DUPLEX UNIT
(Machine Code: G390)

1. REPLACEMENT AND ADJUSTMENT

⚠CAUTION
Set the power off and disconnect the printer before you remove parts of the printer.

Keys:

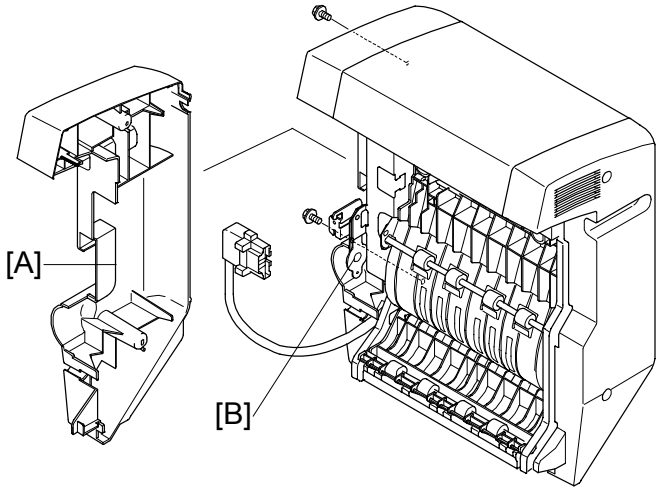
☛ : See or refer to : Screw : Connector
 : Clip ring : E ring

1.1 EXTERIOR COVER

1. Duplex unit (from the printer)
2. Left cover [A] (x 2)

Reassembling

Make sure that the stopper [B] is in the correct position before you fasten the screw.



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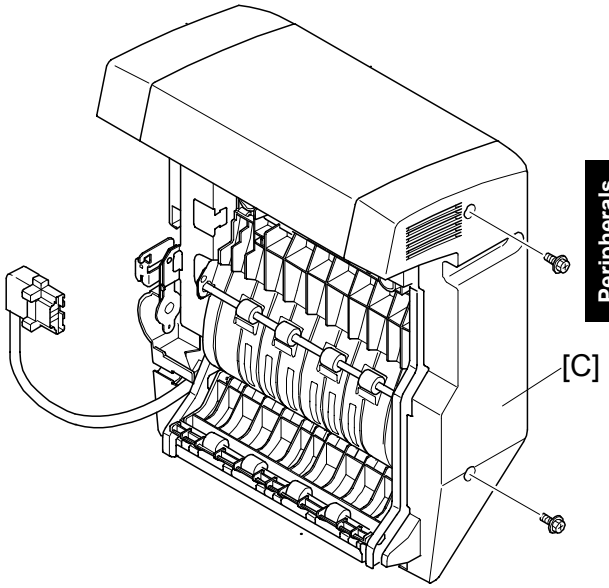
3. Right cover [C] (x 2)



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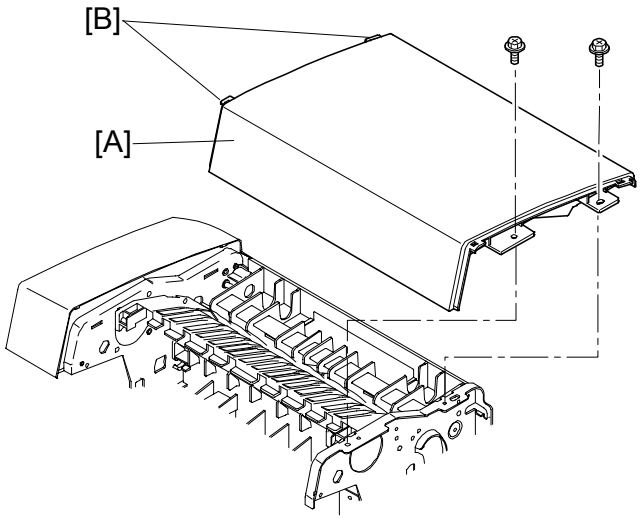
4. Top cover [A] (x 2, 2 hooks [B])



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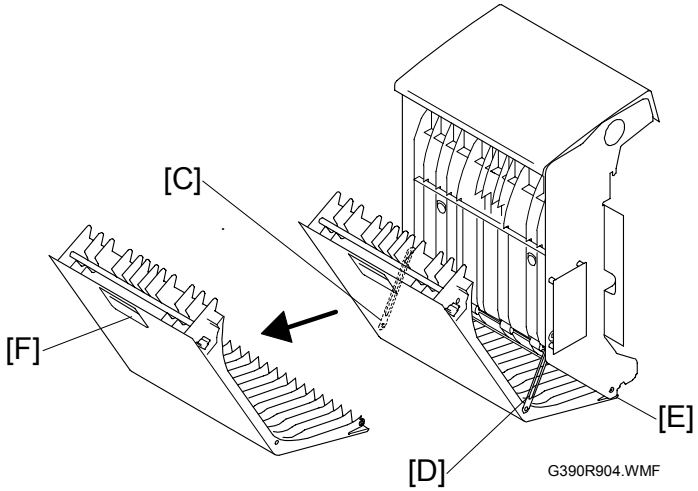
5. Release the supports [C][D].
6. Release the hinge [E].
7. Rear cover [F]



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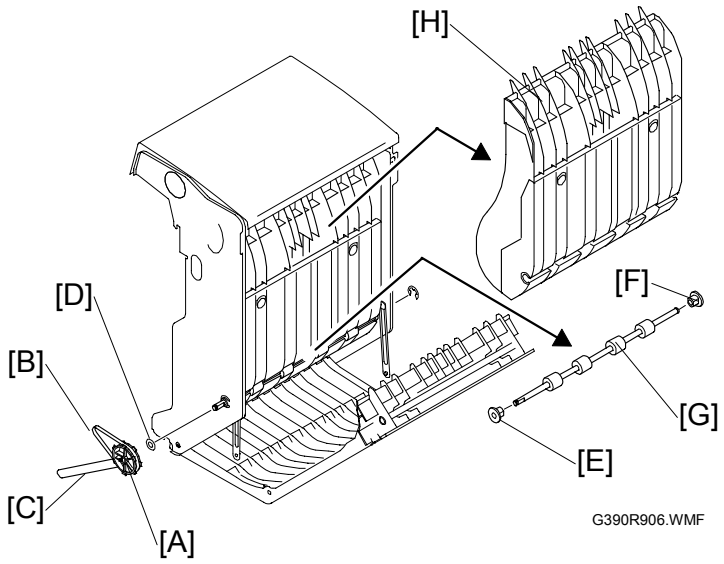
1.2 PAPER GUIDE

