TOSHIBA

SERVICE MANUAL

REVERSING AUTOMATIC DOCUMENT FEEDER

MR-3011/3012



File No. 31100005

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TOSHIBA TEC CORPORATION

General Precautions for Installation/Servicing/Maintenance for the MR-3011/3012

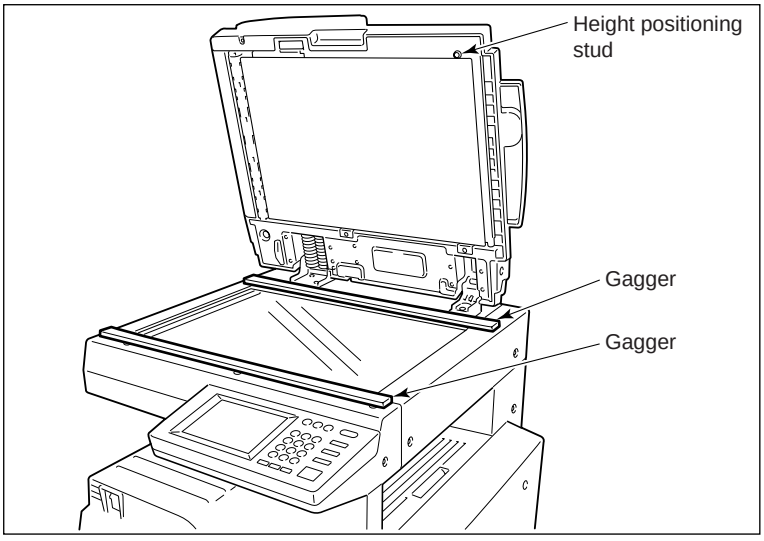
The installation and service should be done by a qualified service technician.

1. When installing the MR-3011/3012 to the Plain Paper Copier, be sure to follow the instructions described in the "Unpacking/Set-Up Procedure for the MR-3011/3012" booklet which comes with each unit of the MR-3011/3012.
2. The MR-3011/3012 should be installed by an authorized/qualified person.
3. Before starting installation, servicing or maintenance work, be sure to turn off and unplug the copier first.
4. When servicing or maintaining the MR-3011/3012, be careful about the rotating or operation sections such as gears, pulleys, sprockets, cams, belts, etc.
5. When parts are disassembled, reassembly is basically the reverse of disassembly unless otherwise noted in this manual or other related materials. Be careful not to reassemble small parts such as screws, washers, pins, E-rings, toothed washers to the wrong places.
6. Basically, the machine should not be operated with any parts removed or disassembled.
7. Delicate parts for preventing safety hazard problems (such as breakers, thermofuses, fuses, door switches, sensors, etc. if any) should be handled/installed/adjusted correctly.
8. Use suitable measuring instruments and tools.
9. During servicing or maintenance work, be sure to check the serial No. plate and other cautionary labels (if any) to see if they are clean and firmly fixed. If not, take appropriate actions.
10. The PC board must be stored in an anti-electrostatic bag and handled carefully using a wristband, because the ICs on it may be damaged due to static electricity. Before using the wrist band, pull out the power cord plug of the copier and make sure that there is no uninsulated charged objects in the vicinity.
11. For the recovery and disposal of used MR-3011/3012s, consumable parts and packing materials, it is recommended that the relevant local regulations/rules should be followed.
12. After completing installation, servicing and maintenance of the MR-3011/3012, return the MR-3011/3012 to its original state, and check operation.

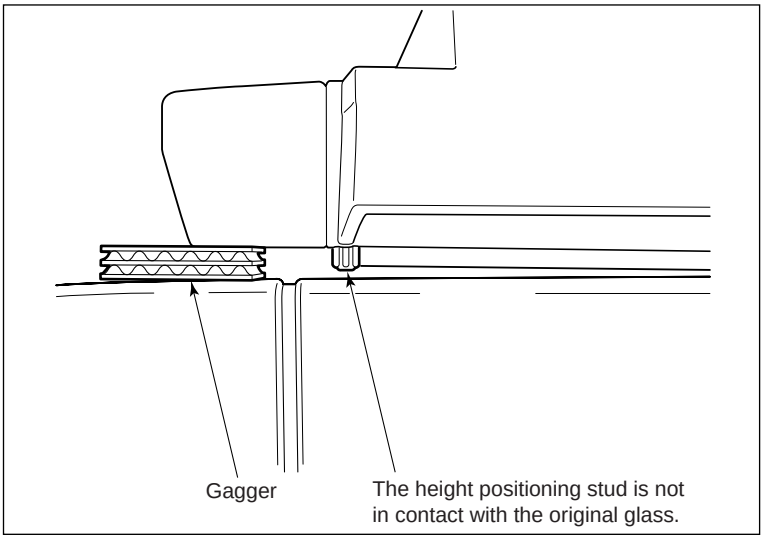
PREPARATION FOR TRANSPORTATION OF COPIER

Before transporting a copier on which mounts the MR-3011/3012, take off the MR-3011/3012 or insert a gaggers underneath the MR-3011/3012 as shown in the following figures.

1. Use pieces of the corrugated board came in the package of MR-3011/3012 or equivalent as the gaggers. Insert the gaggers as shown in the figure, then close the MR-3011/3012.



