Document Insertion Unit-H1

Service Manual

Product Outline

Technology

Periodic Servicing

Parts Replacement/Cleaning Procedure

Adjustment

Installation

Appendix
Application
This manual has been issued by Canon Inc. for qualified persons to learn technical theory, installation, maintenance, and repair of products. This manual covers all localities where the products are sold. For this reason, there may be information in this manual that does not apply to your locality.

Corrections
This manual may contain technical inaccuracies or typographical errors due to improvements or changes in products. When changes occur in applicable products or in the contents of this manual, Canon will release technical information as the need arises. In the event of major changes in the contents of this manual over a long or short period, Canon will issue a new edition of this manual.

The following paragraph does not apply to any countries where such provisions are inconsistent with local law.

Trademarks
The product names and company names used in this manual are the registered trademarks of the individual companies.

Copyright
This manual is copyrighted with all rights reserved. Under the copyright laws, this manual may not be copied, reproduced or translated into another language, in whole or in part, without the written consent of Canon Inc.

(C) CANON INC. 2007

Caution
Use of this manual should be strictly supervised to avoid disclosure of confidential information.
Explanation of Symbols
The following symbols are used throughout this Service Manual.

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Check]</td>
<td>Check</td>
</tr>
<tr>
<td><img src="check" alt="Check visually." /></td>
<td>Check visually.</td>
</tr>
<tr>
<td><img src="check" alt="Check the noise." /></td>
<td>Check the noise.</td>
</tr>
<tr>
<td><img src="disconnect" alt="Disconnect the connector." /></td>
<td>Disconnect the connector.</td>
</tr>
<tr>
<td><img src="connect" alt="Connect the connector." /></td>
<td>Connect the connector.</td>
</tr>
<tr>
<td><img src="remove" alt="Remove the cable/wire from the cable guide or wire saddle." /></td>
<td>Remove the cable/wire from the cable guide or wire saddle.</td>
</tr>
<tr>
<td><img src="set" alt="Set the cable/wire to the cable guide or wire saddle." /></td>
<td>Set the cable/wire to the cable guide or wire saddle.</td>
</tr>
<tr>
<td><img src="remove" alt="Remove the screw." /></td>
<td>Remove the screw.</td>
</tr>
<tr>
<td><img src="tighten" alt="Tighten the screw." /></td>
<td>Tighten the screw.</td>
</tr>
</tbody>
</table>

Symbols | Explanation          |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="remove" alt="Remove the claw." /></td>
<td>Remove the claw.</td>
</tr>
<tr>
<td><img src="insert" alt="Insert the claw." /></td>
<td>Insert the claw.</td>
</tr>
<tr>
<td><img src="use" alt="Use the bundled part." /></td>
<td>Use the bundled part.</td>
</tr>
<tr>
<td><img src="push" alt="Push the part." /></td>
<td>Push the part.</td>
</tr>
<tr>
<td><img src="plug" alt="Plug the power cable." /></td>
<td>Plug the power cable.</td>
</tr>
<tr>
<td><img src="on" alt="Turn on the power." /></td>
<td>Turn on the power.</td>
</tr>
</tbody>
</table>

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.

   In the diagrams, ![ represents the path of mechanical drive; where a signal name accompanies the symbol, the arrow indicates the direction of the electric signal. The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High", while '0' is used to indicate "Low". (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in "DRMD*" indicates that the DRMD signal goes on when '0'.

   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins:

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.
Contents

Safety Precautions 0-1
Points to Note About Turning Off the Main Power Switch 0-2
Notes Before it Works Serving 0-3

1 Product Outline 1-1
Features 1-2
Specifications 1-3
Names of Parts
  External View(Front) 1-4
  External View(Rear) 1-4
  Internal View(Internal) 1-5

2 Technology 2-1
Basic Configuration 2-2
  Functional Configuration 2-2
  Overview of Electrical Circuitry 2-2
  Component Configuration 2-3
  Drive Configuration 2-4
  Basic movement outline 2-4
Various Modes of Control 2-6
  Outline of operations 2-6
  Jam Detection 2-15
  Power Supply 2-17
  Work of service 2-19

3 Periodic Servicing 3-1
List of Work for Scheduled Servicing 3-2

4 Parts Replacement/Cleaning Procedure 4-1
List Of Parts 4-2

External / Internal Covers 4-6
Removing the Rear Upper Cover 4-6
Removing the Rear Lower Cover 4-7
Removing the Front Upper Cover 4-7
Removing the Front Inner Cover 4-8
Removing the Inserter Rear Cover 4-9
Changing the Inserter Top Cover Open/Close Angle 4-9
Removing the Inserter Front Cover 4-10
Changing the Middle Guide Open/Close Angle 4-10
Changing the Inserter Open Angle 4-11
Removing the Main Unit 4-12
Removing the Upper Tray Unit 4-12
Removing the Lower Tray Unit 4-13
Removing the Inserter Pickup Unit 4-13
Consumable Parts Requiring Periodic Replacement and Cleaning Points 4-15
Removing the Inserter pickup rollers (upper) 4-15
Removing the Inserter pickup roller (lower) 4-16
Removing the Inserter separation roller (upper) 4-16
Removing the Inserter separation roller (lower) 4-17
Removing the Inserter feed roller (upper) 4-17
Removing the Inserter feed roller (lower) 4-18
Removing the Inserter torque limiter (upper) 4-18
Removing the Inserter torque limiter (lower) 4-19
Removing the Inserter electromagnetic clutch (upper) 4-19
Removing the Inserter electromagnetic clutch (lower) 4-20
Removing the Motor 4-21
Removing the Tray Pickup Motor (M1) 4-21
Removing the Drive Switchover Motor (M4) 4-22
Removing the Upper Tray Lift Motor (M2) 4-23
Removing the Lower Tray Lift Motor (M3) 4-23
Removing the PCB ........................................ 4-24
Removing the DC Controller PCB ......................... 4-24
Removing the Upper Tray LED PCB ....................... 4-25
Removing the Lower Tray LED PCB ....................... 4-25
Removing the Sensor ....................................... 4-27
Removing the Upper tray empty sensor (S9) .............. 4-27
Removing the Upper tray width sensor (S10) ............. 4-28
Removing the Upper tray last paper sensor (S11) ....... 4-29
Removing the Low tray empty sensor (S12) ............... 4-29
Removing the Low tray width sensor (S13) .............. 4-30
Removing the Low tray last paper sensor 1 (S14) ....... 4-31
Removing the Low tray last paper sensor 2 (S15) ....... 4-32

5 Adjustment 5-1
Adjustment at Time of Parts Replacement ................ 5-2

6 Installation 6-1
Making Pre-installation Checks ............................. 6-2
  Checking the Power Supply ................................ 6-2
  Checking the Installation Space ........................... 6-2
  Cautions at the Time of Installation ....................... 6-3
Checking Bundled Components ............................. 6-4
Unpacking ..................................................... 6-5
  Unpacking Procedure ....................................... 6-5
Installation Procedure ...................................... 6-7
  Preparation for Installation on Upstream Connection Machine Side - 6-7
  Connecting to Connection Machine ....................... 6-8
  Height/Inclination Checks ................................. 6-10
  Connecting the Cables ..................................... 6-13
  Connecting the Wire saddle ............................... 6-14
  Making Checks after Completion of Installation Work 6-15
  Operation Checks .......................................... 6-15

7 Appendix 7-1
Service Tools .................................................. 7-2
Safety Precautions

- Points to Note About Turning Off the Main Power Switch
- Notes Before it Works Serving
Points to Note About Turning Off the Main Power Switch

This machine has two switches related to power supply, the Power switch and the breaker.

Turning on the Power switch powers this machine.
The breaker detects an excess current and electric leakage to protect you against an electric shock.

MEMO:
Explain to the customer that the breaker must be checked once or twice a month and the result must be recorded.
Notes Before it Works Serving

CAUTION:
At servicing, be sure to turn off the power source according to the specified steps and disconnect the power plug.