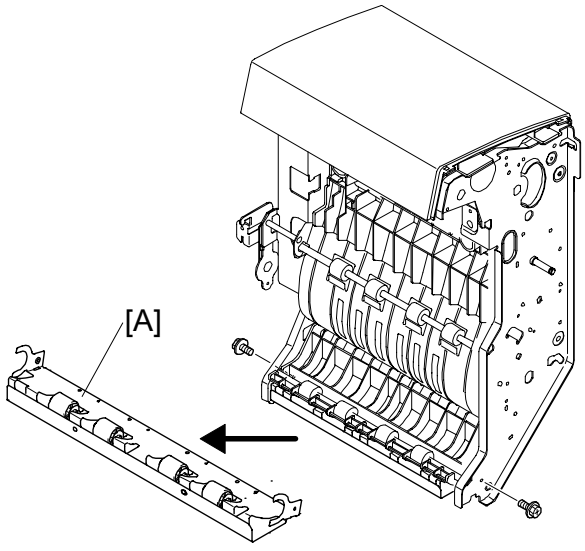
1.2.1 REAR GUIDE

1. Left cover, right cover (☛ 1.1)
2. Gear [A]
3. Timing belts [B][C]
4. Spacer [D]
5. Bushing [E]
6. Bushing [F]
7. Inverting roller [G]
8. Rear guide [H]

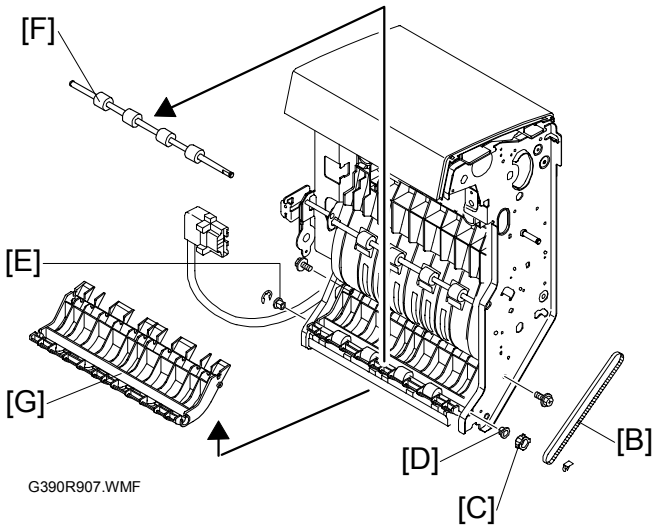


1.2.2 LOWER GUIDE

1. Left cover, right cover (☛ 1.1)
2. Bottom guide (with idle rollers) (🔩 x 2) [A]

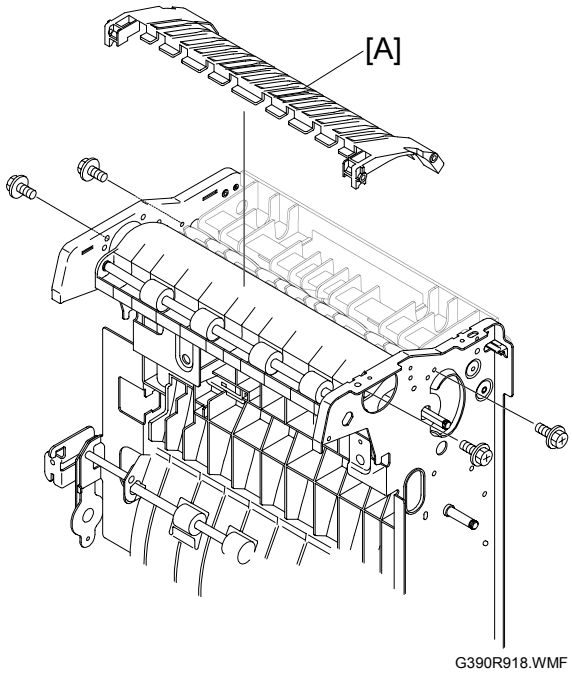


3. Timing belt (x 1) [B]
4. Gear [C]
5. Bushing [D]
6. Bushing [E] (x 1)
7. Exit roller [F]
8. Lower guide [G] (x 2)



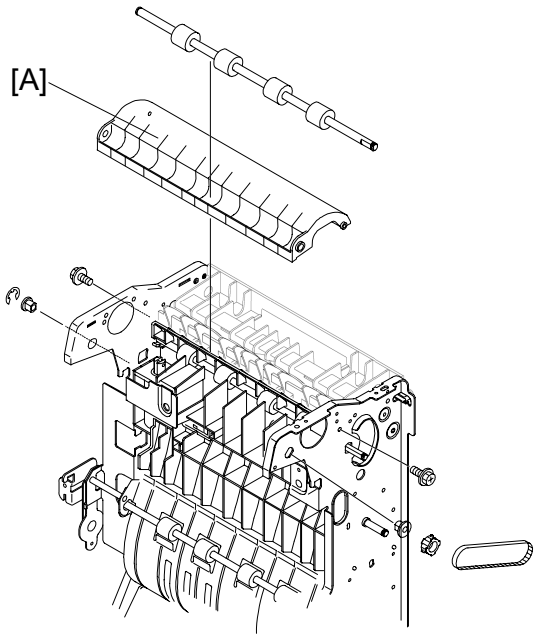
1.2.3 TOP GUIDE

1. Left cover, right cover, top cover (☛ 1.1)
2. Top guide [A] (x 4)



1.2.4 UPPER GUIDE

1. Top guide (☛ 1.2.3)
2. Entrance roller (☛ 1.6.1)
3. Upper guide [A] (🔩 x 2)



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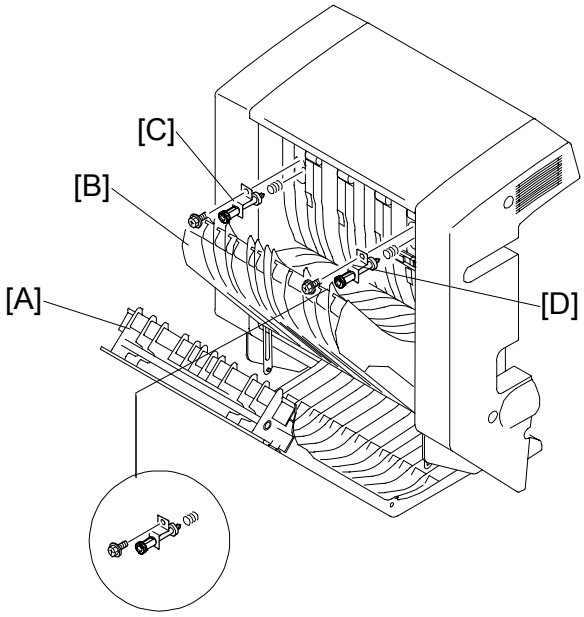
1.3 SCREW BASE

