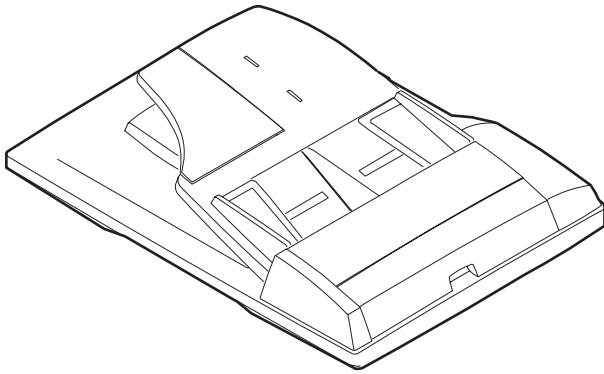


SHARP SERVICE MANUAL

CODE : 00ZARSP10/S1E



**Digital copier
Reverse Single
Pass Feeder (RSPF)
Single Pass Feeder (SPF)**

**AR-RP10
MODEL AR-SP10**

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Parts marked with "!" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

[1] PRODUCT OUTLINE

This machine is a duplex document auto feeder attached to a digital copier.

It feeds originals automatically to allow continuous copying.

[2] SPECIFICATIONS

1. Basic specifications

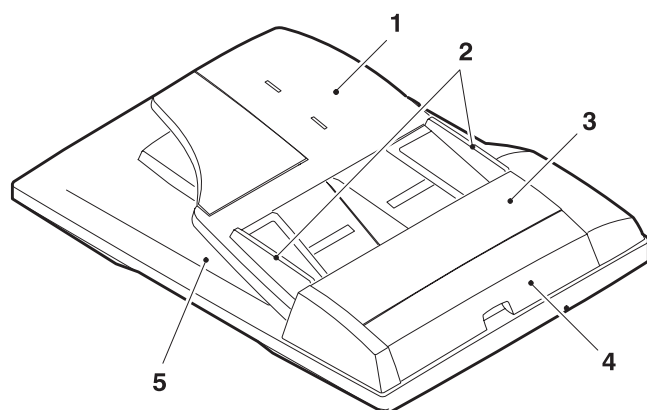
	AR-RP10	AR-SP10
Document set direction	Face up	
Document set position	Right/Center reference	
Document transport system	Sheet through type	
Document feed sequence	Top take-up feed	
Document size	AB series: A3 ~ A5 Inch series: 11 x 17 ~ 8.5 x 5.5	
Document weight	56 ~ 90g/m ² , 15 ~ 24lbs	
Document set quantity	The thickness of the document bundle must be 4mm or less or 40 sheets or less. 40 sheets (when 80g/m ² or less) 30 sheets (B4 or 8.5 x 13 or above)	
Dimensions	586mm (W) x 440mm (D) x 132mm (H)	
Weight	About 5.4 kg	About 5.3 kg
Power source	Supplied from the copier. (DC 24V, 5V)	
Power consumption	26.4W	21W
Document size detection	On the document feed tray	
Detection size	Japan: A3, B4, A4, A4R, B5, B5R Inch series: 11 x 17, 8.5 x 14, 8.5 x 11, 8.5 x 11R, 8.5 x 5.5, 8.5 x 13 EX AB series: A3, B4, A4, A4R, A5, 8.5 x 13	
Mixture of different document sizes	Mixture paper feed: Not available Random paper feed: Not available	
Document reverse	Allowed (without 8.5 x 5.5)	Not allowed
Display section (LED)	None	

2. Document exchange speed

		AR-RP10		AR-SP10	
		Transport speed	Document conversion rate	Transport speed	Document conversion rate
S-S	20-sheet machine	20 sheets/min	100%	20 sheets/min	100%
	16-sheet machine	16 sheets/min	100%	16 sheets/min	100%
S-D	20-sheet machine	9 sheets/min or above	45%		
	16-sheet machine	9 sheets/min or above	56%		
D-D	20-sheet machine	8 sheets/min or above	40%		
	16-sheet machine	8 sheets/min or above	50%		

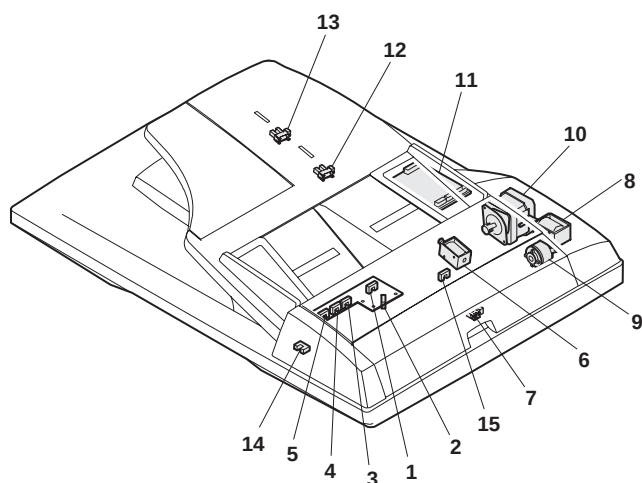
[3] EXTERNAL VIEW AND INTERNAL STRUCTURE

1. External view



No.	Name
1	Document set tray
2	Document guide
3	Document feed section cover
4	Document transport section cover
5	Document exit section

2. Internal structure

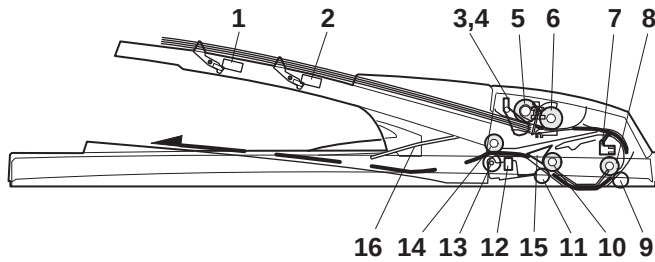


Sensor, detector, etc.

No.	Code	Name	Type	Function/Operation	Note
1	W0	Document set sensor	Photo transmission	Detects presence of documents.	
2	COVER	Open/close sensor	Photo transmission	Detects open/close of the paper feed unit.	
3	W1	Document width sensor (A4R, LTR, A5)	Photo transmission	Detects the document width on the tray.	
4	W2	Document width sensor (B4, B5)	Photo transmission	Detects the document width on the tray.	
5	W3	Document width sensor (WL, TR, A5R, A4, LT)	Photo transmission	Detects the document width on the tray.	
6	PSOL	Pickup solenoid	—	—	
7	PAPER	Paper entry sensor	Photo transmission	Detects presence of documents.	
8	RSOL	Pressure release solenoid	—	—	AR-RP10 only
9	CLH	Transport clutch	—	—	
10	MOT	SPF (RSPF) motor	Stepping motor	Drives document feed on the tray, transport, and paper exit roller.	
11	—	Interface PWB	—	—	
12	L1	Document length detection SW (Short)	Photo transmission	Detects the document length on the tray.	
13	L2	Document length detection SW (Long)	Photo transmission	Detects the document length on the tray.	
14	COVER OPEN	Book sensor	Photo transmission	Detects the SPF (RSPF) float.	
15	PO	Paper exit sensor	Photo transmission	Detects presence of documents.	

[4] OPERATIONAL DESCRIPTIONS

1. Major parts of the paper feed section



No.	Part name	Operation	Note
1	Document length sensor (L2)	Detects the document length on the tray.	
2	Document length sensor (L1)	Detects the document length on the tray.	
3	Document set sensor (W0)	Detects presence of documents.	
4	Document width sensor (W1, W2, W3)	Detects the document width.	
5	Pickup roller	Picks up documents.	
6	Paper feed roller	Feeds and transports documents.	
7	Paper entry sensor (PAPER)	Detects transport of documents.	
8	PS roller	Makes synchronization between the document lead edge and the image lead edge.	
9	PS follower roller	Makes synchronization between the document lead edge and the image lead edge.	
10	Transport roller	Transports documents.	
11	Transport follower roller	Transports documents.	
12	Paper exit sensor (PO)	Detects transport of documents.	
13	Paper exit follower roller	Discharges documents.	
14	Paper exit roller	Discharges documents.	
15	Reverse gate	Opens/closes the document reverse path.	
16	Paper holder	Holds the discharged paper.	