CAUTION:
Do not turn off the power switch when downloading is under way. Turning off the main power switch while downloading is under way can disable the machine.
Product Outline

- Features
- Specifications
- Names of Parts
Features

- A free-standing inserter with a reversal feature, supporting a set of two large tray bins.
- Each tray has a capacity of 200 sheets.
## Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper pickup method</td>
<td>Auto paper pickup/delivery</td>
<td>Upward separation by a cassette separation roller</td>
</tr>
<tr>
<td>Paper pickup mode</td>
<td>Single-sided</td>
<td>automatic reversal mode supported</td>
</tr>
<tr>
<td>Paper types</td>
<td>Plain paper, recycled paper, colored paper, heavy paper, coated paper</td>
<td></td>
</tr>
<tr>
<td>Paper size</td>
<td>Upper tray/lower tray/B5 to 13”x19.2”</td>
<td>Feed direction to 139.7 to 482.6 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Width direction to 98.4 to 330.2 mm</td>
</tr>
<tr>
<td>Paper weighing</td>
<td>52g/m² to 300g/m²</td>
<td></td>
</tr>
<tr>
<td>Loading capacity</td>
<td>Loading height: up to 24mm</td>
<td>Defined on the basis of 80g/m² paper</td>
</tr>
<tr>
<td></td>
<td>Upper tray: 200 sheets/lower tray: 200 sheets</td>
<td></td>
</tr>
<tr>
<td>Reference</td>
<td>Center reference</td>
<td></td>
</tr>
<tr>
<td>Mixed paper loading</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Operator console</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>Document loading LED available</td>
<td></td>
</tr>
<tr>
<td>Size detection feature</td>
<td>Supported</td>
<td>Length: Photointerrupters (Upper tray: 1/ Lower tray: 2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Width: Slide variable resistors (Upper tray: 1/ Lower tray: 1)</td>
</tr>
</tbody>
</table>
Names of Parts

External View (Front)

Upper tray
Upper cover
Low tray
Front upper cover

External View (Rear)

Power switch
Rear cover
Rear upper cover
Rear low cover
Leakage breaker

F-1-1
F-1-2
External View (Internal)

- Horizontal feed guide
- Jam clearing lever (through-feed unit)

F-1-3
Technology

- Basic Configuration
- Controls
- Jam Detection
- Power Supply
- Work of service
Basic Configuration

Functional Configuration

The components of this fold unit are organized into three major blocks: tray unit, paper feed unit, and feed unit.

Overview of Electrical Circuitry

The machine's sequence of operations is controlled by the DC controller PCB. The DC controller PCB is a CPU used to interpret input signals from sensors and host machine and generate signals to drive such loads as motors and clutches at such times as programmed in advance.
Component Configuration

Roller Layout

Sensor Layout

It describes only all optical sensors on the feed path.

- S3 Upper tray regist sensor
- S7 Low tray regist sensor
- S8 Middle feed sensor
- S9 Upper tray empty sensor
- S12 Low tray empty sensor
- S16 Reverse timing sensor
- S17 Reverse sensor
- S18 Reverse entrance sensor
- S20 Entrance sensor
- S21 Delivery sensor 2
**Drive Configuration**

- **M1** Tray Paper feed motor
- **M2** Upper tray lift motor
- **M3** Low tray lift motor
- **M4** Drive switchover motor
- **M5** Entrance motor 1
- **M6** Reverse motor
- **CL1** Uppper tray regist clutch
- **CL2** Low tray regist clutch
- **SOL1** Reverse solenoid

**Basic movement outline**

**Surface insert operation**

Transfers the paper loaded in the inserter tray to the downstream equipment so the upper surface of the paper will face up.

*Paper is fed from tray via a reversing pass to the straight pass.*
- **Back insert operation**
  Transfers the paper loaded in the inserter tray to the downstream equipment so the upper surface of the paper will face down.
  *Paper is fed directly to the straight pass.

- **Inserter pickup tray switch operation**
  You can have paper fed from either of the two inserter trays chosen at your option.
Various Modes of Control

Outline of operations

When a paper feed signal is received from the host machine after paper is loaded in the tray, the following three sequences of operations are performed:

1. Sequence of surface insert operation
2. Sequence of back insert operation
3. Sequence of inserter pickup tray switch operation

Sequence of surface insert operation

The following operations are performed when two papers are fed from the inserter paper feed unit.

(1) First paper feeding for separation
- The upper tray lift motor turns in the reverse direction at a speed of 533 pps to move the paper feed tray upward.
- The upper tray pick sensor turns on to stop the upper tray lift motor.
- For plain paper, the tray paper feed motor turns in the reverse direction at a speed of 500 mm/s to start separating the paper in the tray. For thick paper, the tray paper feed motor turns in the reverse direction at a speed of 250 mm/s to start separating the paper in the tray.
- For the upper tray, the tray paper feed motor stops when the paper has been fed 14.7 [mm] since the registration sensor turned on. For the lower tray, the tray paper feed motor stops when the paper has been fed 19.1 mm since the registration sensor turned on.
- The upper tray lift motor turns in the normal direction at a speed of 533 pps to move the paper feed tray 9 pls downward.
(2) First paper feeding for reversal
- The tray feed motor turns in the normal direction at a speed of 400 mm/s and the reverse motor
  turns in the normal direction at a speed of 400 mm/s to start feeding the paper to the reversal
  standby position.
- For the upper tray, the tray paper feed motor stops when the paper has been fed 64.6 [mm] since
  the registration sensor turned off. For the lower paper feed tray, the tray paper feed motor stops
  when the paper has been fed 10.3 mm since the registration sensor turned off.
- The reversal motor stops when the paper has been fed 19.2 mm since the reverse sensor turned
  off.

(3) Second paper feeding for separation
- After the paper feed motor stops as mentioned above, the upper tray lift motor turns in the reverse
  direction at a speed of 533 pps to move the paper feed tray upward.
- The upper tray pick sensor turns on to stop the upper tray lift motor.
- For plain paper, the tray paper feed motor turns at a speed of 500 mm/s to start separating the
  paper in the tray. For thick paper, the motor turns in the reverse direction at a speed of 250 mm/s
  to start separating the paper in the tray.
- For the upper tray, the tray paper feed motor stops when the paper has been fed 14.7 [mm] since
  the registration sensor turned on. For the lower tray, the tray paper feed motor stops when the
  paper has been fed 19.1 mm since the registration sensor turned on.
- The upper tray lift motor turns in the normal direction at a speed of 533 pps to move the paper feed
  tray 9 pls downward.

(4) First paper feeding to standby position
- The reverse motor turns in the reverse direction at a speed of 800 mm/s to start feeding the paper
  to the standby position.
- When the paper has been fed 51.2 mm since the reverse timing sensor turned on, the reverse
  motor stops.
- When the paper has been fed 12.3 mm since the delivery sensor 2 turned on, an Eject signal is
  sent.
(5) First paper feeding to horizontal feed block
- When an Entry signal for the first paper is received, the entrance motor 1 turns in the reverse direction at the same speed as that of the motor in the host machine and the reverse motor turns in the reverse direction at the same speed as that of the motor in the host machine, thus feeding the paper to the horizontal feed block.
- When the paper has been fed 51.2 mm since the reverse timing sensor was turned off, the reverse motor stops.

(6) Second paper feeding for reversal
- After the reverse feed motor stops as mentioned above, the tray feed motor turns in the normal direction at a speed of 400 mm/s and the reverse motor turns in the normal direction to start feeding the paper to the standby position.
- In case of paper feed from the upper tray, the tray paper feed motor stops when the paper has been fed 64.6 mm since the registration sensor turned off. In case of paper feed from the lower tray, the tray paper feed motor stops when the paper has been fed 10.3 mm since the registration sensor turned off.
- The reverse motor stops when the paper has been fed 19.2 mm since the reverse sensor turned off.
(7) Second paper feeding to standby position
- The reverse motor turns in the reverse direction at a speed of 800 mm/s to start feeding the paper to the standby position.
- The reverse motor stops when the paper has been fed 51.2 mm since the reverse timing sensor turned on.

(8) Second paper feeding to horizontal feed lock
- When an Entry signal for the second paper is received, the time specified to allocate a the pace between the first and second papers is taken, the entrance motor 1 turns in the reverse direction at the same speed as that of the motor in the host machine, and the reverse motor turns in the reverse direction at the same speed as that of the motor in the host machine, thus feeding the paper to the horizontal feed block.
- An Eject signal is sent when the paper has been fed 12.3 mm since the delivery sensor 2 turned on.
Sequence of ack insert operation

The following operations are performed when two papers are fed from the inserter paper feed unit.

