Service Manual

Booklet Trimmer-B1

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Chapter 1 Specifications

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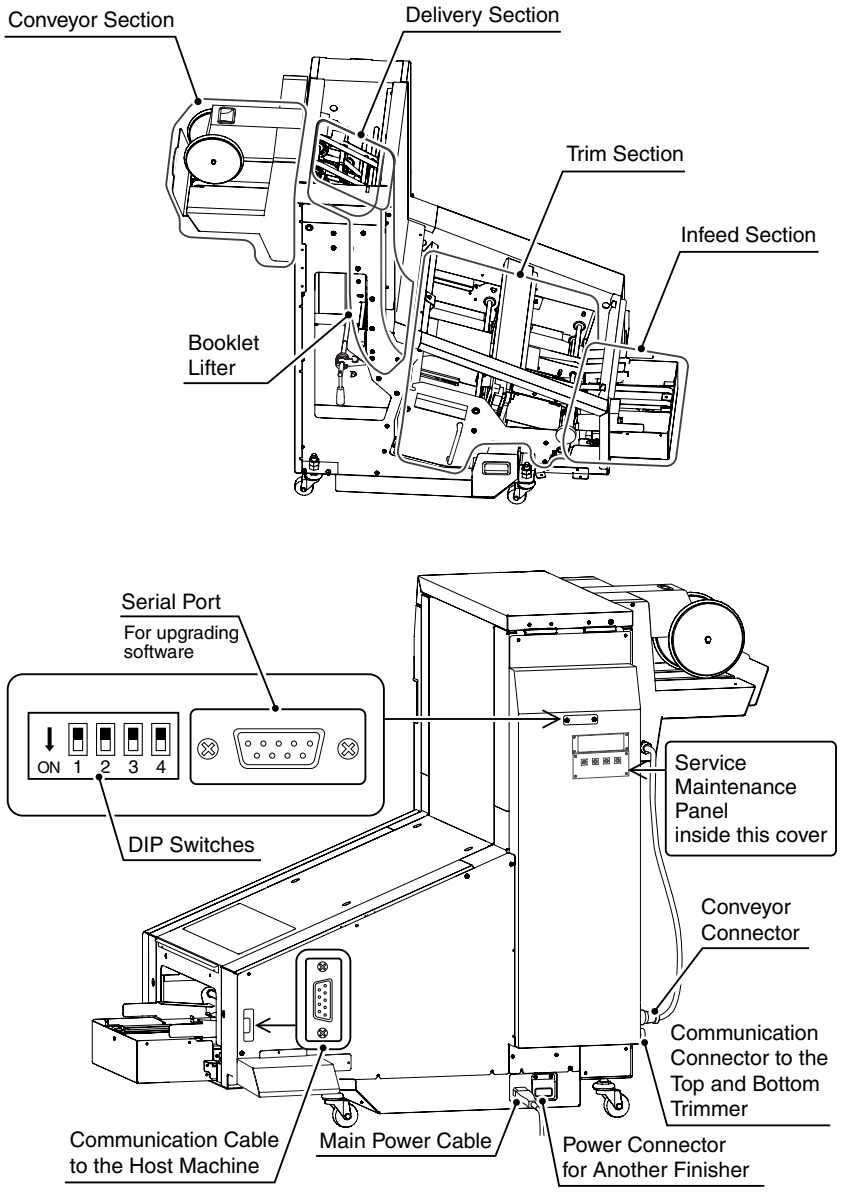
1.1 Product Specifications

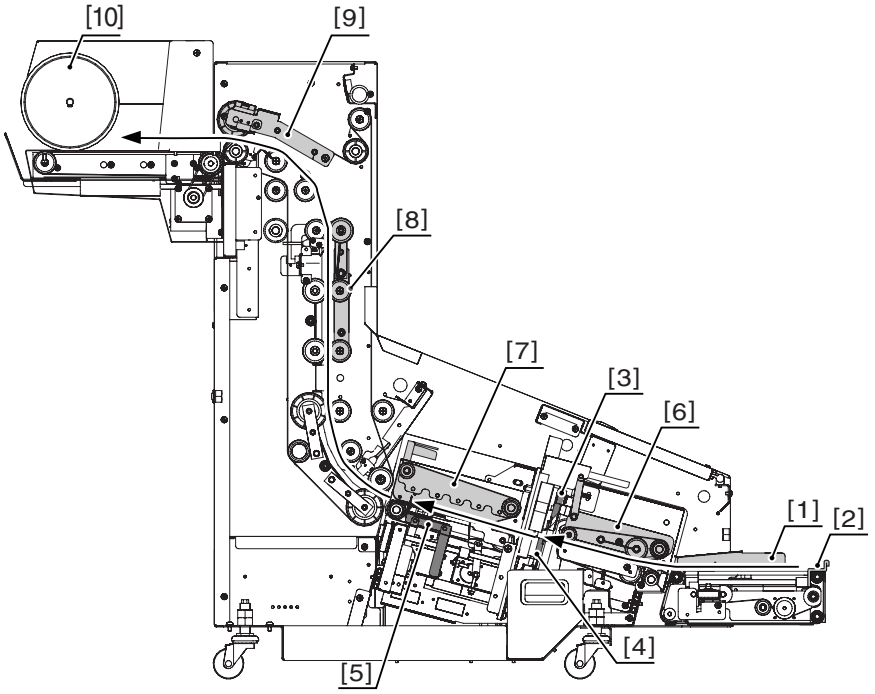
Product Name		Booklet Trimmer-B1
Description of Product		Upper knife reciprocating fore-edge trimmer with delivery tray
Maximum number of sheets trimmable		40 sheets (80 g/m^2), 38 sheets (80 g/m^2) + 2 sheets (300 g/m^2)
Possible trimming size		A3, B4, A4R, 12” x 18”, 11” x 17”, LGL, LTRR (Above sizes are native sheet sizes before half folded.)
Trimmer Booklet Waste Tray Capacity		1,500 sheets of trimmed strip (width 20 mm or 0.78”, 80 g/m^2)
Conveyor Capacity		30 booklets (40 sheets of A4 booklet, 80 g/m^2)
Machine Dimensions		1,575 (W) x 770 (D) x 1,040 (H) mm (62.1” x 30.4” x 41.0”)
Weight		Approximately 152 kg (335 lb)
Installation Space with Host Machine		3,976 (W) x 792 (D) mm (156.6” x 31.2”) (High Capacity Stacker-A1 + Saddle Finisher-V2 + Booklet Trimmer-B1) 3,111 (D) x 792 (D) mm (122.5” x 31.2”) (Saddle Finisher-V2 + Booklet Trimmer-B1)
Voltage / Power Consumption		From the Saddle Finisher-V2 / 300 W max. (50/60 Hz)
Rated Current / Frequency		4 A / 50,60 Hz
Maximum Load Current		4 A
Noise Level		64.2 dBA
Environmental	Temperature in Use	10 to 33 °C (50 to 91.4 F)
	Temperature in Storage	-10 to 40 °C (14 to 104 F)
	Temperature in Transportation	-10 to 50 °C (14 to 122 F)
	Humidity	20 to 80% (RH)
	Pressure	608 to 1013 hPa

1.2 Names of Parts

1.2.1 External View



1.2.2 Cross Section



[1]	Top-bottom guides	[6]	Trim section entrance transport belts
[2]	Transport hooks	[7]	Trim section transport belts
[3]	Upper knife	[8]	Booklet lifter section transport belts
[4]	Lower knife	[9]	Delivery section transport belts
[5]	Stopper	[10]	Conveyor section transport rollers

Chapter 2 Functions

Contents

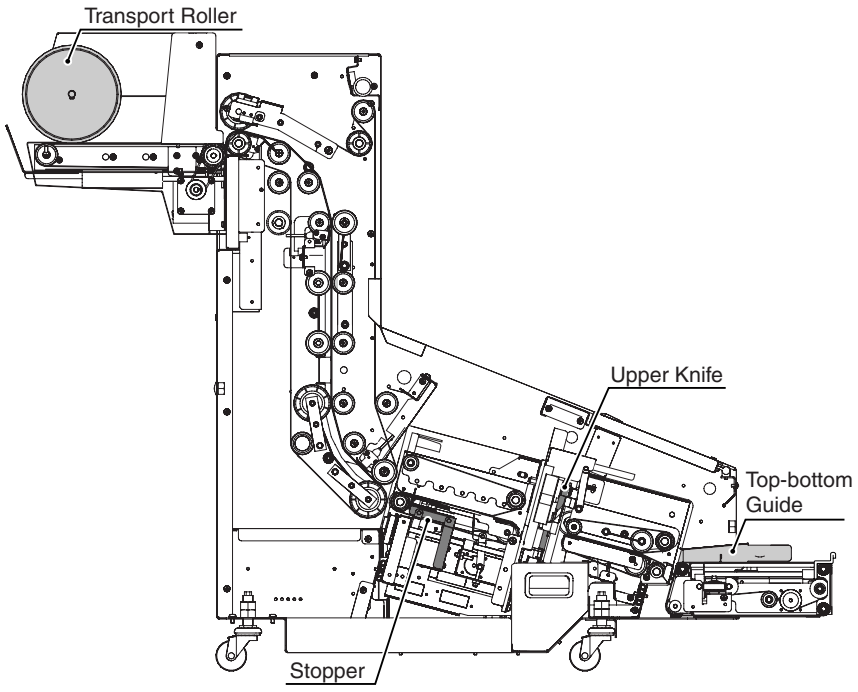
2.1 Basic Operation

2.1.1 Basic Operation of the Fore-edge Trimmer

The fore-edge trimmer receives a booklet which has been stitched and folded by the host machine, trims it on its fore-edge or passes it thorough without trimming, and delivers it to the conveyor.
The basic operation of the fore-edge trimmer is as follows:

When doing fore-edge trimming:

1. The fore-edge trimmer receives the size information from the host machine.
2. Based on the size information, the top-bottom guides, stopper, and conveyor section transport rollers move to the setting positions. The trim length depends on the stopper position.
3. Once the booklet is fed into the fore-edge trimmer, it is jogged on its top and bottom edges in the infeed section, and then fed to the trim section.
4. Once the booklet is fed into the trim section, it stops at the stopper. The upper knife moves down and up to trim the booklet on its fore-edge. After that, the stopper lowers and the booklet is delivered to the conveyor by the booklet lifter.

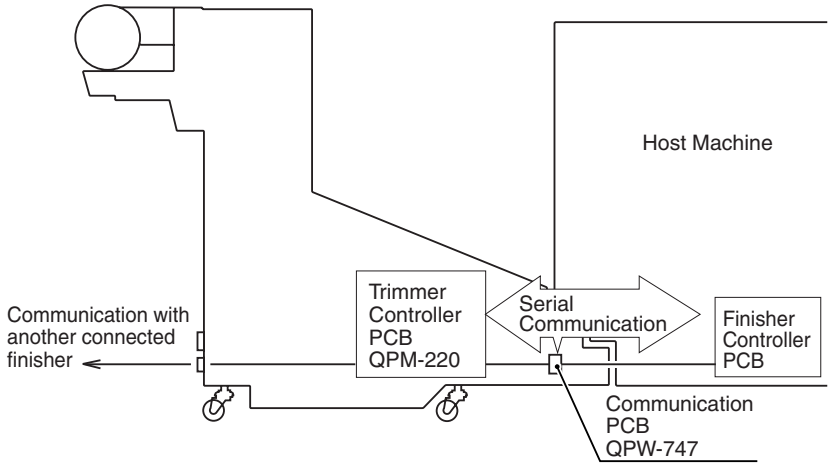


When passing through without trimming:
1. The fore-edge trimmer receives the size information from the host machine.
2. Based on the size information, the top-bottom guides, stopper, and conveyor section hold rollers move to the setting positions.
3. Once the booklet is fed into the fore-edge trimmer, it is jogged on its top and bottom edges in the infeed section, and then fed to the trim section.
4. The booklet passes through the trim section and booklet lifter, and is then delivered to the conveyor.

The operation of the fore-edge trimmer is controlled by the trimmer controller PCB QPM-220. The QPM-220 follows the commands from the host machine.

2.1.2 Communication Between the Host Machine and the Fore-edge Trimmer

The control commands from the host machine enter the trimmer controller PCB QPM-220. This function uses a serial communication link. If another finisher machine is connected downstream of the fore-edge trimmer, the finisher machine communicates with the host machine via the fore-edge trimmer.



The serial communication link exchanges several kinds of information.
Information input to the fore-edge trimmer:
- Finisher model information
- Operation enable command (This enables the fore-edge trimmer operation.)
- Operation startup command

- Booklet delivery start command (This starts the infeed belts)
- Booklet delivery complete command (The fore-edge trimmer takes in a booklet following this machine by this command)
- Booklet information command (The fore-edge trimmer guides and stopper move to the setting positions following command. At the first time after turning on the power, they move to their home positions. After this, they move to the setting positions directly without moving to their home position.)
  Size information (Trimmed and untrimmed booklet sizes)
  Trim direction information (Fore-edge trimming or passing through)
- Job complete command (The guides and stopper return to their home positions for the next job, then the fore-edge trimmer stops)

Information output from the fore-edge trimmer:
- Trimmer model information (Model ID code, software version)
- Error information (This is sent if a system error occurs. The host machine stops upon receiving this type of signal.)
- Jam information
- Booklet delivery complete command (This is sent when the booklet is delivered to the conveyor)
- Booklet accept ready command (This informs the host machine that the fore-edge trimmer is ready to accept booklets)
- Booklet accept not ready command (This informs the host machine that the fore-edge trimmer is not ready to accept booklets)
- Trimmer status information
  Delivery conveyor full (When the host machine receives this, it stops after delivering the processing booklets.)
  Trim full (When the host machine receives this, it stops after delivering the processing booklets.)
  Cover open (This is sent when opening or closing the front cover, delivery section cover or trim waste tray).
- Service mode switching command (This is sent when the “Test” button on the service maintenance panel is pressed.)

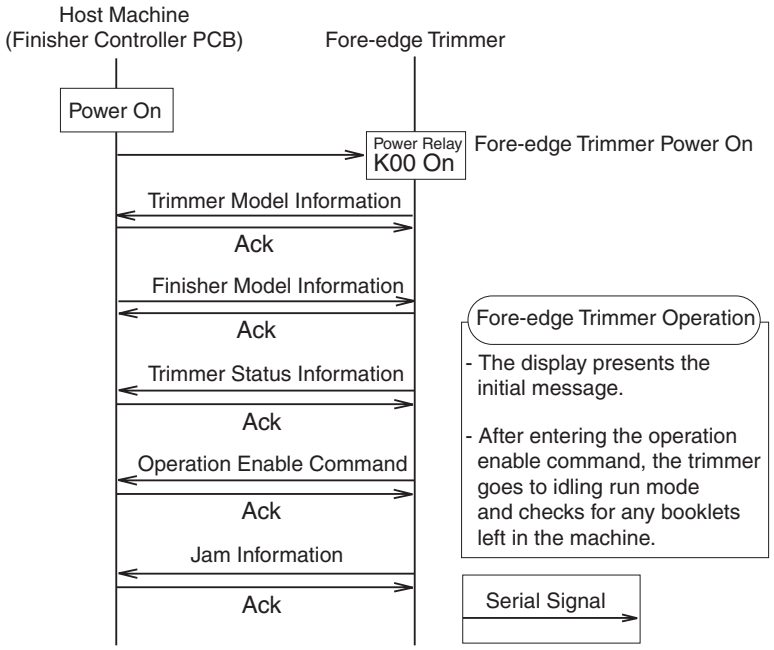
2.1.3 The Fore-edge Trimmer Control System

■ Initial Control

When the fore-edge trimmer power relay K00 turns on following a command from the host machine, power is supplied to the fore-edge trimmer. On the fore-edge trimmer, the display presents the initial message. After this, the fore-edge trimmer performs the initial communication with the host machine as follows:

Initial Communication

The fore-edge trimmer sends the trimmer model information to the host machine. When the host machine receives this, it returns the Ack signal.
Next, the host machine sends the finisher model information to the fore-edge trimmer. When the fore-edge trimmer receives this, it returns the Ack signal.
Then, the fore-edge trimmer sends the trimmer status information to the host machine. When the host machine receives this, it returns the Ack signal.
And then, the host machine sends the operation enable command to the fore-edge trimmer. When the fore-edge trimmer receives this, it returns the Ack signal, and goes to an idling run mode. If any booklet has been left inside, the trimmer sends the jam information to the host machine.
At this point, the initial communication is completed.

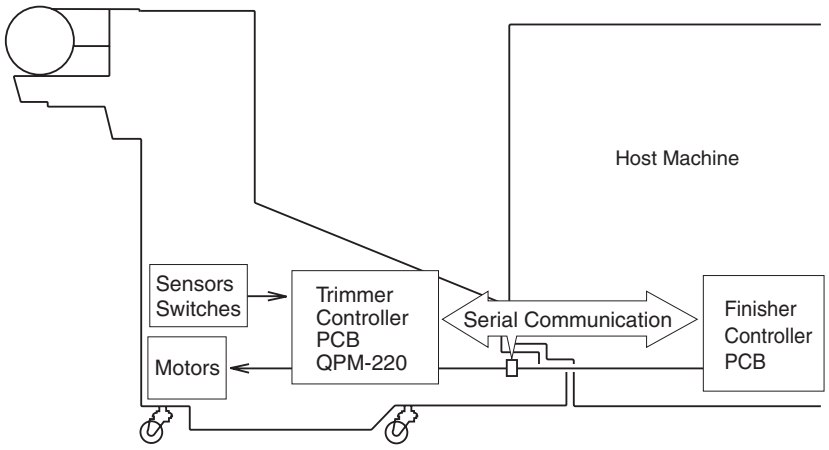


■ Main Control

The fore-edge trimmer operation sequence is controlled by the trimmer controller PCB QPM-220. A 32-bit micro-computer (CPU) is mounted on QPM-220. This handles the sequence control and communication with the host machine.

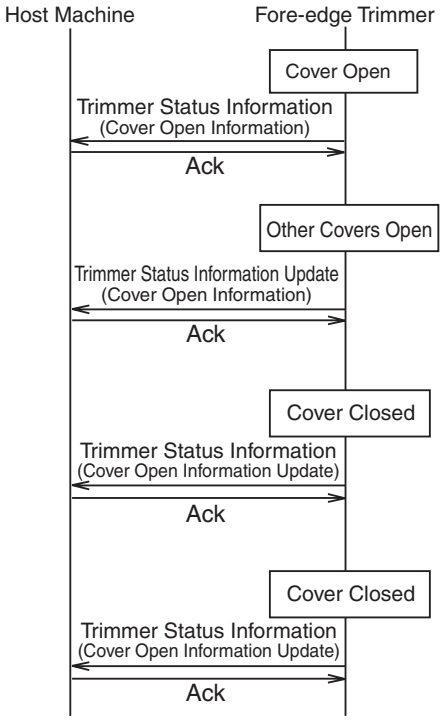
QPM-220 controls the motors based on commands sent from the host machine.

QPM-220 also receives signals from the sensors and switches and informs the host machine using the serial communication link.



■ Cover Open/Close Control

When the front cover (SW01) or delivery section cover (SW03) is opened, the interlock circuit (K01) opens and shuts off the power to the driver PCBs, and this stops all of the motors. The fore-edge trimmer sends the trimmer status information (cover open information) to the host machine. When any additional covers are opened or closed, the fore-edge trimmer resends and updates the trimmer status information (cover open information).



■ Service Maintenance Panel Control

The LCD display and the input button PCB are controlled by the trimmer controller PCB QPM-220. They are also supplied with power from QPM-220. When one of the buttons on the input button PCB QPW-732 is pressed, its input signal is sent to QPM-220.

The calibrations of the home positions for the following are performed on the service maintenance panel:

- Calibrating the home position for top-bottom guide, stopper, and conveyor section transport roller
- Setting position check (setting the guides and stopper for a certain paper size)
- Motion test of each part

See section 4.3.1 for details.

2.2 Transport Drive System

2.2.1 Overview

Each booklet which is delivered from the host machine enters the infeed section. The booklet is transported by the infeed belts and transport hooks from the infeed section to the trim section. In the trim section, the booklet is transported by the upper and lower belts to the booklet lifter. In the booklet lifter, the booklet is transported upward between the belts, and then it is delivered from the delivery section to the conveyor. In the conveyor section, the booklet is transported in small increments by the belts and transport rollers as additional booklets are delivered.
The drive arrangement for the fore-edge trimmer transport system is divided into four sections: infeed section, trim section, booklet lifter to delivery section, and conveyor section.

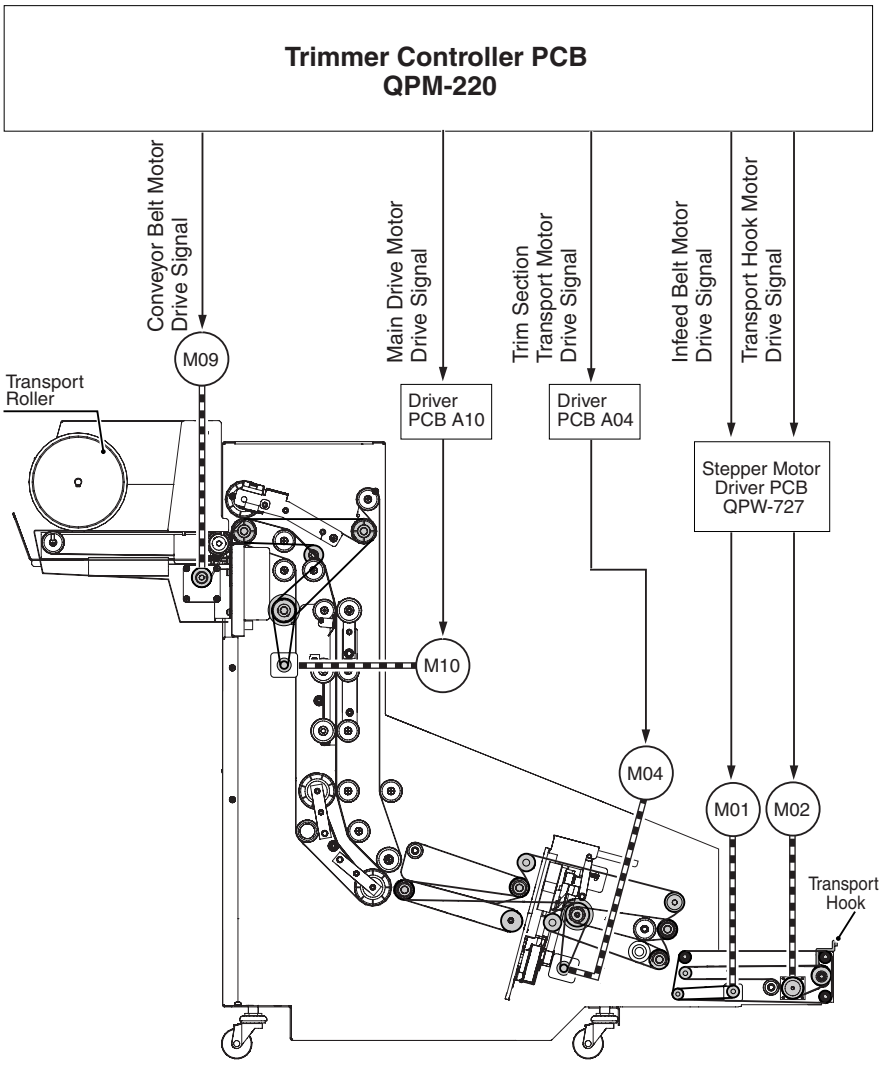
2.2.2 Control System

Transport Drive Motors
Infeed belt motor M01: When the fore-edge trimmer receives the booklet delivery start command from the host machine, M01 powers the infeed section transport mechanism. M01 is a stepper motor, and is controlled by driver PCB QPW-727. QPW-727 is controlled by trimmer controller PCB QPM-220.

Trim section transport motor M04: M04 powers the trim section transport mechanism. M04 is a brushless DC motor, and is controlled by driver A04. A04 is controlled by the trimmer controller PCB QPM-220.

Main drive motor M10: M10 powers the transport mechanism for the booklet lifter and the delivery section. M10 is a brushless DC motor, and is controlled by driver A10. A10 is controlled by the trimmer controller PCB QPM-220.

Conveyor belt motor M09: M09 powers the transport mechanism of the delivery conveyor section. M09 is a DC motor, and is controlled by the trimmer controller PCB QPM-220.



■ Booklet Sensors

The following booklet sensors are installed on the sheet path, and they detect arrival or passage of each sheet:

Infeed section

- Entrance booklet sensor (PI01)
- Exit booklet sensor (PI02)

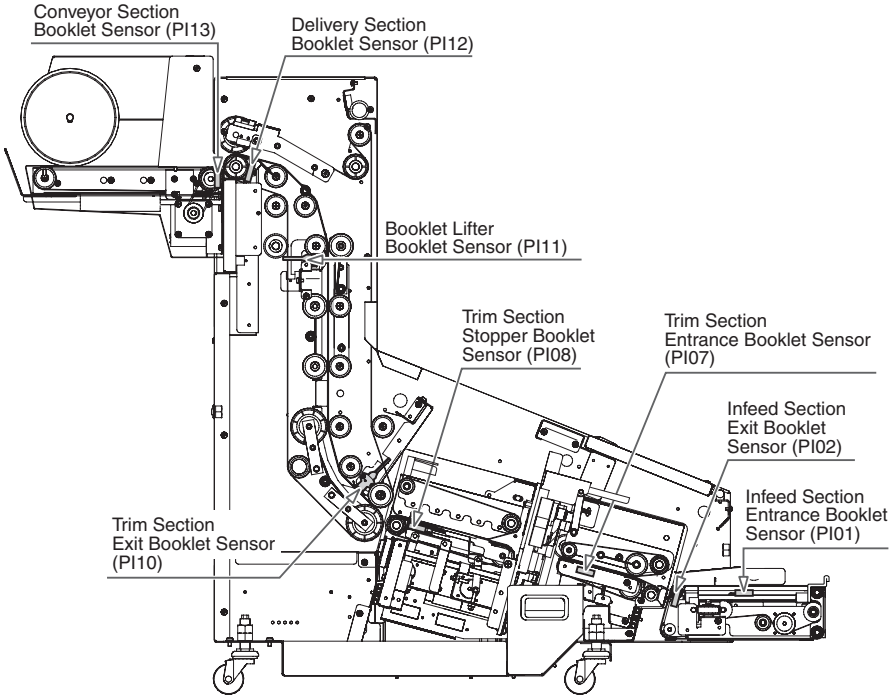
Trim section
- Entrance booklet sensor (PI07)
- Stopper booklet sensor (PI08)
- Exit booklet sensor (PI10)

Booklet lifter section
- Booklet sensor (PI11)

Delivery section
- Booklet sensor (PI12)

Conveyor section
- Booklet sensor (PI13)

(If this sensor detects a booklet for three seconds or longer, it sends the “full” signal to the host machine).