2. Make sure that the height positioning stud is not in contact with the original glass.



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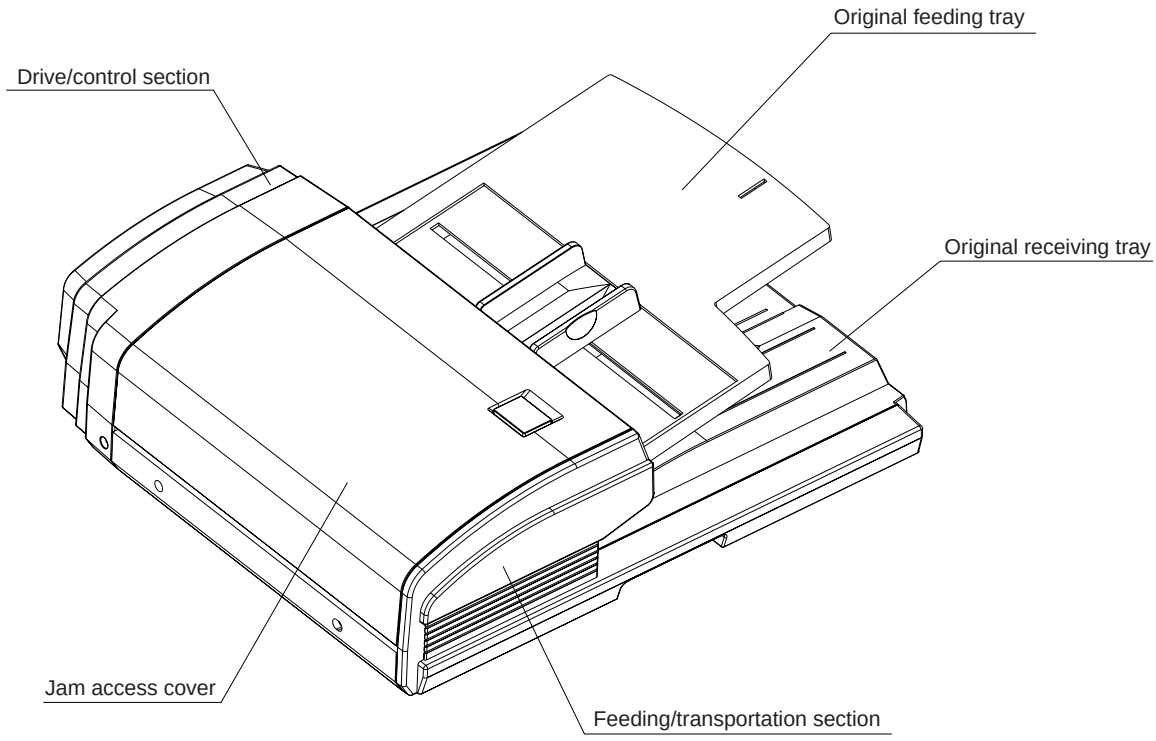
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1. SPECIFICATION

Model Name	MR-3011/MR-3012
Capacity of Original Feeding Tray	Up to 100 sheets
Feed Speed	MR-3011: Approx.16 sheets/min. (A4 or Letter, feed widthwise) [DP1600] Approx.20 sheets/min. (A4 or Letter, feed widthwise) [DP2000] Approx.25 sheets/min. (A4 or Letter, feed widthwise) [DP2500] MR-3012: Approx.35 sheets/min. (A4 or Letter, feed widthwise) [DP3500] Approx.45 sheets/min. (A4 or Letter, feed widthwise) [DP4500]
Acceptable Original Size	Smallest...A5-R Largest...A3 Thickness...50g/m^2~127g/m^2 (13.3lb~33.8lb)
Power Source	Power supplied from the copier
Power Consumption	48W
Dimensions	W557 × D497.3 × H165 (W22 inches × D19.6 inches × H6.5inches)
Weight	Approx.13.6kg or 29.9lb

*Specification and appearance are subject to change without notice due to enhancedment of product quality.