1) First paper feeding for separation
   - The upper tray lift motor turns in the reverse direction at a speed of 533 pps to move the paper feed tray upward.
   - The upper tray pick sensor turns on to stop the upper tray lift motor.
   - For plain paper, the tray paper feed motor turns in the reverse direction at a speed of 500 mm/s to start separating the paper in the tray. For thick paper, the tray paper feed motor turns in the reverse direction at a speed of 250 mm/s to start separating the paper in the tray.
   - For the upper tray, the tray paper feed motor stops when the paper has been fed 14.7 [mm] since the registration sensor turned on. For the lower tray, the tray paper feed motor stops when the paper has been fed 19.1 mm since the registration sensor turned on.
   - The upper tray lift motor turns in the normal direction at a speed of 533 pps to move the paper feed tray 9 pls downward.

2) First paper feeding to standby position
   - The tray paper feed motor turns in the normal direction at a speed of 800 mm/s to start feeding the paper to the standby position.
   - In case of paper feed from the upper tray, the tray paper feed motor stops when the paper has been fed 64.6 mm since the registration sensor turned off. In case of paper feed from the lower tray, the tray paper feed motor stops when the paper has been fed 10.3 mm since the registration sensor turned off.
   - The reverse motor stops when the paper has been fed 51.2 mm since the reverse timing sensor turned on.
(3) Second paper feeding for separation
- After the paper feed motor stops as mentioned above, the upper tray lift motor turns in the reverse direction at a speed of 533 pps to move the paper feed tray upward.
- The upper tray pick sensor turns on to stop the upper tray lift motor.
- For plain paper, the tray paper feed motor turns at a speed of 500 mm/s to start separating the paper in the tray. For thick paper, the motor turns in the reverse direction at a speed of 250 mm/s to start separating the paper in the tray.
- For the upper tray, the tray paper feed motor stops when the paper has been fed 14.7 mm since the registration sensor turned on. For the lower tray, the tray paper feed motor stops when the paper has been fed 19.1 mm since the registration sensor turned on.
- The upper tray lift motor turns in the normal direction at a speed of 533 pps to move the paper feed tray 9 pls downward.

(4) First paper feeding to horizontal feed lock
- When an Entry signal for the first paper is received, the entrance motor 1 turns in the reverse direction at the same speed as that of the motor in the host machine and the reverse motor turns in the reverse direction at the same speed as that of the motor in the host machine, thus feeding the paper to the horizontal feed block.
- The reverse motor stops when the paper has been fed 51.2 mm since the reverse timing sensor was turned off.
- An Eject signal is sent when the paper has been fed 12.3 mm since the delivery sensor 2 turned on.

(5) Second paper feeding to standby position
- After the reverse feed motor stops as mentioned above, the tray paper feed motor turns in the normal direction at a speed of 800 mm/s to start feeding the paper to the standby position.
- In case of paper feed from the upper tray, the tray paper feed motor stops when the paper has been fed 64.6 mm since the registration sensor turned off. In case of paper feed from the lower tray, the tray paper feed motor stops when the paper has been fed 10.3 mm since the registration sensor turned off.
- The reverse motor stops when the paper has been fed 51.2 mm since the reverse timing sensor turned on.
(6) Second paper feeding to horizontal feed block
- When an Entry signal for the second paper is received, the time specified to allocate a the pace between the first and second papers is taken, the entrance motor 1 turns in the reverse direction at the same speed as that of the motor in the host machine, and the reverse motor turns in the reverse direction at the same speed as that of the motor in the host machine, thus feeding the paper to the horizontal feed block.
- The reverse motor stops when the paper has been fed 51.2 mm since the reverse timing sensor was turned off.
- An Eject signal is sent when the paper has been fed 12.3 mm since the delivery sensor 2 turned on.

### Sequence of inserter pickup tray switch operation

This section describes switching of the upper tray to the lower tray that take place when two papers are fed to the upper tray and one paper is fed to the lower tray respectively from the inserter paper feed unit.

1. **Upper tray paper feeding for separation**
   - The upper tray lift motor turns in the reverse direction at a speed of 533 pps to move the paper feed tray upward.
   - The upper tray pick sensor turns on to stop the upper tray motor.
   - For plain paper, the tray paper feed motor turns in the reverse direction at a speed of 500 mm/s to start separating the paper in the upper tray. For thick paper, the tray paper feed motor turns in the reverse direction at a speed of 250 mm/s to start separating the paper in the upper tray.
   - The tray paper feed motor stops when the paper has been fed 14.7 mm since the upper tray registration sensor turned on.
   - The tray lift motor turns in the normal direction at a speed of 533 pps to move the paper feed tray 9 pls downward.
(2) Upper tray paper feeding to standby position or upper tray paper feeding for reversal
- The figure shows feeding of the paper to the standby position.
- In case of reverse side insertion, the paper is fed to the standby position following the right side insertion sequence. In case of reverse side insertion, the paper is fed to the standby position following the reverse side insertion sequence.

(3) Switching between paper feed trays
- The tray paper feed motor stops when the paper has been fed 64.6 mm since the trailing edge of the paper in the upper tray has turned off the registration sensor.
- The drive switchover motor turns in the normal direction at a speed of 533 pps.

At this time, the drive switchover motor turns in the normal direction at a speed of 533 pps.
- The drive switchover motor stops when the paper has been fed 32 pls (2mm) since the drive switchover HP sensor turned on.

(4) Lower tray paper feeding for separation
- The lower tray motor turns in the reverse direction at a speed of 533 pps to move the paper feed tray upward.
- The lower tray pick sensor turns on to stop the lower tray lift motor.
- For plain paper, the tray paper feed motor turns in the reverse direction at a speed of 500 mm/s to start separating the paper in the lower tray. For thick paper, the tray paper feed motor turns in the reverse direction at a speed of 250 mm/s to start separating the paper in the lower tray.
- The lower tray lift motor turns in the normal direction at a speed of 533 pps to lower the paper feed tray 9 pls downward.
(5) Lower tray paper feeding to standby position or lower tray paper feeding for reversal
* The figure shows feeding of the paper to the standby position.
- In case of reverse side insertion, the paper is fed to the standby position following the right side
  insertion sequence. In case of reverse side insertion, the paper is fed to the standby position
  following the reverse side insertion sequence.
(6) Switching between paper feed trays
- The tray paper feed motor stops when the paper has been fed 10.3 mm since the trailing edge of
  the paper in the lower tray has turned off the registration sensor.
  At this time, the drive switchover motor turns in the reverse direction at a speed of 533 pps.
- The drive switchover motor stops when the paper has been fed 275 pts since the drive switchover
  HP sensor turned off.

(7) Upper tray paper feeding for separation.
(1) Same as the Description is omitted.
Jam Detection

Overview

The following paper sensors are used to detect whether paper is present and whether paper is fed normally.

- S3 Upper tray registration sensor
- S7 Lower tray registration sensor
- S8: Middle feed sensor
- S9: Upper tray empty sensor
- S12: Lower tray empty sensor
- S16: Reverse timing sensor
- S17: Reverse sensor
- S18: Reverse entrance sensor
- S20: Entrance sensor
- S21: Delivery sensor 2

Jam Type
The detection sensor and detection timing, and displayed code are indicated as follows.

