Z-Folding Unit
(Machine Code: B660)

1. INSTALLATION

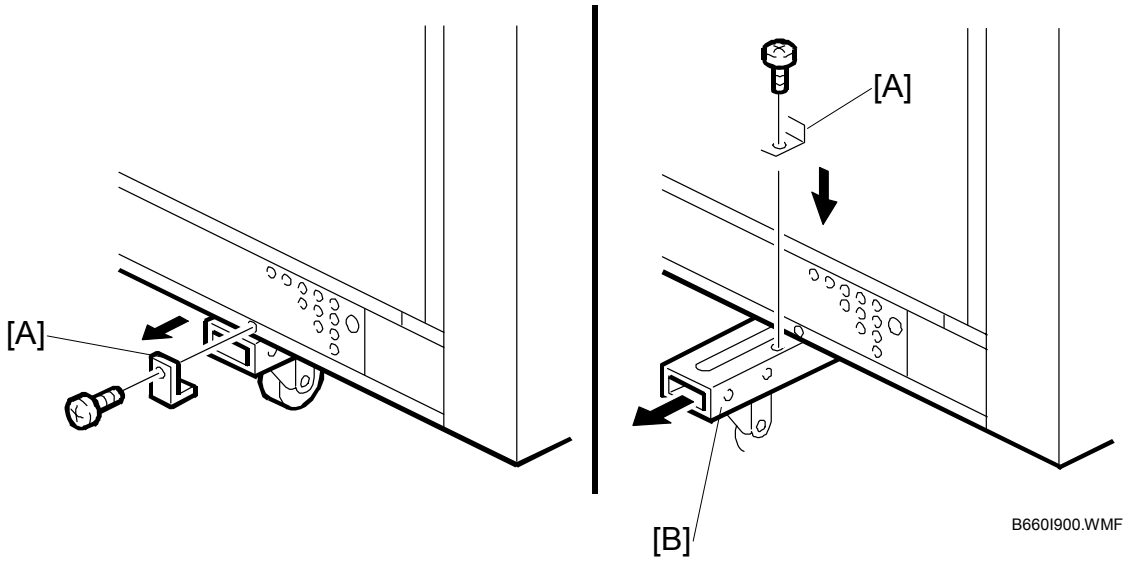
For details about installing the Z-Folding Unit B660, please refer to the instructions you received with the instructions or the “1. Installation” in the main machine service manual.

2. PREVENTIVE MAINTENANCE

For details about the Z-Folding Unit B660 PM table, please refer to Section “2. Preventive Maintenance” in the main Service Manual.

3. REPLACEMENT AND ADJUSTMENT

3.1 BEFORE YOU BEGIN



1. Disengage the Z-folding unit from the machine.
2. Disengage the Z-folding unit from the finisher (or cover sheet feeder).
3. At the bottom on the sides of the Z-folding unit:
   - Remove the lock bracket [A] (🔩 x 1).
   - Pull out the foot extension [B].
   - Re-attach the bracket [A] to lock the foot in the open position (🔩 x 1).

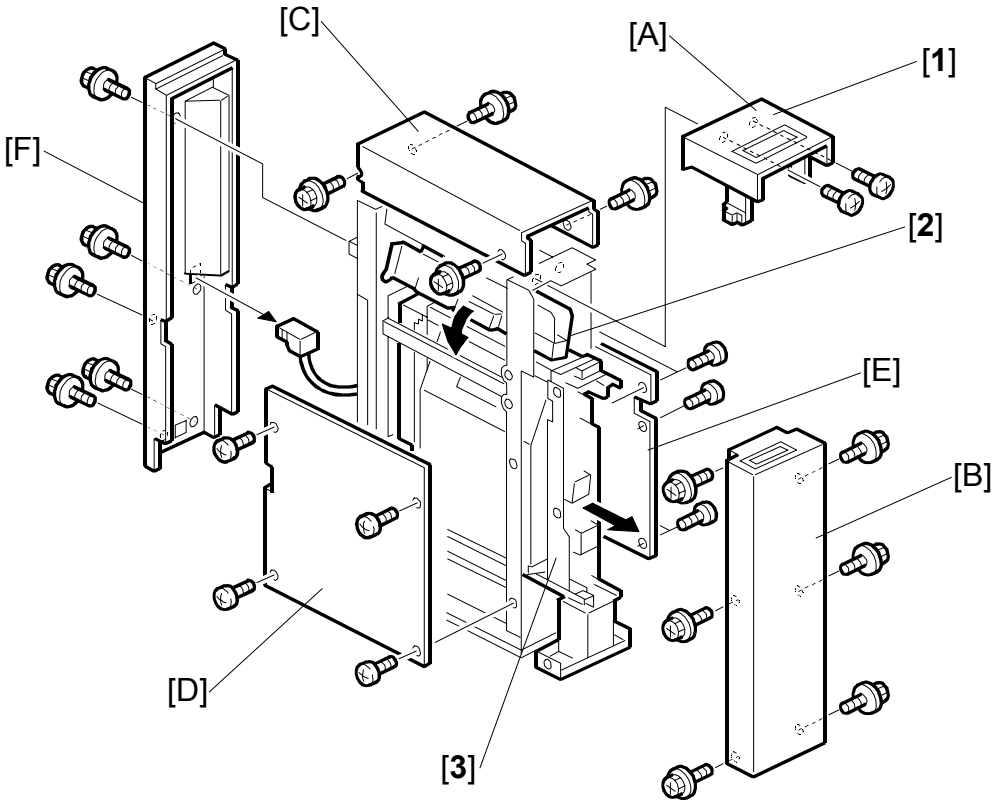
Reinstallation

Do this procedure in the opposite sequence to retract and lock the extensions below the Z-folding unit.

⚠CAUTION

The Z-folding unit is not stable, with or without the feet extended. Do your work carefully; do not tilt the unit.

3.2 COVERS



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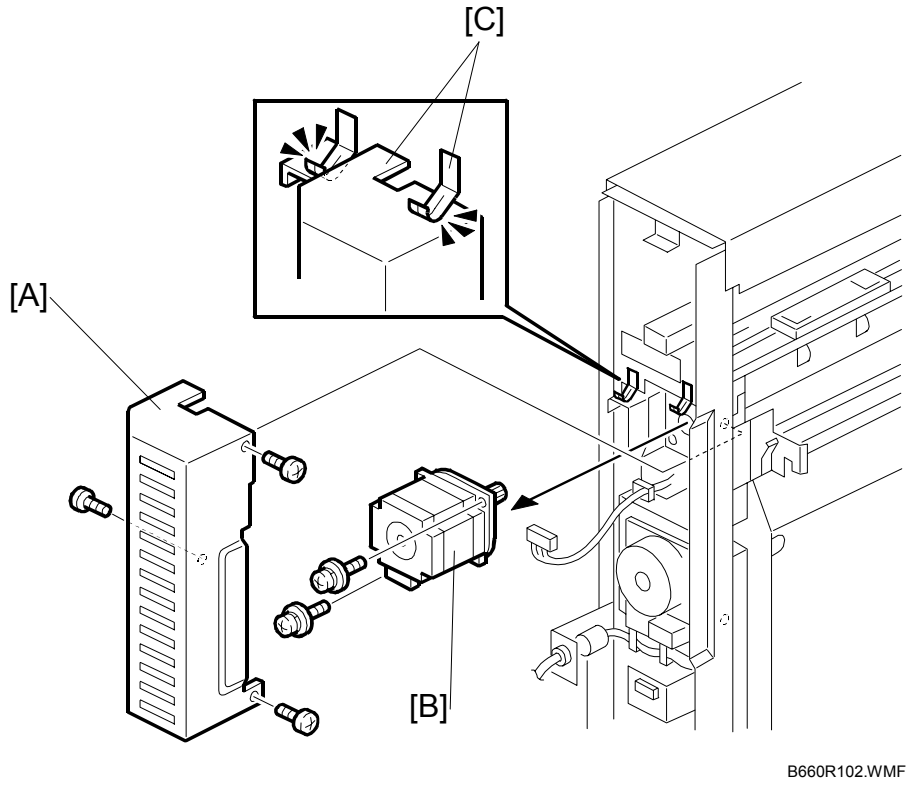
[**1**] Open the front door.

