





**500-SHEET FINISHER**  
**(Machine Code: G302)**

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# 1. REPLACEMENT AND ADJUSTMENT

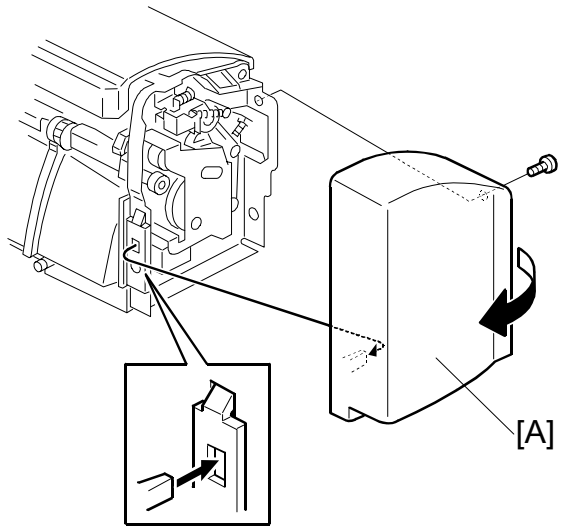
## 1.1 EXTERIOR

**NOTE:** This manual uses several symbols. The meanings for these symbols are as follows

-  See or refer to       screw       connector       clip


### *Front cover*

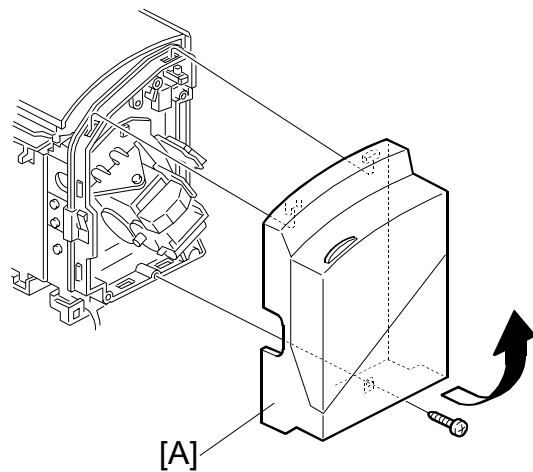
[A] Front cover ( 1)



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### *Rear cover*

[A] Rear cover ( 1)

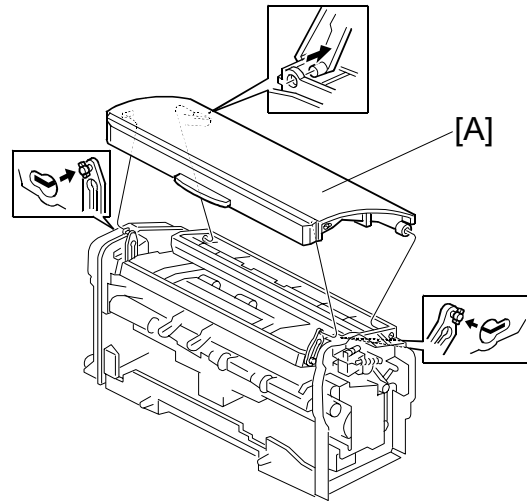


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Options

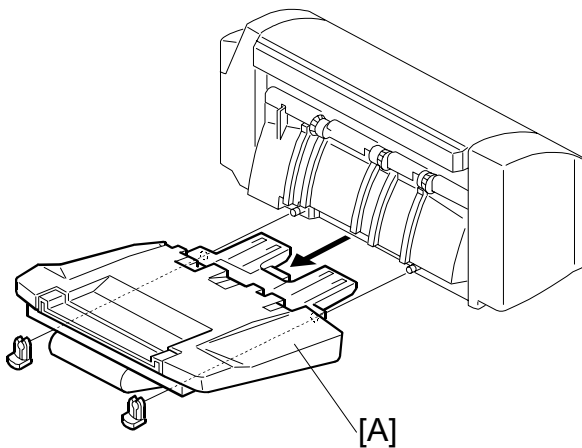
**Top cover**

[A] Top cover (2 links)

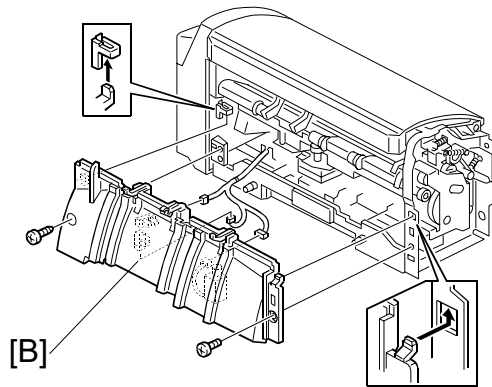


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**Front lower guide**



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G302R104.WMF

[A] Shift tray (☞)2

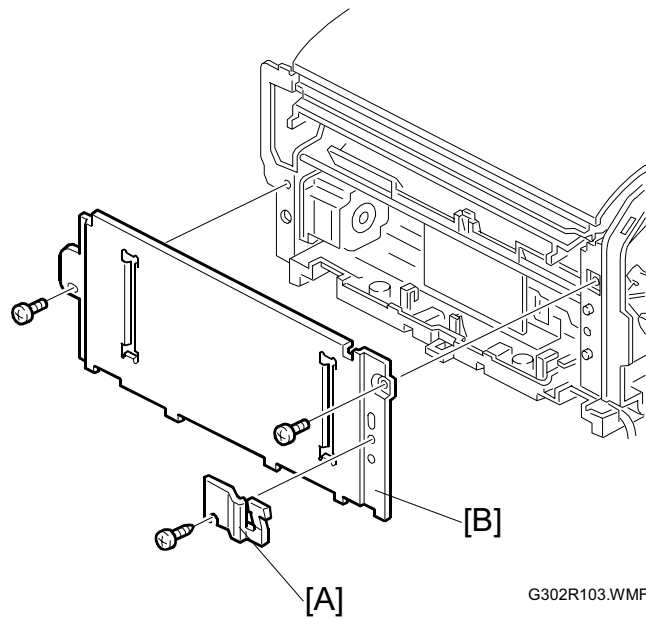
[B] Front lower guide (☞)2

**NOTE:** 1) When re-assembling the lower guide be sure that it is not in contact with the exit lower guide and that the exit lower guide moves smoothly.  
 2) Make sure that the blue and black harness is in the correct position as engraved on the inside of front lower guide.

