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CANOSCAN

D660U

SERVICE MANUAL

REVISION 0

Canon

JULY 2000

JY8-1318-00Z

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CANOSCAN D660U REV.0 JULY 2000 PRINTED IN JAPAN (IMPRIME AU JAPON)

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Imprimé au Japon***

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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-
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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

I. FEATURES	1-1	C. Connecting to the Host Computer	1-6
II. SPECIFICATIONS	1-2	D. Connecting to FAU	1-7
III. EXTERIOR FEATURES	1-3	E. Connecting to Power Source .	1-7
A. Front View	1-3	F. Scanning a Document	1-8
B. Rear View	1-3	V. CUSTOMER'S DAILY MAINTENANCE	1-9
IV. INSTALLATION	1-4		
A. Installation Conditions	1-4		
B. Unlocking the Scanning Unit	1-5		

CHAPTER 2 : GENERAL OPERATIONS

I. BASIC OPERATION	2-1	D. Drive Motor Control Circuit	2-15
A. Functions	2-1	III. IMAGE PROCESSING SYSTEM ...	2-16
B. Outline of Electrical System ..	2-2	A. Outline	2-16
C. Main PCB Input and Output ...	2-3	B. Image Processing Functions	2-16
D. Basic Sequences	2-4	IV. CONTROL SYSTEM	2-19
II. OPTICAL SYSTEM	2-10	A. Outline	2-19
A. Outline	2-10	B. USB Interface	2-19
B. VAROS	2-11	V. POWER SUPPLY	2-21
C. Scanning Lamp/FAU Lamp Lighting Circuit	2-14		

CHAPTER 3 : MECHANICAL SYSTEM

I. EXTERNALS	3-1	A. Lamp Unit	3-10
A. Covers	3-1	IV. PCB	3-11
II. DRIVE SYSTEM	3-7	A. Main PCB	3-11
A. Motor Unit	3-7	B. Button PCB	3-12
III. OPTICAL SYSTEM	3-10	V. FAU	3-14

CHAPTER 4 : MAINTENANCE AND SERVICING

I. PERIODICAL REPLACEMENT PARTS	4-1	III. PERIODICAL SERVICING	4-1
II. CONSUMABLE PARTS DURABILITY	4-1	IV. SPECIAL TOOLS	4-1
		V. SOLVENTS AND LUBRICANTS	4-1

CHAPTER 5 : TROUBLESHOOTING

I. INITIAL CHECK.....	5-1	IV. CANON SCANNER TEST	5-5
A. Operating Environment	5-1	A. Outline	5-5
B. Others	5-1	B. Operating Environment	5-5
II. TROUBLESHOOTING.....	5-2	C. Functions	5-5
A. Faulty Image	5-2	D. Function Descriptions	5-6
B. Faulty Operation	5-3	E. Error Message	5-12
III. LOCATION OF ELECTRICAL PARTS	5-4		

CHAPTER 6 : PARTS CATALOG

FIGURE U01 ACCESSORY	6-2	FIGURE U10 MAIN BODY	6-4
----------------------------	-----	----------------------------	-----

APPENDIX

I. GENERAL CIRCUIT DIAGRAM	A-1	IV. BUTTON PCB CIRCUIT DIAGRAM	A-5
II. MAIN PCB CIRCUIT DIAGRAM	A-2	V. FAU BUTTON PCB CIRCUIT DIAGRAM	A-6
III. CCD DRIVE PCB CIRCUIT DIAGRAM	A-4		

CHAPTER 1

GENERAL DESCRIPTIONS

I. FEATURES	1-1	C. Connecting to the Host	
II. SPECIFICATIONS	1-2	Computer	1-6
III. EXTERIOR FEATURES	1-3	D. Connecting to FAU	1-7
A. Front View	1-3	E. Connecting to Power	
B. Rear View	1-3	Source	1-7
IV. INSTALLATION	1-4	F. Scanning a Document.....	1-8
A. Installation Conditions	1-4	V. CUSTOMER'S DAILY	
B. Unlocking the Scanning		MAINTENANCE	1-9
Unit	1-5		

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 built 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.
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III. EXTERIOR FEATURES

