

**Option Printer**

**d-Color MF201Plus - MF250 - MF350**

**d-Color MF450**

**FS-519/PK-515/OT-602**

**THEORY OF OPERATION**

Code Y108452-8

**PUBLICATION ISSUED BY:**

**Olivetti S.p.A.**

77, Via Jervis - 10015 Ivrea (TO)

Italy

*Copyright © 2008, Olivetti*

*All rights reserved*

# CONTENTS

## FS-519/PK-515/OT-602

### Outline for d-Color MF350 / MF250 / MF201Plus

1.	Product specifications .....	1
1.1	FS-519 .....	1
1.2	PK-515 .....	4
1.3	OT-602 .....	5

### Outline for d-Color MF450

2.	Product specifications .....	7
2.1	FS-519 .....	7
2.2	PK-510 .....	10
2.3	OT-602 .....	11
3.	Paper feed path .....	13
3.1	Feeding paper to the 1st exit tray .....	13
3.2	Feeding paper to the 2nd exit tray .....	13
3.3	Feeding paper to the 2nd exit tray (When OT-602 is mounted) .....	14

### Composition/Operation

4.	Composition .....	15
5.	Drive .....	16
6.	Operations .....	18
6.1	Transport section .....	18
6.1.1	Entrance/transport section .....	19
6.1.2	Intermediate transport section .....	19
6.1.3	Storage section .....	20
6.1.4	Exit transport section .....	20
6.2	Elevator section .....	21
6.2.1	Elevator mechanism .....	21
6.2.2	Elevator tray ascent/descent .....	21
6.2.3	Tray position detection mechanism .....	22
6.2.4	Shutter open/close mechanism .....	25
6.3	Paper aligning section .....	26
6.3.1	Paper aligning mechanism (sub scan direction) .....	26
6.3.2	Paper aligning mechanism (main scan direction) .....	27
6.3.3	Exit mechanism .....	28
6.4	Staple section .....	30
6.4.1	Stapling mechanism .....	30

6.4.2	Stapling unit moving mechanism .....	31
6.4.3	Stapling position.....	31
6.4.4	Staple sheet empty detection.....	32
7.	Punch Kit (PK-510) .....	33
7.1	Composition .....	33
7.2	Operation.....	33
7.2.1	Skew correction mechanism .....	33
7.2.2	Punch mechanism .....	34
7.2.3	Punch status detection .....	34
7.2.4	Punch trash box full detection mechanism .....	35
8.	Punch Kit (PK-515) .....	36
8.1	Composition .....	36
8.2	Operation.....	36
8.2.1	Skew correction mechanism .....	36
8.2.2	Punch mechanism .....	37
8.2.3	Punch status detection .....	37
8.2.4	Punch trash box full detection mechanism .....	38
9.	Output tray (OT-602) .....	39
9.1	Composition .....	39
9.2	Operation.....	39
9.2.1	Overview .....	39

# Outline for d-Color MF350 / MF250 / MF201Plus

## 1. Product specifications

### 1.1 FS-519

#### A. Type

Name	Multi staple finisher built into the copier
Installation	Installed in the copier
Document alignment	Center
Consumables	Staples

#### B. Functions

Modes	Sort, group, sort offset, group offset, sort stable, and punch (when PK-515 is mounted)
-------	---

#### C. Paper

##### (1) Non sort/sort/group

Type	Size	Weight	Max. capacity	
			Exit tray1	200 sheets
Plain paper Recycled paper	A6S, A5S/A5, B5S/B5, B6S, A4S/A4, B4, A3, A3Wide	60 to 90 g/m <sup>2</sup> 16 to 24 lb	Exit tray1	200 sheets
			Exit tray2	A4S, 8-1/2 x 11S or less B4, 8-1/2 x 14 Or greater 500 sheets
Government standard postcards	5-1/2 x 8-1/2S/5-1/2 x 8-1/2,	91 to 210 g/m <sup>2</sup> 24.25 to 55.75 lb	20 sheets	
Envelope	8-1/2 x 11S/8-1/2 x 11,	—		
OHP transparencies	8-1/2 x 14, 11 x 17, 12-1/4 x 18	—		
Translucent paper	Max. 311.15 mm x 457.2 mm	—		
Label	12.25 x 18 inch	—		
Thick paper 1	Min. 90 mm x 139.7 mm 3.5 x 5.5 inch	91 to 150 g/m <sup>2</sup> 24.25 to 40 lb		
Thick paper 2		151 to 209 g/m <sup>2</sup> 40.25 to 55.5 lb		
Thick paper 3		210 to 256 g/m <sup>2</sup> 55.75 to 68 lb		
Thick paper 4		257 to 271 g/m <sup>2</sup> 68.25 to 72 lb		
Long size paper *	210 mm to 297 mm x 457.2 mm to 1200 mm	127 to 160 g/m <sup>2</sup> 33.75 to 42.5 lb		

\*: Long size paper is available only for non-sort mode.

**(2) Sort offset/group offset**

Type	Size	Weight	Max. capacity	
Plain paper Recycled paper	A5, B5S/B5, A4S/A4, B4, A3 8-1/2 x 11S/8-1/2 x 11, 8-1/2 x 14, 11 x 17 Max. 297 mm x 431.8 mm 11.75 x 17 inch Min. 182 mm x 148.5 mm	60 to 90 g/m <sup>2</sup> 16 to 24 lb	Exit tray1	200 sheets
			Exit tray2	A4S, 8-1/2 x 11S or less
Thick paper	7.25 x 5.75 inch	91 to 271 g/m <sup>2</sup> 24.25 to 72 lb		—
			—	

**(3) Sort staple**

Type	Size	Weight	Max. capacity		No. of sheets to be stapled
Plain paper Recycled paper	A5, B5S/B5, A4S/A4, B4, A3 8-1/2 x 11S/8-1/2 x 11, 8-1/2 x 14, 11 x 17 Max. 297 mm x 431.8 mm 11.75 x 17 inch Min. 182 mm x 148.5 mm	60 to 90 g/m <sup>2</sup> 16 to 24 lb	Exit tray1	200 sheets	50 sheets*
			Exit tray2	A4S, 8-1/2 x 11S or less	
Thick paper	7.25 x 5.75 inch	91 to 120 g/m <sup>2</sup> 24.25 to 32 lb		—	
			121 to 209 g/m <sup>2</sup> 32.25 to 55.5 lb	—	

\*: The number of sheets to be stapled is limited for high-density images.  
(Color wise: 20 sheets x 20 sets)

**(4) Punch**

Type	Size	Weight	Punched holes	Exit tray
Plain paper Recycled paper	B5S/B5 to A3 8-1/2 x 11S/8-1/2 x 11 to 11 x 17	60 to 256 g/m <sup>2</sup> 16 to 68 lb	2, 3, 4 *	Exit tray1 Exit tray2 OT-602 MT-502

\*: The punched holes is different because of the difference of area.

**D. Stapling**

Staple filling mode	Dedicated staple cartridge (5000 staples)	
Staple detection	Available (Nearly Empty: 20 remaining staples)	
Stapling position	Back of the corner (30 degree)	A4, A3, B5, B4
	Front of the corner (30 degree)	8-1/2 x 11, 11 x 17
	Back of the corner (Parallel)	A4S, B5S, A5
	Front of the corner (Parallel)	8-1/2 x 11S, 8-1/2 x 14
	Side: Parallel 2 point	A4S/A4, A3, B5S/B5, B4, A5 8-1/2 x 11S/8-1/2 x 11, 8-1/2 x 14, 11 x 17
Manual staple	None	

**E. Hole Punch**

No. of holes	Metric: 4 holes, Inch: 2 holes/3 holes, Sweden: 4 holes
Punch dust full detection	Available

**F. Machine specifications**

Power requirements	DC 24 V (supplied from the main unit)
	DC 5.1 V (generated by finisher)
Max. power consumption	66 W or less
Dimensions	352 mm (W) x 558 mm (D) x 589 mm (H)
	13.75 inch (W) x 22 inch (D) x 23.25 inch (H)
	471 mm (W) x 558 mm (D) x 589 mm (H) *1
	18.5 inch (W) x 22 inch (D) x 23.25 inch (H) *1
Weight	33.2 kg (73.25 lb)

\*1: Size when the paper exit tray is pulled out

**G. Operating environment**

- Conforms to the operating environment of the main body.

## 1.2 PK-515

### A. Type

Name	Punch kit PK-515	
Installation	Built into the finisher	
Paper size	Metric	B5S, A4, B4, A3
	Inch (2 holes)	8-1/2 x 11S/8-1/2 x 11, 8-1/2 x 14, 11 x 17
	Inch (3 holes)	8-1/2 x 11, 11 x 17
	Sweden	B5S, A4, B4, A3
Paper type	Plain paper (60 to 209 g/m <sup>2</sup> , 16 to 55.5 lb) Thick paper 1/2/3 (91 to 256 g/m <sup>2</sup> , 24.25 to 68 lb)	
Punch hole	Metric: 2 holes, 4 holes, Inch: 2/3 hole, Sweden: 4 holes	
Number of stored punch wastes	Metric (2 holes): For 2,500 sheets of paper (64 g/m <sup>2</sup> ) Metric (4 holes): For 1,500 sheets of paper (80 g/m <sup>2</sup> ) Inch (2/3 holes): For 1,000 sheets of paper (75 g/m <sup>2</sup> ) Sweden (4 holes): For 1,500 sheets of paper (80 g/m <sup>2</sup> )	
Document alignment	Center	

### B. Machine specifications

Power requirements	Supplied by the finisher
Dimensions	114 mm (W) x 461 mm (D) x 106 mm (H) 4.5 inch (W) x 18.25 inch (D) x 4.25 inch (H)
Weight	Approx. 1.9 kg (4.25 lb) or less

### C. Operating environment

- Conforms to the operating environment of the main body.



## 1.3 OT-602

### A. Type

Name	Output tray OT-602
Installation	Fixed to the finisher
Mode	Sort, group, and sort stable Sort, group, sort offset, group offset, and sort stable
Number of bins	1 bin
Document alignment	Center

### B. Paper

Mode	Size	Type	Capacity	
Sort/group	A6S, A5S/A5, B5S/B5, B6S, A4S/A4, B4, A3, A3Wide 5- <sup>1</sup> / <sub>2</sub> x 8- <sup>1</sup> / <sub>2</sub> S/5- <sup>1</sup> / <sub>2</sub> x 8- <sup>1</sup> / <sub>2</sub> , 8- <sup>1</sup> / <sub>2</sub> x 11S/8- <sup>1</sup> / <sub>2</sub> x 11, 8- <sup>1</sup> / <sub>2</sub> x 14, 11 x 17 Max. 311.15 mm x 457.2 mm 12.25 x 18 inch Min. 90 mm x 139.7 mm 3.5 x 5.5 inch	Plain Paper	60 to 90 g/m <sup>2</sup> , 16 to 24 lb 200 sheets (up to a height of 24 mm)	
		Recycled paper		
		Special	Government standard postcards	—
			Envelope	
			OHP transparencies	
			Translucent paper	
Label	—			
Thick paper	91 to 271 g/m <sup>2</sup> 24.25 to 72 lb	20 sheets		
Sort offset/ group off- set	A5, B5S/B5, A4S/A4, B4, A3 8- <sup>1</sup> / <sub>2</sub> x 11S/8- <sup>1</sup> / <sub>2</sub> x 11, 8- <sup>1</sup> / <sub>2</sub> x 14, 11 x 17 Max. 297 mm x 431.8 mm 11.75 x 17 inch	Plain Paper	60 to 90 g/m <sup>2</sup> , 16 to 24 lb 200 sheets (up to a height of 24 mm)	
		Recycled paper		
		Thick paper	91 to 271 g/m <sup>2</sup> 24.25 to 72 lb	—
Sort stable	Min. 182 mm x 148.5 mm 7.25 x 5.75 inch	Plain Paper	60 to 90 g/m <sup>2</sup> , 16 to 24 lb 200 sheets or 20 copies (up to a height of 24 mm)	
		Recycled paper		
		Thick paper	91 to 209 g/m <sup>2</sup> 24.25 to 55.5 lb	—

**C. Machine specifications**

Dimensions	282 mm (W) x 368 mm (D) x 57 mm (H) 11 inch (W) x 14.5 inch (D) x 2.25 inch (H)
Weight	0.7 kg (1.5 lb)

**D. Operating environment**

- Conforms to the operating environment of the main body.

**NOTE****How product names appear in the document**

- **FS-519: Finisher**
- **PK-515: Punch kit**
- **OT-602: Output tray**

# Outline for d-Color MF450

## 2. Product specifications

### 2.1 FS-519

#### A. Type

Name	Multi staple finisher built into the copier
Installation	Installed in the copier
Document alignment	Center
Consumables	Staples

#### B. Functions

Modes	Sort, group, sort offset, group offset, sort stable, and punch (when PK-510 is mounted)
-------	---

#### C. Paper type

##### (1) Non sort/sort/group

Type	Size	Weight	Max. capacity	
Plain paper Recycled paper		64 to 90 g/m <sup>2</sup> 17 to 24 lb	Exit tray1	200 sheets
			Exit tray2	A4S, 8 1/2 x 11S or less
				B4, 8 1/2 x 14 Or greater
Government standard postcards	A6S, A5S/A5, B5S/B5, B6S, A4S/A4, B4, A3, A3Wide	91 to 210 g/m <sup>2</sup> 24.25 to 55.75 lb	20 sheets	
Envelope	5 1/2 x 8 1/2 S/5 1/2 x 8 1/2,	—		
OHP transparencies	8 1/2 x 11S/8 1/2 x 11, 8 1/2 x 14, 11 x 17,	—		
Translucent paper	12 1/4 x 18	—		
Label	Max. 311.15 mm x 457.2 mm	—		
Letterhead	12.25 x 18 inch	—		
Thick paper 1	Min. 90 mm x 139.7 mm	91 to 120 g/m <sup>2</sup> 24.25 to 32 lb		
Thick paper 1+	3.5 x 5.5 inch	121 to 157 g/m <sup>2</sup> 32.25 to 41.75 lb		
Thick paper 2		158 to 209 g/m <sup>2</sup> 42 to 55.5 lb		
Thick paper 3		210 to 256 g/m <sup>2</sup> 55.75 to 68 lb		
Thick paper 4		257 to 300 g/m <sup>2</sup> 68.25 to 79.75 lb		
Long size paper *	210 mm to 297 mm x 457.2 mm to 1200 mm	127 to 160 g/m <sup>2</sup> 33.75 to 42.5 lb	—	

\*: Long size paper is available only for non-sort mode.

**(2) Sort offset/group offset**

Type	Size	Weight	Max. capacity	
Plain paper Recycled paper	A5, B5S/B5, A4S/A4, B4, A3 8 1/2 x 11S/8 1/2 x 11, 8 1/2 x 14, 11 x 17 Max. 297 mm x 431.8 mm 11.75 x 17 inch Min. 182 mm x 148.5 mm	64 to 90 g/m <sup>2</sup> 17 to 24 lb	Exit tray1	200 sheets
			Exit tray2	A4S, 8 1/2 x 11S or less
Thick paper	7.25 x 5.75 inch	91 to 300 g/m <sup>2</sup> 24.25 to 79.75 lb		—

**(3) Sort staple**

Type	Size	Weight	Max. capacity		No. of sheets to be stapled
Plain paper Recycled paper	A5, B5S/B5, A4S/A4, B4, A3 8 1/2 x 11S/8 1/2 x 11, 8 1/2 x 14, 11 x 17 Max. 297 mm x 431.8 mm 11.75 x 17 inch Min. 182 mm x 148.5 mm	64 to 90 g/m <sup>2</sup> 17 to 24 lb	Exit tray1	200 sheets	50 sheets*
			Exit tray2	A4S, 8 1/2 x 11S or less	
Thick paper 1	7.25 x 5.75 inch	91 to 209 g/m <sup>2</sup> 24.25 to 55.5 lb		—	
			—		15 sheets
Thick paper 1+	7.25 x 5.75 inch	91 to 209 g/m <sup>2</sup> 24.25 to 55.5 lb	—		15 sheets
Thick paper 2			—		15 sheets

\*: The number of sheets to be stapled is limited for high-density images.

(Color wise: 20 sheets x 20 sets)

**(4) Punch**

Type	Size	Weight	Punched holes	Exit tray
Plain paper Recycled paper	B5S/B5 to A3 8 1/2 x 11S/8 1/2 x 11 to 11 x 17	64 to 209 g/m <sup>2</sup> 17 to 55.5 lb	2, 3, 4 *	Exit tray1 Exit tray2 OT-602 MT-502

\*: The punched holes is different because of the difference of area.

