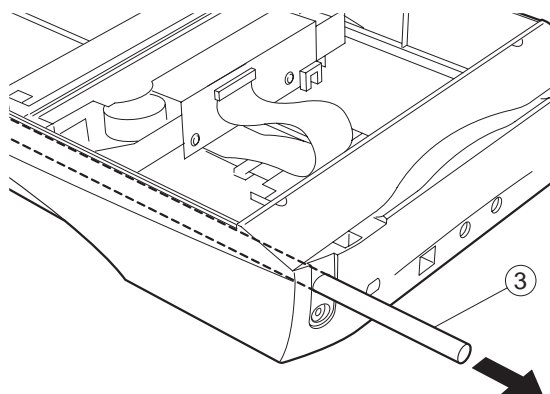
① Screw
② Sliding Rod Cover
③ Sliding Rod

Figure 3-9

2. Removing the scanning unit

1) Remove the document cover.
2) Remove the document glass unit.
3) Remove the sliding rod.
4) Remove the flat cable.
5) Lift the scanning unit to loose the belt, then remove the scanning unit.
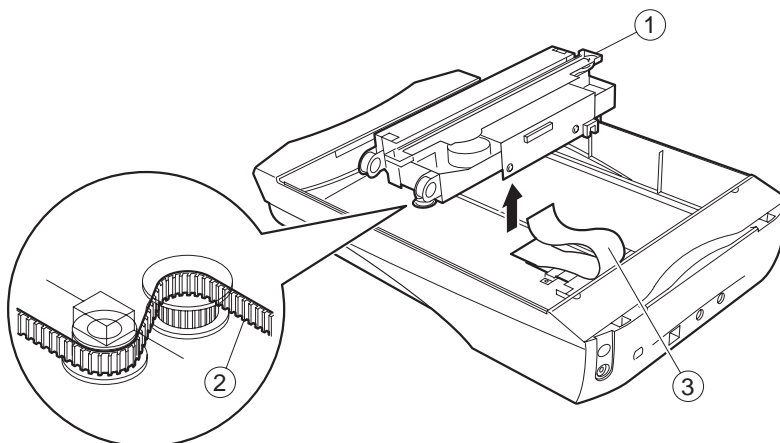
① Scanning Unit
② Belt
③ Flat Cable

Figure 3-10

Note: Take care not to touch the scanning lamp and the CCD drive PCB.

3. Precaution when attaching the scanning unit

1) Take care not to touch the scanning lamp and the CCD drive PCB.
2) Attach the belt as shown in Figure 3-10.
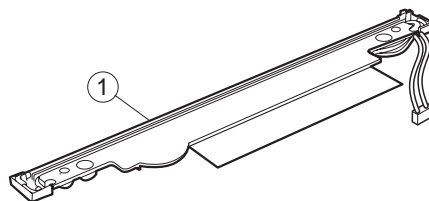3) When attaching the flat cable, take care not to put a hold in the flat cable.

4. Removing the drive motor

1) Remove the document cover.
2) Remove the document glass unit.
3) Remove the sliding rod.
4) Remove the scanning unit.
5) Remove two screws and lamp cable to remove the lamp unit.
6) Remove two screws and drive motor cable, then remove the drive motor.
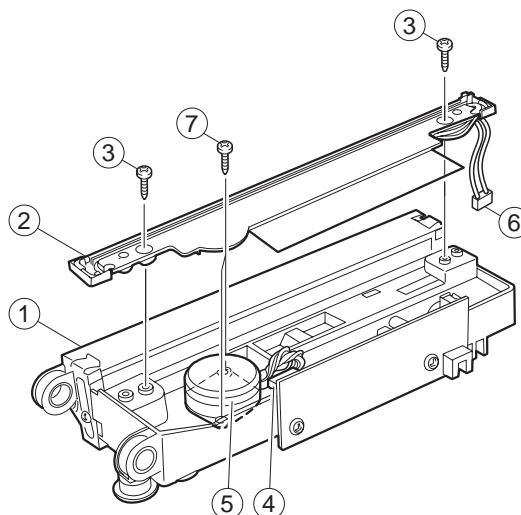
① Scanning Unit
② Lamp Unit
③ Screw
④ Drive Motor Cable
⑤ Drive Motor
⑥ Lamp Cable
⑦ Screw

Figure 3-11

Note: Do not remove the CCD drive PCB from the scanning unit since it must be adjusted at the factory.

III. OPTICAL SYSTEM

A. Lamp Unit

1. Removing the lamp unit

1) Remove the document cover.
2) Remove the document glass unit.
3) Remove the sliding rod.
4) Remove the scanning unit.
5) Remove two screws and lamp cable to remove the lamp unit.
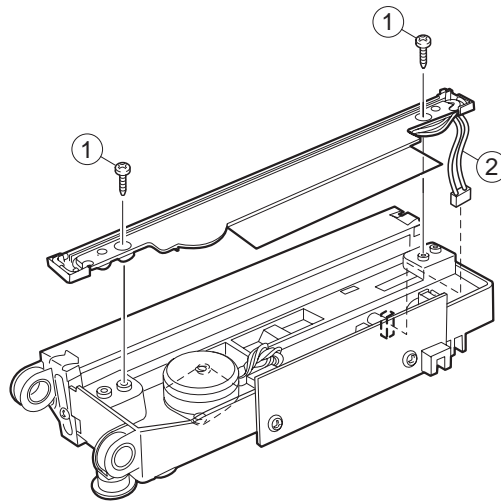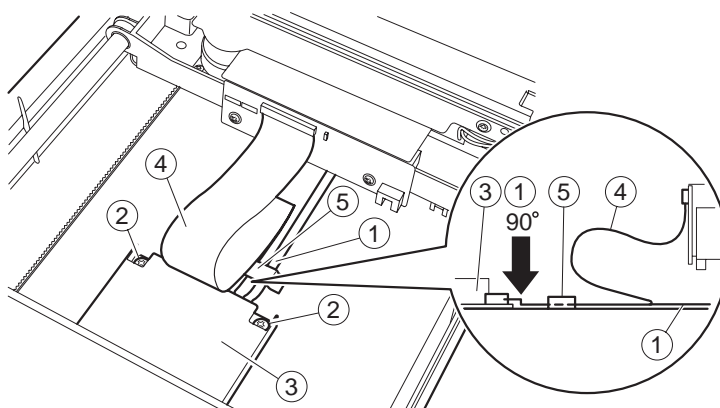
① Screw
② Lamp Cable

Figure 3-12

① Lamp Unit

Figure 3-13

IV. PCB

A. Main PCB

1. Removing the main PCB

1) Remove the document cover.
2) Remove the document glass unit.
3) Remove the flat cable, button cable, and two screws, then remove the main PCB.

① Button Cable
② Screw
③ Main PCB
④ Flat Cable
⑤ Ferrite Core Holder

Figure 3-14

2. Precaution when attaching the main PCB

1) Remove two screws to remove the ferrite core holder temporarily.
2) Connect the flat cable to the main PCB.
3) Bend the button cable at 90 degrees when connecting to the main PCB as shown in Figure 3-14.