1. Open the rear cover [A].
2. Open the rear guide [B].
3. Screw bases [C][D] (🔩 x 1 for each)



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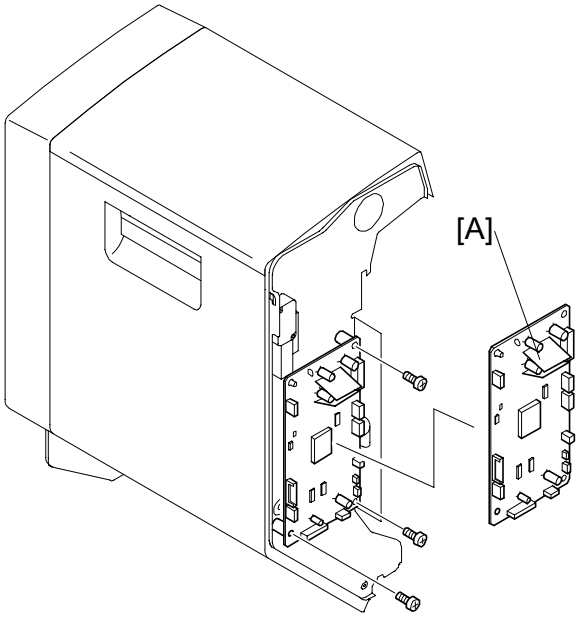
1.4 CONTROLLER BOARD

1. Left cover (☛ 1.1)
2. Controller board [A] (All 🖐's, 🔩 x 2)



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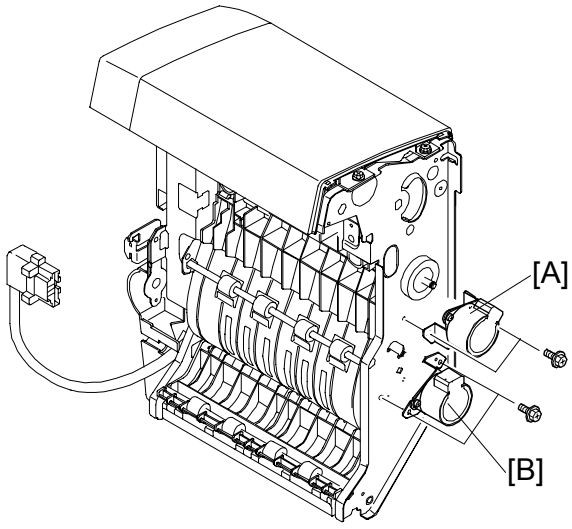
1.5 DRIVE PATH

1.5.1 MOTOR

1. Right cover (☛ 1.1)
2. Transport motor [A] (🖐 x 1, 🔩 x 2)
3. Inverting motor [B] (🖐 x 1, 🔩 x 2)



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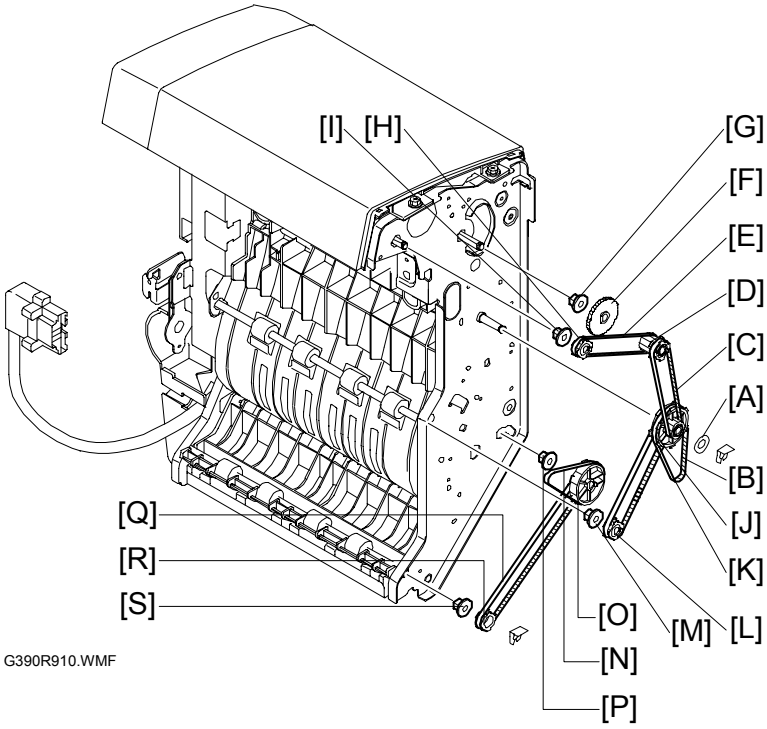
1.5.2 GEARS AND TIMING BELTS

1. Feed motor, exit motor (☛ 1.5.1)
2. Spacer [A] (🔩 x 1)
3. Two timing belts [B][C]
4. Gear [D]
5. Timing belt [E]
6. Spacer [F]
7. Bushing [G]
8. Gear [H]
9. Bushing [I]
10. Gear [J]
11. Timing belt [K]
12. Gear [L] (🔩 x 1)
13. Bushing [M]
14. Timing belt [N]
15. Gear [O]
16. Bushing [P]
17. Timing belt [Q]
18. Gear [R] (🔩 x 1)
19. Bushing [S]

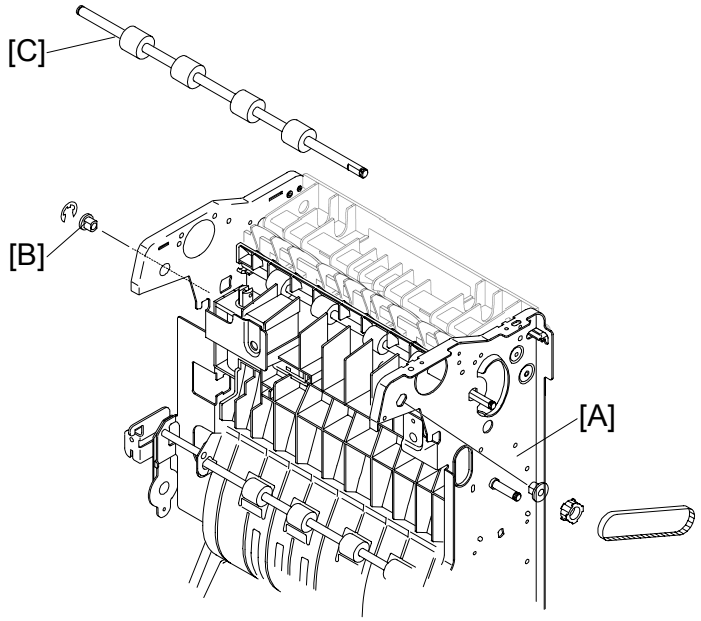


Peripherals

1.6 ROLLER

1.6.1 ENTRANCE ROLLER

1. Left cover, right cover, top cover (☛ 1.1)
2. Timing belt x 1, gear x 1 (☛ 1.5.2)
3. Bushing [A]
4. Bushing [B] (ℂ x 1)
5. Entrance roller [C]