A. Front View

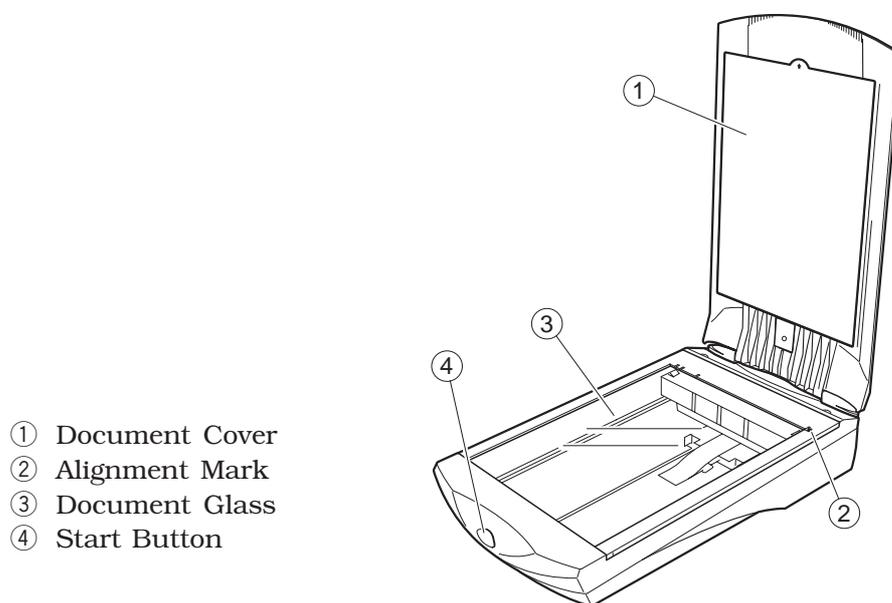


Figure 1-1

B. Rear View

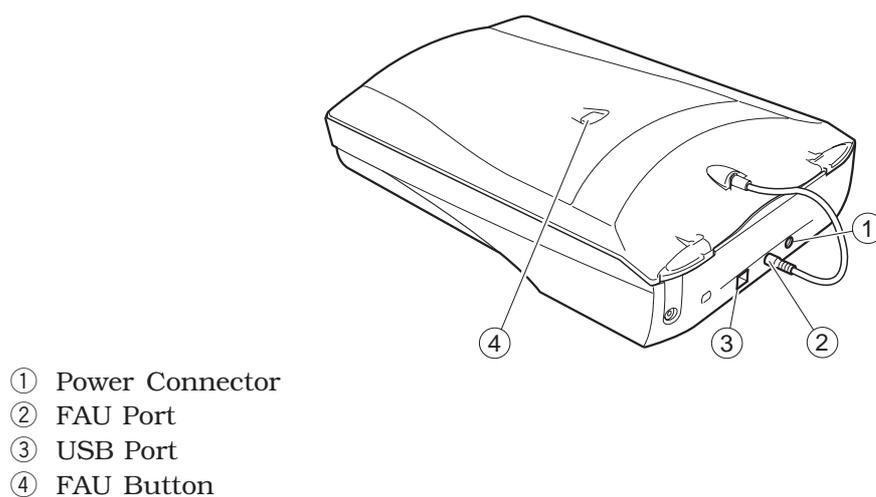


Figure 1-2

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.

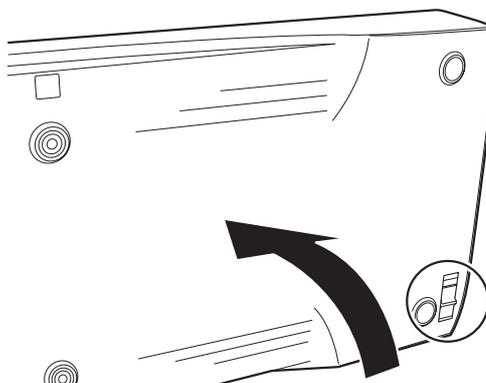


Figure 1-3

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

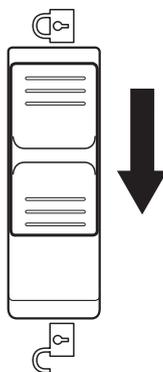


Figure 1-4

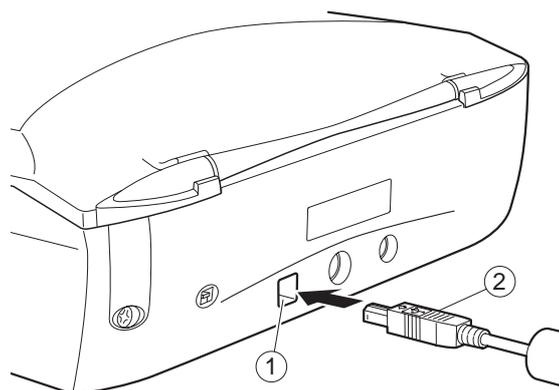
- 3) Return the scanner to its standard position.

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.

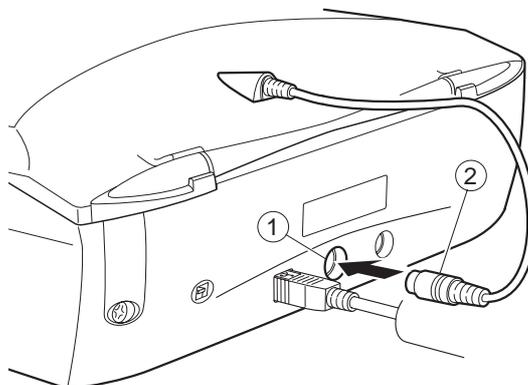


- ① USB Port
- ② USB Cable

Figure 1-5

D. Connecting to FAU

Connect the FAU cable (attached to the document cover) to the FAU port on the scanner.

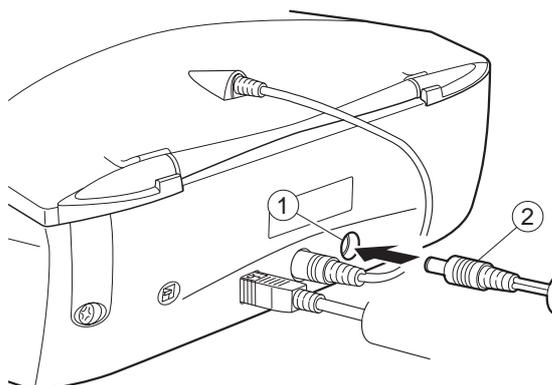


- ① FAU Port
- ② FAU Cable

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.

