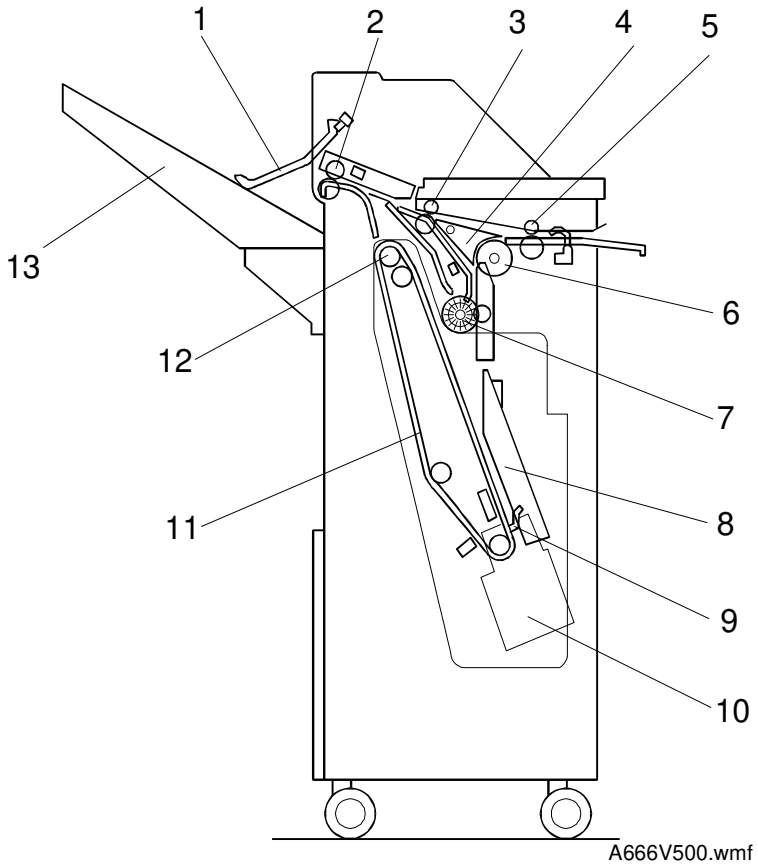
FINISHER
(A666)

1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

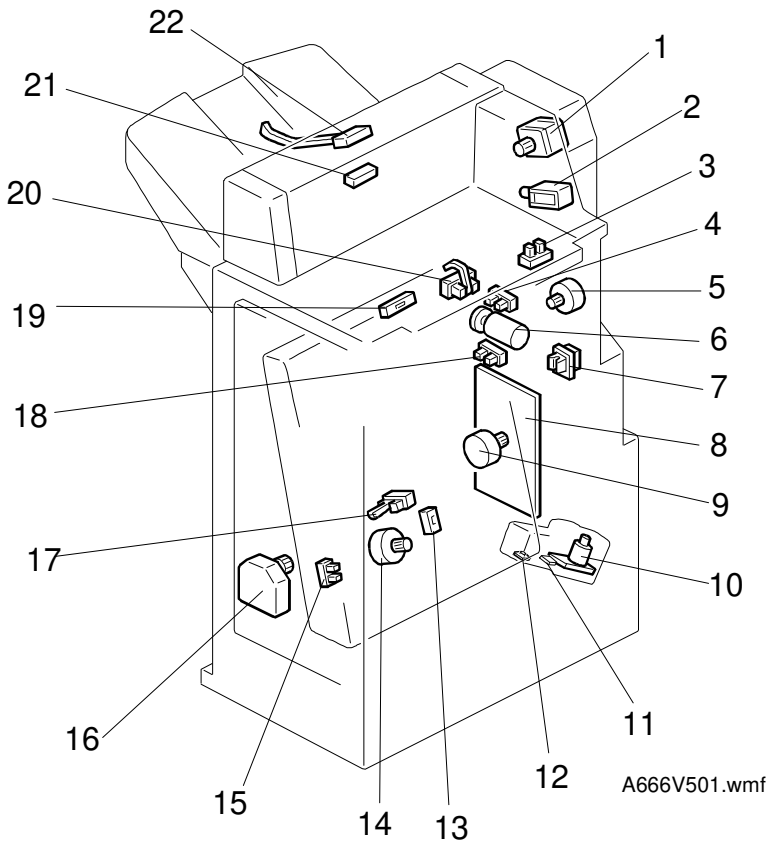
Paper Size:	Standard copying/Stack mode Maximum: 11" x 17"/A3 Minimum: 5 1/2" x 8 1/2" (lengthwise)/A6 (lengthwise) Staple Mode 11" x 8 1/2" (sideways)/A4 (sideways)
Paper Weight:	Standard copying/Stack mode 14 lb. ~ 42 lb. /52 g/m^2 ~ 157 g/m^2 (face-up mode) 17 lb. ~ 28 lb./64 g/m^2 ~ 105 g/m^2 (face-down mode) Staple Mode 17 lb. ~ 21 lb. /64g/m^2 ~ 80g/m^2
Paper Capacity:	Standard copying/Stack mode 250 sheets (face-up mode) 1000 sheets : 8 1/2" x 11"/A4 or smaller (21 lb. / 80g/m^2)(face-down mode) 500 sheets : 8 1/2" x 14"/B4 or smaller (21 lb. /80g/m^2) (face-down mode) Staple Mode 30 sets (80 g/m, 20 pages per set)
Stapler Capacity:	2 to 20 sheets (21 lb. /80g/m^2)
Staple Position:	1 position (Oblique)
Staple Replenishment:	Cartridge exchange (2,000 staples/cartridge)
Power Source:	DC 24V, DC 5V (from the copier)
Power Consumption:	60W
Weight:	28 kg
Size:	520 x 550 x 750 mm

1.2 MECHANICAL COMPONENT LAYOUT



1. Stack Height Sensor Feeler
2. Exit Roller
3. Transport Roller
4. Junction Gate
5. Entrance Roller
6. Turn Roller
7. Alignment Roller
8. Jogger Unit Guide
9. Stack Stopper
10. Stapler Unit
11. Feed-out Belt
12. Feed-out Roller Belt Drive
13. Shift Tray

1.3 ELECTRICAL COMPONENT LAYOUT

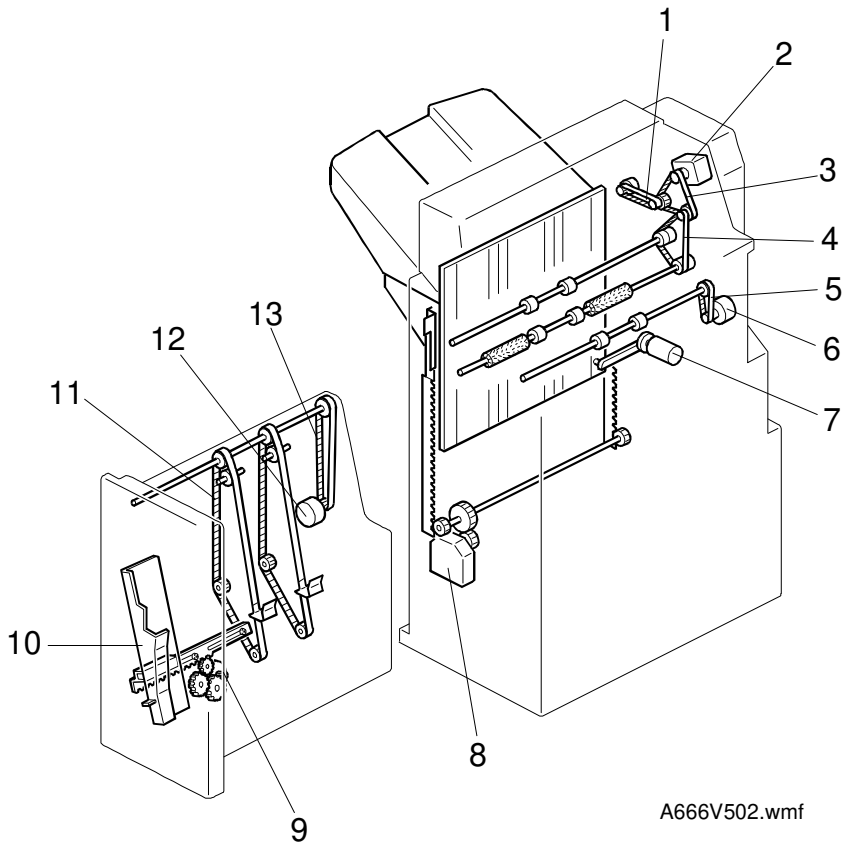


1. Transport Motor
2. Junction Gate Solenoid
3. Upper Cover Open Sensor
4. Shift Tray Position Sensor
5. Entrance Motor
6. Shift Motor
7. Jogger Unit Set Switch
8. Finisher Drive Board
9. Feed-out Motor
10. Staple Motor
11. Hammer HP Sensor
12. Staple End Switch
13. Jogger Unit Paper Sensor
14. Jogger Motor
15. Jogger HP Sensor
16. Shift Tray Lift Motor
17. Feed Belt HP Sensor
18. Shift Tray Lower Limit Sensor
19. Inverter Sensor
20. Entrance Sensor
21. Exit Sensor
22. Stack Height Sensor