B. Button PCB

1. Removing the button PCB

1) Remove the document cover.
2) Remove the document glass unit.
3) Move the scanning unit to the center.
4) Remove the button cable.
5) Remove two screws.
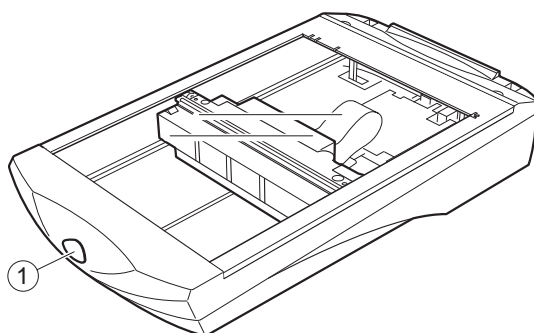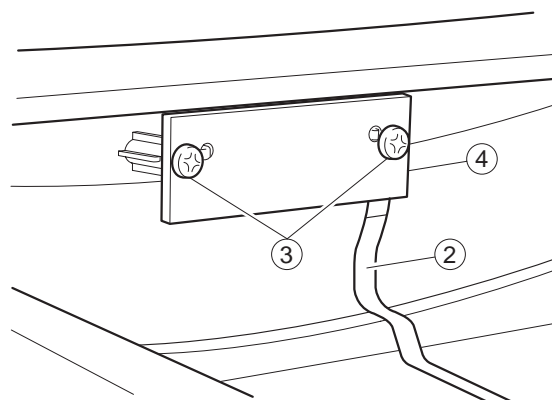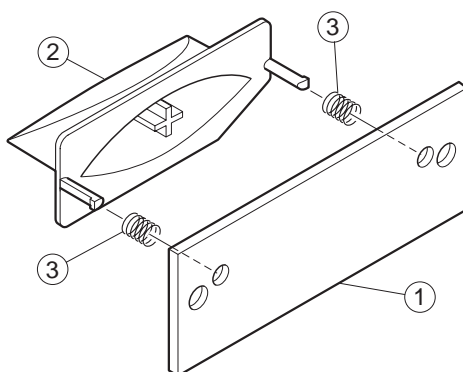6) Remove the start button from the button PCB, caring not to lose the button spring.

Figure 3-15

① Start Button
② Button Cable
③ Screw
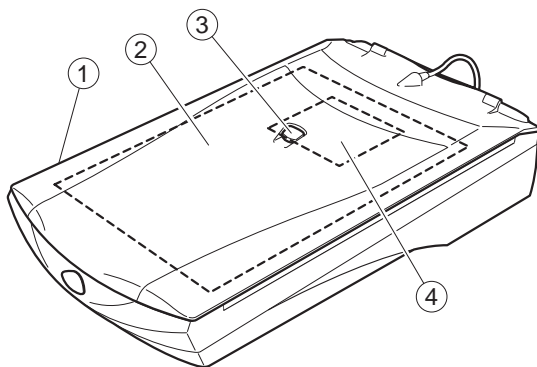④ Button PCB

Figure 3-16

① Button PCB
② Start Button
③ Button Spring

Figure 3-17

V. FAU

The FAU is located between the document cover and FAU cover. It is installed only at the factory. Therefore, if the FAU is faulty, replace the whole document cover.

① Document Cover
② FAU Cover
③ FAU Button
④ FAU lamp

Figure 3-18

CHAPTER 4

MAINTENANCE AND SERVICING

I. PERIODICAL REPLACEMENT PARTS

4 - 1

None

II. CONSUMABLE PARTS DURABILITY

None

III. PERIODICAL SERVICING

None

IV. SPECIAL TOOLS

None

V. SOLVENTS AND LUBRICANTS

Lubricants used for disassembly and reassembly of the scanner.

Name   : Grease

Tool No.   : TKC-0955

Usage   : To be applied to the sliding part between the scanning unit and sliding rod.

Remarks   : MOLYKOTE EM-50L

CHAPTER 5

TROUBLESHOOTING

I. INITIAL CHECK

A. Operating Environment

Check if the operating environment conforms to the following conditions.

1. Line voltage is within ±10% of the rated value.

2. Ambient temperature and humidity conform to the operating environment. (Refer to CHAPTER 1, II. SPECIFICATIONS)

3. The scanner is not installed near a water faucet, boiler, humidifier, open flame, or in dusty place.

4. The scanner is not exposed to direct sunlight. If it must be installed by a window, hang a curtain to block direct sunlight.

5. The scanner is installed in a well-ventilated place.

B. Others

Moving a scanner from a cold place to a warm place can cause condensation on the metal parts, resulting in a faulty operation.

II. TROUBLESHOOTING

Causes and corrective actions against possible faulty image and faulty operation are listed below.

A. Faulty Image

1. Image not output

Cause 1   : Faulty connection of the USB cable
Corrective action : Securely connect the USB cable.

Cause 2   : Faulty scanning lamp when scanning in flatbed mode
Corrective action : Replace the lamp unit.

Cause 3   : Faulty FAU when scanning a film
Corrective action : Replace the document cover.

Cause 4   : Faulty CCD
Corrective action : Replace the scanning unit.

Cause 5   : Faulty main PCB
Corrective action : Replace the main PCB.

2. Uneven image density or lines

Cause 1   : Dirt on the document cover or document glass
Corrective action : Clean the document cover or document glass.

Cause 2   : Faulty calibration data
Corrective action : Scan again.

Cause 3   : External light is entering into the scanner. External light entering into
                     the CCD can cause uneven image density.
Corrective action : Fully close the document cover. If it is impossible, cover with a sheet etc.
                     to prevent external light.

Cause 4   : Faulty CCD
Corrective action : Replace the scanning unit.

Cause 5   : Faulty main PCB
Corrective action : Replace the main PCB.

B. Faulty Operation

1. Host computer not detecting the scanner

Cause 1   : Faulty installation of the device driver
Corrective action : Uninstall the device driver and reinstall it.

Cause 2   : Faulty connection of the USB cable
Corrective action : Securely connect the USB cable to the scanner and host computer.

Cause 3   : Faulty main PCB
Corrective action : Replace the main PCB.

2. Scanner not operating

Cause 1   : Carriage lock is locked.
Corrective action : Unlock the carriage lock.

Cause 2   : Faulty connection of the flat cable
Corrective action : Securely connect the flat cable to the scanning unit and main PCB.

Cause 3   : Faulty scanning lamp
Corrective action : Replace the lamp unit.

Cause 4   : Faulty FAU
Corrective action : Replace the document cover.

Cause 5   : Faulty CCD
Corrective action : Replace the scanning unit.

Cause 6   : Faulty main PCB
Corrective action : Replace the main PCB.
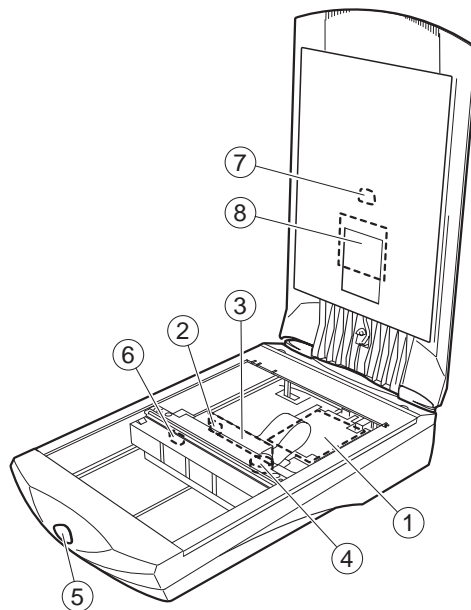
3. Drive motor not running

Cause 1   : Faulty connection of the flat cable
Corrective action : Securely connect the flat cable.

Cause 2   : Faulty drive motor
Corrective action : Replace the drive motor.

Cause 3   : Faulty motor driver
Corrective action : Replace the scanning unit.

Cause 4   : Faulty main PCB
Corrective action : Replace the main PCB.

III. LOCATION OF ELECTRICAL PARTS

① Main PCB
② Home Position Sensor
③ CCD Drive PCB
④ Drive Motor
⑤ Start Button
⑥ Inverter PCB
⑦ FAU Button
⑧ FAU Inverter PCB

Figure 5-1

IV. CANON SCANNER TEST

A. Outline

Canon Scanner Test is utility software to check if faulty scanner operation is due to hardware or communication with a host computer.

* For Windows
  ScanTest.exe (Japanese/English is switched according to the language used in Windows.)