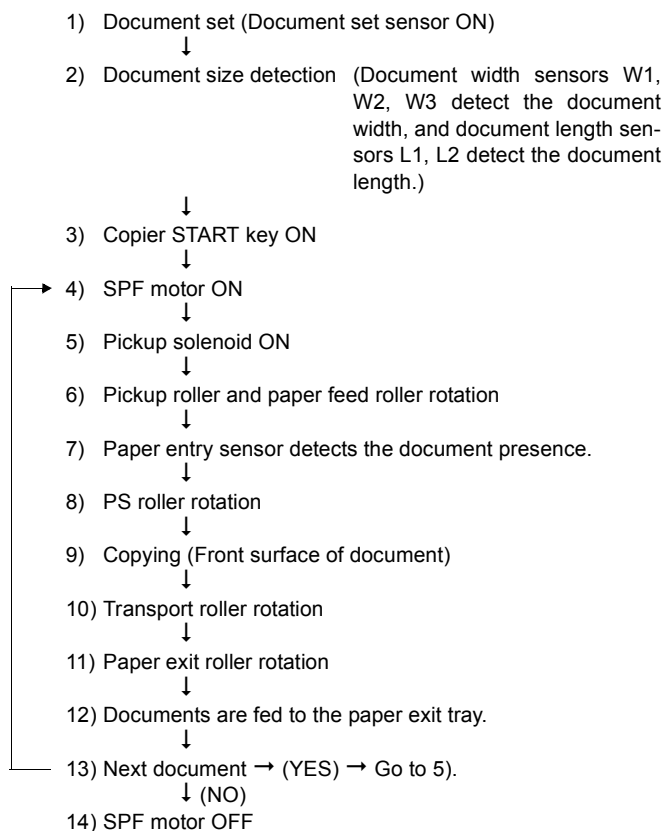
2. Out line of operations

■ AR-RP10 (RSPF)

[Duplex documents]

- 1) Document set (Document set sensor ON)
 - ↓
- 2) Document size detection (Document width sensors W1, W2, W3 detect the document width, and document length sensors L1, L2 detect the document length.)
 - ↓
- 3) Copier START key ON
 - ↓
- 4) RSPF motor ON
 - ↓
- 5) Pickup solenoid ON
 - ↓
- 6) Pickup roller and paper feed roller rotation
 - ↓
- 7) Paper entry sensor detects the document presence.
 - ↓
- 8) PS roller rotation
 - ↓
- 9) Copying (Front surface of document)
 - ↓
- 10) Transport roller rotation
 - ↓
- 11) Paper exit roller rotation
 - ↓
- 12) Paper exit roller reverse rotation (Documents are fed to the reverse path.)
 - ↓
- 13) Paper entry sensor detects document presence.
 - ↓
- 14) PS roller rotation
 - ↓
- 15) Copying (Back surface of document)
 - ↓
- 16) Transport roller rotation
 - ↓
- 17) Paper exit roller rotation
 - ↓
- 18) Paper exit roller reverse rotation (Documents are fed to the reverse path.)
 - ↓
- 19) Paper entry sensor detects document presence.
 - ↓
- 20) PS roller rotation
 - ↓
- 21) Paper exit roller rotation
 - ↓
- 22) Documents are fed to the paper exit tray.
 - ↓
- 23) Next document → (YES) → Go to 5).
 - ↓ (NO)
- 24) RSPF motor OFF

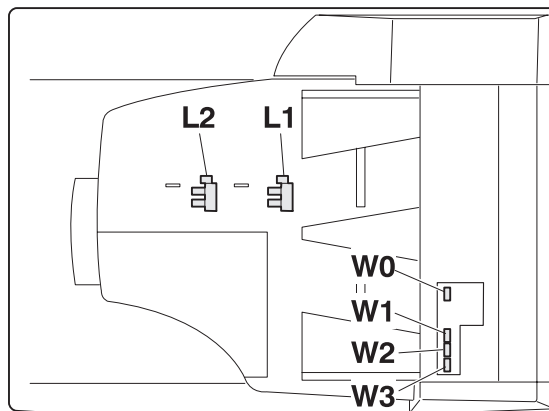
■ AR-SP10 (SPF)



3. Document size detection

1) Document size detection with the document set tray

When documents are set on the document set tray in the auto selection mode of paper/copy magnification ratio, the document size is detected and paper and the copy magnification ratio are automatically selected. When different sizes of documents are set, the max. size is detected. The document width is detected by the document width sensors (W1, W2, W3), and the document length is detected by the document length sensors (L1, L2) to identify the document size. Judgement of the document size is made in a certain timing after detecting the document with the document set sensor (W0).



	Document set size and set direction	Document width sensor			Document length sensor	
		W1	W2	W3	L1	L2
AB series	A5	○	●	●	●	●
	B5	○	○	●	●	●
	A5R	●	●	●	●	●
	A4	○	○	○	●	●
	B5R	●	●	●	○	●
	A4R	○	●	●	○	●
	8.5" x 13"	○	●	●	○	○
	B4	○	○	●	○	○
Inch series	A3	○	○	○	○	○
	8.5" x 5.5"	○	●	●	●	●
	8.5" x 5.5"R	●	●	●	●	●
	11" x 8.5"	○	○	○	●	●
	11" x 8.5"R	○	●	●	○	●
	8.5" x 13"	○	●	●	○	○
	8.5" x 14"	○	●	●	○	○
	11" x 17"	○	○	○	○	○

Note: Detection sensor ON: ○, OFF: ●

[5] ADJUSTMENTS

1. Auto white correction pixel adjustment

- 1) Open the SPF (RSPF) unit.
- 2) Execute Sim63-7.
- 3) The 7-seg display indicates the order number of the pixel of the white sheet for SPF (RSPF) exposure correction in the SPF (RSPF) position.

- It will display on 7-seg display, if values are 93-229, and data are written into the EEPROM.
(In this case, it means that the adjustment has been normally completed.)
- It will display on 7-seg display, if values are 0-92 or 230-999, and data are not written into the EEPROM.
- It will display "--" on 7-seg display, if values is 1000 or larger, and data are not written into the EEPROM.
(In these cases, the adjustment has not been normally completed. Troubleshoot the cause and perform the adjustment again.)

Note: If the operation is executed with the SPF unit closed, an error occurs.

Also when the lens unit is replaced or when the optical axis of the lens unit is shifted, an error occurs.

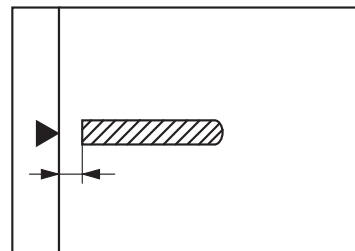
In this case, it is necessary to perform the adjustment of the lens unit described in "SPF white correction pixel position adjustment" of the Service Manual of the machine.

2. Magnification ratio adjustment

Note: • When performing this adjustment, check that the CCD unit is properly installed.

- When performing this adjustment, check that the OC mode adjustment in copying is completed.

- 1) Place a scale on the document table as shown below, and make a normal copy to make a test chart.



Note: Since the printed paper is used as the test chart, place the scale in parallel to both sides.

- 2) Set the test chart to the SPF (RSPF) and make a normal copy.
- 3) Compare the copy and the test chart.
If an adjustment is needed, perform the following procedures.
- 4) Execute SIM 48-5.
- 5) The current correction value is displayed on the display section in two digits.
- 6) Enter the set value, and press the START key.
The entered correction value is stored and a copy is made.
- 7) Change the TEXT mode.
The TEXT indicator lights up, and the current correction value of the back surface sub scanning direction magnification ratio is displayed on the display section in two digits.
- 8) Enter the set value, and press the START key.
The entered correction value is stored and a copy is made.

<Adjustment specifications>

Mode	Spec	SIM	Set value	Set range
Magnification ratio adjustment	Normal: $\pm 1.0\%$	SIM 48-5 AUTO: Surface TEXT: Back	Add 1: 0.1% increase Reduce 1: 0.1% decrease	1 ~ 99

3. Document off center adjustment

Note: When performing this adjustment, check that the paper off-center is properly adjusted.

- 1) Set the center position adjustment test chart (made by yourself) on the SPF (RSPF).

<Adjustment specifications>

Draw a line in the center of paper. (In the scanning direction)

- 2) Make a normal copy from the manual feed tray, and compare the copy and the test chart.

If an adjustment is required, perform the following procedures.

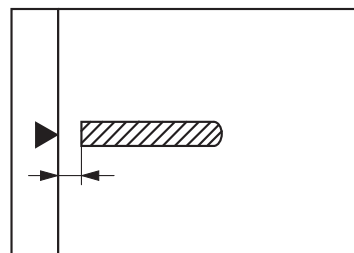
- 3) Execute SIM 50-12.
- 4) The current off-center adjustment value is displayed on the display section in two digits.
- 5) Enter the set value and press the START key.
The entered correction value is started and a copy is made.

<Adjustment specifications>

Mode	Specification	SIM	Set value	Set range
Document off-center (AR-RP10)	Simplex: Center $\pm 3.0\text{mm}$ Duplex: Center $\pm 3.5\text{mm}$	SIM 50-12 TEXT: SPF surface PHOTO: SPF back	Add 1: 0.1mm shifted to R side. Reduce 1: 0.1mm shifted to L side.	1 ~ 99
Document off-center (AR-SP10)		AUTO: Surface TEXT: SPF surface		

4. Image lead edge position adjustment

- 1) Set a scale on the OC table as shown below.