**D. Stapling**

Staple filling mode	Dedicated staple cartridge (5000 staples)	
Staple detection	Available (Nearly Empty: 20 remaining staples)	
Stapling position	Back of the corner (30 degree)	A4, A3, B5, B4
	Front of the corner (30 degree)	8 1/2 x 11, 11 x 17
	Back of the corner (Parallel)	A4S, B5S, A5
	Front of the corner (Parallel)	8 1/2 x 11S, 8 1/2 x 14
	Side: Parallel 2 point	A4S/A4, A3, B5S/B5, B4, A5 8 1/2 x 11S/8 1/2 x 11, 8 1/2 x 14, 11 x 17
Manual staple	None	

**E. Hole Punch**

No. of holes	Metric: 4 holes, Inch: 2 holes/3 holes, Sweden: 4 holes
Punch dust full detection	Available

**F. Machine specifications**

Power requirements	DC 24 V (supplied from the main unit)
	DC 5.1 V (generated by finisher)
Max. power consumption	66 W or less
Dimensions	352 mm (W) x 558 mm (D) x 589 mm (H) 13.75 inch (W) x 22 inch (D) x 23.2 inch (H)
Weight	33.2 kg (73.25 lb)

**G. Operating environment**

- Conforms to the operating environment of the main unit.

## 2.2 PK-510

### A. Type

Name	Punch kit PK-510	
Installation	Built into the finisher	
Paper size	Metric	B5S, A4, B4, A3
	Inch (2 holes)	8 1/2 x 11S/8 1/2 x 11, 8 1/2 x 14, 11 x 17
	Inch (3 holes)	8 1/2 x 11, 11 x 17
	Sweden	B5S, A4, B4, A3
Paper type	Plain Paper, Recycled paper (64 to 209 g/m <sup>2</sup> , 17 to 55.5 lb)	
Punch hole	Metric: 2 holes, 4 holes, Inch: 2/3 hole, Sweden: 4 holes	
Number of stored punch wastes	Metric (2 holes): For 2,500 sheets of paper (64 g/m <sup>2</sup> ) Metric (4 holes): For 1,500 sheets of paper (80 g/m <sup>2</sup> ) Inch (2/3 holes): For 1,000 sheets of paper (75 g/m <sup>2</sup> ) Sweden (4 holes): For 1,500 sheets of paper (80 g/m <sup>2</sup> )	
Document alignment	Center	

### B. Machine specifications

Power requirements	Supplied by the finisher
Dimensions	114 mm (W) x 461 mm (D) x 106 mm (H) 4.5 inch (W) x 18.25 inch (D) x 4.25 inch (H)
Weight	Approx. 1.9 kg (4.25 lb) or less

### C. Operating environment

- Conforms to the operating environment of the main unit.

## 2.3 OT-602

### A. Type

Name	Output tray OT-602
Installation	Fixed to the finisher
Mode	Sort, group, and sort stable Sort, group, sort offset, group offset, and sort stable
Number of bins	1 bin
Document alignment	Center

### B. Paper type

Mode	Size	Type	Capacity		
Sort/group	A6S, A5S/A5, B5S/B5, B6S, A4S/A4, B4, A3, A3Wide 5 1/2 x 8 1/2S/5 1/2 x 8 1/2, 8 1/2 x 11S/8 1/2 x 11, 8 1/2 x 14, 11 x 17  Max. 311.15 mm x 457.2 mm 12.25 x 18 inch Min. 90 mm x 139.7 mm 3.5 x 5.5 inch	Plain Paper	64 to 90 g/m <sup>2</sup> , 17 to 24 lb	200 sheets (up to a height of 24 mm)	
		Recycled paper			
		Special	Government standard postcards		20 sheets
			Envelope		
			OHP transparencies		
			Translucent paper		
			Label		
		Letterhead			
		Thick paper 1	91 to 120 g/m <sup>2</sup> 24.25 to 32 lb		
		Thick paper 1+	121 to 157 g/m <sup>2</sup> 32.25 to 41.75 lb		
Thick paper 2	158 to 209 g/m <sup>2</sup> 42 to 55.5 lb				
Thick paper 3	210 to 256 g/m <sup>2</sup> 55.75 to 68 lb				
Thick paper 4	257 to 300 g/m <sup>2</sup> 68.25 to 79.75 lb				
Sort offset/ group off- set	A5, B5S/B5, A4S/A4, B4, A3 8 1/2 x 11S/8 1/2 x 11, 8 1/2 x 14, 11 x 17  Max. 297 mm x 431.8 mm 11.75 x 17 inch Min. 182 mm x 148.5 mm 7.25 x 5.75 inch	Plain Paper	64 to 90 g/m <sup>2</sup> , 17 to 24 lb	200 sheets (up to a height of 24 mm)	
		Recycled paper			
		Thick paper	91 to 300 g/m <sup>2</sup> 24.25 to 79.75 lb	—	
Sort stable		Plain Paper	64 to 90 g/m <sup>2</sup> , 17 to 24 lb	200 sheets or 20 copies (up to a height of 24 mm)	
		Recycled paper			
		Thick paper	91 to 209 g/m <sup>2</sup> 24.25 to 55.5 lb	—	

**C. Machine specifications**

Dimensions	282 mm (W) x 368 mm (D) x 57 mm (H) 11 inch (W) x 14.5 inch (D) x 2.25 inch (H)
Weight	0.7 kg (1.5 lb)

**D. Operating environment**

- Conforms to the operating environment of the main unit.

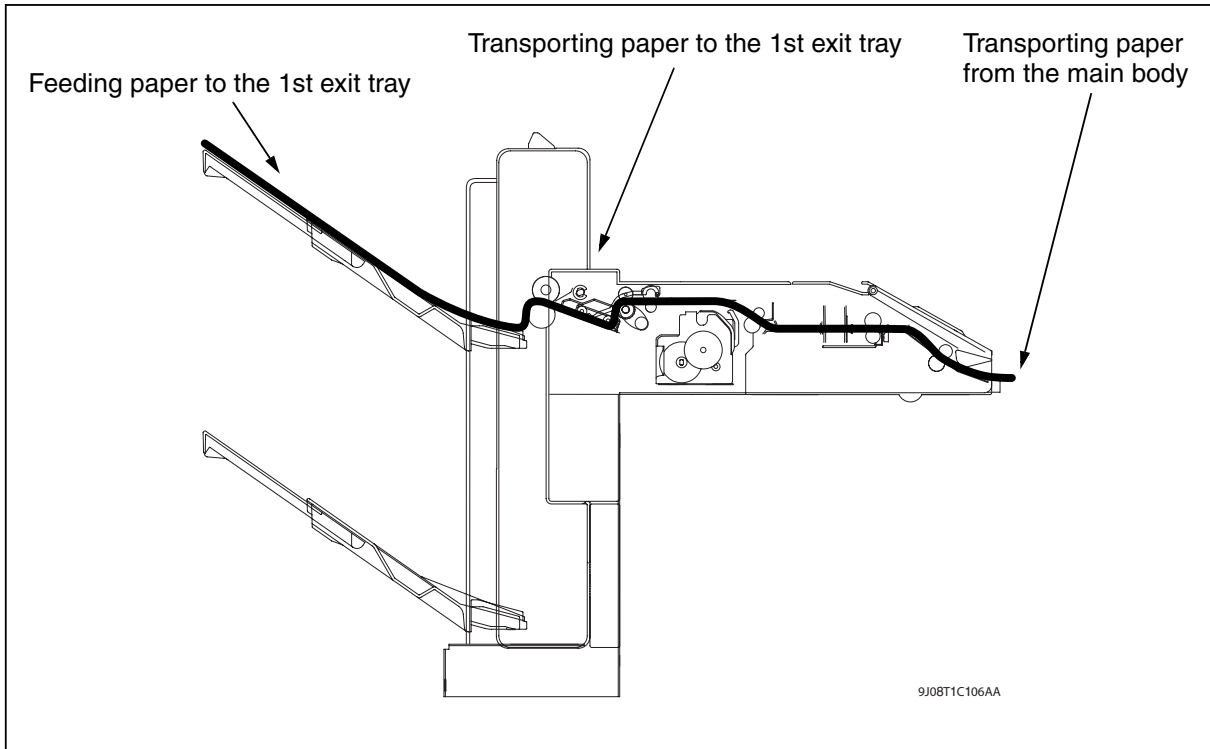
**NOTE****How product names appear in the document**

- **FS-519: Finisher**
- **PK-510: Punch kit**
- **OT-602: Output tray**

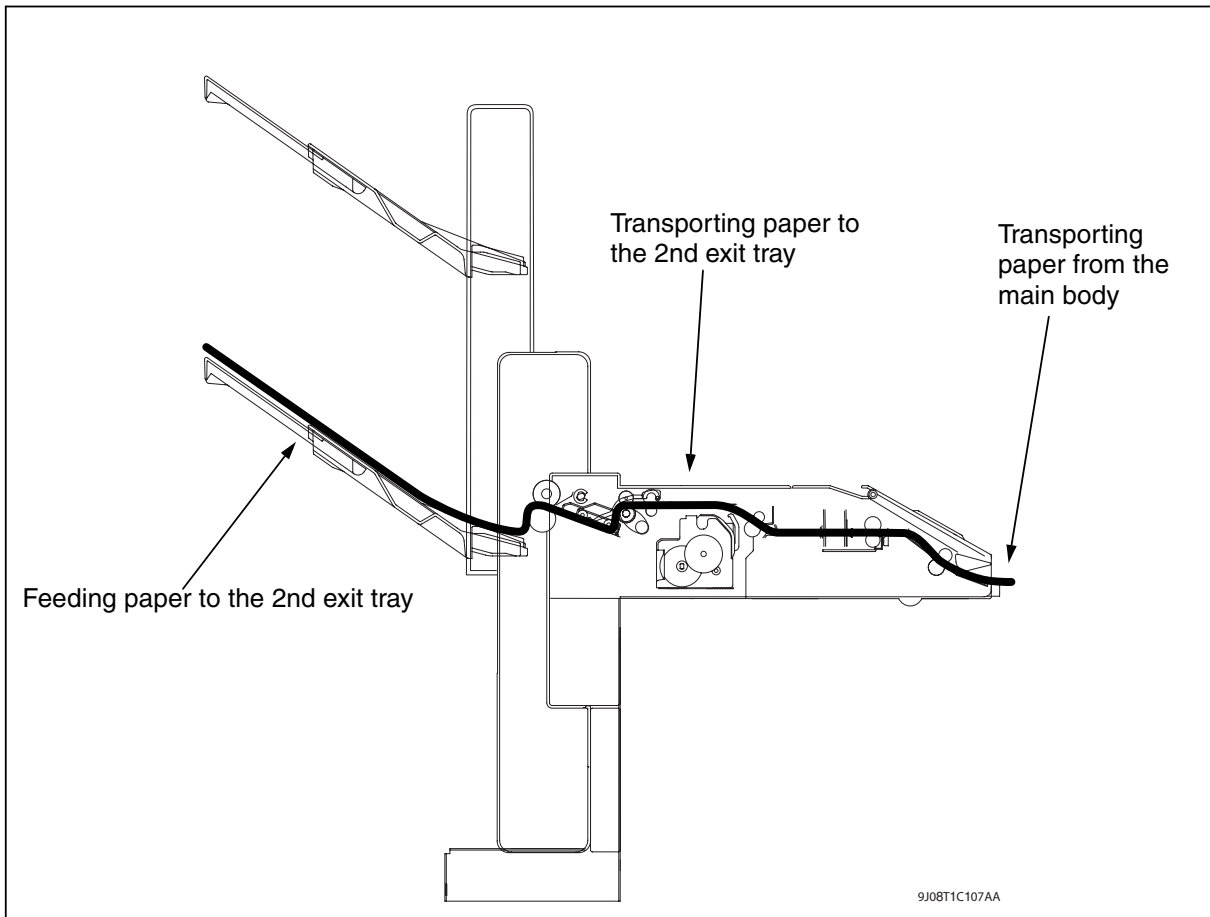


### 3. Paper feed path

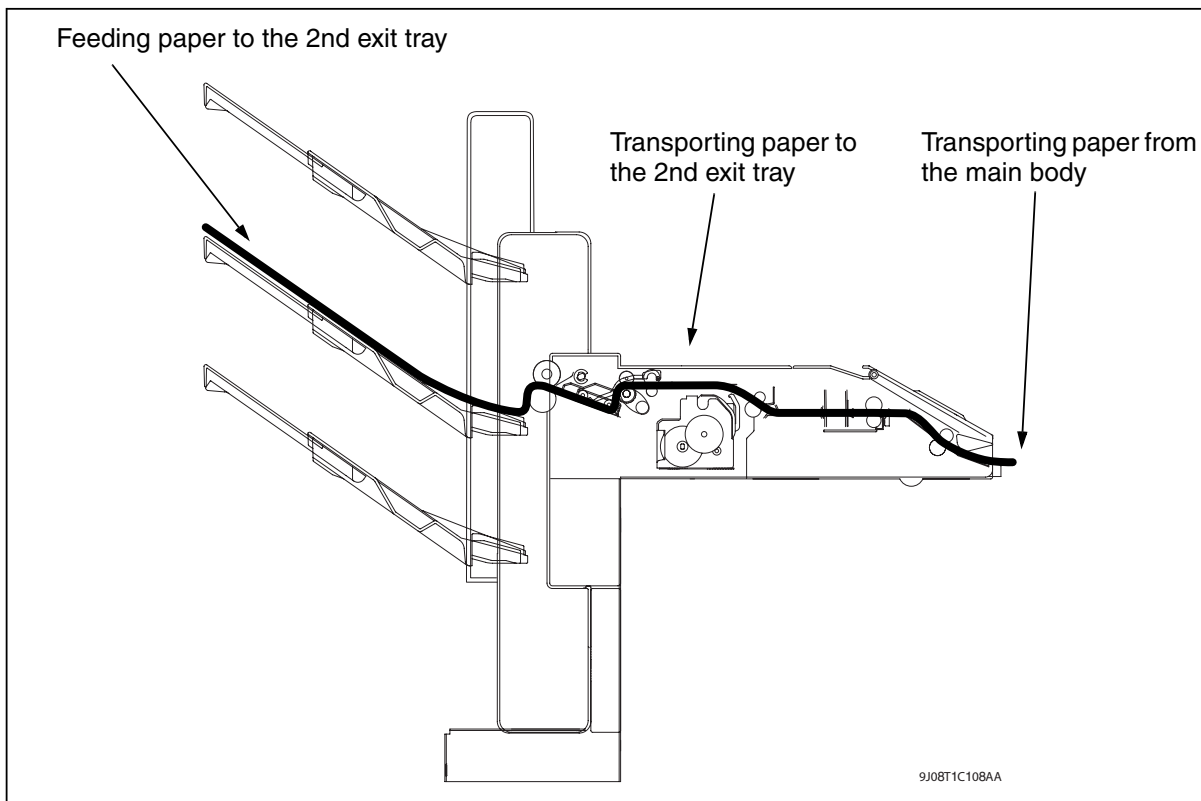
#### 3.1 Feeding paper to the 1st exit tray