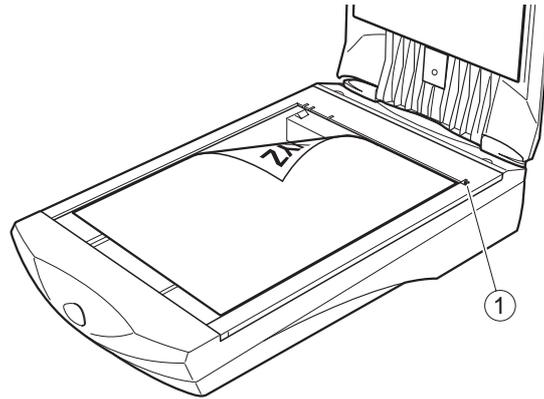


- ① Power Connector
- ② AC Adapter

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	2-1	D. Drive Motor Control	
A. Functions	2-1	Circuit	2-15
B. Outline of Electrical System ...	2-2	III. IMAGE PROCESSING SYSTEM ...	2-16
C. Main PCB Input and Output ...	2-3	A. Outline	2-16
D. Basic Sequences	2-4	B. Image Processing	
II. OPTICAL SYSTEM	2-10	Functions	2-16
A. Outline	2-10	IV. CONTROL SYSTEM	2-19
B. VAROS	2-11	A. Outline	2-19
C. Scanning Lamp/FAU Lamp		B. USB Interface	2-19
Lighting Circuit	2-14	V. POWER SUPPLY	2-21

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.

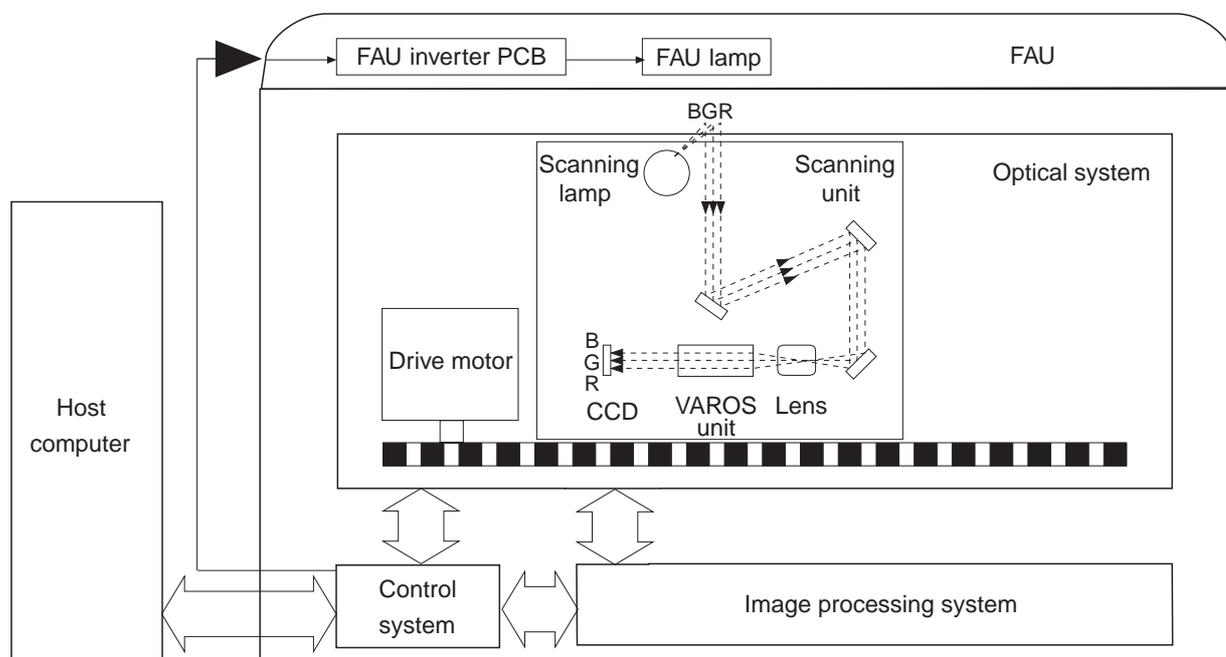


Figure 2-1

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.