**Right cover**

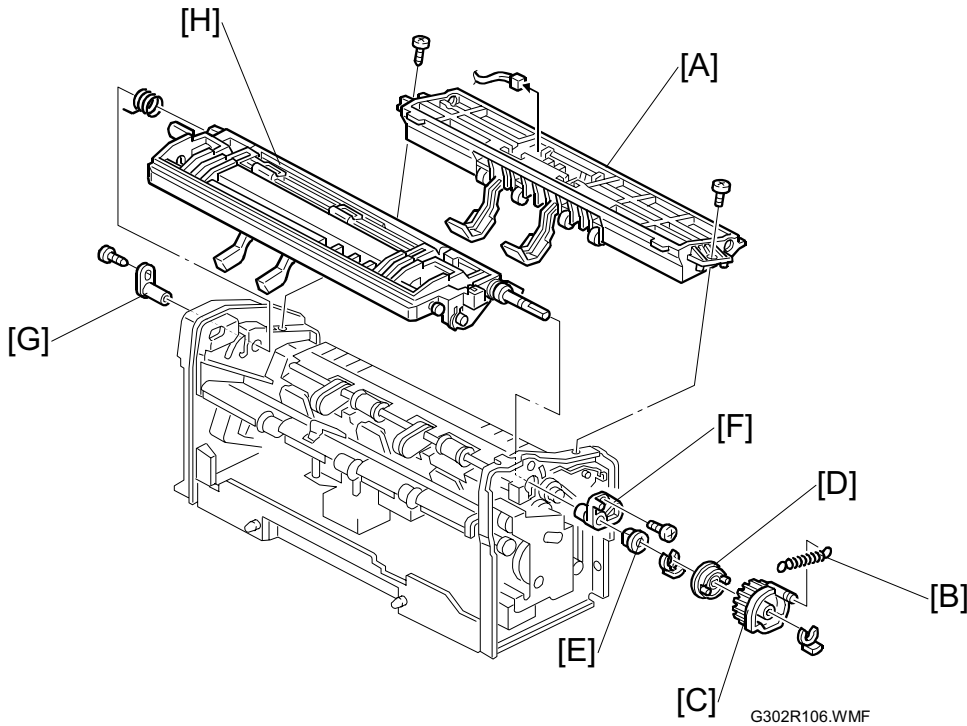
[A] Grounding plate (1)

[B] Right cover (2)



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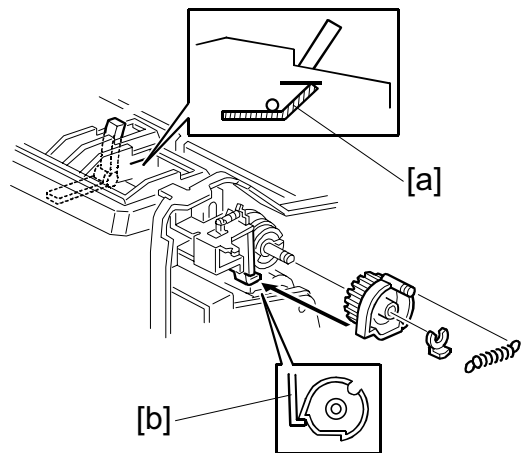
## 1.2 ENTRANCE UPPER GUIDE / PAPER EXIT UNIT



- Front rear and top covers and front lower guide (☛ 1.1 Exterior)

- [A] Entrance upper guide (🔩2 📐1)
- [B] Paddle gear spring
- [C] Paddle gear (📐1)
- [D] Paddle gear holder
- [E] Bushing (📐1)
- [F] Paper exit unit holder (🔩1)
- [G] Rear paper exit unit holder (🔩1)
- [H] Exit unit

**NOTE:** Keep the paper exit unit stays in the upper position. Rotate the paddle roller into the position shown in the illustration [a]. Then insert the paddle gear making sure that the sharp point of the gear's outer frame is resting on the clutch link [b].



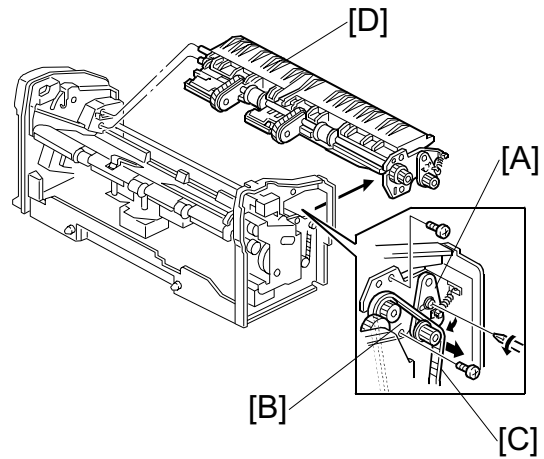
G302R107.WMF

### 1.3 ENTRANCE LOWER GUIDE

- Entrance upper guide (☛ 1.2 Entrance upper guide / Exit unit)
- Exit unit (☛ 1.2 Entrance upper guide / Exit unit)

- [A] Release tension bracket (🔩1)
- [B] Caterpillar roller gear bracket (🔩2)
- [C] Timing belt
- [D] Entrance lower guide

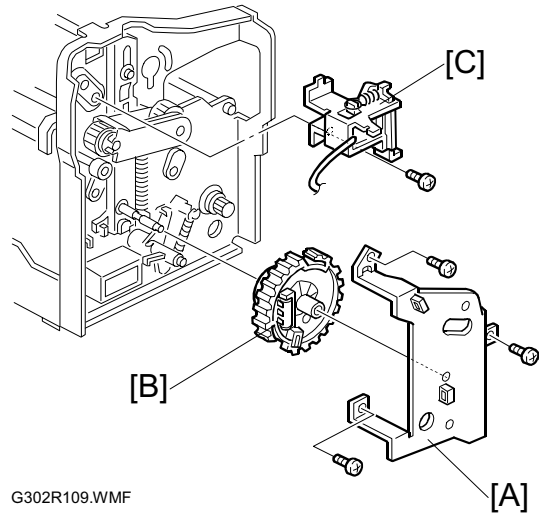
**NOTE:** When re-assembling the tension bracket rotate the main motor counter clockwise to tighten the timing belt.



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### 1.4 PAPER EXIT UNIT GEAR / PADDLE ROLLER SOLENOID

- Front cover (☛ 1.1 Exterior)
- [A] Gear bracket (🔩3)
- [B] Paper exit unit gear
- [C] Paddle roller solenoid (🔩1)

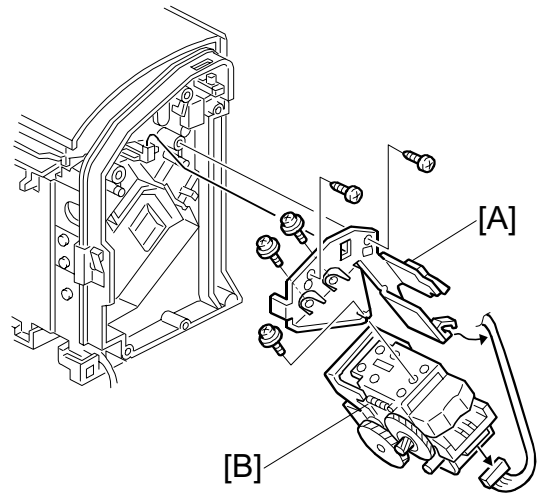


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Options

## 1.5 STAPLER UNIT

- Rear cover (☛1.1 Exterior)
- [A] Stapler unit bracket (🔩2 📌1)
- [B] Stapler unit (🔩3)