[**2**] Lift the horizontal transport plate to the left until it locks on the left side.

[**3**] Pull out the Z-fold mechanism.

[A]: Front door (☞ x 2)
[B]: Front cover (☞ x 6)
[C]: Top cover (☞ x 4)
[D]: Left cover (☞ x 4)
[E]: Right cover (☞ x 5)
[F]: Back cover (☞ x 5)

3.3 FEED MOTOR



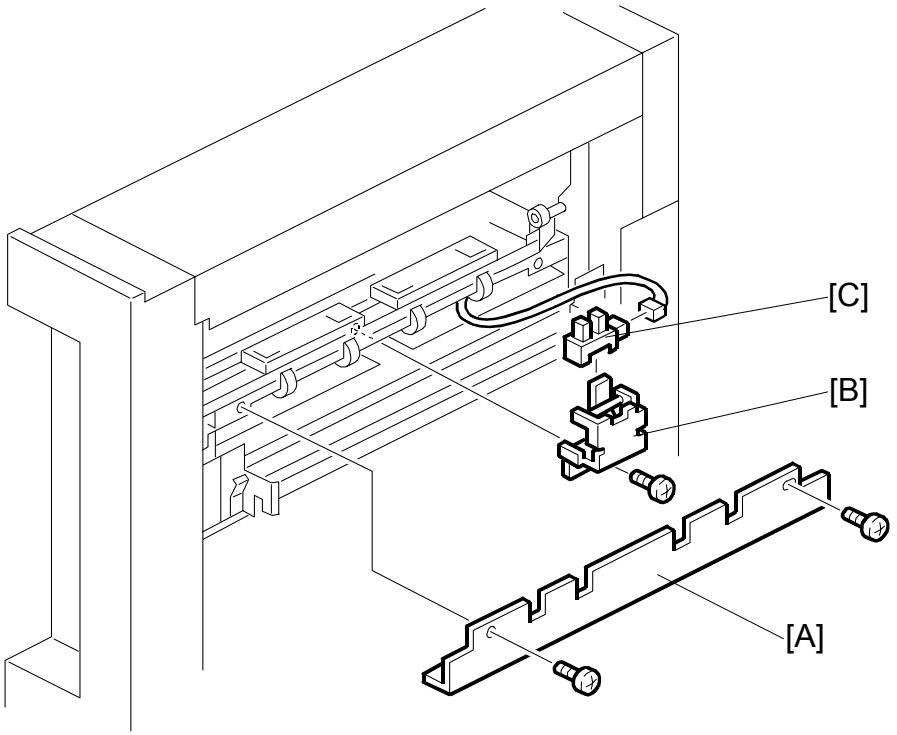
1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (☛ 3.2)
   - Left cover
   - Right cover
   - Back cover

[A]: Motor cover (🔩 x 3)
[B]: Feed Motor (🔩 x 2, 🔌 x 1, timing belt x 1)

Re-installation

Make sure that the motor cover is below the leaf springs [C].

3.4 UPPER EXIT SENSOR



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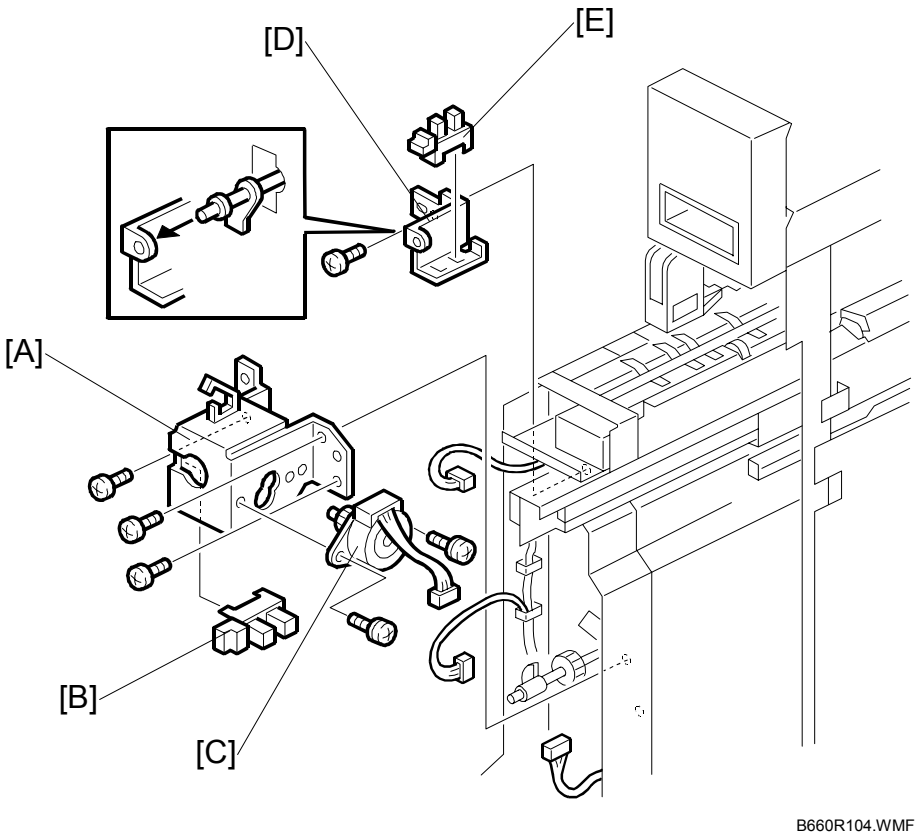
Left cover (☛ 3.2)

[A]: Bracket (🔩 x 2)

[B]: Upper exit sensor bracket (🔩 x 1, 🔌 x 1)

[C]: Upper exit sensor (✋ x 1)

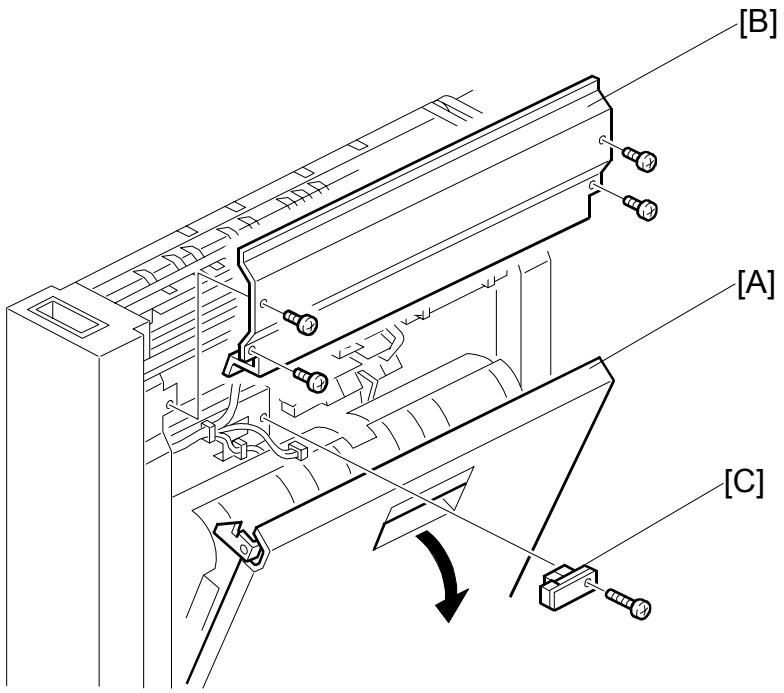
3.5 UPPER STOPPER MOTOR/HP SENSOR, FEED SENSOR