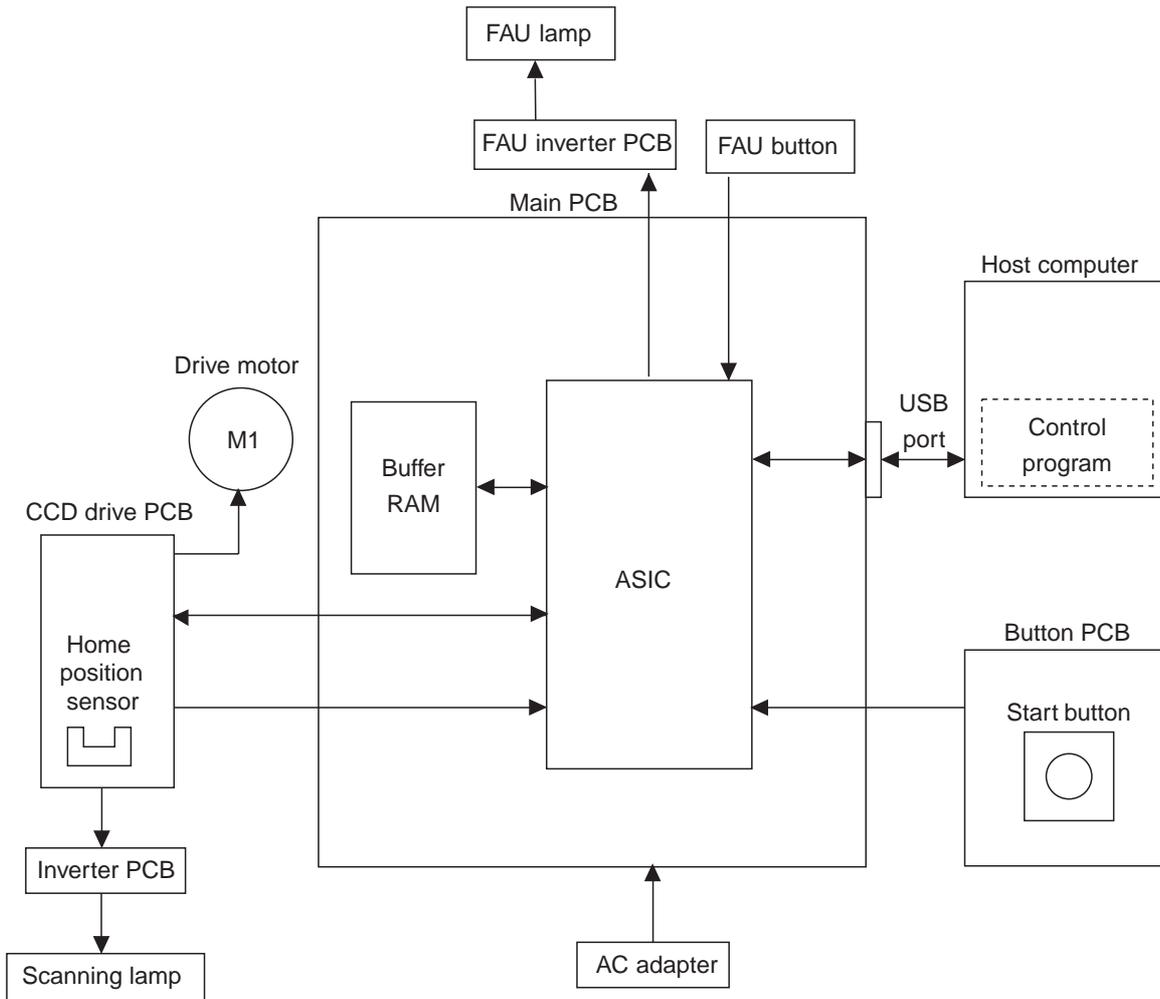


Figure 2-2

C. Main PCB Input and Output