<table>
<thead>
<tr>
<th>Jam type</th>
<th>Sensor</th>
<th>Detection timing</th>
<th>Displayed code</th>
</tr>
</thead>
<tbody>
<tr>
<td>EntryStart time-out jam</td>
<td></td>
<td>EntryStart OFF is not detected even when the specified time has lapsed since EntryStartAck ON was replied.</td>
<td>2FC0</td>
</tr>
<tr>
<td>EjectStartAck time-out jam</td>
<td></td>
<td>EjectStartAck ON is not detected even when the specified time has lapsed since EjectStart ON was reported.</td>
<td>2FC1</td>
</tr>
<tr>
<td>Upper tray empty jam</td>
<td>S9</td>
<td>An attempt is made to feed paper from the upper tray when no paper is loaded in the upper tray.</td>
<td>2FC2</td>
</tr>
<tr>
<td>Lower tray empty jam</td>
<td>S12</td>
<td>An attempt is made to feed paper from the lower tray when no paper is loaded in the lower tray.</td>
<td>2FC3</td>
</tr>
<tr>
<td>Cover open jam</td>
<td></td>
<td>The front cover is opened during inserter operation or the inserter top cover is opened during inserter operation.</td>
<td>2300</td>
</tr>
<tr>
<td>Power-on jam</td>
<td></td>
<td>Paper is detected in the unit at power-on or start of mechanism initialization.</td>
<td>2400</td>
</tr>
<tr>
<td>Error prevention jam</td>
<td></td>
<td>A jam is caused without causing an error when a problem is detected.</td>
<td>2C01</td>
</tr>
<tr>
<td>Emergency stop jam</td>
<td></td>
<td>The inserter stops operating upon reception of an emergency stop signal.</td>
<td>2FC4</td>
</tr>
<tr>
<td>Entrance sensor delay jam</td>
<td>S20</td>
<td>The entrance sensor does not detect paper even when the specified time has lapsed since a paper handover request signal was received.</td>
<td>20E0</td>
</tr>
<tr>
<td>Entrance sensor 2 delay jam</td>
<td>S21</td>
<td>Delivery sensor 2 does not detect paper (in the horizontal paper feed mode) even when the specified time has lapsed since the entrance sensor detected paper, or delivery sensor 2 does not detect paper even when the specified time has lapsed since paper was inserted from the inserter.</td>
<td>20E2</td>
</tr>
<tr>
<td>Registration sensor jam</td>
<td>S3, S7</td>
<td>The registration sensor corresponding to the paper feed tray does not detect paper even when the specified time has lapsed since paper fed from the inserter started.</td>
<td>20E4</td>
</tr>
<tr>
<td>Middle feed sensor delay jam</td>
<td>S8</td>
<td>The middle feed sensor does not detect paper even when the specified time has lapsed since paper feed to the reversal unit standby position started.</td>
<td>20E5</td>
</tr>
<tr>
<td>Reverse entrance sensor delay jam</td>
<td>S18</td>
<td>The reverse entrance sensor does not detect paper even when the specified time has lapsed since the middle feed sensor detected paper.</td>
<td>20E6</td>
</tr>
<tr>
<td>Reverse sensor delay jam</td>
<td>S17</td>
<td>The reverse sensor does not detect paper even when the specified time has lapsed since the reverse entrance sensor detected paper (in the reverse insertion mode), or the reverse sensor does not detect paper even when the specified time has lapsed since paper feed to the reversal unit standby position started after switchback.</td>
<td>20E7</td>
</tr>
<tr>
<td>Reverse timing sensor delay jam</td>
<td>S16</td>
<td>The reverse timing sensor does not detect paper even when the specified time has lapsed since the reverse entrance sensor detected paper (in the straight insertion mode), or the reverse timing sensor does not detect paper even when the specified time has lapsed since the reverse sensor detected paper (in the reverse insertion mode).</td>
<td>20E8</td>
</tr>
<tr>
<td>Entrance sensor stationary jam</td>
<td>S20</td>
<td>Paper does not pass by the entrance sensor even when the specified time has lapsed since the entrance sensor detected paper.</td>
<td>21E0</td>
</tr>
<tr>
<td>Delivery sensor 2 stationary jam</td>
<td>S21</td>
<td>Paper does not pass by the delivery sensor 2 even when the specified time has lapsed since the delivery sensor 2 detected paper.</td>
<td>21E2</td>
</tr>
<tr>
<td>Registration sensor stationary jam</td>
<td>S3, S7</td>
<td>Paper does not pass the registration sensor corresponding to the paper feed tray even when the specified time has lapsed since paper feed to the reversal unit standby position started.</td>
<td>21E4</td>
</tr>
<tr>
<td>Middle feed sensor stationary jam</td>
<td>S8</td>
<td>Paper does not pass by the middle feed sensor even when the specified time has lapsed since paper passed by the registration sensor corresponding to the paper feed tray.</td>
<td>21E5</td>
</tr>
<tr>
<td>Reverse entrance sensor stationary jam</td>
<td>S18</td>
<td>Paper does not pass by the reverse entrance sensor even when the specified time has lapsed since paper passed by the middle feed sensor.</td>
<td>21E6</td>
</tr>
<tr>
<td>Reverse sensor stationary jam</td>
<td>S17</td>
<td>Paper does not pass by the reverse sensor even when the specified time has lapsed since the reverse sensor detected paper (in the reverse insertion mode), or paper does not pass by the reverse sensor even when the specified time has lapsed since the reverse sensor detected paper at the start of paper feed to the reversal unit standby position after switchback.</td>
<td>21E7</td>
</tr>
<tr>
<td>Reverse timing sensor stationary jam</td>
<td>S16</td>
<td>Paper does not pass by the reverse timing sensor even when the specified time has lapsed since paper insertion started.</td>
<td>21E8</td>
</tr>
</tbody>
</table>
Power Supply

The external AC power supplied to this machine passes through the filter PCB, and the filtered AC power is converted to 24 VDC. The 24 VDC is supplied to the DC control PCB from which it is supplied to the load-related parts (motors, solenoids, fans, and clutches) as it is or converted to 5 VDC or 3.3 VDC by the DC-DC to be supplied to logic-related parts (sensors).

Protection Function

The power supply PCB incorporates a primary-side, secondary-side overcurrent, and overvoltage protection circuits.

Each of load-related 24V lines has a fuse. If overcurrent or overvoltage occurs in a load (motor, etc.) due to a trouble such as a short circuit, the fuse blows to actuate the protection mechanism.

Each of logic-related 5V/3.3V lines also has a fuse to actuate the protection mechanism.
Technology > Various Modes of Control > Power Supply > Protection Function

- DC Controller PCB (PCB3)
- Remote Signal (24V)
- Remote Signal (3.3V)

Sensor S1, S2, S3, S4, S5, S6, S7, S8, S9, S11, S12, S14, S15, S16, S17, S18, S19, S20, S21

Motor M1, M2, M3, M4

Fan F1

LED PCB

Solenoid SOL1

Clutch CL1, CL2

Motor Driver IC

Circuit Breaker CB1

Filter PCB PCB7

Power Supply PCB (24V) PCB6

DC/DC Converter

Option Controller PCB PCB4

Arcnet PCB PCB5

SW1: Front upper cover open/close switch
SW2: Upper cover open/close switch
SW3: Power supply switch

Red: Exclusive for AF1/AF2
Blue: Exclusive for AG1/AG2

Remote Signal (24V)
Work of service

Scheduled Servicing

When the endurance time of a part expires soon, replace and/or clean it as required.

<table>
<thead>
<tr>
<th>Item</th>
<th>Part name</th>
<th>Expected service life</th>
<th>Qty</th>
<th>Operation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodically replaced parts</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumable parts</td>
<td>Through-pass inlet antistatic needle</td>
<td>6,000,000 sheets</td>
<td>2</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Through-pass outlet antistatic needle</td>
<td>6,000,000 sheets</td>
<td>2</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pickup roller (upper/lower)</td>
<td>100,000 sheets</td>
<td>4</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>separation roller (upper/lower)</td>
<td>100,000 sheets</td>
<td>2</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>feed roller (upper/lower)</td>
<td>100,000 sheets</td>
<td>2</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>torque limiter (upper/lower)</td>
<td>1,000,000 sheets</td>
<td>2</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>electromagnetic clutch (upper/lower)</td>
<td>1,000,000 sheets</td>
<td>2</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>solenoid assembly</td>
<td>1,000,000 sheets</td>
<td>1</td>
<td>Replacement</td>
<td></td>
</tr>
<tr>
<td>Periodically serviced parts</td>
<td>pickup roller (upper/lower)</td>
<td>40,000 sheets</td>
<td>4</td>
<td>Cleaning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>separation roller (upper/lower)</td>
<td>40,000 sheets</td>
<td>2</td>
<td>Cleaning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>feed roller (upper/lower)</td>
<td>40,000 sheets</td>
<td>2</td>
<td>Cleaning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>torque limiter (upper/lower)</td>
<td>40,000 sheets</td>
<td>2</td>
<td>Cleaning</td>
<td></td>
</tr>
</tbody>
</table>

Upgrading

Flash ROM is used for IC3 (CPU) on the master controller PCB. Rewrite this IC when upgrading.