Note: Since the printed paper is used as the test chart, place the scale in parallel to both sides.

- 2) Make a copy, and use the copied paper as the document and make a copy from SPF (RSPF) again.
- 3) Check the copied paper. If an adjustment is required, perform the following procedures.
- 4) Execute SIM 50-6.
- 5) Set the SPF/RSPF lead edge position set value so that the image similar to the adjusted image at the OC image lead edge position described previously is printed.

<Adjustment specifications>

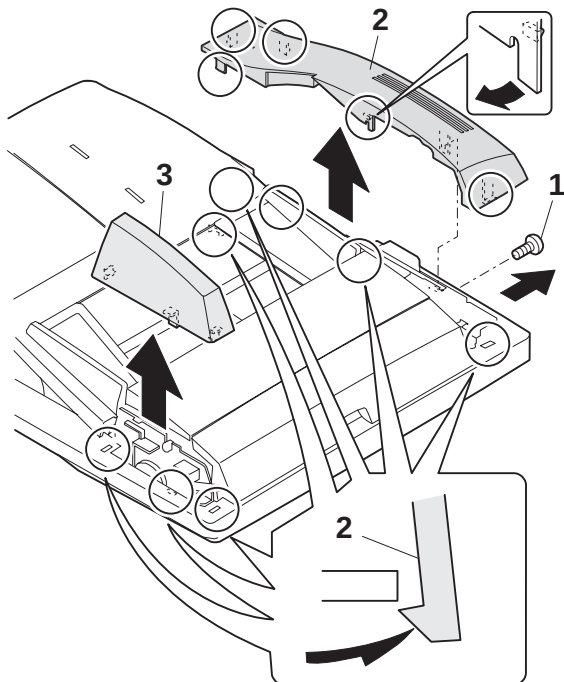
Adjustment mode	SIM	Set value	Specification	Set range
Image lead edge position	SIM 50-6 AUTO: Front TEXT: Back PHOTO: Rear edge	1step: 0.1mm shift	Lead edge void: 1 ~ 4mm Image loss: 3mm or less	1 ~ 99

[6] DISASSEMBLY AND ASSEMBLY

The connector is of the lock type. When disconnecting the connector, press the lock and pull it out.

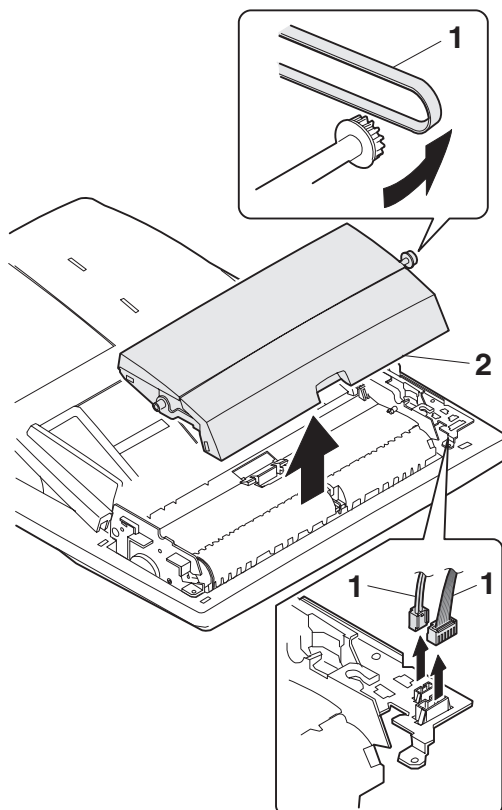
1. External fitting section

Note: Turn the paw in the arrow direction.

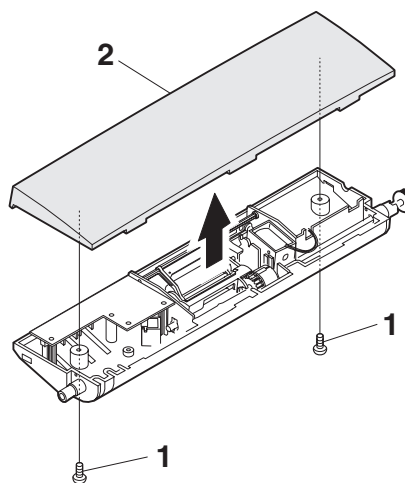


2. Paper feed unit section

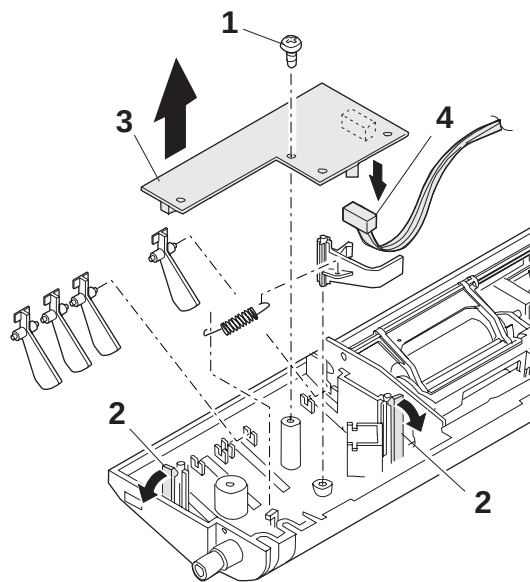
1) Paper feed unit



2) Document feed section cover



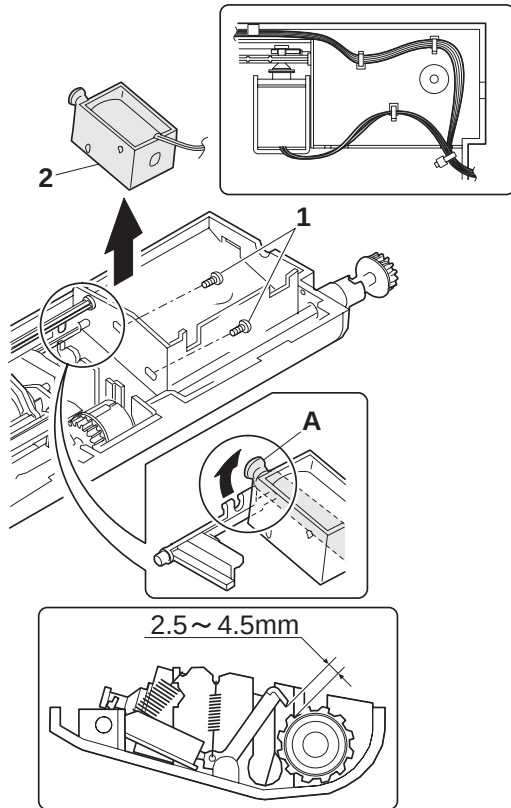
3) Sensor PWB



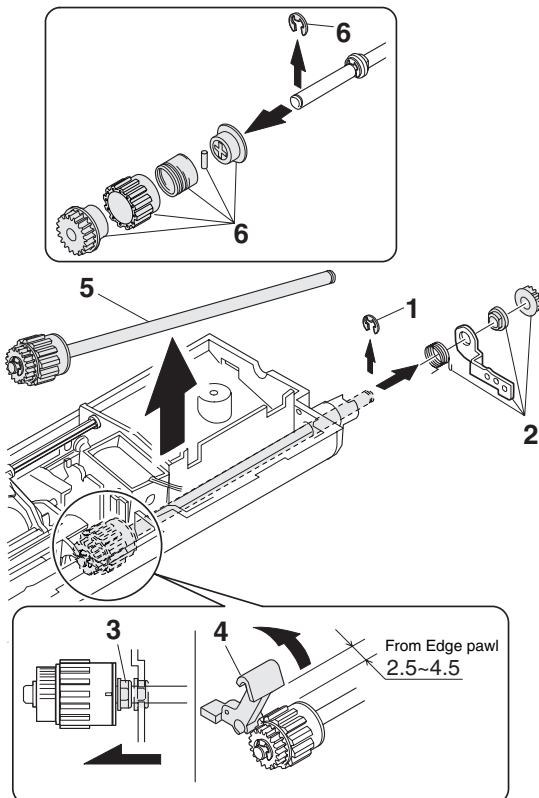
4) Pickup solenoid

Note: Remove section A of the pickup solenoid from the solenoid arm groove.

When assembling, adjust the spacing between the clutch latch and sleeve with the pick-up solenoid pulled. The size should be the distance from the tip of the clutch latch and the root of the clutch sleeve latch.