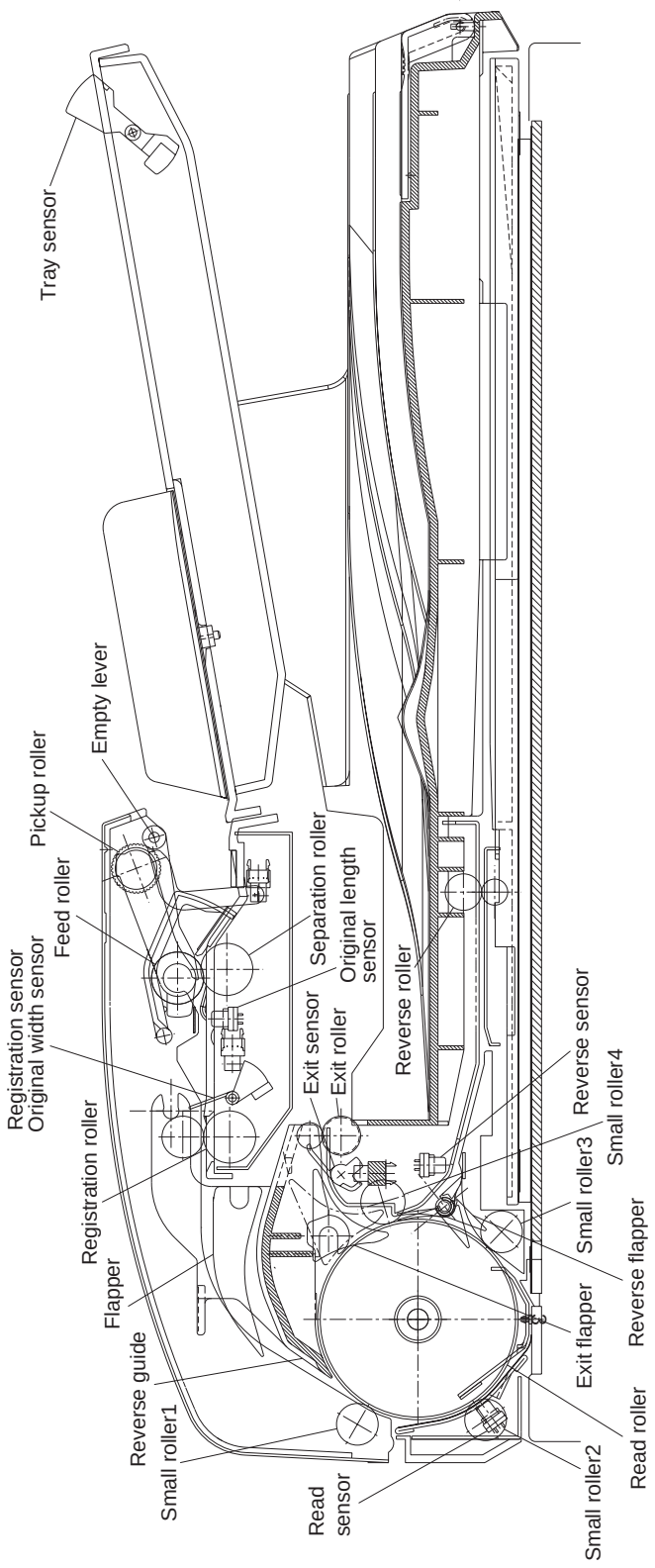
2. CONFIGURATION



	Mechanical	Electrical parts
Feeding/transportation section	• Jam access cover • Pickup roller • Feed roller • Separation roller • Registration roller • Read roller • Reverse roller • Exit roller	• Empty sensor • Original length sensor • Registration sensor • Original width sensor • Read sensor • Reverse sensor • Exit sensor
Original feeding tray section	• Original feeding tray	• Tray sensor
Drive/control section		• Feed motor • Read motor • Reverse motor • Reverse solenoid • RADF open/close sensor • RADF open/close switch • Jam access cover switch • PC board

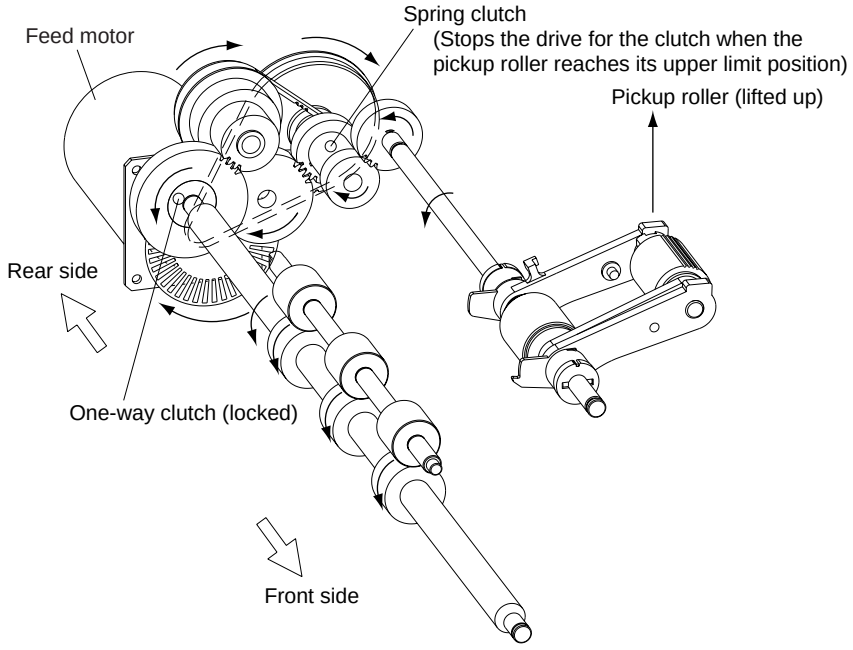
3. SECTIONAL VIEW AND DRIVE SYSTEM

3.1 Sectional View



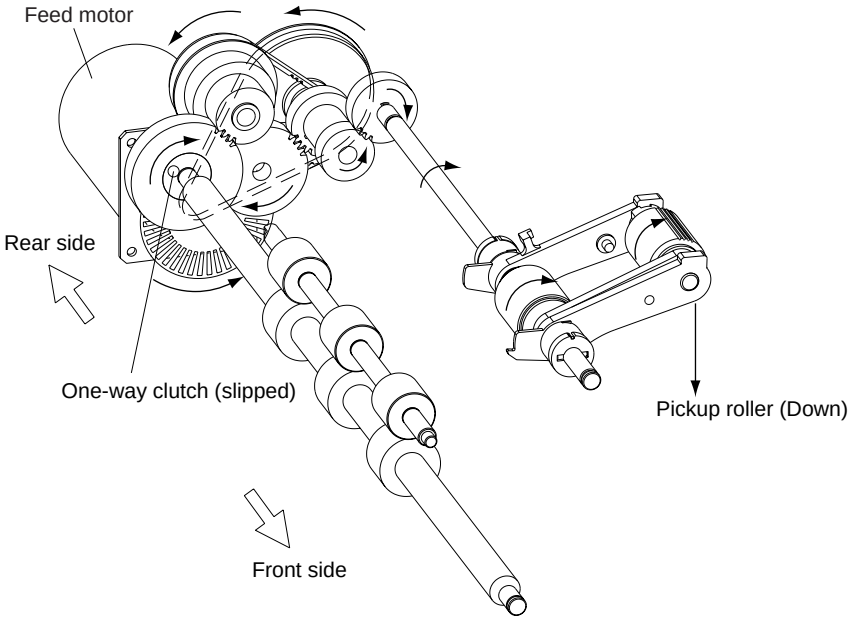
3.2 Drive System

(1) Feed motor rotating clockwise (as seen from the front side)



