Use of this manual should be strictly supervised to avoid disclosure of confidential information.
This Service Manual describes necessary basic information for field service and maintenance for maintaining the product quality and functions of this machine.

Contents

Chapter 1: General Description
Product specifications, name of parts, operation method

Chapter 2: Functions and Operation
Description of operation of machine system and electrical system by function

Chapter 3: Disassembly and Reassembly
Disassembly method, reassembly method

Chapter 4: Installation and Maintenance
Installation method, maintenance method

Chapter 5: Troubleshooting
Service mode and troubleshooting

Appendix: General diagram, Parts catalog etc.

Information in this manual is subject to change. Notification of such changes will be given in Service Information Bulletins.

Thoroughly read the information contained in this Service Manual and the Service Information Bulletins to gain a correct and deeper understanding of the machine. This is one way of fostering response for ensuring prolonged quality and function, and for investigating the cause of trouble during troubleshooting.

Quality Assurance Center
Canon Electronics Inc.
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I. PRODUCT OUTLINE

1. Features

1) Succeeding model for the P-150.

2) Succession of P-150’s features.
   - USB Bus Power Drive: One or two USB cable connection can drive.
   - Plug & Scan function: It can scan without installing software into a computer.
   - Compact Design

3) Card scanning
   New function: Card scanning by switch back feed.

4) Reading Speed (A4, 200dpi)
   - One USB 2.0 cable drive (Power supply 5 V, 0.5 A)
     Black and White / Grayscale: 12 ppm/14 ipm, Color: 10 ppm/10 ipm
   - Two USB 2.0 cables drive (5 V, 1.0 A), or one USB 3.0 cable drive (5 V, 0.9 A)
     Black and White / Grayscale: 15 ppm/30 ipm, Color: 10 ppm/20 ipm

5) Both Windows/Mac available
   CaptureOnTouch Lite available OS Windows/Mac both is installed.
   (It has some limitations of function compared with CaptureOnTouch the same as P-150.)

6) Automatic image processing
   Auto-color detection mode and Auto-resolution mode
   Full-auto mode (including two modes above, auto-size, deskew and blank skip etc.)

7) Service ability (the same as P-150)
   - Installation: By user
   - Feed roller, Separation pad: User replacement
   - Periodically maintenance by service technician: None
   - Service tool: Current type (not unification type)

"Windows" is a trademark of Microsoft Corporation in the U.S. and other countries.
Other company names and product names mentioned in this document are registered trademarks or trademarks of the respective companies.
### 2. Main Specifications

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Appearance / Installation</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Type</td>
<td>Desktop type sheet-fed scanner</td>
</tr>
</tbody>
</table>
| 2   | Dimensions                    | Tray closed: 285 (W) x 95 (D) x 40 (H) mm  
* Details are described later. |
| 3   | Weight                        | 1.0 kg (Main body only) |
| 4   | Power supply                  | USB 2.0 bus power (5 V, 0.5 A): 1 or 2 cables  
Or USB 3.0 bus power (5 V, 0.9 A): 1 cable  
* AC adapter for option. |
| 5   | Power consumption             | 1) Operation: USB 2.0x2: 5 W same or less  
USB 2.0x1: 2.5 W same or less  
USB 3.0x1: 4.5 W same or less  
2) Sleep mode: 1.5 W same or less  
3) Power switch OFF: 0.1 W same or less |
| 6   | External interface            | USB 2.0 (Hi-speed)  
*USB 3.0 doesn't work for signal interface. |
| 7   | Expected product life         | One of the following two items, whichever comes first.  
1) 5 years  
2) 500,000 sheets (including documents and cards fed)  
* Replace parts as required. |
| 8   | Installation                  | By user |
| 9   | Option                        | AC adapter |
| 10  | Consumable parts (Commercial goods) | 1) Separation pad (expected life 10,000 sheets)  
2) Feed roller (expected life 100,000 sheets)  
* User replacement with both parts. |
| 11  | Bundle software               | 1) ISIS/TWAIN driver, CaptureOnTouch  
2) Others depend on sales region  
* CaptureOnTouch Lite has been installed. |

*Table 1-101a*
### CHAPTER 1  GENERAL DESCRIPTION

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Document reading/outputting</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sensor type/elements</td>
<td>1 line-CMOS contact image sensor, 600 dpi</td>
</tr>
<tr>
<td>13</td>
<td>Sensor operation mode</td>
<td>600 dpi or 300 dpi</td>
</tr>
<tr>
<td>14</td>
<td>Effective reading width</td>
<td>216 mm</td>
</tr>
<tr>
<td>15</td>
<td>Light source</td>
<td>3-color (RGB) LED, Single-side illumination</td>
</tr>
<tr>
<td>16</td>
<td>Background color</td>
<td>White</td>
</tr>
<tr>
<td>17</td>
<td>Image data memory size</td>
<td>32 MB (including work memory)</td>
</tr>
</tbody>
</table>
| 18  | Output data to computer             | 1) Type: 8 bit grayscale or 24 bit color (non-compression)  
|     |                                     | 2) Resolution: 600 x 600 dpi, 600 x 400 dpi,  
|     |                                     | 300 x 300 dpi, 300 x 200 dpi, 300 x 150 dpi  
|     |                                     | 2) Grayscale: 8 bit  
|     |                                     | 3) Color: 24 bit  
|     |                                     | * Auto-color detection mode can be available. |
| 19  | Mode setting in driver              | 1) Binary: Black and White / Error diffusion / ATE-II  
|     |                                     | * ATE=Advanced Text Enhancement  
|     |                                     | 2) Grayscale: 8 bit  
|     |                                     | 3) Color: 24 bit  
|     |                                     | * Auto-color detection mode can be available. |
| 20  | Resolution setting in driver        | 600 x 600 dpi, 400 x 400 dpi, 300 x 300 dpi,  
|     |                                     | 200 x 200 dpi, 150 x 150 dpi  
|     |                                     | * Auto-resolution mode can be available. |
| 21  | Reading speed (A4 size, and using  |                |
|     | CaptureOnTouch)                     |                |
|     | Mode                                |                |
|     | Resolution                         | USB 2.0 x 1 | USB 3.0 x 1 * |
|     |                                     | Simple | Duplex | Simple | Duplex |
|     | B&W / Gray-scale                   | 200 dpi | 12 ppm | 14 ipm | 15 ppm | 30 ipm |
|     |                                     | 300 dpi | 12 ppm | 14 ipm | 15 ppm | 30 ipm |
|     |                                     | 600 dpi | 5 ppm  | 5 ipm  | 5 ppm  | 10 ipm |
|     | Color                               | 200 dpi | 10 ppm | 10 ipm | 10 ppm | 20 ipm |
|     |                                     | 300 dpi | 6 ppm  | 6 ipm  | 6 ppm  | 12 ipm |
|     |                                     | 600 dpi | 1 ppm  | 1.5 ipm | 1 ppm | 2 ipm |
|     |                                     |                |
|     | The numbers above may differ        |                |
|     | depending on the computer, the     |                |
|     | function settings and other         |                |
|     | conditions.                         |                |
|     | * 2 cables of USB 2.0 is the same   |                |
|     | as 1 cable of USB 3.0.              |                |

Table 1-101b
<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Document feed path</td>
<td>Straight path with slope, No eject tray</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Feed path for card scanning: Switch back path is provided.</td>
</tr>
<tr>
<td>23</td>
<td>Document size</td>
<td>1) Width: 50.8 to 216 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Length: 70 to 356 mm</td>
</tr>
<tr>
<td>24</td>
<td>Document weight</td>
<td>52 to 128 g/m² (0.06 to 0.15 mm)</td>
</tr>
<tr>
<td></td>
<td>(thickness)</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Special document</td>
<td>Business card, Post card, and Plastic card are available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* There are some limitations required.</td>
</tr>
<tr>
<td>26</td>
<td>Document storage (pickup)</td>
<td>20 sheets max. and 3mm height max. (including curls)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* One sheet for the card scanning.</td>
</tr>
<tr>
<td>27</td>
<td>Double feed detection</td>
<td>Length detection only</td>
</tr>
</tbody>
</table>

**Others**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Operation / Indication</td>
<td>1) Power switch (connected open/close of pickup tray)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Power indicator (start button)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Start button (concur Job button)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4) Mode switch (ON/OFF for Auto Start)</td>
</tr>
</tbody>
</table>

Table 1-101c
• External dimensions (mm)

Figure 1-101
3. Precautions

This section describes items that require particular care, for example, regarding human safety.

These precautions must be observed. The user should be explained the items that relate to user safety and instructed to take appropriate actions.

1) Power OFF in emergency
   If such abnormal conditions as extraordinary noise, smoke, heat and odor occur, immediately unplug the power cord (See Note).
   Be careful not to get clothing (ties, long hair, etc.) caught in this machine as it may cause injury. Should this occur, immediately unplug the power cord.
   Do not insert fingers in the feed section while moving the rollers.

Note: Power cords
   The power cords of this machine are a USB cable, a power supply USB cable, and an optional AC adapter cable.
   The power supply of this machine is turned ON/OFF when the pickup unit is opened or closed.

2) Power OFF on disassembling
   When disassembling and assembling are performed, unplug the power cord.

3) Prohibition of modify
   This machine must not arbitrarily be modified or remade. If it is, use may be forcibly suspended.
   To change the specifications or disassemble and reassemble this machine, follow the instructions described in this manual and the service information.

4) Electromagnetic wave interference
   This machine complies with some standards regarding electromagnetic wave interference, such as VCCI and FCC. However, the user may have to take countermeasures if the machine causes electromagnetic wave interference.

5) “User Manual”
   Read each “User Manual” thoroughly prior to use of this machine.

6) Disposal
   Follow local regulations when disposing of the product and parts. This product is subject to the WEEE Directive in Europe.
II. NAME OF PARTS

1. Name of Parts

◆ Front

- Document Feed Tray
- Feed Tray Release Lever
- Document Guides
- Feeder Cover Release Lever
- Feeder Cover (It is also called the upper unit in this document.)
- Eject Outlet
- Card Slot
- Card Guides
- Feed Extension Plate
- Feed Inlet
- Start Button

◆ Rear

- Rear Card Slot
- Auto Start Switch
- USB Connector
- Kensington Slot
- Power Connector
III. USER OPERATION

For details, refer to the “User Manual” of this machine.

For installation and maintenance, refer to “CHAPTER 4 INSTALLATION & MAINTENANCE”.

1. Auto Start Switch

Depending on the position of the Auto Start switch, the scanner operates differently. Set the position of the switch before connecting the USB cable.