2.3 Fore-edge Trim Operation

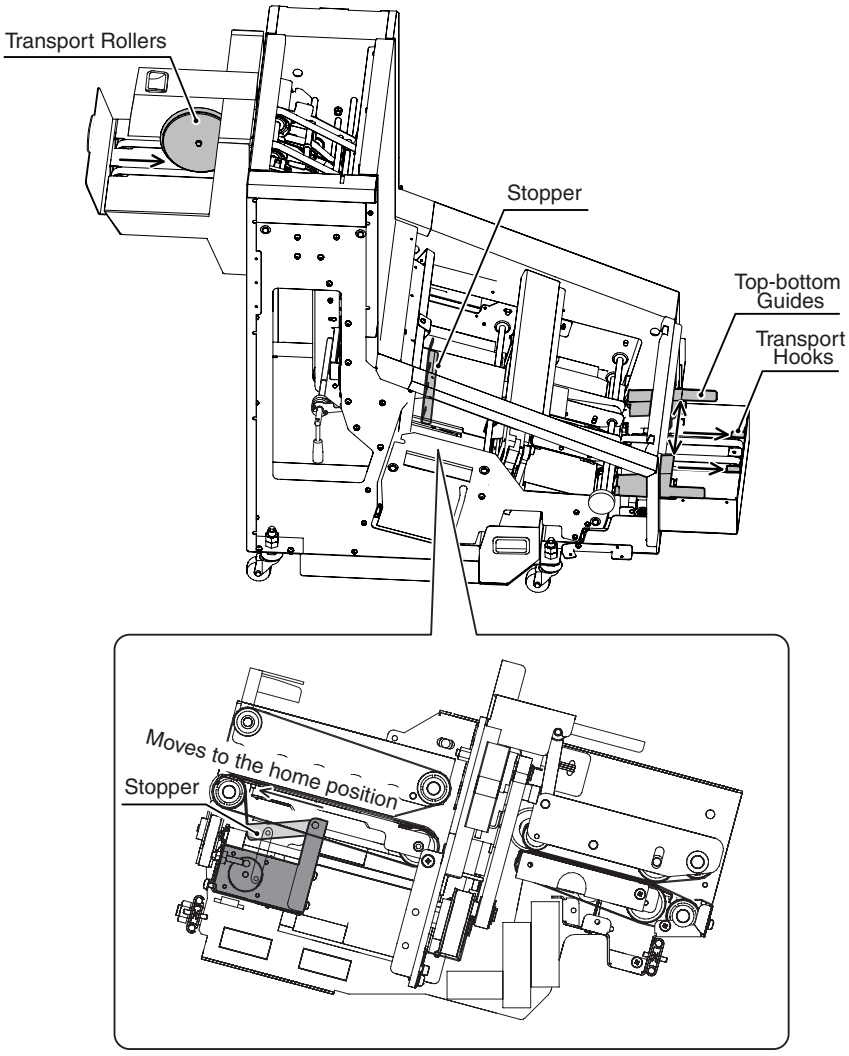
2.3.1 Preparation Stage Control

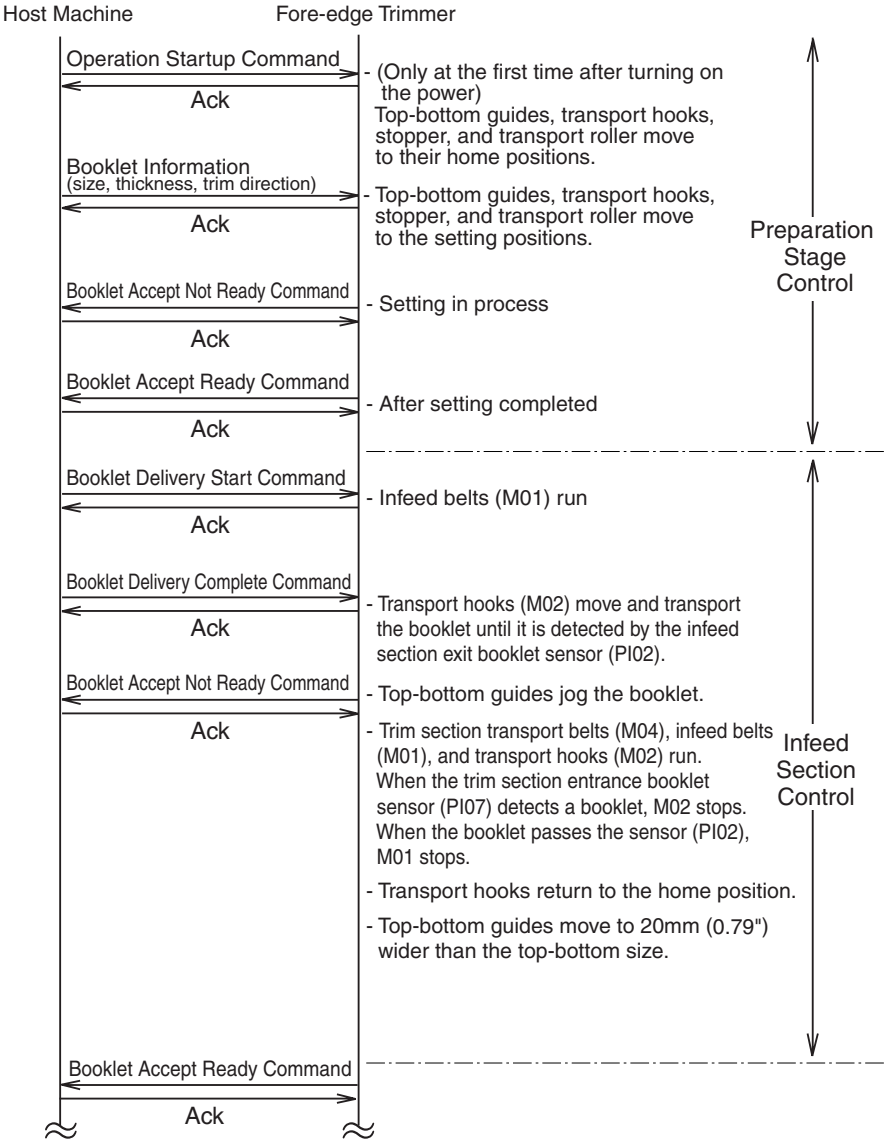
When the fore-edge trimmer receives the operation startup command from the host machine, the following parts return to their home positions only at the first time after turning on the power. (After this, they move to the setting positions directly without moving to their home position.)

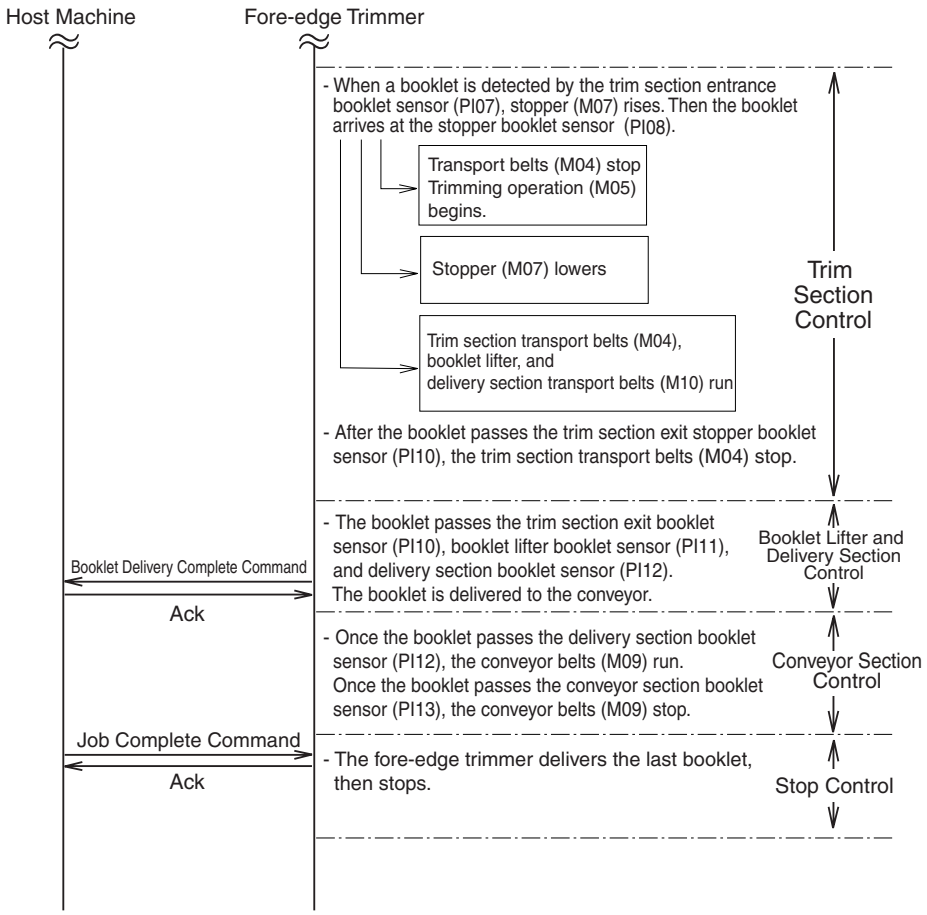
Home Positions
Infeed section: Top-bottom guides (to outside), transport hooks (to the right)
Trim section: Stopper (to the left)
Conveyor section: Transport roller (to the right)

Next, when the fore-edge trimmer receives the booklet information (size, thickness, trim direction) from the host machine, the guides and stoppers move as follows:
Infeed section: Top-bottom guide set at top-bottom size + 20mm or 0.79",
transport hook (remains at home position)
Trim section: Stopper (at trimmed fore-edge size)
Conveyor section: Transport roller (at trimmed fore-edge size)

When the parts start to move into position, the fore-edge trimmer sends the “booklet accept not ready” command to the host machine. When the parts complete the movements, the fore-edge trimmer sends the “booklet accept ready” command to the host machine.


Transport Rollers
Stopper
Top-bottom Guides
Transport Hooks
Moves to the home position
Stopper


Host Machine
Fore-edge Trimmer
Operation Startup Command
Ack
- (Only at the first time after turning on the power)
Top-bottom guides, transport hooks, stopper, and transport roller move to their home positions.
Booklet Information
(size, thickness, trim direction)
Ack
- Top-bottom guides, transport hooks, stopper, and transport roller move to the setting positions.
Preparation Stage Control
Booklet Accept Not Ready Command
Ack
- Setting in process
Booklet Accept Ready Command
Ack
- After setting completed
Booklet Delivery Start Command
Ack
- Infeed belts (M01) run
Booklet Delivery Complete Command
Ack
- Transport hooks (M02) move and transport the booklet until it is detected by the infeed section exit booklet sensor (PI02).
Booklet Accept Not Ready Command
Ack
- Top-bottom guides jog the booklet.
- Trim section transport belts (M04), infeed belts (M01), and transport hooks (M02) run.
When the trim section entrance booklet sensor (PI07) detects a booklet, M02 stops.
When the booklet passes the sensor (PI02), M01 stops.
- Transport hooks return to the home position.
- Top-bottom guides move to 20mm (0.79") wider than the top-bottom size.
Infeed Section Control
Booklet Accept Ready Command
Ack


Host Machine
Fore-edge Trimmer
- When a booklet is detected by the trim section entrance booklet sensor (PI07), stopper (M07) rises. Then the booklet arrives at the stopper booklet sensor (PI08).
Transport belts (M04) stop
Trimming operation (M05) begins.
Stopper (M07) lowers
Trim section transport belts (M04), booklet lifter, and delivery section transport belts (M10) run
Trim Section Control
- After the booklet passes the trim section exit stopper booklet sensor (PI10), the trim section transport belts (M04) stop.
- The booklet passes the trim section exit booklet sensor (PI10), booklet lifter booklet sensor (PI11), and delivery section booklet sensor (PI12). The booklet is delivered to the conveyor.
Booklet Lifter and Delivery Section Control
Booklet Delivery Complete Command
Ack
- Once the booklet passes the delivery section booklet sensor (PI12), the conveyor belts (M09) run. Once the booklet passes the conveyor section booklet sensor (PI13), the conveyor belts (M09) stop.
Conveyor Section Control
Job Complete Command
Ack
- The fore-edge trimmer delivers the last booklet, then stops.
Stop Control

2.3.2 Infeed Section Control

When the fore-edge trimmer receives the “booklet delivery start” command from the host machine, the fore-edge trimmer runs the infeed belts (M01).
Next, the fore-edge trimmer receives the “booklet delivery complete” command from the host machine, and the booklet is delivered into the infeed section from the host machine.
The fore-edge trimmer powers the infeed belts (M01) and transport hooks (M02), and transports the booklet until it is detected by the infeed section exit booklet sensor (PI02).
After the top-bottom guides jog the booklet, they move outward. They should be wider than the top bottom size of the booklet by + 1 mm (0.04") at each end in order to transport the booklet correctly.
Next, the trim section transport belts (M04), infeed belts (M01), and transport hooks (M02) run and transport the booklet.
When the trim section entrance booklet sensor (PI07) detects the booklet, the transport hooks (M02) stop. When the booklet passes the infeed section exit booklet sensor (PI02), the infeed belts (M01) stop.
After that, the transport hooks move to the home positions, and the top-bottom guides moves to a position 20 mm (0.79") wider than the top-bottom size for the next booklet.

2.3.3 Trim Section Control

When the booklet passes the trim section entrance booklet sensor (PI07), the stopper (M07) rises, then the booklet arrives at the stopper booklet sensor (PI08).
0.1 second after the booklet is detected by the stopper booklet sensor (PI08), the transport belts (M04) stop and the knife trims the booklet (M05). The upper knife stops when it is detected by the upper limit sensor (PI06).

2.0 seconds after the booklet is detected by the stopper booklet sensor (PI08), the stopper (M07) lowers.

2.4 seconds after the booklet is detected by the stopper booklet sensor (PI08), the trim section transport belts (M04) and the transport belts in the booklet lifter and delivery section (M10) run and the booklet is transported to the booklet lifter section.
After that, when the booklet passes the trim section exit booklet sensor (PI10), the trim unit transport belts (M04) stop.

2.3.4 Booklet Lifter and Delivery Section Control

The booklet passes the trim section exit booklet sensor (PI10), booklet lifter booklet sensor (PI11), and the delivery section booklet sensor (PI12), and is delivered to the conveyor. After that, the fore-edge trimmer sends the “booklet delivery complete” command to the host machine.

2.3.5 Conveyor Section Control

When the booklet passes the delivery section booklet sensor (PI12), the conveyor belts (M09) run.
When the booklet passes the conveyor section booklet sensor (PI13), the conveyor belts (M09) stop.
When the booklet is detected by the conveyor section booklet sensor (PI13) for more than a set interval, it is judged as the delivery conveyor full condition, and the fore-edge trimmer sends the trimmer status information to the host machine.

2.3.6 Stop Control

When the last booklet passes the delivery section booklet sensor (PI12), the fore-edge trimmer sends the “booklet delivery complete” command to the host machine. When the host machine receives this, it returns the “job complete” command to the fore-edge trimmer. The fore-edge trimmer receives this and stops.

2.4 Pass Through Operation (Without Trimming)

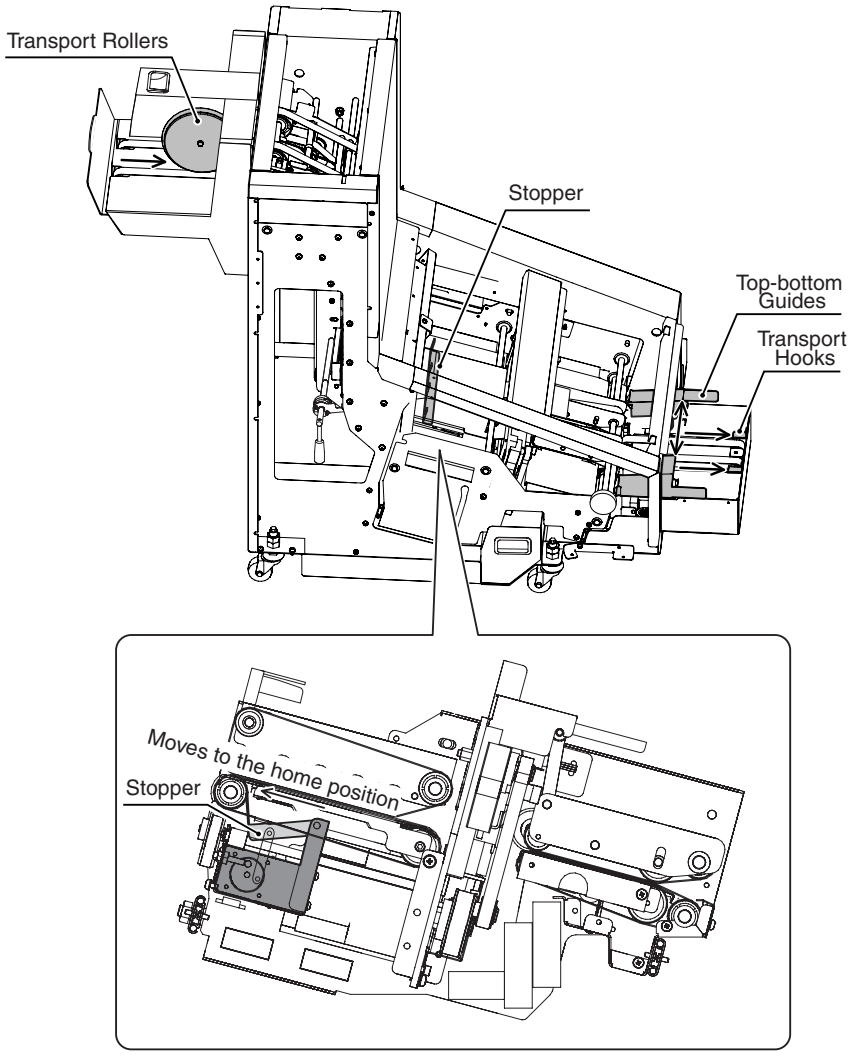
2.4.1 Preparation Stage Control

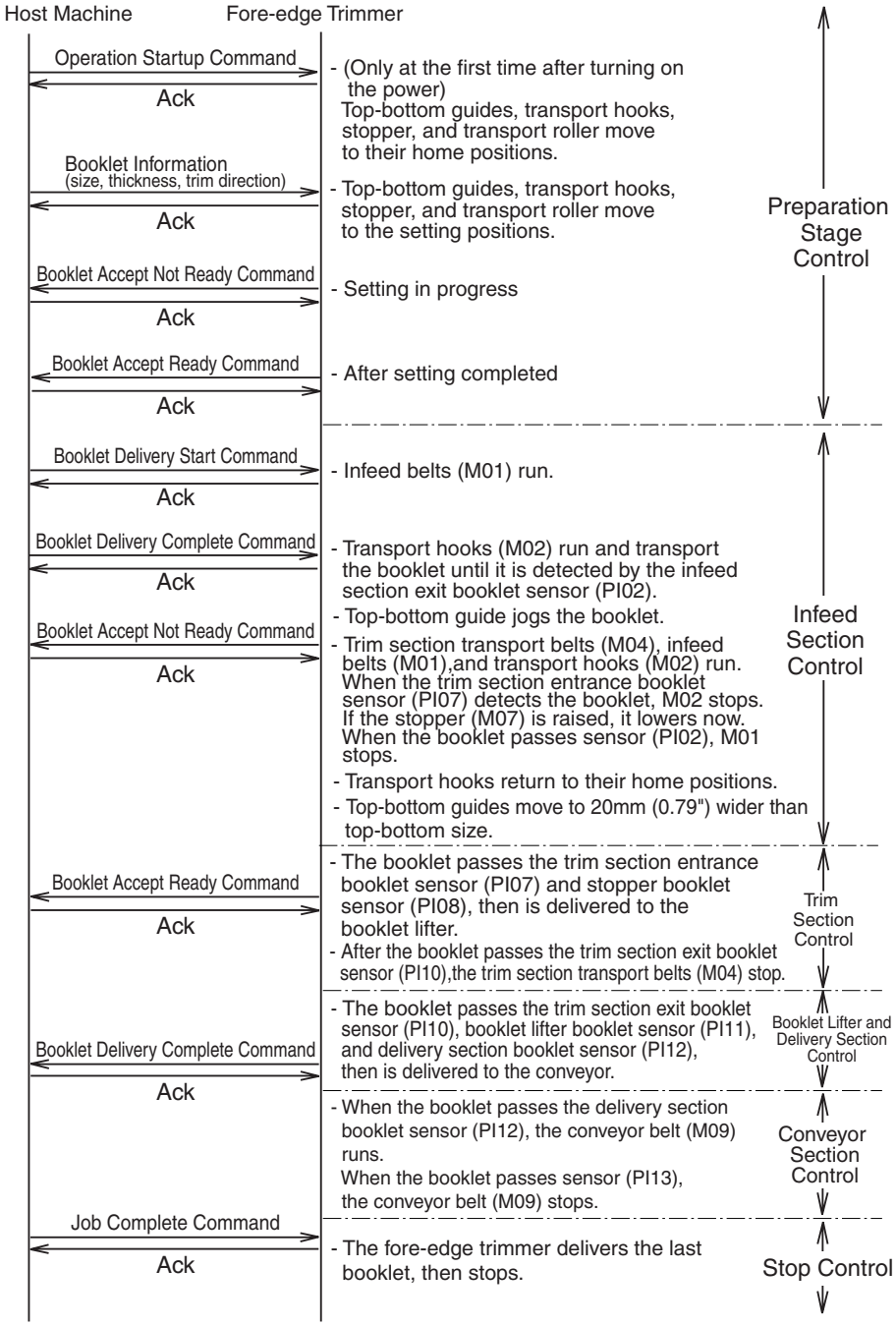
When the fore-edge trimmer receives the operation startup command from the host machine, the following parts return to their home positions only at the first time after turning on the power. (After this, they move to the setting positions directly without moving to their home position.)

Home Positions
Infeed section: Top-bottom guides (to outside), transport hooks (to the right)
Trim section: Stopper (to the left)
Conveyor section: Transport roller (to the right)

Next, when the fore-edge trimmer receives the booklet information (size, thickness, trim direction) from the host machine, the guides and stoppers move as follows:
Infeed section: Top-bottom guide set at top-bottom size + 20mm or 0.79",
transport hook (remains at home position)
Trim section: Stopper (at fore-edge size)
Conveyor section: Transport rollers (at fore-edge size)

When the parts start to move to their positions, the fore-edge trimmer sends the “booklet accept not ready” command to the host machine. When the parts stop moving, the fore-edge trimmer sends the “booklet accept ready” command to the host machine.


Transport Rollers
Stopper
Top-bottom Guides
Transport Hooks
Moves to the home position
Stopper


Host Machine
Fore-edge Trimmer
Operation Startup Command
Ack
- (Only at the first time after turning on the power)
Top-bottom guides, transport hooks, stopper, and transport roller move to their home positions.
Booklet Information
(size, thickness, trim direction)
Ack
- Top-bottom guides, transport hooks, stopper, and transport roller move to the setting positions.
Preparation Stage Control
Booklet Accept Not Ready Command
Ack
- Setting in progress
Booklet Accept Ready Command
Ack
- After setting completed
Booklet Delivery Start Command
Ack
- Infeed belts (M01) run.
Booklet Delivery Complete Command
Ack
- Transport hooks (M02) run and transport the booklet until it is detected by the infeed section exit booklet sensor (PI02).
- Top-bottom guide jogs the booklet.
Booklet Accept Not Ready Command
Ack
- Trim section transport belts (M04), infeed belts (M01),and transport hooks (M02) run. When the trim section entrance booklet sensor (PI07) detects the booklet, M02 stops. If the stopper (M07) is raised, it lowers now. When the booklet passes sensor (PI02), M01 stops.
- Transport hooks return to their home positions.
- Top-bottom guides move to 20mm (0.79") wider than top-bottom size.
Infeed Section Control
Booklet Accept Ready Command
Ack
- The booklet passes the trim section entrance booklet sensor (PI07) and stopper booklet sensor (PI08), then is delivered to the booklet lifter.
- After the booklet passes the trim section exit booklet sensor (PI10),the trim section transport belts (M04) stop.
Trim Section Control
Booklet Delivery Complete Command
Ack
- The booklet passes the trim section exit booklet sensor (PI10), booklet lifter booklet sensor (PI11), and delivery section booklet sensor (PI12), then is delivered to the conveyor.
Booklet Lifter and Delivery Section Control
- When the booklet passes the delivery section booklet sensor (PI12), the conveyor belt (M09) runs.
When the booklet passes sensor (PI13), the conveyor belt (M09) stops.
Conveyor Section Control
Job Complete Command
Ack
- The fore-edge trimmer delivers the last booklet, then stops.
Stop Control

2.4.2 Infeed Section Control

When the fore-edge trimmer receives the “booklet delivery start” command from the host machine, the fore-edge trimmer runs the infeed belt (M01).
Next, the fore-edge trimmer receives the “booklet delivery complete” command from the host machine, and the booklet is delivered into the infeed section from the host machine. The fore-edge trimmer runs the infeed belts (M01) and transport hooks (M02), and transports the booklet until it is detected by the infeed section exit booklet sensor (PI02).
After the top-bottom guides jog the booklet, they move outward toward a position wider than the top bottom size by + 1 mm (0.04") at each end so the booklet will be transported correctly.
Next, the trim section transport belts (M04), infeed belts (M01), and transport hooks (M02) run and transport the booklet.
When the trim section entrance booklet sensor (PI07) detects the booklet, the transport hooks (M02) stop. If the stopper (M07) has raised, it lowers now. When the booklet passes the infeed section exit booklet sensor (PI02), the infeed belt (M01) stops.
Next, the transport hooks move to the home positions, and the top-bottom guide moves to a position 20 mm (0.79") wider than the top-bottom size for the next booklet.

2.4.3 Trim Section Control

The booklet passes the trim section entrance booklet sensor (PI07), and the stopper booklet sensor (PI08), and then it is transported to the booklet lifter.
The stopper (M07) remains lowered during this period.

2.4.4 Booklet Lifter and Delivery Section Control

The booklet passes the trim section exit booklet sensor (PI10), booklet lifter booklet sensor (PI11), and the delivery section booklet sensor (PI12), and it is delivered to the conveyor. Next, the fore-edge trimmer sends the “booklet delivery complete” command to the host machine.

2.4.5 Conveyor Section Control

When the booklet passes the delivery section booklet sensor (PI12), the conveyor belts (M09) run.
When the booklet passes the conveyor section booklet sensor (PI13), the conveyor belts (M09) stop.
When the booklet is detected by the conveyor section booklet sensor (PI13) for more than the correct interval, it is judged as the “delivery conveyor full” condition, and the fore-edge trimmer sends the trimmer status information to the host machine.

2.4.6 Stop Control

When the last booklet passes the delivery section booklet sensor (PI12), the fore-edge trimmer sends the “booklet delivery complete” command to the host machine. When the host machine receives this, it returns the “job complete” command to the fore-edge trimmer. The fore-edge trimmer receives this and stops.

2.5 Detecting Jams

In order to detect a booklet being moved or a booklet left in the machine, the following booklet sensors are installed:

Infeed section
- Entrance booklet sensor (PI01)
- Exit booklet sensor (PI02)

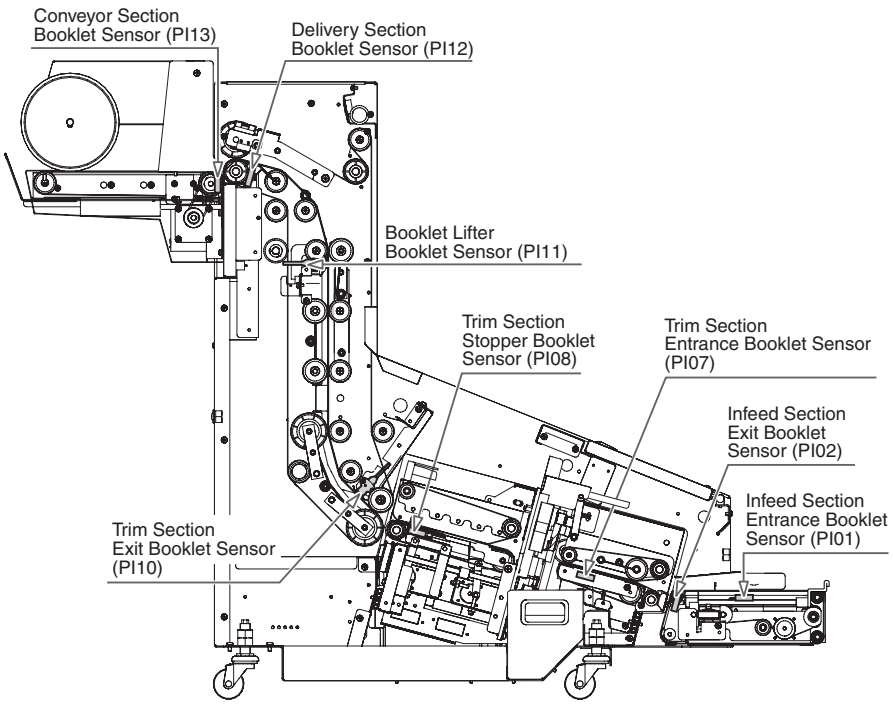
Trim section
- Entrance booklet sensor (PI07)
- Stopper booklet sensor (PI08)
- Exit booklet sensor (PI10)

Booklet lifter section
- Booklet sensor (PI11)

Delivery section
- Booklet sensor (PI12)

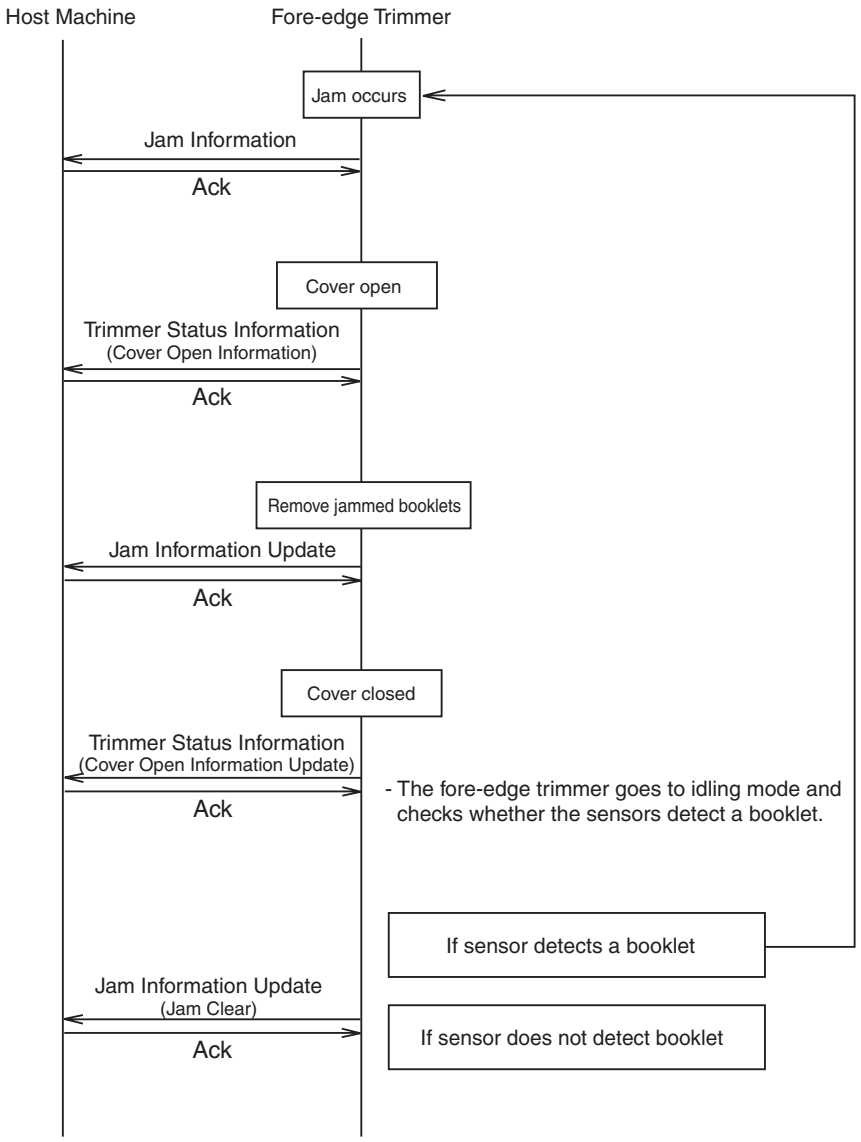
Conveyor section
- Booklet sensor (PI13)

(When this sensor detects a booklet for three seconds or longer, it sends the “full” signal to the host machine).



The micro-computer (CPU) on the trimmer controller PCB QPM-220 records the correct intervals allowed for the booklet to move between each pair of sensors. If a booklet does not pass between a pair of sensors within the correct interval, the CPU judges this as a jam.
When the CPU judges a jam, the fore-edge trimmer stops running and sends the jam information to the host machine.