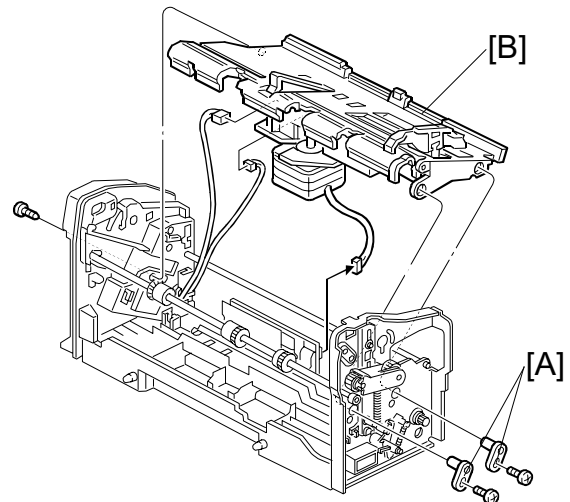
G302R115.WMF

## 1.6 JOGGER TRAY UNIT

- Entrance upper guide and paper Exit unit (☛1.2 Entrance upper guide / paper Exit unit)
- Entrance lower guide (☛1.2 Entrance lower guide)
- Paper exit unit gear and Paddle roller solenoid (☛1.4 Paper exit unit gear / Paddle roller solenoid)
- Stapler unit (☛ 1.5 Stapler unit)

- [A] Jogger tray unit holders (🔩2)
- [B] Jogger tray unit (🔩1 📌3)

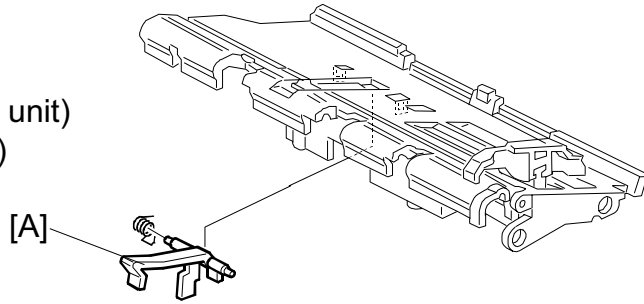
**NOTE:** Be sure to connect the black harness to the paper exit sensor and the blue one to the jogger home position sensor.



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## 1.7 PAPER EXIT SENSOR FEELER

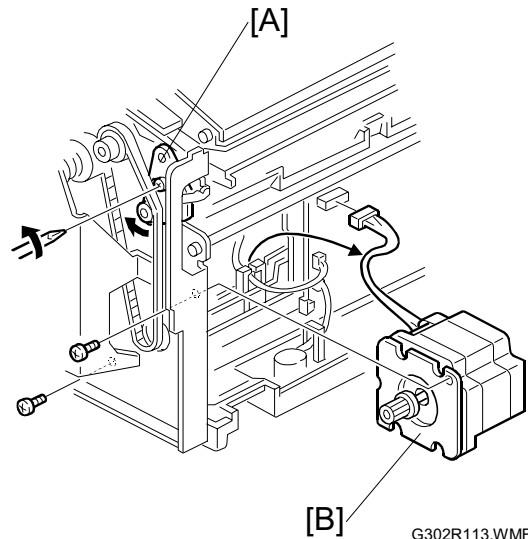
- Jogger tray unit (☛1.6 Jogger tray unit)
  - Jogger motor (☛1.9 Jogger motor)
- [A] Paper exit sensor feeler



G302R121.WMF

## 1.8 MAIN MOTOR

- Right cover (☛1.1 Exterior)
- [A] Release tension bracket (☛1)
- [B] Main motor (☛2 ☛1)



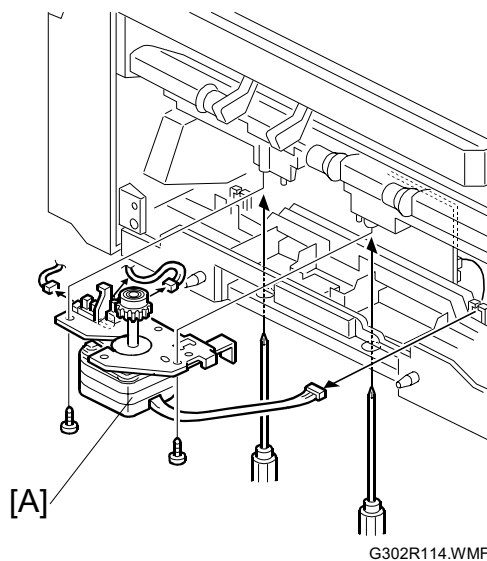
G302R113.WMF

Options



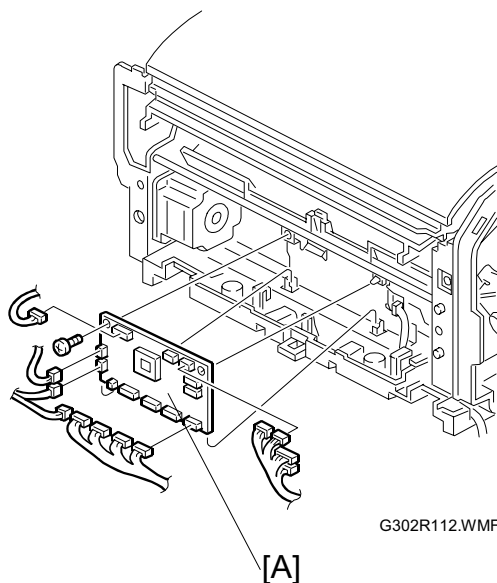
## 1.9 JOGGER MOTOR

- Front lower guide (☛1.1 Exterior)
- [A] Jogger motor (🔧2 📄3)

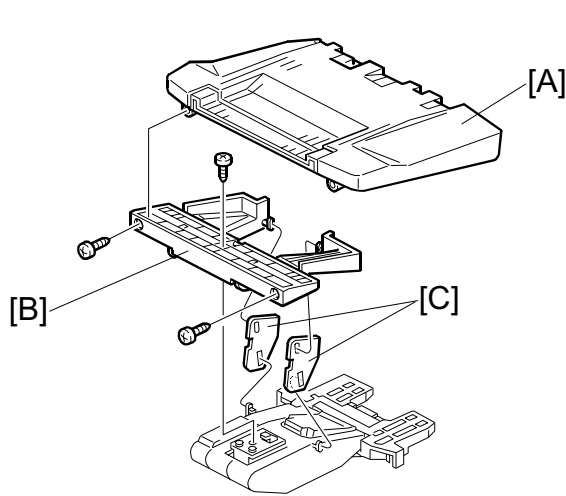


## 1.10 CONTROL BOARD

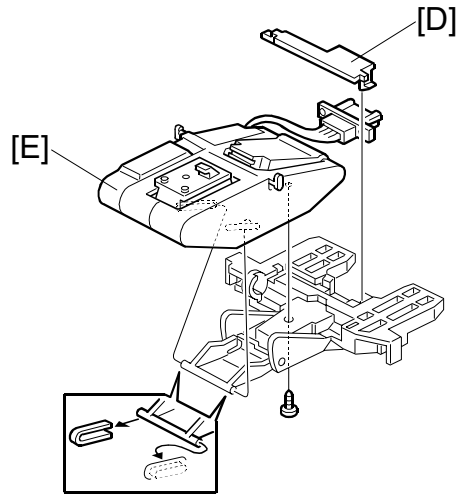
- Front lower guide (☛1.1 Exterior)
- [A] Control board (🔧1 📄12)