1.4 ELECTRICAL COMPONENT DESCRIPTION

Symbol Name	Function	Index No.
Motors		
M1	Transport	Drives the transport rollers and the exit roller.
M2	Shift Tray Lift	Moves the shift tray up or down.
M3	Feed-out	Drives the feed-feed out belt.
M4	Jogger	Moves the jogger fence.
M5	Entrance	Drives the entrance roller.
M6	Shift	Moves the shift motor to front or rear.
M7	Staple	Drives the staple hammer.
Sensors		
S1	Entrance	Detects the copy paper entering the finisher and detects misfeeds.
S2	Inverter	Detects the trailing edge of the paper to change the rotation direction of the transport motor
S3	Jogger Unit Paper	Detects the paper in the jogger unit and detects misfeeds.
S4	Exit	Detects misfeeds in the exit area.
S5	Feed-out Belt HP	Detects the home position of the feed-out belt.
S6	Jogger HP	Detects the jogger home position.
S7	Shift Tray Lower Limit	Detects the lower limit position of the shift tray.
S8	Shift Position	Detects the stop position of the shift motor.
S9	Stack Height	Detects when the copy stack is proper height.
S10	Upper Cover Open	Detects whether the upper cover is opened or not.
S11	Staple Hammer HP	Detects the home position of the staple hammer.
Switches		
SW1	Jogger Unit Set	Cuts the +24V power within the finisher when the jogger unit is pulled out.
SW2	Staple End	Detects when the staples have run out.
Solenoid		
SOL1	Junction Gate	Drives the junction gate.
PCBs		
PCB1	Finisher Drive	Controls overall finisher operation.

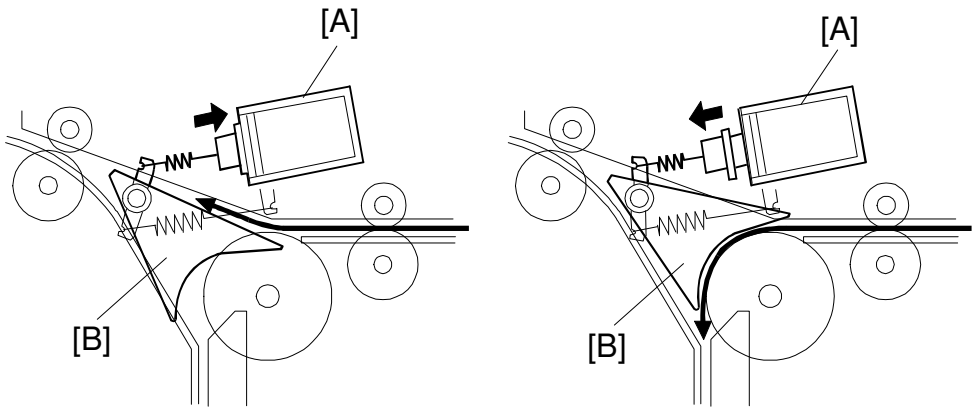
1.5 DRIVE LAYOUT



1. Exit Roller Drive Belt
2. Transport Motor
3. Transport Drive Belt
4. Inverter Drive Belt
5. Entrance Drive Belt
6. Entrance Motor
7. Shift Motor
8. Shift Tray Lift Motor
9. Jogger Motor
10. Jogger Fence
11. Stack Feed Belt
12. Feed-out Motor
13. Feed-out Drive Belt

2. DETAILED DESCRIPTIONS

2.1 JUNCTION GATE MECHANISM



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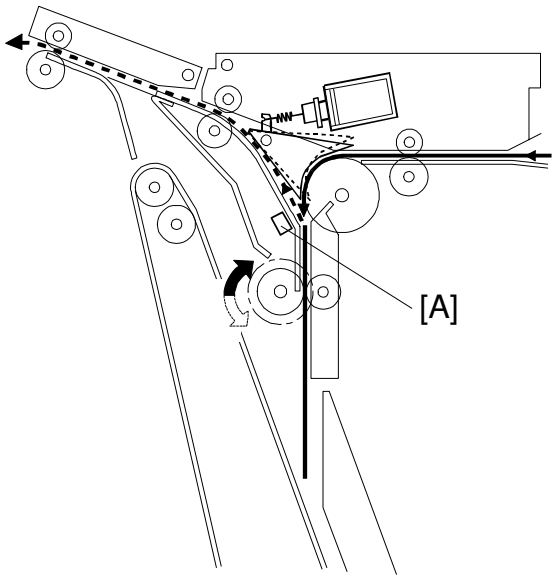
When the entrance sensor is activated in face-up mode, the junction gate solenoid [A] turns on and the junction gate [B] is closed. Then, the paper is transported directly to the shift tray and its maximum speed is 180 mm/s.

When the entrance sensor is activated in face-down or staple mode, the junction gate solenoid [A] stays off and the junction gate [B] is open. Then the paper is transported to the jogger unit.

2.2 PAPER REVERSING MECHANISM



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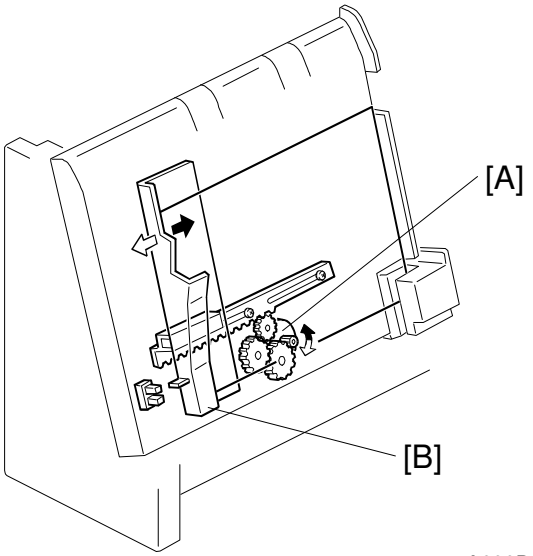
The paper is sent to the staple unit when face-down mode is selected. The paper is transported to the staple unit at 180 mm/s until the trailing edge of the paper turns off the copier exit sensor. After the exit sensor is turned off, the paper transport speed is changed to 500 mm/s.

When the trailing edge of the paper passes through the inverter sensor [A], the transport motor turns off. Then, the transport motor turns on in reverse and the paper is transported to the shift tray.

2.3 JOGGER UNIT PAPER POSITIONING MECHANISM



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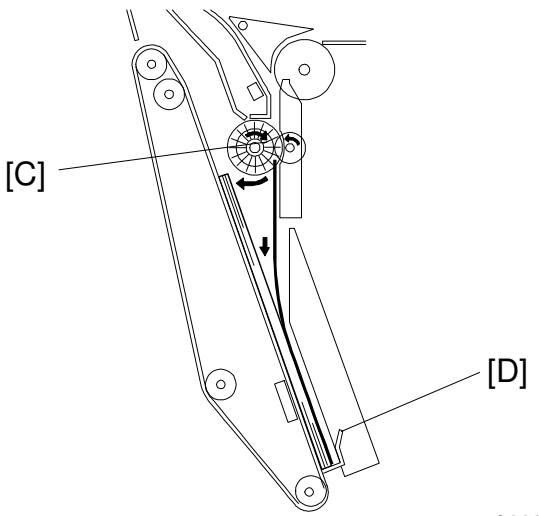

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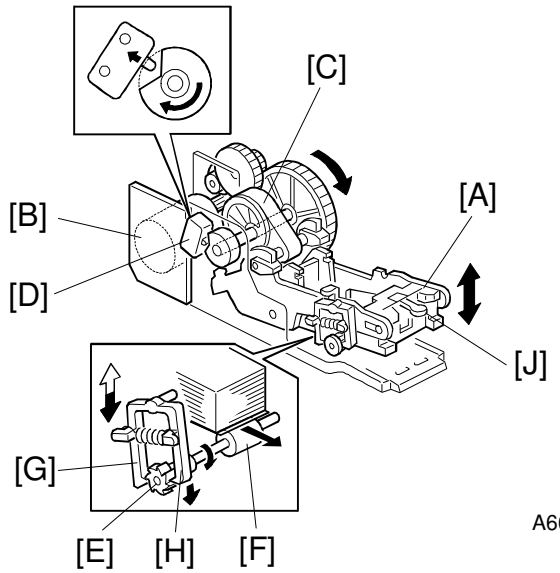
In staple mode, each sheet of copy paper is vertically and horizontally aligned when it arrives in the jogger unit.