- **ON**
  The scanner is recognized as a storage device by the computer. Starting CaptureOnTouch Lite preinstalled in the scanner enables you to perform scanning on a computer without the scanner driver installed.

- **OFF**
  The scanner is recognized as a scanning device by the computer. You can connect the scanner to a computer with the scanner driver installed, and perform scanning using an application, such as the supplied CaptureOnTouch.

2. Place the Document

1) Set up the document guides and feed extension plates.
2) Fan the pages and place the documents.

3) Insert the card straight into the card slot with the card facing upward. When the end of the card touches the card slot, the roller turns automatically and only the end of the card is set.

Figure 1-303

Figure 1-304
3. Scanning Procedure

For details, refer to the “User Manual”. A basic operational procedure in CaptureOnTouch Lite (Windows) is shown below.

1) Set the Auto Start switch to "ON" and then connect the scanner to the computer.

Figure 1-305

2) Open the pickup tray and switch the power ON. Then place the documents.

3) When the "AutoPlay" screen appears, select [Open folder to view files].

Figure 1-306

4) When the "ONTOUCHLITE" folder opens, double-click "ONTOUCHL.exe".

Figure 1-307

5) CaptureOnTouch Lite starts and the main screen appears. Set the scanning method and click the Start button.

Figure 1-308
6) Scanning of the document starts. When scanning of the whole document is completed, the output settings screen appears.

![Figure 1-309](image)

7) Refer to the User Manual for further details.

4. Paper Jam Handling

1) Remove any documents remaining in the feed tray.

2) Open the feeder cover.

3) Remove the jammed document from the feed side or eject side.

![Figure 1-310](image)

![Figure 1-311](image)

![Figure 1-312](image)
4) If a card jam occurs, try pulling the card out toward you, or open the feeder cover to remove the card.

```
Figure 1-313
```

5) Close the feeder cover.
Check to see if the last page was scanned correctly, and then continue scanning.
<table>
<thead>
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<th>OUTLINE .................................................. 2-1</th>
</tr>
</thead>
<tbody>
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<td>READING SYSTEM ............................................ 2-7</td>
</tr>
<tr>
<td>III.</td>
<td>FEED SYSTEM ............................................... 2-9</td>
</tr>
<tr>
<td>IV.</td>
<td>CONTROL SYSTEM ........................................... 2-13</td>
</tr>
<tr>
<td>V.</td>
<td>POWER SUPPLY ............................................... 2-17</td>
</tr>
<tr>
<td>VI.</td>
<td>LAYOUT OF ELECTRICAL COMPONENTS ............................ 2-19</td>
</tr>
<tr>
<td>VII.</td>
<td>PARTS LAYOUT ON EACH PCB ................................ 2-20</td>
</tr>
</tbody>
</table>
I. OUTLINE

1. Main Configuration

Figure 2-101 shows the main configuration of this machine.

1) Reading system
   This system reads image data from image sensors.

2) Feed system
   This system performs from document pickup to document ejection.

3) Control system
   This system is comprised of an image processing section and a feed control section.

4) Power supply section
   This section supplies DC power to the control PCB of this machine via the USB cable. Then it converts the DC power to a required power.
2. Feed Path

1) Document feed

The sectional view of the feed path for feeding documents is shown below.

Note: Since a card is inserted into the machine from the front to feed it, the "eject roller" is called the "front roller".
2) Card feed

The sectional view of the feed path for feeding cards is shown below.

![Figure 2-103]

1. Front roller (drive)
2. Card front roller (follower)
3. Registration roller (drive)
4. Card roller (follower)
5. Detection point of card sensor
6. Detection point of registration sensor
7. Upper reading unit (front reading)
8. Lower reading unit (back reading)
3. Motor Drive

This machine has a feed motor. When a card is fed, the motor turns reversely first and inserts the card into the machine, and then turns normally to eject it. A DC motor with an encoder that detects rotation speed is used as the feed motor.

![Figure 2-104]

Figure 2-104
4. **Electrical Circuits**

An overview of the electrical circuits block diagram of this machine is shown below.

![Figure 2-105](image-url)
5. **Timing Chart**

1) **Document feed**

The timing chart for document reading when you pick up 2 sheets of document and perform Scan Ahead without temporarily suspending the machine is shown below.

Once the machine starts scanning, it activates the feed motor to feed the document.

![Figure 2-106](image)

2) **Card feed**

When the sensor detects the card, the feed motor runs to feed it.

![Figure 2-107](image)
II. READING SYSTEM

1. Reading Unit

The sectional view of the reading units is shown below. The upper and lower reading units have the same configuration but the different shapes for the reading cover each.

The upper reading unit reads the back side of the documents and the lower reading unit reads the front side of the documents. This configuration enables the machine to read both front and back sides of a document using a single scan. However, when a card is scanned, the upper reading unit reads the front side of the card and the lower reading unit reads the back side of the card.

The read image data are sent to the image processing section of the control PCB.

The reading unit consists of CIS unit, and reading cover.

The CIS unit consists of CIS PCB, lens array, LED (R/G/B), light guide, and case.

The reading glass and white reference sheet are mounted on the reading cover.

Photosensitive pixels are mounted on the CIS PCB with a density of 600 dpi in a line. The effective reading width is 216 mm, and the number of effective picture elements is 5104.

A set of three basic color LEDs, red, green, and blue (RGB), is mounted only on the one side. This single-side illumination causes a shadow on a document, which may effect on the image data quality.

In the binary or grayscale modes, image data are read with composite light generated by lighting the RGB LEDs at the same time. In the color mode, the LED is successively lit, and reads image data with each color. As documents are being fed at regular speed while image data are read, the reading positions of RGB are shifted slightly.

In the color dropout mode, only the LED of a designated color lights. In the color emphasis mode, the LED of a color other than a designated color lights.
2. Shading

This section explains the reading mechanism of the white reference sheet for determination of the shading correction value. The sectional view of the reading unit is shown below.

![Diagram showing the reading unit with white reference sheets](image)

This machine can read the white reference data at the document reading position, unlike other scanners having the black background color, since its background color is white. Therefore, there is neither need to feed the shading sheet nor to move the internal white reference sheet or the reading units.

For example, when the lower reading unit reads the white reference data, the LED emitted from the lower unit is reflected from the white reference sheet on the upper unit to be input to the sensor on the CIS PCB.

Since the white reference sheet is placed under the reading glass, feeding document does not cause smudges on it.

When this machine is turned ON or starts scanning, it reads the white reference data to determine the shading correction value.

However, the slightly different optical paths to the light receiving element are used for the actual document and the white reference sheet. Therefore this machine needs fine adjustment of the shading correction value using the service mode and the shading sheet. This fine adjustment is necessary after replacing the reading unit or after replacing the control PCB recording the shading correction value.
III. FEED SYSTEM

1. Document Feed
The sectional view of the document feed system is shown below.

Figure 2-301

1. Pickup tray
2. Feed roller
3. Separation pad
4. Registration roller (drive)
5. Registration roller (follower)
6. Front roller (drive)
7. Front roller (follower)
8. Detection point of document sensor
9. Detection point of registration sensor
10. Upper reading unit (back reading)
11. Lower reading unit (front reading)
1) Feed path
The feed path of this machine is a straight path that tilts from the pickup tray to the registration roller and is horizontal to the front roller including the reading section. The pickup roller is not mounted. The leading edge of the loaded document touches the feed roller and the separation pad. Once the machine starts scanning, it activates the rollers to feed the document inside. The document passes through the registration roller, the reading units, and the front roller and is ejected to the outside of the machine. This machine does not have an eject tray.

2) Drive
The feed motor drives the feed roller and each drive roller. The rotational speed of the feed motor is determined by scan conditions. To provide space between the leading edge of a document and the trailing edge of the next document, the drive speed of the feed roller is slightly lower than the drive speed of the registration roller and front roller. If it is left as it is, the document is braked when it touches the feed roller and the registration roller, and therefore, a one-way clutch is built into the gear used in the feed roller drive system to follow the drive speed of the registration roller.

3) Separation
Separation of the documents is performed by the separation pad. Double feeds and pickup errors are prevented by optimizing the shape of the separation pad and friction against documents. However, if the document setting method is incorrect, the contact between the document and the separation pad becomes poor and double feeds or pickup errors tend to occur easily. For details on the document setting method, refer to the “User Manual” or “CHAPTER 1 GENERAL DESCRIPTION, III. USER OPERATION”.

4) Sensor
For document detection, the document sensor is mounted on the document setting section and the registration sensor is mounted on the registration roller section. They are used for feed control and feed error detection.
2. Card Feed

The sectional view of the card feed system is shown below.

![Figure 2-302](image)

1. Front roller (drive)
2. Card front roller (follower)
3. Registration roller (drive)
4. Card roller (follower)
5. Detection point of card sensor
6. Detection point of registration sensor
7. Upper reading unit (front reading)
8. Lower reading unit (back reading)

The basic functions of the card feed system are the same as those of the document feed system, but the card feed system has a feed path dedicated to cards. The feed path dedicated to cards is located on the right side of the machine body, and the insertion and eject openings of the card feed path are located on the eject side of the document feed path.

![Figure 2-303](image)

When a card is placed in the insertion opening, the card sensor detects the card and feeding begins. The feed motor runs reversely at this time. The card is fed straight and passes through the reading section. Then, the rotation direction of the feed motor is changed to normal direction, and the feed direction of the card reverses. Like document feeding, the card passes through the reading unit and the front roller and is ejected.

As only a single card is placed, no separation mechanism is required. Like the document feed system, the card feed system has a registration sensor in the registration roller section to control the beginning of scanning and detect feed errors.
3. Feed Error

◆ Paper Jam Detection

Paper jams are detected by the registration sensor. The types of the document jams are described as follows.

1) Pickup Delay Jam (Pickup Error)
   The leading edge of the document was not detected by the registration sensor within the specified time after the machine starts scanning.

2) Early Reach Jam
   The leading edge of the following document was detected after the trailing edge of the document was detected by the registration sensor before the document has been fed for a specified length.

3) Residual Jam
   The trailing edge of the document was not detected even though the document has been fed for the maximum specified length after the leading edge of the document was detected by the registration sensor.

4) Fast Feed Jam
   The trailing edge of the document was detected after the leading edge of the document was detected by the registration sensor before the document has been fed for the minimum specified length.

5) Non-removal Jam
   The machine starts scanning while the document is detected by the registration sensor and still remains inside this machine.