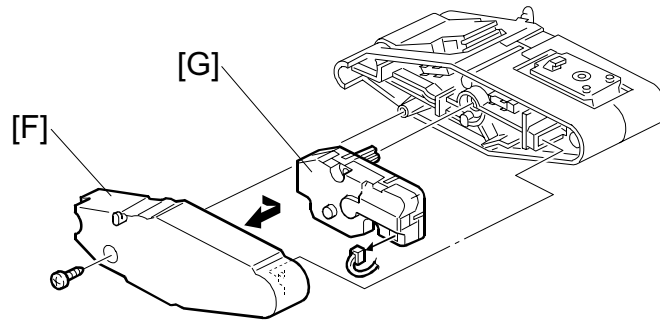
# 1.11 SHIFT TRAY UNIT



G302R117.WMF



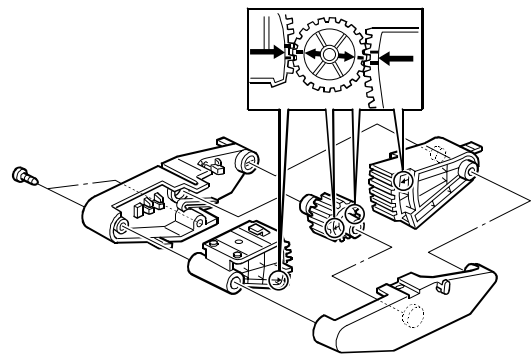
G302R118.WMF



G302R119.WMF

- [A] Shift tray cover (2)
- [B] Tray holder (1)
- [C] Links
- [D] Connector cover
- [E] Shift tray motor link unit (1)
- [F] Rear cover (1)
- [G] Shift tray motor (1)

**NOTE:** When re-assembling the motor link unit arrows on each of the gears need to match each other as shown in the illustration.



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Options

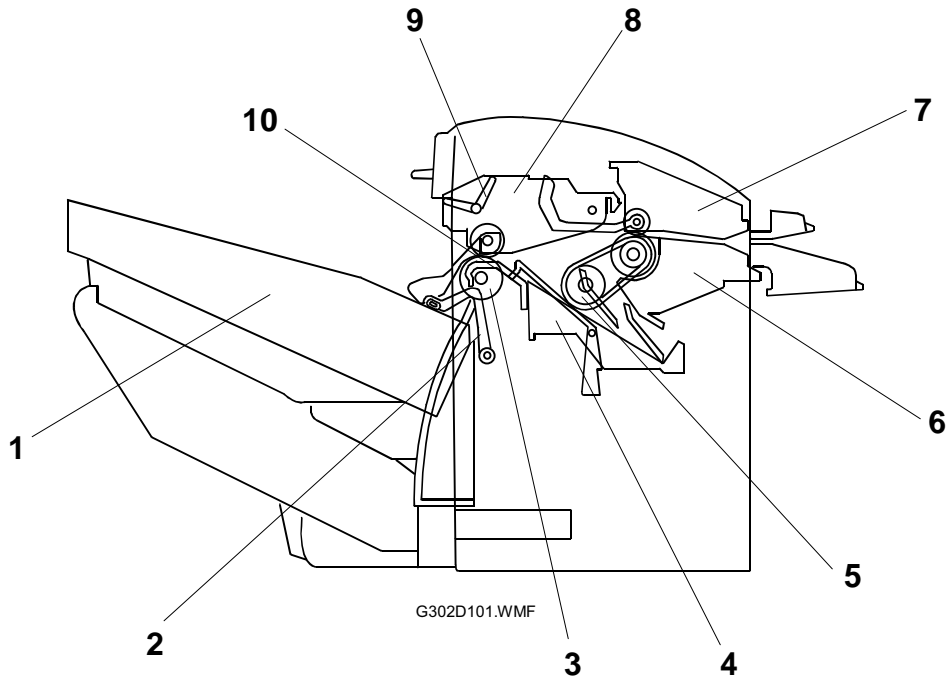
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## 2. DETAILED DESCRIPTIONS

### 2.1 OVERALL MACHINE INFORMATION

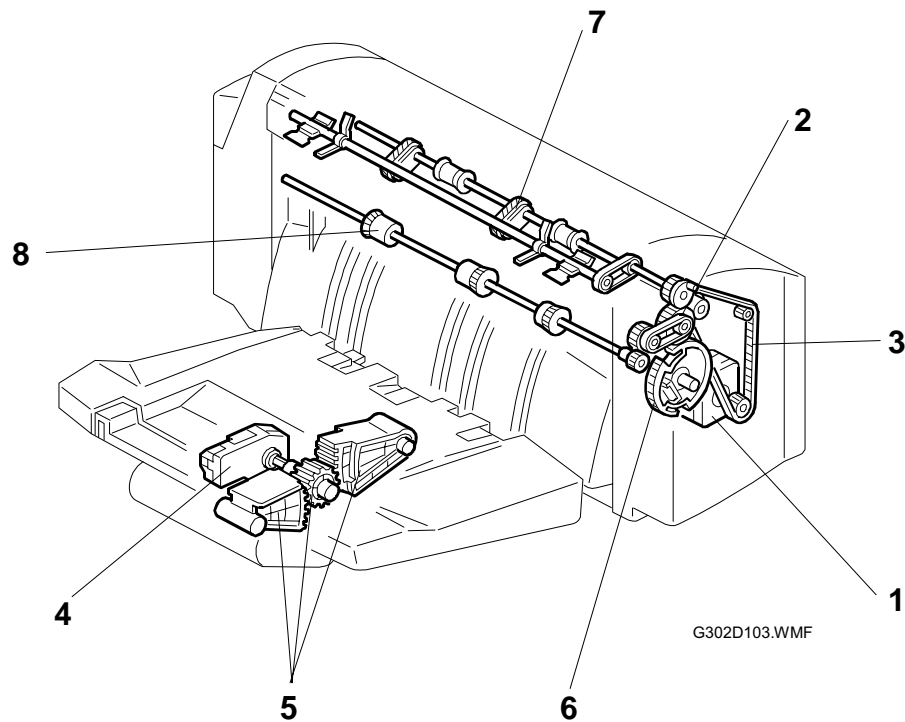
#### 2.1.1 COMPONENT LAYOUT

##### *Mechanical component layout*



- |                                 |                         |
|---------------------------------|-------------------------|
| 1. Shift tray                   | 6. Lower entrance guide |
| 2. Stack height detection lever | 7. Upper entrance guide |
| 3. Paper exit roller            | 8. Paper exit unit      |
| 4. Jogger tray                  | 9. Paddle roller        |
| 5. Caterpillar roller           | 10. Lower exit guide    |