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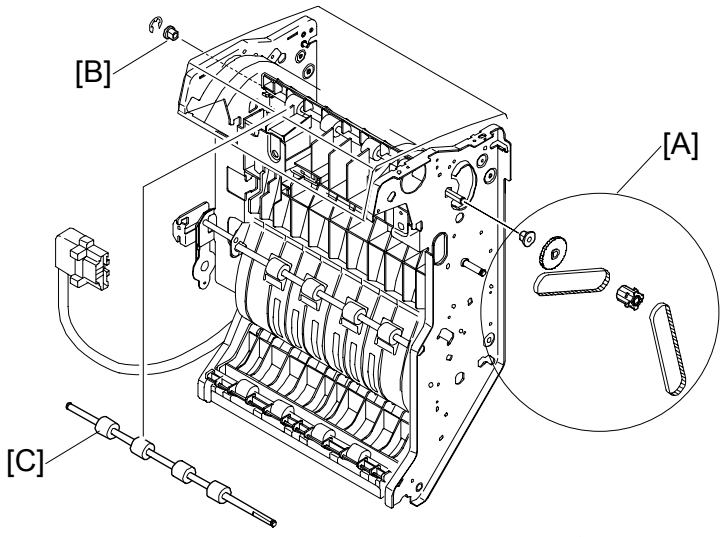
1.6.2 UPPER TRANSPORT ROLLER

1. Timing belts x 2, gears x 2, spacer x 1, bushing x 1 [A] (☛ 1.5.2)
2. Bushing [B] (ℂ x 1)
3. Upper transport roller [C]



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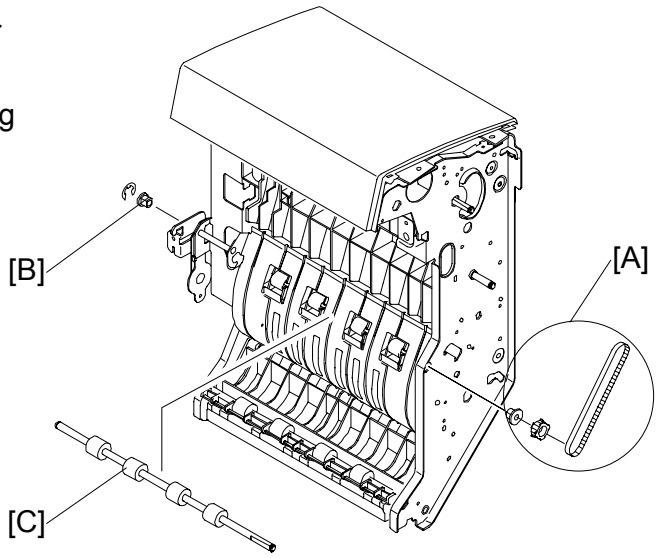
1.6.3 LOWER TRANSPORT ROLLER

1. Left cover, right cover, top cover (☛ 1.1)
2. Timing belt x 1, gear x 1, bushing x 1 (☛ 1.5.2)
3. Bushing [B] (ℂ x 1)
4. Lower transport roller [C]



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1.6.4 INVERTING ROLLER

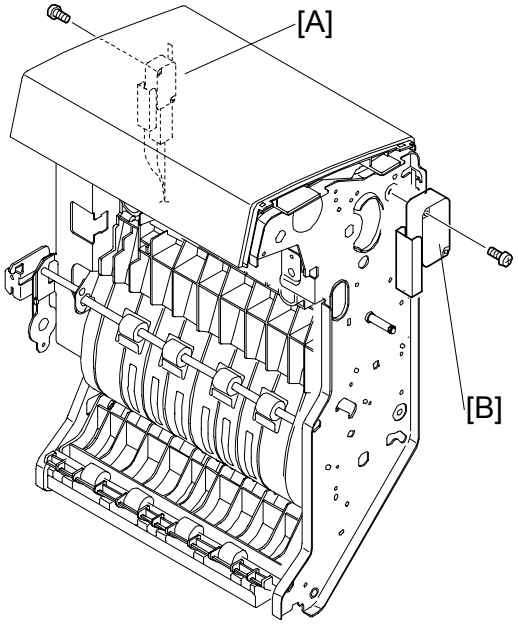
☛ 1.2.1

1.6.5 EXIT ROLLER

☛ 1.2.2

1.7 INTERLOCK SWITCHES

1. Left cover, right cover (☛ 1.1)
2. Left interlock switch [A] (🖉 x 1)
3. Right interlock switch [B] (🖉 x 1)



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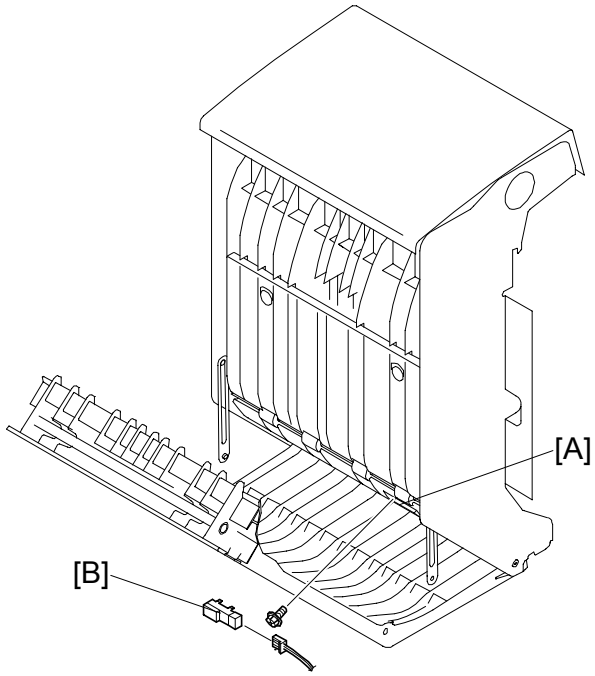
1.8 SENSOR