◆ Double Feed Detection

A double feed is detected by the document length detection by the registration sensor.

The first document length of the scanned batch is used as a reference to detect the document length. The 35 mm or more difference from the standard is interpreted as a double feed.
1. Control PCB

The overall system of this machine is controlled by the control PCB. The block diagram and the function list of major ICs are shown below.

The function of electric double layer capacitor is shown in "V. POWER SUPPLY".

![Diagram of Control PCB and ICs](image.png)
Function list of major ICs

<table>
<thead>
<tr>
<th>IC No.</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC14</td>
<td>ASIC (Controller)</td>
<td>Controls scanning system.</td>
</tr>
<tr>
<td>IC11/12</td>
<td>AFE (Analog processor)</td>
<td>Performs analog gain, offset adjustment, and A/D conversion.</td>
</tr>
<tr>
<td>IC4/5/26</td>
<td>FLASH Memory</td>
<td>Stores firmware and OnTouchLite (8 MB x 3).</td>
</tr>
<tr>
<td>IC8</td>
<td>EEPROM</td>
<td>Stores each setting.</td>
</tr>
<tr>
<td>IC119</td>
<td>SD RAM</td>
<td>Stores image data (32 MB).</td>
</tr>
<tr>
<td>IC901</td>
<td>Sub-CPU</td>
<td>Controls the motor, power supply and Work memory.</td>
</tr>
</tbody>
</table>

**Table 2-401**

**Note:** Both Windows and Macintosh versions of OnTouchLite have been installed.
2. Image Processing Control

A block diagram of the image processing is shown below.

![Block diagram of image processing control](image)

- **CIS unit (upper)**
- **CIS unit (lower)**
- **Control PCB**
  - Analog processor
    - Offset adjustment
    - Gain adjustment
    - A/D conversion
  - Gain adjustment
  - Offset adjustment
  - A/D conversion
- **Scanner controller**
  - LED light control
  - 12 bit → 8 bit
- **USB I/F**
- **Computer**
  - Data reordering
  - Shading correction
  - Color / black & white detection
  - Resolution conversion
  - Color correction (three-dimensional)
  - Bleed-through reduction (when on)
  - One-dimensional gamma correction
  - Edge enhancement
  - Binarization
  - Other processing
    - Auto-size detection
    - Deskew
    - Image rotation
    - Skip blanks
    - File creation
    - Other
- **Data after image processing**

*Figure 2-402*
Analog signals proportionate to the density of each picture element are output to the analog processor on the control PCB from the CIS unit. The resolution of the output data is either 300 dpi or 600 dpi according to the user settings.

The analog processor carries out offset adjustment, gain adjustment, and A/D conversion. Analog signals are converted into 12-bit digital signals in the analog processor. Then the image data is transferred to the scanner controller and converted from 12 bits to 8 bits.

After that, the image data is output to the computer through USB interface. The USB cable used for this machine is a special cable with a USB3.0 standard A type connector on the computer-side and a USB2.0 micro B type connector on the device side. The signal speed supports USB2.0 Hi-speed.

The computer performs the image processing according to the user settings after the signal rearrangement, resolution conversion and shading correction.

Since this machine has a white background, black border removal and punch hole removal are not necessary.
V. POWER SUPPLY

1. Power Supply

USB bus power is used to supply power to this machine. This is a method of supplying power from the computer through a USB cable.

The USB cable used for this machine is a special cable and the signal speed supports USB2.0 Hi-speed, but the rated power is different with the USB interface on the computer side. The rated power of a USB2.0 cable is 5 VDC, 0.5 A, and the rated power of a USB3.0 cable is 5 VDC, 0.9 A.

When a power supply cable is connected and the pickup tray is opened, the tray switch is pressed and the power is switched ON. When the pickup tray is closed, the power is switched OFF.

Each voltage required inside is generated on the control PCB.

The main parts that consume electricity in this machine are the elements of the ICs, etc. on the control PCB, the upper and lower CIS units and the feed motor. The required current value for the feed motor changes according to the load during feeding. To use a special method of feed motor control and power supply if the load increases, the following components are provided:

1) Feed motor with an encoder
2) Electric double layer capacitor (EDLC)
3) Power supply USB cable

The encoder detects that the feed load increases and the number of revolutions decreases, the pulse supplied to the feed motor changes. If the current is insufficient, the capacitor is discharged. If the capacity of the capacitor becomes insufficient, feeding and reading stop and the capacitor is charged. When it is charged again, the feeding and reading begin. However, if the prescribed rotational speed is not reached even when an electric current is added from the capacitor, the rotational speed is reduced and the timing of reading is changed accordingly.

The reading cannot be started until the electric double layer capacitor is sufficiently charged. If the power is switched ON when the capacitor is fully discharged, charging takes approx. 15 seconds. Since it is discharged when the power is OFF, reading cannot be performed for a period of time of approx. several to 15 seconds after the power is switched ON.

The amount of power can be increased by connecting the supplied power supply USB cable between the computer and this machine in addition to the ordinary USB cable that is used for signal transmission and power supply. If this cable is used, power supply to the feed motor can be increased, and therefore, temporary stop and speed reduction can be prevented. The scan speed when two USB2.0 cables are connected is the same as that when one USB3.0 cable is connected. Even if two USB3.0 cables are connected, the scan speed does not increase.
An AC adapter is provided as an option. If the power supply USB cable cannot be connected to the computer, the equivalent DC power can be supplied to by connecting the cable to the AC inlet and this machine. The rated power of the AC adapter is 6 VDC, 0.8 A.

Figure 2-501
VI. LAYOUT OF ELECTRICAL COMPONENTS

1. Layout of Electrical Components

![Figure 2-601]

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Location</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switches</td>
<td>Auto Start switch</td>
<td>Control PCB</td>
<td>SW1</td>
</tr>
<tr>
<td></td>
<td>Tray switch (Power switch)</td>
<td>Control PCB</td>
<td>SW902</td>
</tr>
<tr>
<td></td>
<td>Start switch</td>
<td>Start switch PCB</td>
<td>SW200</td>
</tr>
<tr>
<td>Motor</td>
<td>Feed motor</td>
<td>Left side of base unit</td>
<td>M1</td>
</tr>
<tr>
<td>Sensors</td>
<td>Document sensor</td>
<td>Control PCB</td>
<td>PS900</td>
</tr>
<tr>
<td></td>
<td>Registration sensor</td>
<td>Start switch PCB</td>
<td>Q201/LED200</td>
</tr>
<tr>
<td></td>
<td>Upper unit sensor</td>
<td>Upper sensor PCB</td>
<td>PS300</td>
</tr>
<tr>
<td></td>
<td>Card sensor</td>
<td>Upper FPC</td>
<td>Q400/LED401</td>
</tr>
<tr>
<td>Lamp</td>
<td>Power indicator (LED)</td>
<td>Start switch PCB</td>
<td>LED201</td>
</tr>
</tbody>
</table>

Table 2-601
VII. PARTS LAYOUT ON EACH PCB

1. Control PCB

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>12P</td>
</tr>
<tr>
<td>J3</td>
<td>-</td>
</tr>
<tr>
<td>J4</td>
<td>22P</td>
</tr>
<tr>
<td>J901</td>
<td>13P</td>
</tr>
<tr>
<td>J903</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 2-701

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1</td>
<td>Auto Start switch</td>
</tr>
<tr>
<td>SW902</td>
<td>Tray switch (Power switch)</td>
</tr>
<tr>
<td>PS900</td>
<td>Document sensor</td>
</tr>
</tbody>
</table>

Table 2-702

Figure 2-701
The products shown in the figures in this chapter may be partially different from mass-produced products.
I. EXTERNAL PARTS

1. Bottom Cover
1) Remove 3 screws ① (self-tapping, FH M2.5x6) and remove the bottom cover ②.
   **Note:** When the bottom cover is removed, the light guide for cards is also removed.

   ![Figure 3-101](image)

2. Right Cover
1) Remove the bottom cover.
   **(Page 3-1)**

2) Insert a tool with thin and flat tip into the upper and lower holes ① (2 holes each), and pick the edge of the cover to remove the fitting parts, then remove the right cover ②.

   **Note:** Be sure to insert the tool into the correct positions. Since the hole marked * is hidden and its edge tends to be deformed, remove it lastly carefully.
   Since the right cover may jump out, remove it while holding it by hand.
   The pickup tray unit and inside gears can be removed when the right cover is removed.

   ![Figure 3-102](image)
◆ Notes on assembling
A figure of the gears' assembling is shown below.

Figure 3-103
After assembling the pickup tray unit, place the cable (FPC, FFC) in the right cover and install it. The mark ① on the bottom of the cover is on the eject side.

Figure 3-104

3. Left Cover
1) Remove the bottom cover. *(Page 3-1)*

2) Insert a tool with thin and flat tip into the upper and lower holes ① (2 holes each), and pick the edge of the cover to remove the fitting parts, then remove the left cover ②.

**Note:** Be sure to insert the tool into the correct positions. Since the left cover may jump out, remove it while holding it by hand. The pickup tray unit and inside gears can be removed when the left cover is removed.

Figure 3-105
Notes on assembling
A figure of the gears' assembling is shown below.

Figure 3-106

The mark ① on the bottom of the cover is on the eject side.

Figure 3-107

4. Pickup Tray Unit
1) Remove the right cover or left cover. (Page 3-1), (Page 3-2)
2) Remove the fitting parts ① on the opposite side, then remove the pickup tray unit ②.

Figure 3-108
5. Rear Cover

1) Remove the pickup tray unit.  
(Please refer to Page 3-3)

2) Insert the tool with thin and flat tip into 4 holes ① and down it to remove the fitting parts in order, and then remove the rear cover ②.

![Figure 3-109](image)

**Figure 3-109**

◆ Notes on assembling

After inserting the fitting parts to a degree, align the connector and switch with the holes and install the rear cover. Place the end of the control PCB at the rear in the rear cover.
II. UPPER UNIT

1. Upper Unit [whole]
1) Remove the right cover.  
   (Page 3-1)
2) Remove the pickup tray unit.  
   (Page 3-3)
3) Remove the FPC ① connected with the control PCB.
   
   ![Figure 3-201](image)

4) Relieve a lock for the upper unit ① then remove the fitting parts on the FPC side while the upper unit opening a little, next remove the fitting parts on the opposite side.

   ![Figure 3-202](image)

◆ Notes on assembling
Do not get the FPC caught in parts when assembling the fitting parts on the FPC side. And insert the FPC ① between the guide plates ②. For the details, refer to the below.