#### 3.2 Feeding paper to the 2nd exit tray



### 3.3 Feeding paper to the 2nd exit tray (When OT-602 is mounted)

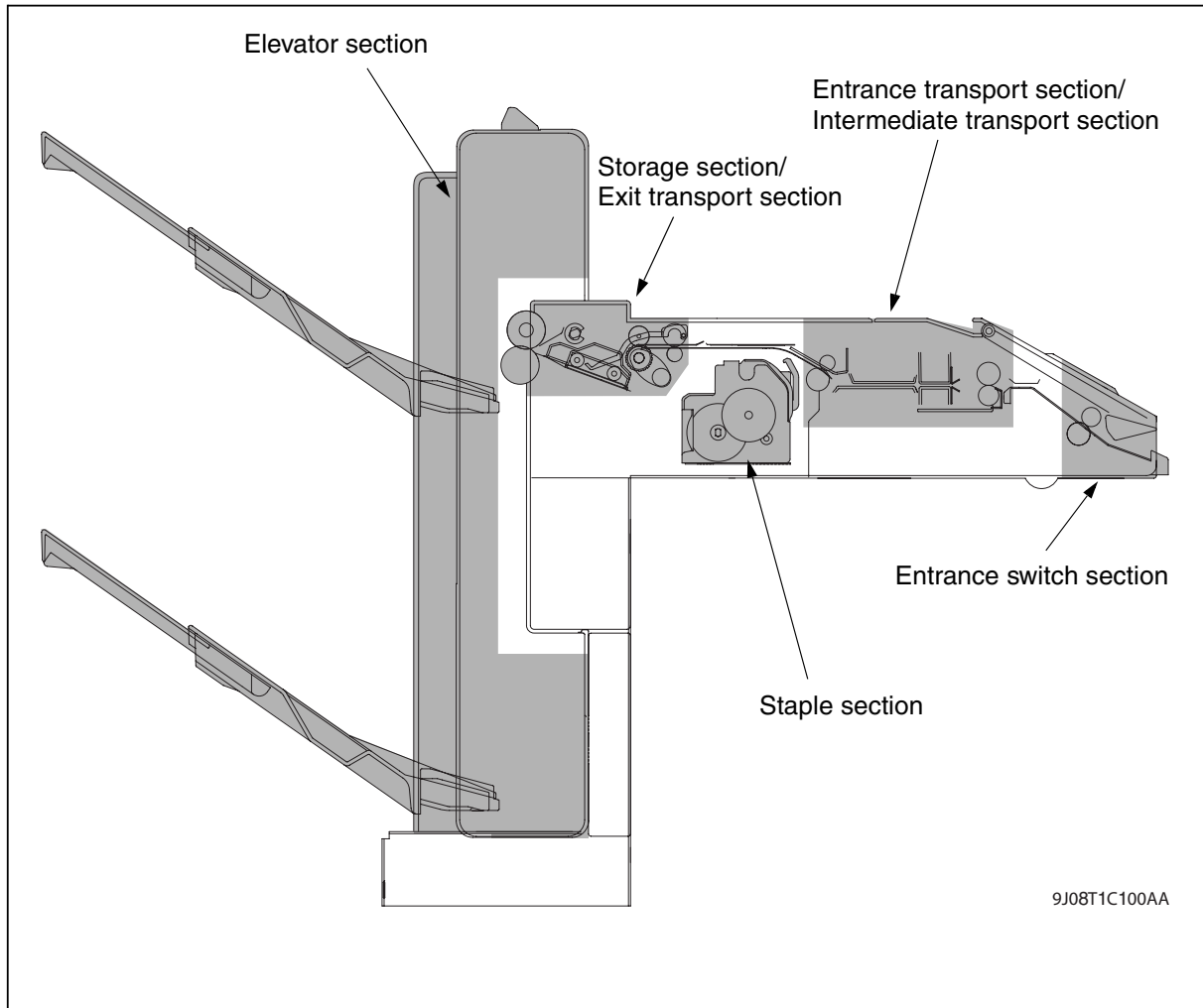


FS-519/PK-515/OT-602

Outline

# Composition/Operation

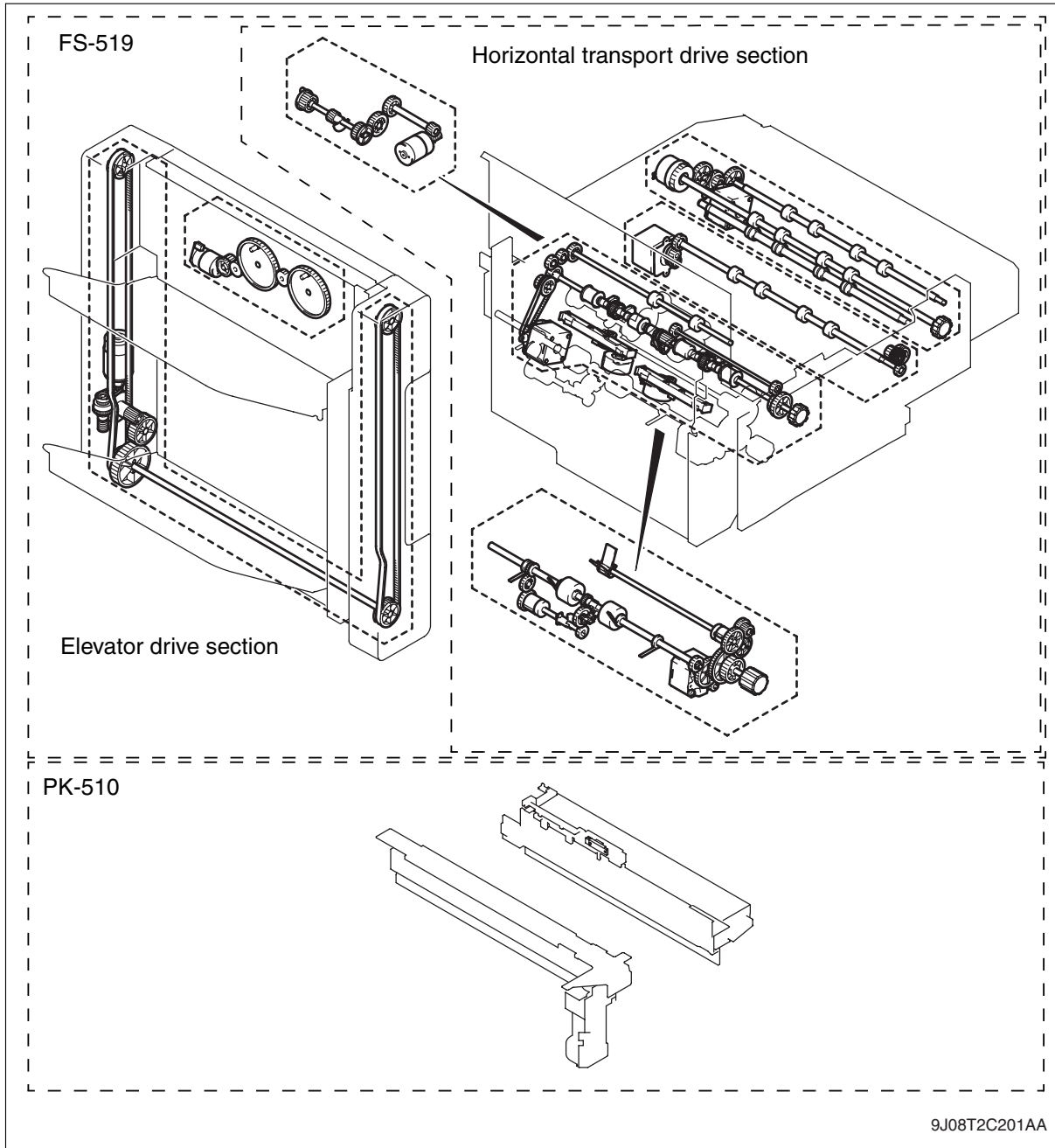
## 4. Composition



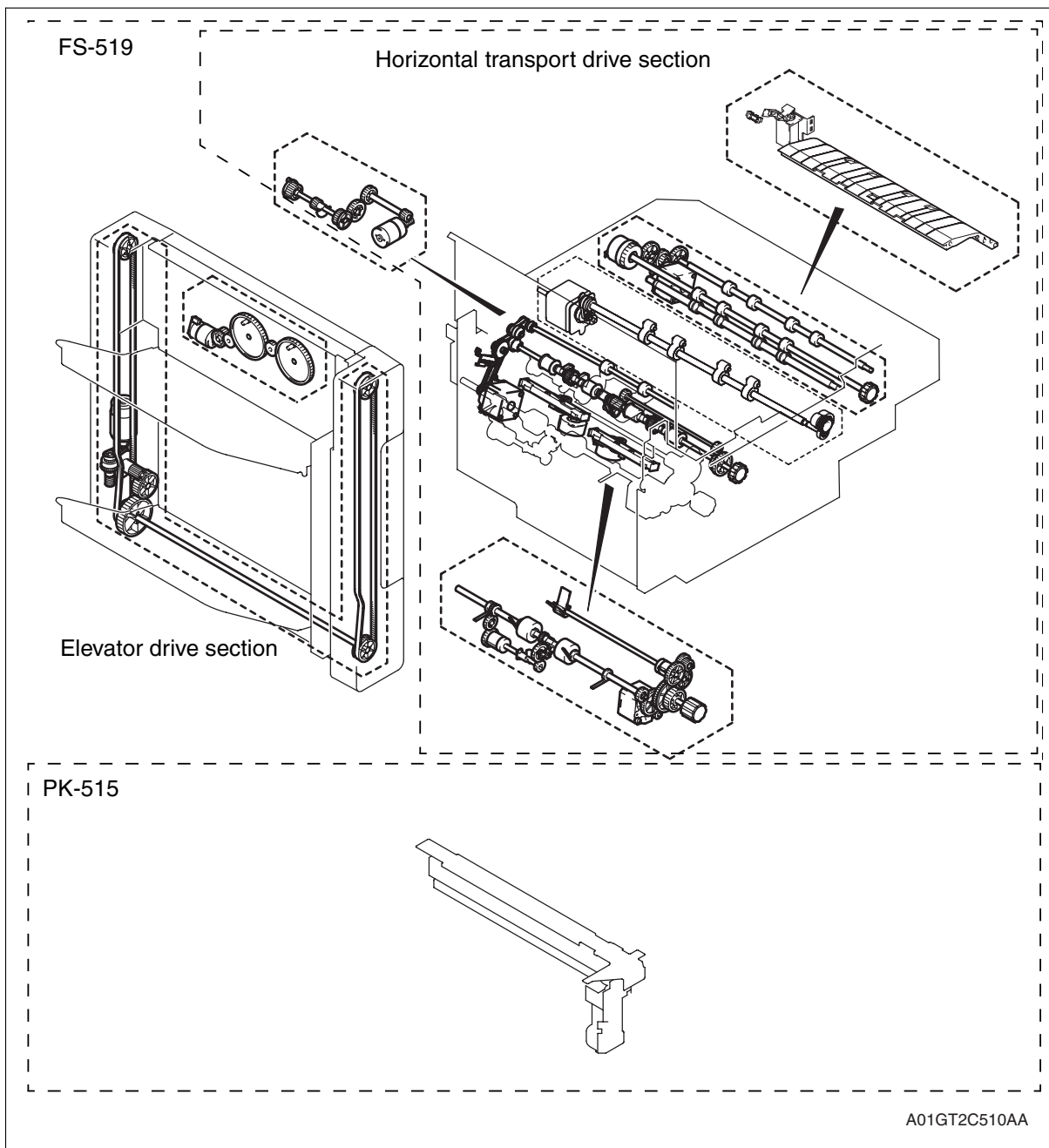
FS-519/PK-515/OT-602

Composition/Operation

# 5. Drive



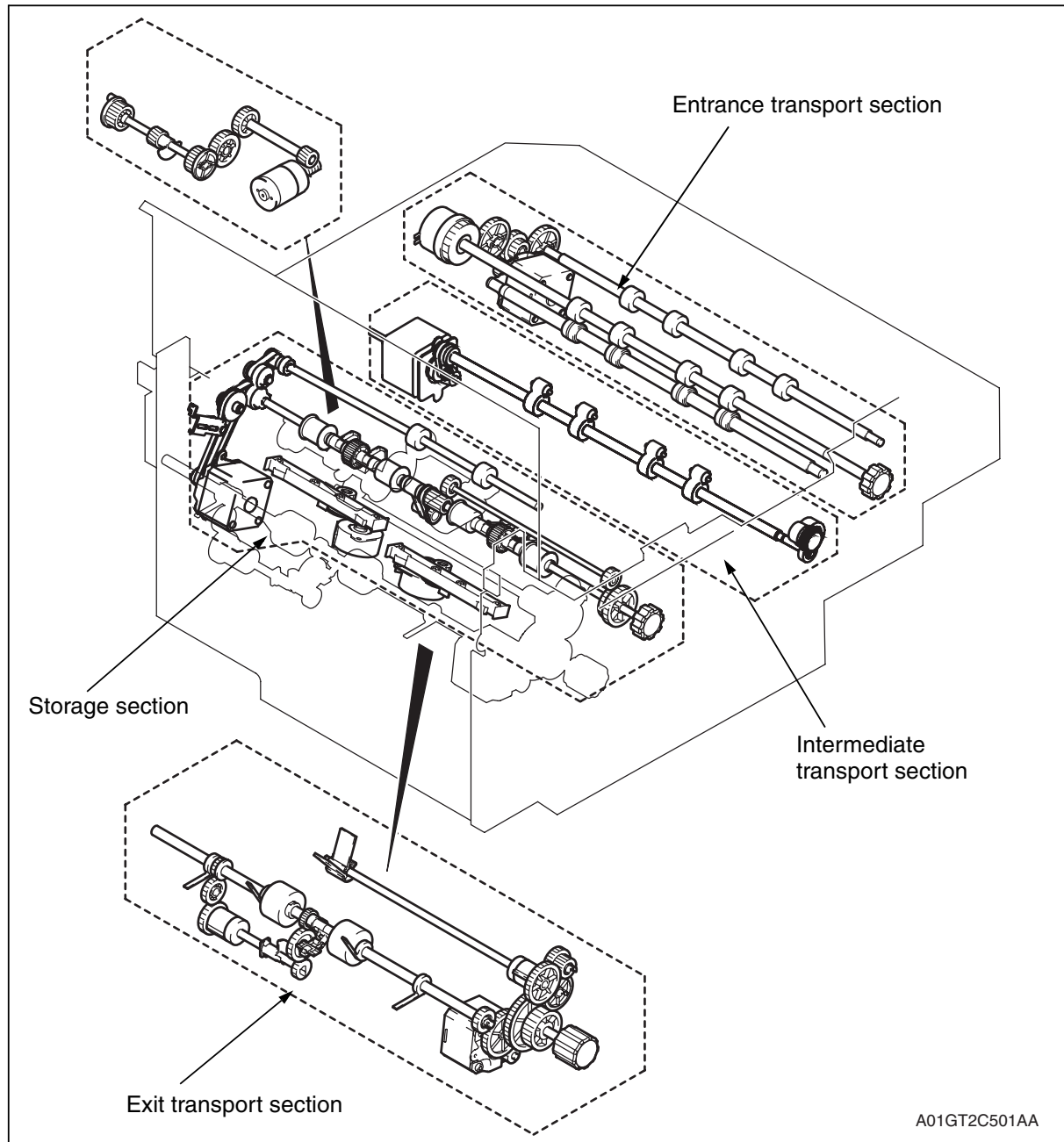
9J08T2C201AA



## 6. Operations

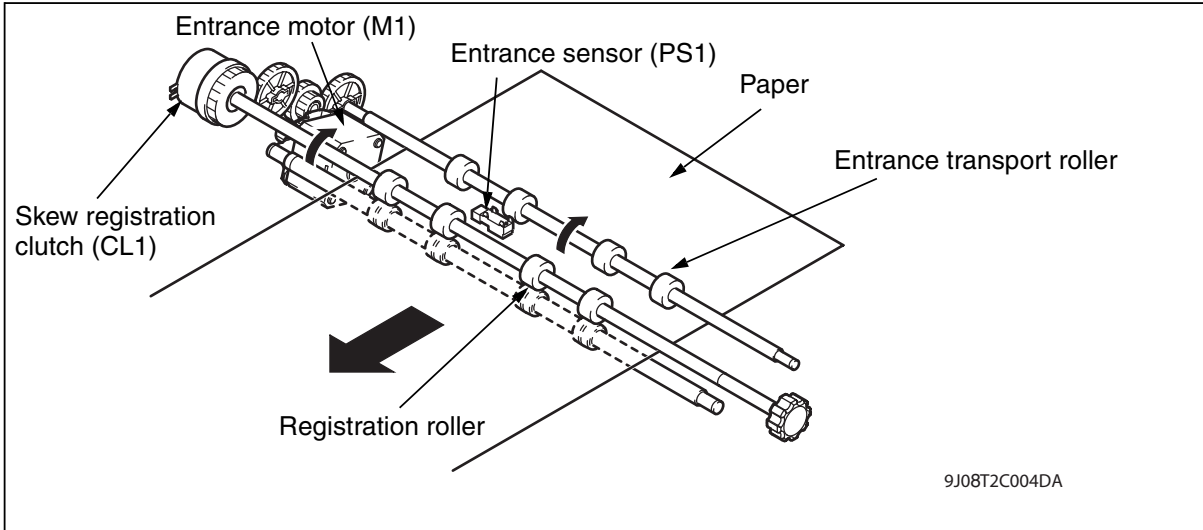
### 6.1 Transport section

- The transport section is divided into the entrance transport section, intermediate transport section, storage section, and the exit transport section. It controls to transport the paper fed from the main body, stop the paper at the punching and creasing positions, and drive the paper for feeding into the exit section.