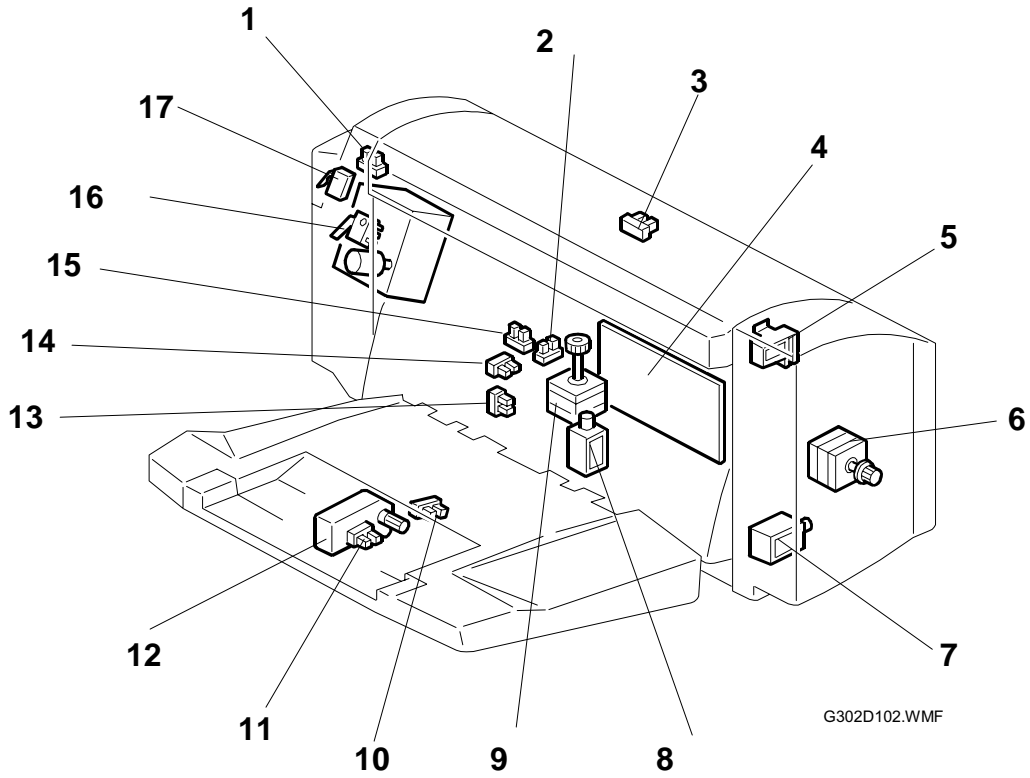
**Drive layout**



- |                            |                               |
|----------------------------|-------------------------------|
| 1. Main motor              | 5. Shift tray link gears      |
| 2. Exit roller timing belt | 6. Paper exit unit drive gear |
| 3. Main motor timing belt  | 7. Caterpillar roller         |
| 4. Shift tray motor        | 8. Paper exit roller          |

Options

### 2.1.2 ELECTRICAL COMPONENT DESCRIPTIONS



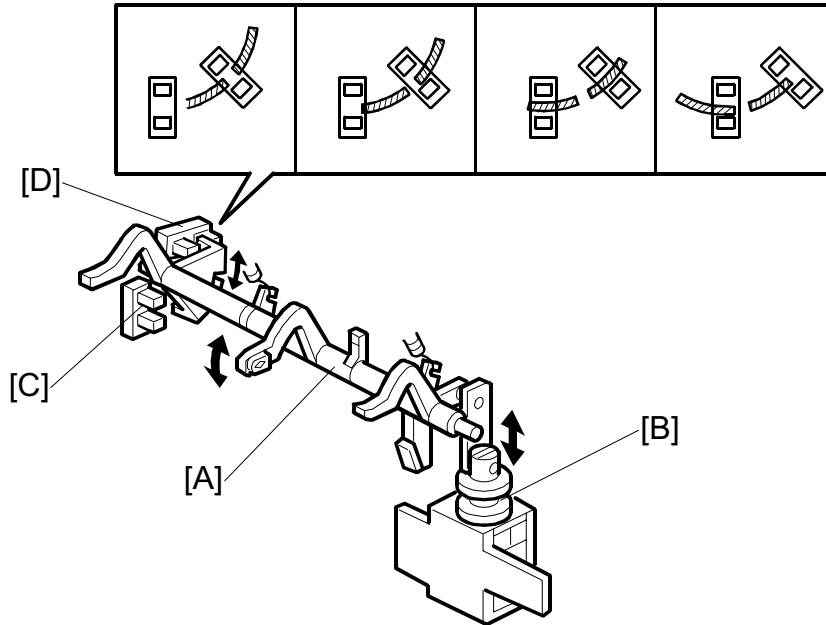
See the next page for the component description table.

<b>Symbols</b>	<b>Name</b>	<b>Function</b>	<b>Index No.</b>
<b>Motors</b>			
M1	Main	Drives all the mailbox rollers.	6
M2	Jogger	Drives the jogger fence	9
M3	Shift Tray	Drives the tray up and down	12
<b>Sensors</b>			
S1	Entrance	Detects paper at the entrance	3
S2	Exit	Detects paper at the exit	15
S3	Stack height	Detects stack height of paper	13
S4	Lever	Detects position of stack height lever	14
S5	Jogger home position	Detects position of jogger fence	2
S6	Top cover	Detects if top cover is open.	1
S7	Tray upper limit	Detects if the tray is lifted up to the upper limit.	11
S8	Stack full	Detects if the tray is almost at its lower limit.	10
<b>Solenoids</b>			
SOL1	Exit unit gear	Moves the paper exit unit up and down	7
SOL2	Paddle	Switches paddle roller rotation on and off.	5
SOL3	Stack height lever	Switches the stack height lever on and off.	8
<b>PCBs</b>			
PCB1	Main Control	Controls all finisher functions	4
<b>Switches</b>			
SW1	Paper exit unit	Switches DC current for staple unit on and off.	17
SW2	Staple unit cover	Cuts DC current when staple unit cover is open.	16