   ![Figure 3-203](image)
CHAPTER 3  DISASSEMBLY & ASSEMBLY

2. Top Cover
1) Remove the upper unit [whole].
(Page 3-5)
2) Remove 2 screws ① (self-tapping, FH M2.5x6). Push out the end of the shaft ② of the front roller (follower) and remove it. At this time, 2 rollers ③ are also removed.

![Figure 3-204](image)

3) Remove the separation pad. While extending 5 pairs of the fitting parts ① to the outside in order from the end side, remove the upper cover on the rear side.

Note: The lock shaft, coil spring for the lock shaft and entrance guide for card can be removed when the upper cover is removed.

![Figure 3-205](image)

◆ Notes on assembling
After assembling the upper cover, be sure to fasten the 2 screws.

3. Registration Roller [follower]
1) Remove the top cover.
(Page 3-6)
2) Remove the start switch PCB ① from the base. Hold the registration roller on the rear side with hand and unhook 2 pairs of the fitting parts ② of the shaft pushing plate, remove 2 registration rollers ③, the shaft ④ and 2 springs ⑤.

![Figure 3-206](image)

◆ Notes on assembling
Bring the flat part at the center of the shaft into contact with the end surface of the springs.

![Figure 3-207](image)
4. Reading Unit [upper]
Note: The reading unit [upper] and [lower] are different with its shape of the reading cover.
1) Remove the top cover.
   (Page 3-6)
2) Remove 2 connectors ① and positioners ② and remove the FPC ③. While holding the rear side of the reading unit ④, remove 2 pairs of the fitting parts ⑤, and then remove the reading unit.
Note: Sensors are mounted on the rear side of FPC.

5. Reading Cover [upper]
Note: This part includes the reading glass and the white reference sheet. Disassembling this part may cause the inside of the reading unit to get dusty. Do not disassemble it unless necessary. When disassembling, be careful with dusts and do not touch the inner surface of the glass or the surface of the lens array.
1) Remove the reading unit [upper].
   (Page 3-7)
2) Clean the outside including the glass surface to prevent dust from entering the reading unit.
3) While removing 9 pairs of the fitting parts ① in order from the end side, remove the reading unit.
Note: If the reading cover is reused, be careful not to damage the hooks when unhooking the fitting parts. The CIS unit is removed when the reading cover is removed.

◆ Notes on assembling
After assembling, clean the front surface of the reading glass.
◆ Notes on assembling
Clean any dust in the reading unit. If there is dirty including fingerprint, clean them with a clean dry cloth.
Push all the fitting parts in until they fit completely. Makes sure there is no gap or space. Install the CIS unit so that it matches the direction of the reading cover. If it is installed incorrectly, the fitting parts lift.
III. BASE UNIT

1. Control PCB

1) Remove the rear cover.
   *(Page 3-4)*

2) Remove the upper unit.
   *(Page 3-5)*

3) Remove the 2 cables ② connected with the control PCB ①. And remove 3 screws ③ (M3x4) and while escaping the control PCB from the fitting parts ④, remove the control PCB.

**Note:** Capacitors are mounted on the rear side of the place [A] indicated by the broken line. While disassembling, pick the control PCB without hitting of the capacitors.

4) Pull the switch slide plate ① out from the switch.

   **Figure 3-302**

- **Notes on assembling**
  Before installing the PCB, install the switch slide plate on the PCB.

   **Figure 3-301**
2. **Front Roller (drive)**

1) Remove the left cover.

(Please refer to page 3-2)

2) Remove the gear ①. Using a tool with the thin tip, unhook the fitting parts ② (2 places), remove the central shaft support, unhook the fitting parts ③ (2 places), and remove the shaft support at the end and the front roller ④.

![Figure 3-303](image)

**Notes on assembling**

Install 2 shaft supports in correct direction, and push them in until they are fitted properly. Insert the gear to the end with the D-shaped hole facing outward. Insert the gear while rotating it slightly because it is in the form of helix.

3. **Registration Roller (drive)**

1) Remove the control PCB.

(Please refer to page 3-9)

2) Remove 3 screws ① (self-tapping, FH M2.5x6) and remove the PCB mounting plate ②.

**Note:** The PCB mounting plate includes a tray detection lever.

![Figure 3-304](image)

3) Using a tool with the thin tip, unhook 2 pairs of the fitting parts of 4 shaft supports ① and remove the lower cover ②. Also remove the part ③ of the lower cover that holds the upper sensor PCB ④.

**Note:** The lower cover includes a document sensor lever.

![Figure 3-305](image)
4) Remove the light guide ①. Then remove the registration roller ②.

![Figure 3-306](image)

**Notes on assembling**

Push the fitting parts of the shaft support sufficiently, and they must not be lifted. When the upper sensor PCB is assembled, insert projections into positioning holes (3 places) and hold them with the PCB holders of the lower cover ①.

![Figure 3-307](image)

4. **Motor Unit**

1) Remove the left cover. *(Page 3-2)*

2) Remove the rear cover. *(Page 3-4)*

3) Remove the gear ① and the gear ② (with a bearing). And remove 2 screws ③ (M3x4) and FFC ④, then remove the motor unit ⑤.

![Figure 3-308](image)
5. Reading unit [lower]
1) Remove the bottom cover. (Page 3-1)
2) Remove the FFC ①. While holding the reading unit on the rear side, remove 4 pairs of the fitting parts ②, and then remove the reading unit.

![Figure 3-309]

◆ Notes on assembling
After assembling, clean the front surface of the reading glass.

6. Reading Cover [lower]
Note: This part includes the reading glass and the white reference sheet. Disassembling this part may cause the inside of the reading unit to get dusty. Do not disassemble it unless necessary. When disassembling, be careful with dusts and do not touch the inner surface of the glass or the surface of the lens array.

1) Remove the reading unit [lower]. (Page 3-12)
2) Clean the outside including the glass surface to prevent dust from entering the reading unit.
3) While removing 9 pairs of the fitting parts ① in order from the end side, remove the reading unit ②.

Note: If the reading cover is reused, be careful not to damage the hooks when unhooking the fitting parts. The CIS unit is removed when the reading cover is removed.

![Figure 3-310]
◆ Notes on assembling

Clean any dust in the reading unit. If there is dirty including fingerprint, clean them with a clean dry cloth.

Push all the fitting parts in until they fit completely. Makes sure there is no gap or space. Install the CIS unit so that it matches the direction of the reading cover. If it is installed incorrectly, the fitting parts lift.
I. INSTALLATION

This machine is installed by the user. The user should be advised to install the scanner by reading the Setup Guide of User Manual thoroughly. This section gives an overview of the procedure. For details, refer to the user manual.

1. System Requirements
   The recommended system is as follows.
   1) Computer
      CPU: Intel Core 2 Duo 1.66 GHz or higher
      Memory: 1 GB or more
      Hard disk: 3 GB or more of free space (required for installation of all software)
      USB interface: Hi-speed USB 2.0 (Only the power supply supports USB 3.0.)
      Monitor: Resolution 1024 x 768 (XGA) or higher
      Optical drive: Able to read DVDs

   2) OS
      Microsoft Windows XP
      Microsoft Windows XP x64 Edition
      Microsoft Windows Vista
      (32/64 bit edition)
      Microsoft Windows 7
      (32/64 bit edition)
      Mac OS X

   Note: For details on each version, refer to the user manual.

2. Checking the Accessories
   Open the package, and take out the main body and its accessories.
   ① Main body
   ② USB cable
   ③ Power supply USB cable
   ④ Reference Guide (Basic operation edition)
   ⑤ Setup disk
   ⑥ Warranty, etc. (depends on the shipping region)

   Note: The USB cable whose power supply supports both USB 2.0 and 3.0 is dedicated to this machine.
3. Installing the Software

Install the following software from the supplied setup disk that is required in order to use the scanner.

- CaptureOnTouch
- Scanner driver
- Others

**Note:** If “CaptureOnTouch Lite” is used, the above software does not need to be installed.

**Note:** The software should be installed before connecting the machine to a computer.

The following shows an outline of the installation on Windows.

1) Login using an account with Administrator privileges.
2) Before installing the software, exit all other applications.
3) Load the setup disk into the DVD drive of the computer.
4) The setup menu starts automatically.
5) Click [Typical Installation].

![Figure 4-101](image.png)

Finish the installation by following the on-screen messages.

4. Connecting to a Computer

1) Close the pickup tray and turn the Auto Start switch "OFF".
2) Connect the machine and the computer using the supplied USB cable.

**Note:** The USB port should support USB 2.0 or USB 3.0.

![Figure 4-102](image.png)

3) Open the pickup tray and verify that the power is switched ON.

**Note:** If the cable is connected to the USB2.0 port, bus power of 5 V 0.5 A is supplied and if it is connected to the USB3.0 port, bus power of 5 V 0.9 A is supplied.

**Note:** Although this scanner supports USB 3.0 bus power, USB data transfer rates remain at USB 2.0 speeds.

**Note:** The scanner cannot be used when it is connected to a computer via a bus-powered USB hub. A self-powered USB hub can be used, but operation is not guaranteed.
5. **Auxiliary Power Supply**

This machine can scan using a USB cable, but if an auxiliary power supply is used for USB 2.0, the machine can scan at higher speed. However, it is not necessary for USB 3.0.

1) Power supply USB cable (supplied)

![Figure 4-103](image)

2) AC adapter (separately sold)

![Figure 4-104](image)
II. PARTS TO BE REPLACED

1. Periodically Replaced Parts
   This machine does not have any periodically replaced parts.

2. Consumable Parts
   1) Parts replaced by users

<table>
<thead>
<tr>
<th>No.</th>
<th>Parts name</th>
<th>Parts number</th>
<th>Expected life</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Separation pad</td>
<td>MG1-4691-000</td>
<td>10,000 sheets</td>
<td>Because the surface is worn, it is necessary to replace when</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>the pickup failures or the document jams are occurred after cleaning.</td>
</tr>
<tr>
<td>2</td>
<td>Feed roller</td>
<td>MA2-9680-000</td>
<td>100,000 sheets</td>
<td></td>
</tr>
</tbody>
</table>

   **Note:** The items above are assigned as service parts and the parts replaced by users are assigned as commercially available products.

   Table 4-201

   2) Parts replaced by service technicians

   None
III. MAINTENANCE

1. User Maintenance

Refer to the “User Manual” for the details.