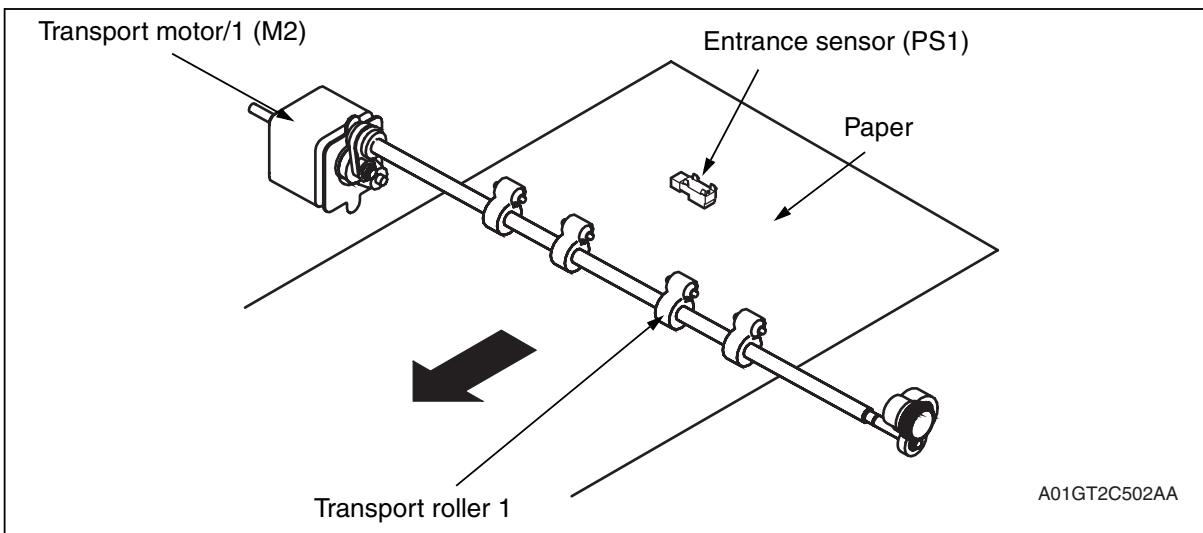
### 6.1.1 Entrance/transport section

- The paper fed from the main body is transported to the intermediate transport section.
- The entrance motor provides the drive for transporting the paper.
- When the entrance motor is energized, the entrance transport roller is driven to rotate.
- When the skew registration clutch is energized, the registration roller is driven to rotate.
- The entrance sensor detects the paper in the transport section.



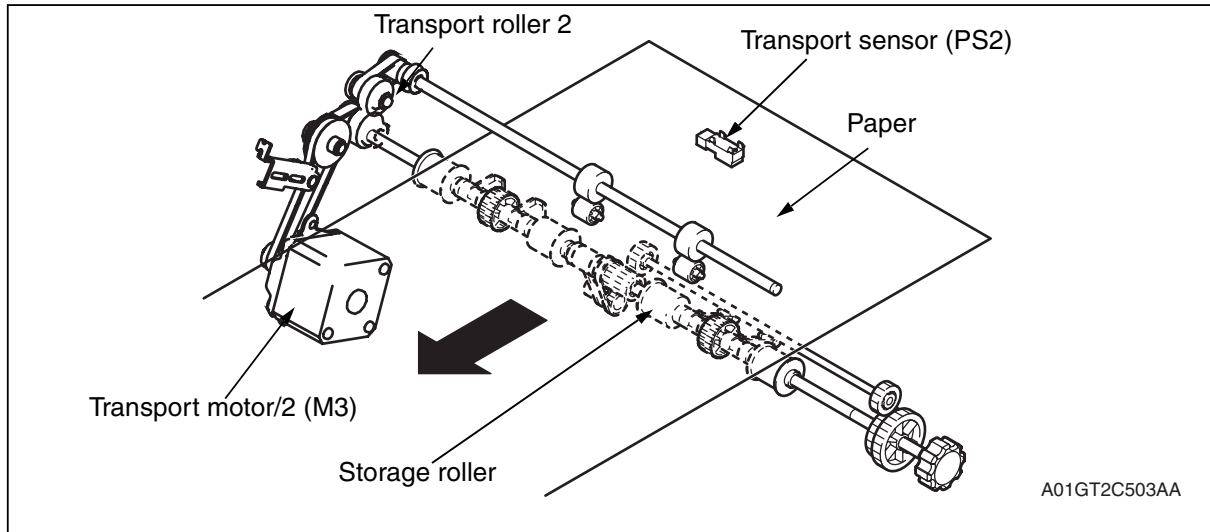
### 6.1.2 Intermediate transport section

- The paper transported from the entrance transport section is brought to a stop at the punching and creasing position. The paper is also transported to the storage section.
- Drive for the intermediate transport section is provided by the transport motor/1. Drive of the transport roller 1 is controlled.
- The entrance sensor detects paper in the intermediate transport section.



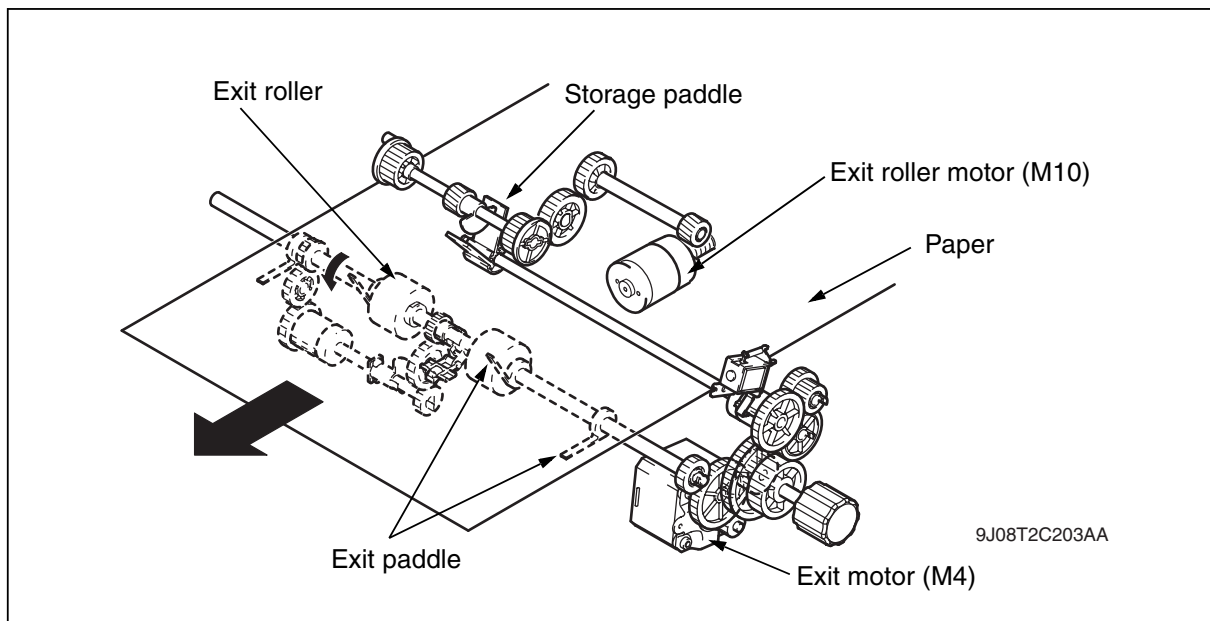
### 6.1.3 Storage section

- The paper transported from the intermediate transport section is transported to the storage section.
- Drive for the storage section is provided by the transport motor/2. Drive of the transport roller 2 and storage roller are controlled.
- The entrance sensor and transport sensor detects paper in the storage section.



### 6.1.4 Exit transport section

- The paper transported from the storage section is transported onto each of the exit trays.
- The exit motor provides drive for the exit roller, storage paddle, and exit paddle.

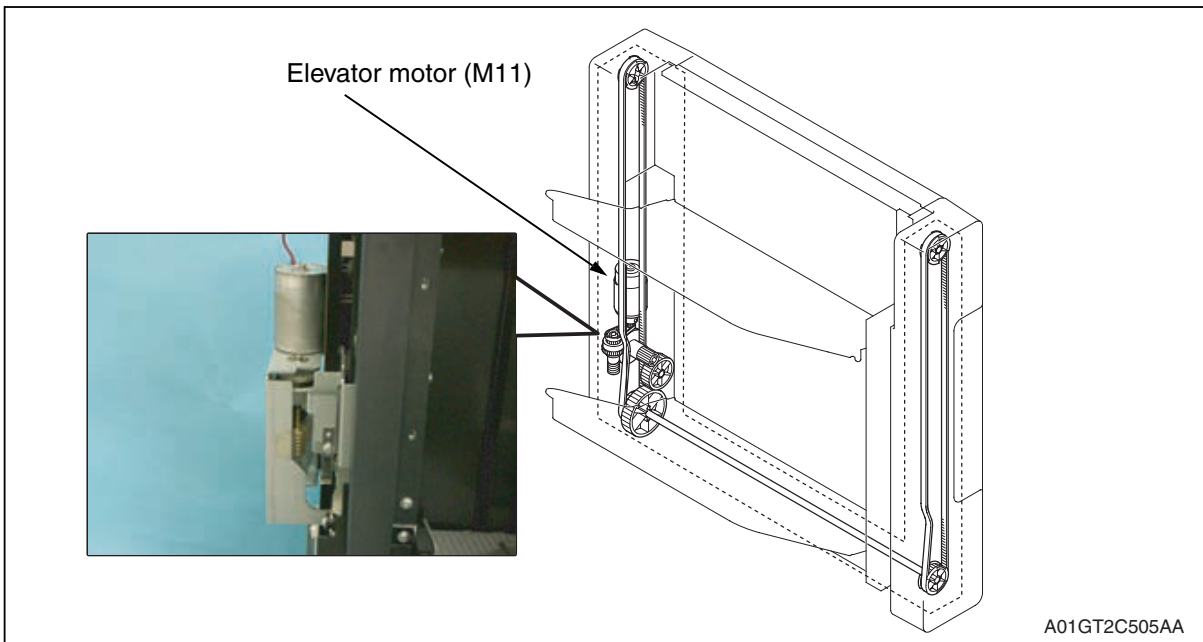




## 6.2 Elevator section

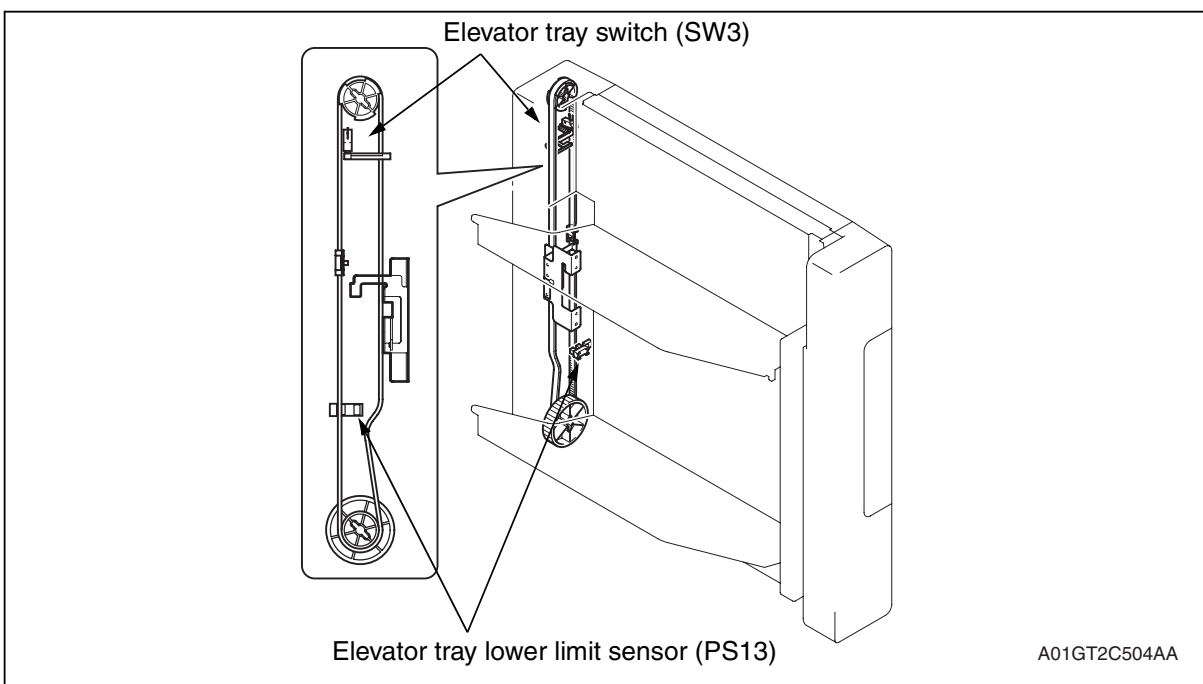
### 6.2.1 Elevator mechanism

- The elevator mechanism is operated to select a specific exit port, thereby feeding the paper out onto a specific exit tray.



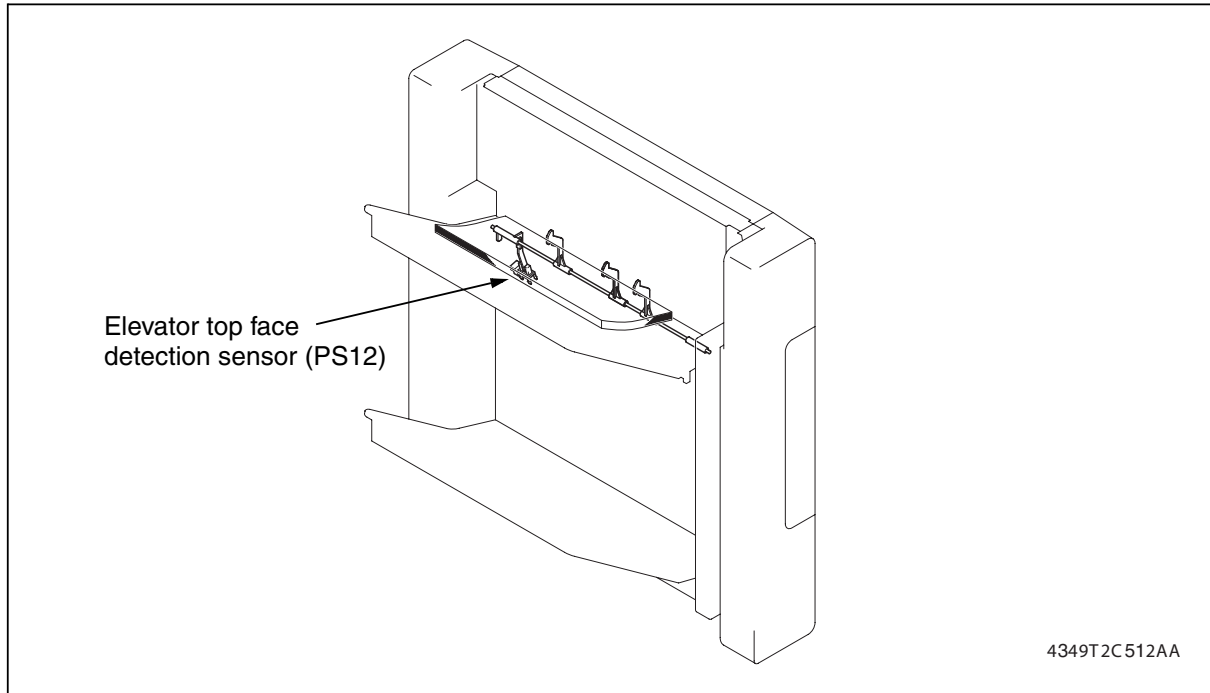
### 6.2.2 Elevator tray ascent/descent

- The elevator tray is moved up or down by the elevator motor that turns forward or backward to drive the front and rear belts.
- The elevator tray lower limit sensor detects the elevator tray at its lower limit position.
- Elevator tray switch is mounted for preventing the elevator tray's overrun for both upper and lower parts.
- The shutter is mounted for preventing the hand from being caught at the exit when the tray moves up and down.
- The shutter detect switch is mounted for preventing the hand from being caught when the shutter opens or closes.



### 6.2.3 Tray position detection mechanism

- The tray moves up or down according to the amount of paper fed onto it.
- If the elevator top face detection sensor is activated when a sheet of paper is fed onto the tray, the elevator tray is temporarily lowered until the elevator top face detection sensor is deactivated and then the tray is raised to a level, at which the elevator tray.
- Elevator top face detection sensor is activated again. This is done when each time a sheet of paper is fed onto the tray to keep the same height at all times for the elevator top face detection sensor of the paper on the tray.