Front cover (☛ 3.2)

[A]: Upper stopper motor bracket (🔩 x 3, 🔩 x 2)
[B]: Upper stopper motor HP sensor (🔌 x 1)
[C]: Upper stopper motor (🔩 x 2, 🔌 x 1)
[D]: Feed sensor bracket (🔩 x 1)
[E]: Feed sensor (🔌 x 1)

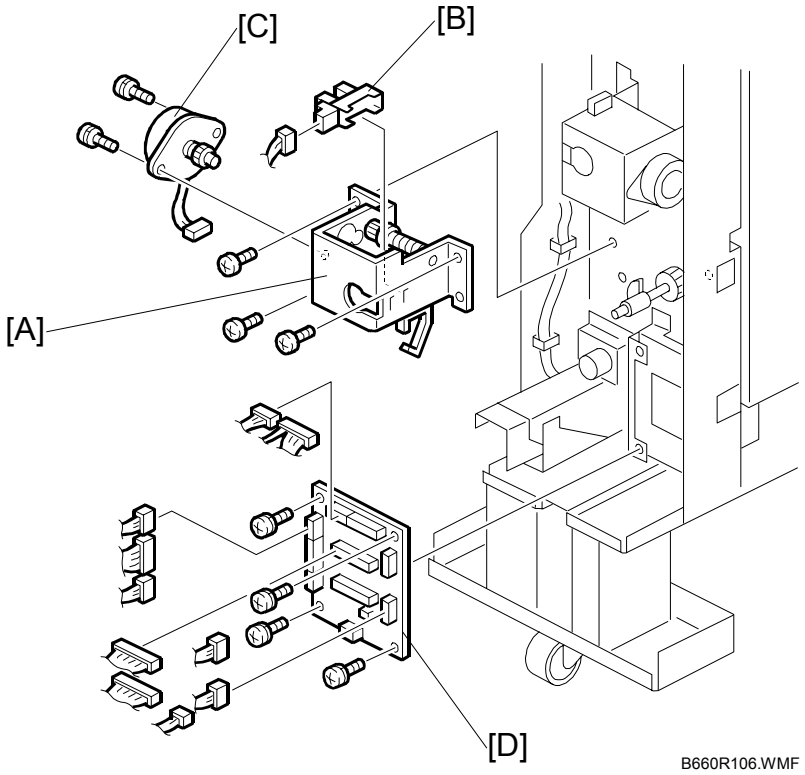
3.6 FOLD TIMING SENSOR



Pull the Z-fold mechanism out of the unit. (☛ 3.2)

[A]: Open the right vertical transport unit cover.
[B]: Plate (🔩 x 4)
[C]: Fold timing sensor (🔩 x 1, 🔌 x 1)

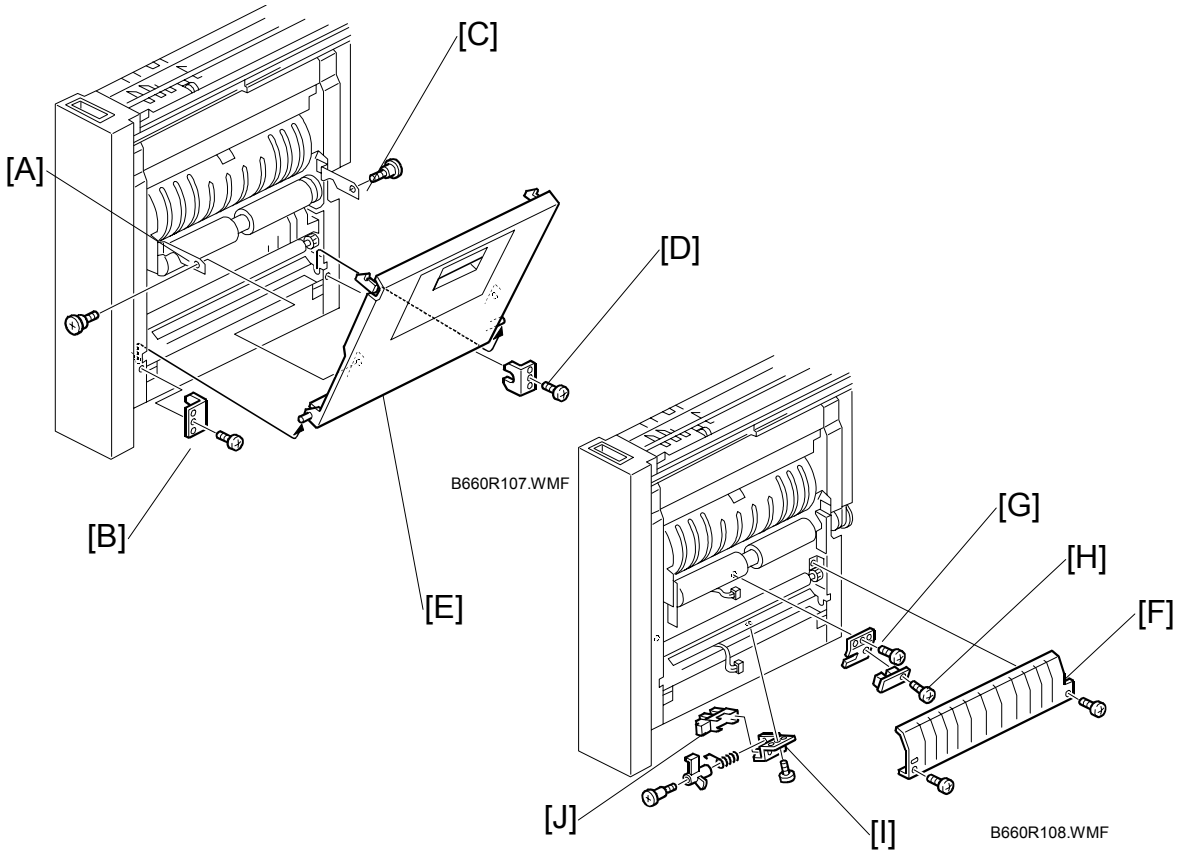
3.7 LOWER STOPPER MOTOR/HP SENSOR, RELAY BOARD



Front cover (☛ 3.2)

[A]: Lower stopper motor bracket (x 3, x 1)
[B]: Lower stopper HP sensor (x 1)
[C]: Lower stopper motor (x 2, x 1, x 1)
[D]: Relay board (x 4, x 3, x 10)