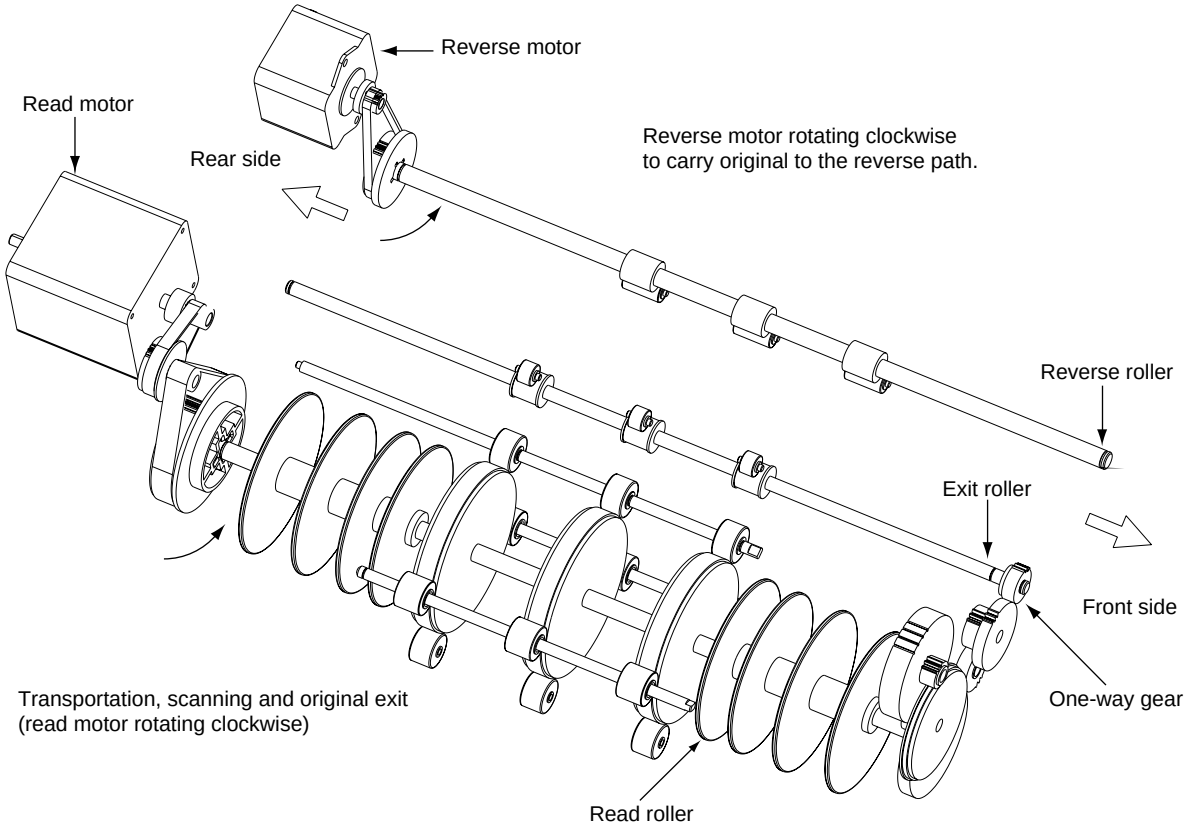
Motor rotating clockwise to transport original

(2) Feed motor rotating counterclockwise (as seen from the front side)

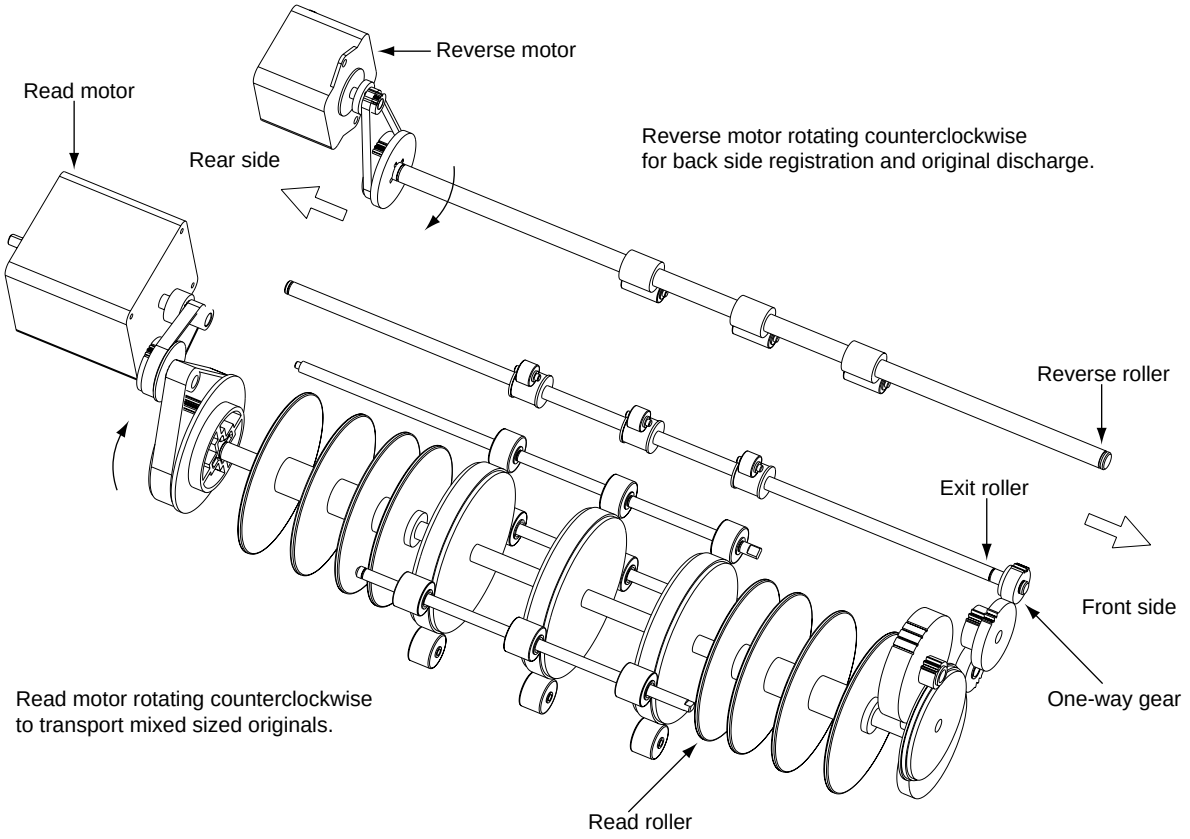


Motor rotating counterclockwise to transport original

(3) Read motor rotating clockwise (as seen from the front side)



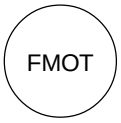
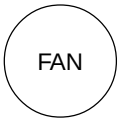
(4) Read motor rotating counterclockwise (as seen from the front side)



4. SYMBOLS AND LAYOUT OF ELECTRICAL PARTS / DIAGRAM OF SIGNAL BLOCKS

4.1 Symbols

(1) Motors

Symbol	Name	Function	Remarks
	RDMOT (Read motor)	Drives transportation roller and exit roller	Pulse motor
	RVMOT (Reverse motor)	Drives reverse roller	Pulse motor
	FMOT (Feed motor)	Drives pickup roller, feed roller and registration roller	DC motor
	FAN (Fan motor)	Cools down read motor	Fan motor