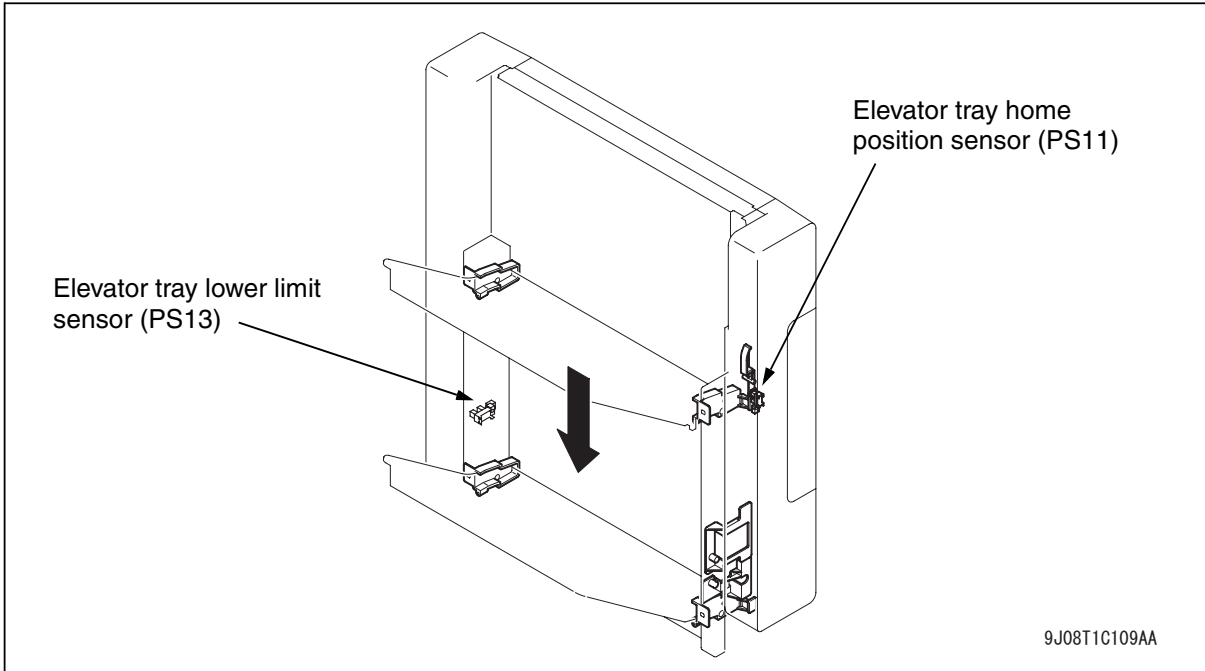


## A. Tray position detection

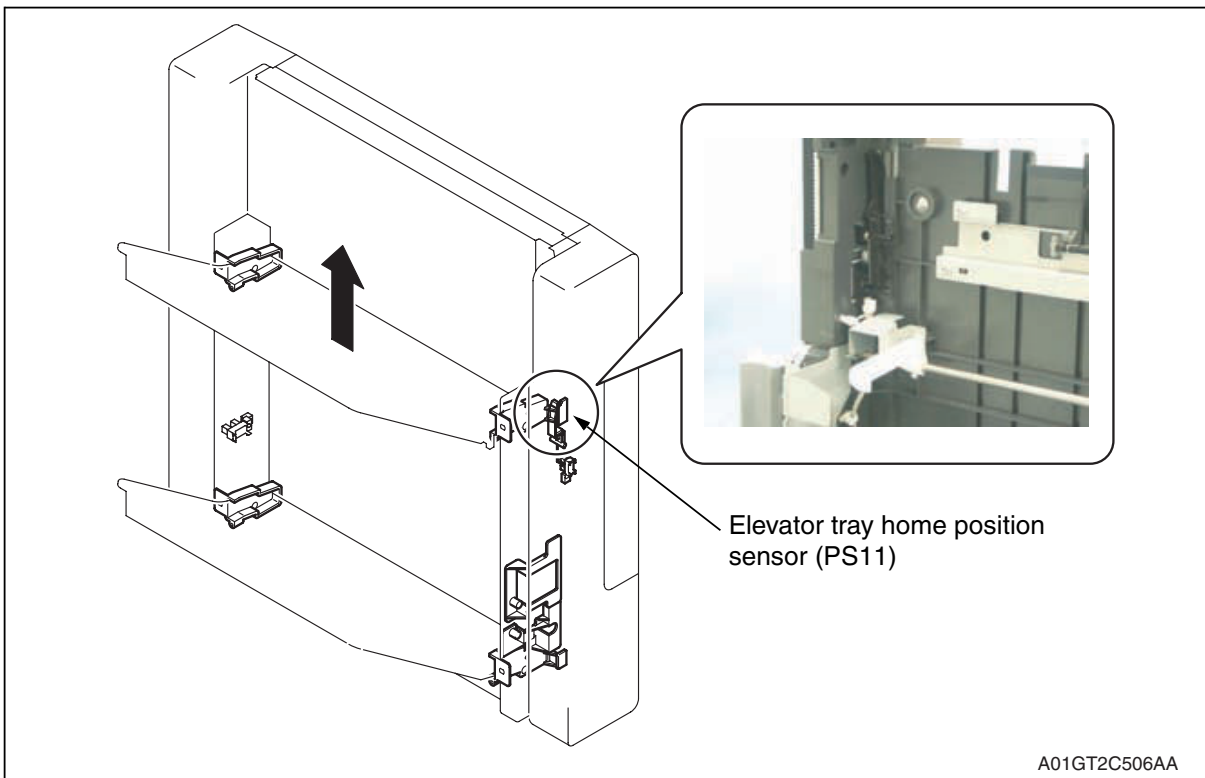
- Tray position detection is controlled according to the number of times the elevator tray home position sensor is activated after the elevator tray lower limit sensor has been activated.

### (1) Tray position detection operation

- During the initial operation sequence, the elevator tray is subjected to a descent motion until the elevator tray lower limit sensor is activated.



- After the elevator tray lower limit sensor has been activated, the elevator tray is subjected to an ascent motion.
- When the elevator tray home position sensor is activated a first time after the ascent motion of the elevator tray has been started, it is determined that the elevator tray is now located at the exit port for the 1st exit tray.



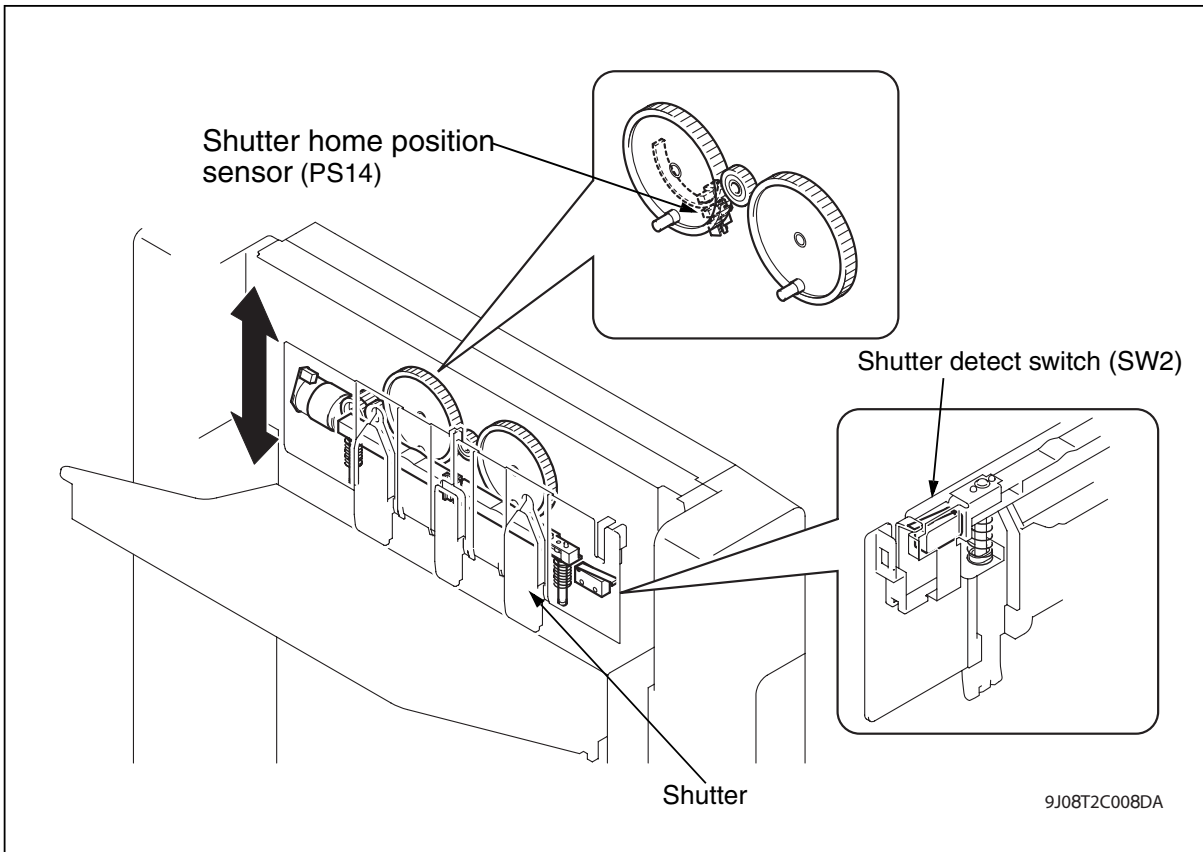
4. When the elevator tray home position sensor is activated a second time after the ascent motion of the elevator tray has been started, it is determined that the elevator tray is now located at the exit port for the 2nd exit tray.
  5. Drive is stopped when the elevator top face detection sensor is activated with the home position sensor of the target tray in the activated position.
- \* If an additional OT-601 tray is installed, the additional tray is at the exit port when the position sensor is activated twice and the 2nd tray is at the exit port when the home position sensor is activated three times.

**B. Paper full detection**

- When the elevator tray home position sensor changes from the activated to deactivated state with the elevator top face detection sensor in the activated state, a paper full condition is detected and the corresponding message will appear on the control panel.
- The shutter is closed to cover the exit while the elevator tray is moving.
- The elevator motor provides the drive for the elevator tray.
- The shutter motor opens or closes the exit port.

### 6.2.4 Shutter open/close mechanism

- The shutter at the exit is open with the opening for exit being disclosed. When the tray moves, the shutter closes to prevent the hand from being caught at the exit.
- The shutter is opened or closed by the shutter motor that turns a gear train for raising or lowering the shutter.
- The shutter home position sensor detects the position of the gear, thereby determining the position of the shutter.
- The shutter detection switch is mounted to prevent the hand from being caught when the shutter opens and closes. Pressing the shutter detection switch will stop the shutter's opening or closing operation as well as tray's up or down movement.



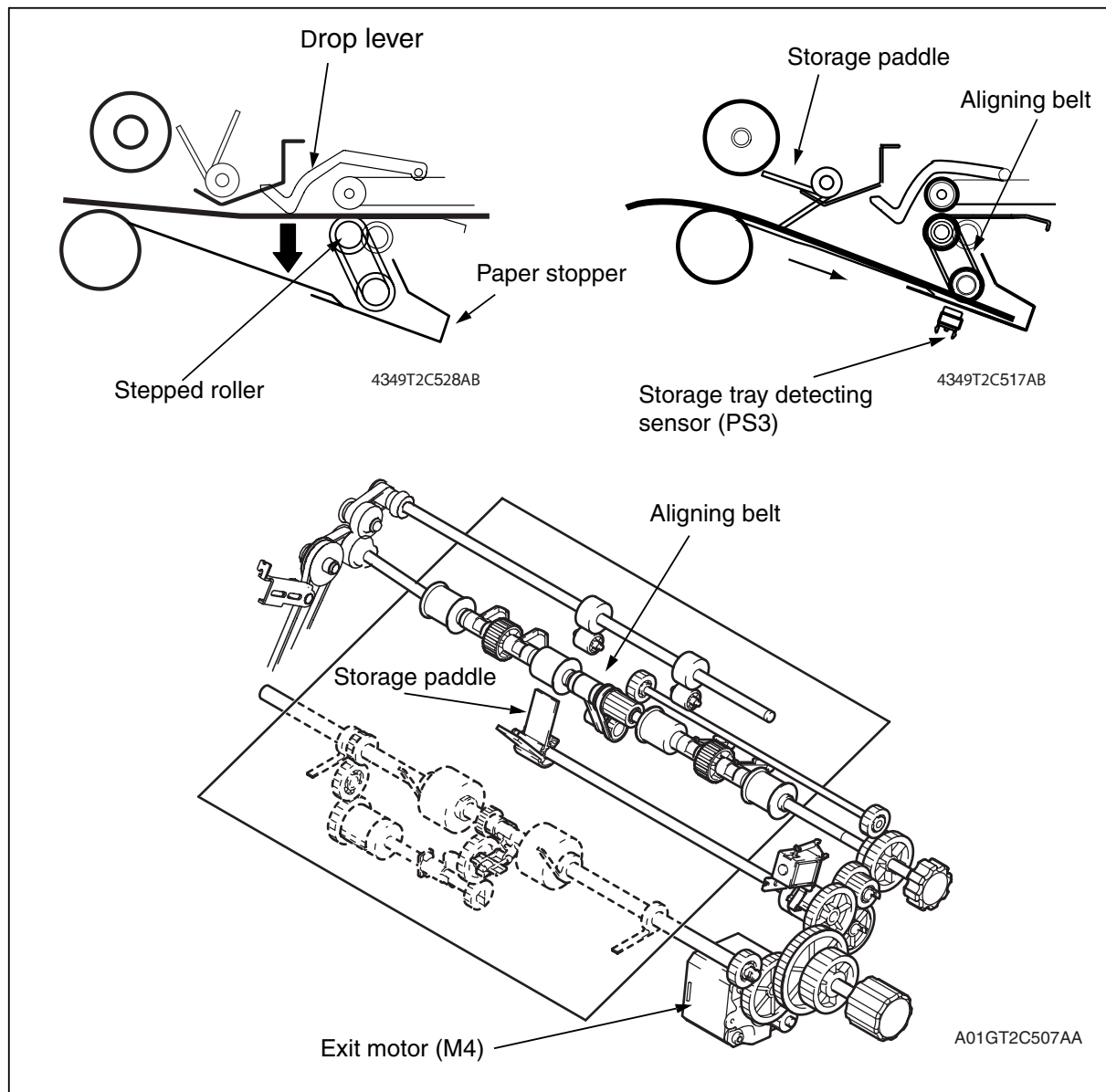
## 6.3 Paper aligning section

### 6.3.1 Paper aligning mechanism (sub scan direction)

- Sheets of paper are aligned properly and stapled together inside the transport section before being fed out onto the corresponding exit tray.
- In the sort, group copy, staple, or center crease/center staple mode, each copy set is stored in the storage tray with the upper exit roller separated from the lower exit roller.
- The storage tray detect sensor detects paper in the storage tray.
- The storage paddle and aligning belt are driven when the exit motor is rotated in reverse.

#### A. Operation

1. The paper fed out from the main body is held downward by the drop lever and dropped down into the storage tray by the stepped roller.
2. The paper dropped into the storage tray is pressed against the stopper by the paddle and aligning belt so that it is aligned properly in the sub scan direction.

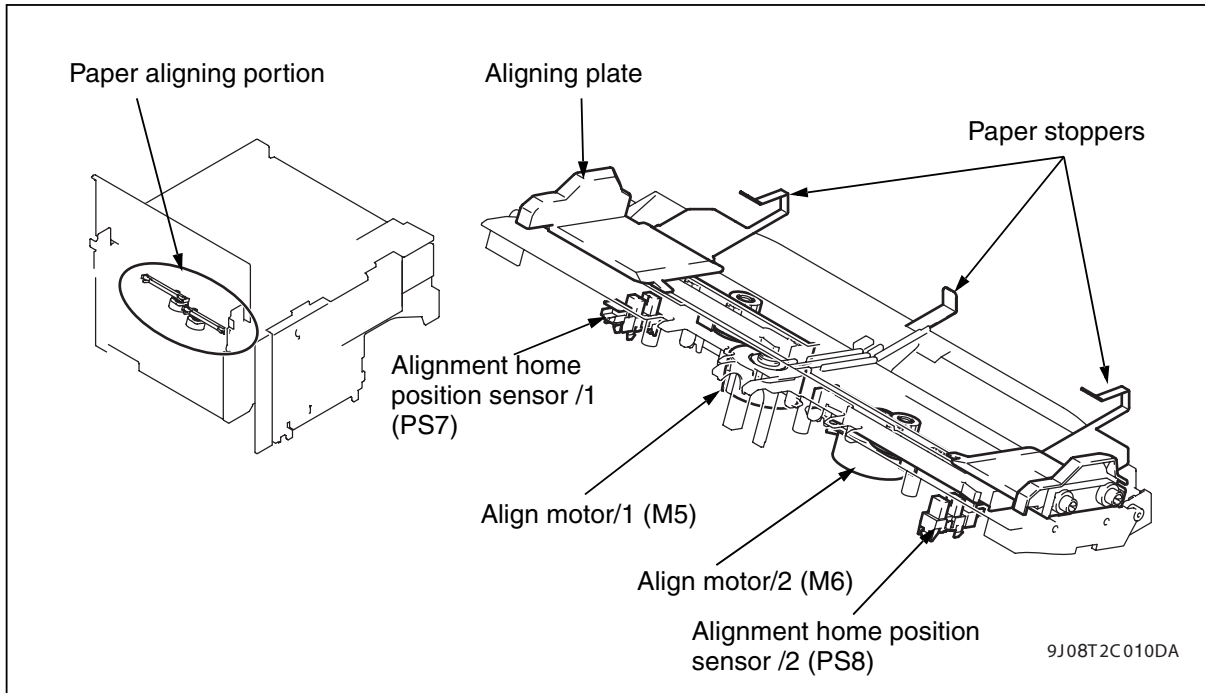


### 6.3.2 Paper aligning mechanism (main scan direction)

- Aligning plates are moved and the paddle is rotated so as to align the paper at the stapling position.
- The paper in the storage tray is aligned in the main scan direction by two align motors and aligning plates.