After the jammed booklet is cleared and all the covers are closed, the fore-edge trimmer goes to an idling run mode and checks to see whether the sensors still detect the booklet. If the sensors do not detect any booklet, the fore-edge trimmer judges this as a complete recovery and sends the revised jam information to the host machine.



Error description	Sensor	Cause	Error Code
A booklet has not arrived at the infeed section entrance booklet sensor.	PI01	After the trimmer received the booklet delivery complete command, the booklet has not arrived at the entrance booklet sensor within the timeout period.	E0005a7-10C2
A booklet has been left on the infeed section entrance booklet sensor.	PI01	A booklet has been left on the entrance booklet sensor for the timeout period.	E0005a7-11C3
A booklet has not arrived at the infeed section exit booklet sensor.	PI02	A booklet which was detected by the infeed section entrance booklet sensor has not arrived at the exit booklet sensor within the timeout period.	E0005a7-10C4
A booklet has been left on the infeed section exit booklet sensor.	PI02	A booklet has been left on the exit booklet sensor for the timeout period.	E0005a7-11C5
A booklet has not arrived at the trim section entrance booklet sensor.	PI07	A booklet which was detected by the infeed section exit booklet sensor has not arrived at the trim section entrance booklet sensor within the timeout period.	E0005a7-10C6
A booklet has been left on the trim section entrance booklet sensor.	PI07	A booklet has been left on the trim section entrance booklet sensor for the timeout period.	E0005a7-11C7
A booklet has not arrived at the trim section stopper booklet sensor.	PI08	A booklet which was detected by the trim section entrance booklet sensor has not arrived at the trim section stopper booklet sensor within the timeout period.	E0005a7-10C8
A booklet has been left on the trim section stopper booklet sensor.	PI08	A booklet has been left on the trim section stopper booklet sensor for the timeout period.	E0005a7-11C9
A booklet has not arrived at the trim section exit booklet sensor.	PI10	A booklet which was detected by the trim section stopper booklet sensor has not arrived at the trim section exit booklet sensor within the timeout period.	E0005a7-10CA

Error description	Sensor	Cause	Error Code
A booklet has been left on the trim section exit booklet sensor.	PI10	A booklet has been left on the trim section exit booklet sensor for the timeout period.	E0005a7-11CB
A booklet has not arrived at the booklet lifter section booklet sensor.	PI11	A booklet which was detected by the trim section exit booklet sensor has not arrived at the booklet lifter section booklet sensor within the timeout period.	E0005a7-10CC
A booklet has been left on the booklet lifter section booklet sensor.	PI11	A booklet has been left on the booklet lifter section booklet sensor for the timeout period.	E0005a7-11CD
A booklet has not arrived at the delivery section booklet sensor.	PI12	A booklet which was detected by the booklet lifter section booklet sensor has not arrived at the delivery section booklet sensor within the timeout period.	E0005a7-10CE
A booklet has been left on the delivery section booklet sensor.	PI12	A booklet has been left on the delivery section booklet sensor for the timeout period.	E0005a7-11CF
A booklet has not arrived at the conveyor section booklet sensor.	PI13	A booklet which was detected by the delivery section booklet sensor has not arrived at the conveyor section booklet sensor within the timeout period.	E0005a7-10D0
A booklet has arrived at the infeed section too early.	-	The finisher has delivered a booklet (sent the booklet delivery command) when the trimmer cannot receive a booklet.	E0005a7-1FDA
A cover is opened.	-	One of the covers has been opened during operation.	E0005a7-14DB
A booklet has been left when the power switch is turned on.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13	After the power switch is turned on, the transport system drives to check whether a booklet has been left. During this operation, one of the sensors has detected a booklet.	E0005a7-13DC

Error description	Sensor	Cause	Error Code
A booklet has been left when the cover is closed.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13	After the cover is closed, the transport system drives to check whether a booklet has been left. During this operation, one of the sensors has detected a booklet.	E0005a7-17DD
A booklet has been left when the trimmer operation is started.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13	After the operation had started, a sensor at the downstream path detected a booklet while the first booklet was being transported in the trimmer.	E0005a7-17DE
A booklet has been left when the trimmer operation is finished.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13	A sensor detected a booklet when the trimmer operation had been finished.	E0005a7-17DE
An incorrect size data of booklet has been transmitted.	-	The trimmer declared that a size data out of specification had been transmitted.	E0005a7-1FDF

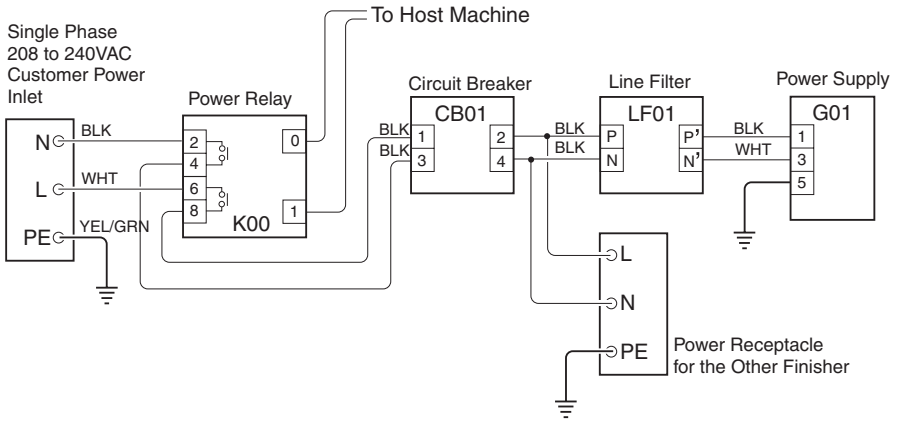
2.6 Power Source

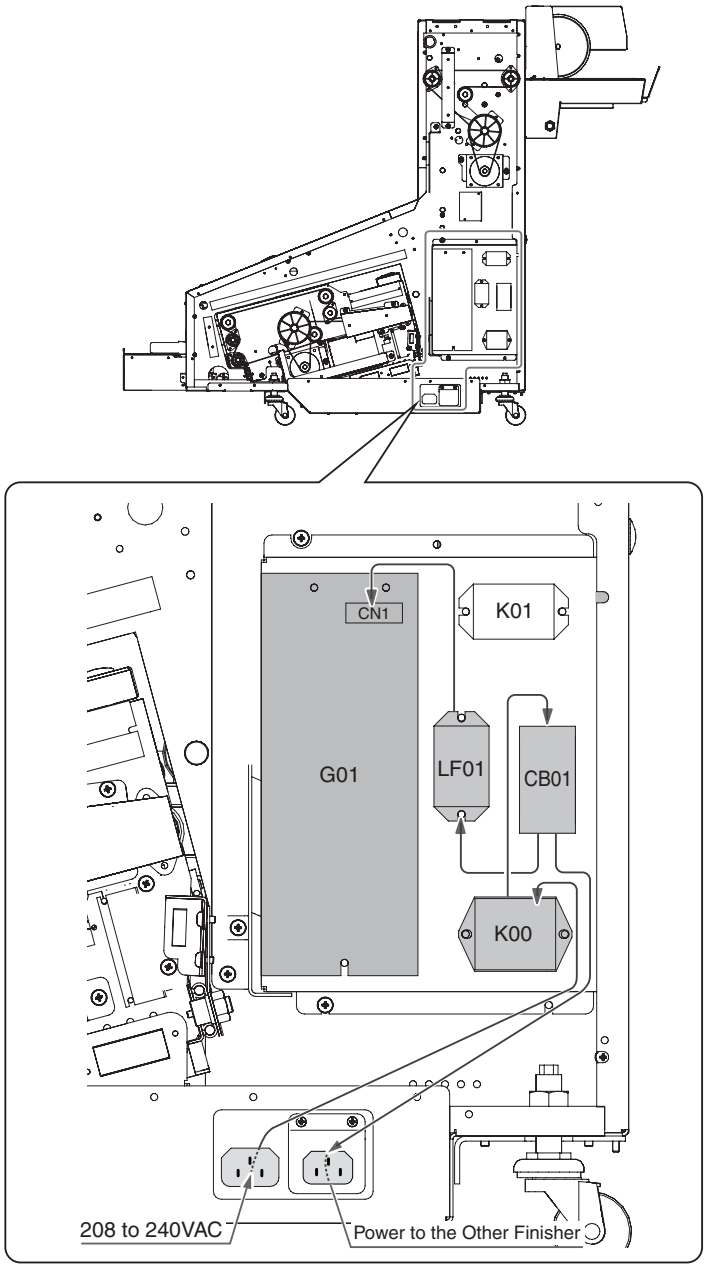
2.6.1 208-240V Power Supply Route

208-240V is supplied to the power entrance for fore-edge trimmer, and then it goes through the power relay K00. Power relay K00 is turned on or off by the host machine. From K00, the 208-240V power goes through circuit breaker CB01 and line filter LF01, and then it is supplied to power supply G01. Power supply G01 generates two voltages: 24VDC and 5VDC. Both 24VDC and 5VDC are supplied to the trimmer controller PCB QPM-220. 24VDC is supplied to the DC motor driver PCBs and stepper motor driver PCBs via the interlock relay.

If another finisher machine is connected in line, the 208-240V power for the other finisher machine is supplied from an outlet on the fore-edge trimmer. This power circuit branches off between circuit breaker CB01 and line filter LF01, and the receptacle is available for connection with the power plug for the finisher.

The 208-240V power supply route is as follows:



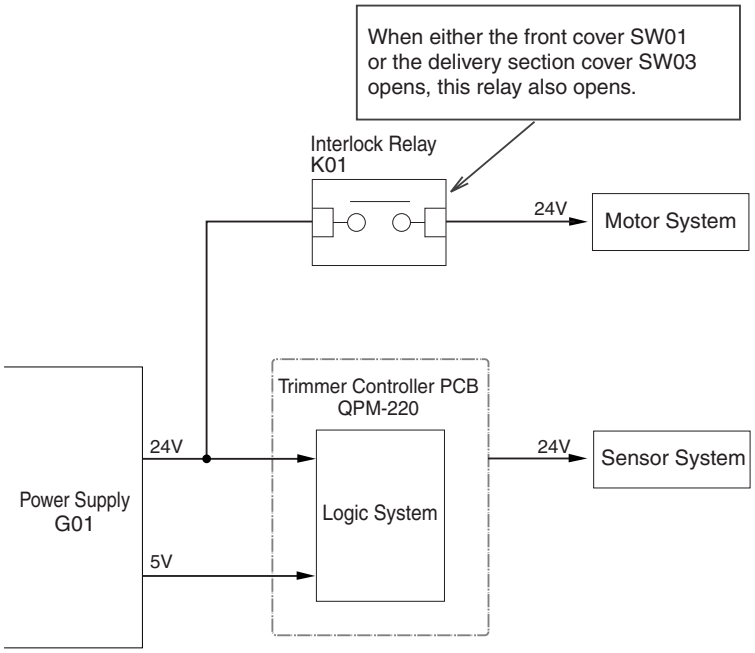

CN1
K01
G01
LF01
CB01
K00
208 to 240VAC
Power to the Other Finisher

2.6.2 5V/24V Power Supply Route

Power supply G01 provides two voltages: 24VDC and 5VDC. G01 supplies the 24 VDC and 5VDC for the logic system to the trimmer controller PCB QPM-220.

24VDC used to power the motors is supplied to the DC motor driver PCBs and stepper motor driver PCBs from G01 via interlock relay K01. When one of the interlock switches (SW01/SW03) activates, the power is shut off.

5V/24V power supply route is as follows:



Chapter 3 Part Replacement Procedures

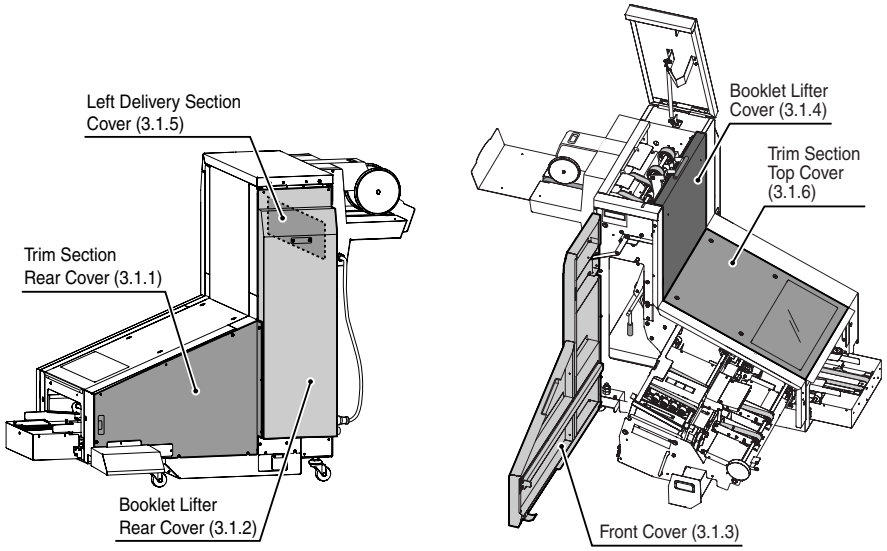
Reinstall any removed parts by reversing the removal procedure, unless instructed otherwise.

Caution

- Turn off the power switch before you remove the external covers.
- When doing service or maintenance work on the back of the machine, disconnect the power cable.

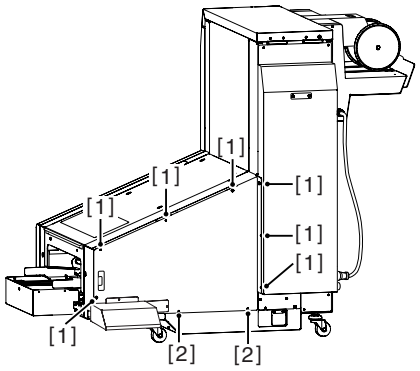
Contents

3.1 External Covers



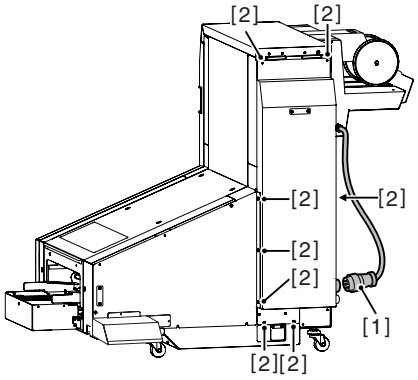
3.1.1 Trim Section Rear Cover

1) Remove the 7 screws [1].
2) Loosen the 2 screws [2].



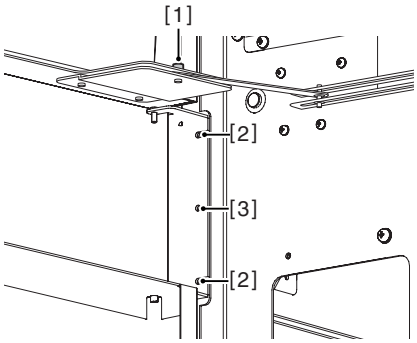
3.1.2 Booklet Lifter Rear Cover

1) Disconnect the conveyor cable [1].
2) Remove the 8 screws [2].



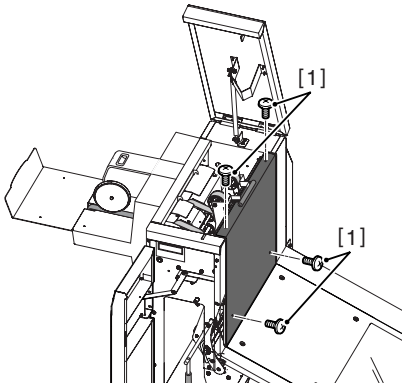
3.1.3 Front Cover

1) Open the front cover, and remove the screw [1] from the stopper.
2) Loosen the 2 screws [2] on the bracket and remove the screw [3] holding the cover.
3) Lift up the cover and remove it.



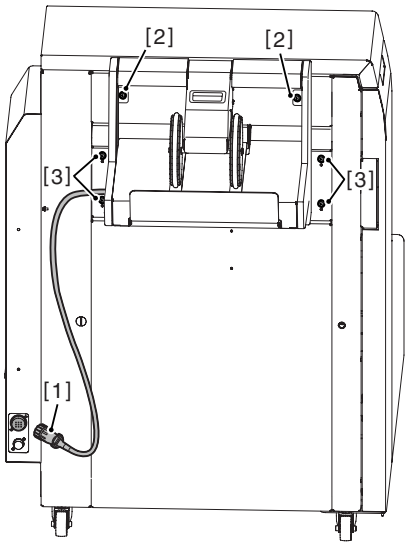
3.1.4 Booklet Lifter Cover

1) Open the delivery section cover.
2) Remove the 4 screws [1] and remove the booklet lifter cover.

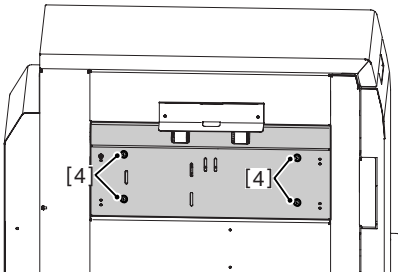


3.1.5 Left Delivery Section Cover

1) Disconnect the conveyor connector [1].
2) Remove the 2 screws [2], loosen the 4 screws [3] and remove the conveyor lifting up from the trimmer.

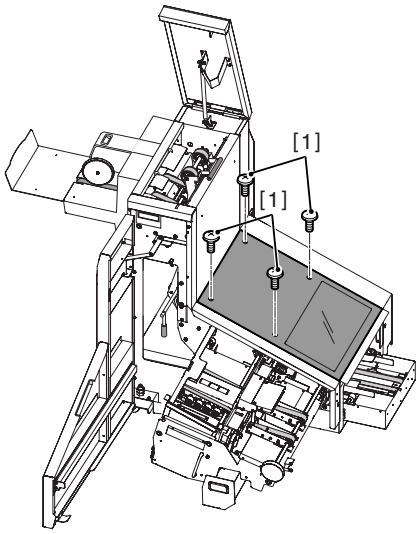


3) Remove the 4 screws [4] and the left delivery section cover.



3.1.6 Trim Section Top Cover

1) Remove the 4 screws [1] and the trim section top cover.

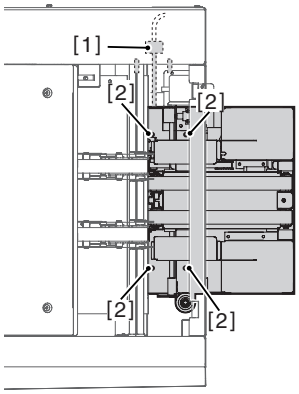


3.2 Drive System

3.2.1 Infeed Unit

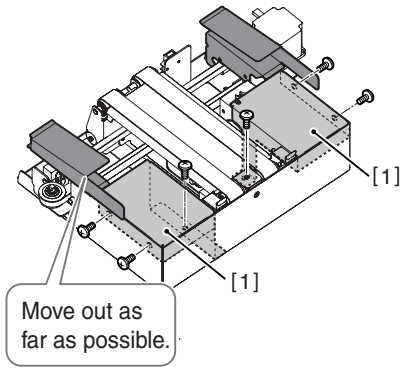
Note
When you repair or replace the internal parts of the infeed section, it is most efficient to remove the infeed unit.

1) Remove the finisher from the trimmer.
2) Remove the trim section rear cover. (See section 3.1.1.)
3) Disconnect the 3 connectors [1].
4) Loosen the 4 screws [2], and pull the infeed unit a bit to the right and remove it.

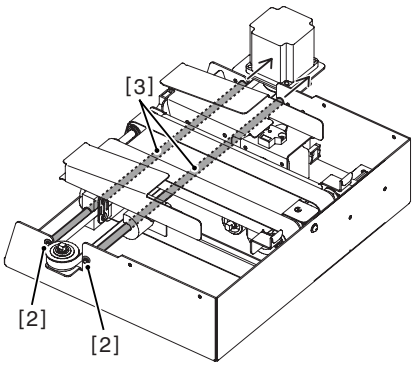


3.2.2 Top-bottom Guide Timing Belt

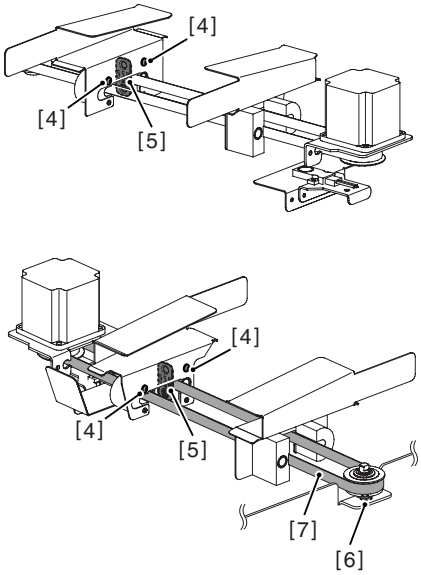
1) Remove the infeed unit. (See section 3.2.1.)
2) Move the top-bottom guides out as far as possible.
3) Remove the 2 lower guide plates [1].



4) Remove the snap rings [2] from the guide shafts, and pull out the guide shafts [3] from the rear of the machine.

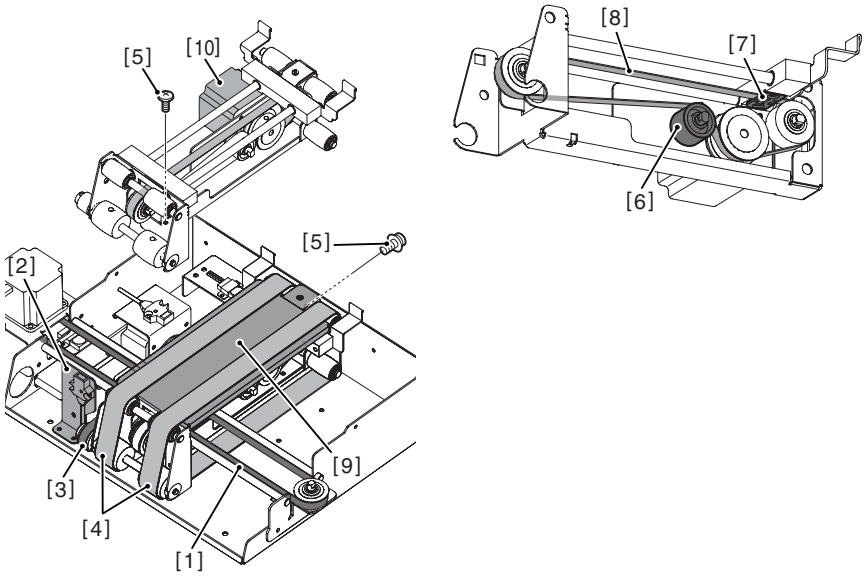


5) Remove the 4 screws [4] and remove each top-bottom guide.
6) Remove the 2 belt hold plates [5].
7) Loosen the screw [6] and remove the timing belt [7].



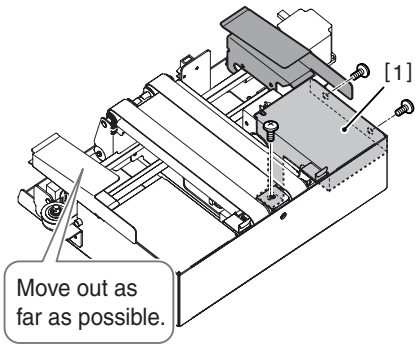
3.2.3 Transport Hook Drive Timing Belt

1) Remove the timing belt [1] for the top-bottom guides. (See section 3.2.2.)
2) Disconnect the wiring connector to the transport hook motor M02 [10].
3) Remove the bracket [2] for the infeed section exit booklet sensor PI02.
4) Remove the timing belt [3] which drives the transport belt.
   - If this is hard to remove, loosen the screw on the motor bracket to release the belt tension.
5) Remove the transport belts [4].
6) Remove the middle guide [9].
7) Remove the 2 screws [5] and remove the transport drive section.
8) Loosen the idler pulley [6].
9) Remove the belt support plate [7].
10) Remove the transport hook drive timing belt [8].

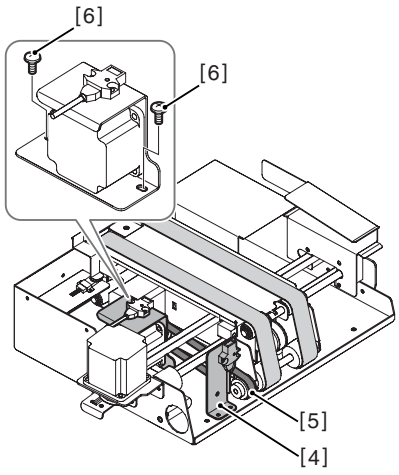


3.2.4 Infeed Section Transport Belt Drive Timing Belt

1) Remove the infeed unit. (See section 3.2.1.)
2) Move the top-bottom guides out as far as possible.
3) Remove the lower guide plate [1].



4) Remove the bracket [4] for the infeed section exit booklet sensor PI02.
5) Remove the timing belt [5] which drives the transport belt.
   - If this is hard to remove, loosen the screws [6] on the motor bracket to loosen the belt tension.

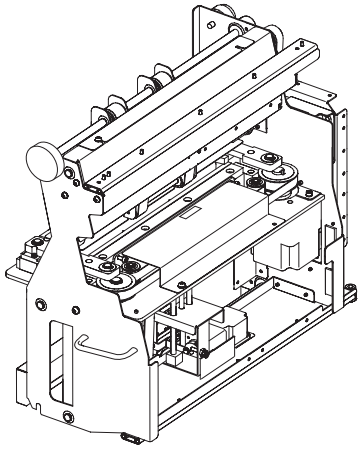


3.2.5 Knife Drive Timing Belt

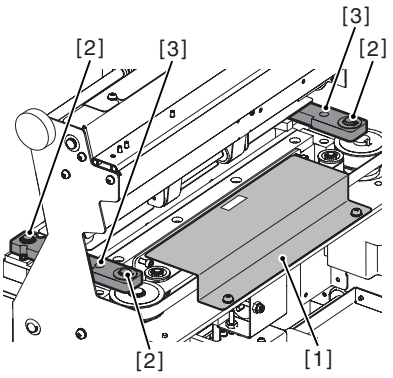
Warning

Keep your hands away from the knife-edge when you remove the timing belt.

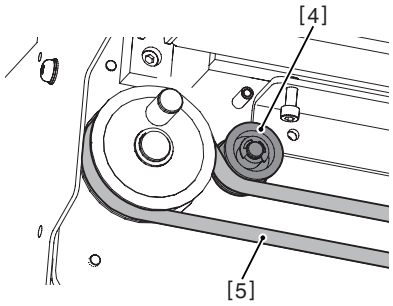
1) Remove the trim unit. (See section 3.2.13.)
   - Stand up the trim unit as shown below.
   - Support the trim unit so that it is stable by putting magazines etc. under any spaces under the frame.



2) Remove the trim guide [1].
3) Remove 4 snap rings [2] and remove the connecting rods [3].

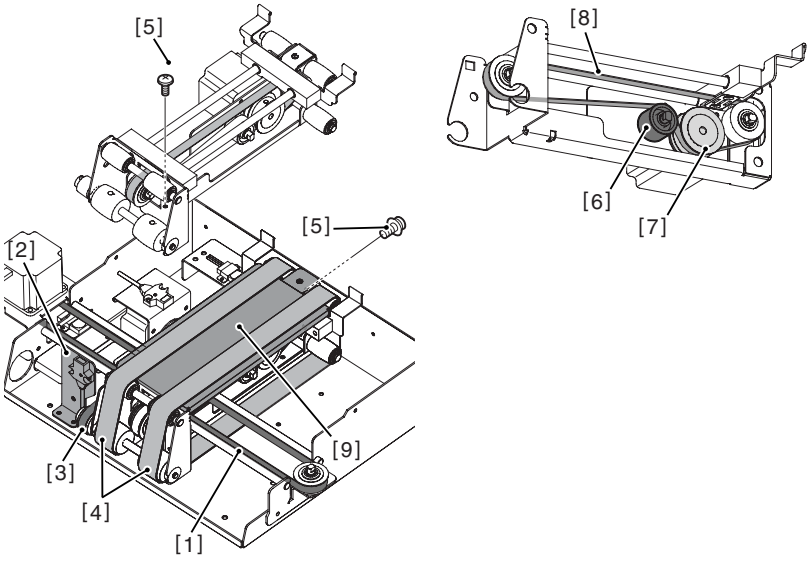


4) Loosen the tension roller [4].
5) Remove the timing belt [5].

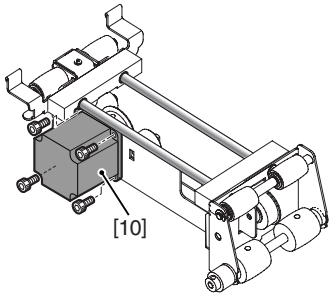


3.2.6 Transport Hook Motor M02

1) Remove the timing belt [1] for the top-bottom guides. (See section 3.2.2.)
2) Disconnect the wiring connector to the transport hook motor M02.
3) Remove the bracket [2] for the infeed section exit booklet sensor PI02.
4) Remove the timing belt [3] which drives the transport belt.
   - If this is hard to remove, loosen the screw on the motor bracket to release the belt tension.
5) Remove the transport belts [4].
6) Remove the middle guide [9].
7) Remove the 2 screws [5] and remove the transport drive section.
8) Loosen the idler pulley [6].
9) Remove the timing belt [8] from the motor pulley [7].
10) Remove the motor pulley [7].



11) Remove the motor [10].