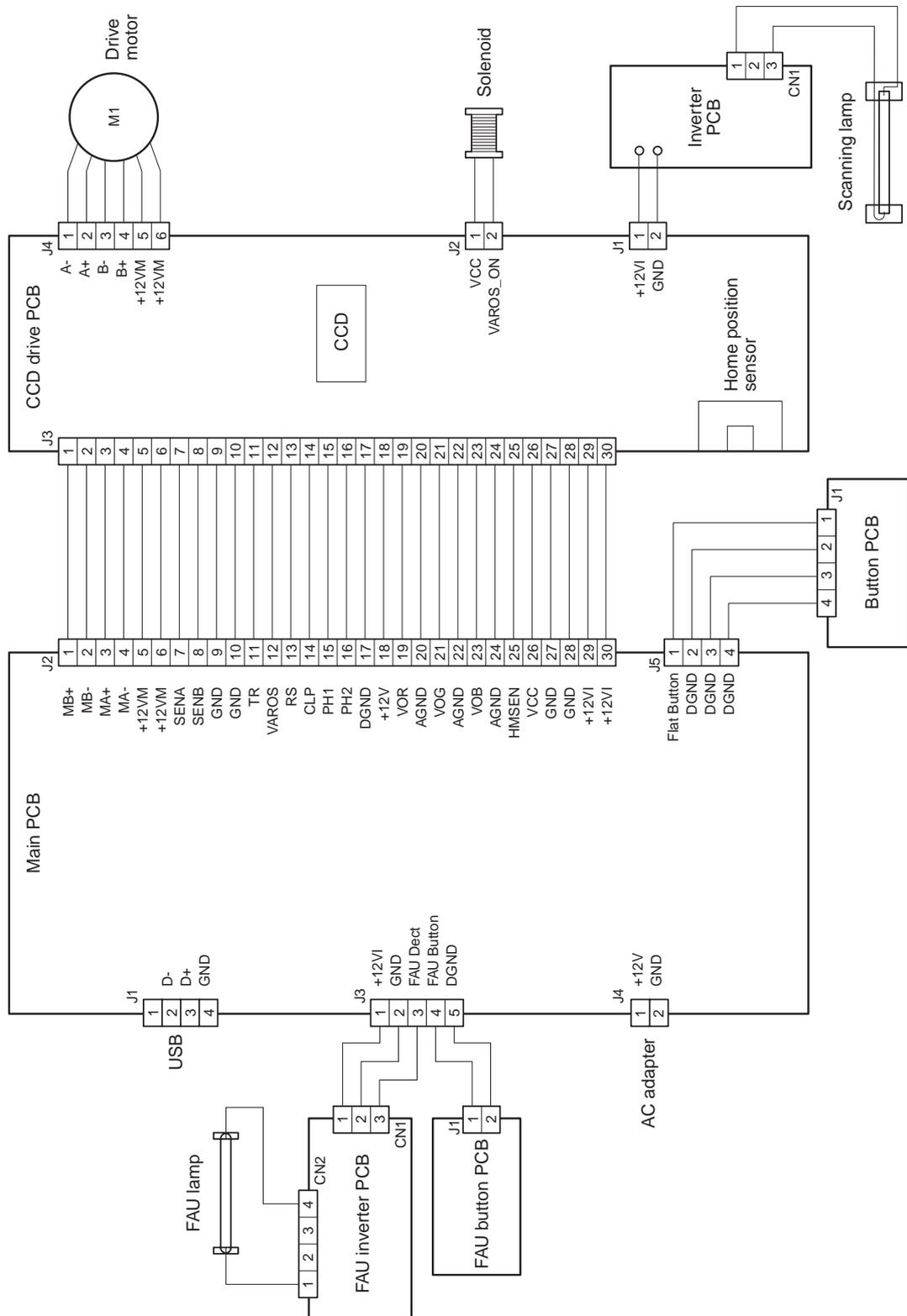
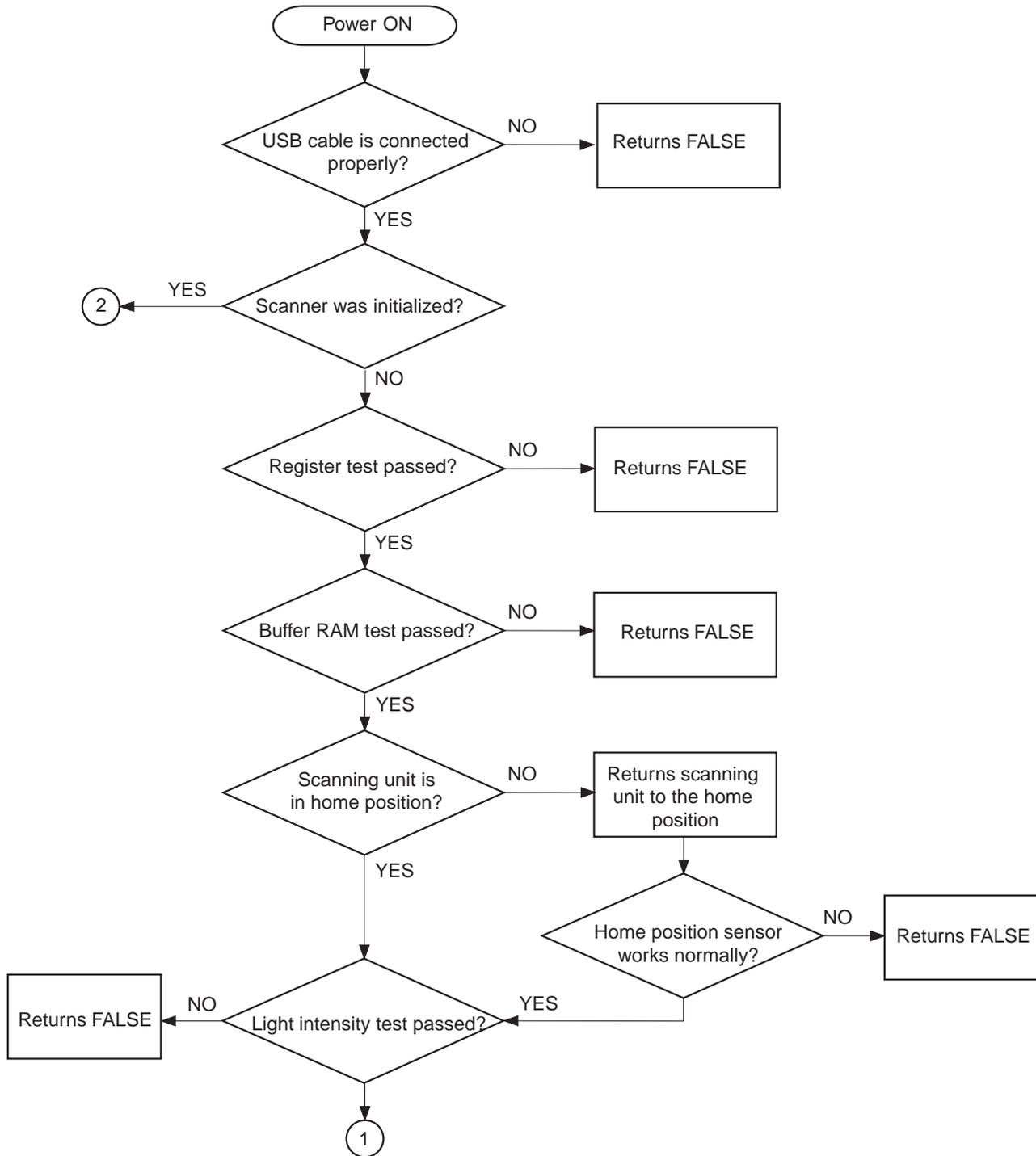