3.8 LEADING EDGE SENSOR, LOWER EXIT SENSOR

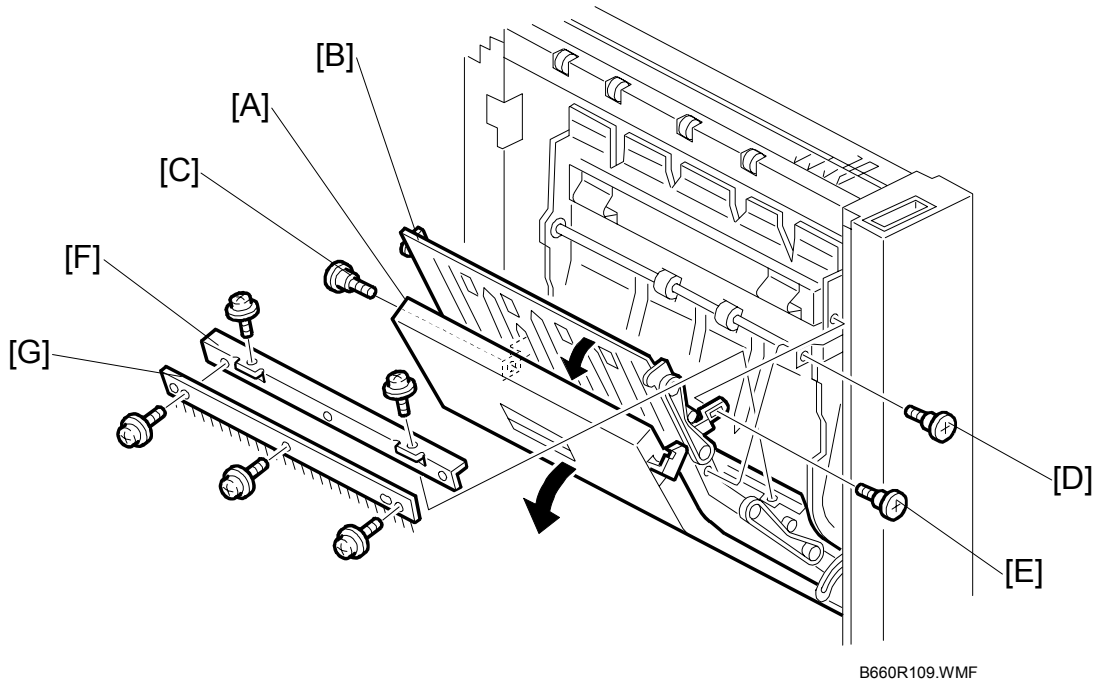


Pull out the Z-folding mechanism. (☛ 3.2)

Open the right vertical transport cover [E].

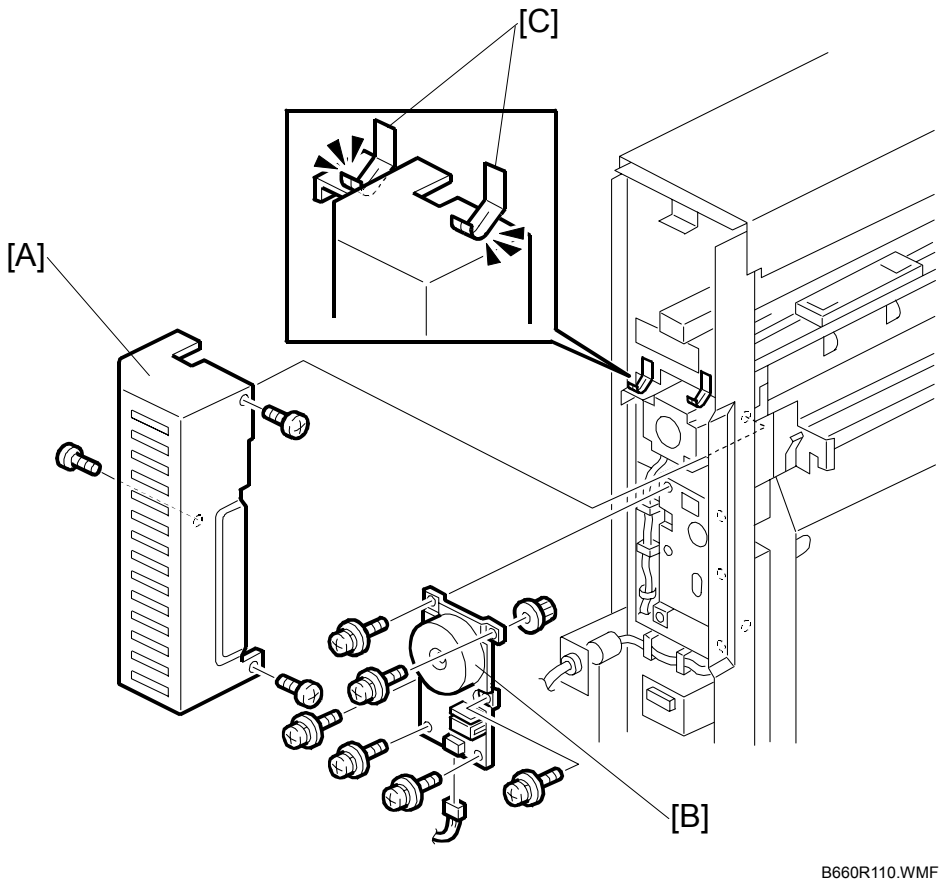
[A]: Left link arm (☞ x 1)
[B]: Left corner bracket (☞ x 1)
[C]: Right link arm (☞ x 1)
[D]: Right corner bracket (☞ x 1)
[E]: Vertical transport cover.
[F]: Lower fold roller cover (☞ x 2)
[G]: Leading edge sensor bracket (☞ x 1)
[H]: Leading edge sensor (☞ x 1, ☞ x 1)
[I]: Lower exit sensor bracket (☞ x 1)
[J]: Lower exit sensor (☞ x 1, ☞ x 1)

3.9 ANTI-STATIC BRUSH



1. Pull out the Z-folding mechanism. (☛ 3.2)
2. Open the left vertical transport cover [A].
3. Open the vertical transport assembly [B].
4. Remove the left link screw [C] of the vertical transport assembly.
5. Remove the right link screw [D] of the vertical transport assembly.
6. Remove the link screw [E] between the plates of the vertical transport assembly.
7. Remove the bracket [F].
8. Remove the anti-static brush [G].

3.10 FOLD ROLLER MOTOR



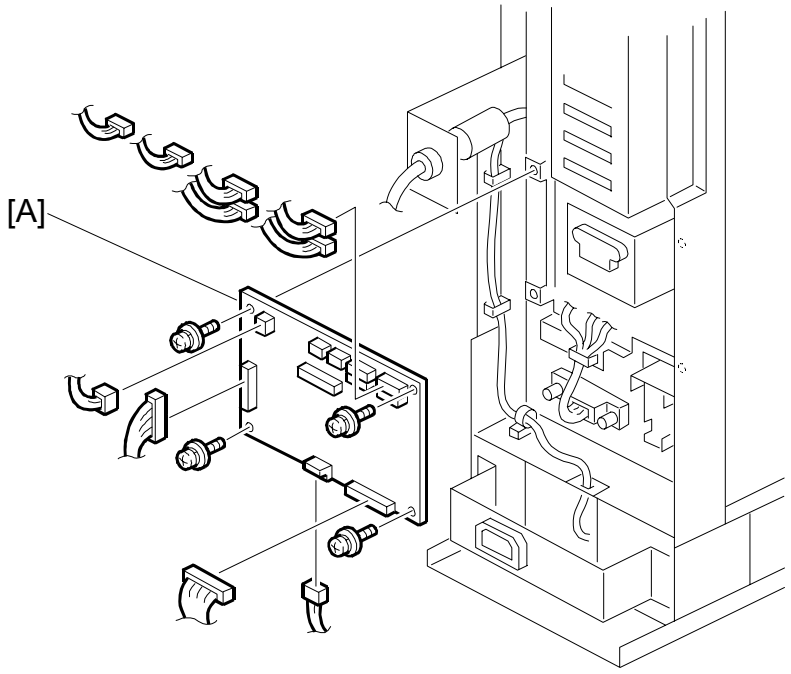
1. Pull the Z-folding mechanism out of the unit, but not fully.
2. Remove: (☛ 3.2)
   - Left cover
   - Right cover
   - Back cover