1) List

<table>
<thead>
<tr>
<th>No.</th>
<th>Location/Parts</th>
<th>Maintenance Cycle</th>
<th>Other</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main body</td>
<td>△</td>
<td></td>
<td>Use a cloth slightly dampened with water and well wrung out to remove any dirt, and then use a soft, clean, dry cloth to wipe the main body.</td>
</tr>
<tr>
<td>2</td>
<td>Feed path</td>
<td>△</td>
<td></td>
<td>Use such as air blowers to remove any dust and paper particles that have accumulated on the feed path.</td>
</tr>
<tr>
<td>3</td>
<td>Reading glass</td>
<td>△</td>
<td></td>
<td>Use a soft, clean, and dry cloth to wipe off any dirt.</td>
</tr>
<tr>
<td>4</td>
<td>Separation pad</td>
<td>△</td>
<td>●</td>
<td>Use a cloth slightly dampened with water and well wrung out to remove any dirt, and then use a clean, dry cloth to wipe the main body. <strong>Note:</strong> Remove the feed roller from the main body before cleaning.</td>
</tr>
<tr>
<td>5</td>
<td>Feed roller</td>
<td>△</td>
<td>●</td>
<td>100,000 sheets</td>
</tr>
<tr>
<td>6</td>
<td>Other rollers</td>
<td>△</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4-301

2) Locations to be cleaned

![Image of the printer with labeled parts](Figure 4-301)
CHAPTER 4 INSTALLATION & MAINTENANCE

2. Consumable Parts

This section describes replacement messages and how to reset the counter. However, the operating system should be Windows. For details, refer to the "User Manual".

◆ Replacement messages

If the number of sheets fed exceeds an expected life, a message appears when the scanner is connected to the computer.

1) Feed roller: 100,000 sheets

2) Separation pad: 10,000 sheets

◆ Resetting the Counters

When the feed roller or separation pad was replaced, clear the counter recorded in the scanner.

The method is different if the Auto Start switch is "ON" and if it is "OFF". It is also possible in service mode.

a. Auto Start switch "ON"

1) Click the CaptureOnTouch Lite icon on the taskbar. A menu screen is displayed. Select "Environmental settings".

2) The "Maintenance" tab is displayed. Click the corresponding "Reset" button.

Figure 4-304

Figure 4-305
b. Auto Start switch "OFF"

1) Click the [Start] button on the computer, and click [All Programs], [Canon P-215], [Utilities].

2) The Canon imageFORMULA utility starts and a screen is displayed.

3) Select [Canon P-215 USB], and click [Properties]. When the screen is displayed, click the [Maintenance] tab.

4) Click the corresponding "Reset" button.

3. Service Maintenance

For this machine, no periodical maintenance item by the service technicians is specified. However, when visiting a user, check whether the reading glasses and the rollers are dirty. If they are very dirty, instruct the user to follow the “User Maintenance” procedures. Recommend the user to replace consumable parts if necessary.
CHAPTER 5

TROUBLESHOOTING

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CHAPTER 5 TROUBLESHOOTING

I. ERROR DISPLAY

1. Main Body
   Although this machine does not have an error display unit, errors are indicated by the start button.

   If the machine state is normal, the start button lights up when the power is turned ON. When the machine is unable to scan, such as when the feeder cover is open or when a paper jam occurs, the start button flashes.

   When the capacitor is charged immediately after the power is switched ON, the start button flashes slowly.

   ![Start button](image)

   **Figure 5-101**

2. Computers
   Error messages are displayed on the screen of the computer connected to the machine. Each of the different pieces of software (applications, drivers, OSs) have their own unique messages which they control.

   There are many user-related messages, such as when the user performs an incorrect operation. Users should resolve problems according to the error messages.

   The following shows an example of an error message when using CaptureOnTouch (Windows).

   ![Error message](image)

   **Figure 5-102**
II. SERVICE MODE

1. Outline

To execute the service mode, install the software (service tool) for the service mode, which is stored in the supplied setup disc in the computer for servicing. However, it is not an integration type, but a type that uses a dedicated EXE file. This software supports only the Windows operating system.

The system requirements for the computer are equivalent to those indicated in the “User Manual”.

The service screen is shown below.

On the service screen, there are buttons to select each specified mode. Each service mode starts from this screen. And product name, version, serial number, and the total scanning count are displayed.

A list of the modes is show below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Button displayed/description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All Adjustment</td>
</tr>
<tr>
<td></td>
<td>Perform No. 2 to 4 below for image reading.</td>
</tr>
<tr>
<td>2</td>
<td>Registration Adjustment[Auto]</td>
</tr>
<tr>
<td></td>
<td>Performs the registration adjustment.</td>
</tr>
<tr>
<td>3</td>
<td>Light Adjustment</td>
</tr>
<tr>
<td></td>
<td>Performs fine adjustments to the shading correction value.</td>
</tr>
<tr>
<td>4</td>
<td>Regist sensor adjustment</td>
</tr>
<tr>
<td></td>
<td>Fixes the initial value of the amount of light received of the regist sensor.</td>
</tr>
<tr>
<td>5</td>
<td>Firm Load</td>
</tr>
<tr>
<td></td>
<td>Changes the firmware.</td>
</tr>
<tr>
<td>6</td>
<td>About</td>
</tr>
<tr>
<td></td>
<td>Displays the version of the service mode.</td>
</tr>
<tr>
<td>7</td>
<td>Dcon Check</td>
</tr>
<tr>
<td></td>
<td>Checks operations of the hardware inside of the machine, such as an operation key, sensor, and motor.</td>
</tr>
<tr>
<td>8</td>
<td>Check Device</td>
</tr>
<tr>
<td></td>
<td>Displays the internal version of the device. Reset the serial number.</td>
</tr>
<tr>
<td>9</td>
<td>Counter</td>
</tr>
<tr>
<td></td>
<td>Display and reset the total scanning count and the number of document jams, and reset the roller counter.</td>
</tr>
</tbody>
</table>

Figure 5-201

Table 5-201
CHAPTER 5 TROUBLESHOOTING

2. How to Install

Procedure to install service tool: Never install it in the user's computer.

1) Turn ON the computer for servicing to start OS (Windows).
2) Install the setup disc (DVD) supplied with this machine.
3) An installation screen for the user is displayed, but ignore this, right-click the [Start] button, and select “Explorer”.
4) Open the folder “\Driver\Tools” in the setup disc. Copy the "P215Tool.exe" file in the folder on any drive of the computer for servicing.

Note: If the Auto Start switch is set to "OFF", install the driver for this machine and also install the CaptureOnTouch as necessary. Please refer to the “User Manual” on installation of them.

However, when checking a specification such as the scanning speed, the system requirements for a computer described in the “User Manual” should be satisfied.

Note: Keep the name of the folder and the password confidential from the user.

3. How to Start and Finish

◆ How to start
1) Start the computer for serving.
2) If an icon of CaptureOnTouch is displayed on the task bar, click the icon to terminate it.

Note: Refer to the "User Manual" for the details of how to operate CaptureOnTouch.
3) Set the Auto Start switch to "OFF".

Note: If it is "ON", the service tool does not start.
4) Connect the machine to the computer for servicing use with a USB cable. And then open the feed tray.
5) Start the installed file “P215Tool.exe”.

Figure 5-202
6) Password dialogue box appears, and enter six characters as “market” and select [OK].

**Figure 5-203**

**Note:** If “OK” is selected before completing scanner recognition, the “Config” screen below appears. Select "Rescan" in a few seconds. The "Config" screen also appears if the scanner is not operated correctly, such as if it is not turned on. Check the operation procedure.

**Figure 5-204**

**Note:** When the Auto Start switch is "ON", the Auto Play screen appears, but should be ignored.

**Figure 5-205**

7) Service screen appears.

**Note:** Do not start other application software while starting the service tool. If it becomes inoperative, restart the computer. Sample error screens are shown below.

**Figure 5-206**
◆ How to finish
1) Select [Close] on the service screen.
2) Close the pickup tray and remove the USB cable.

However, if “Firm Load” is performed, remove and reinstall the USB cable at the end to reset the power properly.

Refer to the “Firm Load” section for the details.

4. Registration Adjustment[Auto]

This mode performs adjustments on a reading-start position and reading-end position for feed direction automatically.

If the leading- and trailing-edge positions of a scanned image are improper, perform this adjustment.

Also perform this adjustment after replacing or reassembling a registration-related part such as the reading unit or the start switch PCB on which a registration sensor is installed or after replacing the control PCB recording the adjustment data.

This mode can be used together with other adjustment items. For details, refer to [All Adjustment].

◆ Adjustment sheet
The dedicated sheet is required to execute this mode. However, you can create the sheet by drawing a black line on available paper, so it is not specified as a service tool. Prepare it for yourself.

The sheet is required:
1) The material may be normal white copy paper, recycled paper or shading sheet (TKM-0326/0332) that is used in the next section.

Note: If the shading sheet is used, it can be shared with “Light Adjustment”.

2) To have the black leading edge and the white trailing edge, whose width is 2 mm or more.

3) Paper size is basically A4 size or LTR size, and the above-mentioned shading sheet, and must have the following range: Width: 200 to 220 mm; Length: 130 to 297 mm.
4) To cause neither jams nor skews.

Example: Blacken the leading edge of a A4 size or LTR size paper with a black pen.
Use the sheet after the ink has dried. Do not use a pencil.
The shading sheet may be used. Not only one side, but also both sides may be painted in black.

- Operation Procedure
1) Clean feed path, roller, and reading glass.
2) Load a piece of the registration sheet you prepared. Make sure to set the document guides to fit the sheet to prevent skews.

Note: The black edge needs to be detected as the leading edge of the sheet with the front side sensor. Load the sheet with the black-lined side facing down, considering this black edge of the sheet is the top of feed. Do not set extra sheets.

![Figure 5-207](image)

"A4 or LTR"
Black region 2mm or more

"Shading Sheet" TKM-0326/0332
Black region 2 to 4mm

![Figure 5-208](image)

3) On the service screen, select [Registration Adjustment[Auto]].

![Figure 5-209](image)

Note: If it stops in the middle when using A4 size or LTR size paper due to the computer specifications, set to half the size. Note that you should cut that paper perfectly straight without any slant.
4) The adjustment proceeds automatically while the progress screens are displayed.

Figure 5-210

5) The sheet is fed. After the adjustment is complete, the progress screen disappears and the screen returns to the service screen.

Note: If the following error screen appears, select "OK" and terminate the service mode. Then start the service tool, verify the adjustment sheet and the operation procedure and execute the adjustment again.

Figure 5-211

5. Light Adjustment

This mode performs fine adjustments on the shading correction values since the reading point differs between the white reference sheet inside of the reading unit and the actual document.