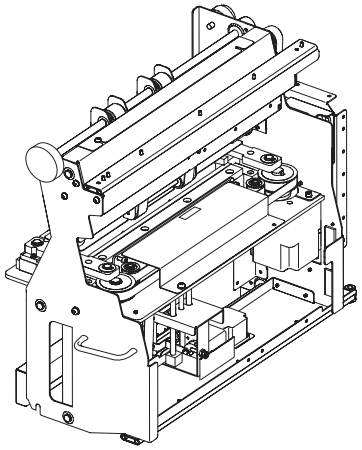


3.2.7 Knife Motor M05

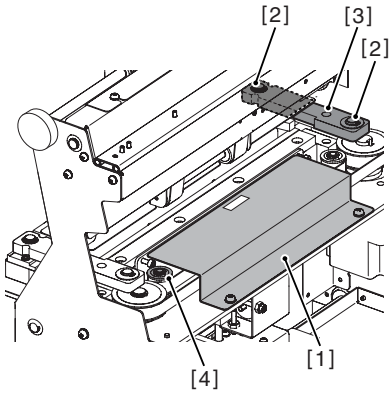
Warning

Keep your hands away from both knife-edges when you remove the knife motor.

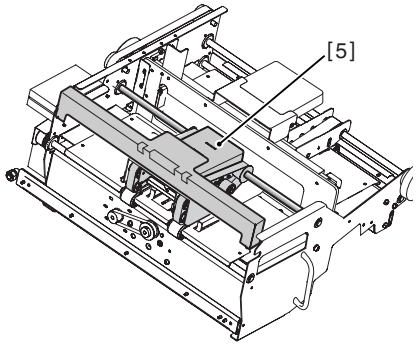
1) Remove the trim unit. (See section 3.2.13.)
   - Stand up the trim unit as shown below.
   - Make the trim unit stable by putting magazines etc. into any spaces below the frame.



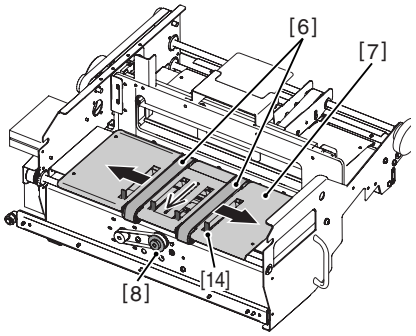
2) Remove the trim guide [1].
3) Remove the 2 snap rings [2] and remove the connecting rod [3].
4) Loosen the tension roller [4].



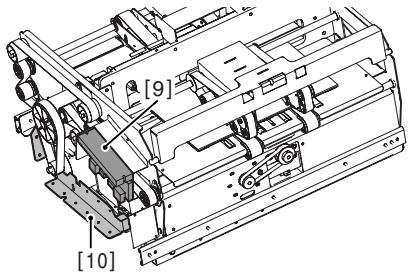
5) Swing the trim section transport belt unit [5] up.



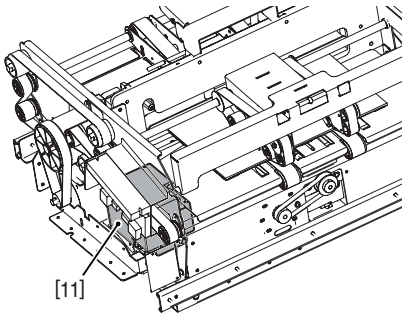
6) Move the transport belts [6] sideways toward the outside of the assembly.
   - The transport belts are elastic. Stretch the belts and move them off the transport table [7].
7) Turn the pulley [8] to move the stopper [14] in the arrow direction to the end.
8) Remove the transport table [7].



9) Disconnect the wiring from the driver [9].
10) Remove the bracket [10] for the wiring.

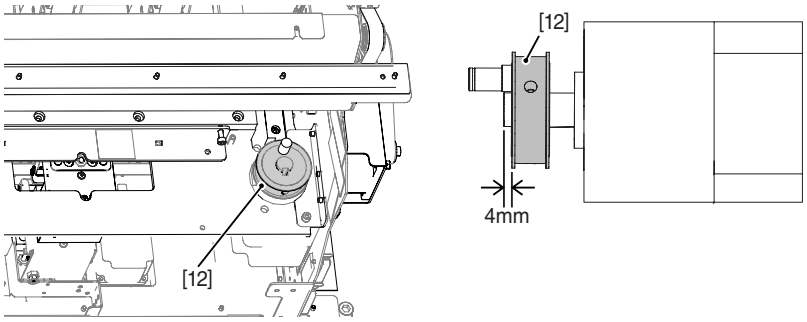


11) Remove the knife motor [11].
- Remove the motor with the timing pulley attached.

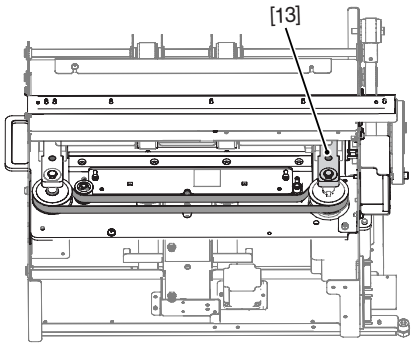


12) Remove the timing pulley [12].

Here is the procedure for reinstalling the parts:
13) Install the timing pulley [12] on the new knife motor.
- See the figure below for the installation position.

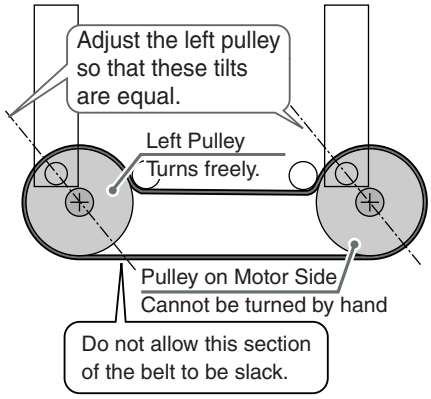


14) Install the motor.
15) Fit the timing belt over the motor timing pulley.
- Do not tension the timing belt yet.
16) Install the connecting rod [13].
- Lock them in place using the snap rings.



17) Align the connecting rods so they are parallel.
- The timing pulleys should not mesh with the timing belt yet. The left timing pulley should be able to rotate freely.

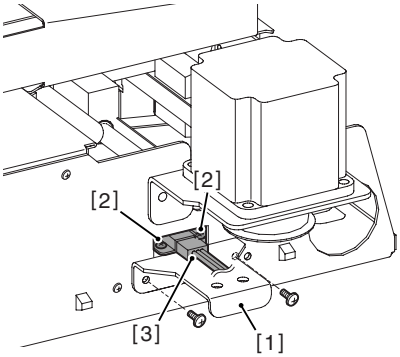
18) Push the tension roller for the left pulley against the belt and lock it in position.
- Match the positions of the pulleys as shown in the figure. Hold the left pulley and lock the tension pulley in position to apply the tension.



19) Reinstall the other parts following step 10 through step 1, in reverse order.

3.2.8 Top-bottom Guide Home Position Sensor PI03

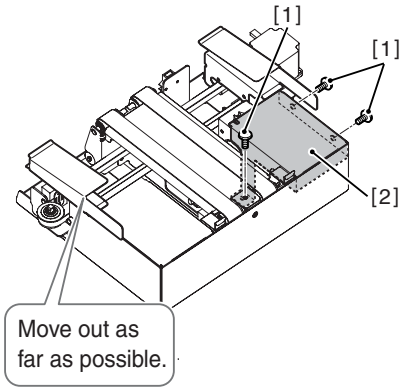
1) Remove the infeed unit. (See section 3.2.1.)
2) Remove the sensor bracket [1].
3) Remove the screws [2] and remove the sensor.
4) Disconnect the connector [3].



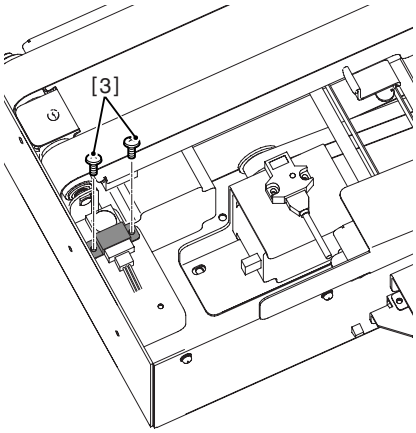
Caution
After replacing the top-bottom guide home position sensor PI03, reset the home position of the top-bottom guide by the home position calibration in the service mode. (See section 4.3.1.3.)

3.2.9 Transport Hook Home Position Sensor PI04

1) Remove the trimmer from the finisher.
2) Move the top-bottom guides out as far as possible.
3) Remove the 3 screws [1] and remove the lower guide plate [2].



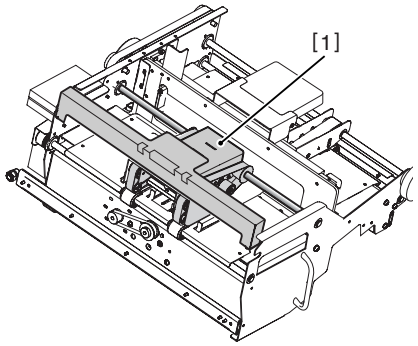
4) Remove the 2 screws [3] and remove the sensor.



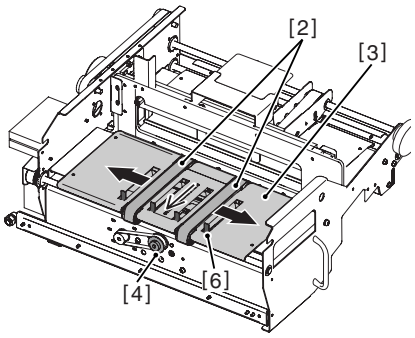
5) Disconnect the connector.

3.2.10 Stopper Home Position Sensor PI05

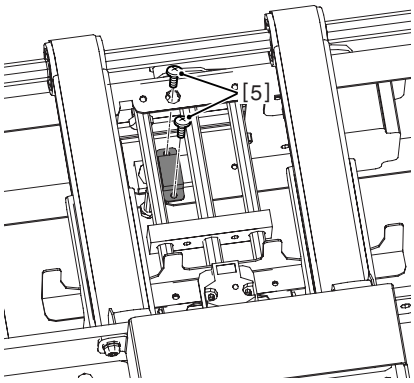
1) Remove the trim unit. (See section 3.2.13.)
2) Swing the trim section transport belt unit [1] up.



3) Move the transport belts [2] sideways.
   - The transport belts are elastic. Stretch the belts and move them off the transport table [3].
4) Turn the pulley [4] to move the stopper [6] in the arrow direction to the end.
5) Remove the transport table [3].



6) Remove the 2 screws [5] and remove the sensor.



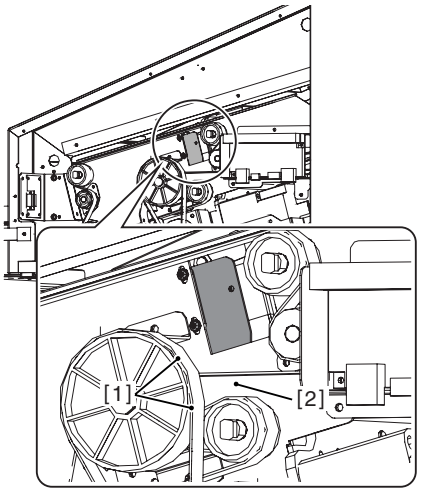
7) Disconnect the connector.

Caution

After replacing the stopper home position sensor PI05, reset the home position of the stopper by the home position calibration in the service mode. (See section 4.3.1.3.)

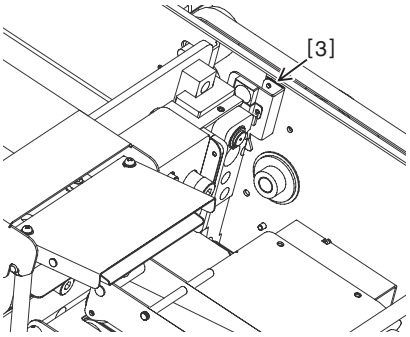
3.2.11 Upper Knife Upper Limit Sensor PI06

1) Remove the trim section rear cover. (See section 3.1.1.)
2) Remove the trim section top cover. (See section 3.1.6.)
3) Remove the 2 screws [1] and remove the bracket [2].



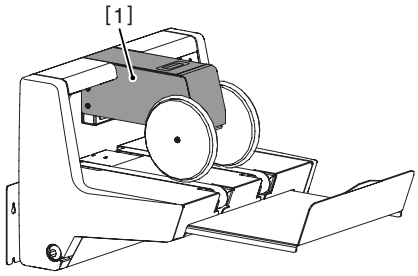
4) Disconnect the connector.
5) Remove the sensor from the bracket.

Note
Install the bracket so that the top of the bracket is aligned with the mark-off line [3].

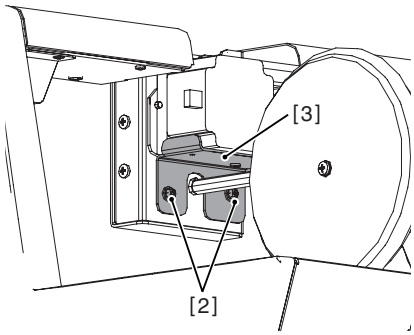


3.2.12 Delivery Roller Home Position Sensor PI14

1) Remove the top cover.



2) Remove the 2 screws [2] and remove the sensor bracket [3].



3) Disconnect the connector.
4) Remove the sensor.

Caution

After replacing delivery roller home position sensor PI14, reset the home position of the delivery roller by the home position calibration in the service mode. (See section 4.3.1.3.)

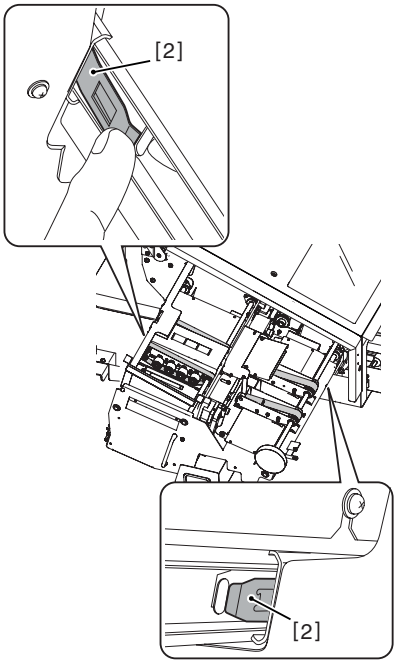
3.2.13 Trim Unit

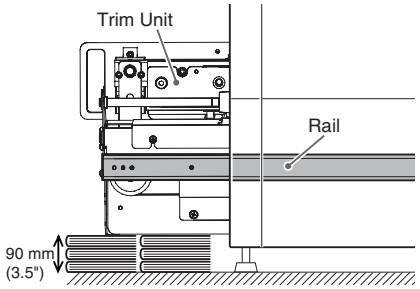
Note
When you pull out the trim unit, it will be stopped by a stopper so it does not fall out of the machine.

1) Remove the trim waste tray [1].
2) Pull out the trim unit until it stops.
3) Put some magazines underneath the trim unit to support it.

Note
The trim unit weighs about 40 kg (18.15 lb). Place a stack of magazines so they will support the trim unit when it is pulled out later in the procedure. This will prevent the unit from bending the supporting rails. Make a stack which is 90 mm (3.5") high.

4) Push in on the stopper [2] on the end of the rail and pull out the trim unit with the stopper released.

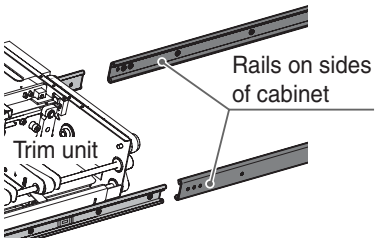




5) Pull out the trim unit completely.

Caution

Support the trim unit level as you pull it out. Do not allow the trim unit to press down on the ends of the rails. This can cause the rails to bend.



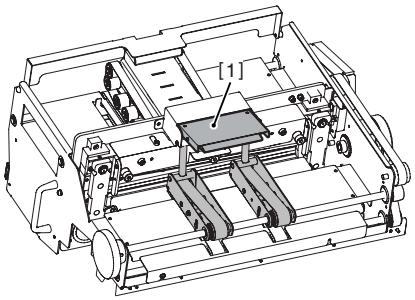
3.2.14 Upper Knife Assembly

Warning

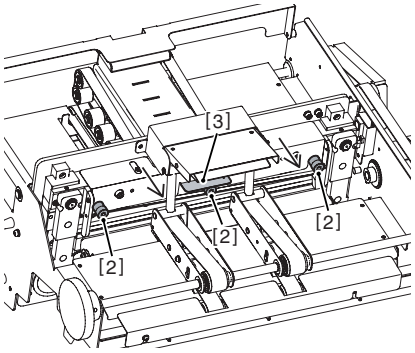
When you remove the upper knife assembly, be sure to hold it using the handle. Never touch the edge of the knife. This can cause severe personal injury.

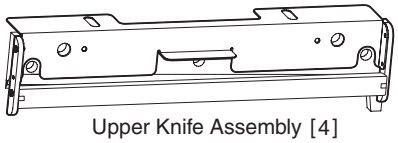
1) Pull out the trim unit.

2) Open the transport belt mechanism [1].



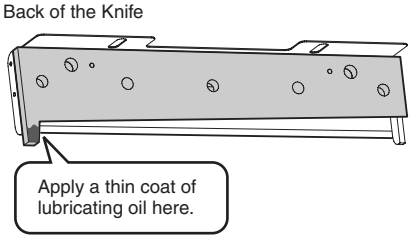
3) Remove 3 screws [2] using a 6 mm Allen wrench, and remove the upper knife assembly [4].
- When you remove the upper knife assembly, be sure to hold the bracket [3].
- Pull out the upper knife assembly, lift it a bit, then pull it out completely.
- Place the upper knife assembly in a safe place. Use a table or shelf which is stable, and which allows some space around the knife assembly.





Upper Knife Assembly [4]

Note
Apply PG 641 lubricating oil at the location shown in the figure before installing the new upper knife assembly.

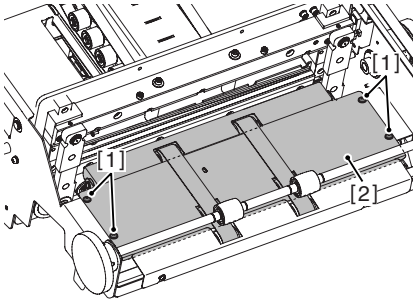


3.2.15 Lower Knife

Warning

When you handle the lower knife, keep your hands away from the knife-edge. Otherwise, it can cause severe personal injury.

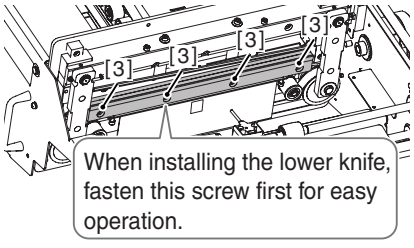
1) Remove the upper knife. (See section 3.2.14.)
2) Remove the 4 screws [1] and lift the infeed lower guide [2] upward.

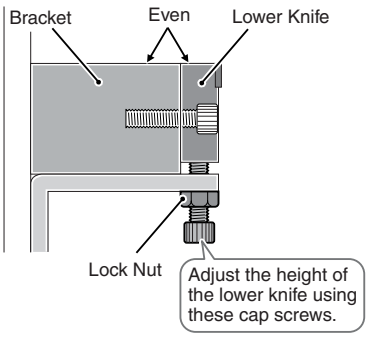


3) While holding the lower knife by hand, remove the 4 screws [3] using a 4 mm Allen wrench and remove the lower knife.

Note

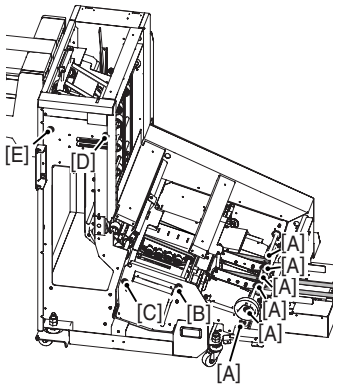
- After installing the lower knife, adjust the height before fastening the screws. (See section 4.3.3 step 4 and below.)
- Wipe off any anti-rust oil applied on the lower knife before installing the new knife.





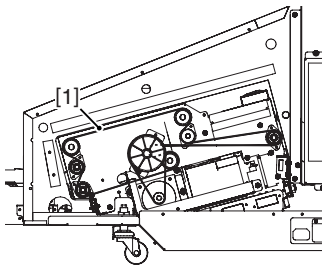
3.2.16 Metal Bushings

Metal bushings are used in the mechanisms shown below:

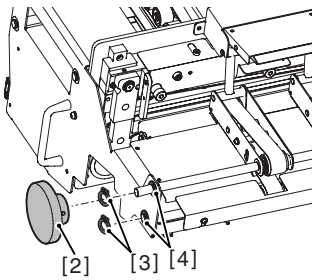


How to remove the [A] metal bushings:
Remove each bushing of [A] toward the front side, because the shaft is pressed into the bearings from the drive side.

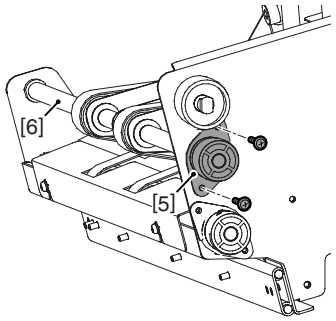
1) Remove the trim section rear cover. (See section 3.3.1.)
2) Remove the trim section rear drive belt [1] .



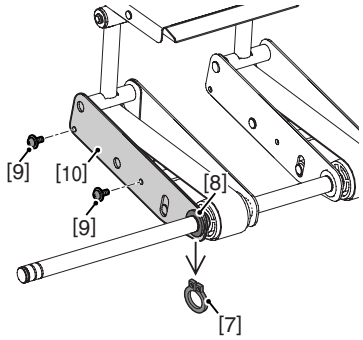
3) Remove the handle [2], snap rings [3] and metal bushings [4].



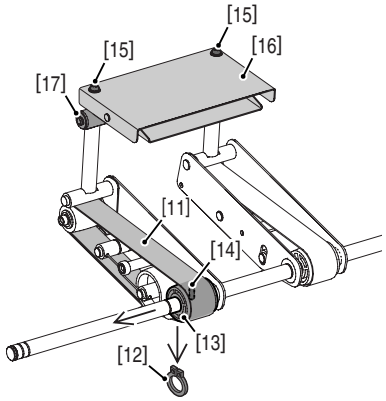
4) Remove the bearing bracket [5] on the drive side.
5) Remove the drive shaft assembly [6] from the trimmer.



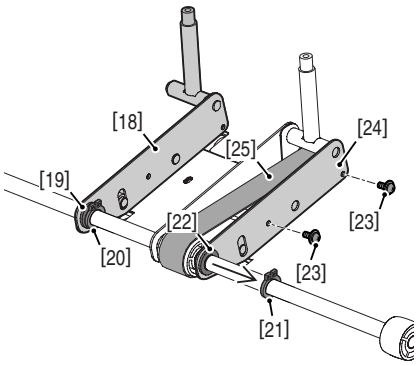
6) Remove the snap ring [7] and metal bushing [8].
7) Remove the 2 screws [9] and bracket [10].



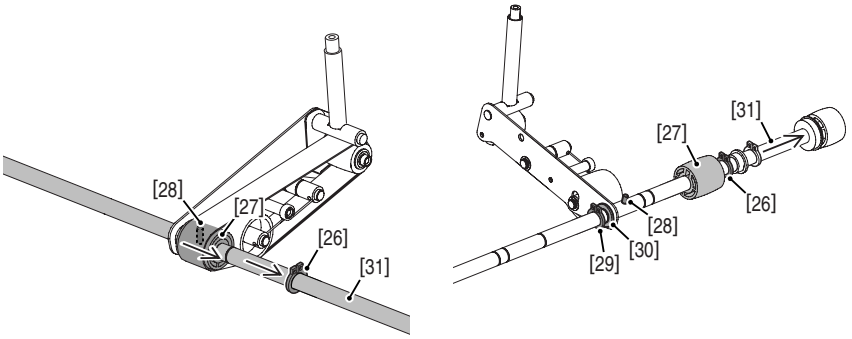
8) Remove the belt [11].
9) Remove the snap ring [12], pulley [13] and pin [14].
10) Remove the 2 screws [15], handle [16] and bar [17].



11) Remove the bracket [18], metal bushing [19] and snap ring [20].
12) Move the snap ring [21] and metal bushing [22] to the bearing side.
13) Remove the 2 screws [23] and move the bracket [24] to the bearing side.
14) Remove the belt [25].

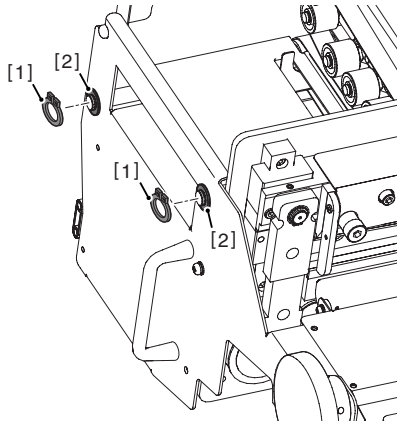


15) Move the snap ring [26] and pulley [27] to the bearing side and remove the pin [28].
16) Remove the snap ring [29] and metal bushing [30].
17) Pull out the shaft [31].

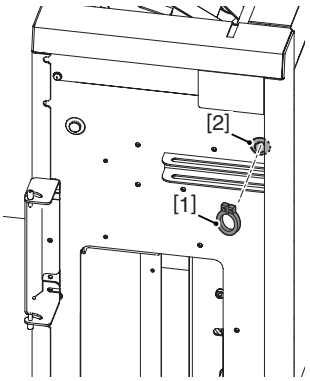


18) Remove the other metal bushings.

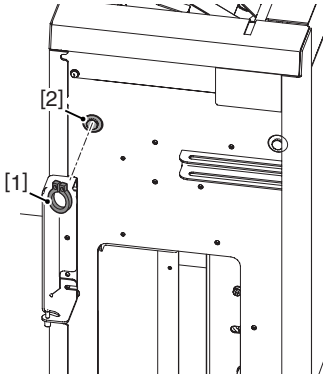
How to remove the [B] and [C] metal bushings:
1) Remove the snap ring [1].
2) Remove the metal bushings [2].



How to remove the [D] metal bushing:
1) Remove the snap ring [1] and metal bushing [2].

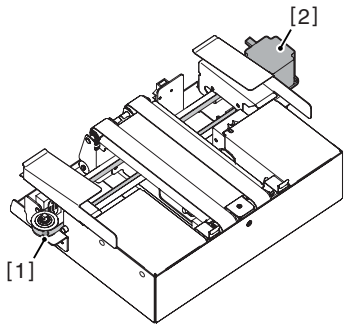


How to remove the [E] metal bushing:
1) Remove the snap ring [1] and metal bushing [2].



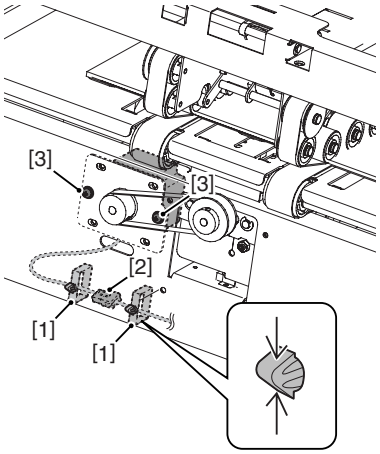
3.2.17 Top-bottom Guide Motor M03

1) Remove the infeed unit. (See section 3.2.1.)
2) Loosen the screw [1] to release the belt tension.
3) Remove the motor [2].



3.2.18 Stopper Move Motor M06

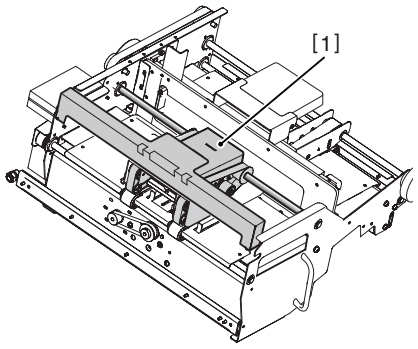
1) Pull out the trim unit.
2) Remove the 2 snap ties [1].
   - Pinch the end of the snap tie and push it in to remove.
3) Disconnect the connector [2].
4) Remove the 2 screws [3] to remove the motor bracket.



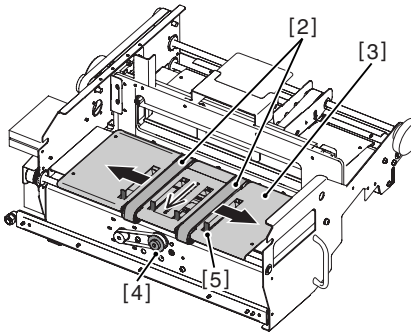
5) Remove the motor from the bracket.

3.2.19 Stopper Open/Close Motor M07

1) Pull out the trim unit. (See section 3.2.13.)
2) Remove the trim section transport belt unit [1]. (See steps 1 to 4 of "How to remove type [C] transport belts" in section 3.3.3.)

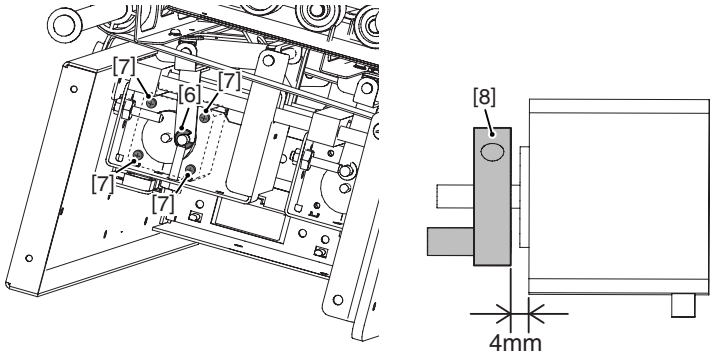


3) Move the transport belts [2] sideways.
   - The transport belts are elastic. Stretch the belts and move them off the transport table [3].
4) Turn the pulley [4] to move the stopper [5] in the arrow direction to the end.
5) Remove the transport table [3].



6) Disconnect the motor connector.