Figure 2-3

D. Basic Sequences

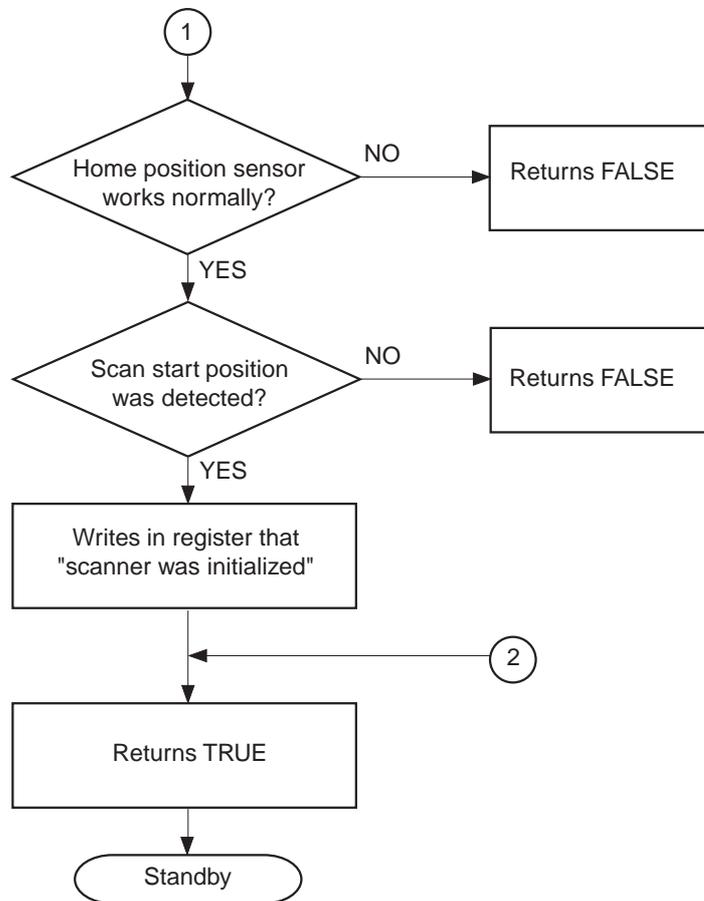
The basic sequences of the scanner is divided into the power ON sequence, calibration sequence, and document scanning sequence.

1. Power ON sequence



<Light intensity test error>
Initializes the scanner again up to 30 sec.

Figure 2-4-1

**Figure 2-4-2**

2. Calibration sequence

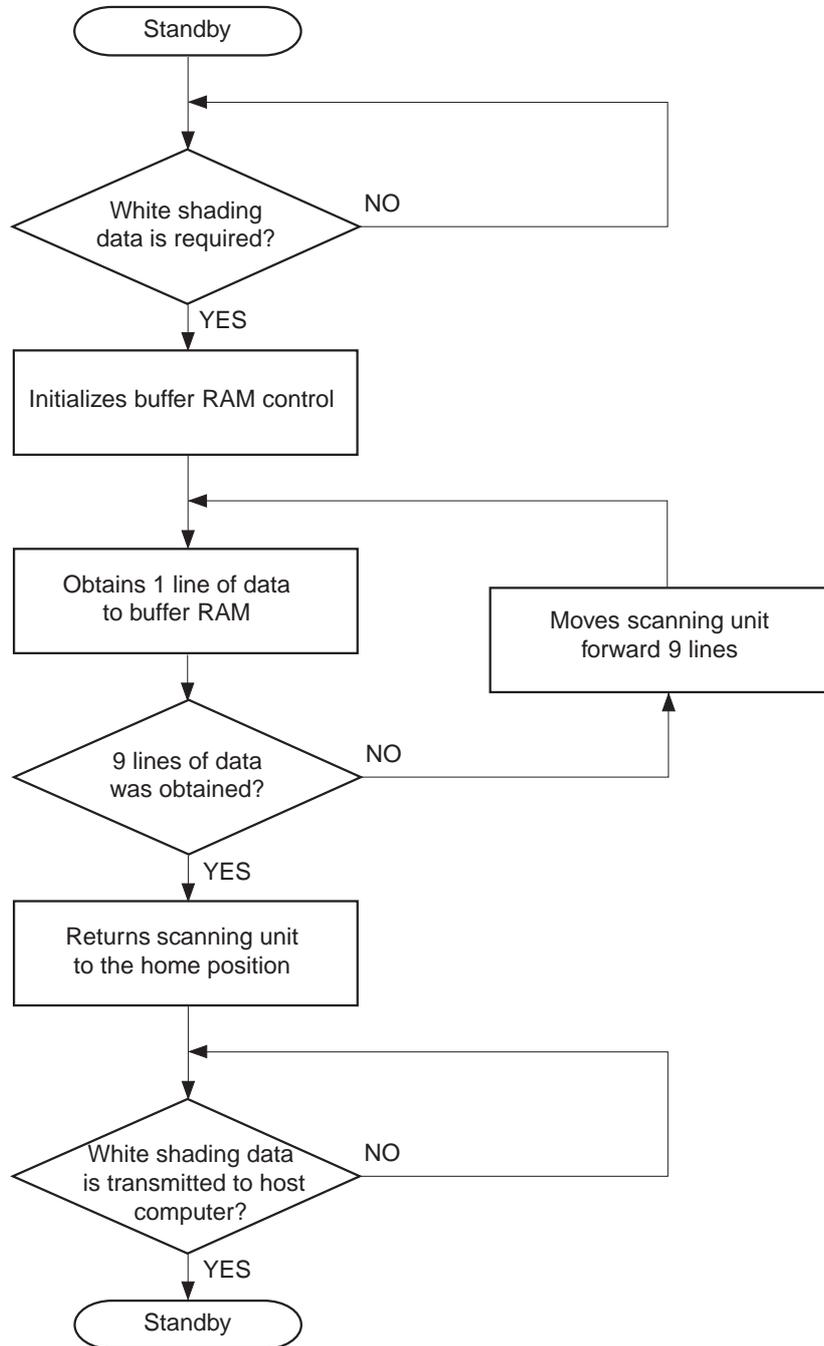
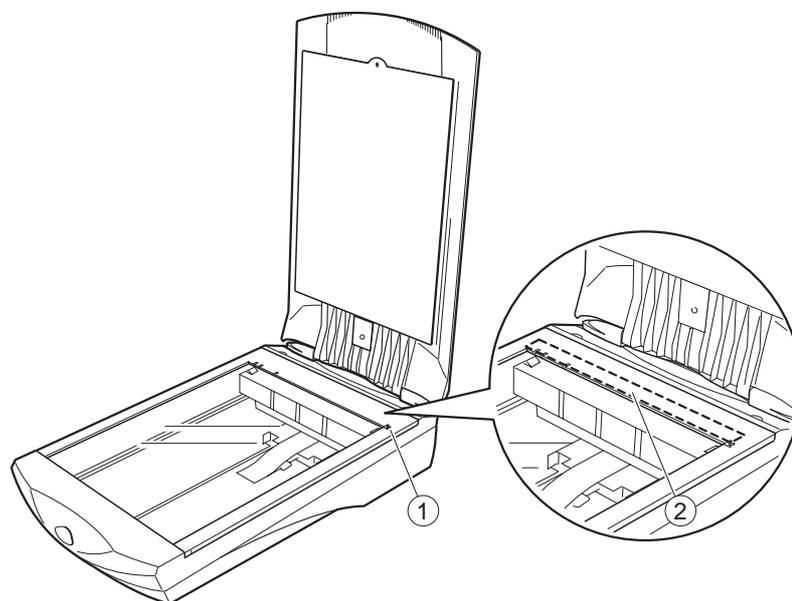