(2) Solenoid

Symbol	Name	Function	Remarks
	RSOL (Reverse solenoid)	Switches flapper	DC solenoid

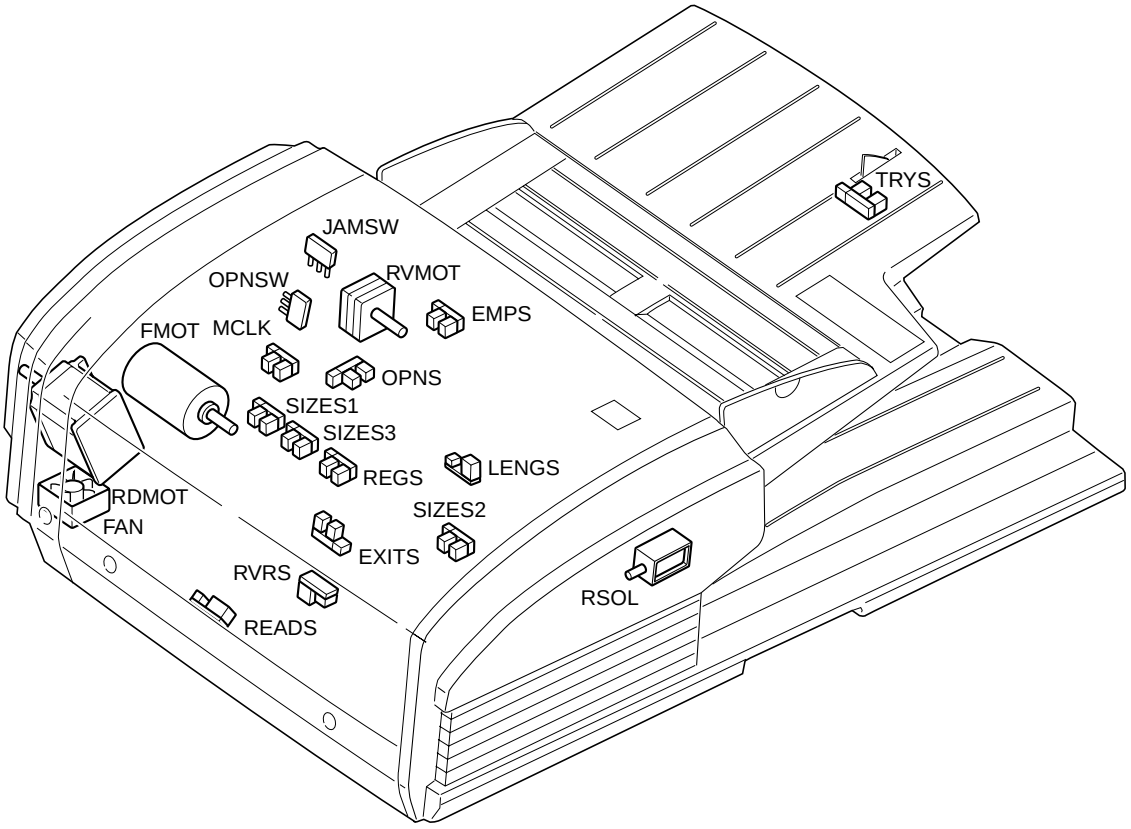
(3) Switches and Sensors

Symbol	Name	Function	Remarks
JAMSW	JAM-SW (Jam access cover switch)	Switch to detect if jam access cover for feeding unit is opened/closed	Microswitch
OPNSW	RADF-OPN-SW (RADF open/close switch)	Switch to detect if RADF unit is opened/closed	Microswitch
EMPS	EMP-SNS (Empty sensor)	Sensor to detect original on original tray	Semiconductive optical sensor
REGS	REG-SNS (Registration sensor)	Sensor to detect original at registration position	Semiconductive optical sensor
EXITS	EXIT-SNS (Exit sensor)	Sensor to deteat original at exit area	Semiconductive optical sensor
SIZES1	SIZE-SNS 1 (Original width sensor 1)	Original width detection sensor 1	Semiconductive optical sensor
SIZES2	SIZE-SNS 2 (Original width sensor 2)	Original width detection sensor 2	Semiconductive optical sensor
SIZES3	SIZE-SNS 3 (Original width sensor 3)	Original width detection sensor 3	Semiconductive optical sensor
TRYS	TRY-SNS (Tray sensor)	Sensor to detect length of original on original tray	Semiconductive optical sensor
OPNSN	RADF-OPN-SNS (RADF open/close sensor)	Sensor to detect if RADF unit is opened/closed	Semiconductive optical sensor
MCLK	MCLK-SNS (Feed motor clock sensor)	Detection sensor for feed motor clock	Semiconductive optical sensor
LENGS	LENG-SNS (Original length sensor)	Sensor to detect length of original	Semiconductive optical sensor
READS	Read-SNS (Read sensor)	Sensor to detect leading edge of original at scanning position	Semiconductive optical sensor
RVRS	RVR-SNS (Reverse sensor)	Sensor to detect original at reverse position	Semiconductive optical sensor