1.8.1 PAPER SENSOR 2

1. Rear cover (☛ 1.1)
2. Sensor bracket (with the sensor) [A] (☞ x 1)
3. Paper sensor 2 [B] (☞ x 1)



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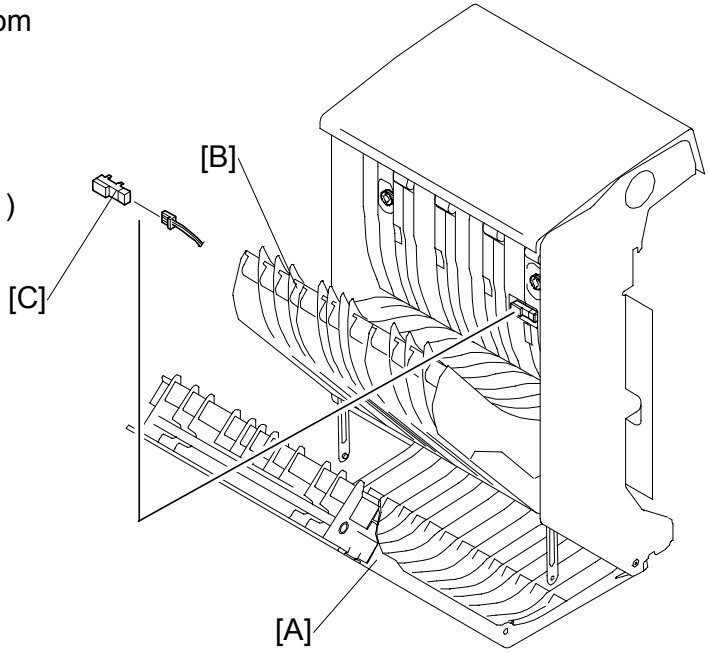
1.8.2 PAPER SENSOR 1

1. Remove the duplex unit from the printer.
2. Open the rear cover [A].
3. Open the rear guide [B].
4. Paper sensor 1 [C] (☞ x 1)



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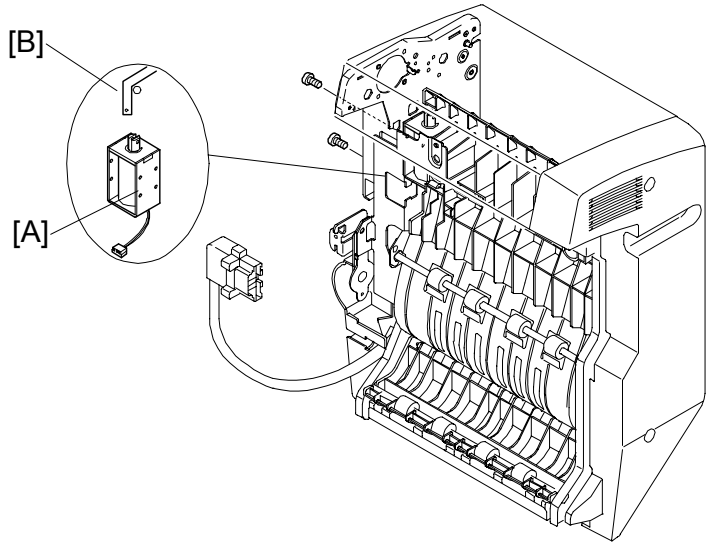
1.9 PAPER GATE SOLENOID



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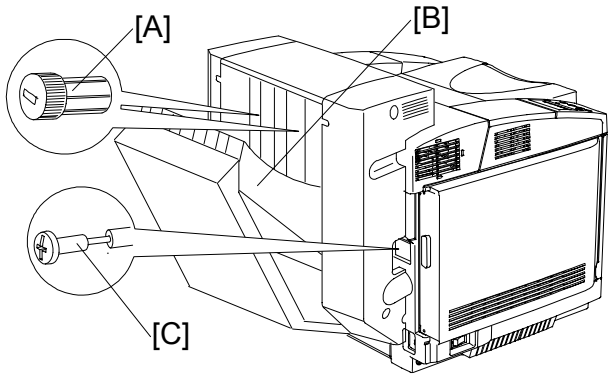
1. Left cover (☛ 1.1)
2. Paper gate solenoid [A] (☞ x 2)

Reassembling

Make sure that the solenoid correctly engages with the lever [B].

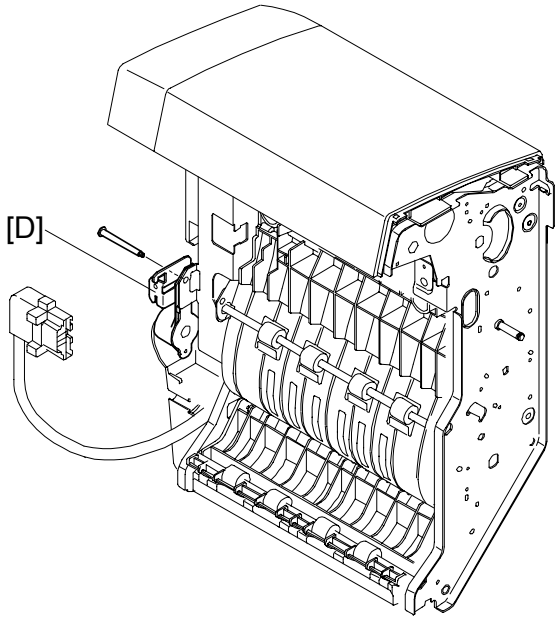
1.10 STOPPER



G390R916.WMF

1. Make sure that the screws [A] inside the rear paper guide [B] are correctly attached.
   NOTE: The duplex unit is unstable if these screws are not correctly attached.
2. Release the bolt [C] from the printer.
   NOTE: The screw does not come off the stopper.