There are two ways to upgrade.
- Upgrading from the host machine (using USB memory or service support tool)
Periodic Servicing

- Periodic services items
List of Work for Scheduled Servicing

As of January 2009

<table>
<thead>
<tr>
<th>Category</th>
<th>Part name</th>
<th>Part number</th>
<th>Qty</th>
<th>Interval</th>
<th>Remarks</th>
<th>Adjusted/ not adjusted</th>
<th>Counter</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feed unit</td>
<td>Through-pass inlet antistatic needle</td>
<td>FL3-1472</td>
<td>2</td>
<td>CR/6,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-ELM1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Paper feed</td>
<td>Through-pass outlet antistatic needle</td>
<td>FL3-1470</td>
<td>2</td>
<td>CR/6,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-ELM2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Paper feed</td>
<td>pickup roller (upper)</td>
<td>4A3-3870</td>
<td>2</td>
<td>CR/6,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-P-RL1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Paper feed</td>
<td>separation roller (upper)</td>
<td>4A3-3868</td>
<td>1</td>
<td>CR/100,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-S-RL1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Paper feed</td>
<td>feed roller (upper)</td>
<td>4A3-3869</td>
<td>1</td>
<td>CR/100,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-F-RL1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Paper feed</td>
<td>torque limiter (upper)</td>
<td>4A3-3888</td>
<td>1</td>
<td>CR/1,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-TQLM1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Paper feed</td>
<td>electromagnetic clutch (upper)</td>
<td>4H3-0290</td>
<td>1</td>
<td>CR/1,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-CL1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Paper feed</td>
<td>pickup roller (lower)</td>
<td>4A3-3870</td>
<td>2</td>
<td>CR/100,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-P-RL2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Paper feed</td>
<td>separation roller (lower)</td>
<td>4A3-3868</td>
<td>1</td>
<td>CR/100,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-S-RL2</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Paper feed</td>
<td>feed roller (lower)</td>
<td>4A3-3869</td>
<td>1</td>
<td>CR/100,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-F-RL2</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Paper feed</td>
<td>torque limiter (lower)</td>
<td>4A3-3888</td>
<td>1</td>
<td>CR/1,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-TQLM2</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Paper feed</td>
<td>electromagnetic clutch (lower)</td>
<td>4H3-0290</td>
<td>1</td>
<td>CR/1,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-CL2</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Feed unit</td>
<td>Reversal solenoid assembly</td>
<td>FL2-7191</td>
<td>1</td>
<td>CR/1,000,000sheet</td>
<td>No</td>
<td>DRBL-2&gt;IS-RV-SL</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Paper feed</td>
<td>pickup roller (upper)</td>
<td>4A3-3870</td>
<td>2</td>
<td>CR/40,000sheet</td>
<td>Clean it with a cloth wetted with water and squeezed tightly.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>15</td>
<td>Paper feed</td>
<td>separation roller (upper)</td>
<td>4A3-3868</td>
<td>1</td>
<td>CR/40,000sheet</td>
<td>Clean it with a cloth wetted with water and squeezed tightly.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>Paper feed</td>
<td>feed roller (upper)</td>
<td>4A3-3869</td>
<td>1</td>
<td>CR/40,000sheet</td>
<td>Clean it with a cloth wetted with water and squeezed tightly.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>17</td>
<td>Paper feed</td>
<td>pickup roller (lower)</td>
<td>4A3-3870</td>
<td>2</td>
<td>CR/40,000sheet</td>
<td>Clean it with a cloth wetted with water and squeezed tightly.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>18</td>
<td>Paper feed</td>
<td>separation roller (lower)</td>
<td>4A3-3868</td>
<td>1</td>
<td>CR/40,000sheet</td>
<td>Clean it with a cloth wetted with water and squeezed tightly.</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>Paper feed</td>
<td>feed roller (lower)</td>
<td>4A3-3869</td>
<td>1</td>
<td>CR/40,000sheet</td>
<td>Clean it with a cloth wetted with water and squeezed tightly.</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
4 Parts Replacement/Cleaning Procedure

- List of Parts
- External / Internal Covers
- Main Units
- Consumable Parts Requiring Periodic Replacement and Cleaning Points
- Motors / PCBs
- Sensors
### List Of Parts

#### External / Internal Covers

<table>
<thead>
<tr>
<th>Name</th>
<th>Part No.</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Rear Upper Cover</td>
<td>FC9-1851/FC9-1776</td>
<td>4-6</td>
</tr>
<tr>
<td>[2] Rear Lower Cover</td>
<td>FC9-1766</td>
<td>4-7</td>
</tr>
<tr>
<td>[3] Front Upper Cover</td>
<td>FC9-1764/FC9-1767/FC6-5697</td>
<td>4-7</td>
</tr>
<tr>
<td>[4] Front Inner Cover</td>
<td>FC9-1765</td>
<td>4-8</td>
</tr>
<tr>
<td>[5] Rear Cover</td>
<td>FC9-1882</td>
<td>4-9</td>
</tr>
<tr>
<td>[6] Front Cover</td>
<td>FC9-1881</td>
<td>4-10</td>
</tr>
</tbody>
</table>
Consumable Parts Requiring Periodic Replacement and Cleaning Points

<table>
<thead>
<tr>
<th>Name</th>
<th>Part No.</th>
<th>Refer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through-pass inlet antistatic needle</td>
<td>FL3-1472</td>
<td>-</td>
</tr>
<tr>
<td>Through-pass outlet antistatic needle</td>
<td>FL3-1470</td>
<td>-</td>
</tr>
<tr>
<td>Inserter pickup roller (upper)</td>
<td>4A3-3870</td>
<td>4-15</td>
</tr>
<tr>
<td>Inserter separation roller (upper)</td>
<td>4A3-3868</td>
<td>4-16</td>
</tr>
<tr>
<td>Inserter feed roller (upper)</td>
<td>4A3-3869</td>
<td>4-17</td>
</tr>
<tr>
<td>Inserter torque limiter (upper)</td>
<td>4A3-3888</td>
<td>4-18</td>
</tr>
<tr>
<td>Inserter feed roller (upper)</td>
<td>4A3-3869</td>
<td>4-18</td>
</tr>
<tr>
<td>Inserter separation roller (lower)</td>
<td>4A3-3868</td>
<td>4-17</td>
</tr>
<tr>
<td>Inserter feed roller (lower)</td>
<td>4A3-3869</td>
<td>4-18</td>
</tr>
<tr>
<td>Inserter torque limiter (lower)</td>
<td>4A3-3888</td>
<td>4-19</td>
</tr>
<tr>
<td>Inserter electromagnetic clutch (upper)</td>
<td>4H3-0290</td>
<td>4-19</td>
</tr>
<tr>
<td>Inserter electromagnetic clutch (lower)</td>
<td>4H3-0290</td>
<td>4-20</td>
</tr>
<tr>
<td>Reversal solenoid assembly</td>
<td>FL2-7191</td>
<td>-</td>
</tr>
<tr>
<td>Name</td>
<td>Part No.</td>
<td>Refer to</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>M1 Tray Paper feed motor</td>
<td>FK2-4580</td>
<td>4-21</td>
</tr>
<tr>
<td>M2 Upper tray lift motor</td>
<td>FH5-1040</td>
<td>4-23</td>
</tr>
<tr>
<td>M3 Low tray lift motor</td>
<td>FH5-1040</td>
<td>4-23</td>
</tr>
<tr>
<td>M4 Drive switchover motor</td>
<td>FH5-1041</td>
<td>4-22</td>
</tr>
<tr>
<td>M5 Entrance motor 1</td>
<td>FK2-4582</td>
<td>-</td>
</tr>
<tr>
<td>M6 Reverse motor</td>
<td>FK2-4580</td>
<td>-</td>
</tr>
<tr>
<td>SW1 Front upper cover open/close switch</td>
<td>4H1-6449</td>
<td>-</td>
</tr>
<tr>
<td>SW2 Upper cover open/close switch</td>
<td>4H1-6449</td>
<td>-</td>
</tr>
<tr>
<td>SW3 Power supply switch</td>
<td>FK2-1741</td>
<td>-</td>
</tr>
<tr>
<td>CL1 Upper tray regist clutch</td>
<td>4H3-0290</td>
<td>4-19</td>
</tr>
<tr>
<td>CL2 Low tray regist clutch</td>
<td>4H3-0290</td>
<td>4-20</td>
</tr>
<tr>
<td>SOL1 Reverse solenoid</td>
<td>FH6-5136</td>
<td>-</td>
</tr>
<tr>
<td>F1 Fan</td>
<td>FK2-6484</td>
<td>-</td>
</tr>
<tr>
<td>CB1 Breaker</td>
<td>FH7-7625</td>
<td>-</td>
</tr>
<tr>
<td>PCB1 Upper tray LED PCB</td>
<td>4H3-0268</td>
<td>4-25</td>
</tr>
<tr>
<td>PCB2 Low tray LED PCB</td>
<td>4H3-0268</td>
<td>4-25</td>
</tr>
<tr>
<td>PCB3 DC controller PCB</td>
<td>FM3-9731</td>
<td>4-24</td>
</tr>
<tr>
<td>PCB4 Option controller PCB</td>
<td>FM3-7034</td>
<td>-</td>
</tr>
<tr>
<td>PCB5 Arcnet PCB</td>
<td>FM2-6170</td>
<td>-</td>
</tr>
<tr>
<td>PCB6 Power supply PCB</td>
<td>FK2-6317</td>
<td>-</td>
</tr>
<tr>
<td>PCB7 Filter PCB</td>
<td>FM3-9733</td>
<td>-</td>
</tr>
<tr>
<td>Name</td>
<td>Part No.</td>
<td>Refer to</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>S1 Drive switchover sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S2 Upper tray pick sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S3 Upper tray regist sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S4 Upper tray lower limit sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S5 Low tray lower limit sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S6 Low tray pick sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S7 Low tray regist sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S8 Middle feed sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S9 Upper tray empty sensor</td>
<td>WG8-5696</td>
<td>4-27</td>
</tr>
<tr>
<td>S10 Upper tray width sensor</td>
<td>4H3-0282</td>
<td>4-28</td>
</tr>
<tr>
<td>S11 Upper tray last paper sensor</td>
<td>WG8-5696</td>
<td>4-29</td>
</tr>
<tr>
<td>S12 Low tray empty sensor</td>
<td>WG8-5696</td>
<td>4-29</td>
</tr>
<tr>
<td>S13 Low tray width sensor</td>
<td>4H3-0282</td>
<td>4-30</td>
</tr>
<tr>
<td>S14 Low tray last paper sensor 1</td>
<td>WG8-5696</td>
<td>4-31</td>
</tr>
<tr>
<td>S15 Low tray last paper sensor 2</td>
<td>WG8-5696</td>
<td>4-32</td>
</tr>
<tr>
<td>S16 Reverse timing sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S17 Reverse sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S18 Reverse entrance sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S19 Inserter open/close sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S20 Entrance sensor</td>
<td>WG8-5696</td>
<td></td>
</tr>
<tr>
<td>S21 Delivery sensor 2</td>
<td>WG8-5696</td>
<td></td>
</tr>
</tbody>
</table>
External/Inneral Covers