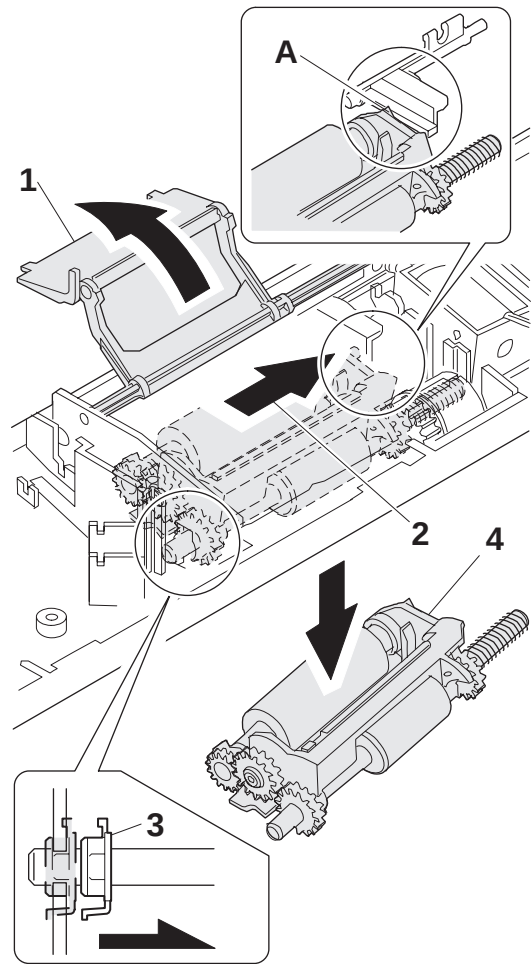


5) Clutch gear ass'y

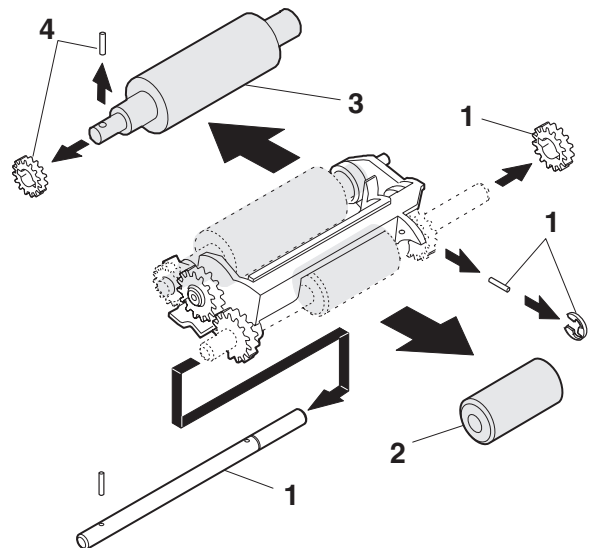


6) Pickup roller ass'y

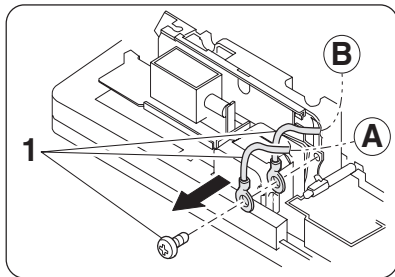
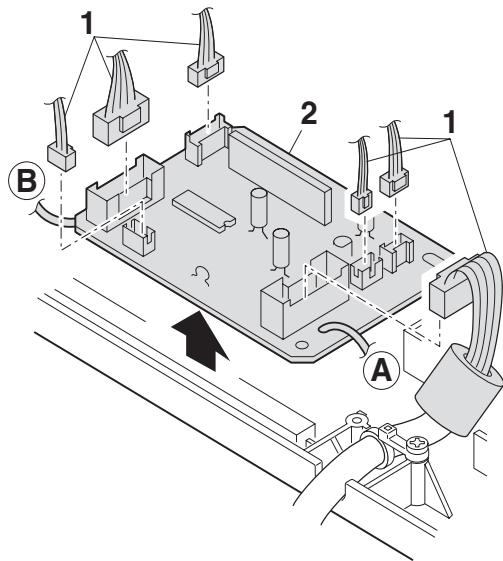
Note: When assembling the pickup roller ass'y 4, check that rib A is on the rib of the solenoid arm.