For the horizontal alignment, the jogger motor [A] moves the front jogger fence [B] to align the copies.

For the vertical alignment, the brush roller [C] pushes the trailing edge of the paper against the stack stopper [D]. The position of the stack stopper depends on the paper size (LT or A4), and is changed by the feed-out motor.

2.4 STAPLER



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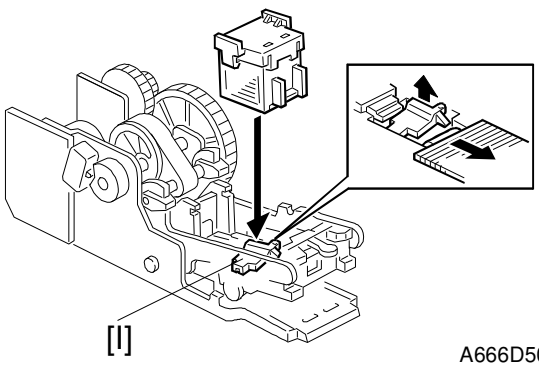

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The staple hammer [A] is driven by the stapler motor [B] via gears, a eccentric cam [C].

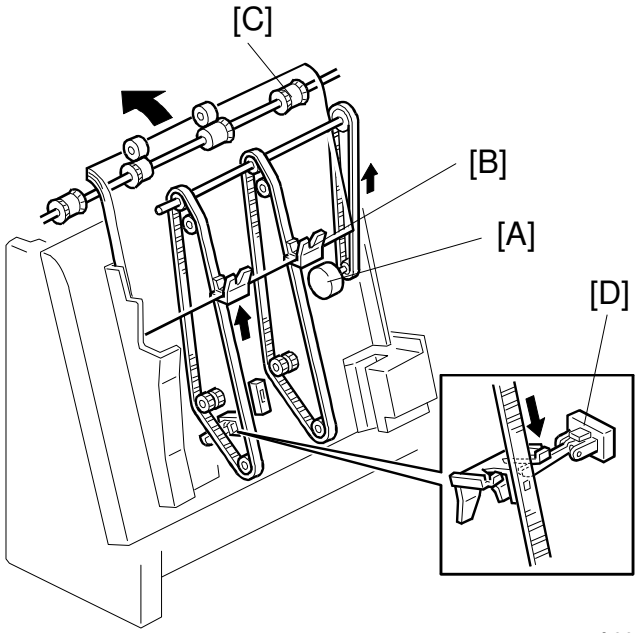
When the aligned copies are brought to the stapling position by the brush roller and jogger fence, the stapler motor [B] turns on. When the cam [C] completes one rotation, the staple hammer home position sensor [D] turns off, detecting the end of the stapling operation. The staple motor then turns off.

The feed gear [E] drives staple feed roller [F] to feed a sheet of staples. The feed gear is driven by the long hook [G] when the hammer moves up and by the short hook [H] when the hammer moves down.

When there is only one sheet of staples left in the cartridge, the actuator [I] moves up and the staple end sensor is activated.

When jammed staples are left in the staple unit, release and move up the staple guide [J] to remove the jammed staples.

2.5 FEED OUT MECHANISM



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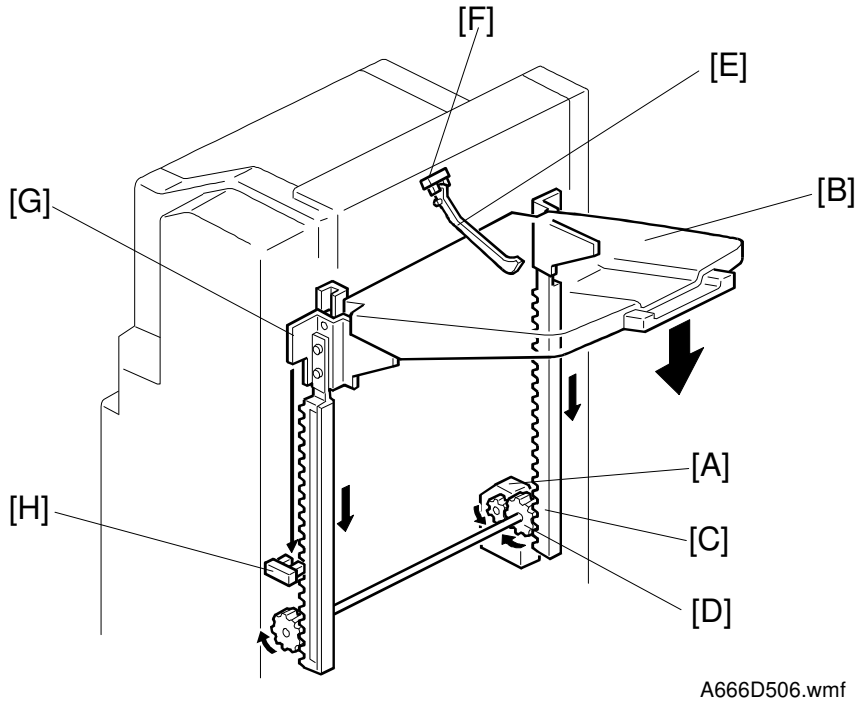
After the copies have been stapled, the feed-out motor [A] turns on to drive the feed out belt. The stack stopper [B] on the feed-out belt transports the set of stapled copies up,(its speed is 450 mm/s) and feeds it towards the shift tray. Approximately 500 ms after the feed-out motor turns on, it stops for 500 ms. At this moment, the exit roller [C] catches the stapled copies to feed them out to the shift tray. Then, the feed-out motor turns on again until the stack stopper actuates the feed-out belt home position sensor [D].

The transport motor drives the brush roller and the exit roller [C] (speed 500 mm/s). The transport motor turns on when the feed-out motor turns on at the start of feed-out to drive brush roller. This prevents the brush roller from disturbing the smooth upward passage of the leading edge of the copy set at the start of paper feed. After 200 ms, the transport motor turns off and on again in reverse to feed out the set of staple copies.

2.6 SHIFT TRAY UP/DOWN MECHANISM

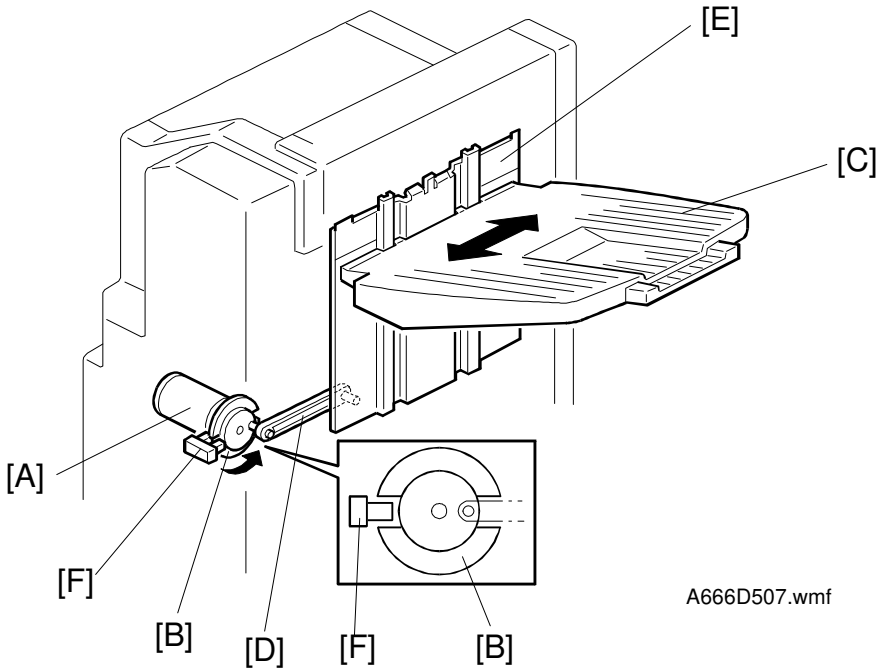


The shift tray lift motor [A] controls the vertical position of the shift tray [B] through the gears [C,D]. When the main switch is turned on, the tray is initialized at the upper position. The trays upper position is detected when the shift tray pushes up actuator feeler[E] until the actuator turns on the stack height sensor [F]. Then the shift tray lift motor turns in reverse until the stack height sensor turns off.

During copying, the actuator feeler [E] gradually rises as the copy stack grows. When the stack height sensor [F] turns on, the shift tray lift motor lowers the shift tray [B] until the sensor is off.