Figure 2-5

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

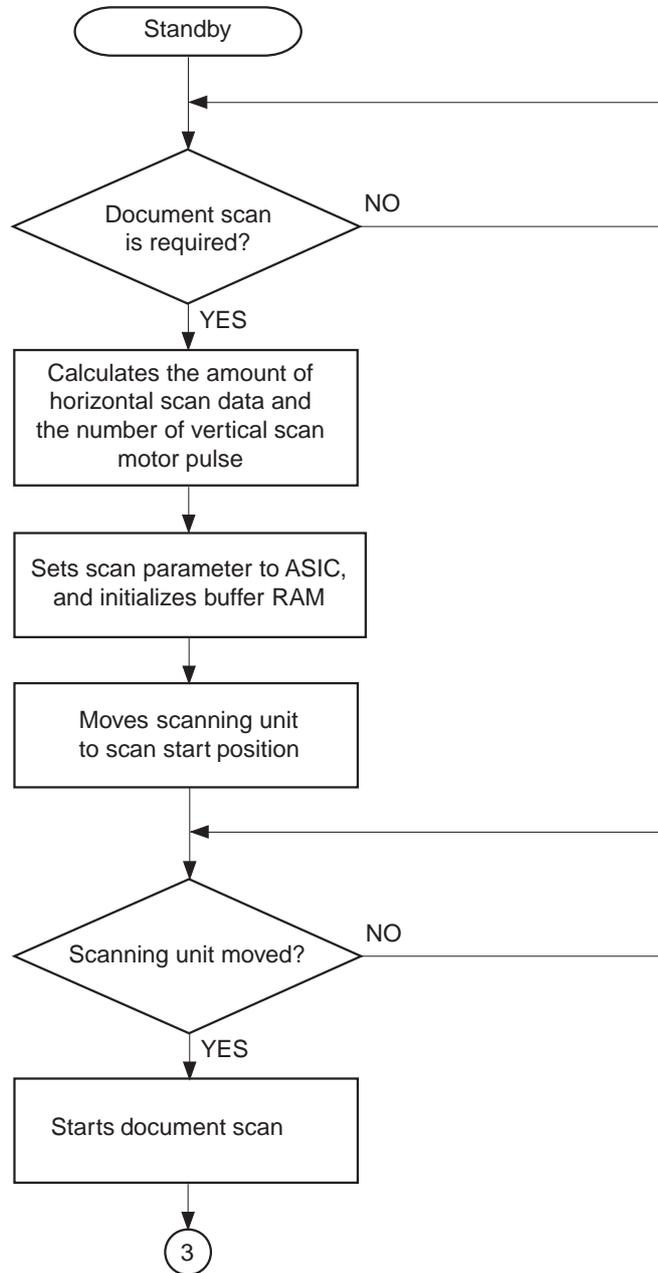


Figure 2-7-1

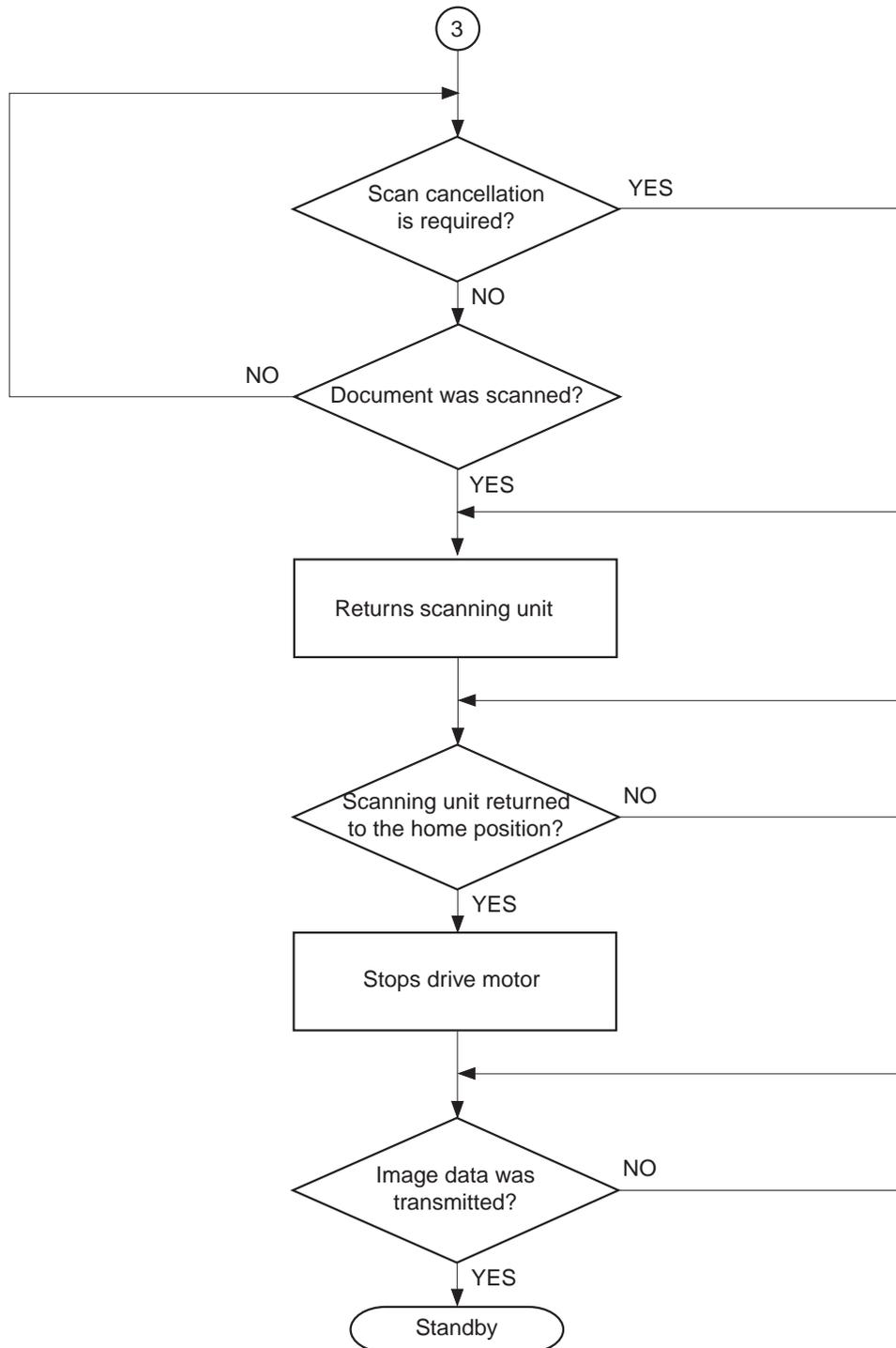


Figure 2-7-2

II. OPTICAL SYSTEM

A. Outline