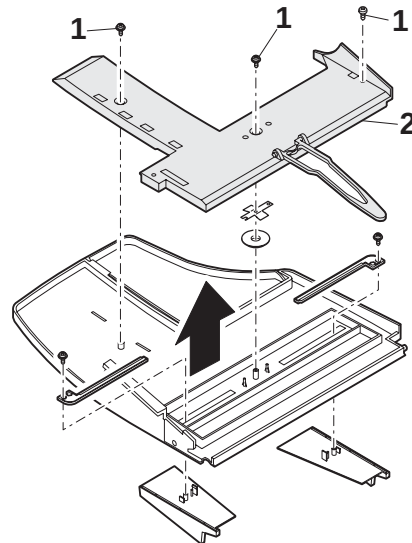
7) Pick up roller, paper feed roller



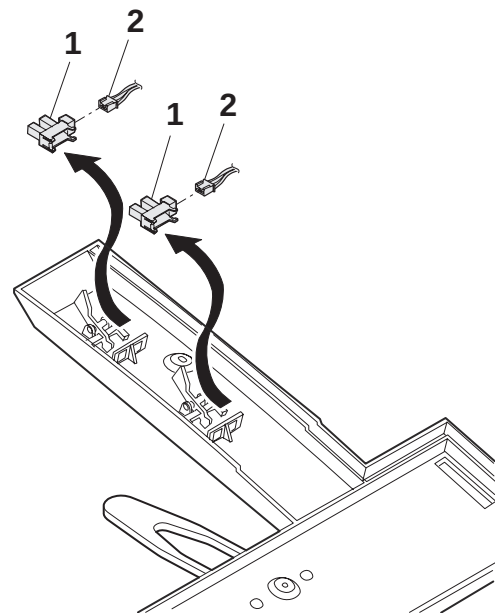
3. Interface PWB



2) Rack cover

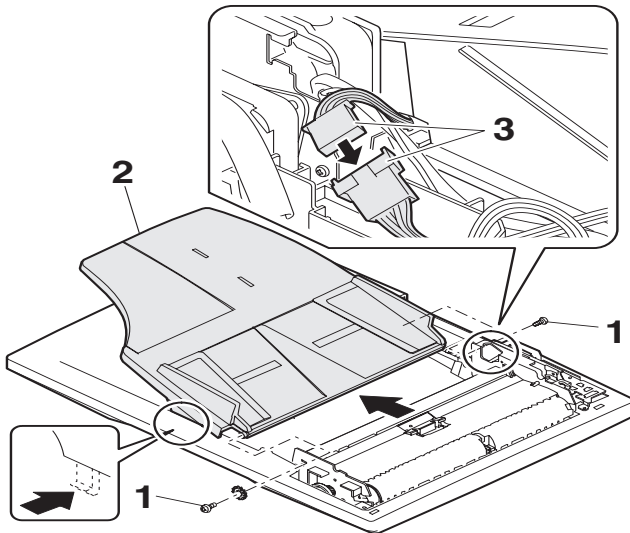


3) Document length sensor SW



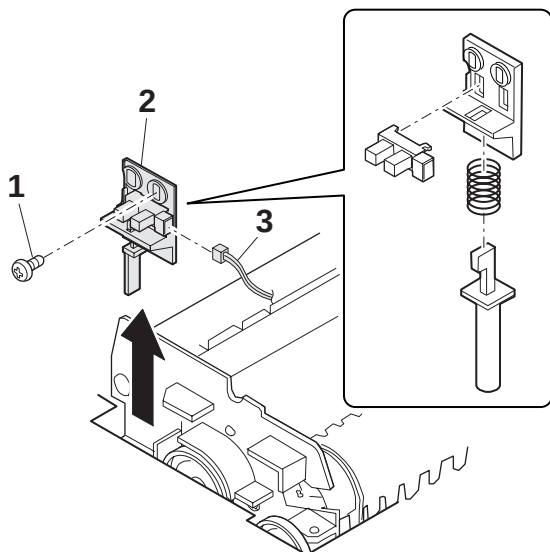
4. Document tray section

1) Document tray

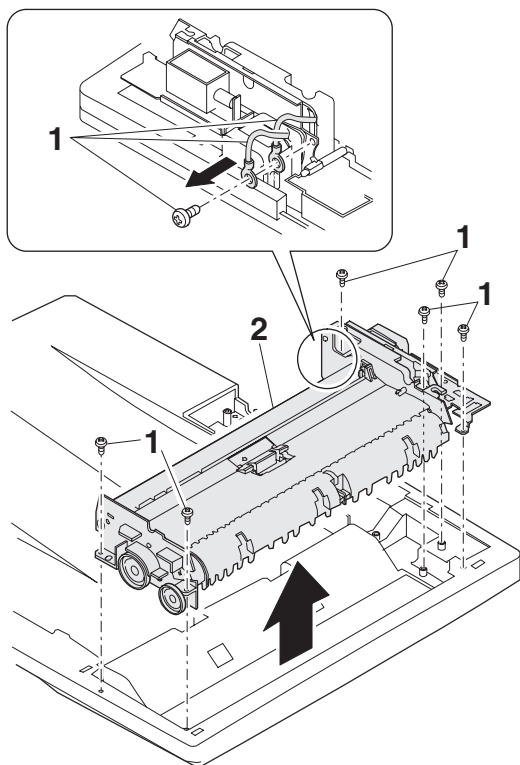


5. Drive frame section

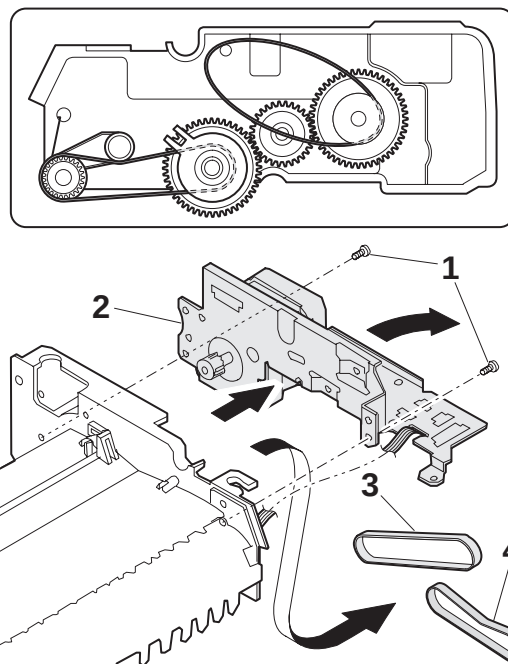
1) Book sensor



2) Drive frame unit



3) Drive frame ass'y and drive belt

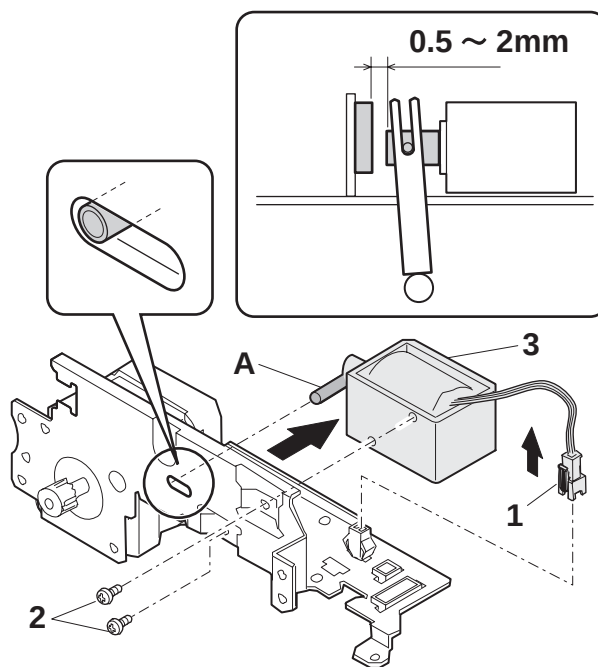


4) Pressure release solenoid

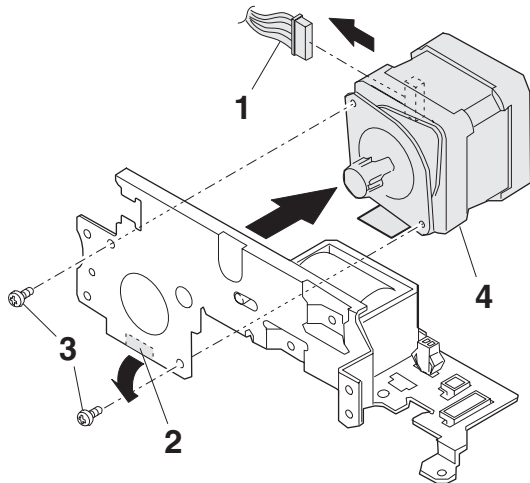
■ AR-RP10 only

Note: Make sure the spring pin A is inserted into the slot.

Make sure that the clearance between the position at which force is applied and the sound deadening sponge is 0.5 ~ 2 mm when the pressure release solenoid plunger is pulled toward the solenoid side.



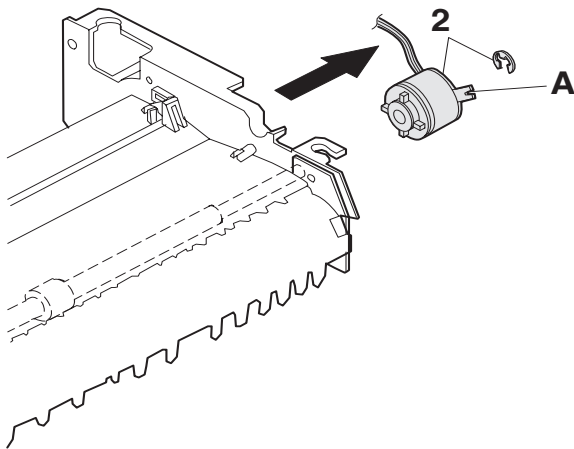
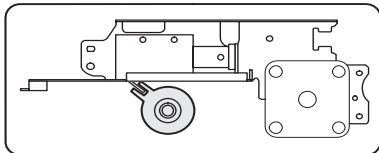
5) RSPF motor / SPF motor



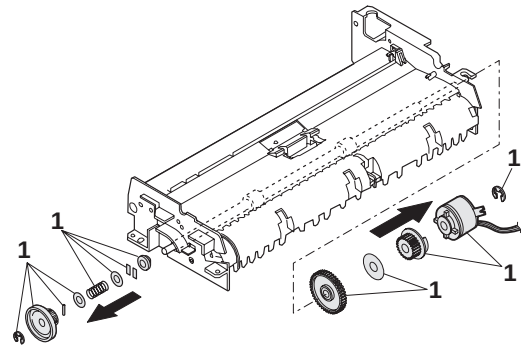
6. Transport section

1) Clutch

Note: When assembling, check that the rib is in the clutch groove A and fix it with E-ring.



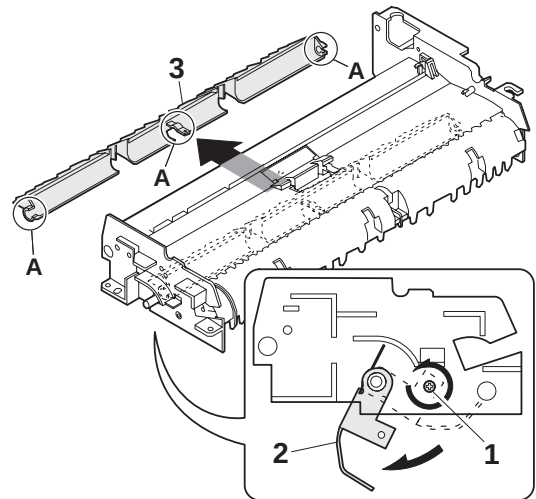
2) Transport roller gear



3) Reverse gate

■ AR-RP10 only

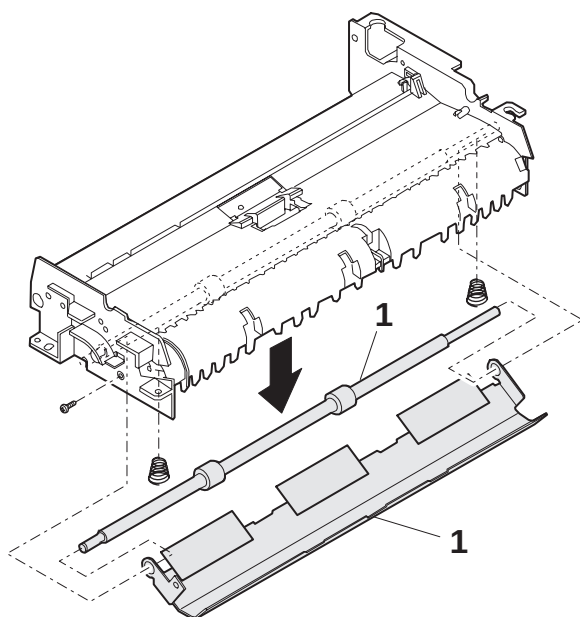
Note: When assembling the inversion gate, apply grease G-484 on the area A.