[A]: Motor cover (x 3)
[B]: Fold roller motor (x 6, x 1, timing belt x 1)

Reinstallation

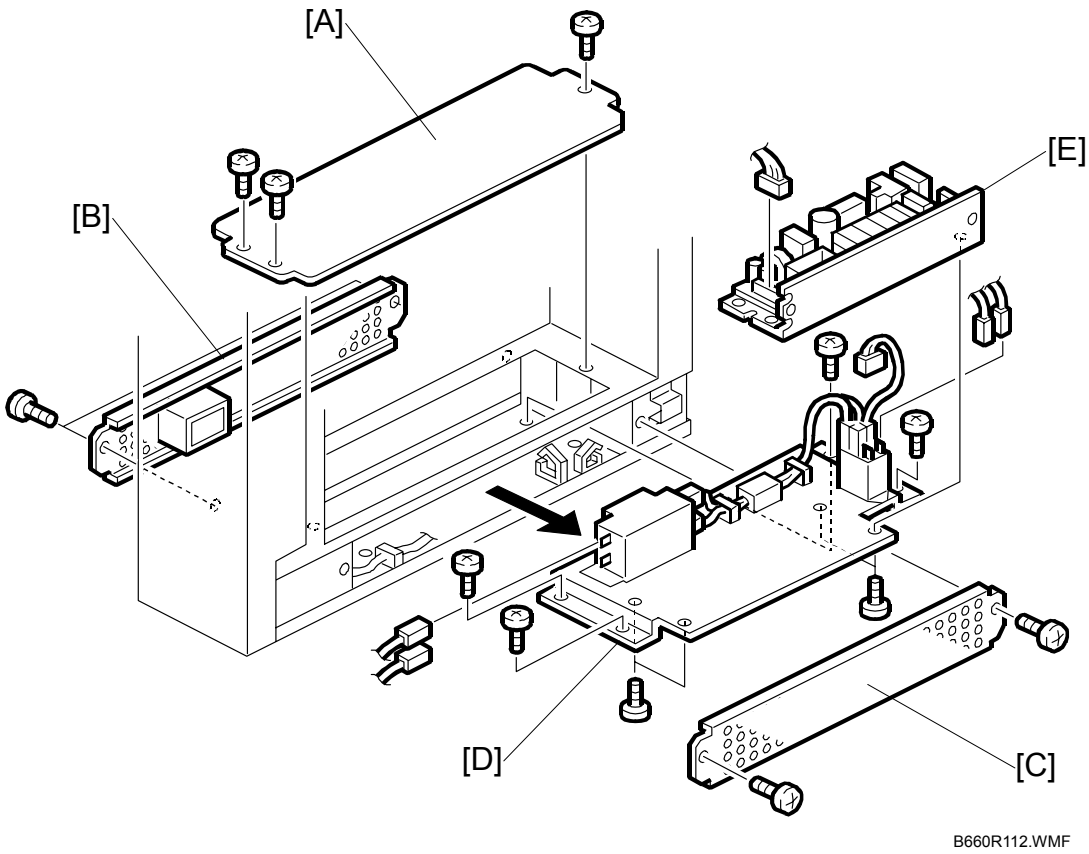
Make sure that the motor cover is below the leaf springs [C].

3.11 MAIN CONTROL BOARD



1. Remove the rear cover. (☛ 3.2)
2. Remove the main control board [A] (🔧 x 4, ✋ x 10)

3.12 PSU



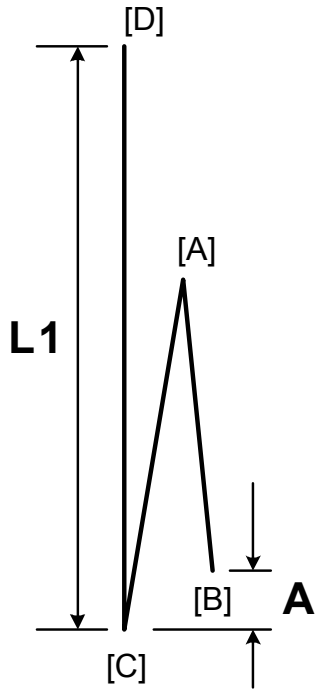
1. Open the front door. (☛ 3.2)
2. Pull the Z-fold mechanism out of the unit. (☛ 3.2)
3. Remove the left cover and right cover. (☛ 3.2)
4. Remove the base top cover [A] (☞ x 3).
5. Remove the base left cover [B] (☞ x 2).
6. Remove the base right cover [C] (☞ x 2).
7. Make a mark at the positions of the connectors, then disconnect them.
   NOTE: These connectors do not have different colors. To help you connect them again correctly, make marks on them.
8. Remove the screws of the power supply unit (PSU) [D] (☞ x 4).
9. Pull the power supply unit [D] out of the right side of the bottom.
10. Remove the power supply board [E] (☞ x 4, ☞ x 5).

4. TROUBLESHOOTING

For more about troubleshooting (jam removal, etc.), please refer to the Operating Instructions.

5. SERVICE TABLES

Two SP codes have been added for the Z-folding unit.



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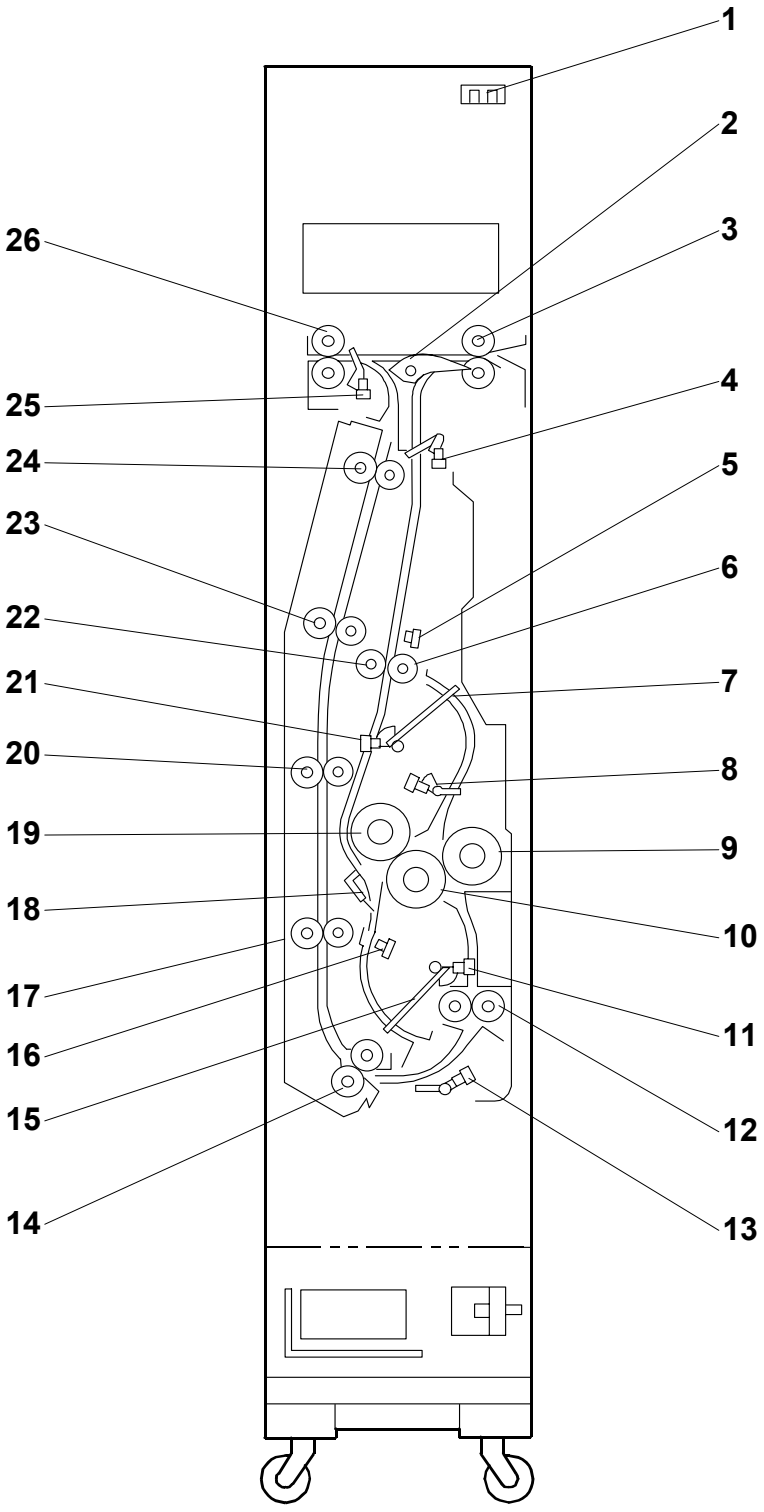
Use these SPs to adjust the locations of the first fold and the second fold.