* For Macintosh
  ScantestD660Uj (Japanese)/ScantestD660Ue (English)

B. Operating Environment

Windows platform
1) CanoScan D660U
2) PC/AT Compatibles (Pentium or faster is recommended.)
3) Windows 98 or Windows 2000 Operating System
4) Scanner Device Driver

Macintosh platform
1) CanoScan D660U
2) Power Macintosh
3) Macintosh OS (Version 8.5 or later)
4) Scanner Device Driver

> Note: Install the scanner device driver before using the Canon Scanner Test.

C. Functions

1. USB information (Windows only)

Scanner information recognized by Windows.

2. Scanner information

Product ID, ROM version, etc. are shown when the scanner is properly communicated with the host computer.

3. Scanner self test

Scanner self test is performed.

4. Scan

Any image is scanned and saved as an image file in the same folder with the Canon Scanner Test.

D. Function Descriptions

1. USB information (Windows only)

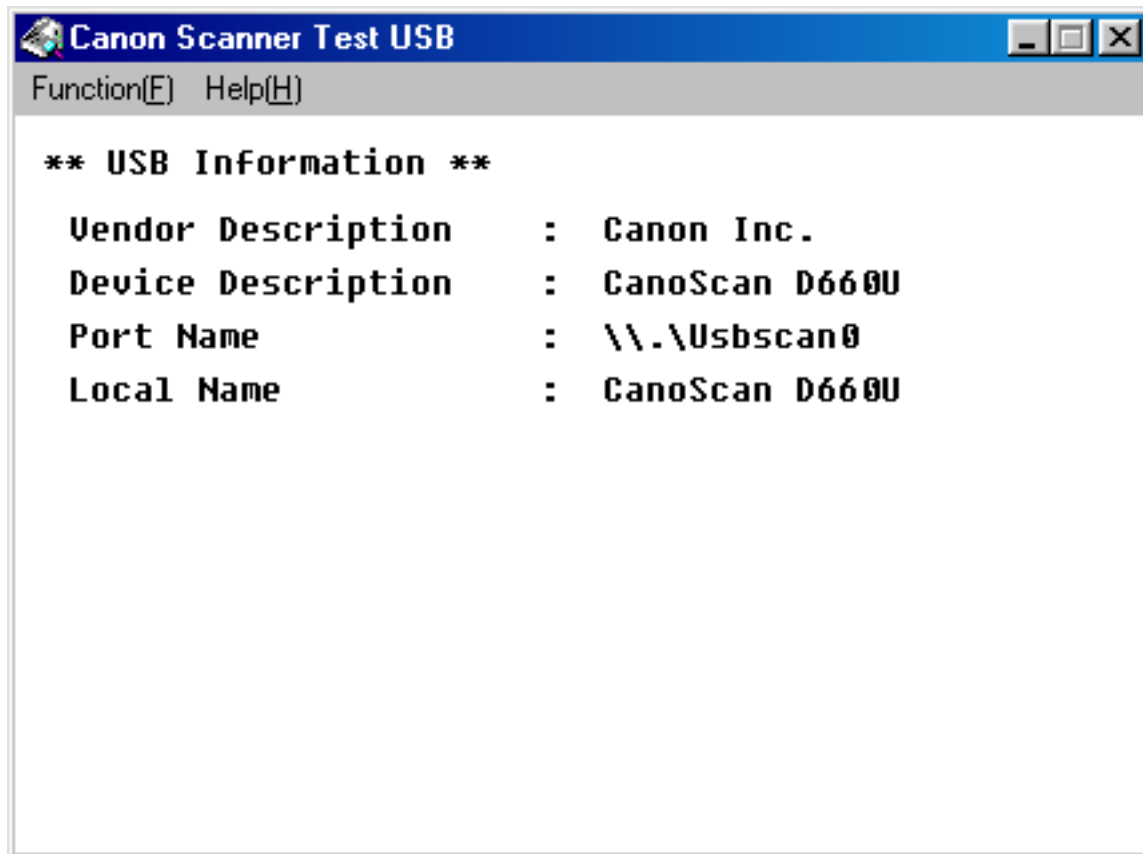Select "USB Information" from the "Function" menu to display as shown in Figure 5-2 (Windows).

Figure 5-2

· Vendor Description   : Manufacturer name (Canon) of the scanner connected.
· Device Description   : Product name of the scanner connected.
· Port Name   : Port name of the scanner recognized by Windows.
· Local Name   : Product name of the scanner connected.

2. Scanner information

Select "Scanner Information" from the "Function" menu to display as shown in Figure 5-3 (Windows) or Figure 5-4 (Macintosh).
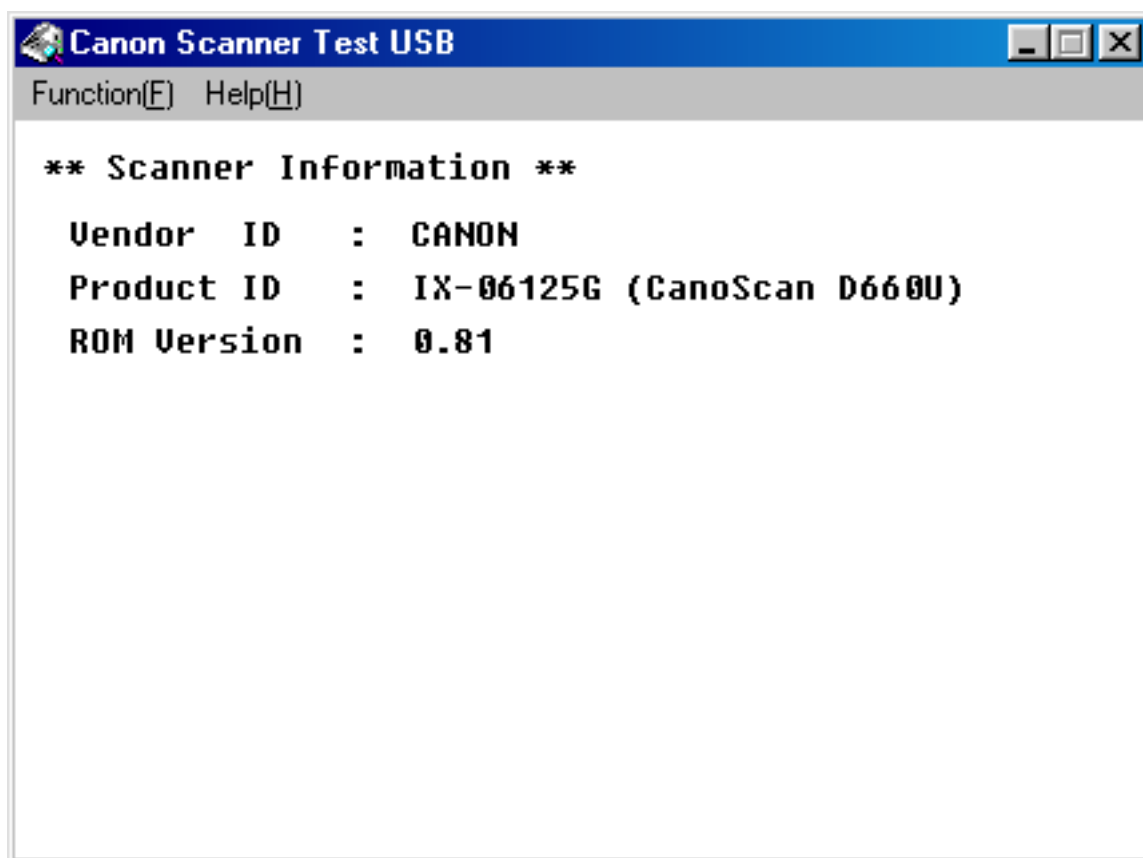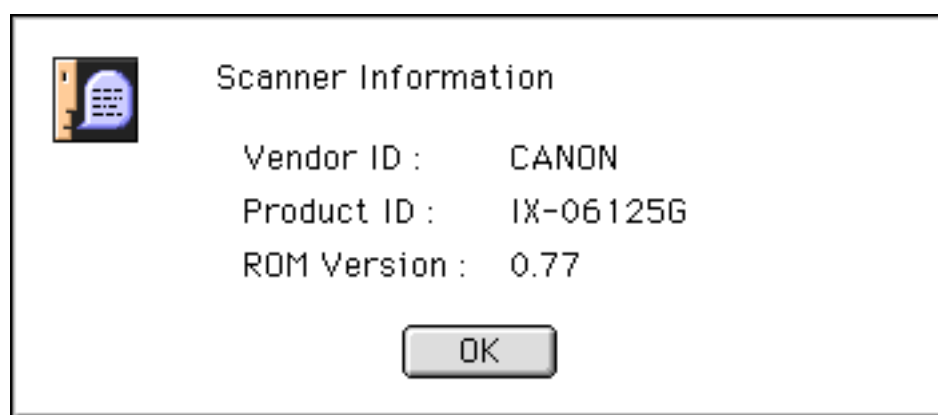