When the actuator [G] turns off the lower limit sensor [H], copying stops. After copying ends and machine is stopped and the copies are removed, the shift tray rises until the stack height sensor [F] is on. Then the shift tray lift motor turns in reverse until the stack height sensor turns off.

2.7 SHIFT TRAY SIDE-TO-SIDE MECHANISM

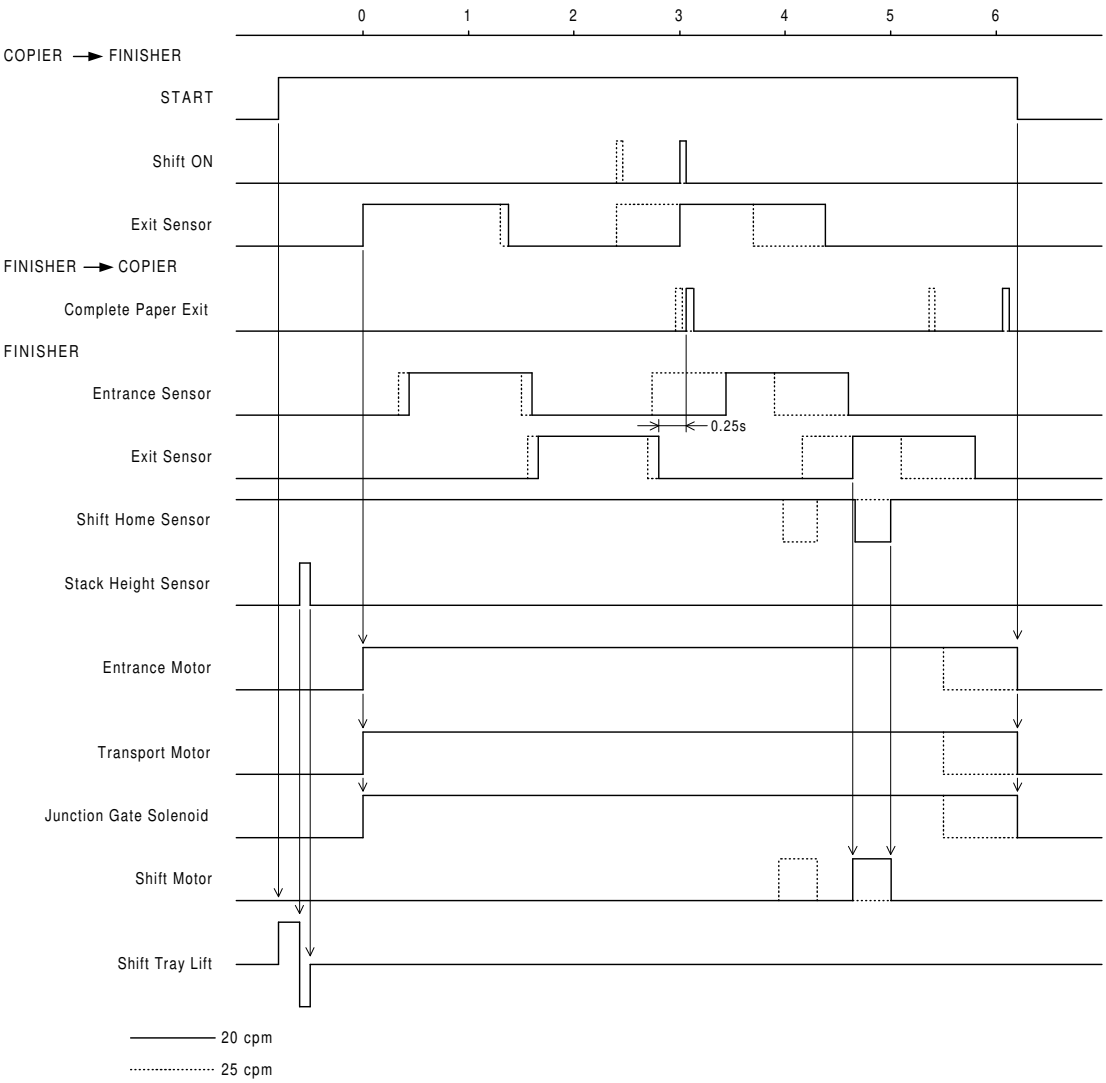


The horizontal position of the shift tray is controlled by the shift motor [A] and the shift motor disk [B]. After one set of originals is copied and delivered to the shift tray [C], the shift motor turns on, driving the shift motor disk and the lever [D]. The shift tray base plate [E] is positioned by the lever, creating the side-to-side movement required to stagger the copies.

When the shift motor disk [B]has rotated 180 degrees (when the shift tray is fully shifted across), the cut-out in the shift motor disk turns on the shift position sensor [F] and the shift motor [A] stops. The next set of copies is then delivered. The motor turns on, repeating the same process and moving the tray back to the previous position.

2.8 TIMING CHART

2.8.1 Face-up Mode (A4: 2 sheets)



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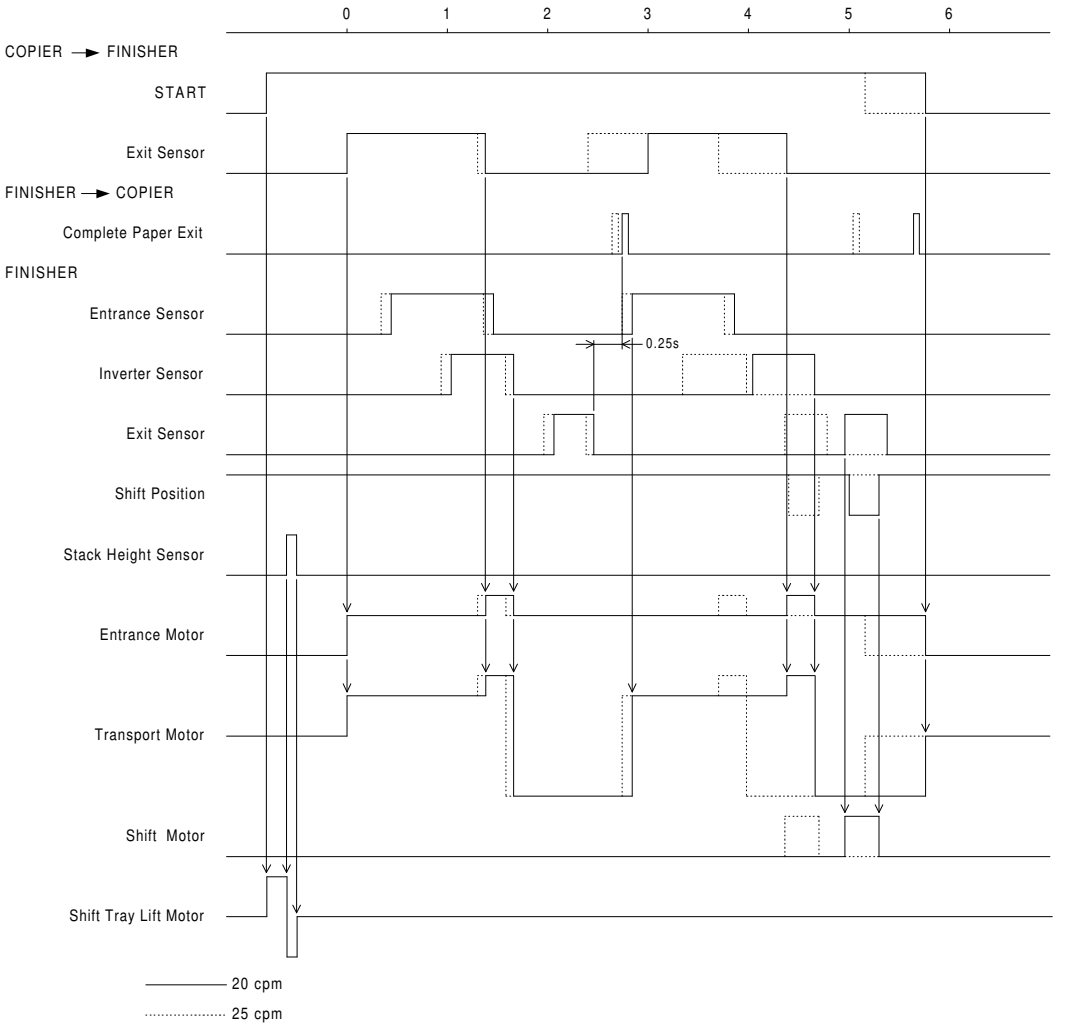
Options