## 2.2 DETAILED SECTION DESCRIPTIONS

### 2.2.1 SHIFT TRAY MECHANISM

#### *Stack height detection*

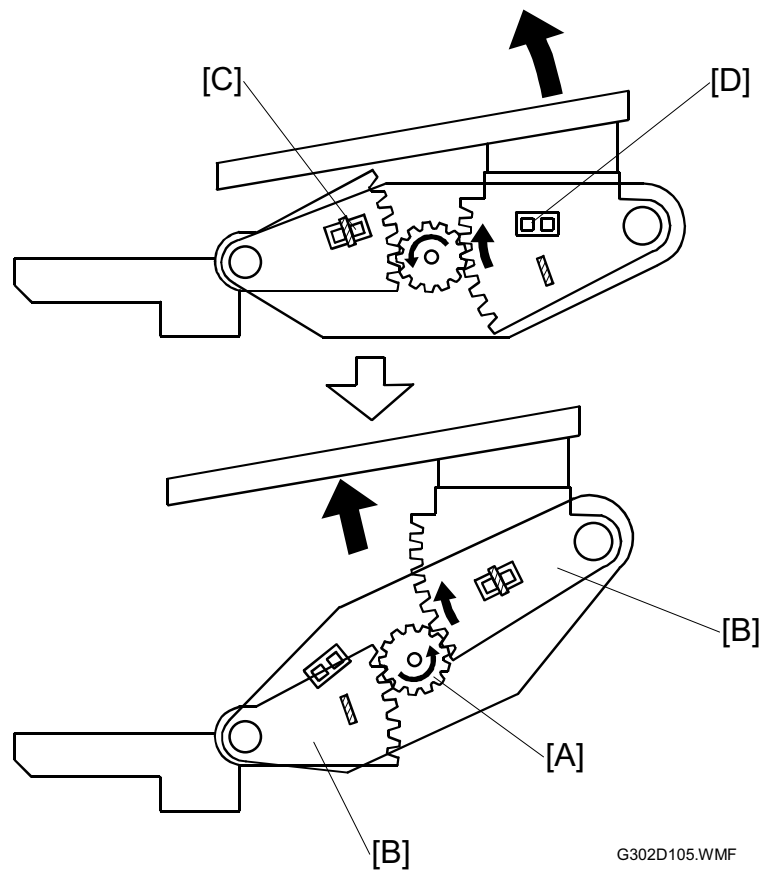


G302D104.WMF

The stack height detection lever [A] is driven by detection lever solenoid [B]. The stack height of the shift tray is detected by the status of two sensors the stack height [C] and lever [D] sensors.

Stack height sensor	Lever sensor	Status
Off	Off	The stack height is below the target. The shift tray is lifted to the target position.
Off	On	Target position
On	On	The stack height is over the target. The shift tray is lowered to the target position.
On	Off	The stack height detection lever is at the home position.

At the start of a print job the stack height detection lever comes out to detect the current stack. The lever is stored inside the unit just before completing paper exit by activating the solenoid. It comes out again just after completing paper exit by deactivating this solenoid.

**Shift tray up/down mechanism**

When the stack height is out of the target position the tray is raised or lowered by the shift tray motor [A]. Two gears [B] keep the angle of the tray constant at any tray position.

When the stack near-full sensor [C] is on a stack near-full signal is transferred to the main frame.

When the upper limit sensor [D] is on a finisher error signal is transferred to the main frame and a finisher error is indicated on main frame.



## 2.2.2 PAPER FEED

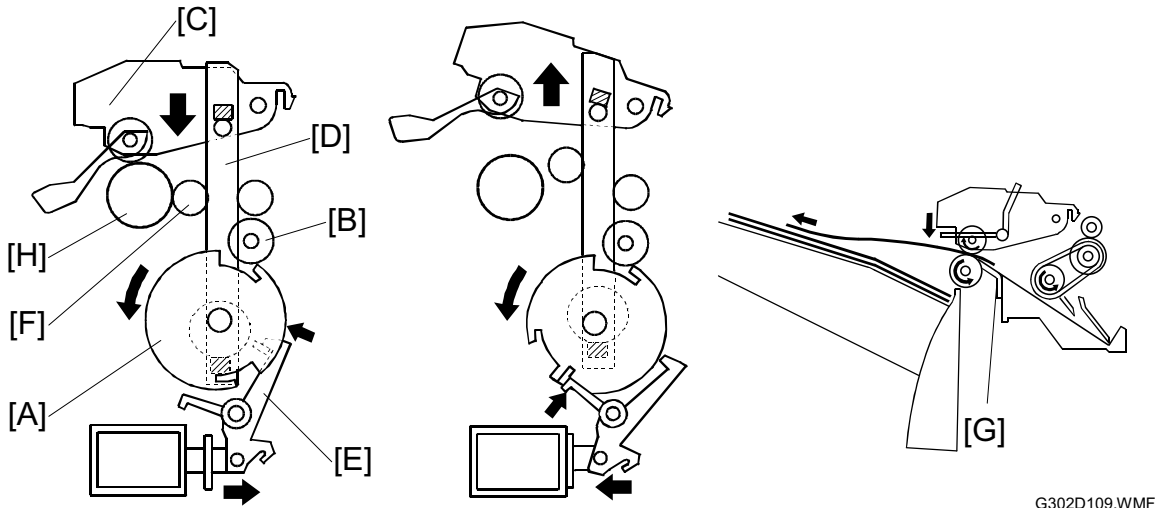
### Overview

The following paper feed out modes can be selected on the printer driver.

Mode	Description
Straight feed out mode	Papers are fed out directly to the shift tray without shifting and/or stapling.
Shifting mode	Sets of papers are shifted then fed to the shift tray.
Staple mode	Sets of papers are shifted and stapled then fed to the shift tray.

### Straight feed out mode

When the main frame starts printing the stack height detection lever moves to detect the current stack height and adjust the position of the tray if the stack height



is not in the target position range.

When the paper exit sensor of main frame turns on the main motor for the finisher starts rotating driving the paper exit unit gear [A] through idle gear [B]. The paper exit unit [C] is pushed down by the paper exit link [D] which is driven by the paper exit unit gear.

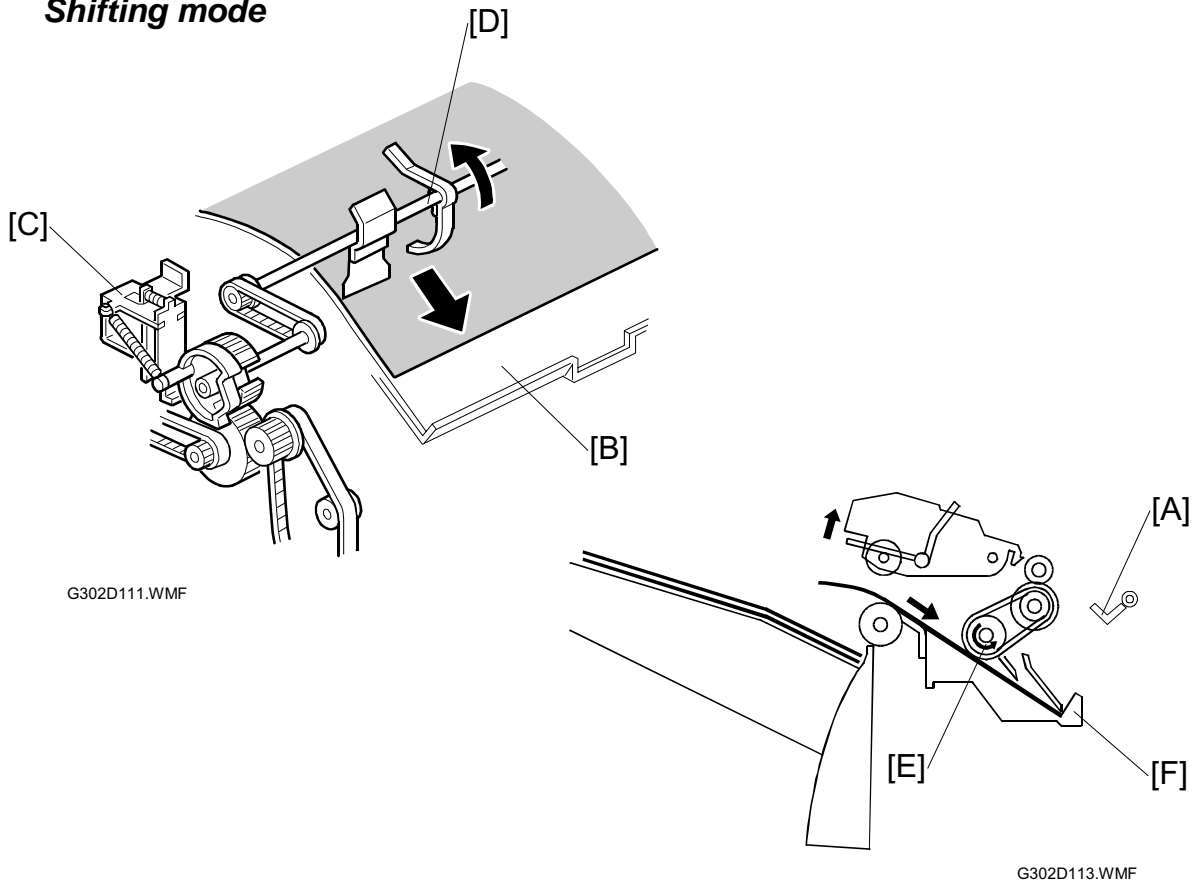
When there is no exit unit gear thread facing the idle gear gear rotation stops. This position is maintained by the solenoid lever [E].