Figure 5-3

Figure 5-4

· Vendor ID   : Manufacturer name (Canon) of the scanner connected.
· Product ID   : Product name of the scanner connected.
· ROM Version   : ASIC version.

3. Scanner self test

Select "Scanner self test" from the "Function" menu to display a dialog as shown in Figure 5-5 (Windows) or Figure 5-6 (Macintosh).
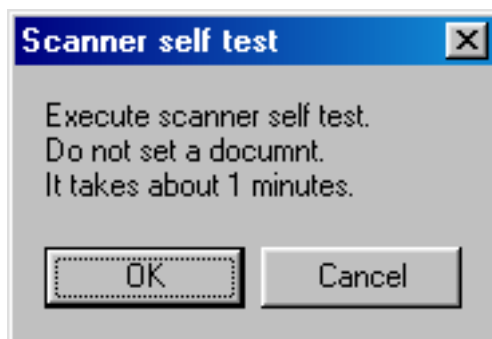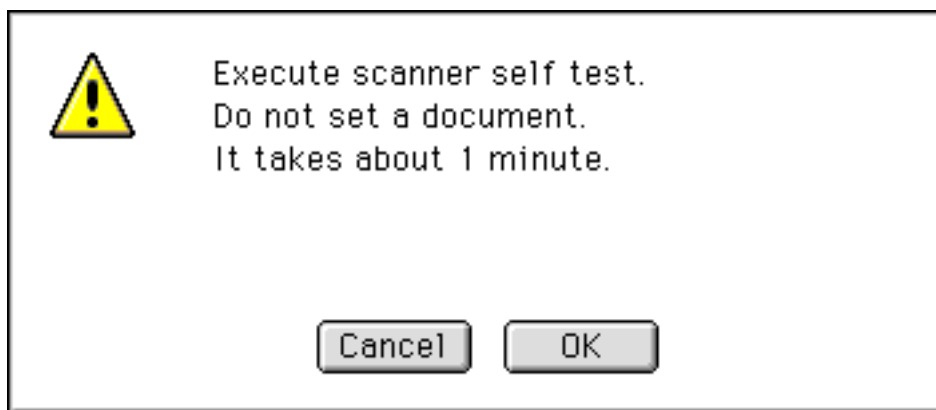
Figure 5-5

Figure 5-6

Click "OK" to perform Scanner self test. When it has completed normally, a dialog as shown in Figure 5-7 (Window) or Figure 5-8 (Macintosh) is displayed.
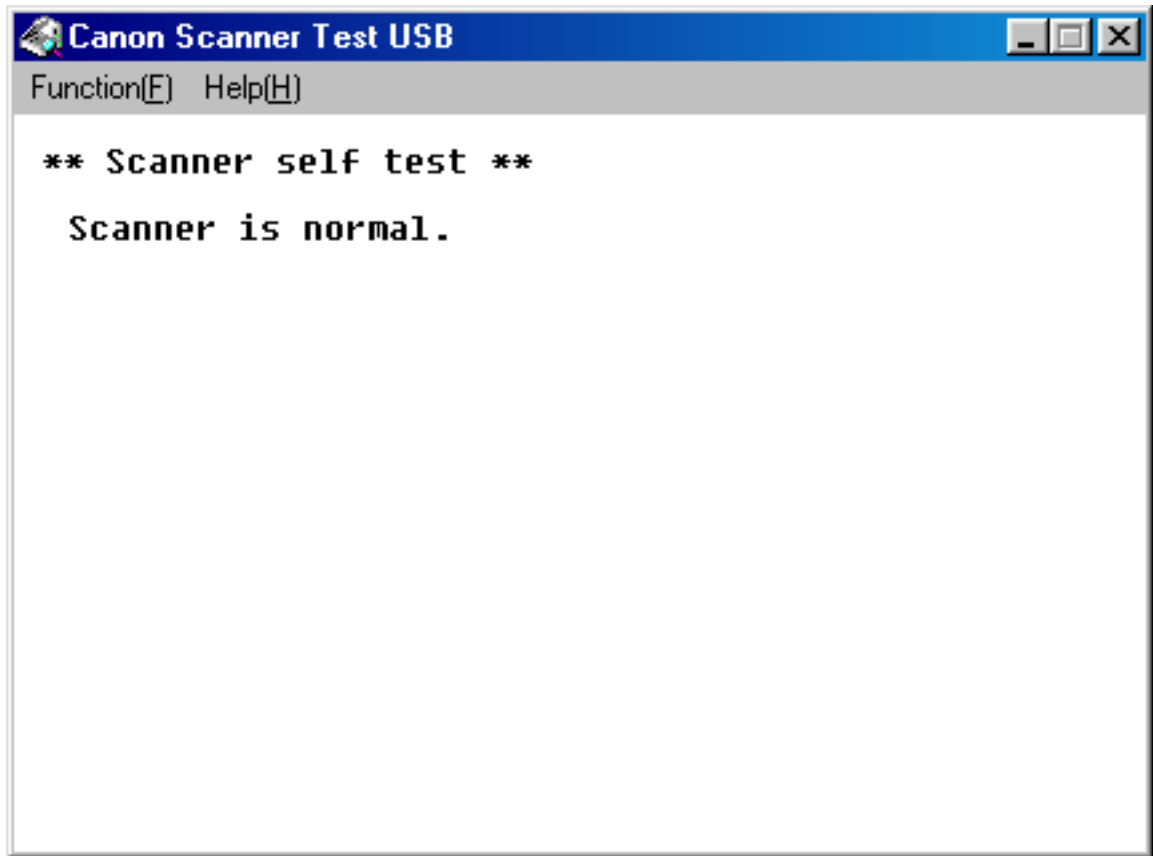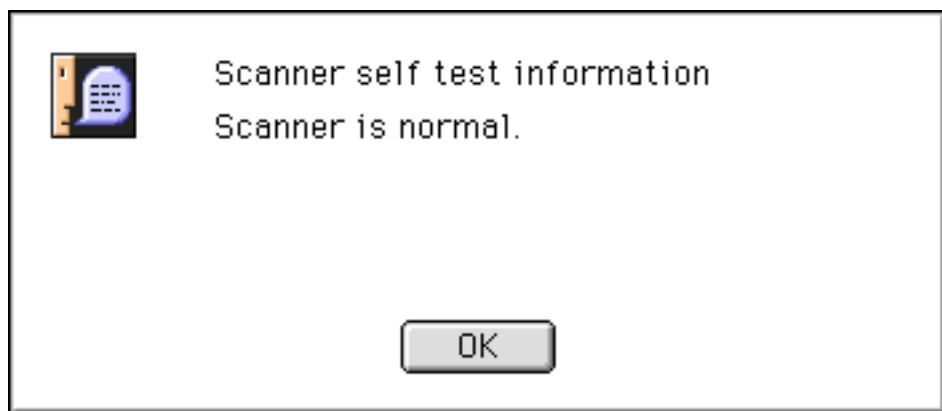