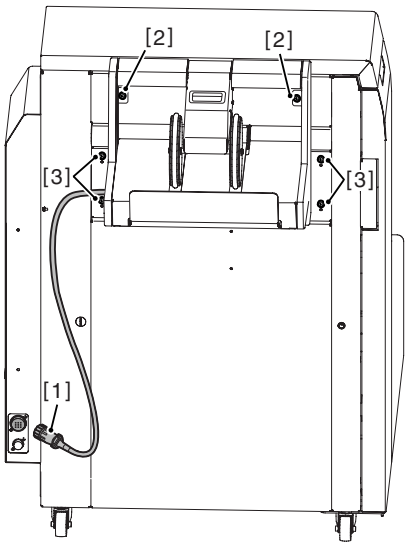
7) Remove the snap ring [6].
8) Remove the 4 screws [7] to remove the motor.
9) Remove the cam [8] from the motor.



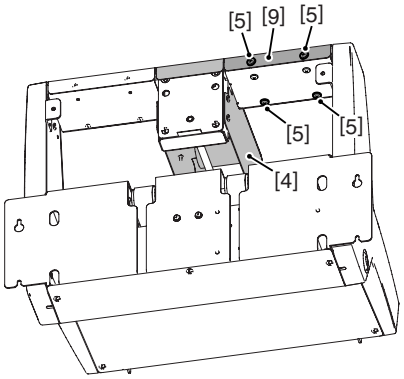
Note
See the figure above for the installation position of the cam [8].

3.2.20 Conveyor Delivery Roller Positioning Motor M08

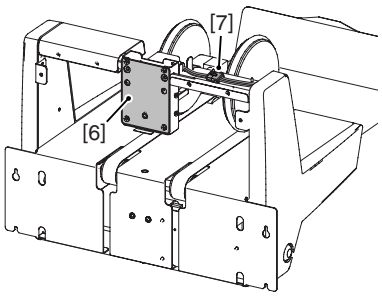
1) Disconnect the conveyor connector [1].
2) Remove the 2 screws [2], loosen the 4 screws [3] and remove the conveyor lifting up from the trimmer.



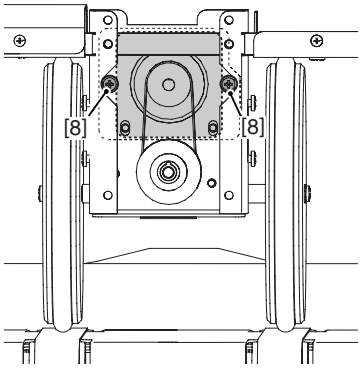
3) Remove the top cover [4].
4) Remove the 4 screws [5] and the cable cover [9].



5) Remove the plate [6].
6) Disconnect the connector [7].



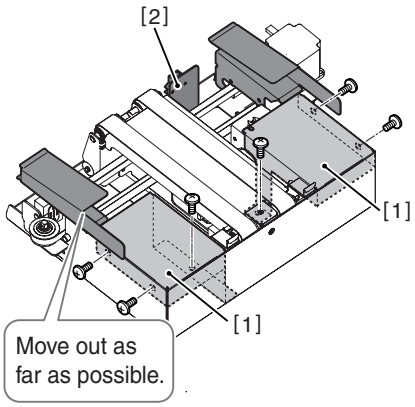
7) Remove the 2 screws [8] to remove the motor bracket.
8) Remove the motor from the bracket.



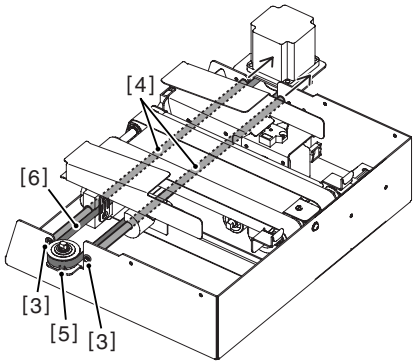
3.3 Document Feeding System

3.3.1 Infeed Section Transport Belts

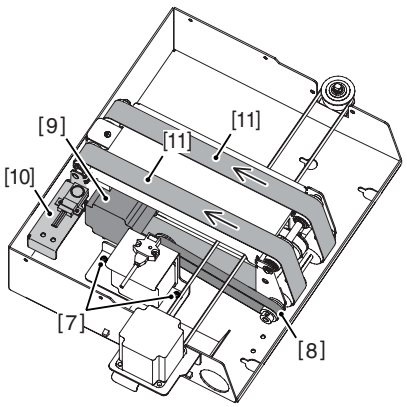
1) Remove the infeed unit. (See section 3.2.1.)
2) Move the top-bottom guides out as far as possible.
3) Remove the 2 lower guide plates [1].
4) Remove the bracket [2] for the infeed section exit booklet sensor PI02.



5) Remove the snap rings [3] from the guide shafts, and pull out the guide shafts [4] from the rear.
6) Loosen the screw [5], and remove the timing belt [6] from the pulley.



7) Loosen the 2 screws [7] on the motor bracket, and remove the transport belt drive timing belt [8].
8) Disconnect the wiring connector for the transport hook motor [9].
   - Disconnect the connector so it will not interfere with the transport belts [11] when they are removed.
9) Remove the bracket [10] for the transport hook home position sensor PI04.
10) Remove the transport belts [11].
   - Remove each transport belt through the timing belt which was removed in step 6.

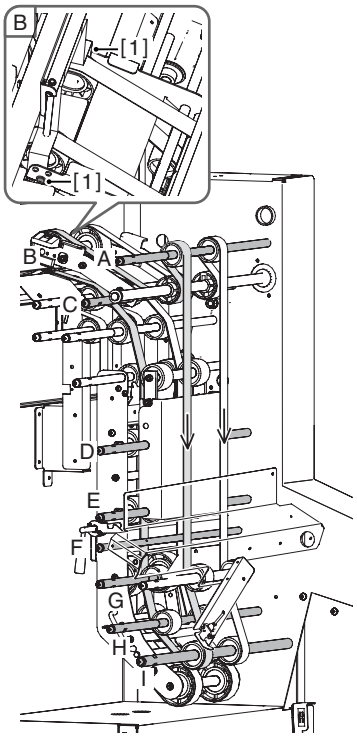


Note
- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the surface of the belt matches the arrow shown in the figure above.

3.3.2 Booklet Lifter Transport Belts

Upper Belt

1) Remove the booklet lifter cover. (See section 3.1.4.)
2) Move the belt from the pulleys, and put it to the operator side.
3) Remove the screws from shafts A, C, D, E, F, G, H, and I on the operator side. Move the pulley shafts to the rear.
4) Remove the 2 screws [1] in section B. Remove the shaft and handle, and remove the belt from section B.
5) Remove the upper belt.

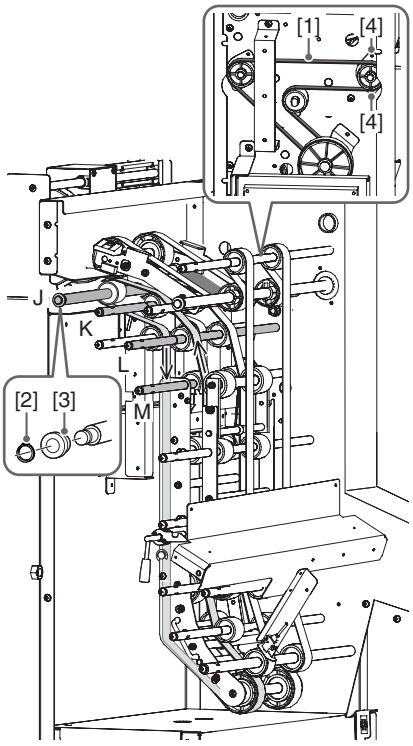


Note

- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the inside of the belt matches the arrow shown in the figure above.

Lower Belt

1) Remove the left delivery section cover. (See section 3.1.5.)
2) Remove the rear cover. (See section 3.1.1.)
3) Remove the drive belt [1] at the rear.
4) Remove the belt from the pulleys, and move it to the operator side.
5) Remove the snap ring [2] and metal bushing [3] from shaft J, on the operator side.
6) Remove the 2 screws [4] and pull out the shaft J to the rear.
7) Remove the screws from shafts K, L, and M on the operator side. Move the pulley shafts to the rear.
8) Remove the lower belt.

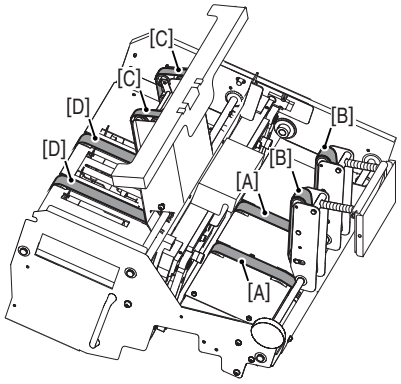


Note

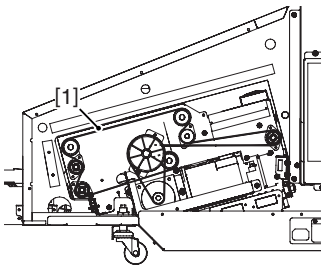
- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the inside of the belt matches the arrow shown in the figure above.

3.3.3 Trim Section Transport Belts

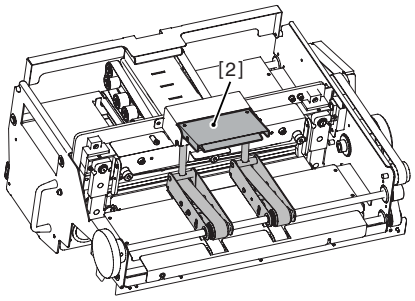
There are 8 transport belts in the trim section.



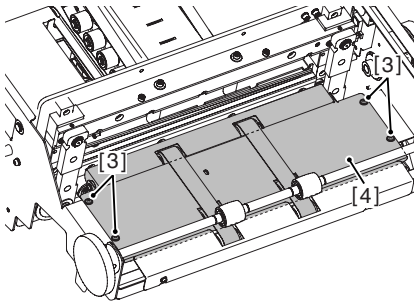
How to remove type [A] transport belts:
1) Remove the trim section rear cover. (See section 3.1.1.)
2) Remove the trim section rear drive belt [1].



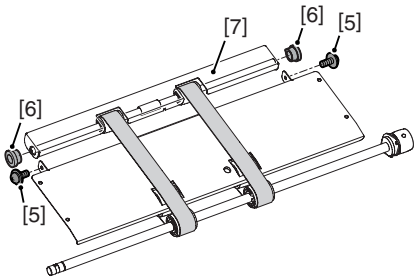
3) Pull out the trim section unit.
4) Open the transport belt mechanism [2].



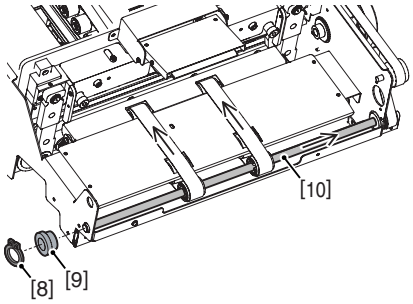
5) Remove the 4 screws [3] and swing the infeed lower guide [4] upward.



6) Remove the 2 screws [5], 2 plastic bushings [6] and guide plate [7].

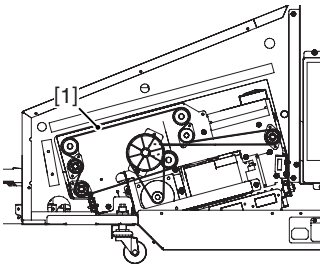


7) Move each belt to the front.
8) Remove the snap ring [8] and metal bushing [9].
9) Move the shaft [10] to the drive side and remove each belt from the front.

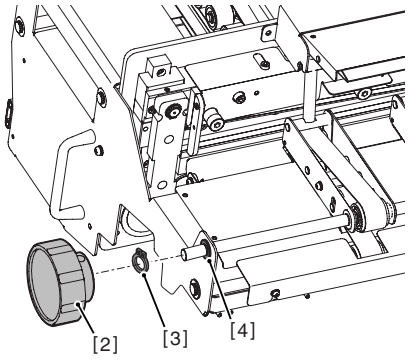


Note
- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the inside of the belt matches the arrow shown in the figure above.

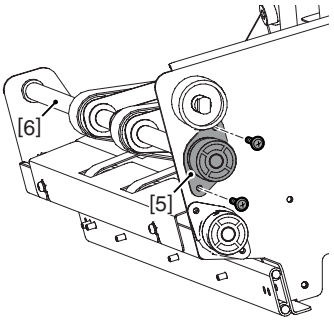
How to remove type [B] transport belts:
1) Remove the trim section rear cover. (See section 3.1.1.)
2) Remove the trim section rear drive belt [1].



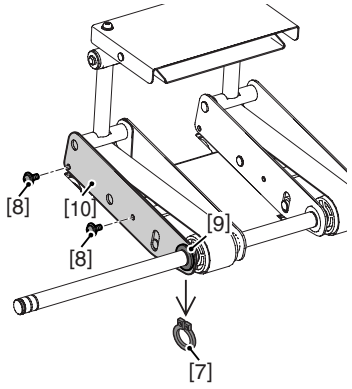
3) Remove the handle [2], snap ring [3], and metal bushing [4].



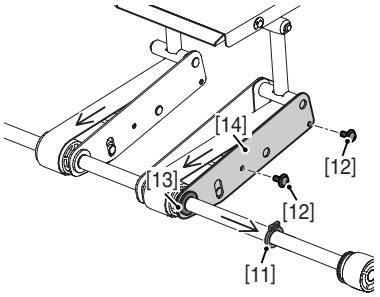
4) Return the trim unit into the trimmer and remove the bearing bracket [5] on the drive side.
5) Pull out the trim unit and remove the drive shaft assembly [6] to the front.



6) Remove the snap ring [7], 2 screws [8], metal bushing [9] and bracket [10].



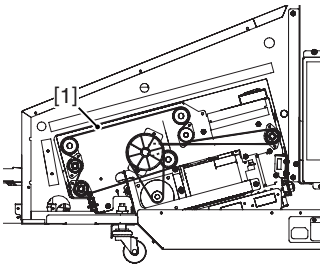
7) Remove the 2 screws [12] and move the snap ring [11], metal bushing [13] and bracket [14] to the bearing side.



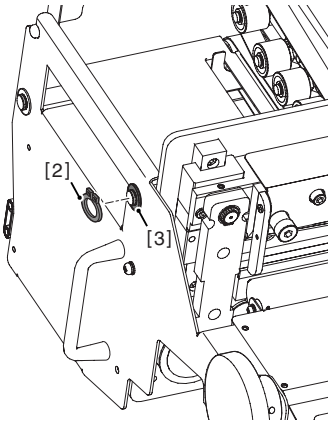
8) Remove the transport belt.

Note
- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the inside of the belt matches the arrow shown in the figure above.

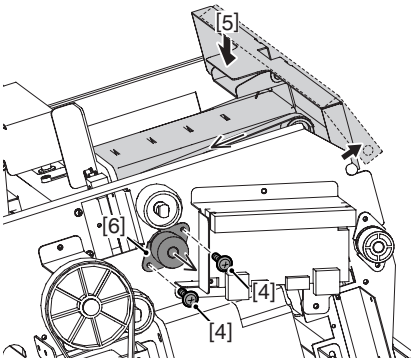
How to remove type [C] transport belts:
1) Remove the trim section rear cover. (See section 3.1.1.)
2) Remove the trim section rear drive belt [1].



3) Remove the snap ring [2] and metal bushing [3].



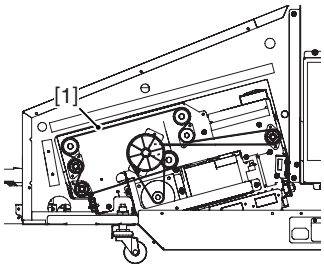
4) Remove the 2 screws [4] and press the handle [5], move the transport belt unit toward the drive side of the machine, and remove the bearing bracket [6].



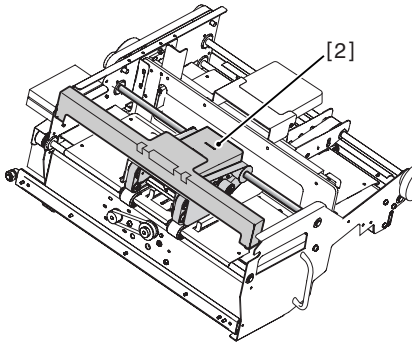
5) Remove the transport belt unit and remove the belts.

Note
- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the inside of the belt matches the arrow shown in the figure above.

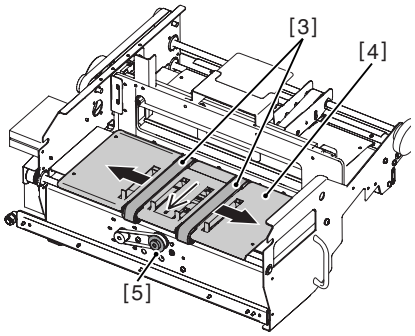
How to remove type [D] transport belts:
1) Remove the trim section rear cover. (See section 3.1.1.)
2) Remove the trim section rear drive belt [1].



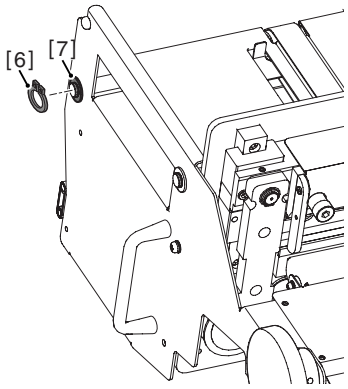
3) Remove the trim section transport belt unit [2]. (See steps 1 to 4 of "How to remove type [C] transport belts" in section 3.3.3.)



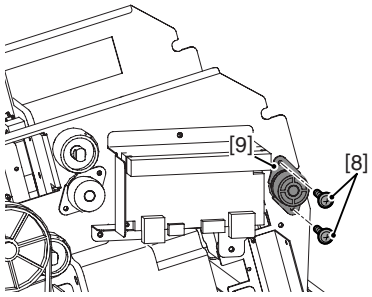
4) Move the transport belts [3] sideways.
   - The transport belts are elastic. Stretch the belts and move them off the transport table [4].
5) Turn the pulley [5] to move the stopper in the arrow direction to the end.
6) Remove the transport table [4].



7) Remove the snap ring [6] and metal bushing [7].



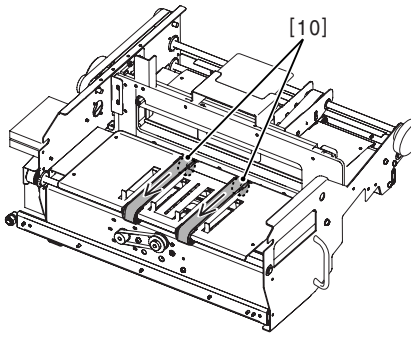
8) Remove the 2 screws [8], move the shaft toward the drive side, and remove the bearing bracket [9].



9) Pull out the shaft from the frame and remove the belts.

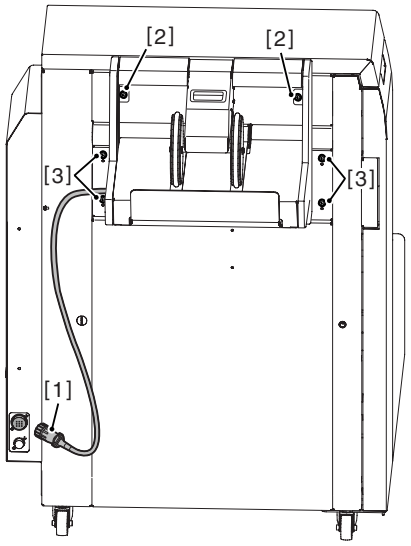
Note

- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the inside of the belt matches the arrow shown in the figure above.
- When installing the transport belt, put the belt on the entrance side pulley [10] first for easy operation.

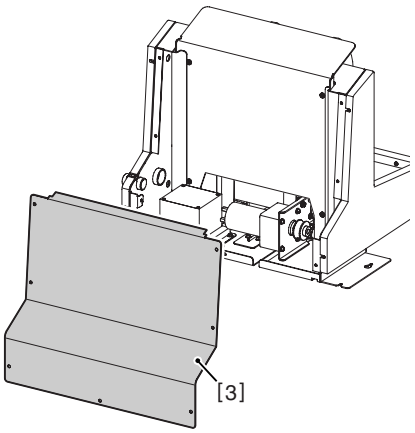


3.3.4 Conveyor Belt

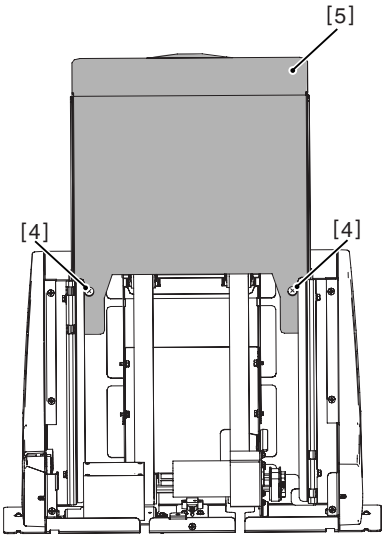
1) Remove the wiring connector to the conveyor [1].
2) Remove the 2 screws [2], loosen the 4 screws [3] and remove the conveyor from the trimmer.



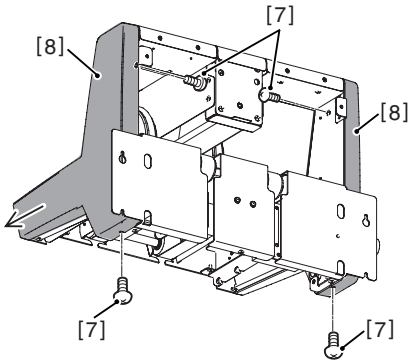
3) Stand up the conveyor as shown below, and remove the lower cover [3].



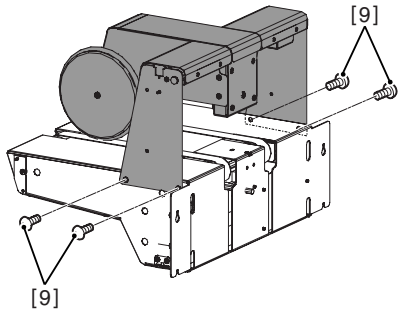
4) Remove the 2 screws [4] and pull out the delivery tray [5].



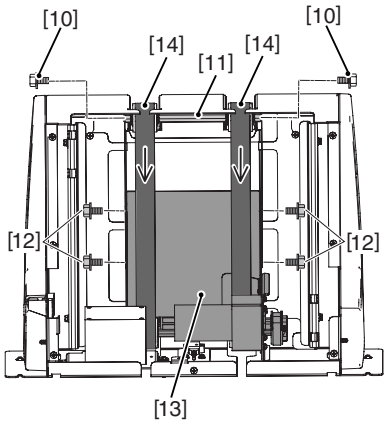
5) Remove the 4 screws [7] and remove the side cover [8].
- Pull the cover in the arrow direction to remove it.



6) Remove the 4 screws [9] and remove the transport roller unit.



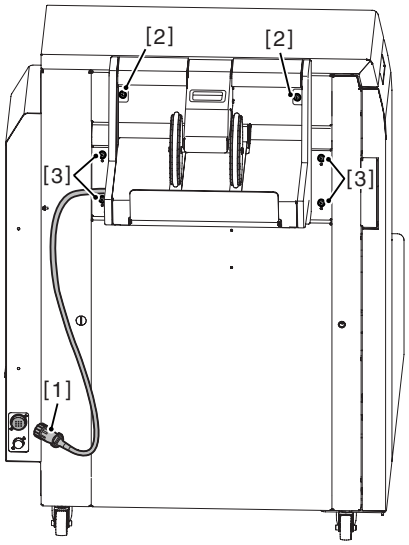
7) Remove the 2 screws [10] and remove the idler shaft [11].
8) Remove the 4 screws [12] and remove the drive roller bracket [13].
9) Remove the conveyor belt [14].



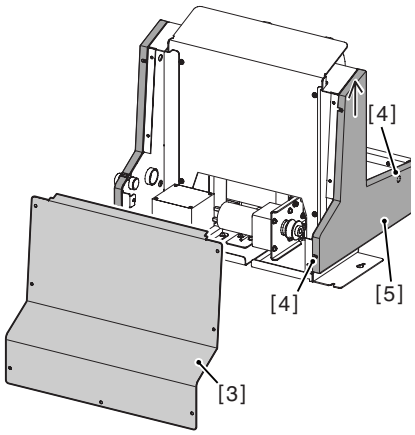
Note
- The transport belt has a direction to install it.
  Install the transport belts so that the arrow printed on the inside of the belt matches the arrow shown in the figure above.

3.3.5 Conveyor Belt Motor M09

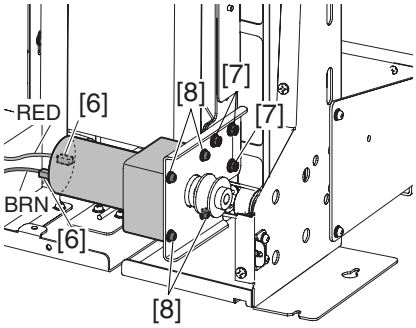
1) Remove the wiring connector to the conveyor [1].
2) Remove the 2 screws [2], loosen the 4 screws [3] and remove the conveyor from the trimmer.



3) Stand up the conveyor as shown below, and remove the lower cover [3].
4) Remove the 2 screws [4] to remove the guide cover [5].
   - Pull the cover in the arrow direction to remove it.



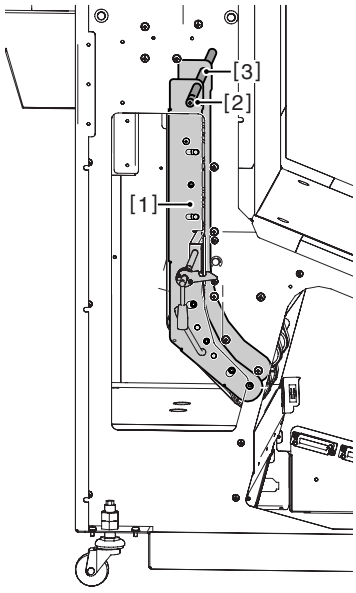
5) Remove the motor connector [6] and loosen the 3 screws [7].
6) Remove the 4 screws [8] and remove the motor.



Note
Connect the wirings referring the wire color shown in the figure above.

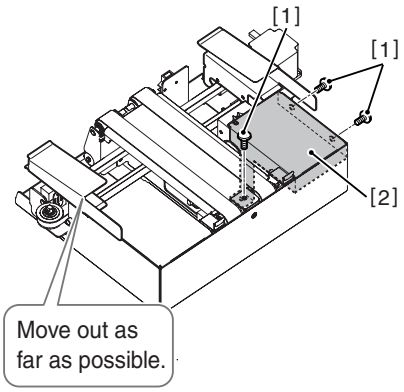
3.3.6 Booklet Lifter Unit

1) Remove the transport belts from the bottom, and move them to the rear.
2) Support the booklet lifter unit [1], and remove the screw [2] on the operator side of shaft M [3].
3) Tilt the booklet lifter unit and take it out.

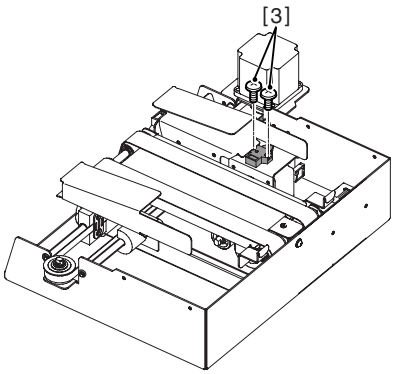


3.3.7 Infeed Section Entrance Booklet Sensor PI01

1) Disconnect the finisher from the trimmer.
2) Move the top-bottom guides out as far as possible.
3) Remove the 3 screws [1] and remove the lower guide plate [2].

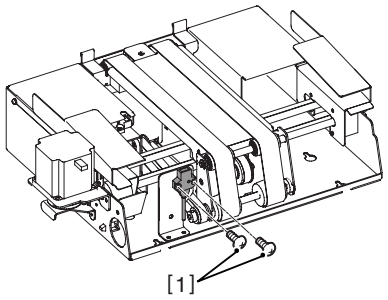


4) Remove the 2 screws [3] and remove the sensor.
5) Disconnect the connector.



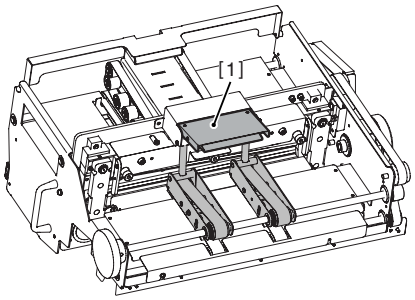
3.3.8 Infeed Section Exit Booklet Sensor PI02

1) Remove the infeed unit. (See section 3.2.1.)
2) Remove the 2 screws [1] and remove the sensor.
3) Disconnect the connector.

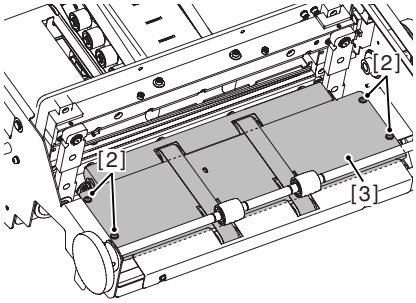


3.3.9 Trim Section Entrance Booklet Sensor PI07

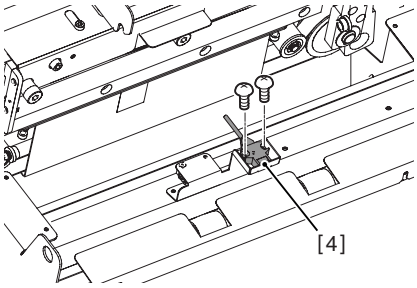
1) Pull out the trim unit.
2) Open the transport belt mechanism [1].



3) Remove the 4 screws [2] and swing the lower infeed guide [3] upward.