2.8.2 Face-down Mode (A4: 2 sheets)



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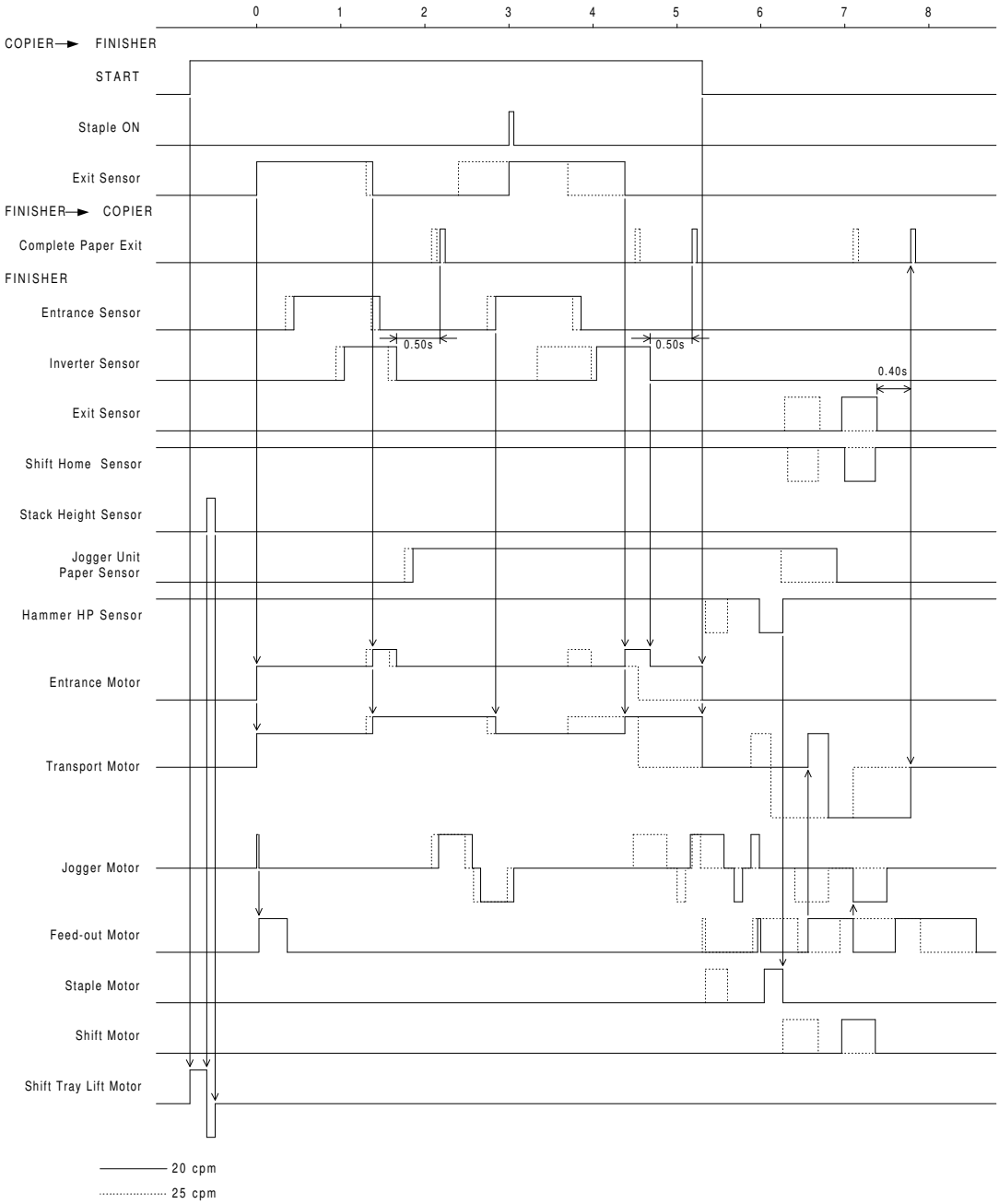
2.8.3 Staple Mode (A4: 2 sheets)



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2.8.4 Jam Detection

1. Face-up Mode

Jam 1: The entrance sensor stays on for 4.2 s.

Jam 2: The exit sensor stays off 3.5 s after the entrance sensor turns on.

Jam 3: The exit sensor stays on for 2.0 s.

2. Face-down Mode

Jam 1: The entrance sensor stays on for 4.2 s.

Jam 2: The inverter sensor stays off 1.5 s after the entrance sensor turns on.

Jam 3: The inverter sensor stays on for 4.2 s.

Jam 4: The exit sensor stays off 0.6 s after the inverter sensor turns off.

Jam 5: The exit sensor stays on for 1.2 s.

3. Staple Mode

Jam 1: The entrance sensor stays on for 2.5 s.

Jam 2: The inverter sensor stays off 1.5 s after the entrance sensor turns on.

Jam 3: The inverter sensor stays on for 0.8 s.

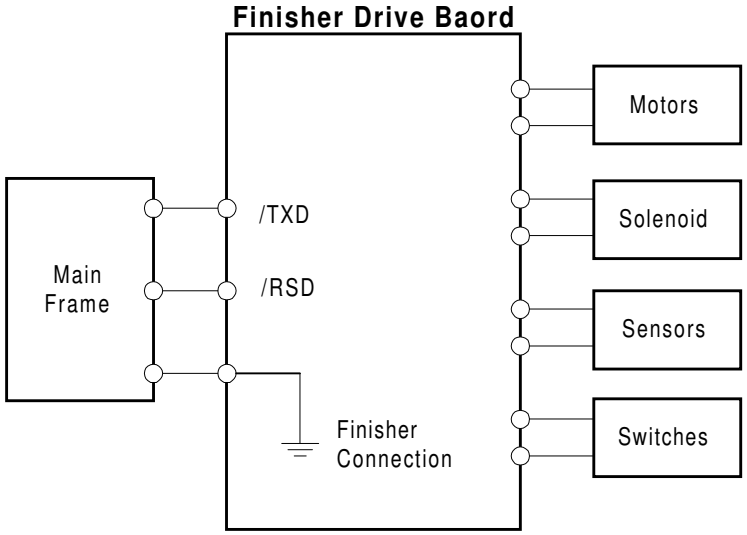
Jam 4: The jogger unit paper sensor stays off 0.5 s after the inverter sensor turns off.

Jam 5: The exit sensor stays off 1.05 s after the feed-out motor turns on.

Jam 6: The exit sensor stays on for 0.85 s.

Staple Jam: The staple hammer HP sensor stays off 0.48 s after the staple motor turns on.

2.8.5 Verall Electrical Circuit



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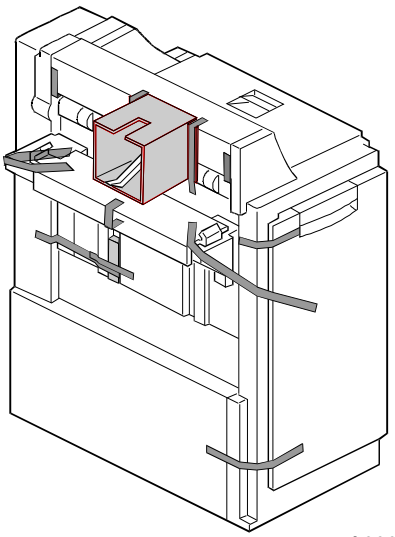
All components (motors, sensors, solenoid and switches) are controlled by the finisher drive board and the communication between the main frame and finisher uses a serial signal.

When the finisher is connected, the finisher connection signal to the main frame is grounded. Then the main frame detects that the finisher is connected.