Figure 5-7

Figure 5-8

4. Scan

    Select "Scan" from the "Function" menu to display a dialog as shown in Figure 5-9 (Windows) or Figure 5-10 (Macintosh).
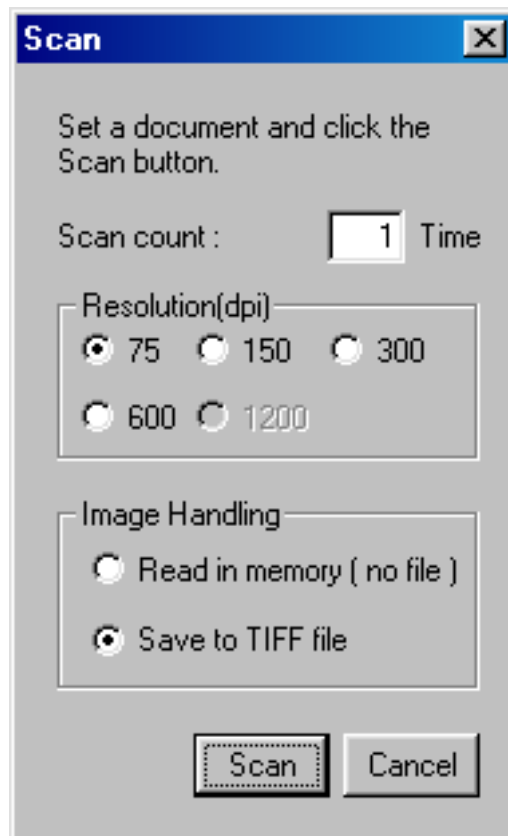
Figure 5-9

Set a document and click the
Scan button.

Scan count: [1] Time(s)

Resolution
⦿ 75   ◯ 150
◯ 300   ◯ 600
◯ 1200

Image
◯ Read in memory (no file)
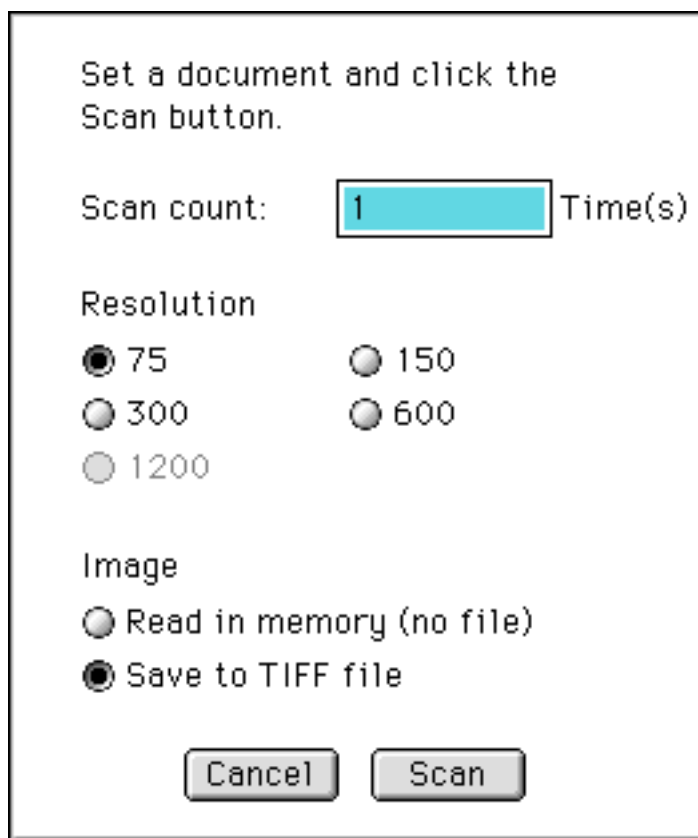⦿ Save to TIFF file

[Cancel]   [Scan]

Figure 5-10

* Scan count   : Specify the number of scan.
* Resolution   : Select a resolution for the image to be scanned.
* Image   : Select a handling method of the scanned image. When "Read in memory (no
                 file)" is selected, scanned image is read into the memory, then abandoned
                 after readout. When "Save to TIFF file" is selected, the file of "img0.tif" is set
                 up in the same folder with the Canon Scanner Test.

                 File volume is as follows.
                     75 dpi : Approx. 1.6 MByte
                    150 dpi : Approx. 6.5 MByte
                    300 dpi : Approx. 26.2 MByte
                    600 dpi : Approx. 104.9 MByte

Note: Confirm before scanning that the available disk space on the HDD in which the
       Canon Scanner Test is installed exceeds above file volume.

E. Error Message

Causes and corrective actions for error messages which may occur during Canon Scanner Test are described below.

1. When Canon scanner test is started, "Unable to find USB scanner" is displayed.

Cause 1 : Device driver for the scanner is not installed in the host computer.
Corrective action : Install the device driver.

Cause 2 : Scanner is not detected by the host computer.
Corrective action : Properly detect the scanner by the host computer.

2. Scanner information is not displayed or scanner self test terminates without scan operation.

Cause 1 : Carriage lock is locked.
Corrective action : Unlock the carriage lock.

Cause 2 : Scanner is not detected by the host computer.
Corrective action : Properly detect the scanner by the host computer.

Cause 3 : Faulty flat cable
Corrective Action : Check the flat cable connector. If it is normal, replace the flat cable.

Cause 4 : Faulty CCD
Corrective Action : Replace the scanning unit.

Cause 5 : Faulty main PCB
Corrective Action : Replace the main PCB.

3. "Carriage lock is locked" is displayed.

Cause 1 : Carriage lock is locked.
Corrective Action : Unlock the carriage lock.

Cause 2 : Faulty drive motor
Corrective Action : Replace the drive motor.

Cause 3 : Faulty home position sensor
Corrective Action : Replace the scanning unit.

4. "Unable to open file" is displayed.

Cause : Canon scanner test is started from a CD-ROM or write-protect HDD.
Corrective Action : Copy the Canon scanner test on a writable HDD to use.