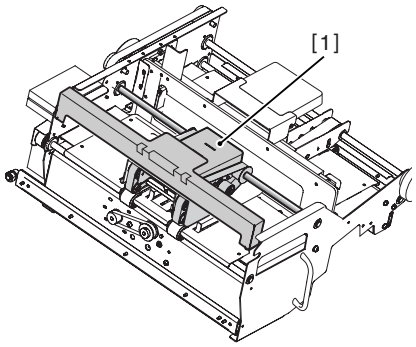


4) Remove the wiring connector to the sensor and the sensor [4].

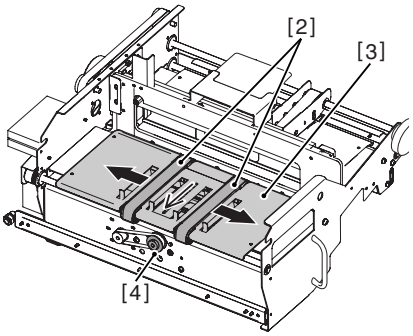


3.3.10 Stopper Booklet Sensor PI08

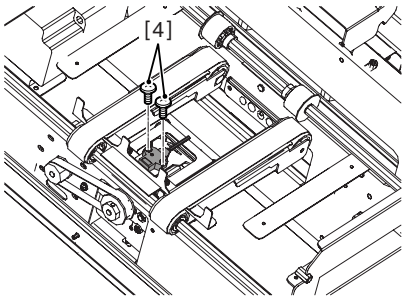
1) Pull out the trim unit. (See section 3.2.13.)
2) Remove the trim section transport belt unit [1]. (See steps 1 to 4 of "How to remove type [C] transport belts" in section 3.3.3.)



3) Move the transport belts [2] sideways.
   - The transport belts are elastic. Stretch the belts and move them off the transport table [3].
4) Remove the transport table [3].



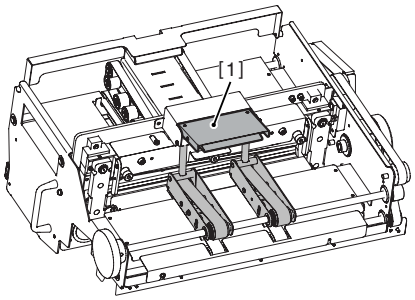
5) Remove the 2 screws [4] and remove the sensor.



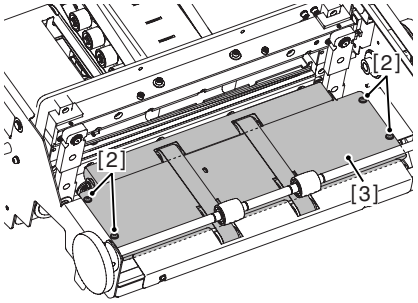
6) Disconnect the connector.

3.3.11 Trim Full Sensor PI09

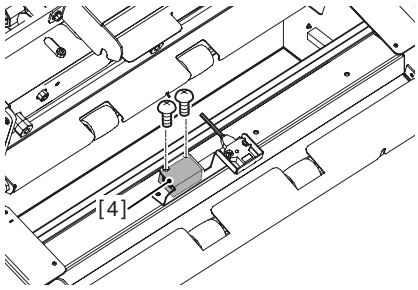
1) Pull out the trim unit.
2) Open the transport belt mechanism [1].



3) Remove the 4 screws [2] and swing the lower infeed guide [3] upward.

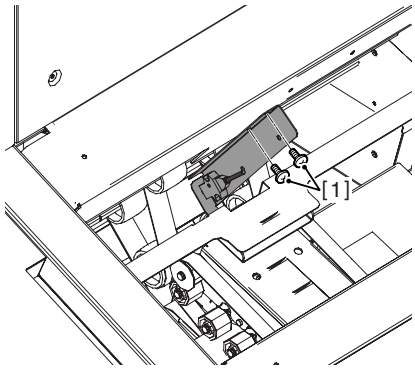


4) Remove the wiring connector to the sensor and the sensor [4].



3.3.12 Trim Section Exit Booklet Sensor PI10

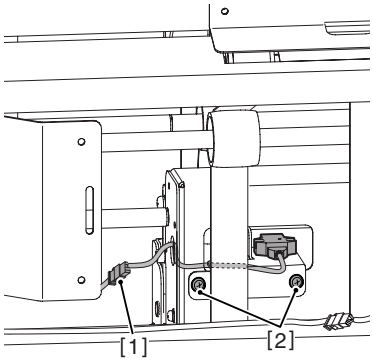
1) Remove the trim section top cover. (See section 3.1.6.)
2) Remove the 2 screws [1] and remove the sensor bracket.



3) Disconnect the connector.
4) Remove the sensor from the bracket.

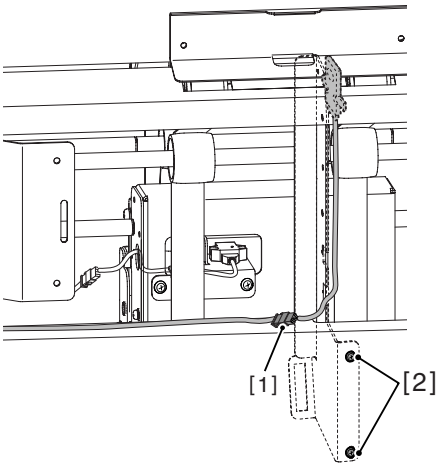
3.3.13 Booklet Lifter Booklet Sensor PI11

1) Remove the left delivery section cover. (See section 3.1.5.)
2) Disconnect the wiring connector to the sensor [1].
3) Remove the screws [2] and remove the sensor bracket.
4) Remove the sensor from the bracket.



3.3.14 Delivery Section Booklet Sensor PI12

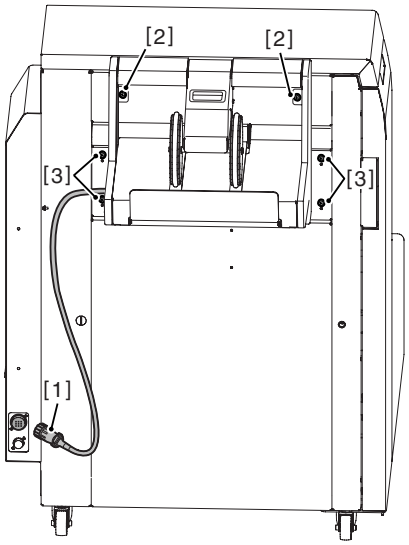
1) Remove the left delivery section cover. (See section 3.1.5.)
2) Disconnect the wiring connector to the sensor [1].
3) Remove the screws [2] and remove the sensor bracket.



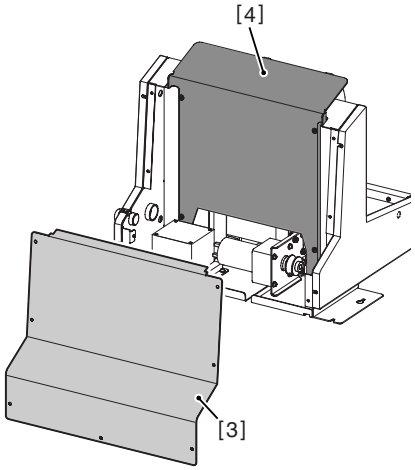
4) Remove the sensor from the bracket.

3.3.15 Conveyor Section Booklet Sensor PI13

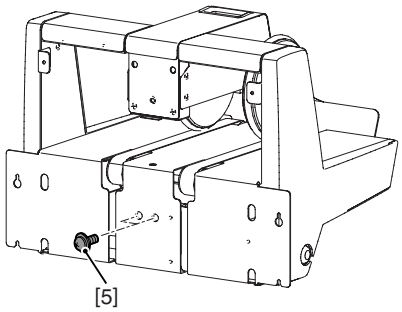
1) Remove the wiring connector to the conveyor [1].
2) Remove the 2 screws [2], loosen the 4 screws [3] and remove the conveyor from the trimmer.



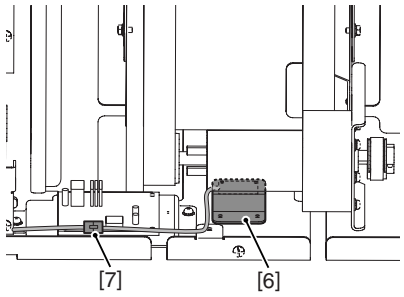
3) Stand up the conveyor as shown below, and remove the lower cover [3].
4) Pull out the delivery tray [4].



5) Remove the 2 screws [5] to remove the sensor bracket [6].

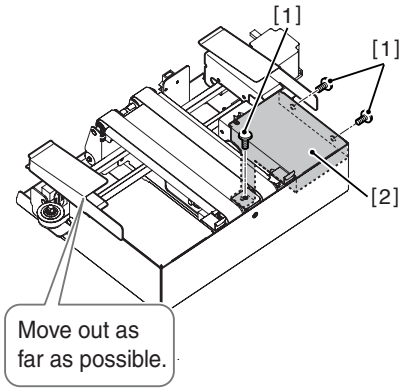


6) Disconnect the connector [7].
7) Remove the sensor from the bracket.

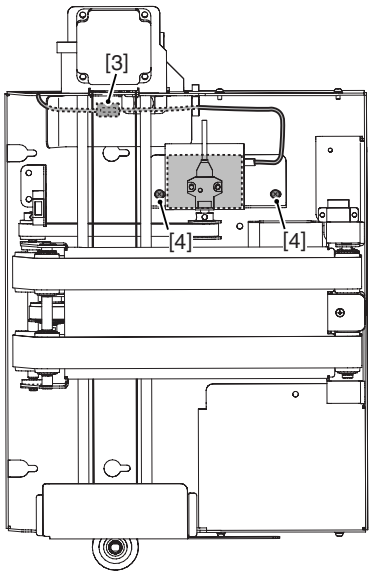


3.3.16 Infeed Belt Motor M01

1) Remove the infeed unit. (See section 3.2.1.)
2) Move the top-bottom guides out as far as possible.
3) Remove the 3 screws [1] and the lower guide plate [2].



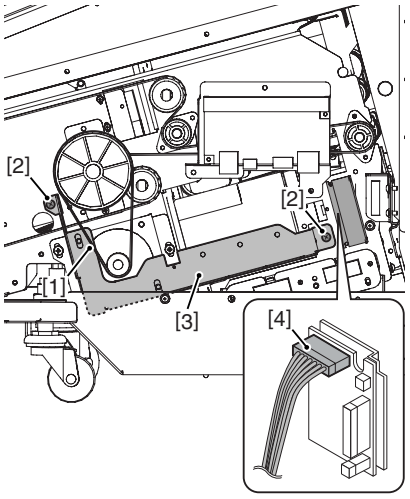
4) Disconnect the motor connector [3].
5) Remove the 2 screws [4] and the bracket.



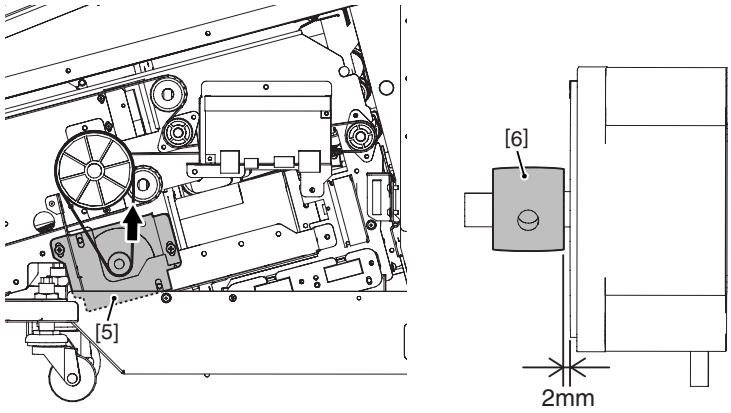
6) Remove the motor from the bracket.

3.3.17 Trim Section Transport Motor M04

1) Remove the trim section rear cover. (See section 3.1.1.)
2) Remove the trim section rear drive belt [1] .
3) Remove the 2 screws [2] and the cable bracket [3].
4) Disconnect the connector [4] for the motor from the driver A04.



5) Remove the motor bracket [5].
6) Remove the pulley [6].

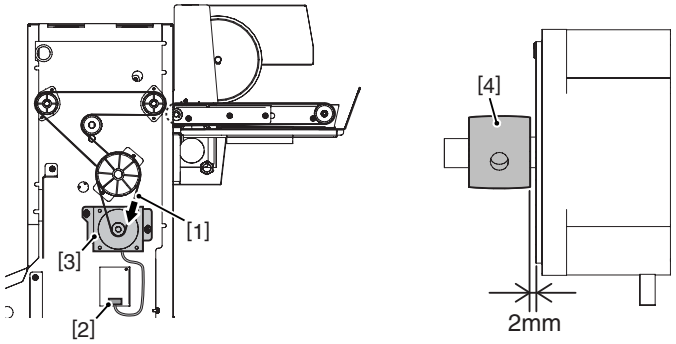


7) Remove the motor from the bracket.

Note
- The drive belt has a direction to install it.
  Install the drive belt so that the arrow printed on the belt matches the arrow shown in the figure above.
- See the figure above for the installation position of the pulley [6].

3.3.18 Main Drive Motor M10

1) Remove the booklet lifter rear cover. (See section 3.1.2.)
2) Remove the rear drive belt [1] .
3) Disconnect the connector [2] for the motor from the driver A10.
4) Remove the motor bracket [3].
5) Remove the motor from the bracket.
6) Remove the pulley [4].

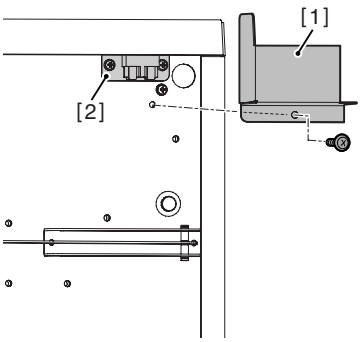


Note
- The drive belt has a direction to install it.
  Install the drive belt so that the arrow printed on the belt matches the arrow shown in the figure above.
- See the figure above for the installation position of the pulley [4].

3.4 Electrical System

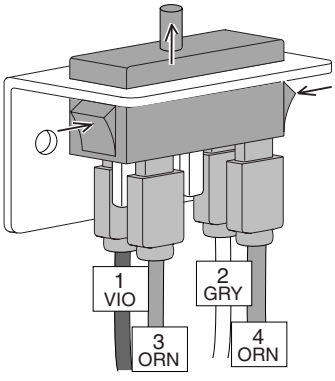
3.4.1 Delivery Section Cover Switch SW03

1) Open the front cover and remove the switch cover [1].
2) Remove the switch bracket [2].



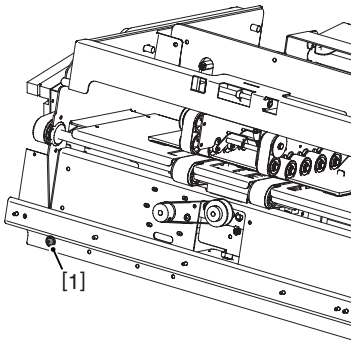
3) Disconnect the cables from the switch.
4) Remove the switch from the bracket.
   - Pinch both sides of the switch and pull it upward.

Caution
When reconnecting the wiring, match the numbers on the terminals with the numbers on the cables.

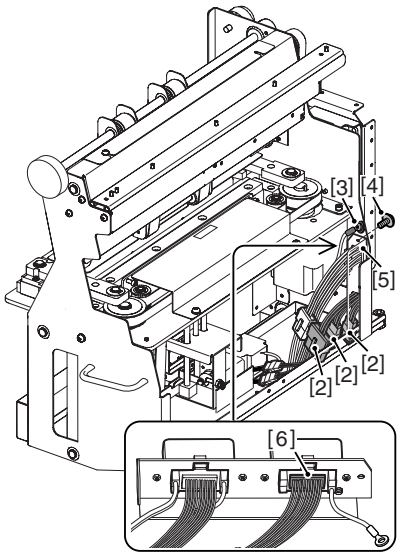


3.4.2 Trim Unit Wiring Connectors (Trim Unit Side)

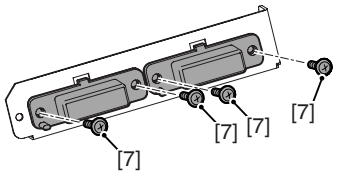
1) Remove the trim unit. (See section 3.2.13.)
2) Remove the screw [1].



3) Stand the trim unit up as shown below.
   - Support the trim unit so it will not move by putting magazines etc. under spaces below the frame.
4) Disconnect the 3 wiring connectors [2].
5) Remove the screw [3] for the ground wire.
6) Remove the screw [4] and remove the connector bracket [5].
7) Pull out the connector [6].

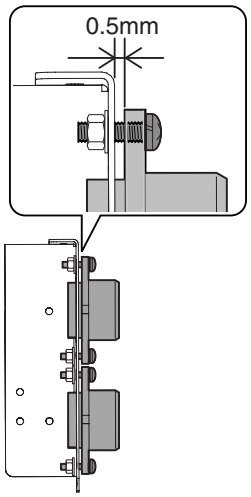


8) Remove the 4 screws [7] and remove the connectors.



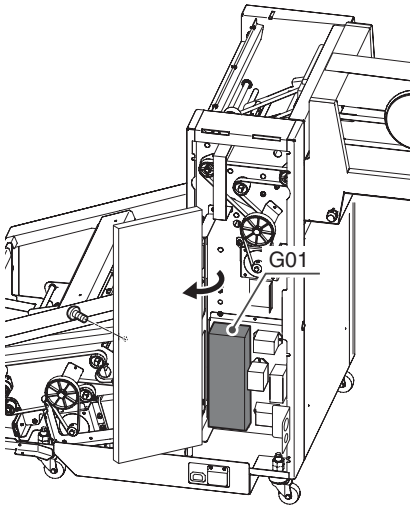
Note

- Install the connector with a space between the connector and connector bracket.
  When installing the connector on the connector bracket, provide a space of 0.5 mm or 0.02" (5 sheets of 84 g/m^2) between the connector and connector bracket, and fasten the screws.

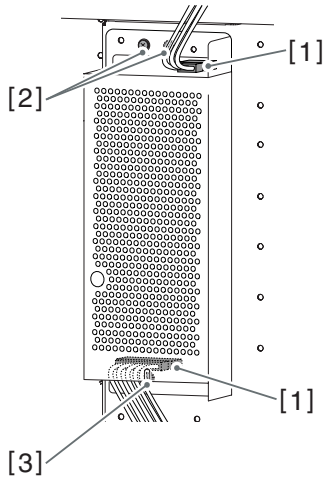


3.4.3 Power Supply G01

1) Remove the booklet lifter rear cover. (See section 3.1.2.)
2) Open the chassis.



3) Disconnect the 2 connectors [1] from the power supply.
4) Remove the 2 screws [2] and loosen the screw [3].
5) Remove the power supply.



Chapter 4 Maintenance

Contents

4.1 User Maintenance

There are not any parts which can be maintained by the user.

4.2 Maintenance and Inspection

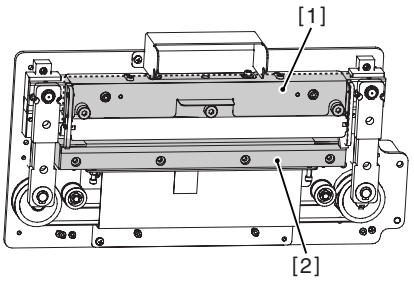
4.2.1 Periodic Parts Replacement

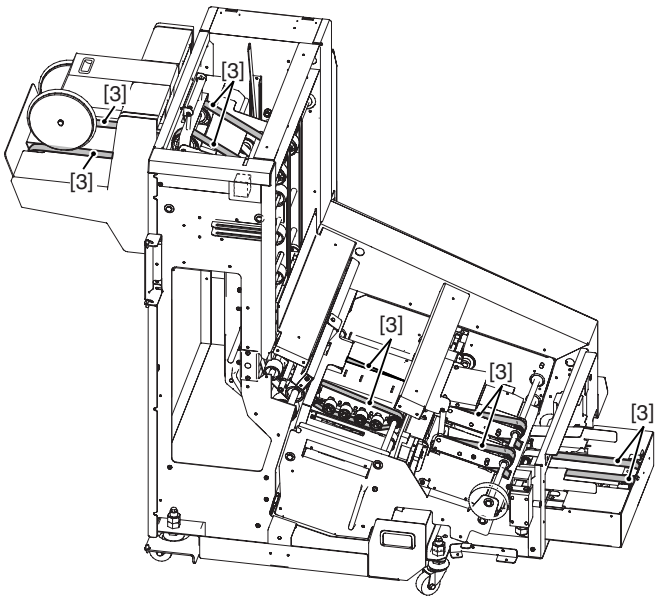
There are not any parts to be replaced periodically.

4.2.2 Consumables

The following parts may need to be replaced once or more during the warranty period, because they have failed or been damaged. Replace the following parts when they are worn out:

No.	Part Name	Quantity	Machine Usage
1	Upper knife	1	500,000 booklets
2	Lower knife	1	500,000 booklets
3	Transport belts	16	1,500,000 booklets

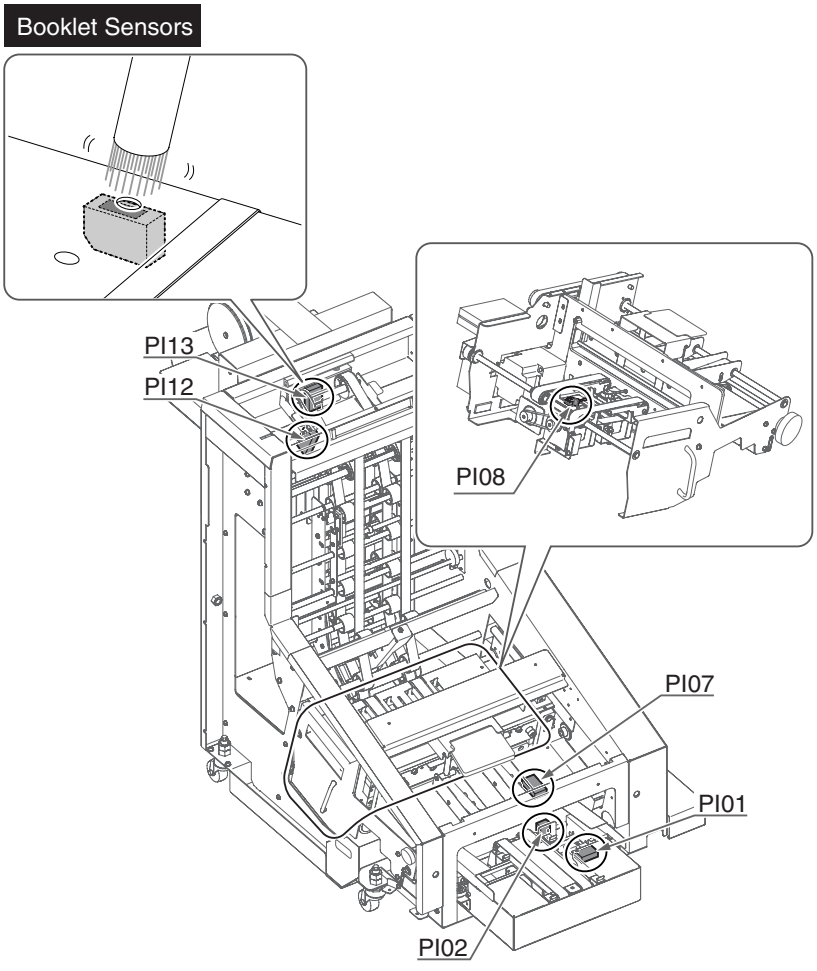




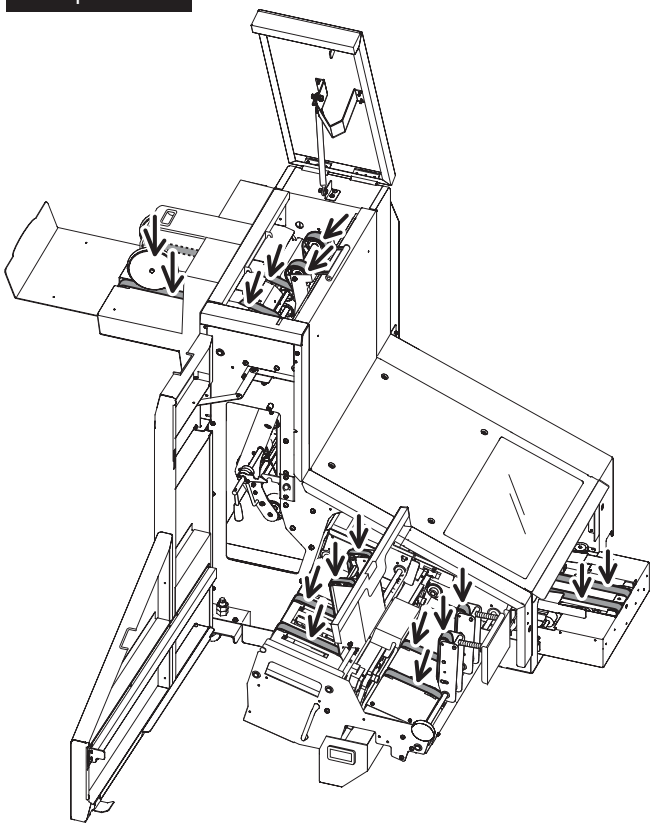
4.2.3 Periodic Servicing

Regularly clean the following parts on the sheet path:
For the belts, wipe only the top surface using alcohol cleaner to remove any dirt.
For the sensors, remove any dust or paper chips using a blower brush.

No.	Item	Cleaning Frequency
1	Transport belts	After every 200,000 booklets
2	Booklet sensors	After every 200,000 booklets



Transport Belts



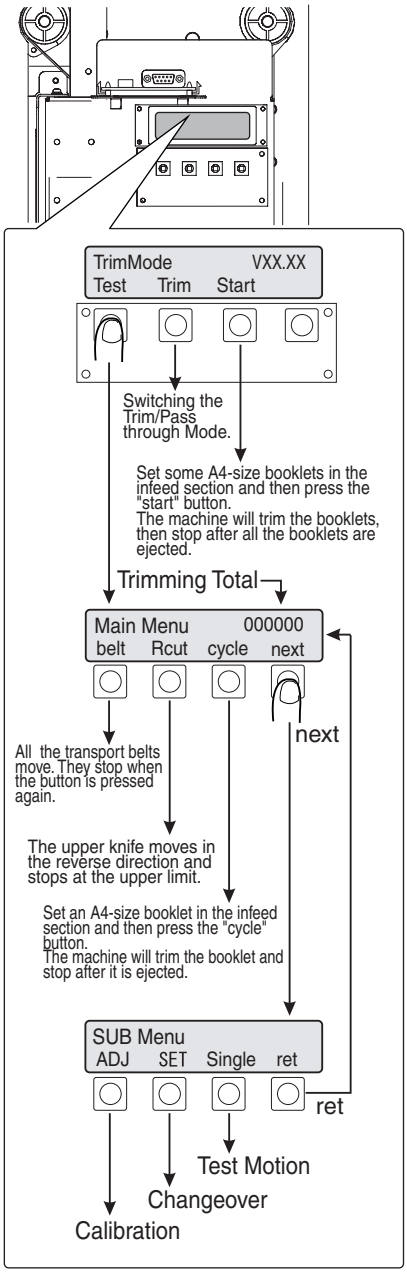
4.3 Adjustments

4.3.1 Service Mode

When the machine is placed the service mode, you can perform the following:
- Home position calibration of the top-bottom guides, stopper and conveyor transport rollers.
- Setting position check
- Motion test of each part

4.3.1.1 Entering the Service Mode

1. Remove the booklet lifter rear cover. (See section 3.1.2.)
2. Press the "Test" button on the service maintenance panel.
   - The trimmer sends the service mode switching command to the finisher.
   - If the finisher permits, the Main Menu appears and the trimmer is switched to the service mode.
     If the trimmer cannot be switched to the service mode, the screen does not change.
3. Press the "next" button.
   - The Sub Menu is appears.
4. Press the button for the mode to be selected.
   - For home position calibration, press the "ADJ" button.
   - For the changeover test, press the "SET" button.
   - For the motion test, press the "Single" button.


TrimMode VXX.XX
Test Trim Start
Switching the Trim/Pass through Mode.
Set some A4-size booklets in the infeed section and then press the "start" button.
The machine will trim the booklets, then stop after all the booklets are ejected.
Trimming Total
Main Menu 000000
belt Rcut cycle next
next
All the transport belts move. They stop when the button is pressed again.
The upper knife moves in the reverse direction and stops at the upper limit.
Set an A4-size booklet in the infeed section and then press the "cycle" button.
The machine will trim the booklet and stop after it is ejected.
SUB Menu
ADJ SET Single ret
ret
Test Motion
Changeover
Calibration

4.3.1.2 Finishing the Service Mode

Turn off the power to the finisher, and turn it on again.

4.3.1.3 Home Position Calibration

The home position values for the stepper motors for the top-bottom guides, stopper, and conveyor transport rollers are stored in the trimmer controller PCB. When the controller PCB is replaced, these values should be reset. If the trimmer controller PCB or any of the home position sensors (PI03, PI05, PI14) is replaced, calibrate the home positions. And if any of the following problems occur also, calibrate the home positions.

1. If the booklet is trimmed crookedly:
   Reduce the spacing between the top-bottom guides.
   If the booklet bends when it is jogged in the infeed section:
   Increase the spacing between the top-bottom guides.

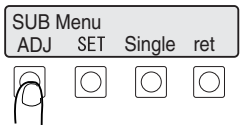
2. If the trimmed booklet is smaller than the desired size:
   Shift the stopper to the left (in view from the operator side).
   If the trimmed booklet is larger than the desired size:
   Shift the stopper to the right (in view from the operator side).

3. If the transport rollers cannot catch and hold the ejected booklet on the conveyor. If the transport roller is too far out:
   Move the transport rollers to the right (in view from the operator side).
   If the top of the ejected booklet hits the transport rollers on the conveyor, and it cannot be ejected completely:
   Move the transport rollers to the left (in view from the operator side).

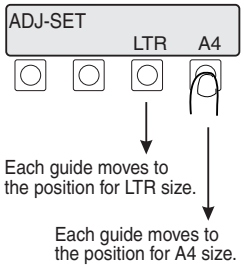
The procedures of home position calibration is as shown on the next page.