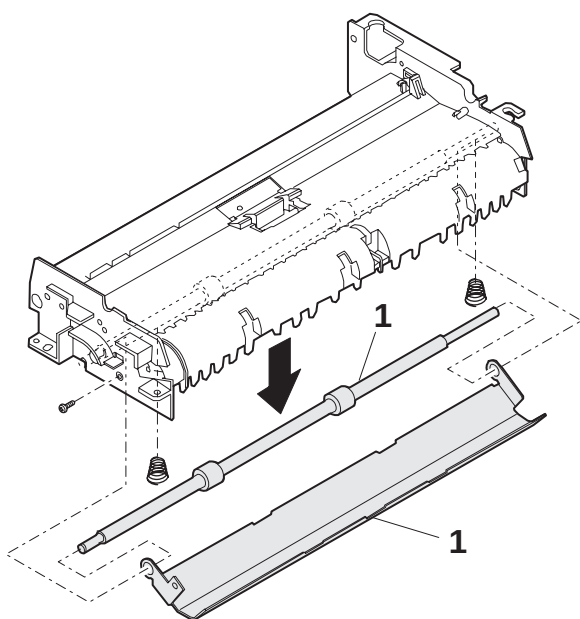
4) Transport roller

Note: Note that the spring will come off when removing.

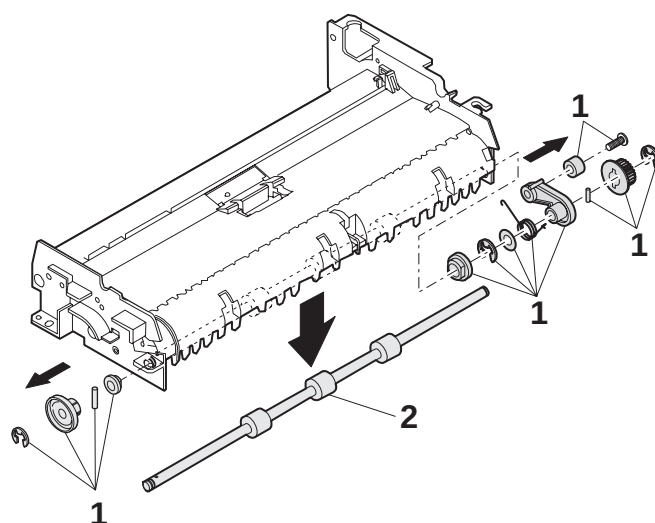
■AR-SP10



■AR-RP10

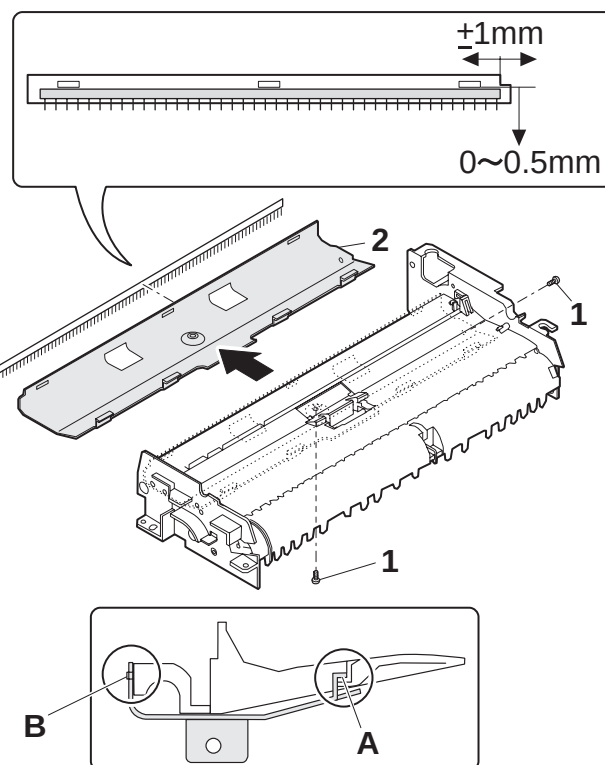


5) PS roller

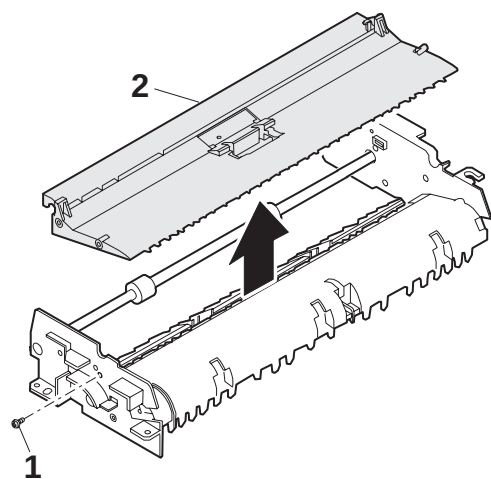


6) Paper feed paper guide lower

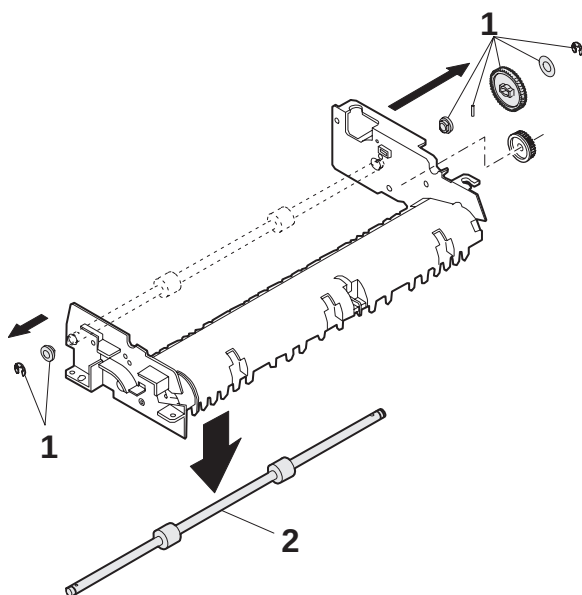
Note: When assembling, check that the paper feed paper guide lower is securely set to rib A and boss B.



7) Paper feed paper guide upper

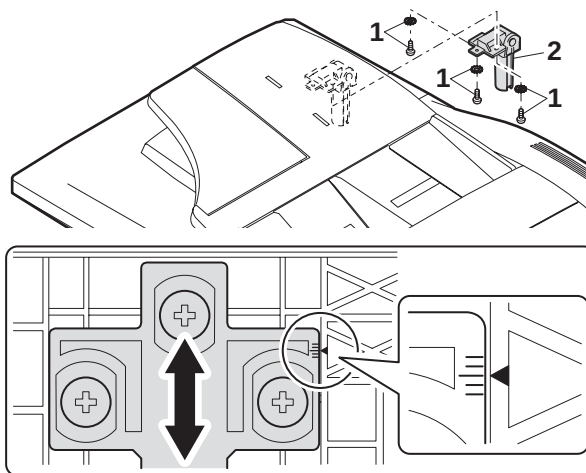


8) Paper exit roller



7. Hinge L

Note: When assembling the hinge L, reference is based on the mark of base tray and the center line of the 5 lines of the hinge L extended horizontally.