The movements of exit roller drive gear [F] and paper exit guide [G] are linked with the movement of the paper exit link. When the paper exit unit is lowered the exit roller drive gear comes in contact with the paper exit roller [H] and the paper exit guide is lowered to bring the paper in contact with the paper exit roller.

After paper exiting is complete the stack height is detected again and the tray is adjusted to the target zone. Stack height detection is done page-by-page.

When the last page is fed out the paper exit unit solenoid turns on to restart unit gear rotation. This rotation causes the paper exit unit to rise. Then the main motor stops rotating the unit gear and the solenoid turns off.

**Shifting mode**

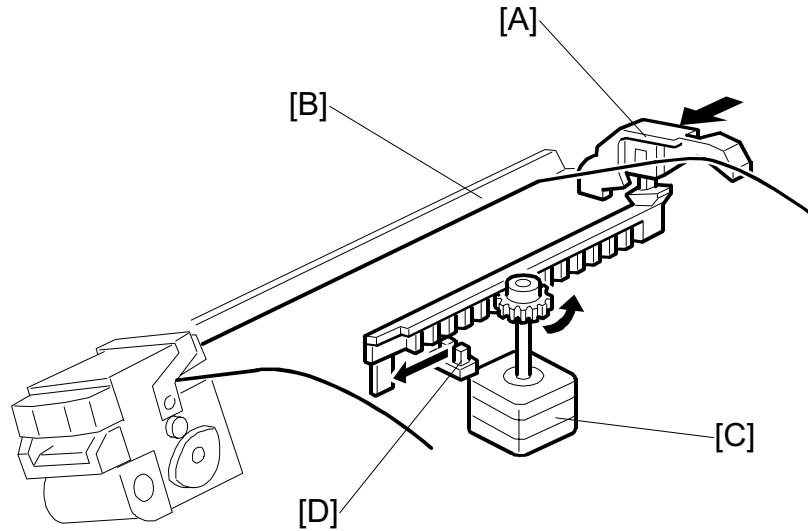


The paper feed mechanism using the paper exit unit is the same as the straight feed out mode.

After feeding the paper for a certain period after initial detection by the entrance sensor [A] the paper exit unit solenoid turns on to restart the rotation of the paper exit unit gear raising the paper exit unit.

The paper drops into the ogger tray [B]. The paddle roller solenoid [C] turns on and rotates the paddle roller [D] on. The paddle roller feeds the paper to the caterpillar roller [E]. The caterpillar roller feeds the paper to the end fence [F] of the ogger tray.

Options



G302D107.WMF

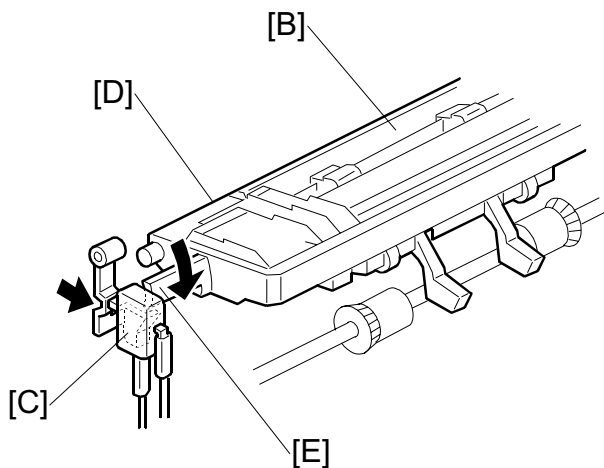
The ogger fence [A] shifts the paper which is fed to the end fence of the ogger tray [B]. The ogger motor [C] drives the ogger fence returning it to its home position. The home position sensor [D] detects when the ogger fence has returned to the home position after shifting.

All pages of a set are fed out together with the first page of the next set fed out in straight feed out mode.

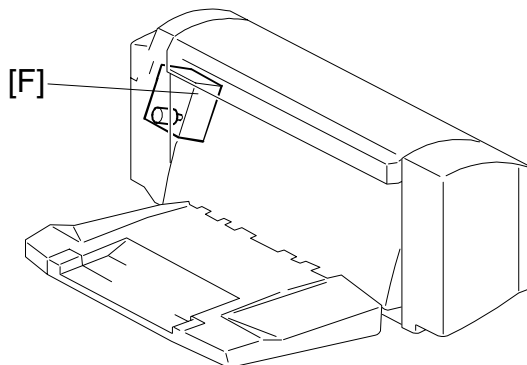
If shifting mode is applied to the last set the paper exit unit is pushed down and the last set is fed out.

The maximum number of sheets this unit can feed out is 30 sheets. The unit feeds out the first 30 sheets and continues printing and shifting the remaining pages if a job of more than 30 sheets is sent by the driver to the printer.

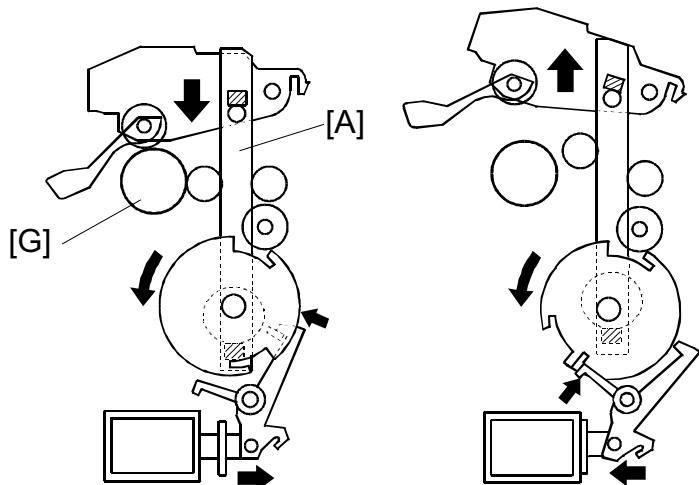
**Staple mode**



G302D112.WMF



G302D114.WMF



G302D106.WMF

After shifting all pages of a set the paper exit link lever [A] pushes the paper exit unit [B] down until the knob of the exit unit [C] pushes the link lever [D] for the exit unit switch [E]. This turns on the exit unit switch. While turning on this switch a DC current is supplied to the stapler unit [F] and the main motor is turned off.