The procedures of home position calibration is as follows.

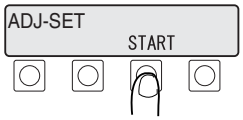
1. Turn off the power to the finisher.
2. Disconnect the signal cable and power cable.
3. Disconnect the trimmer from the finisher.
4. Connect the signal cable and power cable again.
5. Turn on the power to the finisher.
6. Go to the service mode. (See section 4.3.1.1.)
7. Press the "ADJ" button.



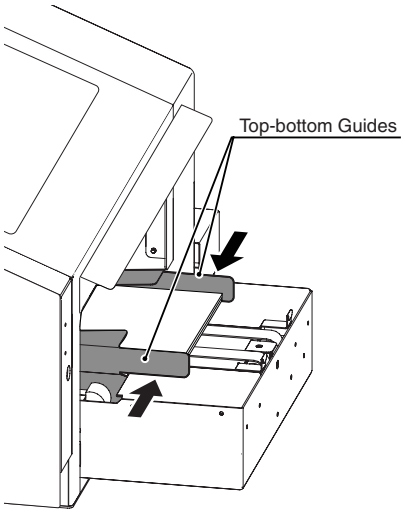
8. Press the "A4" or "LTR" button.



9. Set a booklet of A4 or LTR finishing size between the top-bottom guides.
10. Press the "START" button.

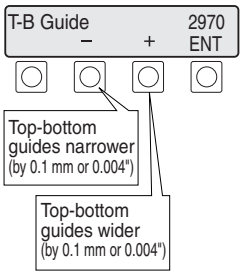


- The top-bottom guides move toward the booklet and hold the booklet, and the booklet stops.

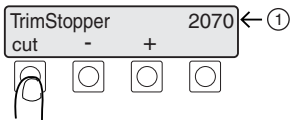


11. Adjust the distance between the top-bottom guides.
  - Adjust so that the gap between the booklet and front guide is 0 to +1.0 mm (0.04”), when the booklet is fit with the rear guide.
  - After the adjustment, press the "ENT" button.

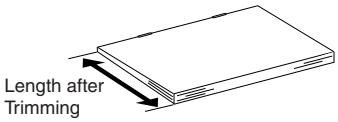
  The booklet is transported to the trim section.



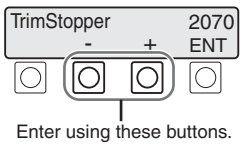
12. Memorize the value no.1 and press the "cut" button.
  - The booklet is trimmed and delivered.



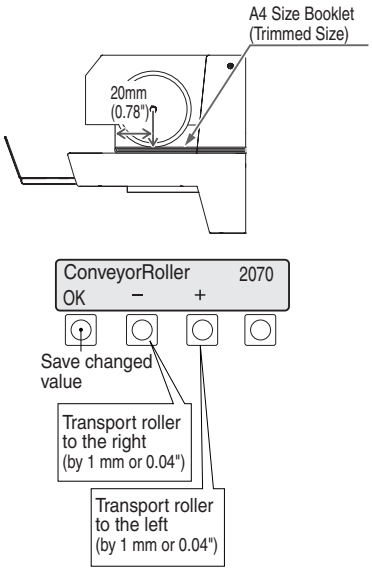
13. Measure the length of the trimmed and delivered booklet.



  - If the size shown as value no.1 on the previous page differs from the actual length of the trimmed booklet, enter the actual length.
  - After entering the value, press the "ENT" button.

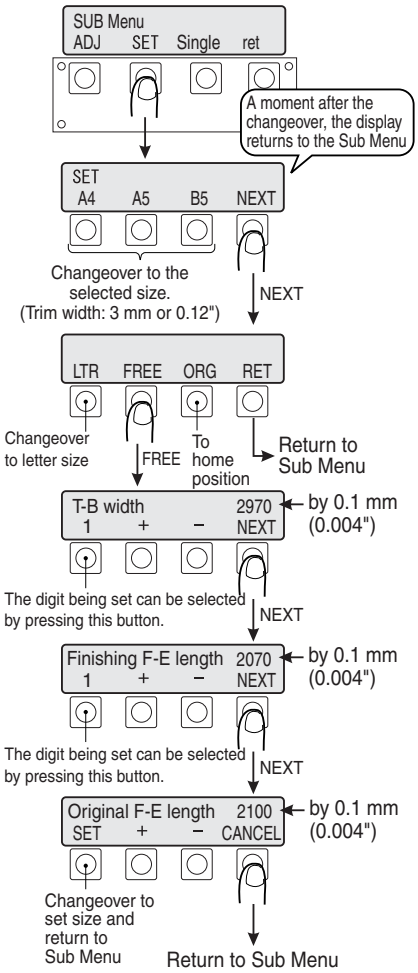


14. Adjust the position of the conveyor section transport rollers.
    - Align the booklet edge with the conveyor right edge and adjust the transport rollers so that the distance between the booklet left edge and center of the roller is 20 mm (0.78”).



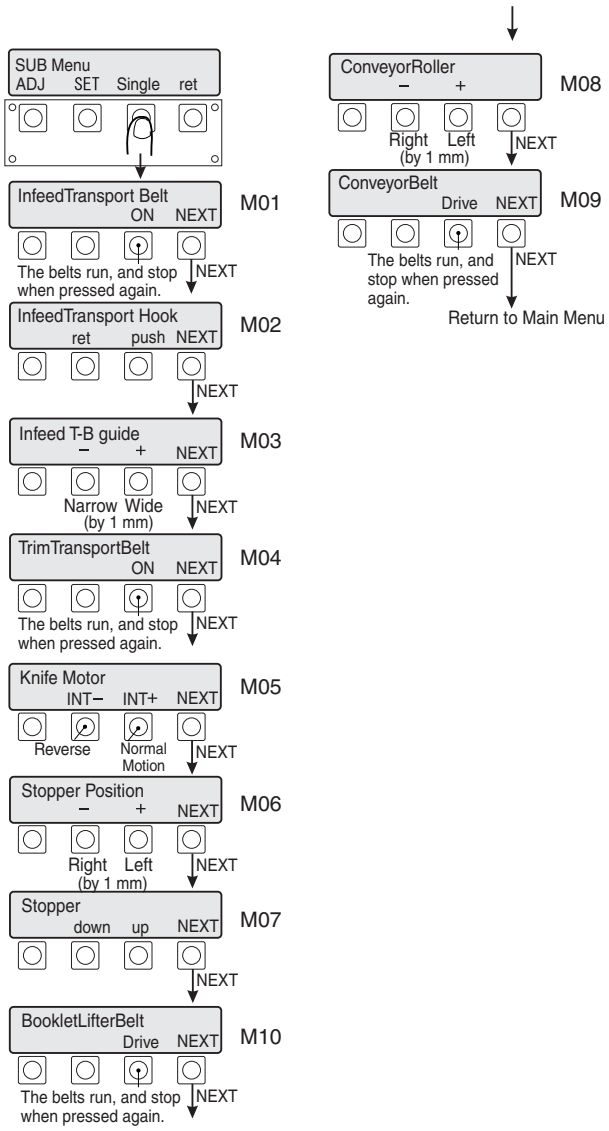
4.3.1.4 Setting Position Check

Normally, the changeover is done based on the size information from the host machine. When you want to check the setting position on the fore-edge trimmer without input from the host machine, follow the procedure listed below. The screen flow in the setting position check is as follows:



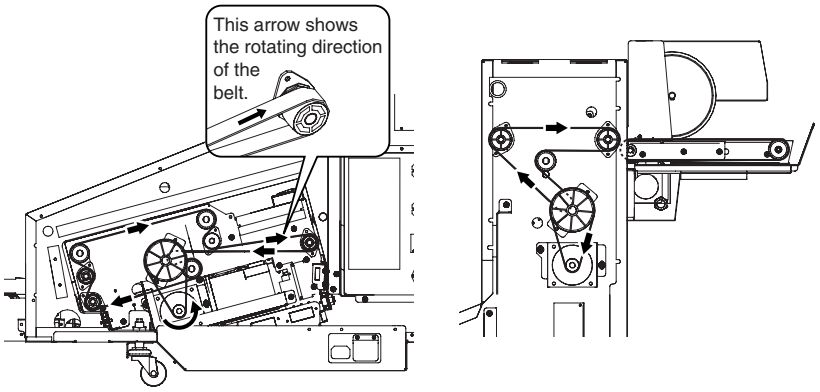
4.3.1.5 Motion Test

Use this feature when you want to run a motor individually to check its function.
The screen flow in the motion test mode is as follows:



4.3.2 Flat Belts Installing Direction

The flat belts have a direction to install them. The direction is shown on the belts by arrow. If you replace one of the flat belts on the rear of the machine, install the belt so that the rotating direction of the belt matches the arrow printed on the belts.

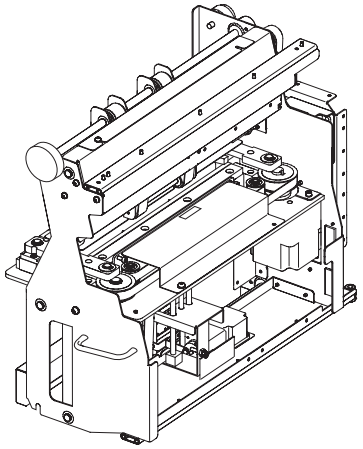


4.3.3 Lower Knife Height Adjustment

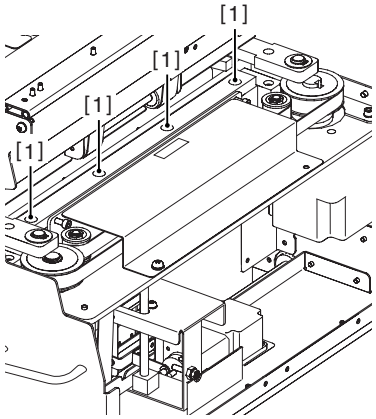
When you replace the lower knife, make the following adjustment.

Note
If the lower knife is not aligned with the bracket, the booklet may be caught and not transported smoothly.

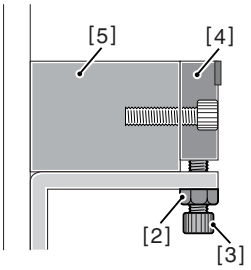
1) Remove the upper knife. (See section 3.2.14.)
2) Remove the trim unit. (See section 3.2.13.)
   - Stand up the trim unit as shown below.
   - Support the trim unit by putting the magazines etc. into any spaces below the frame.



3) Loosen the screws [1] but do not remove the lower knife completely.



4) Loosen the lock nut [2], and adjust the height of lower knife using the cap screws [3].
- Align the top face of the lower knife [4] with the bracket [5].



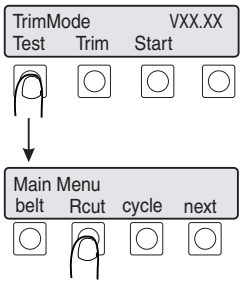
5) Lock the screws [1] on the lower knife, and fasten the lock nuts [2] on the adjusting screw.

4.3.4 Upper Knife Upper Limit Sensor PI06 Height Adjustment

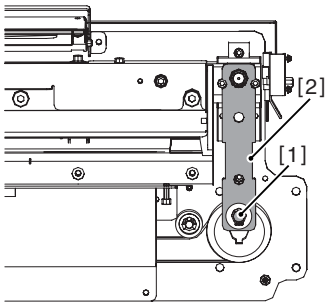
If the upper knife does not stop at the top position after moving up and down, make the following check, and if necessary, the following adjustment.

Warning
When you move the upper knife in the service mode, keep your hands away from belts or other moving parts. Otherwise, your hands or finder will be caught and injured.

Check
1) Enter the service mode and press the "Rcut" button on the Main Menu.
- The upper knife trims the booklet once and the upper knife stops at the upper limit.



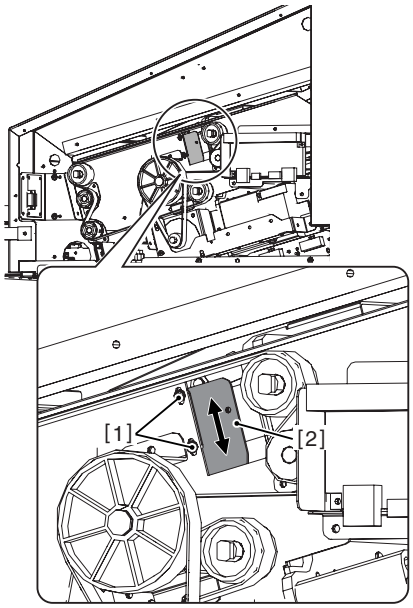
2. Check that the pin [1] of the pulley is at the highest position and the connecting rod [2] is vertical.
   If they are not, adjust them. (See next page.)



Note
- If the sensor is too high, the upper knife holder is not detected by the sensor, therefore the upper knife passes the upper position without stopping there.
- If the sensor is too low, the upper knife stops before reaching the upper limit.

Adjustment

1) Loosen the 2 screws [1] and adjust the position of the bracket [2] upward and downward.



2) After the adjustment, lock the bracket.
3) Perform the “Check” on the previous page.

4.4 Troubleshooting

4.4.1 Error Codes

Caution
After replacing the trimmer controller PCB, calibrate the home position in the service mode. (See section 4.3.1.)

4.4.1.1 E0005a7-8011: Transport Hook Motor M02 Home Positioning Incompletion

■ Is there an obstacle which prevents the transport hook from moving?
YES: Remove the obstacle.

■ Does M02 drive smoothly using the motion test in service mode?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Motor M02 is OK.
When the transport hook is above the transport hook home position sensor PI04 (rightmost), does L11 on the trimmer controller PCB QPM-220 light up?
YES: PI04 is OK. Replace QPM-220. If the error is still not corrected, replace the option controller PCB.
No: If the transport hook is deformed and is not detected by the sensor PI04, replace the transport hook. If the transport hook has no problem, go to CHECK 3.

■ CHECK 2
Motor M02 is not working.
When the power is turned off, does the transport hook move smoothly by hand?
YES: Check the wiring between M02, the stepper motor driver PCB QPW-727 and trimmer controller PCB QPM-220. If the wiring is OK, replace M02. If the error is still not corrected, replace the stepper motor driver PCB QPW-727, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

■ CHECK 3
Sensor PI04 is not working.
Is the wiring between PI04 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI04. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

4.4.1.2 E0005a7-8012: Transport Hook Motor M02 Remaining in Home Position

■ Check the transport hook home position sensor PI04.
When the transport hook moves to the left (downstream), does L11 on the trimmer controller PCB QPM-220 go out?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Sensor PI04 is OK.
Is the wiring between M02, the stepper motor driver PCB QPW-727 and trimmer controller PCB QPM-220 OK?
YES: Go to CHECK 3.
No: Fix the wiring.

■ CHECK 2
Sensor PI04 is not working.
Is the wiring between PI04 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI04. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

■ CHECK 3
When the power is turned off, does the transport hook move smoothly by hand?
YES: Replace M02. If the error is still not corrected, replace the stepper motor driver PCB QPW-727, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

4.4.1.3 E0005a7-8021: Top-bottom Guide Motor M03 Home Positioning Incompletion

■ Is there an obstacle which prevents the top-bottom guide from moving?
YES: Remove the obstacle.

■ Does M03 drive smoothly using the motion test in service mode?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Motor M03 is OK.
When the top-bottom guide is above the top-bottom guide home position sensor PI03 (when the guides are moved out as far as possible), does L10 on the trimmer controller PCB QPM-220 light up?
YES: PI03 is OK. Replace QPM-220. If the error is still not corrected, replace the option controller PCB.
No: If the top-bottom guide is deformed and is not detected by the sensor PI03, replace the top-bottom guide. If the top-bottom guide has no problem, go to CHECK 3.

■ CHECK 2
Motor M03 is not working.
When the power is turned off, does the top-bottom guide move smoothly by hand?
YES: Check the wiring between M03, the stepper motor driver PCB QPW-727 and trimmer controller PCB QPM-220. If the wiring is OK, replace M03. If the error is still not corrected, replace the stepper motor driver PCB QPW-727, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

■ CHECK 3
Sensor PI03 is not working.
Is the wiring between PI03 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI03. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

4.4.1.4 E0005a7-8022: Top-bottom Guide Motor M03 Remaining in Home Position

■ Check the top-bottom guide home position sensor PI03.
When the top-bottom guide moves to the center, does L10 on the trimmer controller PCB QPM-220 go out?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Sensor PI03 is OK.
Is the wiring between M03, the stepper motor driver PCB QPW-727 and trimmer controller PCB QPM-220 OK?
YES: Go to CHECK 3.
No: Fix the wiring.

■ CHECK 2
Sensor PI03 is not working.
Is the wiring between PI03 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI03. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

■ CHECK 3
When the power is turned off, does the top-bottom guide move smoothly by hand?
YES: Replace M03. If the error is still not corrected, replace the stepper motor driver PCB QPW-727, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

4.4.1.5 E0005a7-8033: Trim Section Transport Motor M04 Driver Problem

■ Is there a booklet jammed in the trim section?
YES: Remove the booklet and close the front cover.

■ Does the transport roller too much load to rotate?
YES: Correct the cause of the overload.
No: Replace the driver PCB A04. If the error is still not corrected, replace the trimmer controller PCB QPM-220.

4.4.1.6 E0005a7-8043: Knife Motor M05 Driver Problem

■ Is there a booklet jammed in the trim section?
YES: Remove the booklet and close the front cover.

■ Does the transport roller too much load to rotate?
YES: Correct the cause of the overload.
No: Replace the driver PCB A05. If the error is still not corrected, replace the trimmer controller PCB QPM-220.

4.4.1.7 E0005a7-8044: Upper Knife Cannot Detect Upper Limit Position in One Stroke

■ Check the upper knife upper limit sensor PI06.
When you place a ferrous chip against the upper knife upper limit sensor PI06, does L13 on the trimmer controller PCB QPM-220 light up?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Sensor PI06 is OK.
Is the wiring between M05, the driver PCB A05 and trimmer controller PCB QPM-220 OK?
YES: Go to CHECK 3.
No: Fix the wiring.

■ CHECK 2
Sensor PI06 is not working.
Is the wiring between PI06 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI06. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

■ CHECK 3
When the upper knife is at the upper limit, is the distance between the sensor PI06 and upper knife holder within 2.5 mm or 0.098”?
YES: Motor M05 is not working. Replace M05. If the error is still not corrected, replace the driver PCB A05, and then trimmer controller PCB QPM-220.
No: The sensor bracket is deformed. Replace the sensor bracket.

4.4.1.8 E0005a7-8051: Stopper Move Motor M06 Home Positioning Incompletion

■ Is there an obstacle which prevents the stopper from moving?
YES: Remove the obstacle.

■ Does M06 drive smoothly using the motion test in service mode?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Motor M06 is OK.
When the stopper is above the stopper home position sensor PI05 (leftmost), does L12 on the trimmer controller PCB QPM-220 light up?
YES: PI05 is OK. Replace QPM-220. If the error is still not corrected, replace the option controller PCB.
No: If the stopper is deformed and is not detected by the sensor PI05, replace the stopper. If the stopper has no problem, go to CHECK 3.

■ CHECK 2
Motor M06 is not working.
When the power is turned off, does the stopper move smoothly by hand?
YES: Check the wiring between M06, the stepper motor driver PCB QPW-727 and trimmer controller PCB QPM-220. If the wiring is OK, replace M06. If the error is still not corrected, replace the stepper motor driver PCB QPW-727, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

■ CHECK 3
Sensor PI05 is not working.
Is the wiring between PI05 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI05. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

4.4.1.9 E0005a7-8052: Stopper Move Motor M06 Remaining in Home Position

■ Check the stopper home position sensor PI05.
When the stopper is at the rightmost position (upstream), does L12 on the trimmer controller PCB QPM-220 go out?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Sensor PI05 is OK.
Is the wiring between M06, the stepper motor driver PCB QPW-727 and trimmer controller PCB QPM-220 OK?
YES: Go to CHECK 3.
No: Fix the wiring.

■ CHECK 2
Sensor PI05 is not working.
Is the wiring between PI05 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI05. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

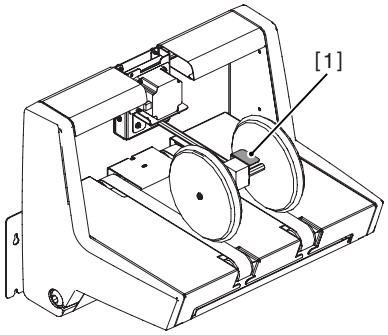
■ CHECK 3
When the power is turned off, does the stopper move smoothly by hand?
YES: Replace M06. If the error is still not corrected, replace the stepper motor driver PCB QPW-727, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

4.4.1.10 E0005a7-8061: Conveyor Delivery Roller Positioning Motor M08 Home Positioning Incompletion

■ Is there an obstacle which prevents the delivery roller from moving?
YES: Remove the obstacle.

■ Does M08 drive smoothly using the motion test in service mode?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Motor M08 is OK.
When the delivery roller is above the delivery roller home position sensor PI14 (right-most), does L21 on the trimmer controller PCB QPM-220 light up?
YES: PI14 is OK. Replace QPM-220. If the error is still not corrected, replace the option controller PCB.
No: If the actuator [1] is deformed and is not detected by the sensor PI14, replace the actuator. If the actuator has no problem, go to CHECK 3.



■ CHECK 2
Motor M08 is not working.
When the power is turned off, does pulley move smoothly by hand?
YES: Check the wiring between M08, the stepper motor driver PCB QPW-740 and trimmer controller PCB QPM-220. If the wiring is OK, replace M08. If the error is still not corrected, replace the stepper motor driver PCB QPW-740, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

■ CHECK 3
Sensor PI14 is not working.
Is the wiring between PI14 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI14. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

4.4.1.11 E0005a7-8062: Conveyor Delivery Roller Positioning Motor M08 Remaining in Home Position

■ Check the delivery roller home position sensor PI14.
When the delivery roller moves to the left (downstream), does L21 on the trimmer controller PCB QPM-220 go out?
YES: Go to CHECK 1.
NO: Go to CHECK 2.

■ CHECK 1
Sensor PI14 is OK.
Is the wiring between M08, the stepper motor driver PCB QPW-740 and trimmer controller PCB QPM-220 OK?
YES: Go to CHECK 3.
No: Fix the wiring.

■ CHECK 2
Sensor PI14 is not working.
Is the wiring between PI14 and the trimmer controller PCB QPM-220 OK?
YES: Replace PI14. If the error is still not corrected, replace QPM-220.
No: Fix the wiring.

■ CHECK 3
When the power is turned off, does the motor pulley move smoothly by hand?
YES: Replace M08. If the error is still not corrected, replace the stepper motor driver PCB QPW-740, and then trimmer controller PCB QPM-220.
No: Correct the cause of the overload.

4.4.1.12 E0005a7-8073: Main Drive Motor M10 Driver Problem

■ Is there a booklet jammed in the booklet lifter?
YES: Remove the booklet and close the front cover.

■ Does the transport roller too much load to rotate?
YES: Correct the cause of the overload.
No: Replace the driver PCB A10. If the error is still not corrected, replace the trimmer controller PCB QPM-220.

4.4.1.13 E0005a7-80X5: EEPROM Error

■ Is the error still not corrected after turning off the power of the finisher and turning it on again?
YES: Replace the trimmer controller PCB QPM-220.

4.4.2 Trimming Problems

4.4.2.1 Skewed Trimming

■ When the top-bottom guides jog the booklet in the infeed section, is there clearance between the top-bottom guides and the booklet?
YES: In the service mode, calibrate the home position of the top-bottom guides. (See section 4.3.1.3.)
NO: Check to see if the stopper in the trim section is bent or damaged.

4.4.2.2 The trimmed booklet is longer or shorter than the set size.

In the service mode, calibrate the home position of the stopper. (See section 4.3.1.3.)

4.4.2.3 The booklet is left untrimmed, or is torn off.

Replace the upper knife and lower knife. (See sections 3.2.14 and 3.2.15.)
However, if the trimming cycle does not reach 10,000 booklets after both upper and lower knives are replaced, replace only the upper knife.

4.4.2.4 The booklet is smeared on its surface.

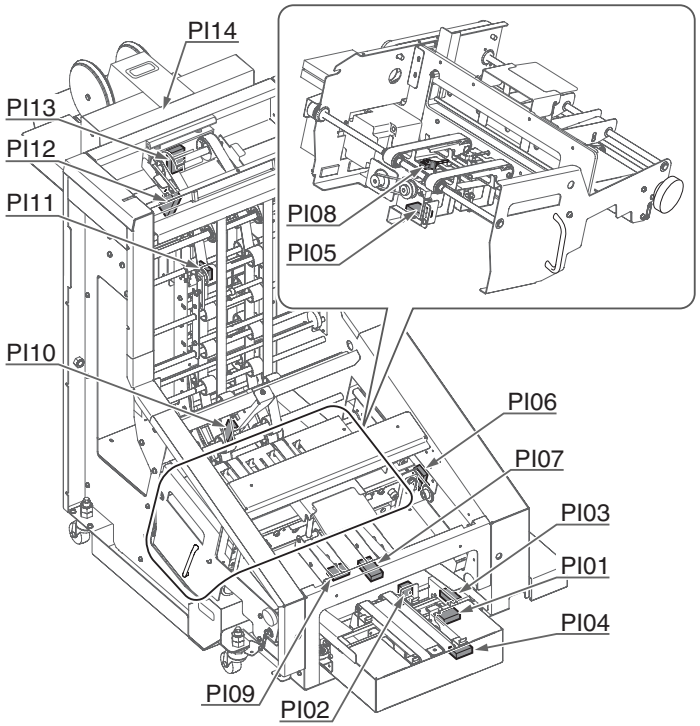
Wipe off any dirt on the transport belts.

4.4.2.5 A pressing line remains on the booklet.

The height of the lower knife is not proper. Adjust the height of the lower knife. (See section 4.3.3.)