When scanning a reflective 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.

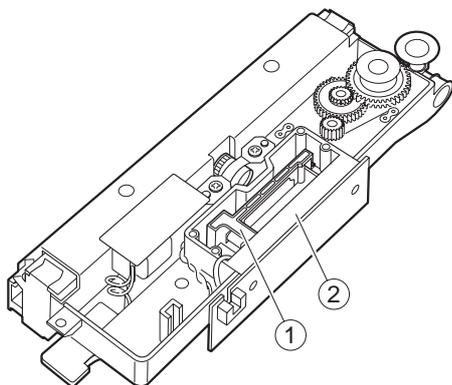
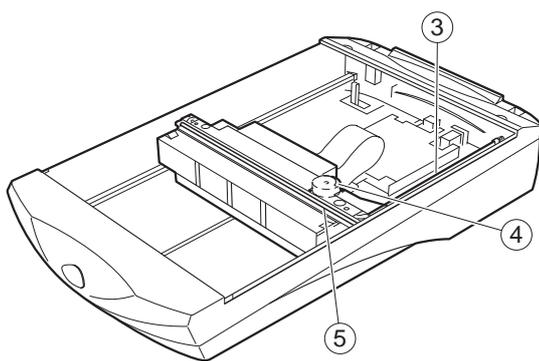


Figure 2-8-1



- ① VAROS Unit
- ② CCD
- ③ Belt
- ④ Drive Motor
- ⑤ Scanning Lamp

Figure 2-8-2