The illustration shows the position of the sheet while it goes through the lower exit rollers after it has been folded.

SP6122 001-008	Fine Adjustment – 1st Fold Position
	[-4 ~ +4/0/ 0.2 mm] Adjusts the position of the first fold [A] to decrease or increase the distance (**A**) between the leading edge [B] and the crease of the 2nd fold [C].
SP6122 009-016	Fine Adjustment – 2nd Fold Position
	[-4 ~ +4/0/ 0.2 mm] Adjusts the position of the 2nd fold [C] to decrease or increase the length (**L1**) of the sheet between the trailing edge [D] and the 2nd fold.

6. DETAILS

6.1 OVERVIEW



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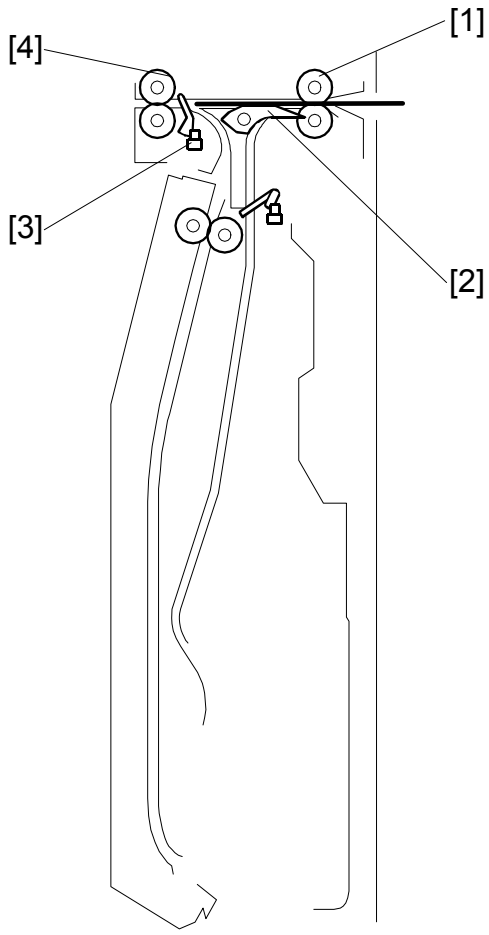
1. Front Door Sensor
2. Junction Gate
3. Feed Rollers
4. Feed Sensor
5. Fold Timing Sensor
6. Pinch Idle Roller
7. Upper Stopper
8. Upper Stopper Path Sensor
9. 3rd Fold Roller
10. 2nd Fold Roller
11. Lower Stopper HP Sensor
12. Lower Exit Rollers
13. Lower Exit Sensor
14. Grip Rollers
15. Lower Stopper
16. Leading Edge Sensor
17. Vertical Feed Rollers – 1
18. Anti-Static Brush
19. 1st Fold Roller
20. Vertical Feed Rollers – 2
21. Upper Stopper HP Sensor
22. Pinch Feed Roller
23. Vertical Feed Rollers – 3
24. Vertical Feed Rollers – 4
25. Upper Exit Sensor
26. Upper Exit Rollers

6.2 Z-FOLDING UNIT PAPER PATH

6.2.1 PAPER PATH WITH NO FOLDING



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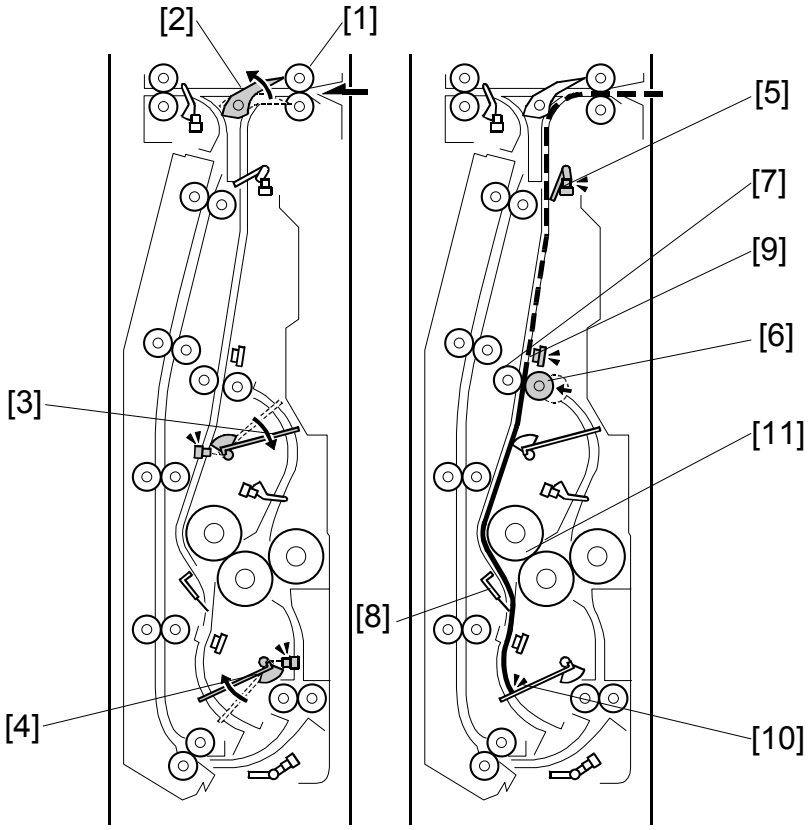
The feed rollers [1] feed the paper from the main machine into the Z-folding unit.

If Z-folding was not used for the job, the sheet feeds above the closed junction gate [2].

The upper exit sensor [3] detects the leading and trailing edge of the unfolded sheet.

The upper exit rollers [4] feed the unfolded sheet out of the Z-folding unit and into the finisher.

6.2.2 PAPER PATH WITH Z-FOLDING



The feed rollers [1] feed the paper from the main machine into the Z-folding unit.

The junction gate solenoid energizes and opens the junction gate [2]. The junction gate sends the sheet down into the Z-folding paper path.