If the scanned image quality is degraded, perform this adjustment. Also perform this adjustment after replacing the reading unit or after replacing the control PCB recording the adjustment data.

This mode can be used together with other adjustment items. For details, refer to [All Adjustment].

- Adjustment sheet
  The shading sheet is required to execute this mode. Use TKM-0326 or TKM-0332, which is the same shading sheet as the one used for the P-150 or others. Do not use a sheet with any dirt or creases.

Note: Shading sheets with a black line for "Registration Adjustment[Auto]" can also be used.

- Operation Procedure
  1) Clean feed path, roller, and reading glass.
2) Open the document guides fully extended, then load a shading sheet you prepared to fit the width between the document guides. **Note:** Do not set extra sheets.

![Figure 5-212](image)

3) On the service screen, select [Light Adjustment].

![Figure 5-213](image)

4) The adjustment starts automatically. The sheet is fed, and a progress screen is displayed.

![Figure 5-214](image)

5) Even after the sheet has been ejected, the data may be processed inside the machine. The progress screen disappears, and a warning screen is displayed. Do not turn OFF the machine or perform any operations until the warning screen disappears.

![Figure 5-215](image)

6) After the adjustment is complete, the warning screen disappears.
Note: If the following error screen appears, select "OK" and terminate the service mode. Then start the service tool, verify the adjustment sheet and the operation procedure and execute the adjustment again.

![Figure 5-216](image)

Figure 5-216

6. Regist sensor adjustment

This mode is used to adjust the initial value of the quantity of light received when the document is not set at the sensor section so that the regist sensor functions correctly.

The value performed at the factory is set when the sensor is shipped from the factory, but the adjustment is carried out if the regist sensor does not detect a document correctly because the ambient amount of light is very different and so on. Also run this mode after replacing the start switch PCB on which the sensor is installed and after replacing the control PCB on which data is stored.

For this machine, the card sensor is also adjusted. The LED and light-receiving sensor for the card sensor are mounted on the upper FPC.

This mode is included in "All Adjustment" described later.

- Operation Procedure
  1) Clean the surface of the light guide for the registration sensor.
  2) On the service screen, select [Regist sensor adjustment].

![Figure 5-217](image)

Figure 5-217
3) The adjustment starts automatically and ends instantaneously.

**Note:** A progress screen is displayed, but it cannot often be confirmed because it is displayed instantaneously.

---

### 7. All Adjustment

In this mode, “Registration Adjustment[Auto]”, “Light Adjustment” and “Registration sensor adjustment” described above are performed continuously. The purpose and timing to perform each adjustment are discussed in the corresponding section below.

- **Adjustment sheet**
  
  As the shading sheet and the registration adjustment sheet, use sheets described in the previous section. However, make sure that the width of the registration sheet is the same 219 mm as that of the shading sheet to prevent skews.

  **Note:** Two shading sheets with a black line for registration adjustment may be used. If a feeding error occurs, execute each mode individually.

- **Operation Procedure**
  
  1) Clean feed path, roller, and reading glass.
2) Open the document guides fully extended, then load a prepared registration adjustment sheet as the first sheet and a prepared shading sheet as the second. Insert them properly not to cause skew.

**Note:** Do not set extra sheets.

![Figure 5-218](image)

3) On the service screen, select [All Adjustment].

![Figure 5-219](image)

4) The adjustment starts automatically. The sheets are fed and the progress screen is displayed.

![Figure 5-220](image)

5) Even after the shading sheet has been ejected, the data may be processed inside the machine. The progress screen disappears, and a warning screen is displayed. Do not turn OFF the machine or perform any operations until the completion screen is displayed.

![Figure 5-221](image)
6) After the adjustment is complete, the completion screen is displayed. Click [OK].

8. Dcon Check
This mode checks operations of each hardware inside of the machine.

   ◆ Basic screen
1) On the service screen, select [Dcon Check].

   ![Figure 5-222](image)
   
   ![Figure 5-223](image)

2) The [DCON Check] screen is displayed. Select a menu to execute on this screen.

   ![Figure 5-224](image)

Note: When this machine enters the service mode, the tray switch (power switch) is disabled. The power is not switched OFF even when the pickup tray is closed.

Note: The state (Auto Start On or Auto Start Off) of the Auto Start switch appears on the upper right corner of the screen when the service tool is started.
a. Sensors and switches

The operation states of sensors and switches are shown below.

The figure below shows that the "Tray switch" is ON and the "Auto Start switch" is OFF.

![Figure 5-225]

<table>
<thead>
<tr>
<th>Mark</th>
<th>Name/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Start button (Start switch)" /></td>
<td>When the start button is pressed, the mark turns on.</td>
</tr>
<tr>
<td><img src="image" alt="Auto Start switch" /></td>
<td>Shows the ON/OFF state of the switch.</td>
</tr>
<tr>
<td><img src="image" alt="Upper unit sensor" /></td>
<td>When the upper unit is open, the mark turns on.</td>
</tr>
<tr>
<td><img src="image" alt="Registration sensor" /></td>
<td>When the registration sensor detects paper, the mark turns on. (See Note)</td>
</tr>
<tr>
<td><img src="image" alt="Document sensor" /></td>
<td>When the document sensor detects paper, the mark turns on.</td>
</tr>
<tr>
<td><img src="image" alt="Tray switch (Power switch)" /></td>
<td>When the pickup tray is open, the mark turns on.</td>
</tr>
<tr>
<td><img src="image" alt="Card sensor" /></td>
<td>When the card sensor detects card, the mark turns on. (See Note)</td>
</tr>
<tr>
<td><img src="image" alt="USB 3.0" /></td>
<td>When USB3.0 power is supplied, the mark turns on.</td>
</tr>
</tbody>
</table>

**Table 5-202**

**Note:** Because the registration sensor and card sensor become the detection state even if upper unit is in an opened state, this mark turns on. The upper unit is open, the registration sensor detects the mark turns on.
b. Motor
Checks the operation of the feed motor. Select a resolution, a reading mode and direction, then select [Start] to make the motor turn at the speed that meets the condition. Select [Stop] to stop the motor.

![Figure 5-226]

9. Check Device
This mode displays versions of the main body firmware and the internal devices of this machine. The serial number is also displayed and set.

On the service screen, select [Check Device] to display the [Check Device] screen.

![Figure 5-228]

- [MAIN] Main body firmware
- [MCON] Motor controller

Note: Version of the main body firmware can also be confirmed on the user's driver screen.

Serial number data is saved on the control PCB. If this PCB is replaced, enter the serial number shown on the rating label at the bottom of the main body and select "Set" on the right side.
10. Firm Load

Firmware and “CaptureOnTouch Lite” are changed in this mode. For details, refer to service information provided when firmware is changed. Do not misuse this mode.

◆ Operation Procedure
1) On the service screen, select [Firm Load].
2) The screen is displayed requiring the file in which software is stored to be selected.
3) Select and open the file.
4) It is loaded automatically and a progress screen is displayed.

5) When the load is finished, the progress screen disappears and the service screen returns. The cumulative number of sheets displayed at the bottom of the service screen is "0: zero".

6) Select “Close” on the service screen and close the pickup tray.

**Note:** The power stays on even when the pickup tray is closed at this time.

7) Remove and reconnect the USB cable.

8) Start the service tool and verify that the version and the total scanning count displayed on the service screen are correct.

**Figure 5-229**

**Figure 5-230**

**Figure 5-231**

**Note:** Do not turn the power OFF including the USB cable is removed during loading. If the power is turned OFF, it returns to its original state when re-started, but this is not guaranteed.
11. About
This mode displays a detailed version of the service tool.
On the service screen, select [About] to display the version screen.
Press [OK] to close the version screen.

Figure 5-232

12. Counter
This mode is used to display/change the scanning count and the number of document jams.
Note: Do not change the value of each item by mistake. Change it only if necessary.

a. Message
On the service screen, select [Counter] to display the [Counter] screen.

Figure 5-233

- [Total Count]
  Total scanning count (documents and cards fed)
- [P01 Jam Count]
  Number of documents jams in the pickup section
  Pickup delay jam (pickup error) count
- [P02 Jam Count]
  Number of documents jams in the registration section
  Residual jam count
- [Card Count]
  Total scanning count of card
- [Roller Count]
  Scanning count of the roller being used
- [Pad Count]
  Scanning count of the separation pad being used
b. Change

These values are changed when the control PCB is replaced. After the replacing the control PCB, input the same values as before the replacement. If you don't know the values before the replacement, input the estimated values.

After changing the value, select the [Set] button at the right side of each item to finalize it. Pressing the [Set] button in the lower right portion of the screen finalizes values for all items.

However, [Roller Count] and [Pad Count] has a [Reset] button instead of the [Set] button. If this [Reset] button is selected, the value becomes “0 (zero)”. Since it is interlocked with the “Count Reset” for the user, do not select the [Reset] button by mistake.

If you replace the control PCB or change the [Total Count], the [Roller Count] and [Pad Count] are also changed. As the “Replacement message” may be displayed the next time the user turns the power ON or the count be incorrect, reset the count if necessary.
III. LIST OF FAILURES

The lists below give the major failures conditions and their causes. Refer to the next section for details of the causes and the measures to be taken.

1. Operation Failures

<table>
<thead>
<tr>
<th>No.</th>
<th>Cause</th>
<th>System/Software</th>
<th>Hardware</th>
<th>Connection</th>
<th>Dirt/dust</th>
<th>Document</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power does not come ON.</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>No scanner is found.</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Scanner does not start.</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Scanning does not feed properly.</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Scanning speed is slow.</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Note: Major causes of each failure are marked “X.”

Table 5-301

2. Image Failures

<table>
<thead>
<tr>
<th>No.</th>
<th>Cause</th>
<th>System/Software</th>
<th>Hardware</th>
<th>Connection</th>
<th>Dirt/dust</th>
<th>Document</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All black/all white/all streaked.</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Too dark/too light.</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Streaks in image.</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Image slanted.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Wrong image size.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>Text cannot be seen.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Moire in image.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Note: Major causes of each failure are marked “X.”

Table 5-302
IV. OPERATION TROUBLESHOOTING

When an operation problem occurs, check the error message displayed on the display connected to a computer. Also perform an operation check on the sensors and motor using the service mode.