4.5 Electrical Components/Functions

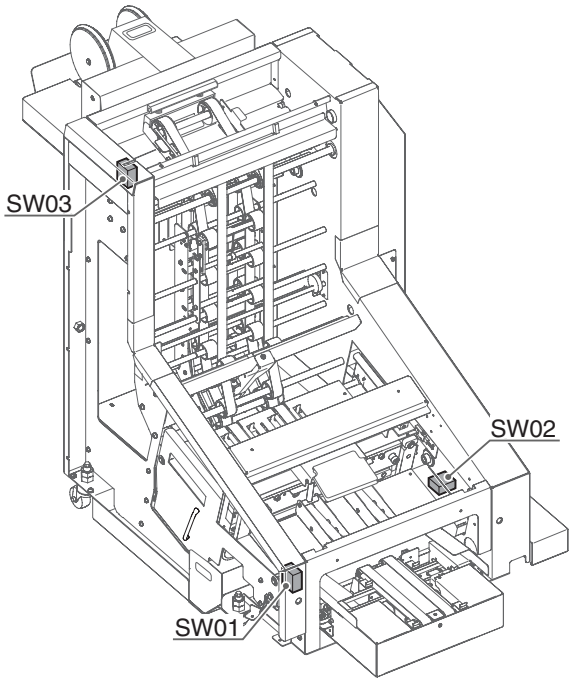
4.5.1 Sensors



Code	Name	Function	Jam	Error	Trimmer controller PCB QPM-220
PI01	Infeed section entrance booklet sensor (Photoelectric)	Booklet detection at the entrance of the infeed section	E0005a7-10C2 E0005a7-11C3		CON10
PI02	Infeed section exit booklet sensor (Photoelectric)	Booklet detection at the exit of the infeed section	E0005a7-10C4 E0005a7-11C5		CON10
PI03	Top-bottom guide home position sensor (Proximity)	Top-bottom guide home position detection		E0005a7-8021 E0005a7-8022	CON10
PI04	Transport hook home position sensor (Proximity)	Transport hook home position detection		E0005a7-8011 E0005a7-8012	CON10
PI05	Stopper home position sensor (Proximity)	Stopper home position detection		E0005a7-8051 E0005a7-8052	CON10
PI06	Upper knife upper limit sensor (Proximity)	Upper knife detection at the upper limit		E0005a7-8041 E0005a7-8042 E0005a7-8044	CON10
PI07	Trim section entrance booklet sensor (Photoelectric)	Booklet detection at the trim section entrance	E0005a7-10C6 E0005a7-11C7		CON11
PI08	Stopper booklet sensor (Photoelectric)	Booklet detection at the stopper	E0005a7-10C8 E0005a7-11C9		CON11

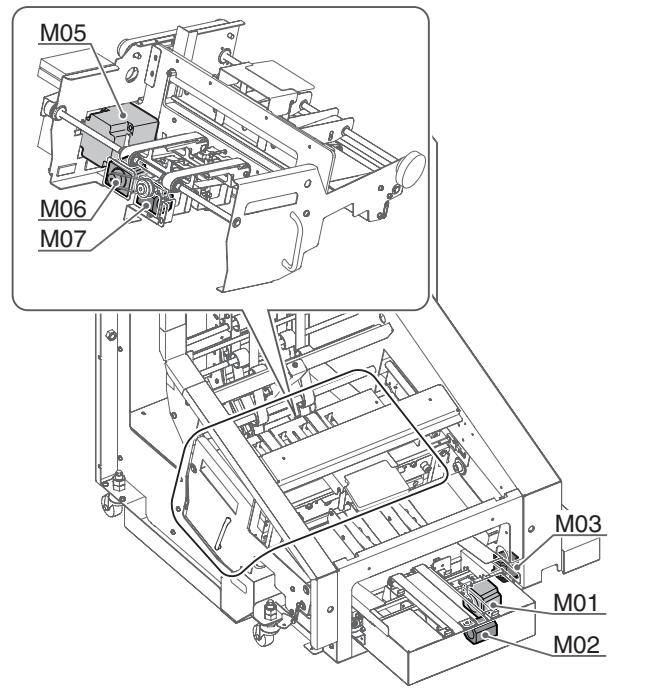
Code	Name	Function	Jam	Error	Trimmer controller PCB QPM-220
PI09	Trim full sensor (Photoelectric reflection) When the green LED lights up: The on/off input signal of the sensor is stable. When the orange LED lights up: The light is blocked. (sensor deactivated)	Trim full detection			CON11
PI10	Trim section exit booklet sensor (Photoelectric)	Booklet detection at the trim section exit	E0005a7-10CA E0005a7-11CB		CON11
PI11	Booklet lifter booklet sensor (Photoelectric)	Booklet detection at the booklet lifter section	E0005a7-10CC E0005a7-11CD		CON12
PI12	Delivery section booklet sensor (Photoelectric)	Booklet detection at the delivery section	E0005a7-10CE E0005a7-11CF		CON12
PI13	Conveyor section booklet sensor (Photoelectric)	Booklet detection at the conveyor section	E0005a7-10D0		CON12
PI14	Delivery roller home position sensor (Proximity)	Delivery roller home position detection		E0005a7-8061 E0005a7-8062	CON12

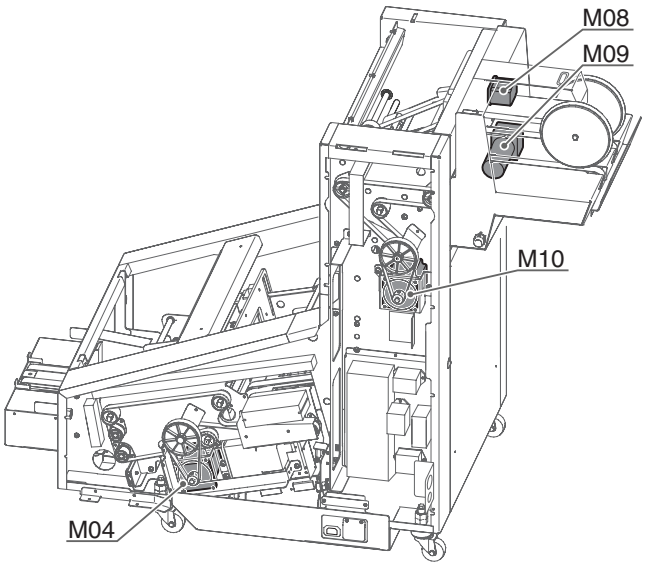
4.5.2 Switches



Code	Name	Function	Trimmer Controller PCB QPM-220
SW01	Front cover switch	Front cover open detection	CON13
SW02	Trim waste tray switch	Trim waste tray open detection	CON13
SW03	Delivery section cover switch	Delivery section cover open detection	CON13

4.5.3 Motors

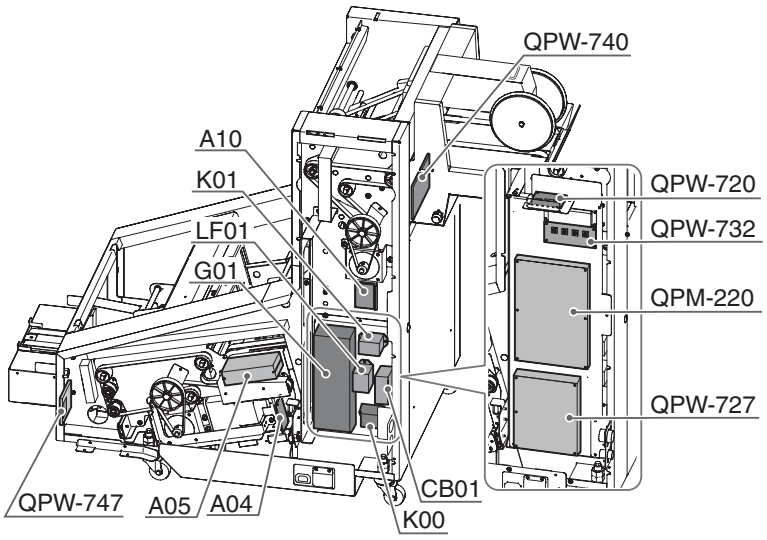




Code	Name	Function	Error
M01	Infeed belt motor	Transports the booklets in the infeed section	
M02	Transport hook motor	Moves the transport hooks	E0005a7-8011 E0005a7-8012
M03	Top-bottom guide motor	Moves the top-bottom guides	E0005a7-8021 E0005a7-8022
M04	Trim section transport motor	Transports the booklets in the trim section	E0005a7-8033
M05	Knife motor	Moves the upper knife up or down	E0005a7-8043 E0005a7-8044
M06	Stopper move motor	Moves the stopper	E0005a7-8051 E0005a7-8052
M07	Stopper open/close motor	Opens and closes the stopper	
M08	Delivery roller motor	Moves the delivery roller	E0005a7-8061 E0005a7-8062
M09	Conveyor belt motor	Transports the booklets in the conveyor section	
M10	Main drive motor	Transports the booklets in the booklet lifter and delivery section	E0005a7-8073

Code	Stepper Motor Driver PCB QPW-727	Stepper Motor Driver PCB QPW-546	Motor Driver PCB A04	Motor Driver PCB A05	Motor Driver PCB A10	Trimmer Controller PCB QPM-220
M01	CON103/CON102					CON24
M02	CON103/CON102					CON24
M03	CON104/CON102					CON24
M04			CN3/CN2			CON17
M05				CN3, 4/CN2		CON18
M06	CON104/CON102					CON24
M07	CON104/CON102					CON24
M08		CON2/CON1				CON15
M09						CON15
M10					CN3/CN2	CON17

4.5.4 Printed Circuit Boards and Other Parts



Code	Name	Remarks
A04	Trim section transport motor driver PCB	M04
A05	Knife motor driver PCB	M05
A10	Main drive motor driver PCB	M10
CB01	Circuit breaker	
G01	Power supply	24VDC/5VDC
K00	Power relay	
K01	Interlock relay	
LF01	Line filter	
QPM-220	Trimmer controller PCB	
QPW-720	Upgrade PCB	For downloading upgrade program
QPW-727	Stepper motor driver PCB	M01/M02/M03/M06/ M07
QPW-732	Input button PCB	For service maintenance of the LCD
QPW-740	Stepper motor driver PCB	M08
QPW-747	Communication PCB	For communication with the host machine

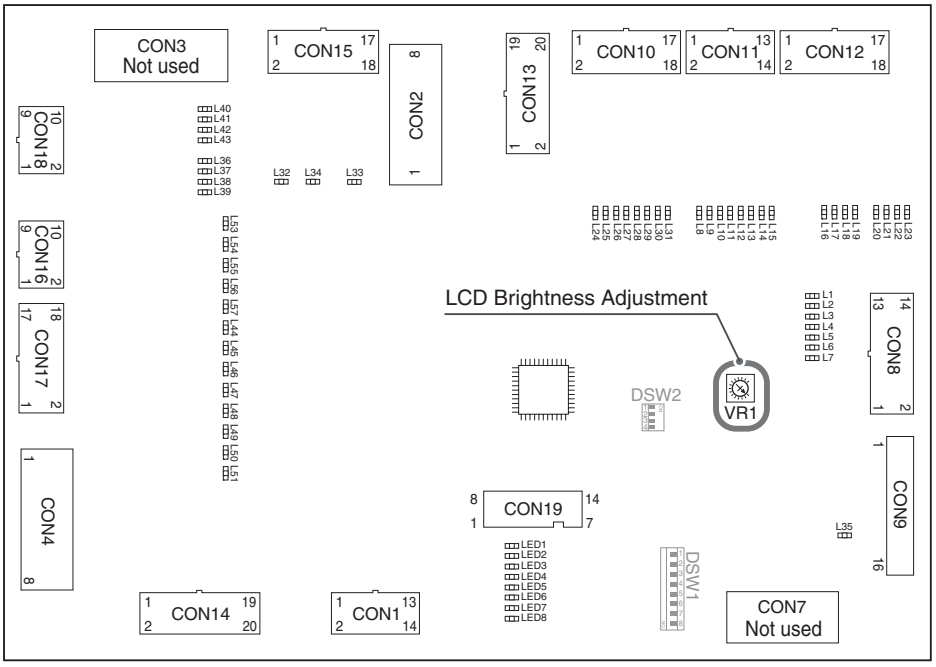
4.6 Variable Resistors (VR), LEDs, and DIP Switches (DSW)

4.6.1 Overview

This section describes the LEDs, variable resistors (VR), and DIP switches (DSW) which are necessary for service functions in the field.

Any variable resistors (VR) which are not described here are pre-adjusted at the factory. Special tools and gauges are needed to adjust and check them, and high accuracy is required. Do not try to adjust these in the field.

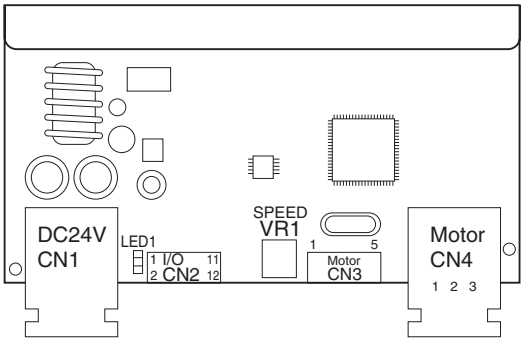
4.6.2 Trimmer Controller PCB QPM-220



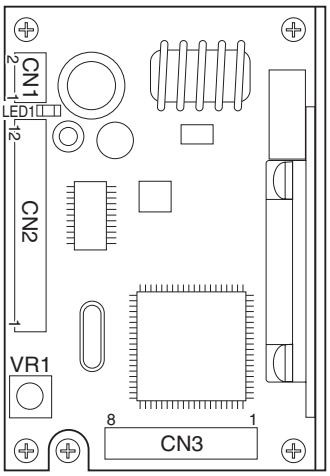
LED	Code	Lighted . . .
L3	QPW-732	when the finisher signal arrives.
L4	QPW-732	when panel switch SW4 is pressed.
L5	QPW-732	when panel switch SW3 is pressed.
L6	QPW-732	when panel switch SW2 is pressed.
L7	QPW-732	when panel switch SW1 is pressed.
L8	PI01	when the infeed section entrance booklet sensor activates.
L9	PI02	when the infeed section exit booklet sensor activates.
L10	PI03	when the top-bottom guide home position sensor activates.
L11	PI04	when the transport hook home position sensor activates.
L12	PI05	when the stopper home position sensor activates.
L13	PI06	when the upper knife upper limit sensor activates.
L14	PI07	when the trim section entrance booklet sensor activates.
L15	PI08	when the stopper booklet sensor activates.
L16	PI09	when the trim full sensor activates.
L17	PI10	when the trim section exit booklet sensor activates.
L18	PI11	when the booklet lifter booklet sensor activates.
L19	PI12	when the delivery section booklet sensor activates.
L20	PI13	when the conveyor section booklet sensor activates.
L21	PI14	when the delivery roller home position sensor activates.
L28	SW01	when the front cover switch is being pressed.
L29	SW02	when the trim waste tray switch is being pressed.
L30	SW03	when the delivery cover switch is being pressed.
L32	M09	when the conveyor belt motor runs.
L34	M08	when the conveyor delivery roller positioning motor is held in position or running.
L38	A05	when the A05 alarm signal arrives.
L39	A10	when the A10 alarm signal arrives.
L40	A04	when the A04 alarm signal arrives.
L41	A04	when the A04 speed pulse signal arrives.
L42	A10	when the A10 speed pulse signal arrives.
L43	A05	when the A05 speed pulse signal arrives.
L44	A04	when the SCL signal is output.
L45	A04	when the SDA signal is output.

LED	Code	Lighted . . .
L46	A04	when the normal direction run signal is output.
L47	A04	when the A04 alarm reset signal is output.
L48	A10	when the SCL signal is output.
L49	A10	when the SDA signal is output.
L50	A10	when the normal direction run signal is output.
L51	A10	when the A10 alarm reset signal is output.
L53	A05	when the normal direction run signal is output.
L54	A05	when the signal switching between normal/reverse run direction is output.
L55	A05	when the A04 alarm reset signal is output.
L56	A05	when the SCL signal is output.
L57	A05	when the SDA signal is output.

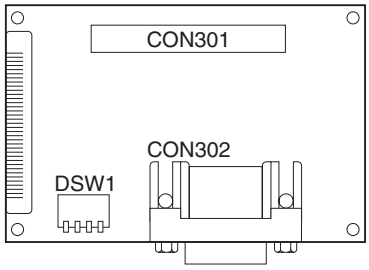
4.6.3 Driver PCB A05



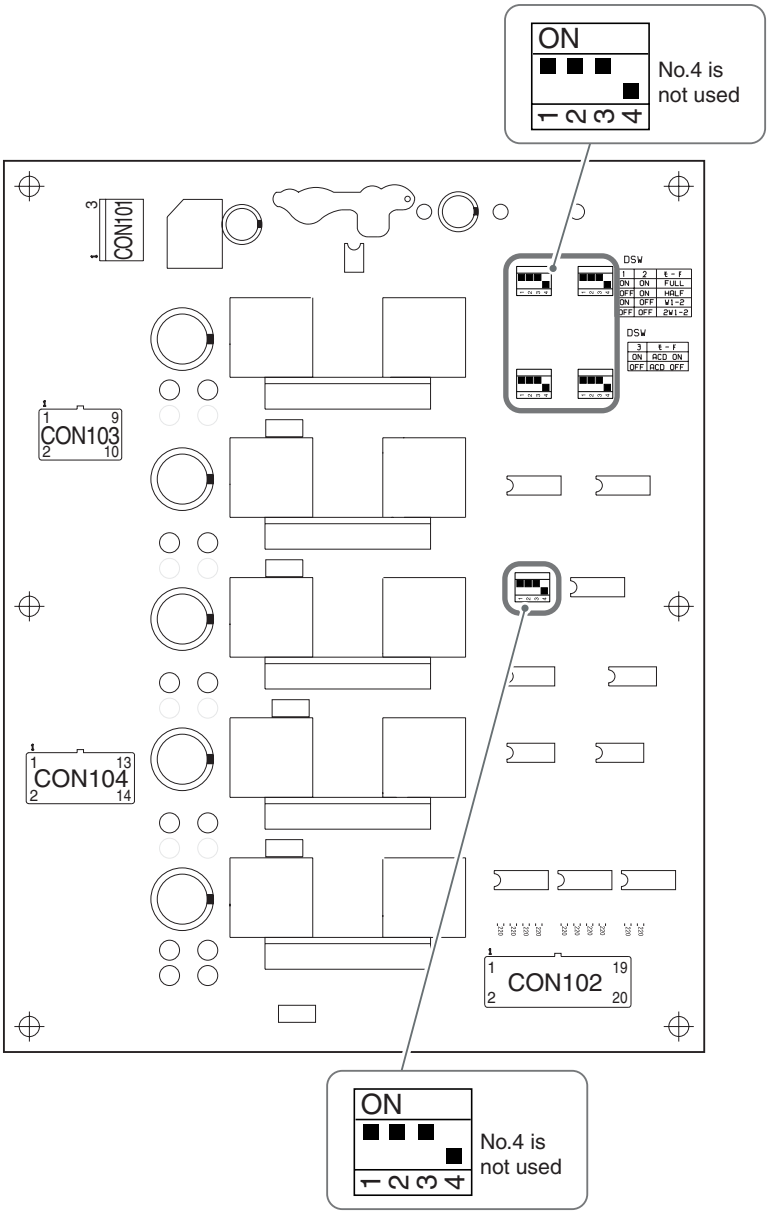
4.6.4 Driver PCBs A04/A10



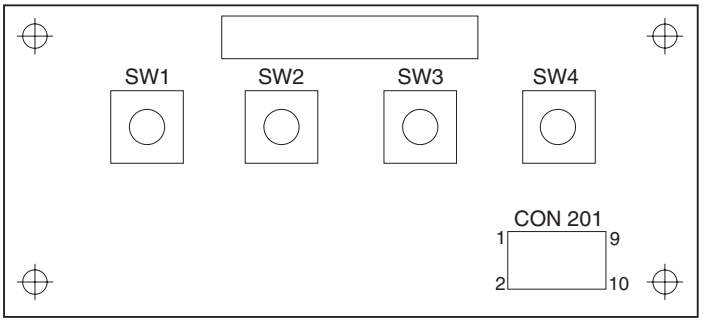
4.6.5 Upgrade PCB QPW-720



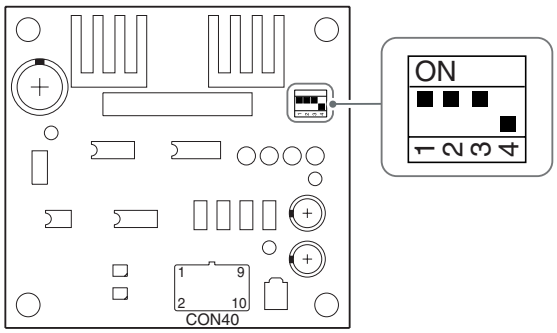
4.6.6 Stepper Motor Driver PCB QPW-727



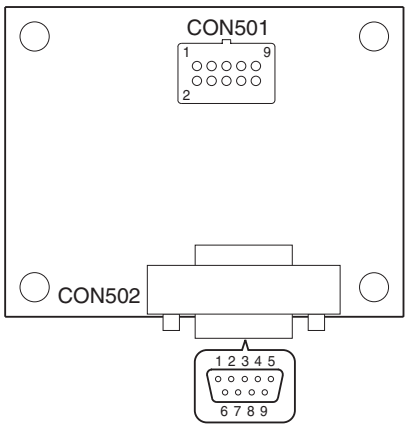
4.6.7 Input Button PCB QPW-732



4.6.8 Stepper Motor Driver PCB QPW-740



4.6.9 Communication PCB QPW-747



4.7 Upgrading the Control Software

■ **Overview**

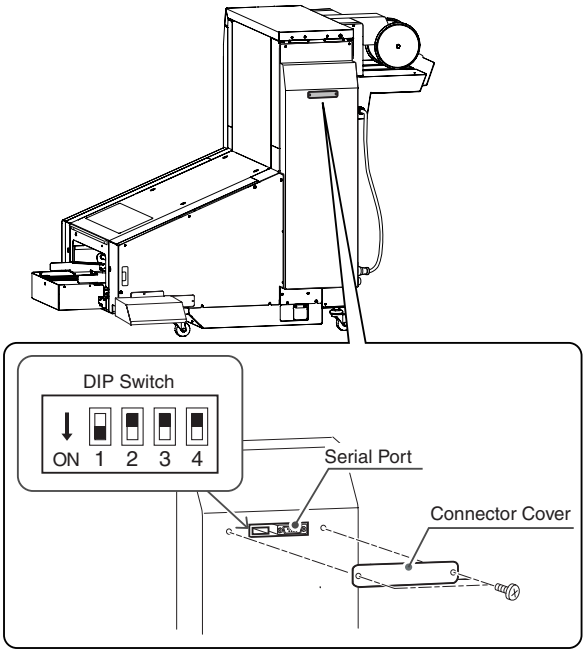
In order to upgrade the software which controls the fore-edge trimmer, connect the fore-edge trimmer with the host machine, and connect a PC directly to the fore-edge trimmer. Turn on the power for the fore-edge trimmer from the host machine, and upgrade the program. (See the following upgrading procedure for details).

Prepare the following:
- Computer (PC)
- Decompressed upgrading program (f-e trimmer_XXX.zip; XXX indicates the version).
- RS232C (serial) cross cable

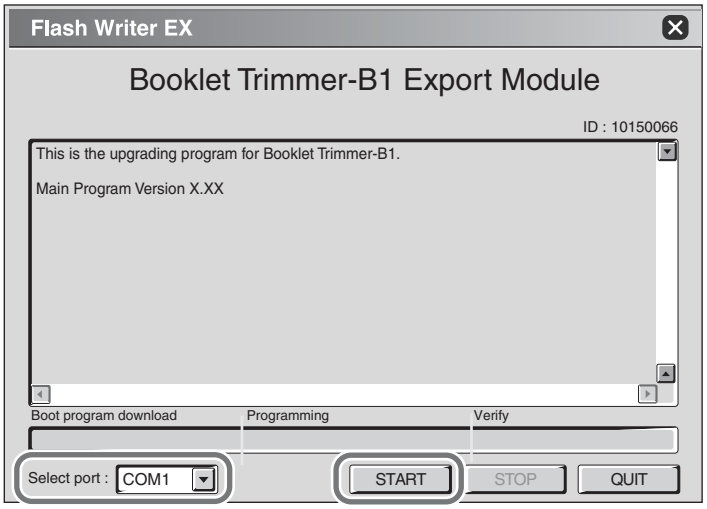
Upgrading Procedure

1. Turn off the power to the finisher.
2. Remove the connector cover on the rear of the machine.

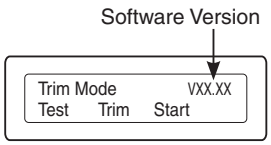
- Locate the serial port and DIP switch behind the cover.



3. Connect the RS232C cross cable between the serial port on the fore-edge trimmer and the PC.
4. Turn on (down) switch no. 1 (left switch in the DIP switch assembly.)
5. Turn on the power for the finisher.
6. Start up the upgrade program (.exe program), and if necessary, select the communications port to be used for the upgrade.



7. Click on the START icon and start the upgrade.
8. After completing the upgrade, turn the power for the fore-edge trimmer off, and disconnect the RS232C cross cable from the serial port on the fore-edge trimmer.
9. Turn off (up) switch no. 1 (left in the DIP switch assembly) and install the connector cover.
10. Turn on the power for the fore-edge trimmer again.
    - If necessary, remove the booklet lifter rear cover and check the software version number on the LCD display. (See section 3.1.2.)
      (This can be checked also on the control panel of the printer.)



The error messages listed on the next page may appear during the upgrade process.
If these error messages appear on the screen of the PC, correct the problem as instructed in the following table.

Error message	Cause	Corrective Action
Cannot reset communications port correctly.	- The wrong communication port on the PC has been selected.	- Select a communication port on the PC which is active.
Baud rate does not match.	- The connections for the RS232C cross cable to the PC and serial port are not secure.	- Check the connections. Restart the fore-edge trimmer and the upgrade program and repeat the upgrade procedure.
	- The download has been canceled by clicking "STOP", and then "START" has been clicked without restarting the upgrade program.	- Whenever the download is canceled, restart the upgrade program.
	- If the suggestions listed above do not correct the problem, there is a problem with the upgrade program.	- Use another copy of the upgrade program. Restart the fore-edge trimmer and the upgrade program and repeat the upgrade procedure.
Communication time-out error.	- There is no response from the fore-edge trimmer while the PC is trying to communicate.	- Check that the fore-edge trimmer is receiving power.
	- The cable is disconnected during the download.	- Connect the cable again. Restart the fore-edge trimmer and the upgrade program and repeat the upgrade procedure.
An error occurred during communication.	- After downloading was canceled, "START" was clicked without restarting the fore-edge trimmer.	- Restart the fore-edge trimmer and repeat the upgrade procedure.
	- A verification error occurred during the download.	- Restart the fore-edge trimmer and the upgrade program and repeat the upgrade procedure.
The frequency data is out of range. Please enter a frequency value between 2.0 to 100.0.	- There is a problem with the upgrade program.	- Use another copy of the upgrade program. Restart the fore-edge trimmer and the upgrade program and repeat the upgrade procedure.

4.8 Service Tools

4.8.1 Solvents

No.	Name	Purpose	Ingredients	Remarks
1	Alcohol cleaner	Cleaning of belts, plastic or rubber parts including rollers and exterior covers.	Fluorine hydro carbon, alcohol, surface-active agent, water	Keep away from fire. Substitute: IPA (Isopropyl alcohol)
2	Lubricating oil PG641	Lubrication of drive parts or sliding parts		

4.8.2 Accessory Tools

No.	Name	Quantity
1	6 mm Allen wrench	1
2	10/24 mm wrench	1
3	13 mm wrench	1

Chapter 5 Error Codes

Contents

5.1 Overview

The error indication of the trimmer is as follows.

- Service error codes (home positioning incompletion, remaining in home position, driver problem, and EEPROM errors):
  The error code (E0005a7-80XX) is displayed on the control panel of host machine.
- Jam codes (booklet remains, or does not pass within the timeout interval):
  The error code (E0005a7-XXXX) is displayed on the control panel of host machine.

5.2 Service Error Codes

Error code	Error description	Detection timing
E0005a7-8011	Transport hook motor M02 home positioning incompletion	The transport hook home position sensor PI04 is not activated.
E0005a7-8012	Transport hook motor M02 remaining in home position	The transport hook home position sensor PI04 is not turned off.
E0005a7-8021	Top-bottom guide motor M03 home positioning incompletion	The top-bottom guide home position sensor PI03 is not activated.
E0005a7-8022	Top-bottom guide motor M03 remaining in home position	The top-bottom guide home position sensor PI03 is not turned off.
E0005a7-8033	Trim section transport motor M04 driver problem	The trim section transport motor driver A04 has a problem.
E0005a7-8043	Knife motor M05 driver problem	The knife motor driver A05 has a problem.
E0005a7-8044	Upper knife cannot detect upper limit position in one stroke	The upper knife upper limit sensor PI06 is not activated.
E0005a7-8051	Stopper move motor M06 home positioning incompletion	The stopper home position sensor PI05 is not activated.
E0005a7-8052	Stopper move motor M06 remaining in home position	The stopper home position sensor PI05 is not turned off.
E0005a7-8061	Conveyor delivery roller positioning motor M08 home positioning incompletion	The delivery roller home position sensor PI14 is not activated.
E0005a7-8062	Conveyor delivery roller positioning motor M08 remaining in home position	The delivery roller home position sensor PI14 is not turned off.
E0005a7-8073	Main drive motor M10 driver problem	The main drive motor driver A10 has a problem.
E0005a7-80X5	EEPROM error	The memorized value for the home position has a problem.

5.3 Jam Codes

Error Code	Error description	Cause	Sensor
E0005a7-10C2	A booklet has not arrived at the infeed section entrance booklet sensor.	After the trimmer received the booklet delivery complete command, the booklet has not arrived at the entrance booklet sensor within the timeout period.	PI01
E0005a7-11C3	A booklet has been left on the infeed section entrance booklet sensor.	A booklet has been left on the entrance booklet sensor for the timeout period.	PI01
E0005a7-10C4	A booklet has not arrived at the infeed section exit booklet sensor.	A booklet which was detected by the infeed section entrance booklet sensor has not arrived at the exit booklet sensor within the timeout period.	PI02
E0005a7-11C5	A booklet has been left on the infeed section exit booklet sensor.	A booklet has been left on the exit booklet sensor for the timeout period.	PI02
E0005a7-10C6	A booklet has not arrived at the trim section entrance booklet sensor.	A booklet which was detected by the infeed section exit booklet sensor has not arrived at the trim section entrance booklet sensor within the timeout period.	PI07
E0005a7-11C7	A booklet has been left on the trim section entrance booklet sensor.	A booklet has been left on the trim section entrance booklet sensor for the timeout period.	PI07
E0005a7-10C8	A booklet has not arrived at the trim section stopper booklet sensor.	A booklet which was detected by the trim section entrance booklet sensor has not arrived at the trim section stopper booklet sensor within the timeout period.	PI08
E0005a7-11C9	A booklet has been left on the trim section stopper booklet sensor.	A booklet has been left on the trim section stopper booklet sensor for the timeout period.	PI08
E0005a7-10CA	A booklet has not arrived at the trim section exit booklet sensor.	A booklet which was detected by the trim section stopper booklet sensor has not arrived at the trim section exit booklet sensor within the timeout period.	PI10

Error Code	Error description	Cause	Sensor
E0005a7-11CB	A booklet has been left on the trim section exit booklet sensor.	A booklet has been left on the trim section exit booklet sensor for the timeout period.	PI10
E0005a7-10CC	A booklet has not arrived at the booklet lifter section booklet sensor.	A booklet which was detected by the trim section exit booklet sensor has not arrived at the booklet lifter section booklet sensor within the timeout period.	PI11
E0005a7-11CD	A booklet has been left on the booklet lifter section booklet sensor.	A booklet has been left on the booklet lifter section booklet sensor for the timeout period.	PI11
E0005a7-10CE	A booklet has not arrived at the delivery section booklet sensor.	A booklet which was detected by the booklet lifter section booklet sensor has not arrived at the delivery section booklet sensor within the timeout period.	PI12
E0005a7-11CF	A booklet has been left on the delivery section booklet sensor.	A booklet has been left on the delivery section booklet sensor for the timeout period.	PI12
E0005a7-10D0	A booklet has not arrived at the conveyor section booklet sensor.	A booklet which was detected by the delivery section booklet sensor has not arrived at the conveyor section booklet sensor within the timeout period.	PI13
E0005a7-1FDA	A booklet has arrived at the infeed section too early.	The finisher has delivered a booklet (sent the booklet delivery command) when the trimmer cannot receive a booklet.	-
E0005a7-14DB	A cover is opened.	One of the covers has been opened during operation.	-
E0005a7-13DC	A booklet has been left when the power switch is turned on.	After the power switch is turned on, the transport system drives to check whether a booklet has been left. During this operation, one of the sensors has detected a booklet.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13

Error Code	Error description	Cause	Sensor
E0005a7-17DD	A booklet has been left when the cover is closed.	After the cover is closed, the transport system drives to check whether a booklet has been left. During this operation, one of the sensors has detected a booklet.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13
E0005a7-17DE	A booklet has been left when the trimmer operation is started.	After the operation had started, a sensor at the downstream path detected a booklet while the first booklet was being transported in the trimmer.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13
E0005a7-17DE	A booklet has been left when the trimmer operation is finished.	A sensor detected a booklet when the trimmer operation had been finished.	PI01/ PI02/ PI07/ PI08/ PI10/ PI11/ PI12/ PI13
E0005a7-1FDF	An incorrect size data of booklet has been transmitted.	The trimmer declared that a size data out of specification had been transmitted.	-