3. Stopper [D] (Bolt x 1)



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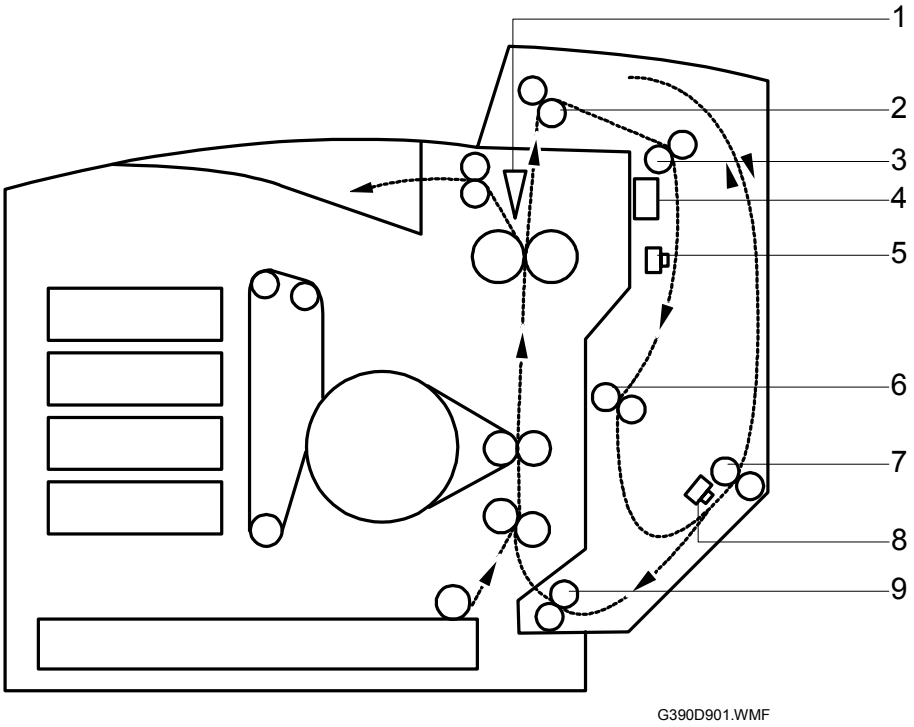
2. DETAILED SECTION DESCRIPTIONS

2.1 COMPONENT LAYOUT AND PAPER PATH



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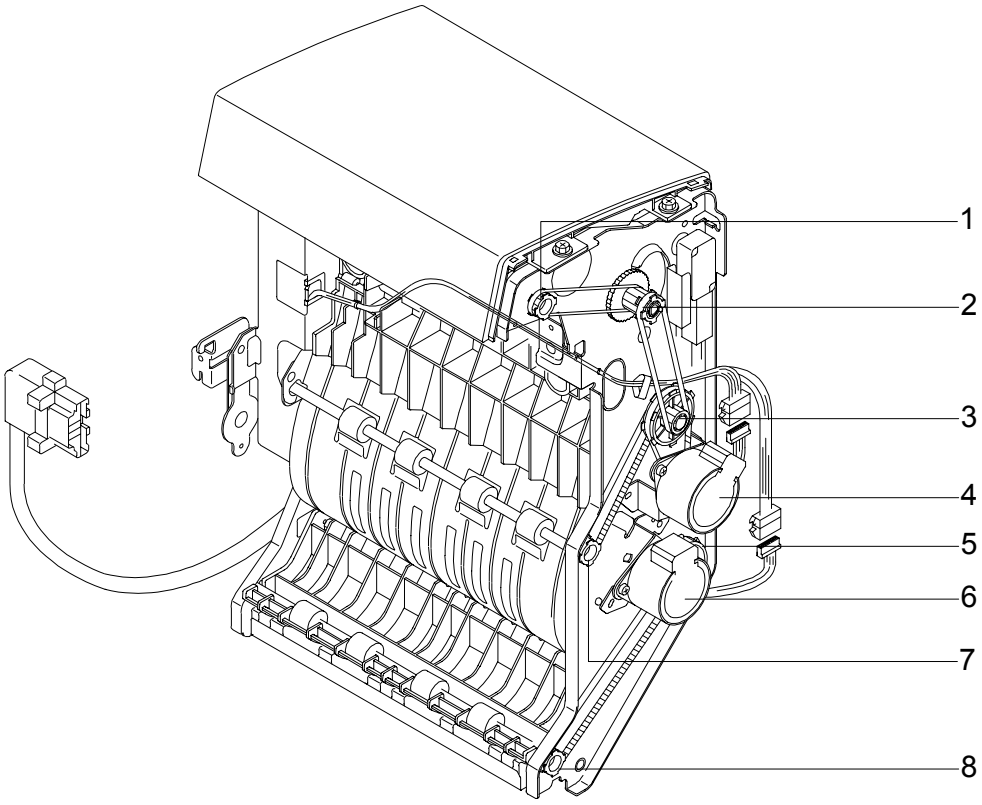
1. Paper gate (of the printer)
2. Entrance roller
3. Upper transport roller
4. Paper gate solenoid
5. Paper sensor 1
6. Lower transport roller
7. Inverting roller
8. Paper sensor 2
9. Exit roller

2.2 DRIVE LAYOUT



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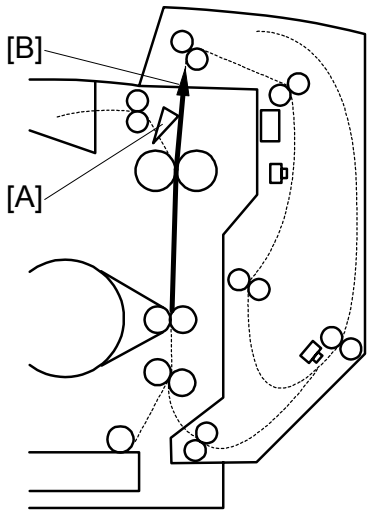
1. Entrance roller gear
2. Upper transport roller gear
3. Relay gear
4. Transport motor
5. Inverting roller gear
6. Inverting motor
7. Lower transport roller gear
8. Exit roller gear

2.3 DUPLEX PRINTING PROCESS

Overview of the duplex printing procedure:

1. The printer prints the opposite side of the first sheet.
2. The paper gate solenoid goes on to open the paper gate [A] (☛ 2.4). The leading edge of the first sheet [B] goes into the duplex unit.
3. The paper gate solenoid goes off to close the paper gate when the trailing edge of the first sheet goes into the duplex unit.
4. The transport motor goes on to drive the entrance roller [C], the upper transport roller [D], and the lower transport roller [E] (☛ 2.5). The first sheet moves to the inverting roller.
5. The inverting motor goes on to drive the inverting roller [F]. The first sheet moves to the rear paper path (☛ 2.5).
   NOTE: The inverting motor also drives the exit roller [G].
6. The inverting motor operates in reverse to drive the inverting roller.
   NOTE: The inverting motor also drives the exit roller in reverse.
7. When the first sheet reaches the exit roller, the inverting roller stops. The first sheet [H] stays there with the leading edge on the exit roller.
8. The printer prints the reverse side of the second sheet [I].
9. The inverting motor starts operating. The inverting roller and the exit roller move the first sheet to the registration roller of the printer.
10. The printer prints the front side of the first sheet.