Removing the Rear Upper Cover

1) Remove four screws to remove the rear upper cover.
Removing the Rear Lower Cover

1) Remove the rear upper cover. (Refer to: 4-6)

2) Remove four screws to remove the rear lower cover.

Removing the Front Upper Cover

1) Open the front upper cover.

2) Remove two resin E-rings to remove the upper front cover.
Removing the Front Inner Cover

1) Open the front upper cover.

2) Holding the jam removal lever, open the transfer guide.

3) Remove two screws to remove the front inner cover (small).

4) Remove five screws to remove the front inner cover.
Removing the Inserter Rear Cover

1) Remove two screws to remove the inserter rear cover.

Changing the Inserter Top Cover Open/Close Angle

1) Remove the rear cover.  
   [Refer to: 4-9]  
2) Remove one screw, remove the inserter top cover angle regulating shaft, and then open the top cover.
Removing the Inserter Front Cover

1) Remove the inserter rear cover.  
   (Refer to: 4-9)
2) Increase the inserter top cover open/close angle.  
   (Refer to: 4-9)
3) Remove two screws to remove the inserter front cover.

Changing the Middle Guide Open/Close Angle

1) Remove the inserter rear cover.  
   (Refer to: 4-9)
2) Increase the inserter top cover open/close angle. 
   (Refer to: 4-9)
3) Remove two screws to open the middle guide.
Changing the Inserter Open Angle

1) Remove the inserter rear cover. (Refer to: 4-9)

2) Remove one screw to remove the support plate 1.

3) Remove one screw to remove the cover.

4) Remove one screw to remove the support plate 2.
Removing the Main Unit

Removing the Upper Tray Unit

1) Remove the rear cover.  
   ([Refer to 4-9])

2) Increase the top cover open/close angle.  
   ([Refer to 4-9])

3) Remove the front cover.  
   ([Refer to 4-10])

4) Remove four screws and three connectors to remove the upper tray unit.
### Removing the Lower Tray Unit

1) Remove the rear cover.  
   (Refer to: 4-9)
2) Increase the top cover open/close angle.  
   (Refer to: 4-9)
3) Remove the front cover.  
   (Refer to: 4-10)
4) Remove the upper tray unit.  
   (Refer to: 4-12)
5) Remove four screws and one connector to remove the lower tray unit.

![Image of Removing the Lower Tray Unit](F-4-23)

### Removing the Inserter Pickup Unit

1) Remove the inserter rear cover.  
   (Refer to: 4-9)
2) Increase the inserter open angle.  
   (Refer to: 4-11)
3) Remove two screws, one clamp, and 11 connectors to remove the interface cable.

![Image of Removing the Inserter Pickup Unit](F-4-24)
4) Remove two screws from the hinge.

5) Remove two stepped screws, and then slide the inserter pickup unit backward, and then lift it to remove it.
### Consumable Parts Requiring Periodic Replacement and Cleaning Points

#### Removing the Inserter pickup rollers (upper)

1. Remove the rear cover.  
   *(Refer to 4-9)*

2. Increase the top cover open/close angle.  
   *(Refer to 4-9)*

3. Remove two screws to remove the front transfer guide.

   ![Diagram](F-4-27)

4. Remove two resin E-rings to remove two inserter pickup rollers (upper).

   ![Diagram](F-4-28)
Removing the Inserter pickup roller (lower)

1) Remove the rear cover.  
(Refer to 4-9)
2) Increase the top cover open/close angle.  
(Refer to 4-9)
3) Increase the middle guide open/close angle.  
(Refer to 4-10)
4) Remove two resin E-rings to remove two inserter pickup rollers (lower).

Removing the Inserter separation roller (upper)

1) Remove the rear cover.  
(Refer to 4-9)
2) Increase the top cover open/close angle.  
(Refer to 4-9)
3) Remove five screws to remove the transfer guide.
4) Remove two E-rings and one bearing to remove the inserter separation roller (upper).
Removing the Inserter separation roller (lower)

1) Remove the rear cover.  
(Refer to: 4-9)
2) Increase the top cover open/close angle.  
(Refer to: 4-9)
3) Increase the middle guide open/close angle.  
(Refer to: 4-10)
4) Remove five screws to remove the transfer guide.
5) Remove two E-rings and one bearing to remove the inserter separation roller (lower).

Removing the Inserter feed roller (upper)

1) Remove the rear cover.  
(Refer to: 4-9)
2) Increase the top cover open/close angle.  
(Refer to: 4-9)
3) Remove one spring, two resin E-rings, and two bearings to remove the pickup roller unit.
4) Remove one spring, two resin E-rings, and two bearings to remove the pickup roller unit.
5) Remove three E-rings, one pickup roller, and one lever to remove the inserter feed roller (upper).
Removing the Inserter feed roller (lower)

1) Remove the rear cover. (Refer to: 4-9)
2) Increase the top cover open/close angle. (Refer to: 4-9)
3) Increase the middle guide open/close angle. (Refer to: 4-10)
4) Remove six screws to remove the rear transfer guide.
5) Remove one spring, two resin E-rings, and two bearings to remove the pickup roller unit.
6) Remove three E-rings, one pickup roller, and one lever to remove the inserter feed roller (lower).

Removing the Inserter torque limiter (upper)

1) Remove the rear cover. (Refer to: 4-9)
2) Increase the top cover open/close angle. (Refer to: 4-9)
3) Remove five screws to remove the transfer guide.
4) Remove three E-rings, one gear, one parallel pin, two bearings, and one separation roller to remove the inserter torque limiter (upper).
Removing the Inserter torque limiter (lower)

1) Remove the rear cover.  
(Refer to: 4-9)

2) Increase the top cover open/close angle.  
(Refer to: 4-9)

3) Increase the middle guide open/close angle.  
(Refer to: 4-10)

4) Remove five screws to remove the transfer guide.

5) Remove three E-rings, one gear, one parallel pin, two bearings, and one separation roller to remove the inserter torque limiter (lower).

Removing the Inserter electromagnetic clutch (upper)

1) Remove the rear cover.  
(Refer to: 4-9)

2) Increase the top cover open/close angle.  
(Refer to: 4-9)

3) Increase the middle guide open/close angle.  
(Refer to: 4-10)

4) Remove one screw and one connector, and remove the inserter electromagnetic clutch (upper).