1. **Power Does Not Come ON**

The start button is not lit.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection of USB cable</td>
<td>1</td>
<td>Is the USB cable connected?</td>
<td>NO Connect.</td>
<td></td>
</tr>
<tr>
<td>Pickup tray opening/closing</td>
<td>2</td>
<td>Is the pickup tray open?</td>
<td>NO Open.</td>
<td></td>
</tr>
<tr>
<td>USB hub</td>
<td>3</td>
<td>Is the USB hub used?</td>
<td>YES Remove.</td>
<td></td>
</tr>
<tr>
<td>Pickup tray detection lever</td>
<td>4</td>
<td>Does the pickup tray detection lever move smoothly?</td>
<td>NO Assemble properly.</td>
<td></td>
</tr>
<tr>
<td>Pickup tray switch Control PCB</td>
<td>5</td>
<td>Was the problem solved by replacing of control PCB?</td>
<td>YES Done.</td>
<td></td>
</tr>
<tr>
<td>Start button LED (start switch PCB)</td>
<td>6</td>
<td>Was the problem solved by replacing of start switch PCB?</td>
<td>YES Done.</td>
<td></td>
</tr>
</tbody>
</table>

Table 5-301

2. **No Scanner is Found**

Note: If the Auto Start switch is "ON", this machine is recognized as a storage device "ONTOUCHLITE" of the computer. If it is "OFF", it is recognized as a scanner.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>1</td>
<td>Is power supplied to the machine?</td>
<td>NO Perform “1. Power Does Not Come ON”.</td>
<td></td>
</tr>
<tr>
<td>Computer, I/F card</td>
<td>2</td>
<td>Are the computer and I/F card appropriate?</td>
<td>NO Use appropriate equipment.</td>
<td></td>
</tr>
<tr>
<td>Driver (If the Auto Start switch is &quot;OFF&quot;)</td>
<td>3</td>
<td>Is a &quot;?&quot;, &quot;!&quot;, or &quot;x&quot; mark displayed on this machine in the Windows device manager?</td>
<td>YES Reinstall the driver.</td>
<td></td>
</tr>
</tbody>
</table>

Table 5-402
## 3. Scanning Does Not Start

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Start switch setting</td>
<td>1</td>
<td>Is the Auto Start switch setting correct?</td>
<td>NO</td>
<td>Set it correctly.</td>
</tr>
<tr>
<td>System</td>
<td>2</td>
<td>Was the problem solved by resetting the power of the scanner (Pickup tray opening/closing) or restarting the computer?</td>
<td>YES</td>
<td>Done.</td>
</tr>
<tr>
<td>Software</td>
<td>3</td>
<td>Was the problem solved by reinstalling the scanner driver or application?</td>
<td>YES</td>
<td>Done.</td>
</tr>
<tr>
<td>System</td>
<td>4</td>
<td>Is the access to the USB device inhibited by security software?</td>
<td>YES</td>
<td>Explain to the user that CaptureOnTouch Lite cannot be started.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>If the &quot;Auto Play&quot; screen is not displayed, can CaptureOnTouch Lite be started manually from the Explorer?</td>
<td>YES</td>
<td>Explain to the user that the &quot;automatic play&quot; screen is not displayed due to OS type and setting. It is described in the User Manual.</td>
</tr>
<tr>
<td>Cable connection</td>
<td>6</td>
<td>Are the motor and sensor cables connected properly?</td>
<td>NO</td>
<td>Connect properly.</td>
</tr>
<tr>
<td>Gear</td>
<td>7</td>
<td>Are the gears attached properly?</td>
<td>NO</td>
<td>Assemble properly. Replace inferior parts.</td>
</tr>
<tr>
<td>Motor</td>
<td>8</td>
<td>Is the motor attached properly?</td>
<td>NO</td>
<td>Assemble properly.</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Is the operation normal when you perform an operation check with the service mode?</td>
<td>NO</td>
<td>Replace the motor.</td>
</tr>
<tr>
<td>Sensors</td>
<td>10</td>
<td>Is the operation normal when you perform an operation check with the service mode?</td>
<td>NO</td>
<td>Check installation of the sensor lever and light guide. Replace the installed PCB and upper FPC.</td>
</tr>
</tbody>
</table>

Table 5-403
### 4. Scanner Does Not Feed Properly

**Note:** If temporary stop occurs frequently, perform steps 1 to 8 in this section and refer to “5. Scanning Speed is Slow”.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document (included the card)</td>
<td>1</td>
<td>Specified document? (thickness, size, fold or curl)</td>
<td>NO</td>
<td>Use documents compliant with the specified.</td>
</tr>
<tr>
<td>Setting documents</td>
<td>2</td>
<td>Are documents stuck together?</td>
<td>YES</td>
<td>Fan the documents well.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Is the position of the document guide correct?</td>
<td>NO</td>
<td>Correct the position.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Are many documents set?</td>
<td>YES</td>
<td>Reduce the number of documents.</td>
</tr>
<tr>
<td>Separation pad Roller</td>
<td>5</td>
<td>Are the separation pad and rollers installed properly?</td>
<td>NO</td>
<td>Assemble properly.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Are they dirty or deformed?</td>
<td>NO</td>
<td>Clean or replace them.</td>
</tr>
<tr>
<td>Parts touching documents</td>
<td>7</td>
<td>Parts touching documents installed properly? (no float or slant)</td>
<td>NO</td>
<td>Assemble properly.</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Is the surface touching documents smooth? (no flaw or burr)</td>
<td>NO</td>
<td>Replace inferior parts.</td>
</tr>
<tr>
<td>Cable connection</td>
<td>9</td>
<td>Are the motor and sensor cables connected properly?</td>
<td>NO</td>
<td>Connect properly.</td>
</tr>
<tr>
<td>Gear</td>
<td>10</td>
<td>Are the gears attached properly?</td>
<td>NO</td>
<td>Assemble properly. Replace inferior parts.</td>
</tr>
<tr>
<td>Motor</td>
<td>11</td>
<td>Is the motor attached properly?</td>
<td>NO</td>
<td>Assemble properly.</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Is the operation normal when you perform an operation check with the service mode?</td>
<td>NO</td>
<td>Replace the motor.</td>
</tr>
<tr>
<td>Sensors (Each PCB, upper FPC)</td>
<td>13</td>
<td>Is the operation normal when you perform an operation check with the service mode?</td>
<td>NO</td>
<td>Check installation of the sensor lever and light guide. Replace the installed PCB and upper FPC.</td>
</tr>
</tbody>
</table>

*Table 5-404*
5. Scanning Speed is Slow

The scanning speed differs according to scanning conditions. If high resolution, color settings, or special functions are set, the speed decreases. The speed when using one USB cable is lower than that when using two USB cables.

There is no problem with USB 3.0, but if a single USB2.0 cable is used, the power supply is low and the scan speed may change significantly due to differences (variations in properties of parts) of the products. Therefore, the speed may decrease after parts replacement or reassembling, but it is not a failure if the speed specification is satisfied.

If the scanning speed is still slow after taking the above into consideration, the cause may be as follows.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The feeding load is heavy</td>
<td>1</td>
<td>Does the machine temporary stop occur frequently?</td>
<td>YES</td>
<td>Perform steps 1 to 8 in &quot;4. Scanner Does Not Feed Properly&quot;.</td>
</tr>
<tr>
<td>Insufficient power supply</td>
<td>2</td>
<td>Was the problem solved by using a power supply USB cable (or an optional AC adaptor)?</td>
<td>YES</td>
<td>Done.</td>
</tr>
<tr>
<td>Insufficient computer memory</td>
<td>3</td>
<td>Is the memory sufficient?</td>
<td>NO</td>
<td>Increase the memory.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Are other applications running?</td>
<td>YES</td>
<td>Close the unnecessary applications.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Are resident applications such as a virus protection program running?</td>
<td>YES</td>
<td>Close the unnecessary applications.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Is there insufficient hard disc space?</td>
<td>YES</td>
<td>Increase the hard disc space.</td>
</tr>
<tr>
<td>Hi-Speed USB 2.0 not supported</td>
<td>7</td>
<td>Is the USB port supported?</td>
<td>NO</td>
<td>Use a computer that supports it.</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Is the USB cable supported?</td>
<td>NO</td>
<td>Use the supplied USB cable.</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Is the USB hub supported? Bus power type cannot be used. Self power type can be used, but it is not guaranteed.</td>
<td>NO</td>
<td>Use a USB hub that supports it.</td>
</tr>
</tbody>
</table>

Table 5-405
V. IMAGE TROUBLESHOOTING

*Image Sample

<table>
<thead>
<tr>
<th>Document</th>
<th>Normal (B&amp;W)</th>
<th>All black</th>
<th>All white</th>
<th>All streaked</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td>Too dark</td>
<td>Too light</td>
<td>Streaks 1</td>
<td>Streaks 2</td>
<td>Streaks 3</td>
</tr>
<tr>
<td><img src="image6.png" alt="Image" /></td>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
<td><img src="image9.png" alt="Image" /></td>
<td><img src="image10.png" alt="Image" /></td>
</tr>
<tr>
<td>Wrong size</td>
<td>Auto size</td>
<td>Slanting</td>
<td>Skew correction</td>
<td></td>
</tr>
<tr>
<td><img src="image11.png" alt="Image" /></td>
<td><img src="image12.png" alt="Image" /></td>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
<td></td>
</tr>
</tbody>
</table>

Table 5-501
Note: The level of reproducing the image depends on types of documents and setup conditions. Changing setup conditions sometimes works. Confirm whether it is only one side or both sides that image trouble occurs. In the case of the one side, check an item related to the aspect.

1. **All Black/All White/All Streaked**
   The image is all black, all white, or all streaked.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting documents</td>
<td>1</td>
<td>Was the document set with the surface facing down? If not, the reverse side will be scanned.</td>
<td>NO</td>
<td>Set properly.</td>
</tr>
<tr>
<td>Setup of “Brightness”</td>
<td>2</td>
<td>“Brightness” setup properly?</td>
<td>NO</td>
<td>Change the setup. Change “Contrast” if necessary.</td>
</tr>
<tr>
<td>System</td>
<td>3</td>
<td>Was the problem solved by resetting the power of the scanner or restarting the computer?</td>
<td>YES</td>
<td>Done.</td>
</tr>
<tr>
<td>Reading Unit</td>
<td>4</td>
<td>Reading-related cables connected properly?</td>
<td>NO</td>
<td>Connect properly.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Was the problem solved by replacing the reading unit?</td>
<td>YES</td>
<td>Done.</td>
</tr>
<tr>
<td>Control PCB</td>
<td>6</td>
<td>Was the problem solved by replacing the control PCB?</td>
<td>YES</td>
<td>Done.</td>
</tr>
</tbody>
</table>

   **Table 5-502**

2. **Too Dark/Too Light**
   The image cannot be seen properly because the brightness is inappropriate.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup of “Brightness”</td>
<td>1</td>
<td>“Brightness” setup properly? Normally the brightness should be set to the medium value, but this may need to be changed, depending on the document.</td>
<td>NO</td>
<td>Change the setup.</td>
</tr>
<tr>
<td>Setup of “Contrast”</td>
<td>2</td>
<td>“Contrast” setup properly?</td>
<td>NO</td>
<td>Change the setup.</td>
</tr>
<tr>
<td>Light Adjustment</td>
<td>3</td>
<td>Have you executed Light Adjustment</td>
<td>NO</td>
<td>Execute Light Adjustment</td>
</tr>
</tbody>
</table>

   **Table 5-503**
### 3. Streaks in Image

Streaks in the feeding direction may appear in the image due to dirt on the reading glass. Dirt on the separation pad or rollers may also be transferred to the document.