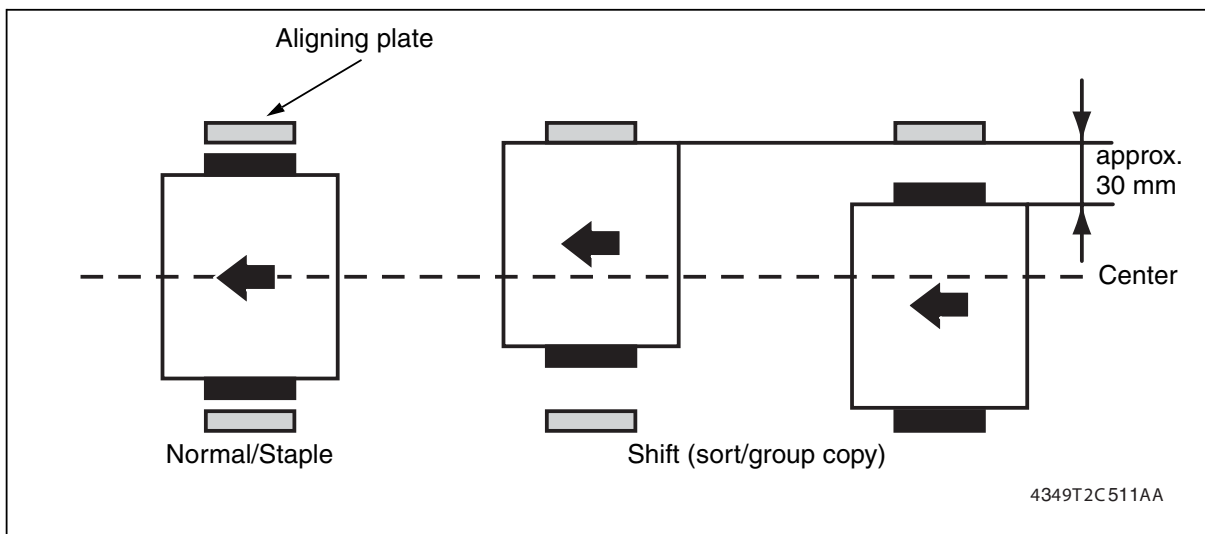
#### A. Aligning plates

- The aligning plates are moved to the front or rear in accordance with the paper size.
- The alignment home position sensor controls the position of each aligning plate.



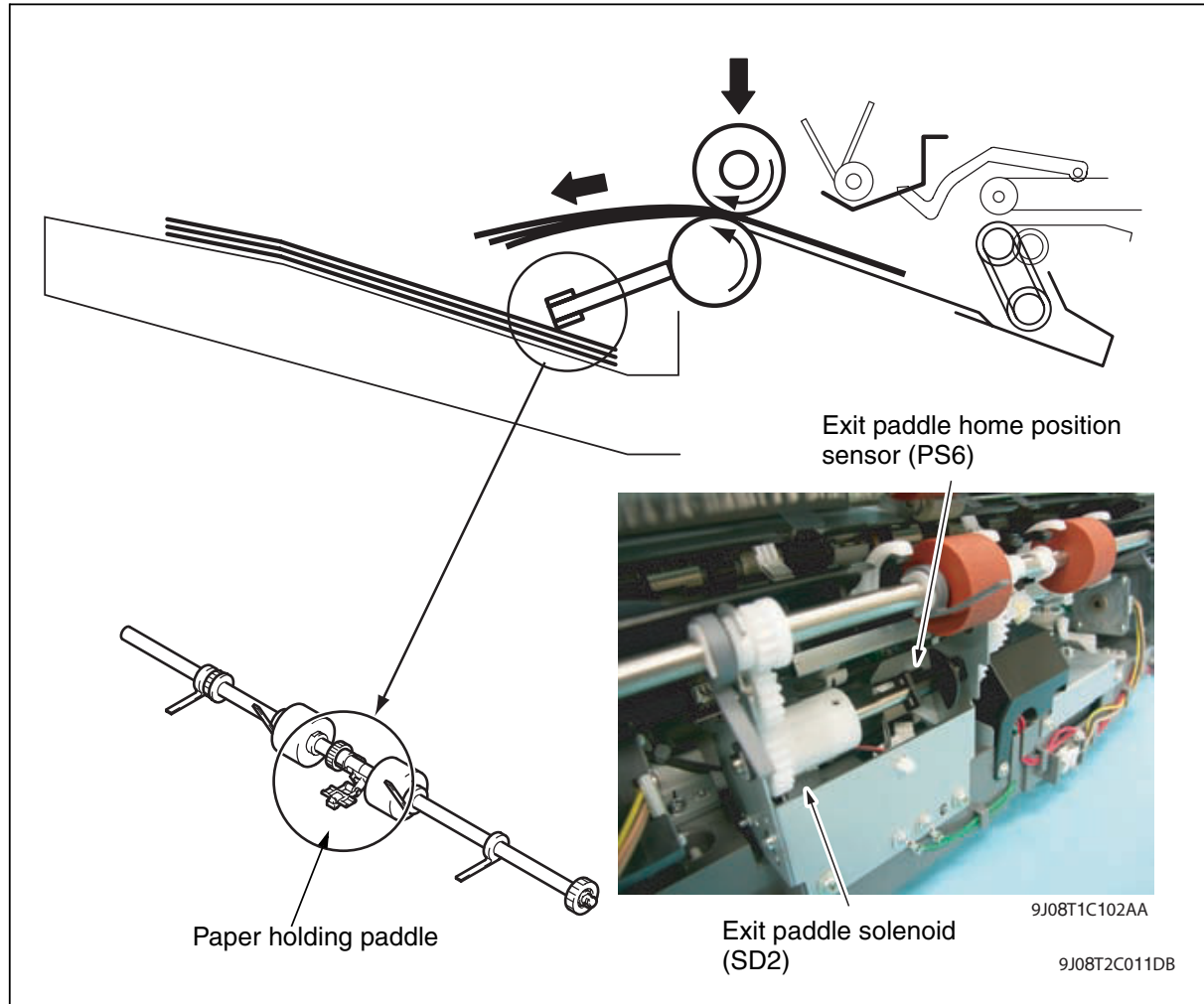
#### B. Paper aligning sequence

- In normal print and staple mode, the paper is fed into the tray at its center position.
- If no stapling is involved in the sort or group copy mode, the aligning plate shifts 15 mm to the front or rear from the center. This stacks copy sets/stacks in a saw tooth manner, each being offset by about 30 mm with respect to the others. This shifting motion is not performed when sets/stacks are fed into the mail bins or the saddle unit.



### 6.3.3 Exit mechanism

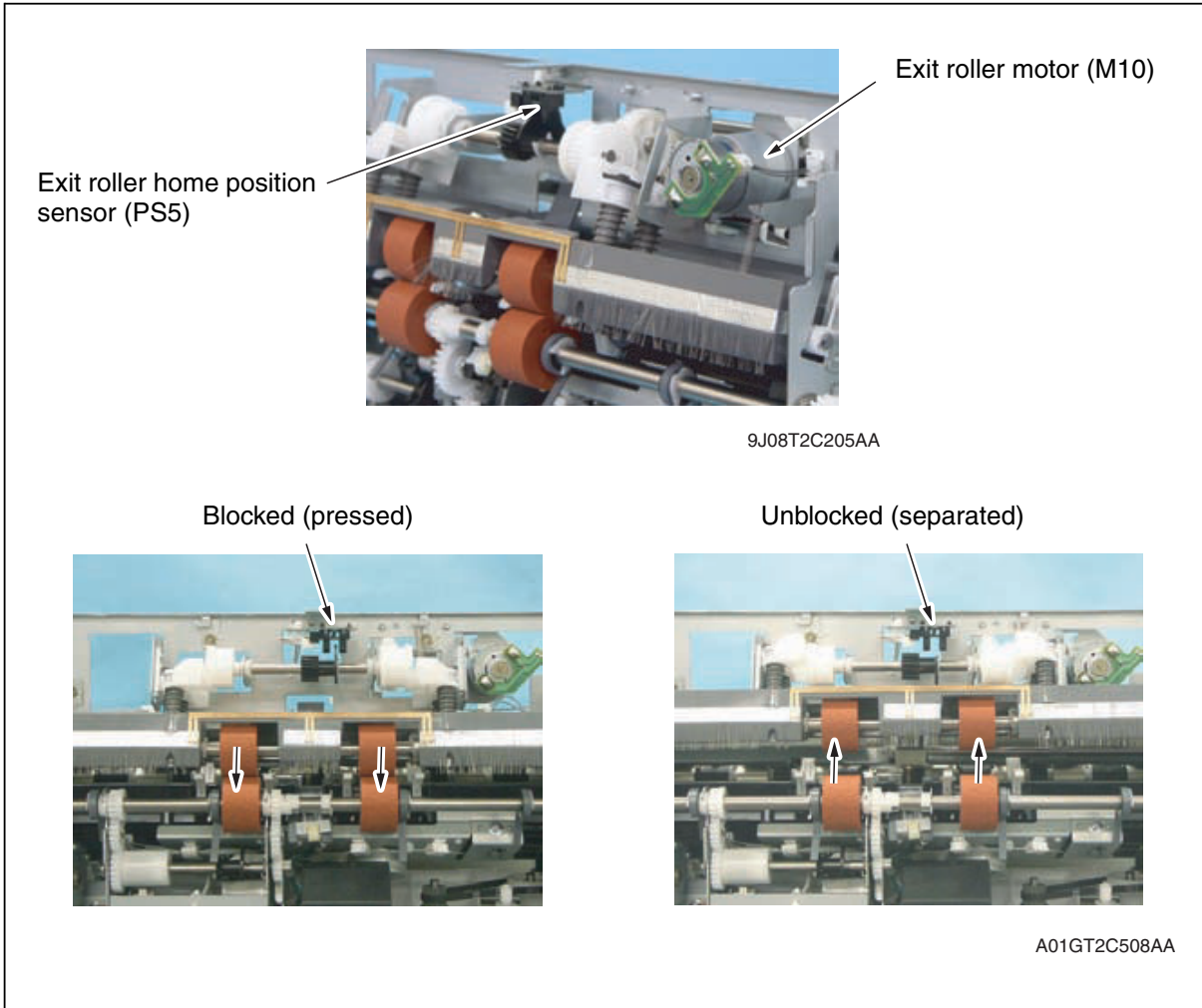
- There is a paper holding paddle provided at the exit roller for preventing the copy set/ stack on the exit tray from being pushed by a new copy set/stack that is being fed out (Except the staple mode).
- The subsequent copy set/stack is fed out with the copy sets/stacks previously resident on the tray being held down by the paper holding paddle.
- The exit paddle home position sensor, spring clutch, and exit paddle solenoid control the retracted position and paper holding position of the paper holding paddle.





### A. Upper exit roller up/down motion mechanism

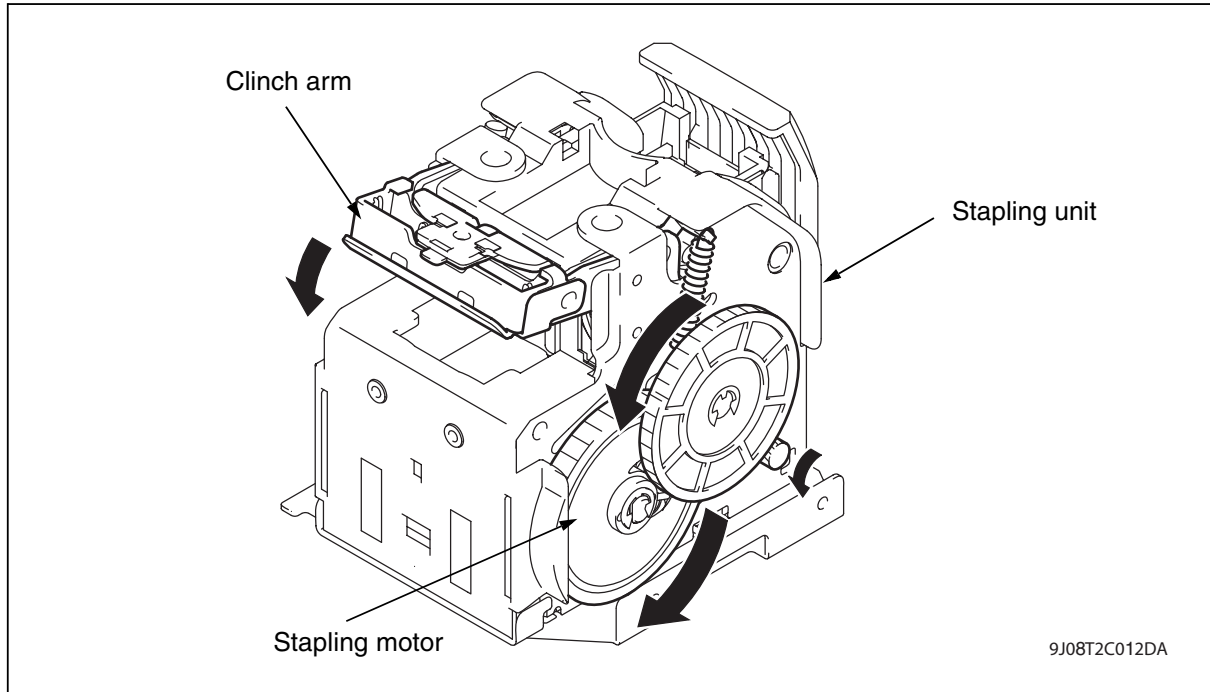
- The exit roller motor moves the upper exit roller away from the lower exit roller or presses the upper exit roller up against the lower exit roller.
- When one copy set/stack is stored in the storage tray, the upper exit roller is moved downward to be pressed up against the lower exit roller and the two rollers feed the copy set/stack out onto the exit tray. The exit roller home position sensor detects the position of the upper exit roller, whether it is in the raised or lowered position.



## 6.4 Staple section

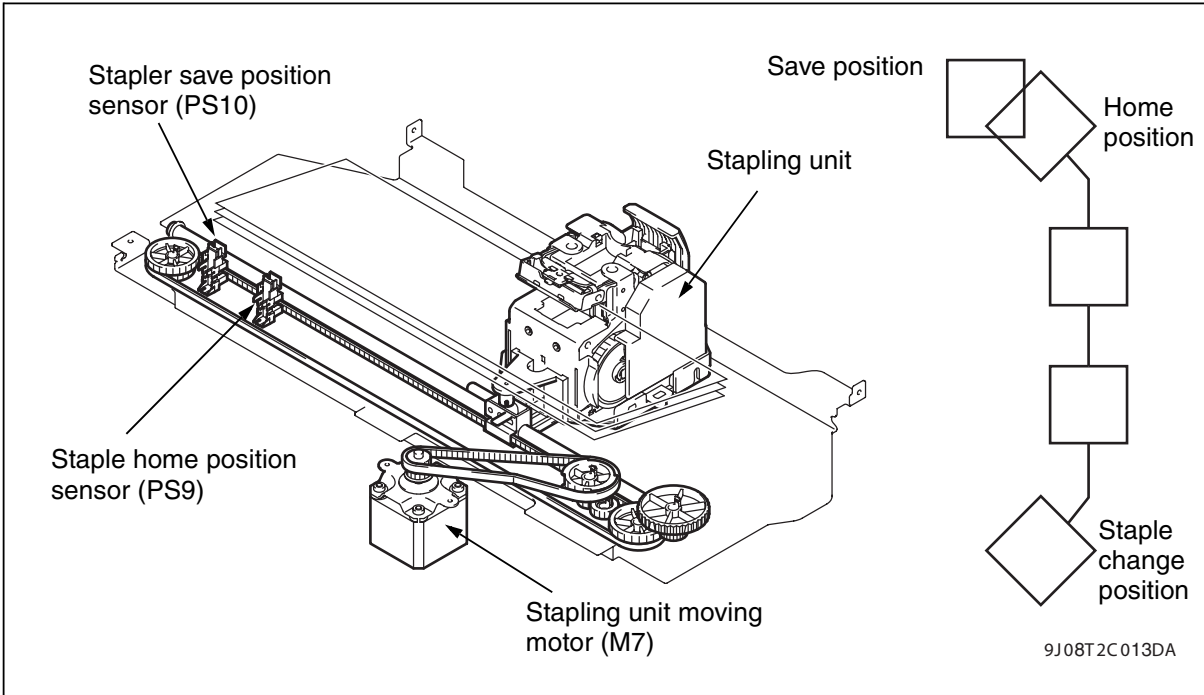
### 6.4.1 Stapling mechanism

- Stapling is performed by the stapling unit.
- When the stapling motor is rotated, the clinch arm lowers. The stapler thereafter goes up to drive a staple in the paper.
- Five different types of stapling are available: parallel front one point, parallel rear one point, slant front one point, slant rear one point and parallel two points.