CHAPTER 6

PARTS CATALOG

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FIGURE U01 ACCESSORY
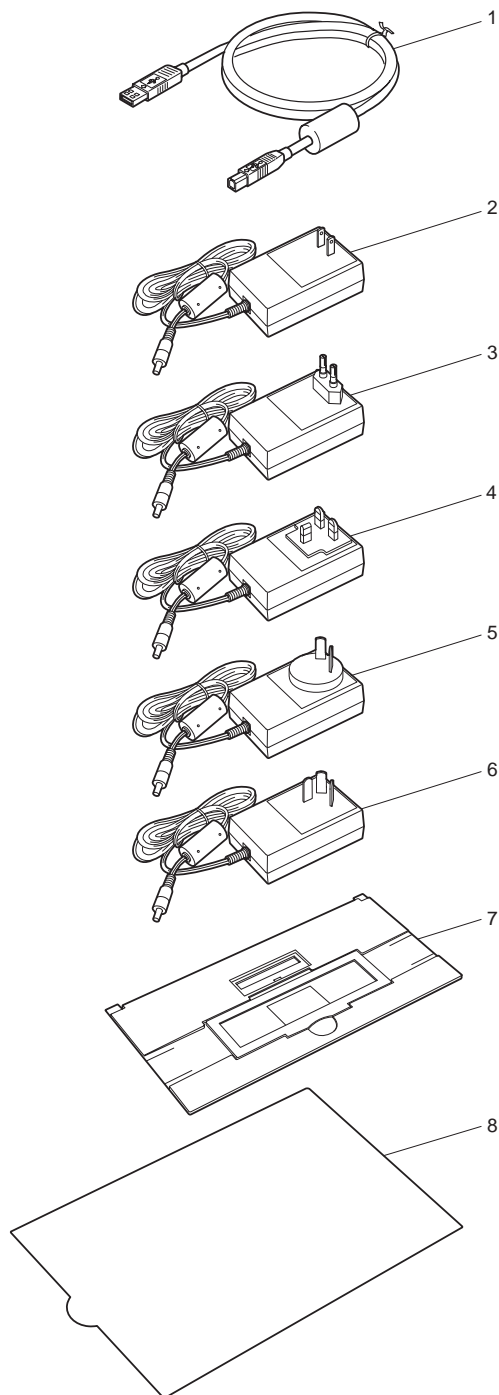
FIGURE & KEY NO.	PART NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS
U01-01	104-0138-0SP		1	CABLE, USB	
02	003-0269-0SP		1	ADAPTER, AC	JPN/CCSI/CANADA/CLA
03	003-2164-0SP		1	ADAPTER, AC	CSPL/CLA/EUR
	003-2191-0SP		1	ADAPTER, AC	HK/LOTTE
04	003-2163-0SP		1	ADAPTER, AC	UK
05	003-2162-0SP		1	ADAPTER, AC	ARGENTINA/CA
06	003-2190-0SP		1	ADAPTER, AC	CHINA
07	NPN		1	FILM GUIDE	
08	NPN		1	COVER, FAU	
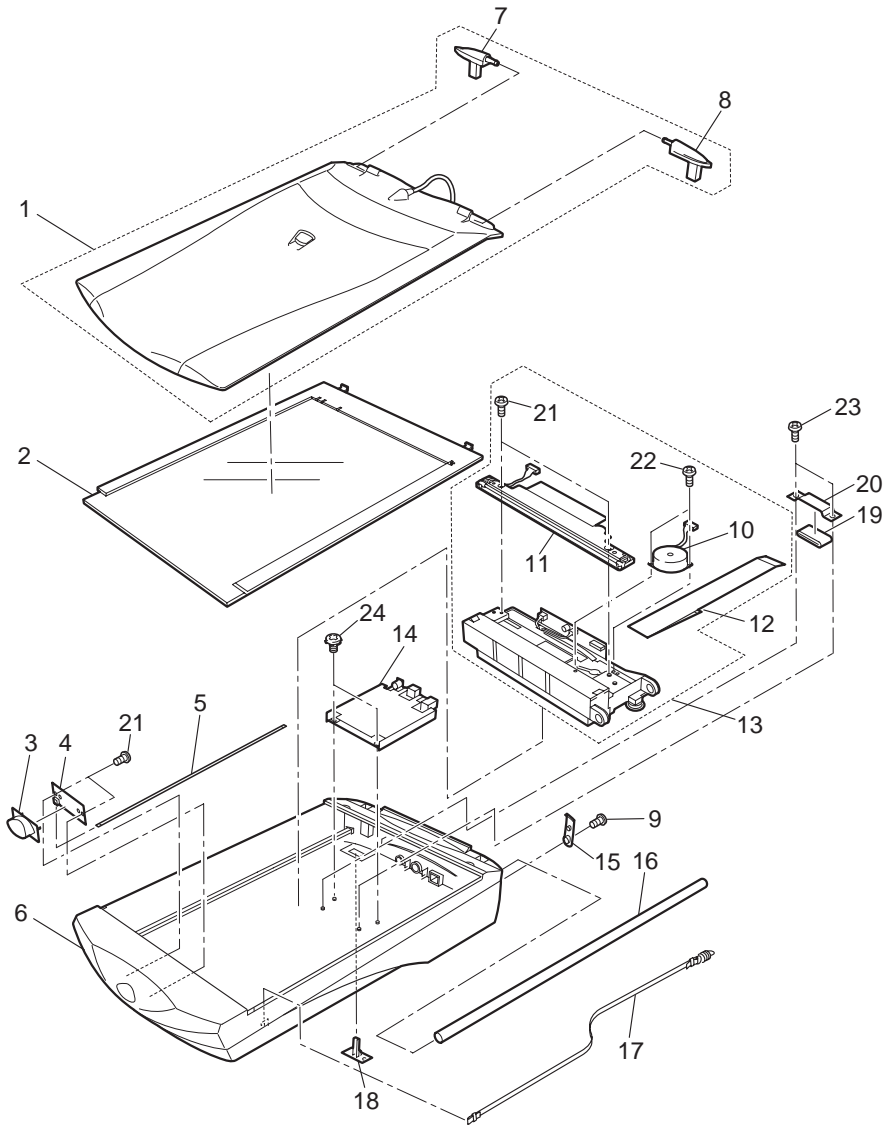
FIGURE & KEY NO.	PART NUMBER	RANK	Q'TY	DESCRIPTION	SERIAL NUMBER/REMARKS
U10-01	003-5244-0SP		1	DOCUMENT COVER ASSEMBLY	
02	002-0841-0SP		1	PLATEN GLASS ASSEMBLY	
03	051-0544-0SP		1	BUTTON	
04	004-0399-0SP		1	BUTTON PCB ASSEMBLY	
05	104-0153-0SP		1	CABLE, BUTTON	
06	NPN		1	BASE FRAME	
07	051-0541-0SP		1	HINGE(R)	
08	051-0540-0SP		1	HINGE(L)	
09	077-0626-0SP		1	SCREW, M3X6, TAPPING	
10	065-0054-0SP		1	MOTOR ASSEMBLY	
11	002-0963-0SP		1	LAMP ASSEMBLY	
12	104-0162-0SP		1	FLEXIBLE FLAT CABLE	
13	003-5256-0SP		1	OPTICAL ASSEMBLY	
14	003-5255-0SP		1	MAIN PCB ASSEMBLY	
15	051-0568-0SP		1	COVER, SLIDING ROD	
16	NPN		1	SLIDING ROD	
17	003-2157-0SP		1	BELT ASSEMBLY	
18	051-0546-0SP		1	LOCK, CARRIAGE	
19	NPN		1	CORE, FERRITE	
20	NPN		1	HOLDER, FERRITE CORE	
21	077-0601-0SP		4	SCREW, M3X6, TAPPING	
22	077-0627-0SP		2	SCREW, M3X6, WITH SW	
23	077-0302-0SP		2	SCREW, M3X6, TAPPING	
24	077-0618-0SP		2	SCREW, M3X6, WITH TW	

APPENDIX

I. GENERAL CIRCUIT DIAGRAM

II. MAIN PCB CIRCUIT DIAGRAM

(1 / 2)