5) Remove three E-rings, one gear, one parallel pin, two bearings, and one separation roller to remove the inserter torque limiter (lower).
Removing the Inserter electromagnetic clutch (lower)

1) Remove the rear cover.  
(Refer to 4-9)
2) Increase the top cover open/close angle.  
(Refer to 4-9)
3) Increase the middle guide open/close angle.  
(Refer to 4-10)

4) Remove one screw and one connector, and then remove the inserter electromagnetic clutch (lower).
Removing the Tray Pickup Motor (M1)

1) Remove the rear cover.  
(Refer to 4-9)

2) Remove one connector and two wire saddles to remove the harness from the harness guide.

3) Remove four screws, one belt, and one spring to remove the tray pickup motor unit.

4) Remove two screws and one connector to remove the tray pickup motor.
## Removing the Drive Switchover Motor (M4)

1. Remove the rear cover.  
   *(Refer to: 4-9)*

2. Remove four connectors and two clamps.

3. Loosen one screw to remove the harness guide.

4. Remove three screws to remove the drive switchover motor unit.

5. Remove two screws to remove the drive switchover motor.
Removing the Upper Tray Lift Motor (M2)

1) Remove the rear cover. [Refer to 4-9]
2) Remove two screws and one connector to remove the upper tray lift motor.

Removing the Lower Tray Lift Motor (M3)

1) Remove the rear cover. [Refer to 4-9]
2) Remove two screws and one connector to remove the lower tray lift motor.
Removing the PCB

Removing the DC Controller PCB

1) Remove the rear cover. (Refer to: 4-9)

2) Remove one screw, three locking supports, and all connectors on the PCB, and then remove the DC controller PCB.
### Removing the Upper Tray LED PCB

1) Remove the upper tray unit.  
(Refer to: 4-12)

2) Remove two screws to remove the LED cover.

3) Remove one screw and one connector to remove the upper tray LED PCB.

---

### Removing the Lower Tray LED PCB

1) Remove the upper tray unit.  
(Refer to: 4-12)

2) Remove the lower tray unit.  
(Refer to: 4-13)

3) Remove four screws to remove the tray bottom cover (large).

4) Remove four screws to remove the tray lower inner cover.
5) Remove two screws to remove the LED cover.

6) Remove one screw and one connector to remove the lower tray LED PCB.
Removing the Sensor

Removing the Upper tray empty sensor (S9)

1) Remove the rear cover.  
(Refer to: 4-9)
2) Increase the top cover open/close angle.  
(Refer to: 4-9)
3) Remove the front cover.  
(Refer to: 4-10)
4) Remove the upper tray unit.  
(Refer to: 4-12)
5) Remove one screw to remove the sensor cover.
6) Remove one connector to remove the upper tray empty sensor.
Removing the Upper tray width sensor (S10)

1) Remove the rear cover.  
(Refer to: 4-9)
2) Increase the top cover open/closed angle.  
(Refer to: 4-9)
3) Remove the front cover.  
(Refer to: 4-10)
4) Remove the upper tray unit.  
(Refer to: 4-12)

5) Remove two screws to remove the tray lower cover (small).

6) Remove two screws and one connector to remove the upper tray width sensor.

MEMO:  
After replacing with the upper tray width sensor with a new one, adjust the sensor output value in the service mode.
**Removing the Upper tray last paper sensor (S11)**

1) Remove the rear cover.  
(Refer to: 4-9)

2) Increase the top cover open/close angle.  
(Refer to: 4-9)

3) Remove the front cover.  
(Refer to: 4-10)

4) Remove the upper tray unit.  
(Refer to: 4-12)

5) Remove two screws to remove the tray lower cover (small).

6) Remove one connector to remove the Upper tray last paper sensor.

---

**Removing the Low tray empty sensor (S12)**

1) Remove the rear cover.  
(Refer to: 4-9)

2) Increase the top cover open/close angle.  
(Refer to: 4-9)

3) Remove the front cover.  
(Refer to: 4-10)

4) Remove the upper tray unit.  
(Refer to: 4-12)

5) Remove the lower tray unit.  
(Refer to: 4-12)

6) Remove four screws to remove the tray lower cover (large).

7) Remove four screws to remove the tray lower cover (inner).
Removing the Low tray width sensor (S13)

1) Remove the rear cover. ([Refer to 4-9])
2) Increase the top cover open/close angle. ([Refer to 4-9])
3) Remove the front cover. ([Refer to 4-10])
4) Remove the upper tray unit. ([Refer to 4-12])
5) Remove the lower tray unit. ([Refer to 4-12])

6) Remove four screws to remove the tray lower cover (large).

7) Remove four screws to remove the tray lower cover (inner).
8) Remove two screws to remove the tray lower cover (small).

9) Remove two screws and one connector to remove the low tray width sensor.

MEMO:
After replacing with the low tray width sensor with a new one, adjust the sensor output value in the service mode.

Removing the Low tray last paper sensor 1 (S14)

1) Remove the rear cover.  
(Refer to: 4-9)
2) Increase the top cover open/close angle.  
(Refer to: 4-9)
3) Remove the front cover.  
(Refer to: 4-10)
4) Remove the upper tray unit.  
(Refer to: 4-12)
5) Remove the lower tray unit.  
(Refer to: 4-12)

6) Remove four screws to remove the tray lower cover (large).

7) Remove four screws to remove the tray lower cover (inner).
Removing the Low tray last paper sensor 2 (S15)

1) Remove the rear cover. *(Refer to: 4-9)*
2) Increase the top cover open/close angle. *(Refer to: 4-9)*
3) Remove the front cover. *(Refer to: 4-10)*
4) Remove the upper tray unit. *(Refer to: 4-12)*
5) Remove the lower tray unit. *(Refer to: 4-12)*
6) Remove four screws to remove the tray lower cover (large).
7) Remove four screws to remove the tray lower cover (inner).
8) Remove two screws to remove the tray lower cover (small).

9) Remove two screws to remove the sensor unit.

10) Remove one connector to remove the low tray last paper sensor 2.
Adjustment

- Adjustment at Time of Parts Replacement
Adjustment at Time of Parts Replacement

Inserter opening/closing adjustment (after replacing the inserter unit)

<Pre-check>
Close the inserter and check whether the positioning pin [1] enters the frame hole in at the bottom of the inserter. (If the pin enters the frame hole by the inserter's own weight although it does not enter the hole smoothly, it is OK.)

If the positioning pin does not enter the hole, adjust the inserter position by adjusting the position of the hinge's adjusting plate following the procedure below.

<Adjustment Method>
1. Loosen two screws to remove the rear cover.
2. Remove one screw to remove the retaining plate.
3. Remove one screw to remove the cover.
4. Remove one screw to remove the retaining plate.
5. Open the inserter, and then loosen the two hinge fixing screw (M4) [1].

![Image of inserter with hinge fixing screws highlighted]

6. Loosen the two screws securing the hinge.

![Image of hinge screws being loosened]

7. Remove the nut cap, loosen the hexagon nut, and turn the adjusting screw [3] using an Allen wrench. Make adjustment with reference to the marks [4] on the front plate. Turning the adjusting screw by one scale mark (1 mm) moves the front of the inserter 4.6 mm to the left/right.
   - Turning the adjusting screw clockwise moves the plate forward and moves the inserter to leftward.
   - Turning the adjusting screw counterclockwise moves the plate backward and moves the inserter to rightward.

![Image of adjusting screw being turned]

8. Tighten the two hinge fixing screws [1].

9. Repeat step 7 until the positioning pin enters the frame hole completely.
Inserter height adjustment (after replacing the inserter unit)

**<Pre-check>**
With the inserter closed, check whether the gap between the right side of the inserter and the finisher is within ±1 mm at the front and back (A and B). If it is not within ±1 mm, make the height adjustment as the following procedure.

**<Adjustment method>**
1. Remove the rear cover.
2. Increase the top cover open/close angle. Remove one screw to remove the upper cover angle restriction shaft [1]. Open the top cover.
3. Loosen two screws to remove the front cover.
5. Using an Allen wrench [1], turn the adjusting screw to adjust the gap between the right side of the inserter pickup unit and the inserter base is within 1 mm at the front and back. Turning the adjusting screw by one scale [4] mark (1 mm) moves the inserter pickup unit 1 mm upward/downward.
   - Turning the adjusting screw clockwise moves the inserter pickup unit upward.
   - Turning the adjusting screw counterclockwise moves the downward.

6. Tighten the screw and hexagon nut.
7. Adjust the height of the left adjusting mechanism to the same mark as that of the right height adjusting mechanism.
8. After completion of the adjustment, reassemble the disassembled parts.