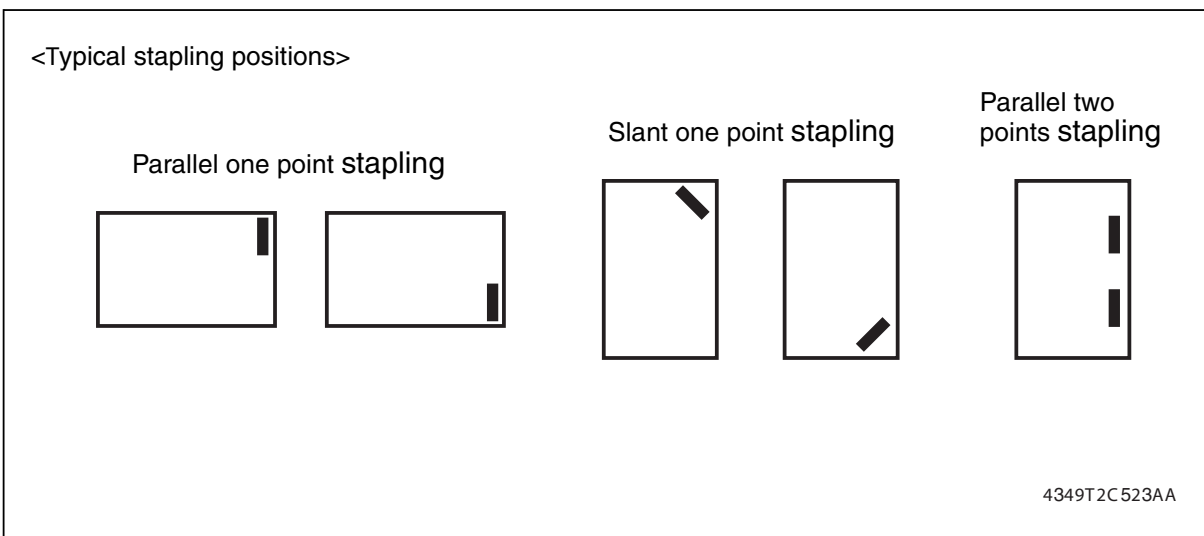
**6.4.2 Stapling unit moving mechanism**

- The stapling unit is moved by the stapling unit moving motor.
- The stapling unit moving motor drives the belt so that the stapling unit is moved to the corresponding stapling position.
- The stapling stop position is controlled by the period of time during which the stapling unit moving motor is kept energized, as counted from the time when the staple home position sensor has been activated.
- The stapler unit will move to the stapler save position during the saddle mode. (The stapler unit needs to be in the save since the moving part of the holding section shifts from horizontal to 20 degrees angles during the saddle mode.)
- The stapler save position is detected by the stapler save position sensor.



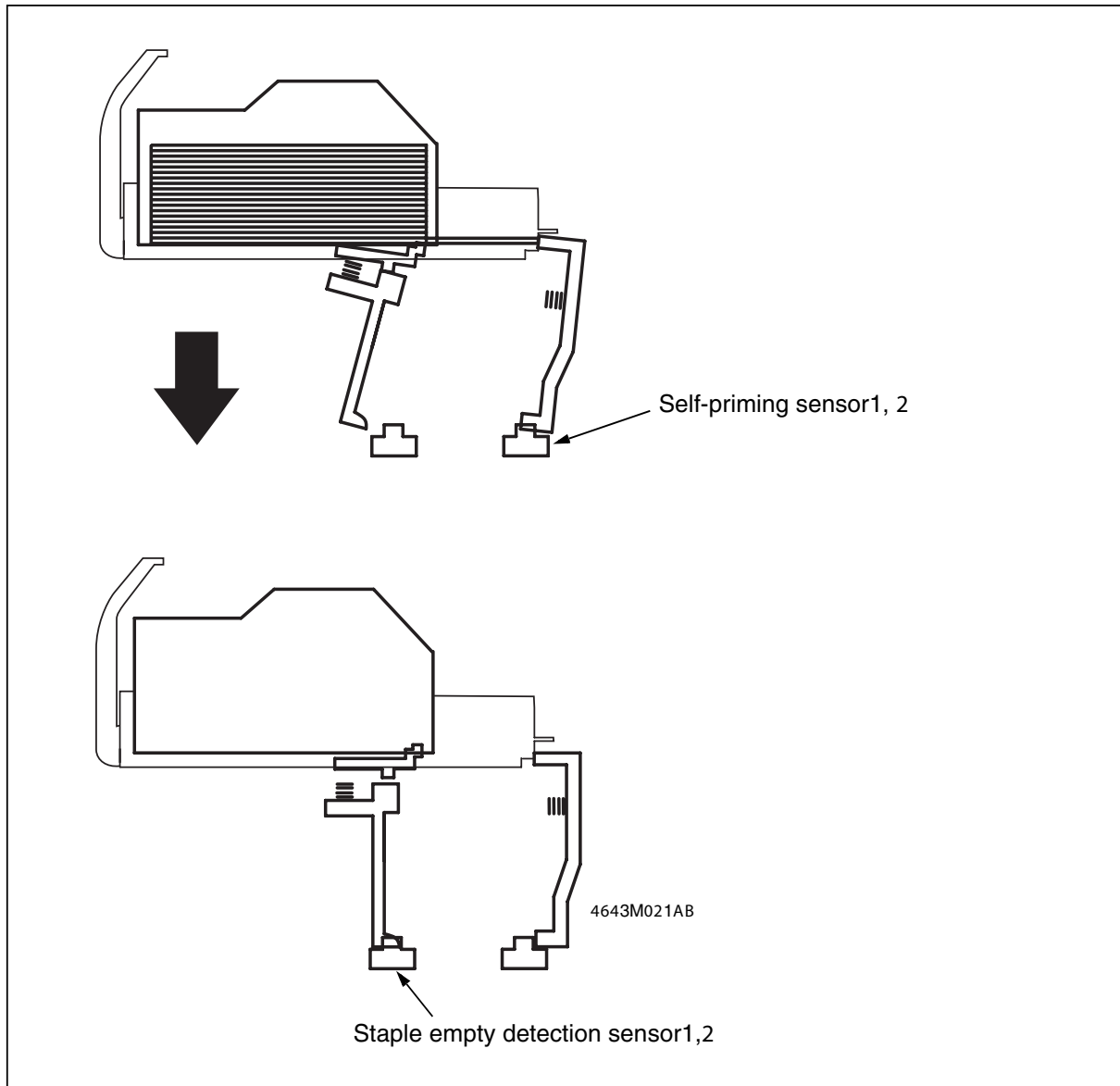
**6.4.3 Stapling position**

- A single stapling unit is moved to perform 2-point stapling.



#### 6.4.4 Staple sheet empty detection

- Staple empty detection sensor 1, 2 detect whether or not there is a staple sheet still left.
- When the number of staples left in the staple cartridge becomes about 20, a staple sheet empty condition results, causing a corresponding empty message to appear on the control panel.
- When the empty condition is detected, the corresponding empty indication is given on the control panel. At the same time, the Stapling Unit moves to the front.
- When a new staple cartridge is loaded, the stapling motor is energized until the self-priming sensor detects a staple, which results in the staple to be fed up to the stapling position.



## 7. Punch Kit (PK-510)

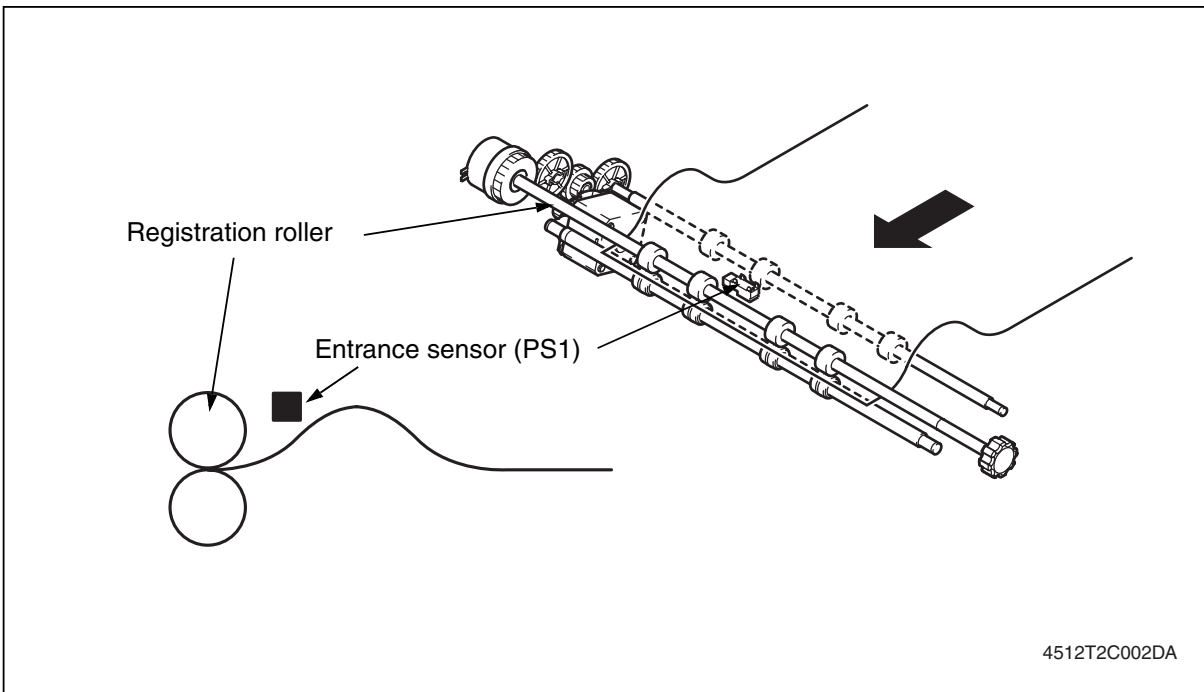
### 7.1 Composition



### 7.2 Operation

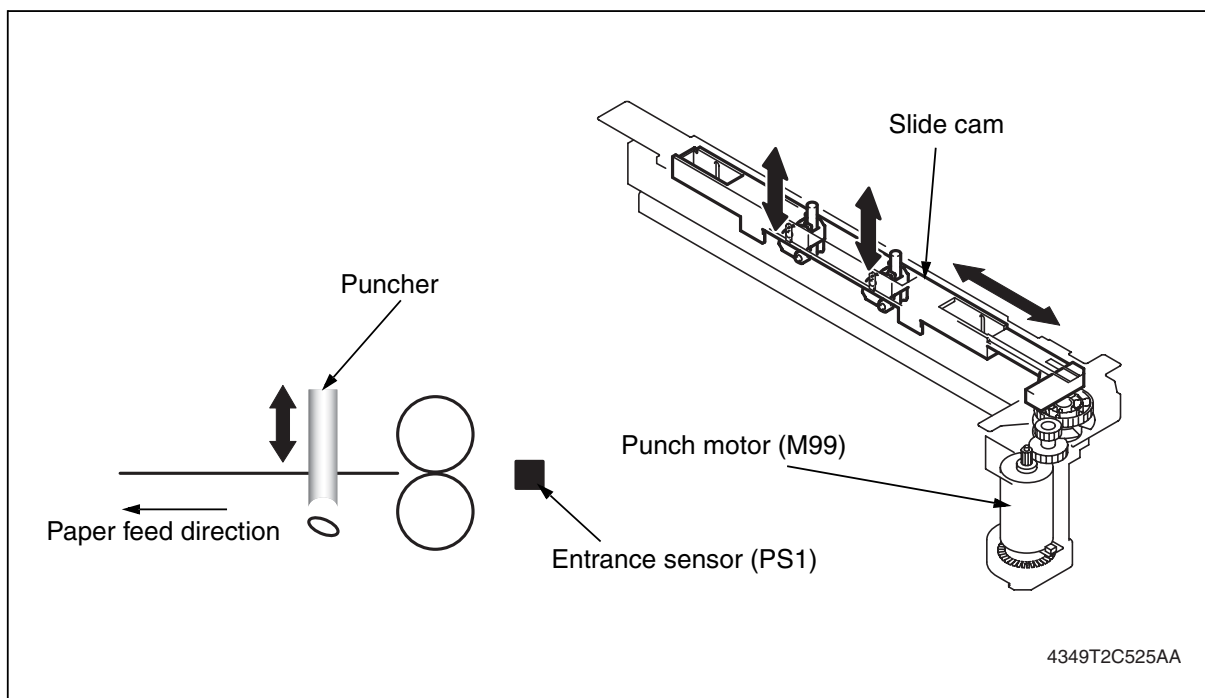
#### 7.2.1 Skew correction mechanism

- For punch and center crease operations, a loop is formed in the paper at the registration roller to correct skew.
- The entrance sensor detects the leading edge of the paper and the registration roller forms a loop in the paper.
- The skew registration clutch is then energized after a given period of time after the entrance sensor is activated by the leading edge of the paper, this causes the registration roller to start turning.



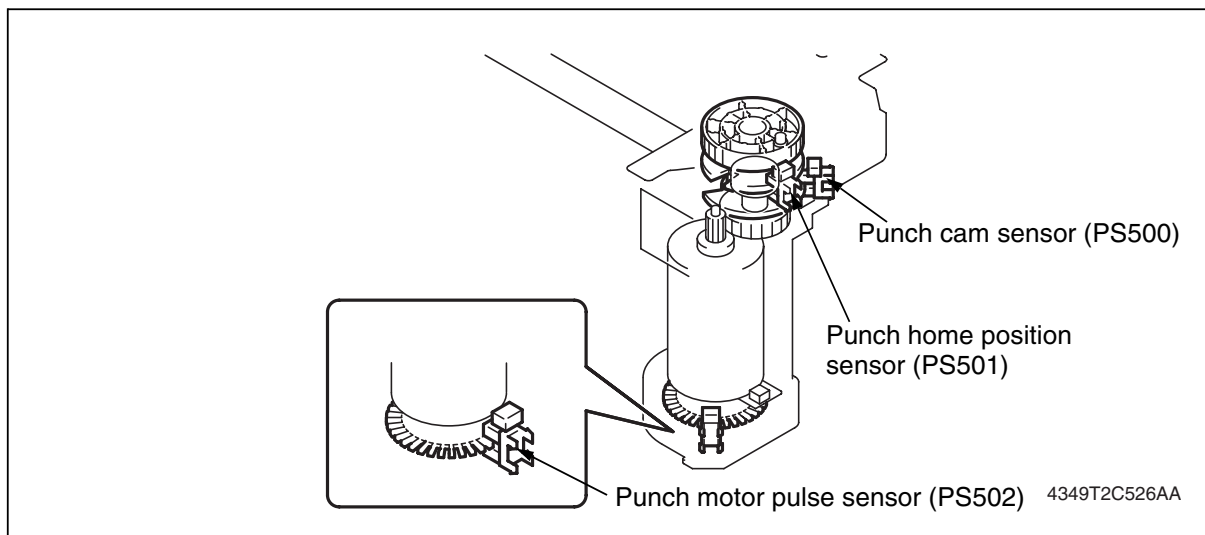
### 7.2.2 Punch mechanism

- The entrance sensor will detect the back edge of the paper, and stop feeding the paper at the specified time. The puncher will move down to make the punch hole at the back edge of the paper. (The punch hole will be made sheet by sheet.)
- The drive cam will be rotated by the punch motor inside the punch unit to move the slide cam back and forth. The slide cam will move the puncher down to make the punch holes.