When white streaks appear in the image, this is due to shading correction being performed when the reading glass is dirty.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading glass</td>
<td>1</td>
<td>Is the reading glass clean?</td>
<td>NO</td>
<td>Clean the reading glass. Replace the reading cover (reading glass) if it is damaged.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replace the reading glass cover if it is damaged.</td>
</tr>
<tr>
<td>Roller</td>
<td>2</td>
<td>Is the surface clean?</td>
<td>NO</td>
<td>Clean or replace it.</td>
</tr>
<tr>
<td>Feed Path</td>
<td>3</td>
<td>Is the feed path clean?</td>
<td>NO</td>
<td>Clean it.</td>
</tr>
<tr>
<td>CIS unit</td>
<td>4</td>
<td>Is the inside of the CIS unit clean?</td>
<td>NO</td>
<td>Clean or replace the reading unit.</td>
</tr>
<tr>
<td>Light Adjustment</td>
<td>5</td>
<td>Have you executed Light Adjust</td>
<td>NO</td>
<td>Execute Light Adjustment.</td>
</tr>
</tbody>
</table>

Table 5-504

### 4. Image Slanted

If the document is fed at an angle, the image will become slanted.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting documents</td>
<td>1</td>
<td>Is the document set properly?</td>
<td>NO</td>
<td>Set properly.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Are the document guides adjusted to fit the document width?</td>
<td>NO</td>
<td>Correct the position.</td>
</tr>
<tr>
<td>Setup of “Skew correction”</td>
<td>3</td>
<td>Was “Skew correction” set?</td>
<td>NO</td>
<td>Set it. You can correct the slant of an image using image processing.</td>
</tr>
<tr>
<td>Feeding documents</td>
<td>4</td>
<td>Are documents fed straight?</td>
<td>NO</td>
<td>Perform the checks in “III. OPERATION TROUBLESHOOTING 4. Scanner does not feed properly”.</td>
</tr>
</tbody>
</table>

Table 5-505
5. Wrong Image Size

The scanned image size is different from the document size, images have margins, or outer areas of images disappear.

Note: Set the paper size to "auto detection" when scanning groups of different size documents.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup of “Paper size”</td>
<td>1</td>
<td>Is the setup of “Paper size” correct?</td>
<td>NO</td>
<td>Change the setup</td>
</tr>
<tr>
<td>Setting documents</td>
<td>2</td>
<td>Was the document set in the correct position?</td>
<td>NO</td>
<td>Set the document in the correct position.</td>
</tr>
<tr>
<td>Setup of “Auto detection” for the paper size</td>
<td>3</td>
<td>Was “Auto detection” set?</td>
<td>NO</td>
<td>Set it.</td>
</tr>
<tr>
<td>Registration Adjus-</td>
<td>4</td>
<td>Have you executed Registration Adjustment</td>
<td>NO</td>
<td>Execute Registration Adjus-</td>
</tr>
</tbody>
</table>

Table 5-506

6. Text Cannot be Seen

When the background includes colors or patterns, text may be hidden by the background when scanning in black and white. The "Advanced Text Enhancement II" mode exists to solve this problem.

Note: The problem may not be fixed, depending on the type of document.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup of “Mode”</td>
<td>1</td>
<td>Was the problem solved by setting to “Color” or “Grayscale”?</td>
<td>YES</td>
<td>Done.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Was the problem solved by setting to “Advanced Text Enhancement II”?</td>
<td>YES</td>
<td>Done.</td>
</tr>
<tr>
<td>Setup of “Brightness”</td>
<td>3</td>
<td>Was the problem solved by changing the setup of “Brightness”?</td>
<td>YES</td>
<td>Done.</td>
</tr>
</tbody>
</table>

Table 5-507
7. Moire in Image

The moire effect occurs when photos from magazines, catalogs, etc. are scanned at a low resolution.

<table>
<thead>
<tr>
<th>Cause/Faulty Location</th>
<th>Step</th>
<th>Check Item</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup of “Moire Reduction”</td>
<td>1</td>
<td>Is “Moire Reduction” set?</td>
<td>NO</td>
<td>Set it.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>YES</td>
<td>Increase the resolution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Set to “High Quality Moire Reduction”.</td>
</tr>
</tbody>
</table>

Table 5-508
VI. AFTER REPLACING PARTS

Some of the parts used in this machine require adjustments and settings after being replaced. The object parts are shown below.
Perform a feed and image check after replacing parts or disassembling/reassembling. When there is malfunction, perform measures.

1) Control PCB
   In the service mode, execute [All Adjustment], change the [Counter] value and input the serial number into [Check device].

2) Reading Unit
   In the service mode, execute [All Adjustment].

3) Registration Related Parts
   Execute [Regist sensor adjustment] and then [Registration Adjustment[Auto]] after replacing the start switch PCB on which the registration sensor is installed and the base unit on which related parts are mounted.
I. ELECTRICAL BLOCK DIAGRAM

- Control PCB
- CIS unit (lower)
- Upper unit sensor

- Feed motor (with encoder)
- Upper sensor PCB
- USB cable (micro connector)

- AC Adapter
- Power supply USB cable (DC plug)

- Option
- Card sensor

- Start switch PCB
- Start switch

- Document sensor
- Registration sensor

- Tray switch
- JP1 12 11 10 8 7 6 5 4 3 2 1

- J2
- JP1 12 11 10 8 7 6 5 4 3 2 1
II. LIST OF SPECIAL EQUIPMENT

The list of special tools needed for service works of this machine is the following. However, these are the same as used for other machines.

<table>
<thead>
<tr>
<th>No.</th>
<th>Equipment name</th>
<th>Equipment number</th>
<th>Rank</th>
<th>Usage/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shading sheet</td>
<td>TKM-0326 TKM-0332</td>
<td>B</td>
<td>For the light adjustment Same as used for DR-M160 etc.</td>
</tr>
<tr>
<td>2</td>
<td>Registration adjustment sheet</td>
<td></td>
<td>B</td>
<td>For the registration adjustment Created of copy paper or shading sheet by service technicians</td>
</tr>
</tbody>
</table>

Table A-201

Note: Rank notation:
A = Equipment that each service technician must carry.
B = Equipment that can be shared among a group of 5 service technicians.
C = Equipment that each workshop needs to have.
1. External Cover

Figure 100
<table>
<thead>
<tr>
<th>FIGURE &amp; KEY NO.</th>
<th>PART NUMBER</th>
<th>RANK</th>
<th>Q'TY</th>
<th>DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-1</td>
<td>MG1-4678-000</td>
<td>1</td>
<td></td>
<td>PICKUP TRAY UNIT, P-215</td>
<td>P-215</td>
</tr>
<tr>
<td></td>
<td>MG1-5007-000</td>
<td>1</td>
<td></td>
<td>PICKUP TRAY UNIT, P-215II</td>
<td>P-215II</td>
</tr>
<tr>
<td></td>
<td>MA2-9680-000</td>
<td>1</td>
<td></td>
<td>FEED ROLLER</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MA2-9695-000</td>
<td>1</td>
<td></td>
<td>COVER, REAR</td>
<td>P-215</td>
</tr>
<tr>
<td></td>
<td>MA3-0456-000</td>
<td>1</td>
<td></td>
<td>COVER, REAR</td>
<td>P-215II</td>
</tr>
<tr>
<td></td>
<td>MF1-4631-000</td>
<td>1</td>
<td></td>
<td>GEAR, Z46-20</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MS2-0225-000</td>
<td>1</td>
<td></td>
<td>GEAR, Z42</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MS2-0224-000</td>
<td>1</td>
<td></td>
<td>GEAR, Z15-17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MA2-9693-000</td>
<td>1</td>
<td></td>
<td>COVER, LEFT</td>
<td>P-215</td>
</tr>
<tr>
<td></td>
<td>MA3-0454-000</td>
<td>1</td>
<td></td>
<td>COVER, LEFT</td>
<td>P-215II</td>
</tr>
<tr>
<td></td>
<td>MF1-4752-000</td>
<td>1</td>
<td></td>
<td>PLATE, BOTTOM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MA2-9692-000</td>
<td>N</td>
<td></td>
<td>GUIDE, LIGHT, CARD</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>MS2-0278-000</td>
<td>1</td>
<td></td>
<td>GEAR, Z42-23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MA2-9694-000</td>
<td>1</td>
<td></td>
<td>COVER, RIGHT</td>
<td>P-215</td>
</tr>
<tr>
<td></td>
<td>MA3-0455-000</td>
<td>1</td>
<td></td>
<td>COVER, RIGHT</td>
<td>P-215II</td>
</tr>
<tr>
<td></td>
<td>MH2-5376-000</td>
<td>1</td>
<td></td>
<td>CABLE, USB, DC PLUG</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>MH2-5413-000</td>
<td>1</td>
<td></td>
<td>CABLE, USB MICRO CONNECTOR</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>XA9-1960-000</td>
<td>3</td>
<td></td>
<td>SCREW, TAPPING B, FH M2.5x6</td>
<td></td>
</tr>
</tbody>
</table>
2. Upper Unit
<table>
<thead>
<tr>
<th>FIGURE &amp; KEY NO.</th>
<th>PART NUMBER</th>
<th>RANK</th>
<th>Q'TY</th>
<th>DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-1</td>
<td>MG1-4759-000</td>
<td>1</td>
<td>1</td>
<td>SEPARATION PAD UNIT</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>MG1-4680-000</td>
<td>1</td>
<td>1</td>
<td>UPPER UNIT</td>
<td></td>
</tr>
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3. Base Unit

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Prepared by

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Canon Electronics Inc.

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