(4) PC board

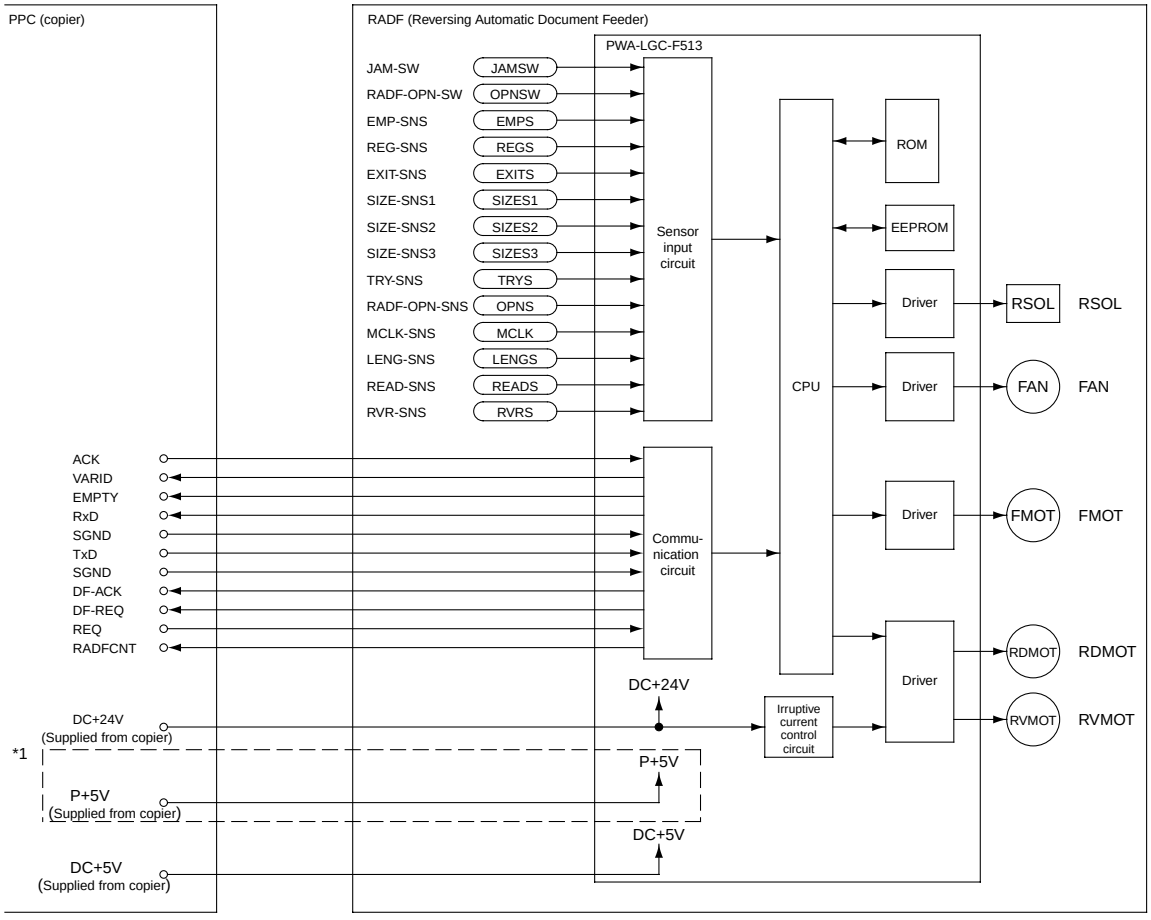
Symbol	Name	Function	Remarks
PWA-DF	PWA-LGC-RADF (PC board)	Drives feeding and transportation	

4.2 Layout of Electrical Parts



RDMOT	Read motor
RVMOT	Reverse motor
FMOT	Feed motor
FAN	Fan motor
RSOL	Reverse solenoid
JAMSW	Jam access cover switch
OPNSW	RADF open/close switch
EMPS	Empty sensor
REGS	Registration sensor
EXITS	Exit sensor
SIZE 1	Original width sensor 1
SIZE 2	Original width sensor 2
SIZE 3	Original width sensor 3
TRYS	Tray sensor
OPNS	RADF open/close sensor
MCLK	Feed motor clock sensor
LENGS	Orignal length sensor
READS	Read sensor
RVRS	Reverse sensor

4.3 Diagram of Signal Blocks

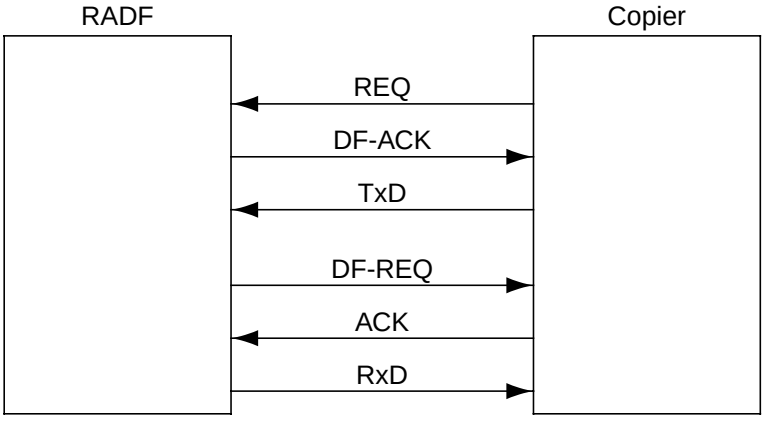


*1 ····· Available only for MR-3011

4.4 Description of Interface Signals

The following 6 lines are used to send/receive signals between the copier and the RADF.
REQ ..... Communication request signal (from copier to RADF)
DF-REQ ..... Communication request signal (from RADF to copier)
DF-ACK ..... Response signal for communication request signal (from RADF to copier)
ACK ..... Response signal for communication request signal (from copier to RADF)
TxD ..... Data sent from copier to RADF
RxD ..... Data sent from RADF to copier

Data communication (RxD and TxD) between the scanner and RADF has adopted the serial communication system which does not allow checking using testing devices to see whether the signals are sent/received properly in the field.