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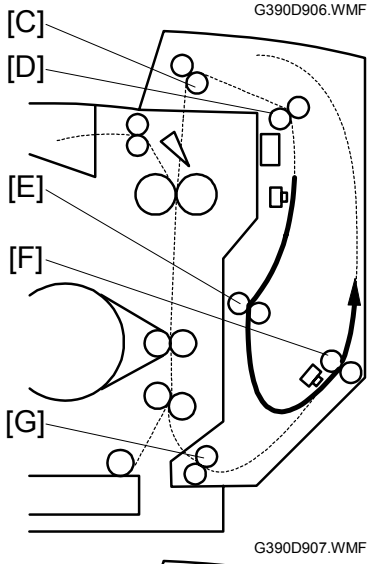

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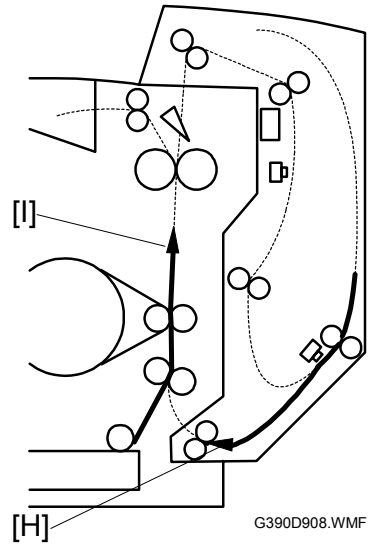

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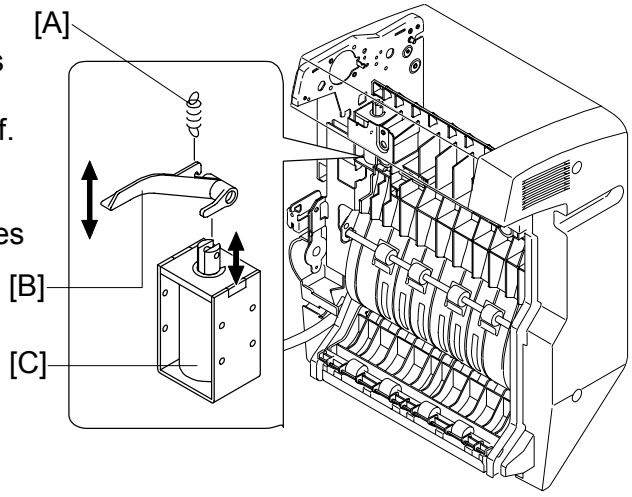
2.4 PAPER GATE CONTROL

Solenoid and Lever

The paper gate solenoid [C] controls the lever [B]. The spring [A] pulls up the lever when the solenoid is set off. The solenoid pulls down the lever when the solenoid is set on. At this time, the front end of the lever pushes the paper gate in the printer.



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Paper Path

The table lists the status and positions of the related components and available paper paths.

Solenoid	Lever	Paper Path
Off	Up	Fusing unit → Exit tray
On	Down	Fusing unit → Duplex unit

Possible Paper Jam

If the paper gate solenoid does not go on during duplex printing, these symptoms occur:

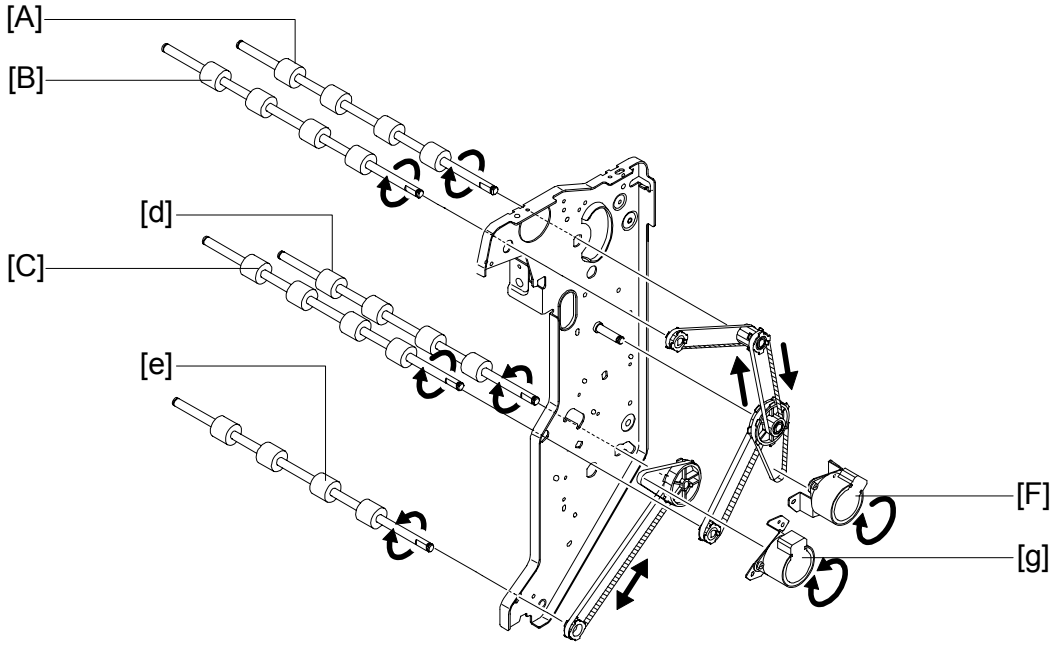
- The paper moves to the exit tray of the printer.
- Though the paper is not caught in the printer or in the duplex unit, the message "Remove Misfeed Duplex Unit" is displayed.

NOTE: When the printer continuously outputs two or more sheets, the subsequent sheet can be near the registration roller of the printer.

If the paper gate solenoid does not go off during duplex printing, these symptoms occur:

- The first-side image is correctly printed.
- The paper is moved correctly to the duplex unit.
- The paper stays in the fusing unit after the second-side image is printed.

2.5 PAPER TRANSPORT



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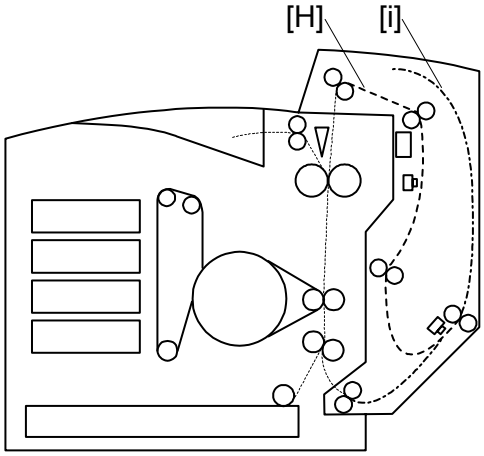
Overview

There are two motors on the right side of the duplex unit–the transport motor [F] and the inverting roller [g]. These two motors drive five rollers.