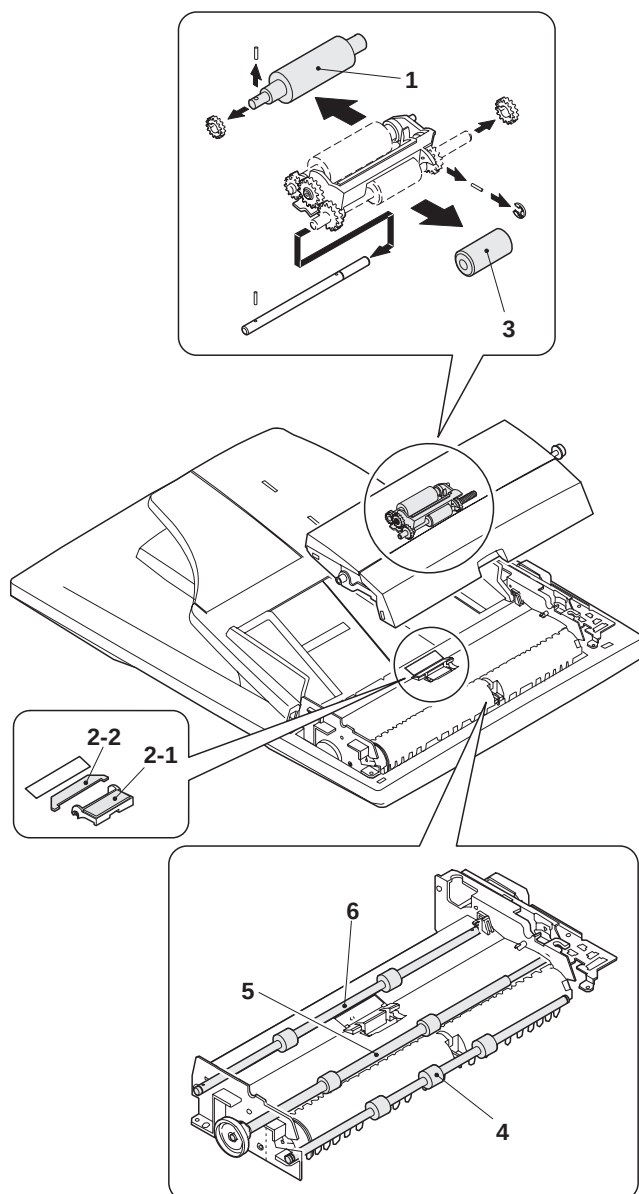
[7] MAINTENANCE

1. Maintenance parts

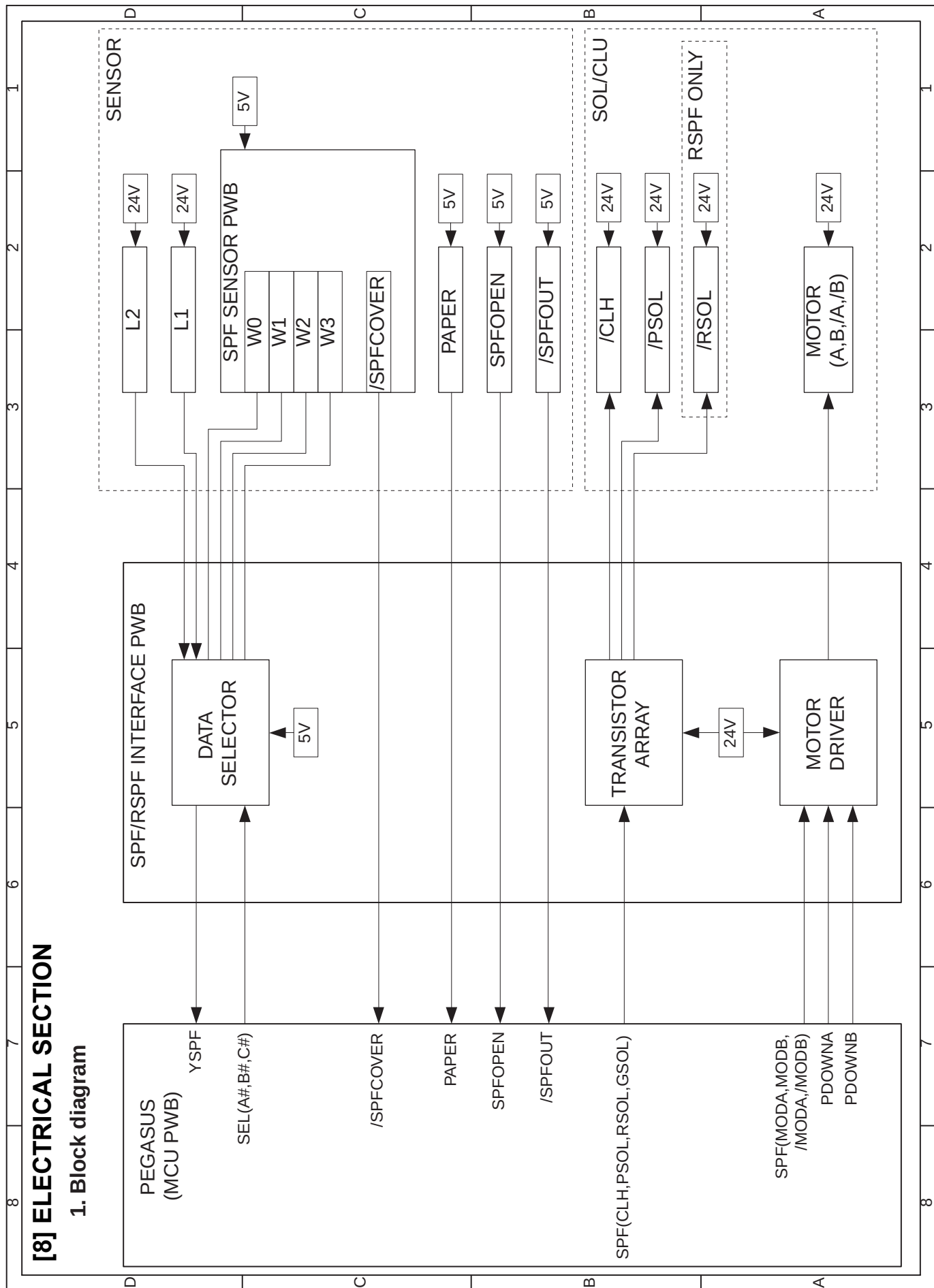
X : Check (Clean, adjust, or replace according to necessity.) ○ : Clean

No.	Name	When calling	50K	100K	150K	Remark
1	Pickup roller	○	○	○	○	*1
2-1	Separation unit	X	X	X	X	Replace when worn down.
2-2	Front separation sheet	X	X	X	X	
3	Paper feed roller	○	○	○	○	*1
4	PS roller	○	○	○	○	
5	Transport roller	X	X	X	X	
6	Paper exit roller	X	X	X	X	

*1 Replacement reference: Replace when the SPF counter (SIM22-8) reaches 100K or the usage time reaches 1 year.



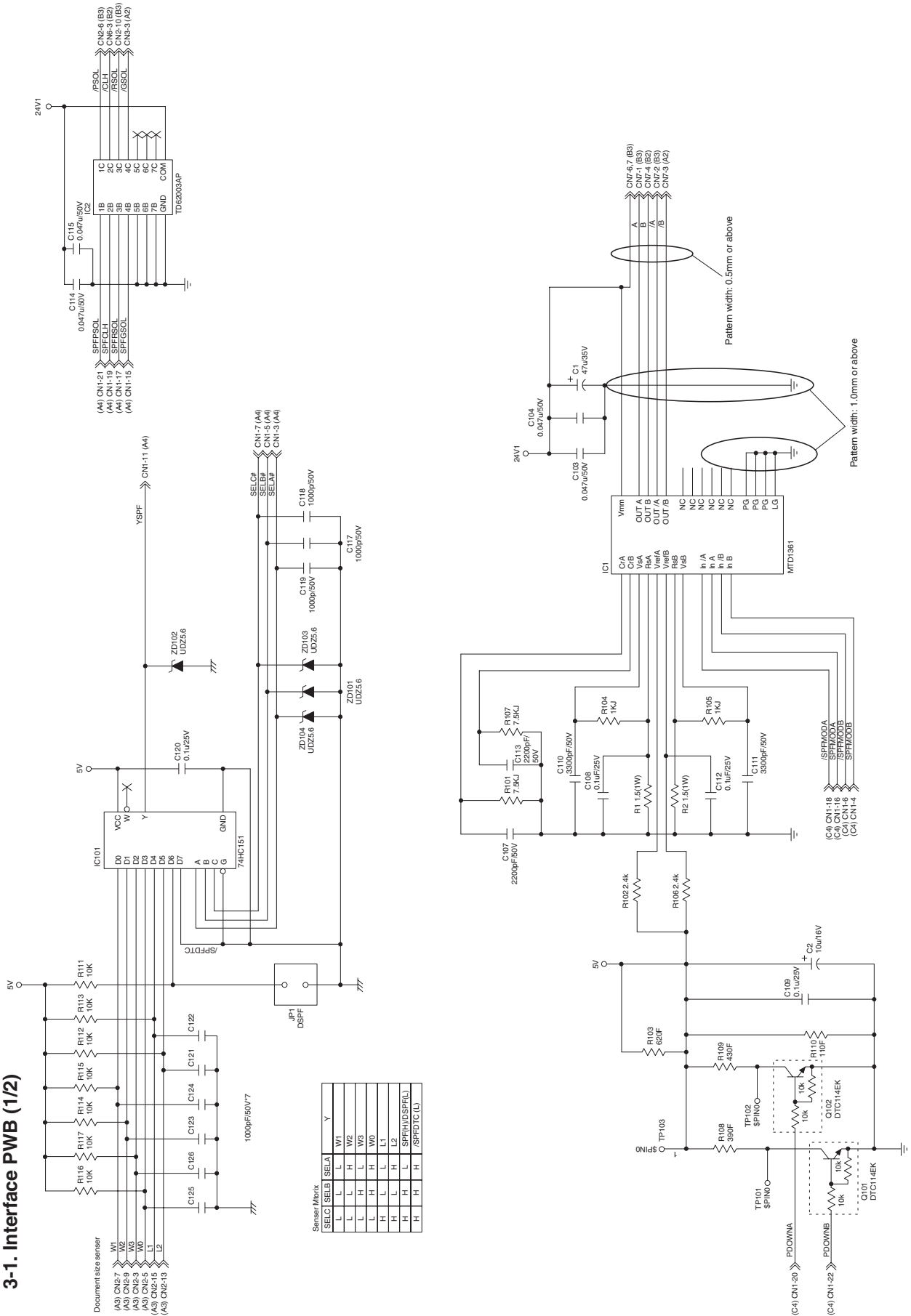
Note: When performing maintenance, refer to [7] DISASSEMBLY AND ASSEMBLY.