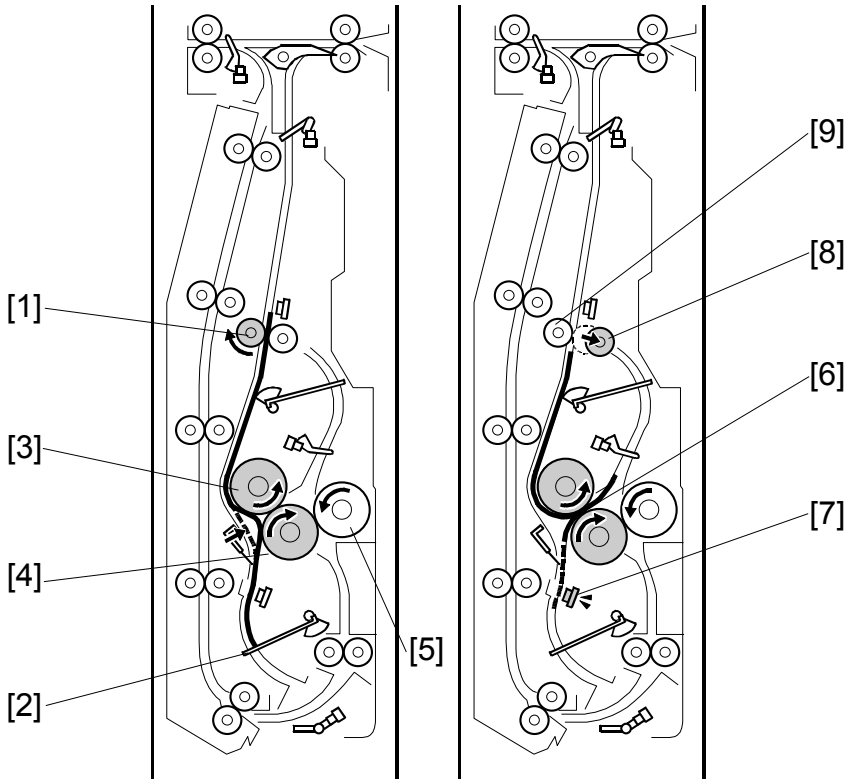
The upper and lower stopper motors move the upper stopper [3] and lower stopper [4] to the positions for the paper size that was used for the job, and for the fold positions that were selected.

The feed sensor [5] detects the leading edge and trailing edge of the sheet. The pinch idle roller solenoid (upper) pulls the pinch idle roller [6] away from the pinch feed roller [7] and the paper can fall between the pinch rollers.

The anti-static brush [8] removes static electricity from the sheet.

When the fold timing sensor [9] detects the trailing edge of the sheet, it energizes the pinch idle roller solenoid (lower). This pushes the pinch idle roller [6] against the opposite pinch feed roller [7].

The lower stopper [10] stops the sheet and buckles it slightly toward the nip [11] of the 1st and 2nd fold rollers.



The pinch feed roller [1] feeds the sheet down against the lower stopper [2].

At the same time, these rollers turn:

- 1st fold roller [3]
- 2nd fold roller [4]
- 3rd fold roller [5]

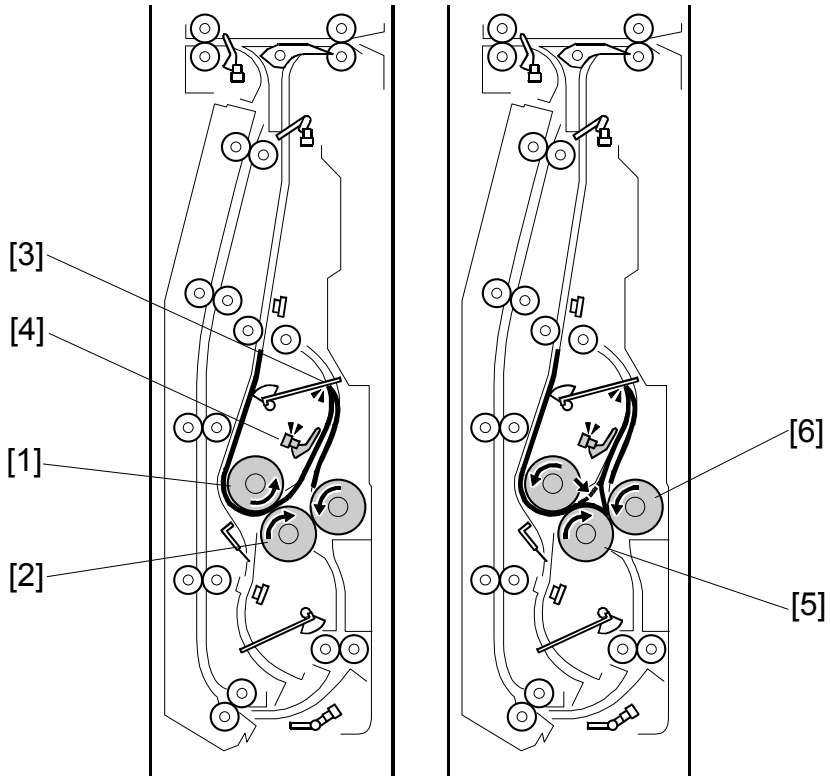
The sheet continues to buckle until it feeds into the nip [6] of the 1st and 2nd fold rollers. These two rollers fold the sheet.

The leading edge sensor [7] detects the leading edge of the sheet:

- When the leading edge goes by while the paper feeds down (to the lower stopper).
- When the leading edge goes by again while the paper feeds up into the nip of the 1st and 2nd fold rollers.

If the leading edge sensor does not detect the leading edge at the correct time, this sensor signals a jam.

At the correct time, the pinch idle roller [8] is pulled away from the pinch feed roller [9] by the pinch idle roller solenoid (upper).



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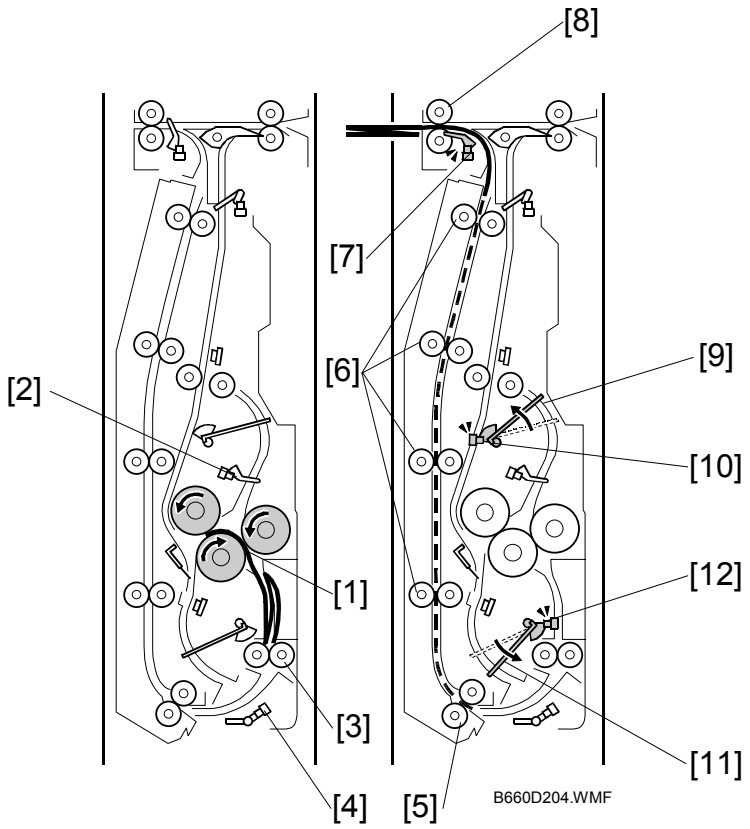
The 1st fold roller [1] and 2nd fold roller [2] continue to turn. This feeds the edge of the 1st fold up until it hits the upper stopper [3].

The sheet lifts the feeler of the upper stopper path sensor [4]. This sensor:

- Detects when the sheet comes to the upper stopper path.
- Detects when the sheet goes out of the upper stopper path.