---

**Document tray width adjustment (after replacing the document width sensor)**

1. Remove the rear cover.
2. Set the DIP switch as shown below, turn on the SW1 (push switch), and then turn on the inserter. (Note: Keep pressing the SW1 for at least 2 seconds after turning on the power.) After switching between modes, turn off the power and then turn it on again.

<table>
<thead>
<tr>
<th>DIPSW (■ ON □ OFF)</th>
<th>Test mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8</td>
<td>Tray control adjustment</td>
</tr>
</tbody>
</table>

3. Place A4-size paper on the inserter upper tray in the landscape orientation, and move the side guide plates so that they touch the side edges of the paper.
4. Press the SW1 (to complete the first adjustment).
5. Place A4-size paper on the inserter upper tray in the portrait orientation, and move the side guide plates so that they touch the side edges of the paper.
6. Press the SW1 (to complete the second adjustment).

7. Place A4-size paper on the inserter lower tray in the landscape orientation, and move the side guide plates so that they touch the side edges of the paper.
8. Press the SW1 (to complete the third adjustment).
9. Place A4-size paper on the inserter lower tray in the portrait orientation, and move the side guide plates so that they touch the side edges of the paper.

10. Press the SW1 (to complete the fourth adjustment).

- Top cover positioning pin adjustment (after replacing the top cover)

<Pre-check>
If you cannot lock the inserter top cover or it is difficult to lock it after replacing the top cover or top cover unit, adjust the positioning pin following the procedure mentioned below.

<Adjustment method>
1. Remove the rear cover.
2. Increase the top cover open/close angle.
3. Loosen two screws [1] and one screw [2].
4. Twist the top cover with both hands while twisting it slightly, and move the adjusting plate with reference to the marks [3]. Next, secure the adjusting plate using a screw [2].
5. Close the top cover to check whether it closes smoothly. If it does not open/close smoothly, repeat step 4.
6. Tighten the three temporary jointed screws.[1]
Installation

- Making Pre-installation Checks
- Checking Bundled Components
- Unpacking
- Installation Procedure
Making Pre-installation Checks

The following conditions are required for the installation site. It is recommended to make a preliminary inspection of the installation site before delivering the equipment to the user.

Checking the Power Supply

The equipment must be connectable to the outlet that can supply the rated voltage +10/-15% at the specified ampere or higher.

120V - 230V 1A

Checking the Installation Space

The following illustration describes the necessary space for the maintenance.
Cautions at the Time of Installation

1. Turn off the host machine.

CAUTION
Before installing this equipment, be sure to perform the following steps in the specified order.

1) Turn OFF the main power switch of the host machine.
2) Be sure that the control panel display and the main power lamp are both turned OFF, and then disconnect the power plug.

2. About the Installation
   This equipment is approx. 55.0kg, so it should require two or more personnel to install.
Checking Bundled Components

- [1] RS tight screw (M4x8) 8pcs.
- [5] Binding-head screw (M4x10) 2pcs.
- [8] Index label 2pcs.

*1: Use the correct power cord to match the location/area of installation. Make sure not to leave unused power cord at the site.
*2: Only for the 230V model.
Unpacking

Unpacking Procedure

MEMO
The equipment ships, secured by tapes, cushioning and other materials to protect it from vibration and impact during transit. Remove all such tapes and cushioning materials as instructed below before installing the equipment. (Keep all the shipping fixtures and cushioning materials in a safe place for later reuse in reshipping the equipment, as for relocation and repairs.)

1) Take out the auxiliary box from the package.

CAUTION
Leave the four cushioning materials attached to the inserter in position. Removing the cushioning materials could result in a deformation of the mounting portion or elsewhere.
2) Allow a team of two workers at least to lift and erect the inserter, along with the cushioning materials.

CAUTION:
- Raising the inserter by holding its main unit might result in a deformed or damaged cabinet.
- The inserter is so heavy (weighing 55.0 kg) that it should require a team of two workers at least to handle.

3) Remove the pallet, and cushioning materials shown in the figure. Then, put the plastic cover down.

4) Elevate the front and rear casters lightly in this order and remove cushioning materials. Then, remove the plastic cover and packaging tapes.
Installation Procedure

Preparation for Installation on Upstream Connection Machine Side

1) Remove two covers.

2) Secure the two bundled clamp plates and positioning pin to the host machine each with two bundled RS tight screws (M4 x 8). At this time, secure the supplied ground plate along with the rear latch catch.
Connecting to Connection Machine

**CAUTION**

Check that the connected equipment is switched off and unplugged from the wall outlet.

1) Stow the left overturning prevention stay by removing a wing screw and lifting the stay up.

2) After stowing the overturning prevention stay, clamp it with the wing screw removed.

3) Stow the right overturning prevention stay by removing a wing screw and then clamp it with the wing screw removed.

4) Install the inserter in position by inserting the positioning pin into the hole on the inserter.
5) With the Upper front cover open, remove one screw and press the lock lever to hook on the bearing clip. Reinstall the screw removed to secure the lock lever.

6) Close the Upper front cover.
Height/Inclination Checks

### Height Check

**MEMO**
An improperly adjusted height or inclination could result in jams frequently occurring at the paper folding unit inlet.

1. Check to see if there is a height difference of 22±3mm between the right upper surface of the inserter and the left upper surface of the connected equipment.

### Inclination Check

1. Check that the difference of clearances at the two positions as shown in the figure. The difference should be within 0±2mm.
2) Check that the difference of clearances at the two positions as shown in the figure. The difference should be within 0±2mm.

**CAUTION**

*If the height and inclination of the inserter and the connected equipment are not within their tolerances, adjust them in these steps:*

1) Open the front upper cover and remove the jam recovery map.
2) Remove the wrench from the front upper cover.
3) Turn the nut [1] on the front caster assembly (connected equipment side) clockwise to loosen it. Then turn the nut [2] to adjust the height.

MEMO:
- Turn the nut [2] counterclockwise to lower and clockwise to heighten.

4) Turn the nut [1] on the rear caster assembly (connected equipment side) clockwise to loosen it. Then turn the nut [2] to adjust the height.

MEMO:
- Turn the nut [2] counterclockwise to lower and clockwise to heighten.
- After making the adjustment, tighten the front and rear nuts [1] on the inserter.

Inclination Adjustment

1) Turn the nut [1] on the front caster assembly (paper ejection side) clockwise to loosen it. Then turn the nut [2] to adjust the height.

MEMO:
- Turn the nut [2] counterclockwise to lower and clockwise to heighten.

2) With the nut [1] on the rear caster assembly (paper ejection side) being loosened, turn the nut [2] to adjust the height. When the adjustment is complete, tighten the nut [1].

MEMO:
- Turn the nut [2] counterclockwise to lower and clockwise to heighten.
- After making the adjustment, tighten the front and rear nuts [1] on the inserter.
Connecting the Cables

Connecting the Interface cable

1) Connect the installed interface cable to the finisher with two bundled RS tight screws (M4x8). (Refer to the Staple Finisher-A1/Booklet Finisher-A1 Installation Procedure)

Connecting the Power Cord

1) Insert the bundled power cord into the inserter to connect. Insert the plug end of the power cord into an external power outlet.
Connecting the Shunt Cable

1) Remove the Buffer Pass Unit the screw

2) Attach the bundled shunt cable at the rear bottom of the Connection Machine and the connected equipment using the Bundled binding-head screw(M4x10) and step 1) to the supplied screw.

Connecting the Wire saddle

1) Attach the bundled wire saddle to the rear lower cover.

2) Stow the excess length of the interface cable connected to the downstream finisher into the wire saddle.
Making Checks after Completion of Installation Work

Take back the following parts which are no longer necessary:


Operation Checks

1) After completion of installation, connect the power plug of the host machine and equipment to the power outlet. Then open the switch cover and turn ON the main power switch.

2) In the operation check mode, check for cover sheet insertion operation.
Appendix

- Service Tools
- General Circuit Diagram
Service Tools

Solvents and Oils

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Uses</th>
<th>Composition</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vic Clean</td>
<td>Cleaning: e.g., glass, plastic, rubber parts, external covers</td>
<td>Hydrocarbon (fluorine family), Alcohol, Surface activating agent, Water</td>
<td>Do not bring near fire. Procure locally. Isopropyl alcohol may be substituted.</td>
</tr>
</tbody>
</table>

Special Tools

None