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A - 3
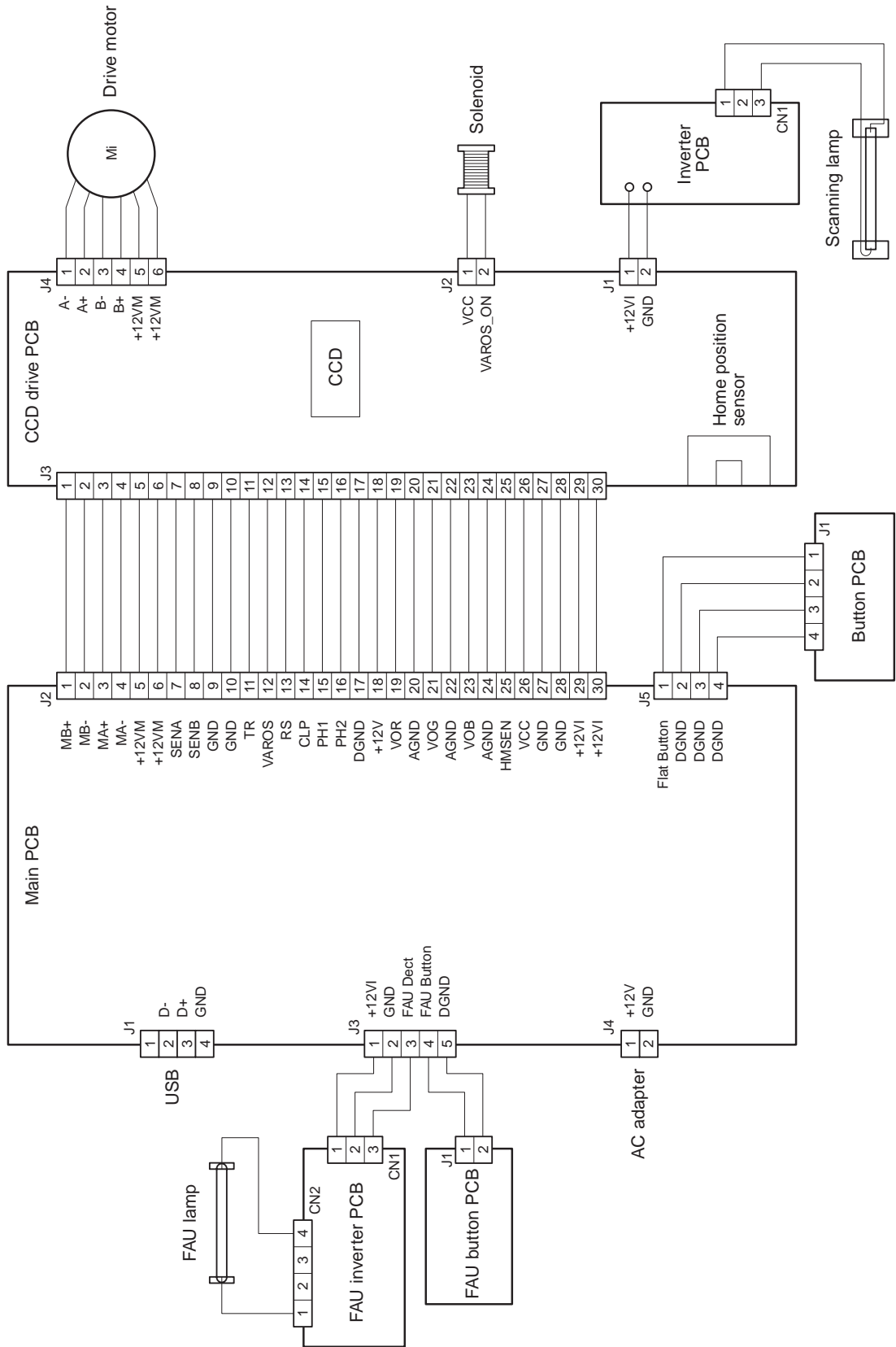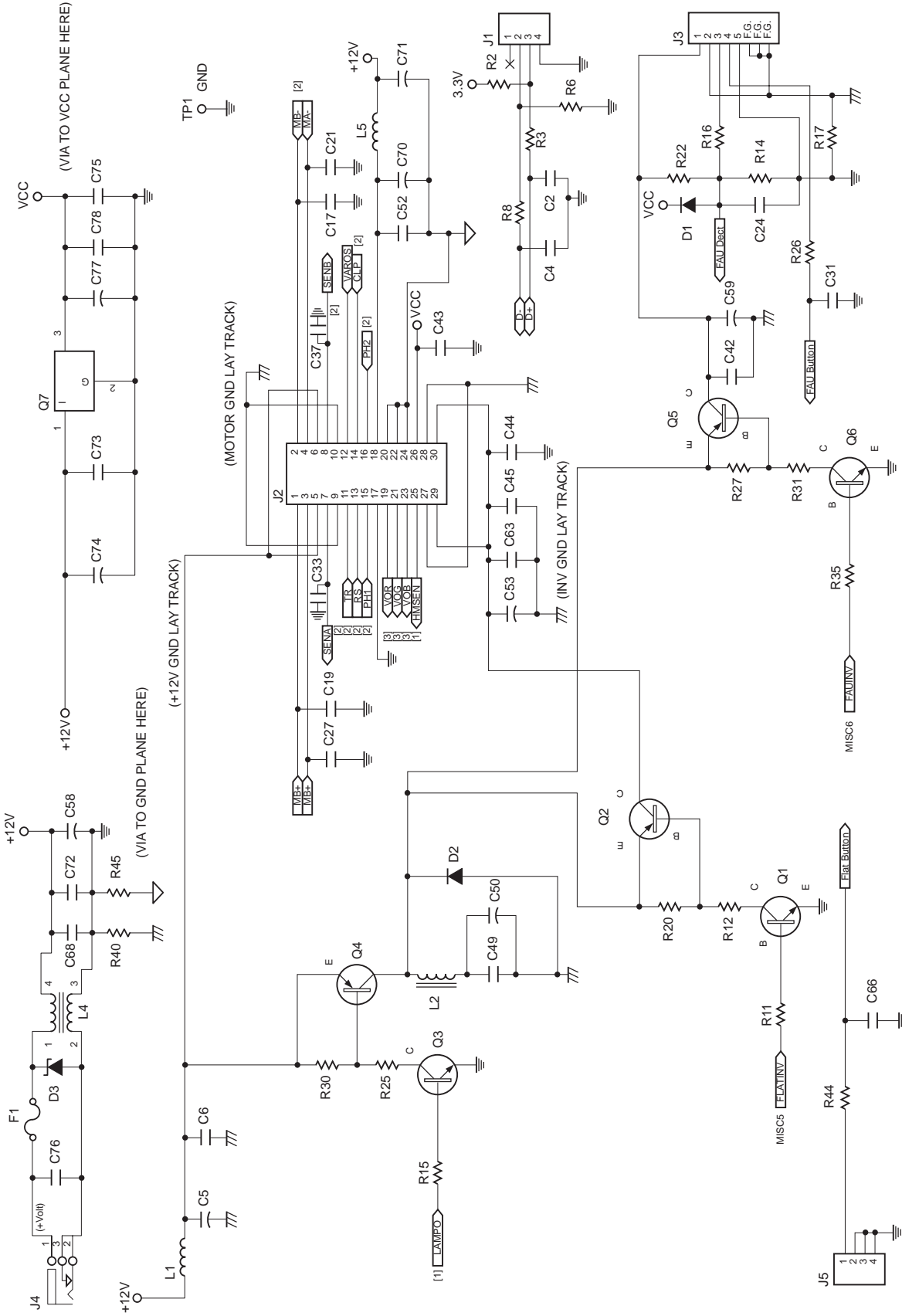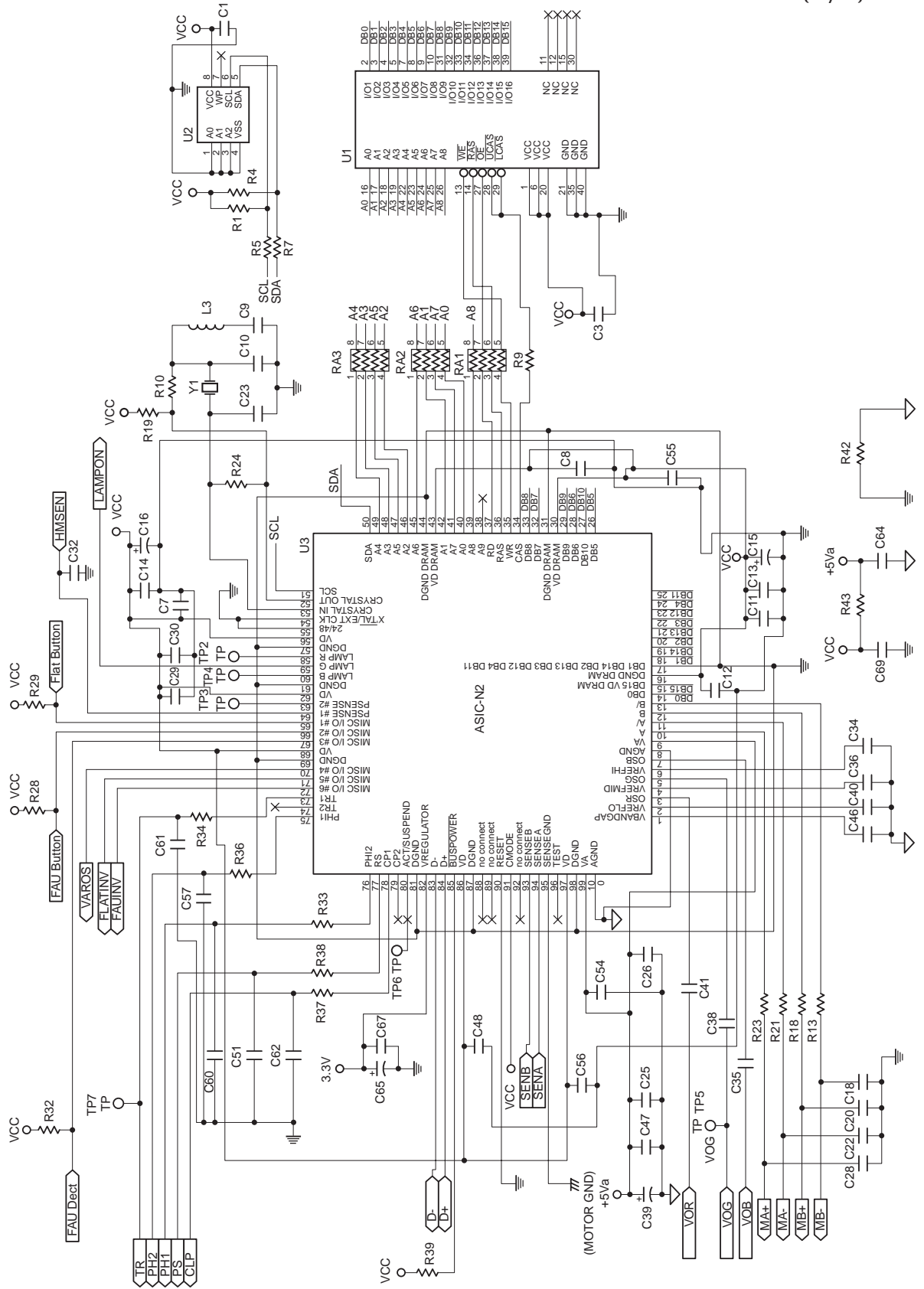
III. CCD DRIVE PCB CIRCUIT DIAGRAM
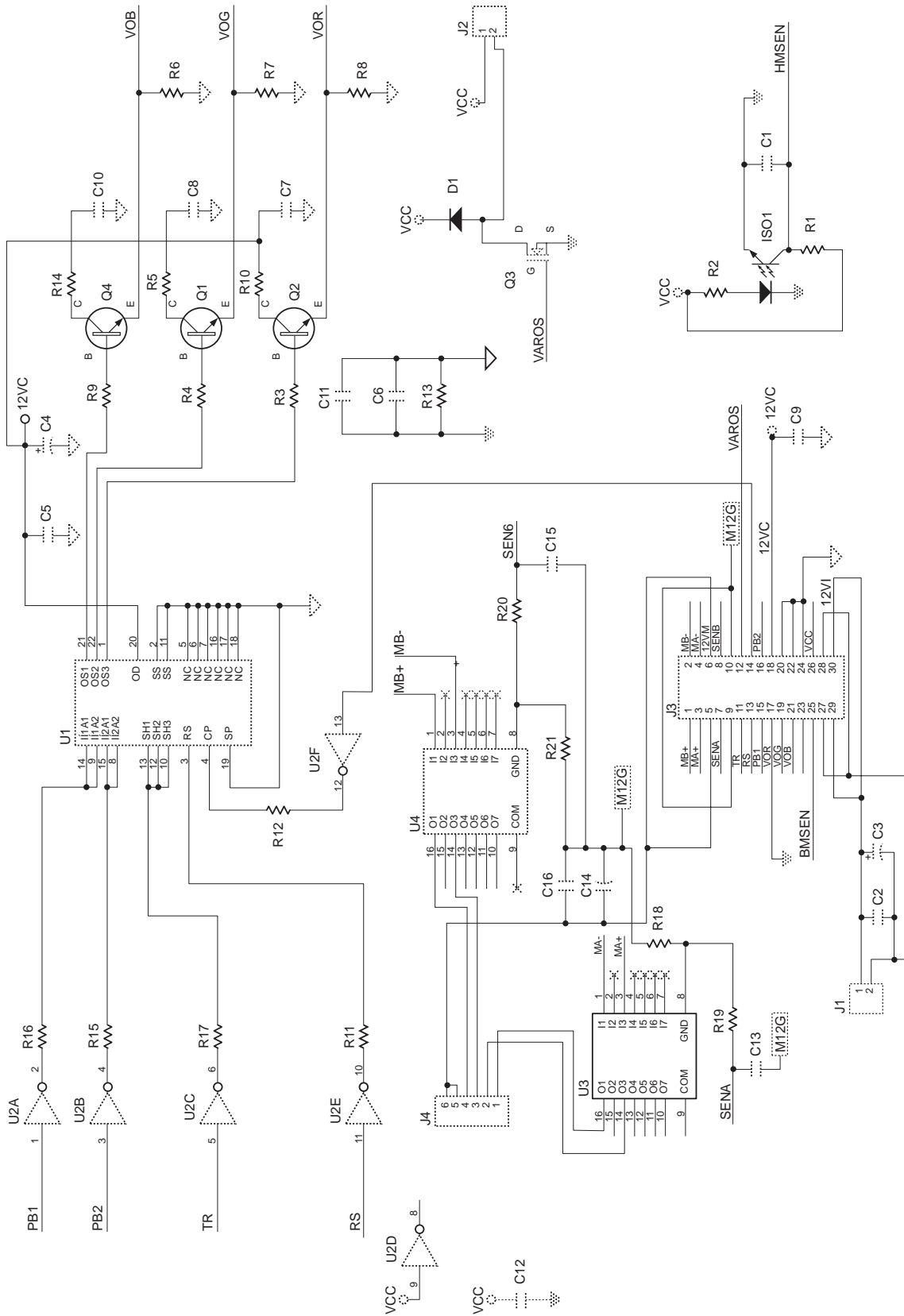
IV. BUTTON PCB CIRCUIT DIAGRAM

SW1   BOT   J1

2 4
1 3

1
2
3
4
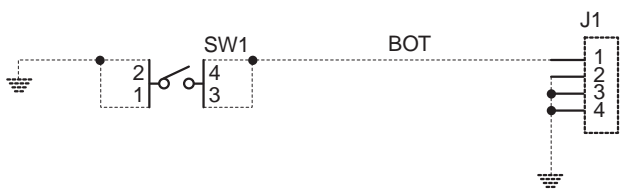
V. FAU BUTTON PCB CIRCUIT DIAGRAM
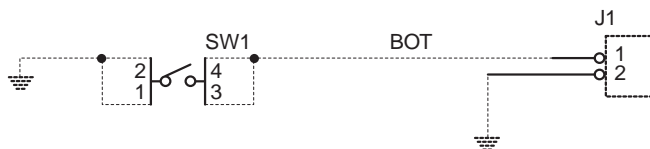
REVISION 0 (JULY 2000)

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