3. INSTALLATION PROCEDURE (AD1/AD1E)



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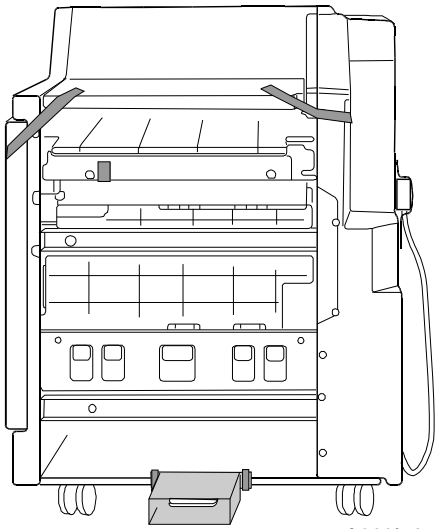

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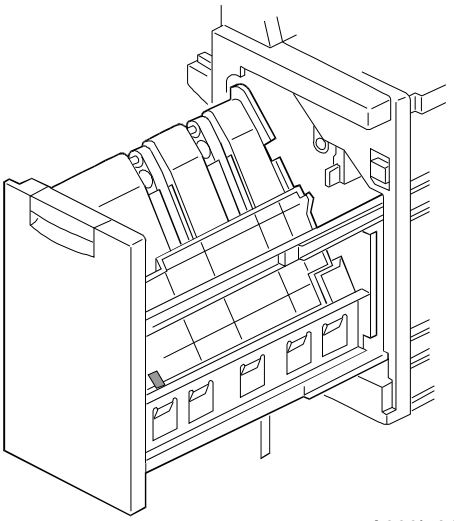

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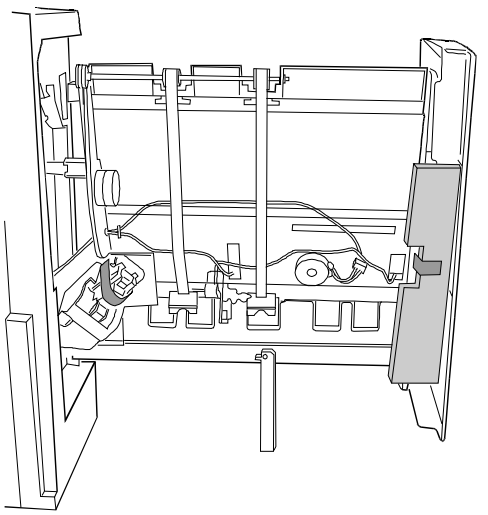

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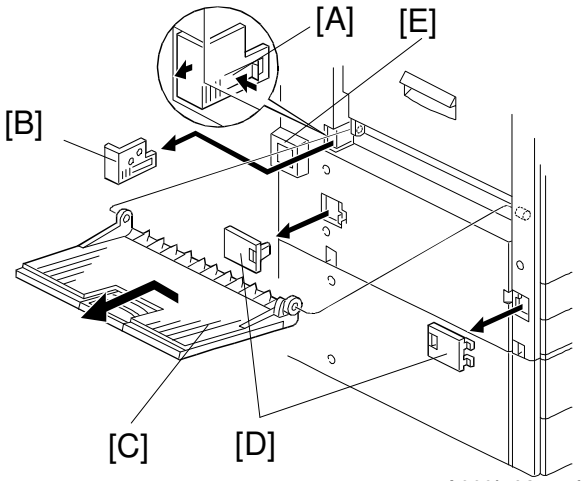
⚠ CAUTION

Unplug the copier power cord and turn off the main switch before starting the following procedure.

1. Unpack the finisher. Then remove all tapes and cushions.



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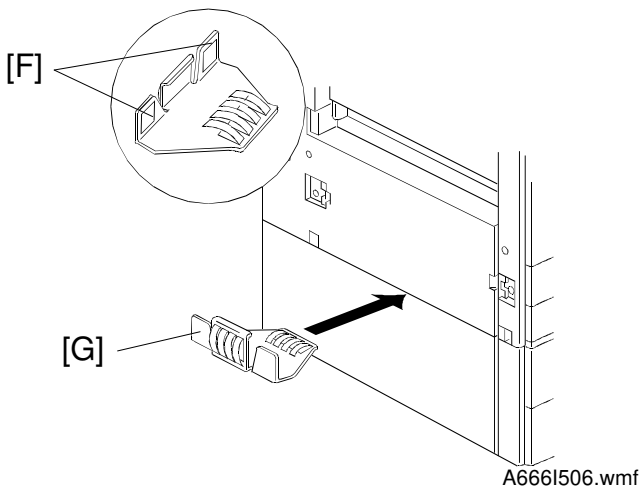

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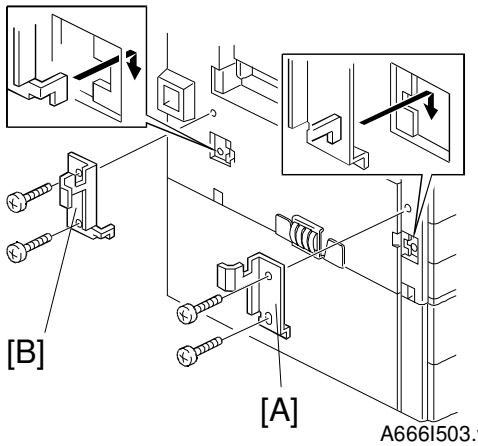
2. Push the hook [A] of the face-up tray shaft cover [B] and remove it.
3. Remove the face-up tray [C].
4. Remove the caps [D] and the connector cover [E].
5. Peel off the backing of the double sided tapes [F] of the grounding plate [G].
6. Insert the grounding plate between the copier and the paper bank as shown.



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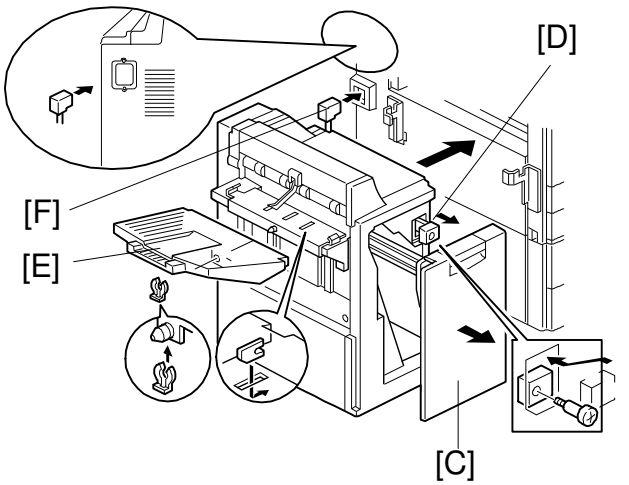

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7. Install the front [A] and rear [B]connecting bracket. (2 screws each)
8. Pull out the stapler unit [C] and confirm that locking lever [D] has been drawn out.
9. Align and install the finisher to connecting brackets and lock them in place by pushing the locking lever [D].
10. Secure the locking lever [D] (1 screw) and push the staple unit into the finisher.
11. Install the shift tray [E] (1 snap ring).
12. Connect the cable [F]to the copier.
13. Plug in the copier power cord.
14. Turn the ac and main switches on. and check if the document feeder works properly.

4. PREVENTIVE MAINTENANCE

NOTE: The amounts mentioned as the PM interval indicate the number of prints.

Symbol key: C:Clean , R:Replace , L:Lubricate , I:Inspect

ITEM	EM	100K	200K	300K	NOTE
Rollers	C	C	C	C	Alcohol or water
Bushings	I	I	I	I	Use Launa oil or equivalent
Sensors	C	C	C	C	Dry cloth

5. SERVICE TABLES

5.1 LED TABLE

LED No. 100	LED No. 101	FUNCTION
ON	OFF	When the entrance sensor is ON (Paper Detected)
OFF	ON	When the inverter sensor is ON (Paper Detected)
ON	ON	When the exit sensor is ON (Paper Detected)

NOTE: Check the sensors by setting DIP SW 100/101 to Sensor Check Mode(see below).

5.2 DIP SWITCH TABLE

5.2.1 Factory Setting

[0 : OFF 1 : ON]

DIP SW 100				DIP SW 101			
4	3	2	1	4	3	2	1
0	0	0	0	0	0	0	0

5.2.2 Stapling Position Adjustment

[0 : OFF 1 : ON]

DIP SW 100				DIP SW 101				STAPLING POSITION
4	3	2	1	4	3	2	1	
0	0	0	0	0	0	0	1	+ 1.0 mm (down)
0	0	0	0	0	0	1	0	+ 2.0 mm (down)
0	0	0	0	0	1	0	0	–1.0 mm (up)
0	0	0	0	1	0	0	0	–2.0 mm (up)

5.2.3 Sensor Check

[0 : OFF 1 : ON]

DIP SW 100				DIP SW 101			
4	3	2	1	4	3	2	1
1	0	0	0	0	0	0	0

When checking the sensors , see the LED table (5.1).