The upper stopper sensor detects a jam if it does not detect that the sheet comes and goes at the correct times.

When the sheet feeds between the 1st and 2nd fold rollers, this pushes the first fold against the upper stopper. The sheet buckles down into the gap between the 2nd fold roller [5] and 3rd fold roller [6]. The second fold is made when the sheet feeds between the 2nd and 3rd feed rollers.



The 2nd and 3rd fold rollers [1] continue to turn and feed the sheet down.

The feeler of the upper stopper path sensor [2] falls and the sensor detects that the sheet is gone. The fold rollers feed the folded sheet to the lower exit rollers [3].

The lower exit sensor [4] detects the leading edge and trailing edge of the sheet. If the trailing edge is not detected during the correct time interval, the sensor detects a jam.

The grip rollers [5] feed the folded sheet to the four pairs of vertical feed rollers [6].

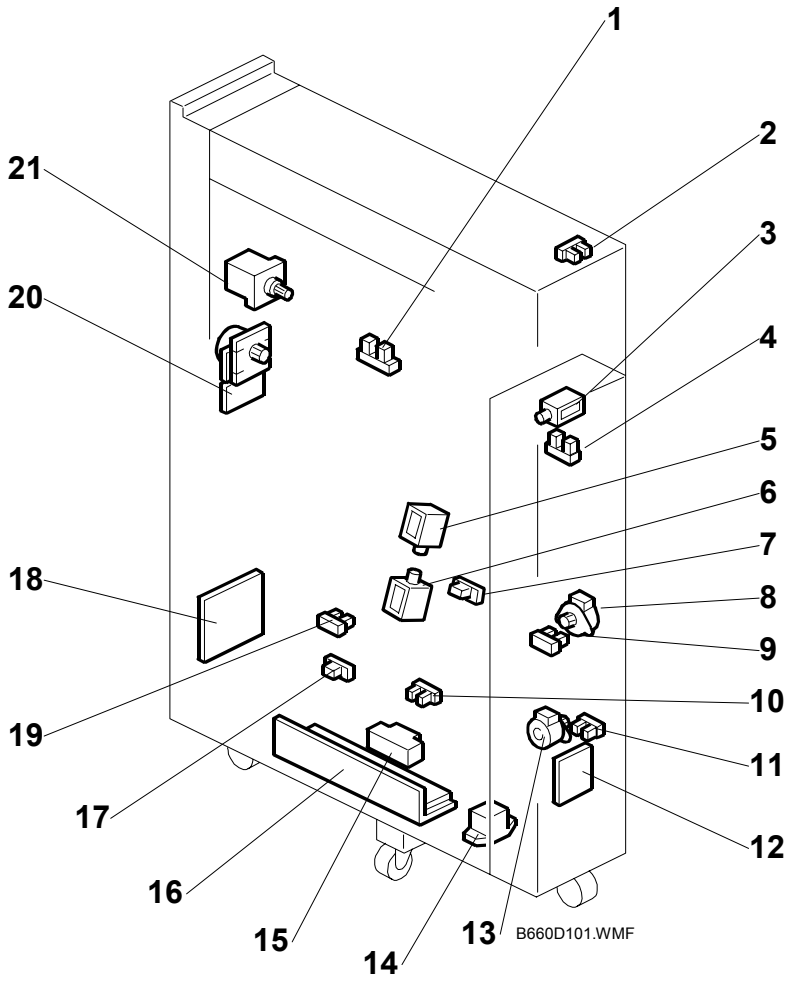
The upper exit sensor [7] detects the leading edge and trailing edge of each folded sheet. If the leading and trailing edge are not detected during the correct time interval, this sensor detects a jam.

The upper exit rollers [8] feed the folded sheet into the finisher.

At the correct time:

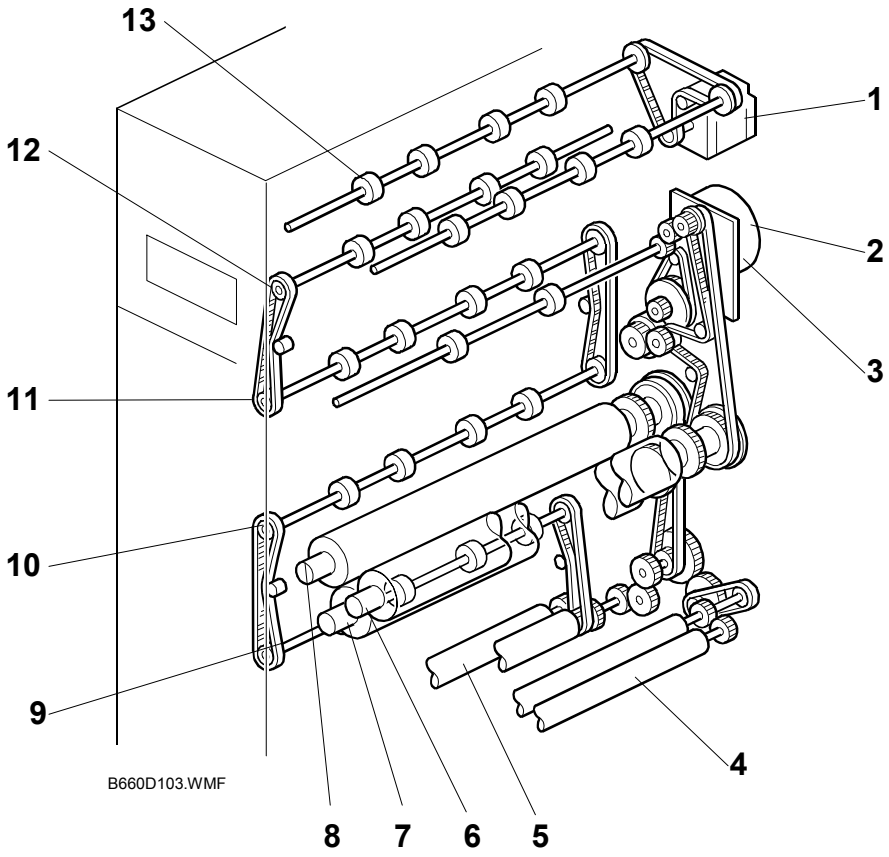
- The upper stopper motor lifts the upper stopper [9] until the upper stopper sensor [10] detects that the upper stopper is at its home position. This stops the motor.
- The lower stopper motor lowers the lower stopper [11] until the lower stopper sensor [12] detects that the lower stopper is at its home position. This stops the motor.

6.3 ELECTRICAL COMPONENTS



1. Upper Exit Sensor
2. Front Door Sensor
3. Junction Gate Solenoid
4. Feed Sensor
5. Pinch Idle Roller Solenoid – Upper
6. Pinch Idle Roller Solenoid – Lower
7. Fold Timing Sensor
8. Upper Stopper Motor
9. Upper Stopper HP Sensor
10. Lower Exit Sensor
11. Lower Stopper HP Sensor
12. Relay Board
13. Lower Stopper Motor
14. Connector Relay
15. Breaker
16. Power Supply Unit
17. Leading Edge Sensor
18. Main Control Board
19. Upper Stopper Path Sensor
20. Fold Roller Motor
21. Feed Motor

6.4 DRIVE LAYOUT



1. Feed Motor
2. Feed Rollers
3. Fold Roller Motor
4. Lower Exit Rollers
5. Grip Rollers
6. 3rd Fold Roller
7. 2nd Fold Roller
8. 1st Fold Roller
9. Vertical Feed Rollers – 1
10. Vertical Feed Rollers – 2
11. Vertical Feed Rollers – 3
12. Vertical Feed Rollers – 4
13. Upper Exit Rollers