NOTE: The rollers and paper path shown with uppercase letters are mostly related to the transport roller. The rollers and paper path shown by lowercase letters are mostly related to the inverting motor.

Motors and Rollers



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The transport motor [F] turns clockwise (shown from the right side). The transport motor drives these rollers:

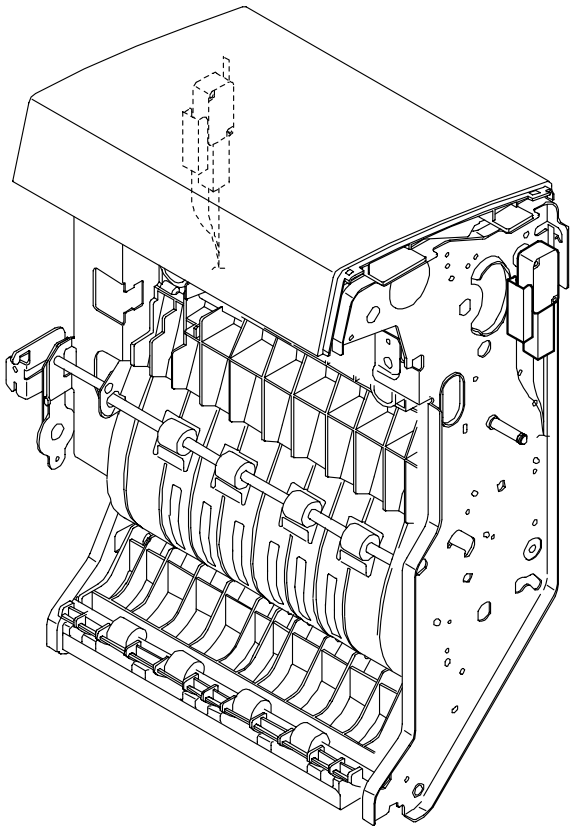
- Entrance roller [B]: Transports the paper from the printer to the front paper path [H].
- Upper transport roller [A]: Moves the paper through the front paper path.
- Lower transport roller [C]: Moves the paper through the front paper path.

The inverting roller [g] turns clockwise or counterclockwise. The inverting motor drives these rollers:

- Inverting roller [d]: Moves the paper from the front paper path to the rear paper path [I]. Then it moves it to the exit roller.
- Exit roller [e]: Moves the paper to the printer.

2.6 SAFETY SWITCHES

The duplex unit has two safety switches. There is one on the left side and the one on the right side. These switches go off when you open the rear cover of the duplex unit. The printer stops printing when one of the two safety switches is off.



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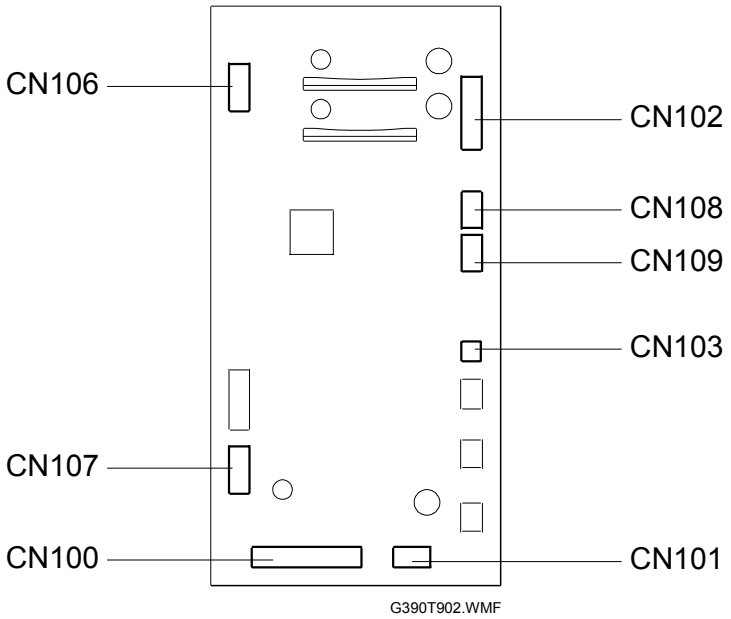
3. TROUBLESHOOTING

3.1 LOOSE CONNECTION

The table lists some symptoms that can be caused by loose connections on the controller board.

Symptom	Possible Cause
The operation panel shows that the printer start to warm up. But the printer does not become ready.	One of the following connectors is not connected: CN101, CN103, CN108, CN109.
The printer does simplex printing when you have set duplex printing from the printer driver.	Connector CN100 is not connected.
A paper jam occurs when the trailing edge is near paper sensor 1.	Connector CN106 is not connected.
A paper jam occurs when the trailing edge is near paper sensor 2.	Connector CN107 is not connected.
A paper jam occurs when the leading edge is near the entrance roller.	Connector CN102 is not connected.



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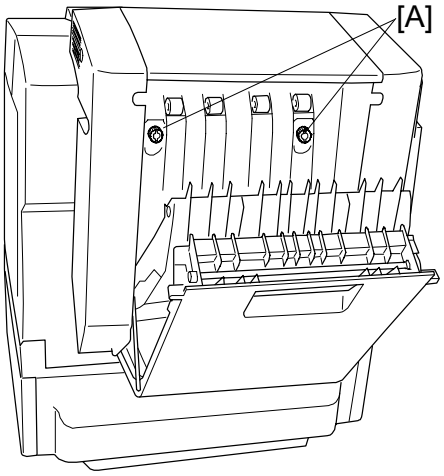
3.2 PAPER JAM

The table lists some symptoms of paper jams.

Symptom	Possible Cause
The paper stops when it is half put into the duplex unit.	The duplex unit is incorrectly installed. The screws behind the rear paper guide [A] are not fastened (☛ Option Setup Guide).
The paper is output to the paper tray. The message "Remove Misfeed Duplex Unit" is shown.	The paper gate solenoid does not work correctly (☛ 1.9, 2.3).
The paper stays in the fusing unit after the second-side image is printed.	The paper gate solenoid does not work correctly (☛ 1.9, 2.3).
A paper jam occurs when the trailing edge is near paper sensor 1.	Connector CN106 is not connected (☛ 3.1).
A paper jam occurs when the trailing edge is near paper sensor 2.	Connector CN107 is not connected (☛ 3.1).
A paper jam occurs when the leading edge is near the entrance roller.	Connector CN102 is not connected (☛ 3.1).



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