5.2.4 FREE RUN WITHOUT PAPER

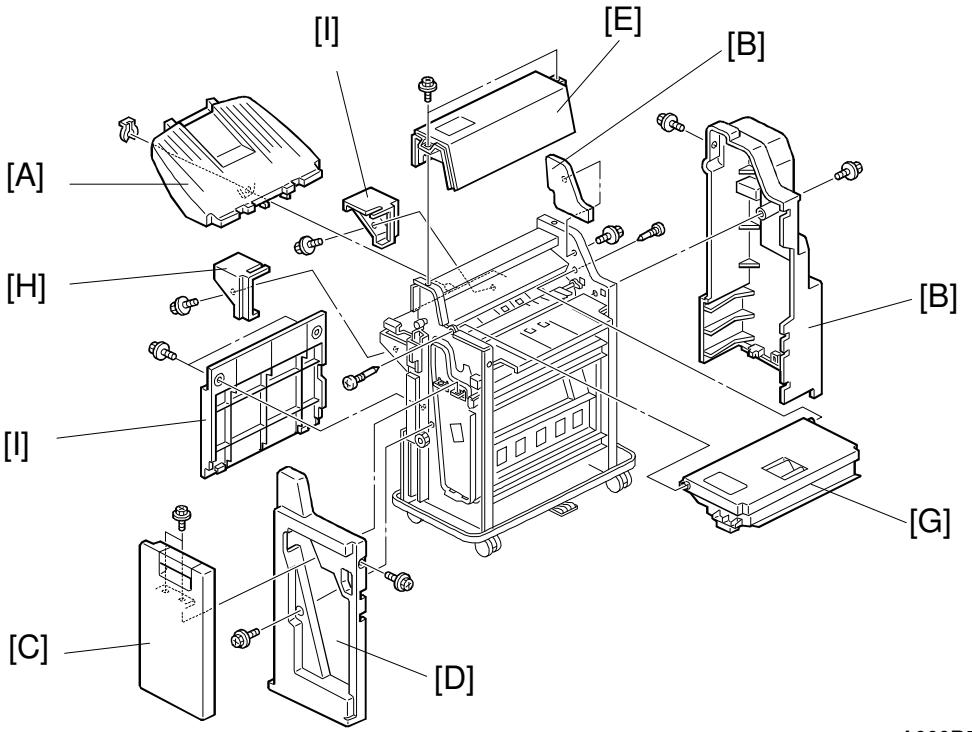
How to do a free run

1. Turn off the main and AC switches, and unplug the machine.
2. Select the free run mode with DIP switches (see below).
3. Disconnect connector 102 on the finisher drive board.
4. Plug in the machine and turn on the power (AC and main switches).
5. To stop the free run, pull out the staple unit.

DIP SW 100				DIP SW 101				FUNCTION
4	3	2	1	4	3	2	1	
0	1	1	1	0	0	0	0	Staple Mode (2 Pages)
0	1	1	1	0	0	0	1	Staple Mode (5 Pages)
0	1	1	1	0	0	1	0	Staple Mode (10 Pages)
0	1	1	1	0	1	0	0	Staple Mode (15 Papers)
0	1	1	1	1	0	0	0	Staple Mode (20 Pages)
1	1	1	1	0	0	0	0	Face Down Mode (2 Pages)
1	1	1	1	0	0	0	1	Face Down Mode (5 Pages)
1	1	1	1	0	0	1	0	Face Down Mode (10 Pages)
1	1	1	1	0	1	0	0	Face Down Mode (15 Pages)
1	1	1	1	1	0	0	0	Face Down Mode (20 Pages)

6. REPLACEMENT AND ADJUSTMENT

6.1 EXTERIOR REMOVAL



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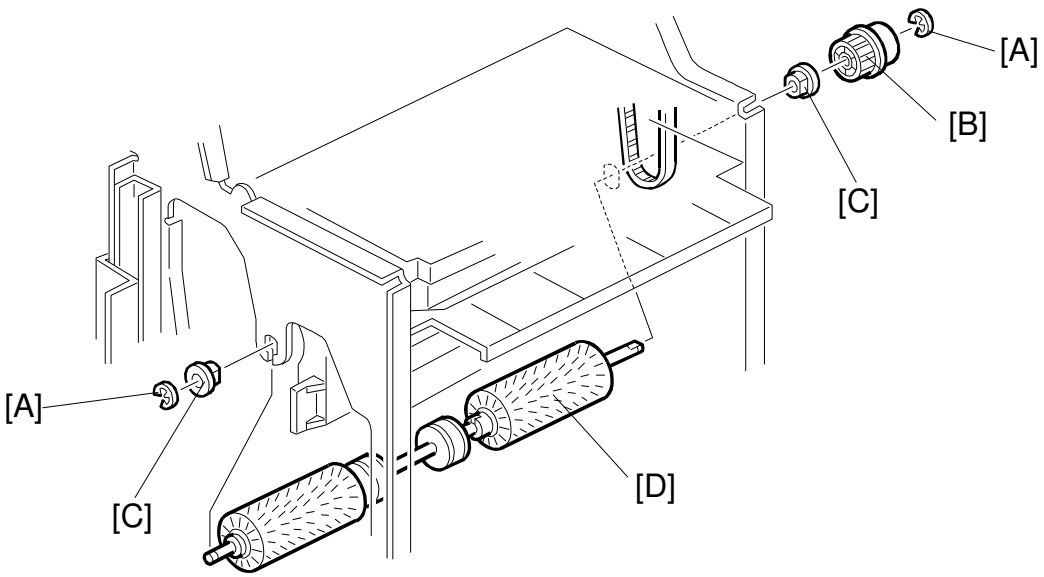
1. Remove the shift tray [A] (1 snap ring).
   NOTE : The shift tray cannot be removed if it is at its uppermost position.
2. Remove the rear cover [B] (3 screws).
3. Remove the front cover [C] (2 screws).
4. Remove the front inner cover [D] (3 screws).
5. Remove the upper cover [E] (2 screws).
6. Remove the rear upper cover [F] (1 screw).
7. Remove the upper entrance cover [G] (2 screws).
8. Remove the front and rear tray covers [H,I] (2 screws)
9. Remove the left cover [J](2 screws).

6.2 ALIGNMENT BRUSH ROLLER REPLACEMENT



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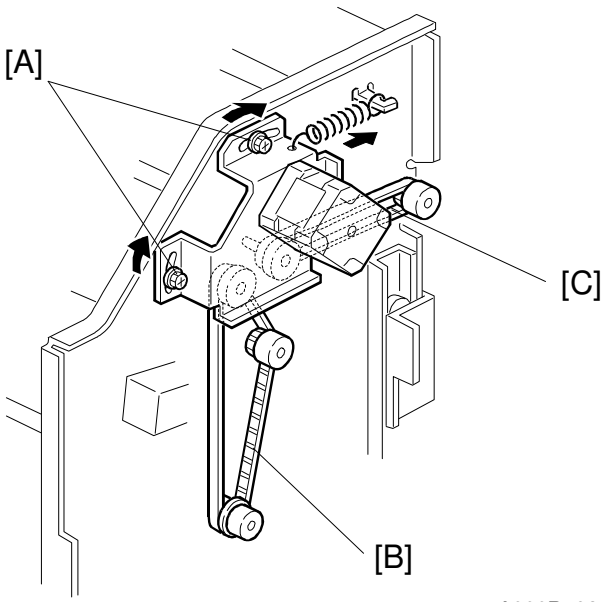
1. Remove the front and rear covers.
2. Pull out the jogger unit
3. Remove the E-ring [A], slide off the pulley [B], then remove 2 bushings [C].

   NOTE: When reinstalling, the metal bushing goes at the front side.
4. Remove the alignment brush roller assembly [D].