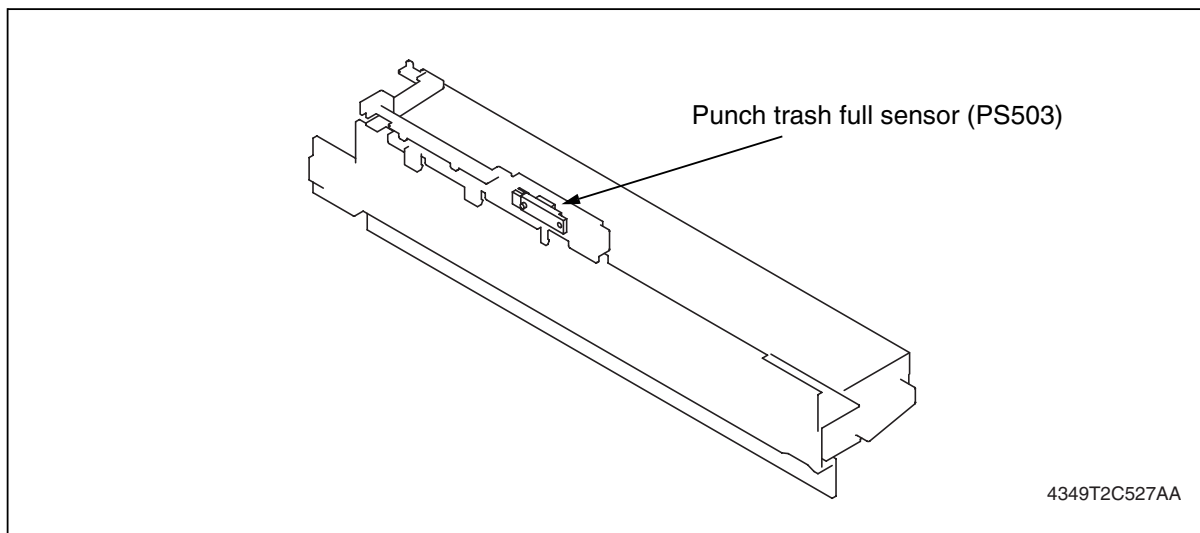
### 7.2.3 Punch status detection

- The punch status is detected by using the punch cam sensor, punch home position sensor, and the punch motor pulse sensor.



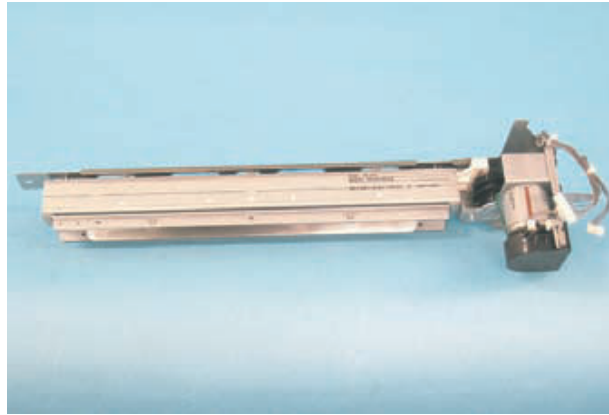
### 7.2.4 Punch trash box full detection mechanism

- Punch trash produced as a result of punching operation is stored in the punch trash box.
- The punch trash box is provided with the punch trash full sensor. When a punch waste is detected, the corresponding message is displayed on the control panel.
- The punch trash full sensor is a reflector type sensor that detects height of the punch trash.
- Punch trash full sensor also detects whether or not the punch dust box is mounted. "Punch dust full" message will be displayed on the control panel when the punch trash box is not mounted.



## 8. Punch Kit (PK-515)

### 8.1 Composition

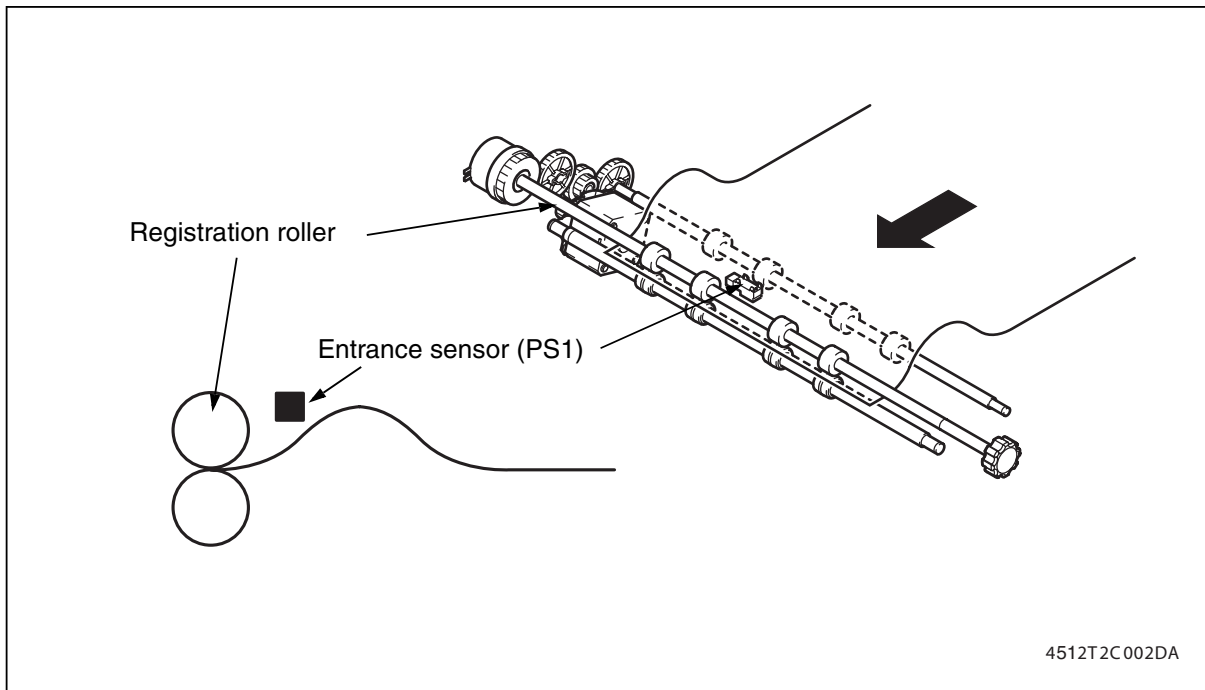


A01GT2C509AA

### 8.2 Operation

#### 8.2.1 Skew correction mechanism

- For punch and center crease operations, a loop is formed in the paper at the registration roller to correct skew.
- The entrance sensor detects the leading edge of the paper and the registration roller forms a loop in the paper.
- The skew registration clutch is then energized after a given period of time after the entrance sensor is activated by the leading edge of the paper, this causes the registration roller to start turning.

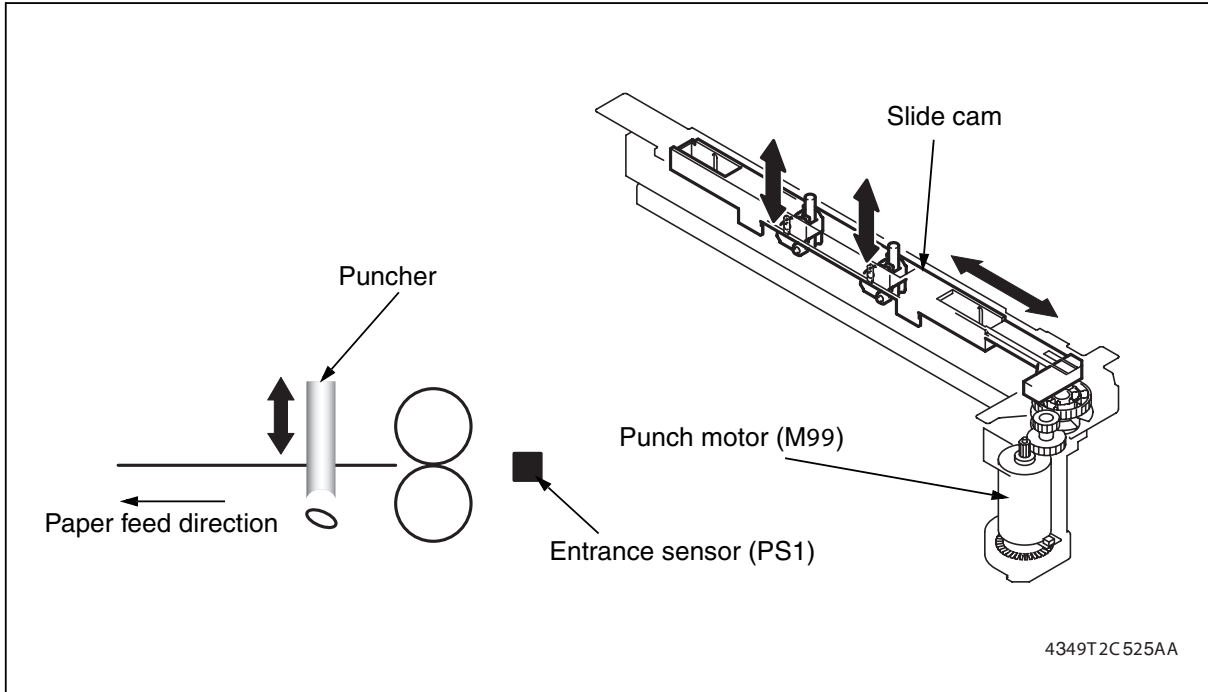


4512T2C002DA



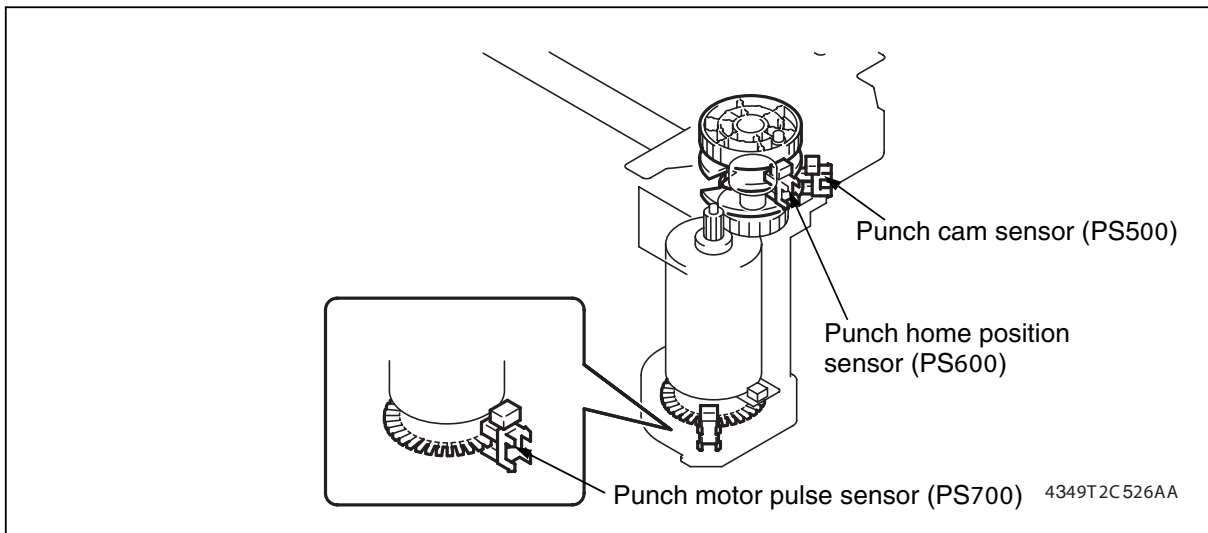
### 8.2.2 Punch mechanism

- The entrance sensor will detect the back edge of the paper, and stop feeding the paper at the specified time. The puncher will move down to make the punch hole at the back edge of the paper. (The punch hole will be made sheet by sheet.)
- The drive cam will be rotated by the punch motor inside the punch unit to move the slide cam back and forth. The slide cam will move the puncher down to make the punch holes.



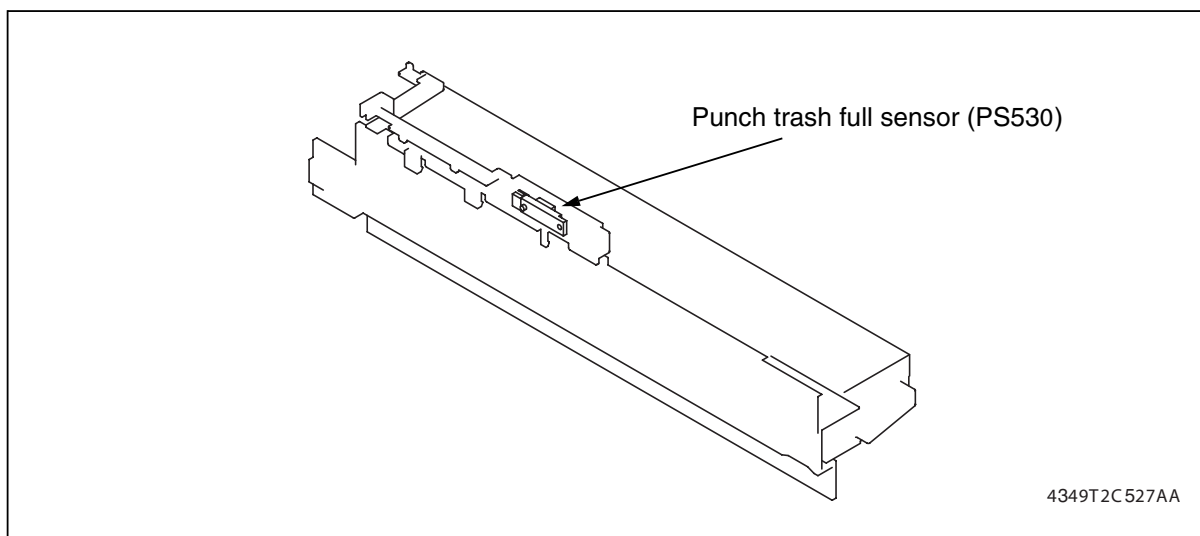
### 8.2.3 Punch status detection

- The punch status is detected by using the punch cam sensor, punch home position sensor, and the punch motor pulse sensor.



### 8.2.4 Punch trash box full detection mechanism

- The punch trash full sensor detects a punch trash full state. When the amount of punch trash reaches a predetermined level, “Empty hole-punch scrap box” message appears on the control panel.
- The amount of punch trash and whether or not the punch waste box is properly installed is monitored by the punch trash full sensor, which is a reflective type sensor.



## 9. Output tray (OT-602)

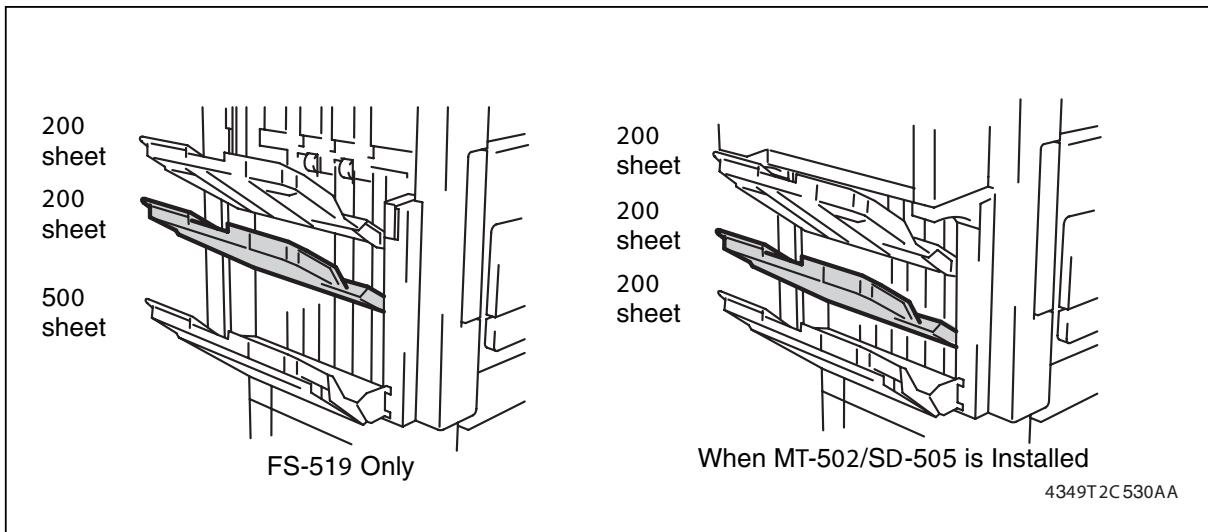
### 9.1 Composition



### 9.2 Operation

#### 9.2.1 Overview

- Mounting the optional output tray (OT-602) provides a total of three exit trays.
- The output tray is attached at different positions depending on whether options MT-502/SD-505 are mounted or not.  
The capacity of each of the different trays depends on the specific positions they are attached.
- When the short-circuit connector shipped with the output tray is mounted, the machine determines that the output tray has been mounted.



Blank Page