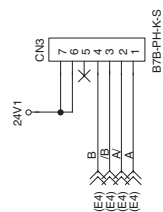
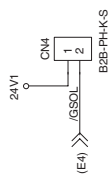
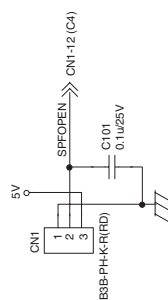
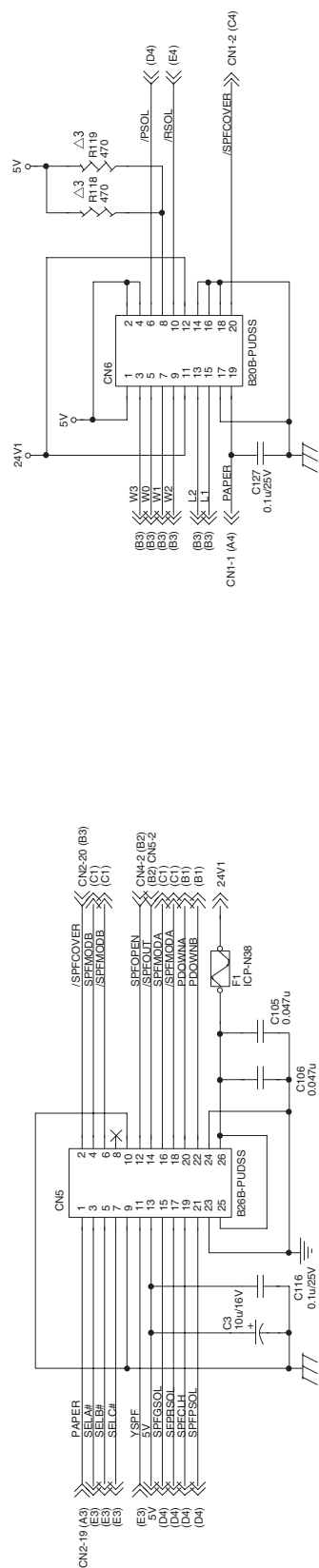
[illegible]

3. Circuit Diagram

3-1. Interface PWB (1/2)



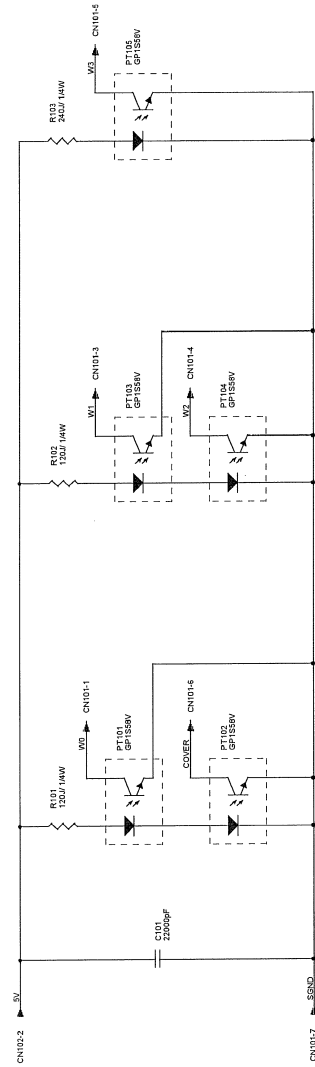
3-2. Interface PWB (2/2)



3-3. Sensor PWB

CN101
(PHR-7)

1	W0
2	5V
3	W1
4	W2
5	W3
6	COVER
7	SGND



4. Parts arrangement

4-1. Interface PWB

a. Parts surface

CN3(B7B-PH-K-S)

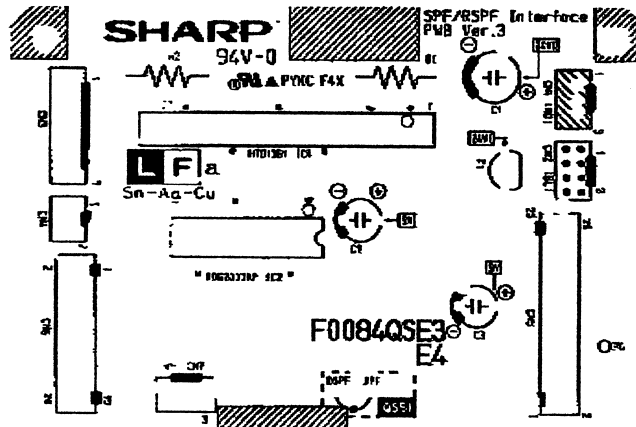
1	A
2	/A
3	/B
4	B
5	N.C.
6	24V1
7	24V1

CN4(B2B-PH-K-S)

1	24V1
2	/GSOL

CN6(B20B-PUDSS)

2	5V	1	5V
4	5V	3	W3
6	/PSOL	5	W0
8	Pull up	7	W1
10	/RSOL	9	W2
12	24V1	11	24V1
14	SGND	13	L2
16	SGND	15	L1
18	SGND	17	SGND
20	SPFCOVER	19	PAPER



CN7(B3B-PH-K-S)

1	24V1
2	N.C.
3	/CLH

CN1(B3B-PH-K-R RD)

1	SGND
2	SPFOPEN
3	5V

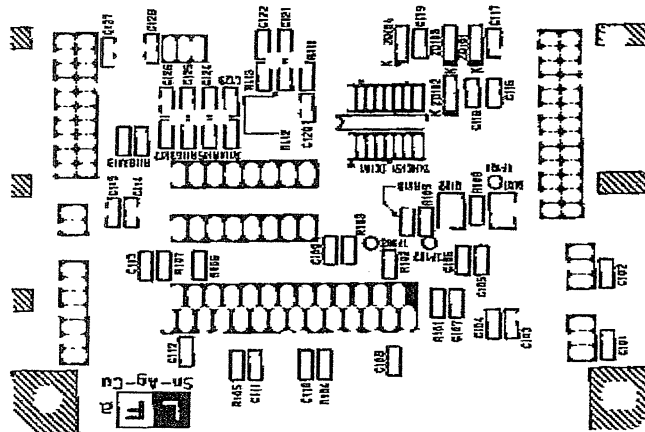
CN2(B3B-PH-K-E BK)

1	SGND
2	/SPFOUT
3	5V

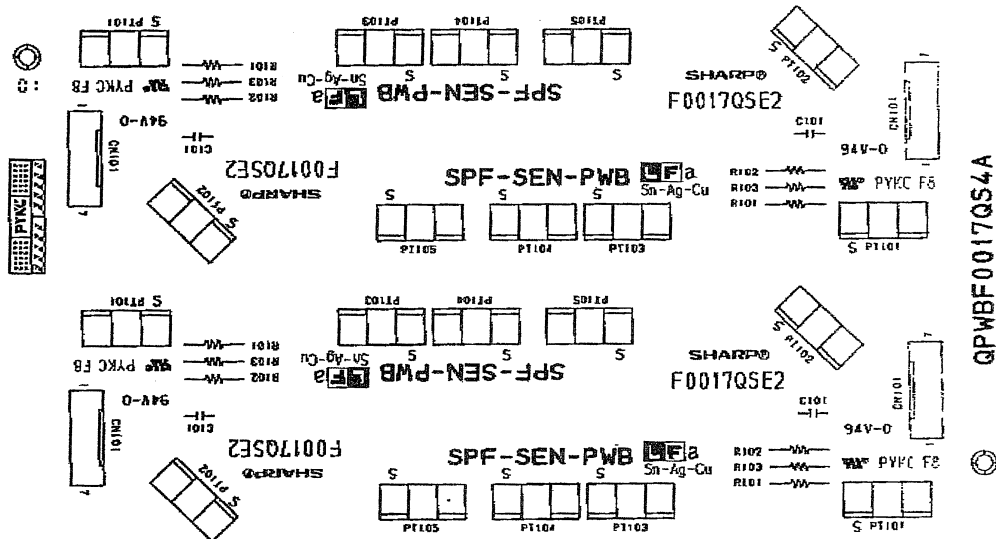
CN5(B26B-PUDSS)

25	24V1	26	24V1
23	PGND	24	PGND
21	SPFPSOL	22	PDOWNB
19	SPFCLH	20	PDOWNA
17	SPFRSOL	18	/SPFMODE
15	SPFGSOL	16	SPFMODE
13	5V	14	/SPFOUT
11	YSPF	12	SPFOPEN
9	SGND	10	SGND
7	SELCS	8	N.C.
5	SELBS	6	/SPFMODEB
3	SELA	4	SPFMODEB
1	PAPER	2	/SPFCOVER

b. Solder surface



4-2. Sensor PWB



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