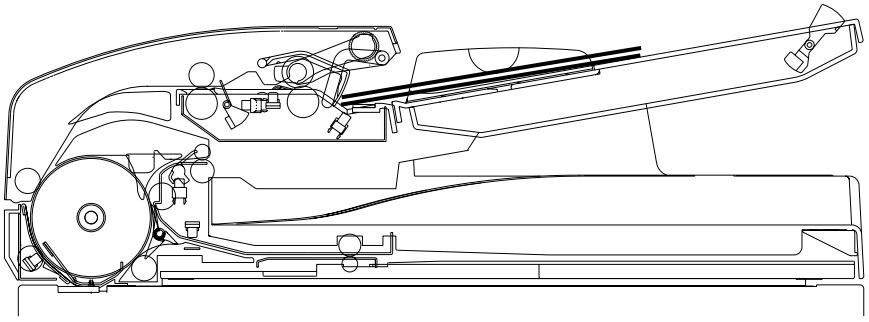


5. DESCRIPTION OF OPERATIONS

5.1 Single Side Feeding

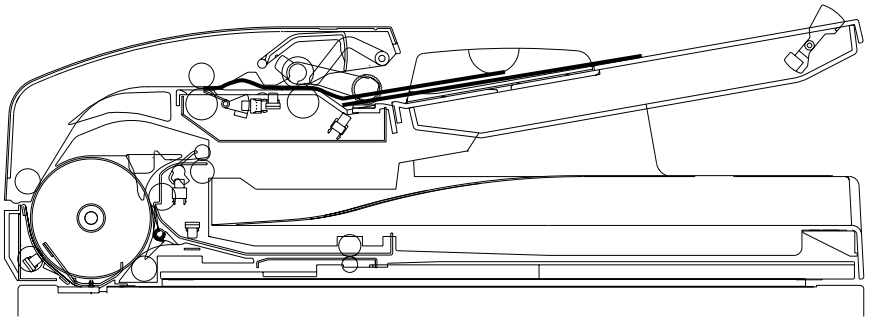
(A4, registration ratio 100%)

(1) Setting original



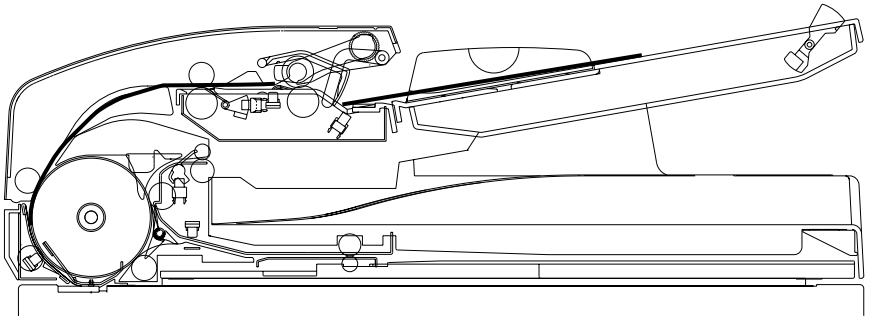
The original is set on the tray and the empty sensor is turned ON.
The original set signal becomes ON.

(2) Start of pre-feeding operation → Completion of pre-feeding operation



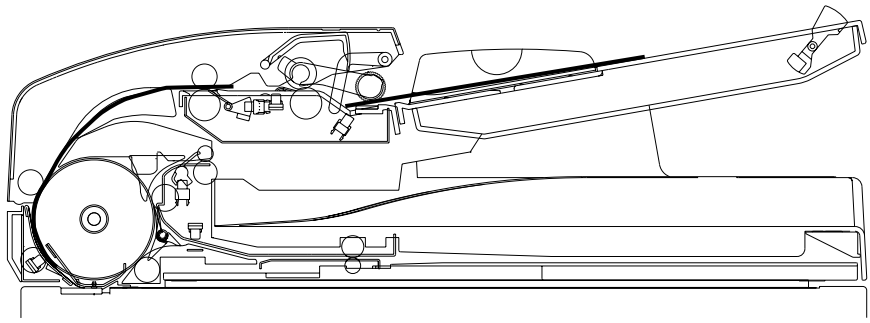
A feed signal is sent from the main unit, and the feed motor rotates the pickup roller and feed motor to start feeding the original (pre-feeding operation).

(3) Start of feeding operation → Original length sensor OFF



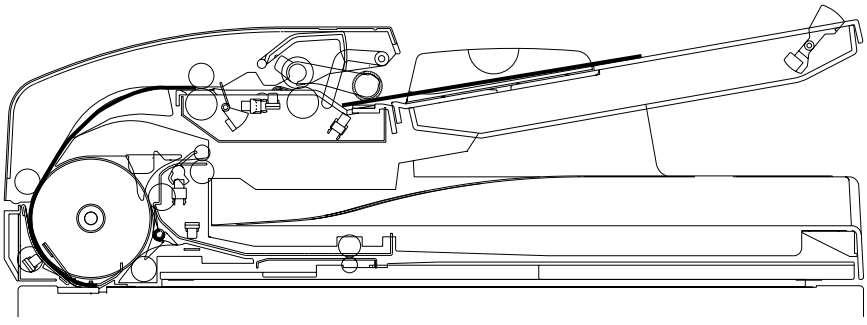
The feed motor starts to rotate in reverse and the read motor rotates forward to rotate the registration roller and the read roller while the original is waiting in front of the registration roller and read roller starts to be transported. The feed motor is stopped after the original length sensor is turned OFF.

(4) Original length sensor OFF → Completion of sending operation



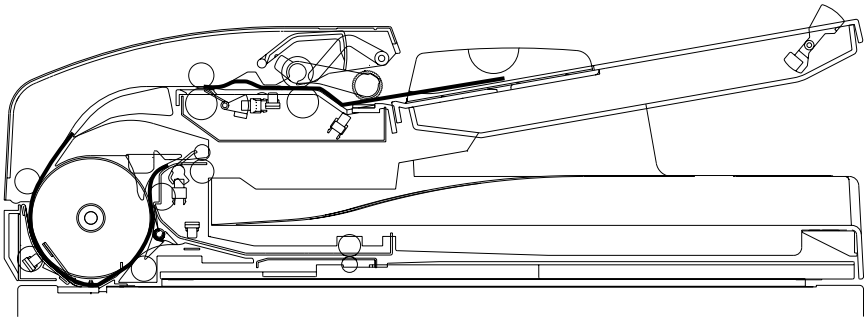
If the next original is waiting in the tray, the pickup roller is lowered after the feed motor which has started to rotate forward rotates for a certain number of pulses. (The pickup roller waits for the next pre-feeding operation in that lowered position.)
The read motor rotates for a certain number of pulses and stops after the read sensor is turned ON. (The leading edge of the original reaches the pre-scanning position.)