6.3 BELT TENSION ADJUSTMENT



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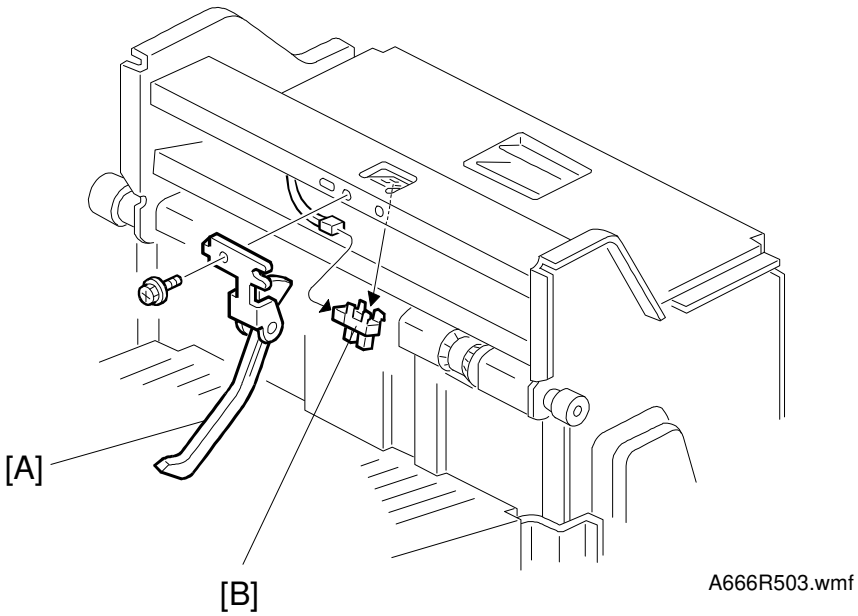
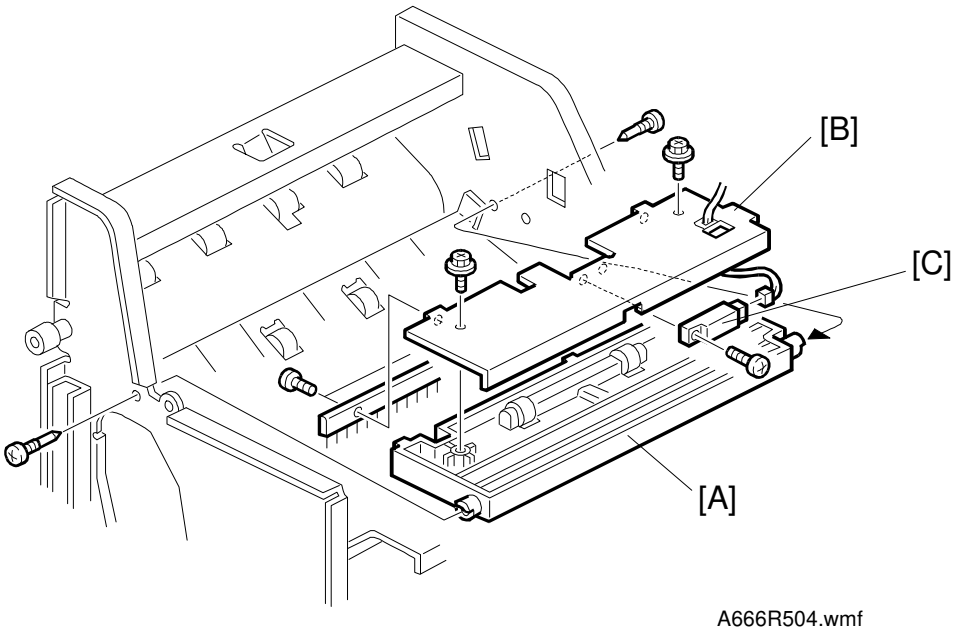
1. Remove the rear cover.
2. Loosen the 2 screws [A] of the transport motor bracket and tighten them again to adjust the two tension belts [B,C].

6.4 STACK HEIGHT SENSOR REPLACEMENT



1. Remove the front, rear, and upper covers.
2. Remove the stack height sensor actuator [A] (1 screw).
3. Replace stack height sensor [B] (1 connector).

6.5 EXIT SENSOR REPLACEMENT



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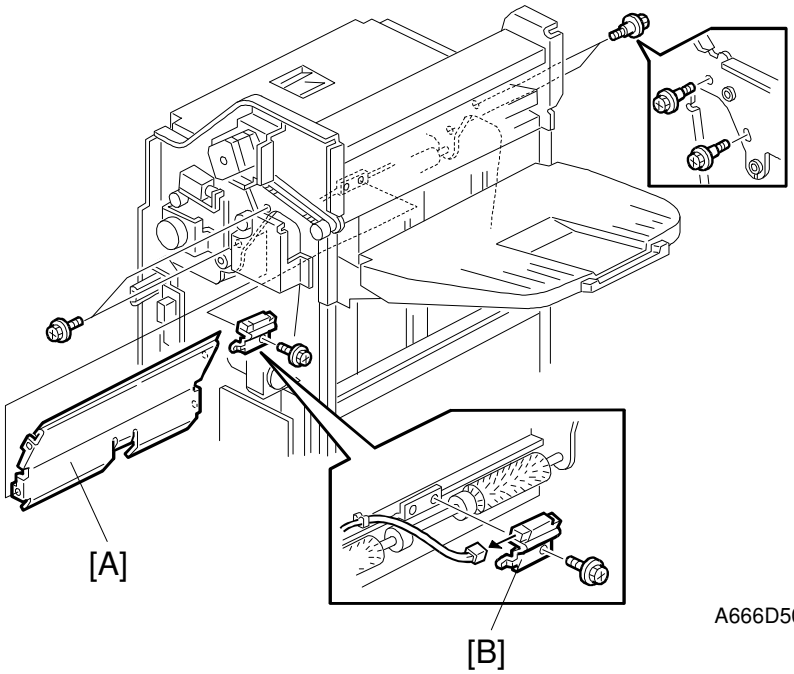
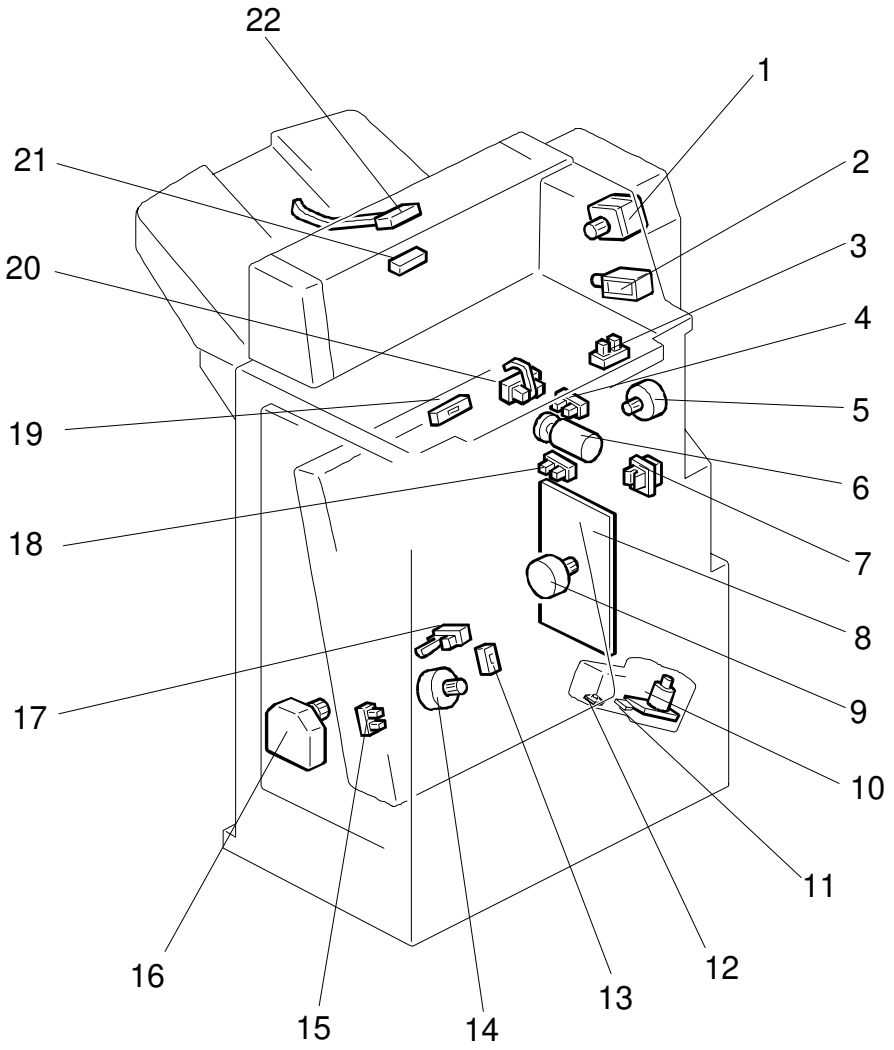
1. Remove the front, rear, and upper covers.
2. Remove the exit guide unit [A] (1 screw).
3. Remove the discharge brush and the exit guide plate [B] (2 screws).
4. Remove the exit sensor [C] (1 screw and 1 connector).

6.6 INVERTER SENSOR REPLACEMENT



1. Remove the front, front inner, and rear covers.
2. Slide out the jogger unit.
3. Remove the entrance guide plate [A] (4 screws).
4. Remove the inverter sensor ass'y [B] (1 screw and 1 connector).
5. Replace the inverter sensor.

FNISHER (A666) ELECTRICAL COMPONENT LAYOUT



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Symbol	Index No.	Function	P to P
Motors			
M1	1	Transport	D13
M2	16	Shift Tray Lift	F13
M3	9	Feed-out	H13
M4	14	Jogger	G13
M5	5	Entrance	B13
M6	6	Shift	E13
M7	10	Staple	J14
Sensors			
S1	20	Entrance	E4
S2	19	Inverter	F4
S3	13	Jogger Unit Paper	K5
S4	21	Exit	I4
S5	17	Feed-out Belt HP	J5
S6	15	Jogger HP	J5
S7	18	Shift Tray Lower Limit	G4
S8	4	Shift Position	G4
S9	22	Stack Height	H4
S10	3	Upper Cover Open	E4
S11	11	Staple Hammer HP	J13
Switches			
SW1	7	Jogger Unit Set	K12
SW2	12	Staple End	I13
Solenoid			
SOL1	2	Junction Gate	A13
PCB			
PCB1	8	Finisher Drive	B8

FINISHER (A666) POINT TO POINT DIAGRAM