After stapling the set the paper exit unit is pushed down again until the unit comes in contact with the paper exit roller [G] and the set of paper is fed out.

Options

**2.2.3 JAM CONDITIONS**

	Sensors	Conditions
Remaining paper detection	Entrance Exit	Either entrance or exit sensor is activated when initializing the unit.
No feed at the entrance	Entrance	The entrance sensor is not activated within a certain period after the paper exit sensor detects paper.
Jamming at the entrance	Entrance	The entrance sensor is not de-activated after paper is fed 1.3 times the length of the paper.
No feed inside the unit (Straight feed out mode only)	Exit	The exit sensor is not activated within a certain period after the entrance sensor detects paper.
Jamming at the exit	Exit	The exit sensor is not de-activated after paper is fed 1.5 times the length of the paper tray.
Jogger tray	Exit	The exit sensor is de-activated during paper shifting or stapling.

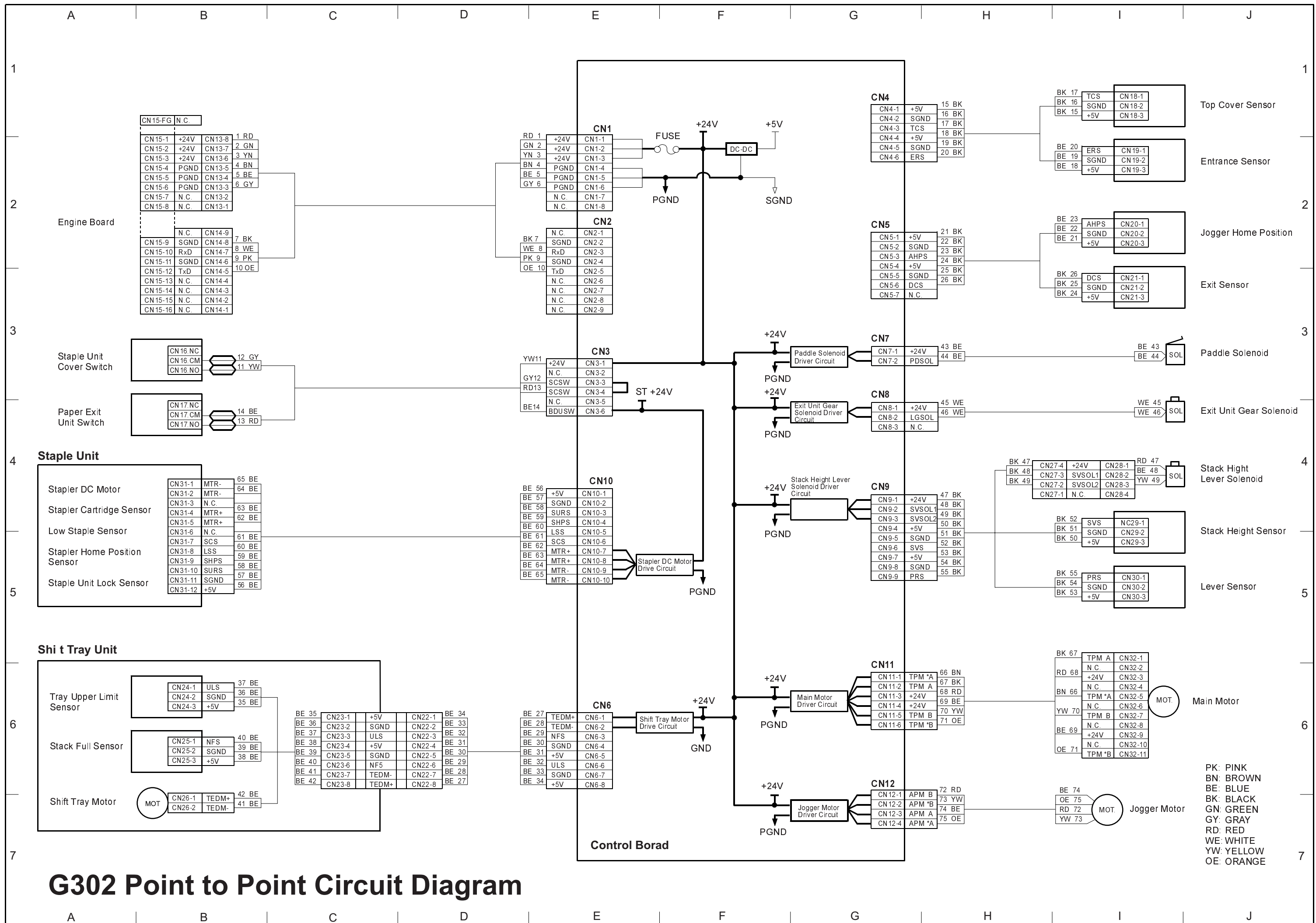
**2.2.4 ERROR DETECTION**

	Conditions
Jogger motor error	Jogger home position sensor does not shut off after jogger motor driving.
Jogger motor home position detection error	Jogger home position sensor does not turn on after paper shifting.
Stapler error	Stapler home position sensor does not turn on after stapling.
Shift tray upper limit error	Upper limit sensor is activated.
Shift tray motor error	The shift tray is out of target position for more than 10 seconds.
Stack height detection error	The stack height detection lever does not return to its home position before going to detect the stack height.

**NOTE:** If the above errors are indicated as Finisher am at the first occurrence. If the same error happens again on the next job a Finisher error is indicated.

### 3. SPECIFICATIONS

Paper Size	A3 B4 A4 B5 sideways (Metric) DLT LG LT (Inch)
Paper Weight	52 128 g/m <sup>2</sup> 14 34 lb.
Staple Capacity	20 sheets (A3 B4 DLT LG 80g/ m <sup>2</sup> 21lb) 30 sheets (A4 B5 sideways LT 80g/ m <sup>2</sup> 21lb)
Stack Capacity (Maximum)	500 sheets (A4/LT or smaller 80 g/m <sup>2</sup> 21 lb.) 250 sheets (A3 B4 DLT and LG. 80 g/m <sup>2</sup> 21 lb.)
Staple Positions	1
Staple Replenishment	Cartridge (3 000 staples/cartridge)
Power Source	24 V DC 5 V DC (from the copier/printer)
Power Consumption	48 W
Weight	8.3 kg (18.4 lbs.)
Dimensions (W x D x H)	350 x 490 x 230 mm



**G302 Point to Point Circuit Diagram**