(5) Start of scanning operation → Start of pre-feeding operation for next original



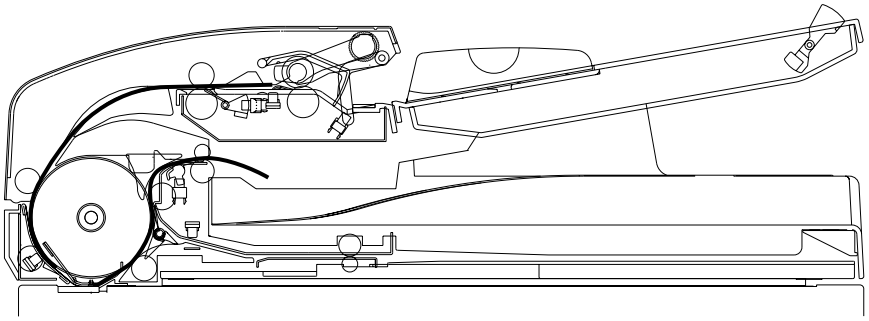
The original transport signal is sent from the main unit, and the read motor starts to rotate forward. The read roller and exit roller are rotated to start scanning the original. The feed motor rotates the pickup roller and feed roller after the trailing edge of the original has passed the registration roller to start the pre-feeding operation for the next original.

(6) Start of pre-feeding operation for next original → Completion of pre-feeding operation



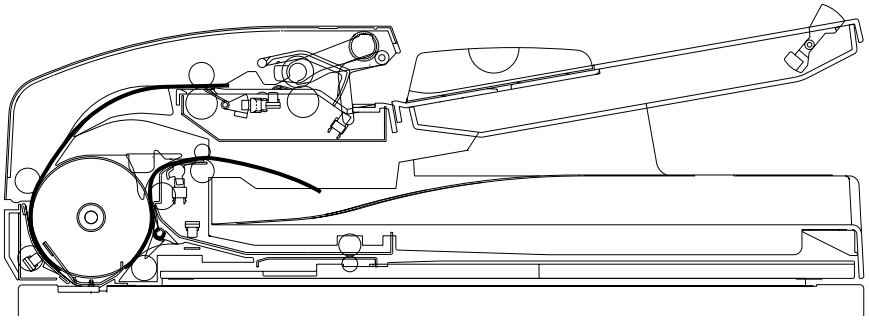
After the registration sensor has detected the leading edge of the original. The feed motor transports the original for a certain number of pulses, performs registration and stops.

(7) Start of feeding operation for next original → Completion of scanning operation



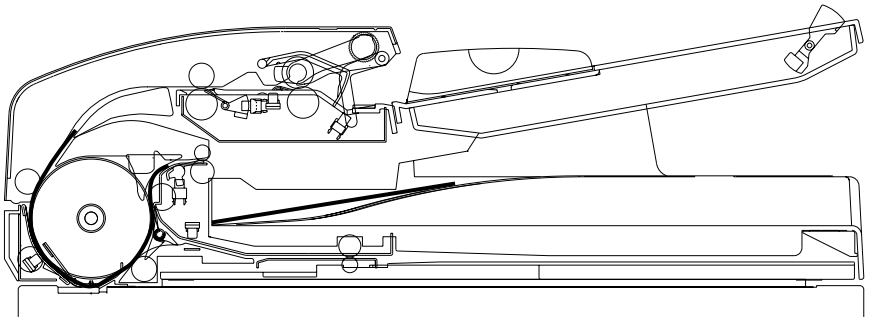
The feed motor starts to rotate in reverse, it rotates the registration roller to feed the next original waiting in front of the registration roller and read roller.
The original set signal is reset when the empty sensor is turned OFF. The feed motor is stopped after the original length sensor is turned OFF.
The scanning operation is completed when the trailing edge of the original being scanned has passed the scanning position.

(8) Completion of scanning operation → Completion of feeding operation for next original



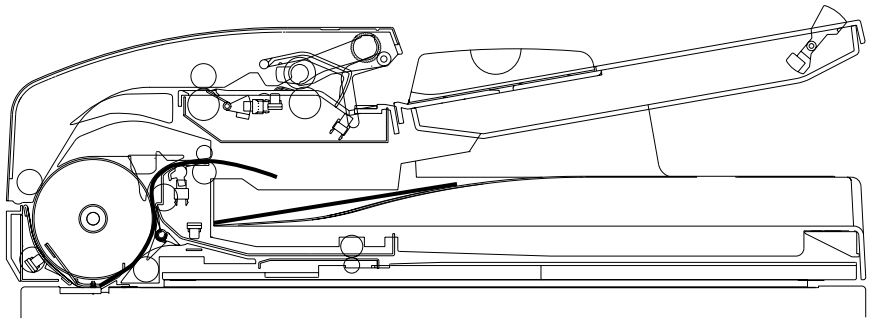
The read motor rotates for a certain number of pulses and stops after the read sensor is turned ON.
(The leading edge of the next original reaches the pre-scanning position.)

(9) Start of scanning operation for next original → Completion of original discharge



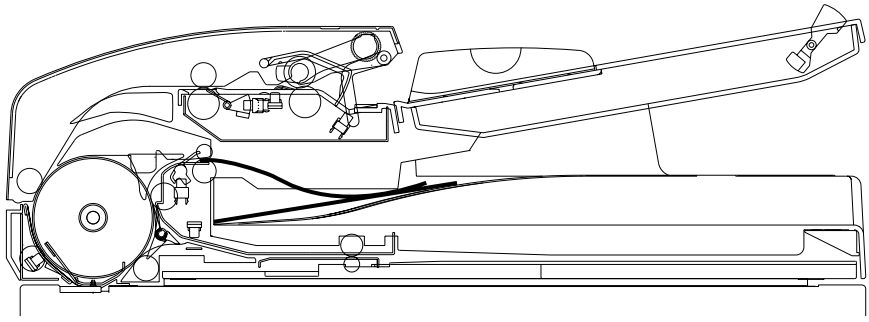
The read motor starts to rotate forward, it rotates the read roller and exit roller to start scanning the next original.
Original discharge is completed when the trailing edge of the original has passed the exit roller.

(10) Completion of scanning operation for next original



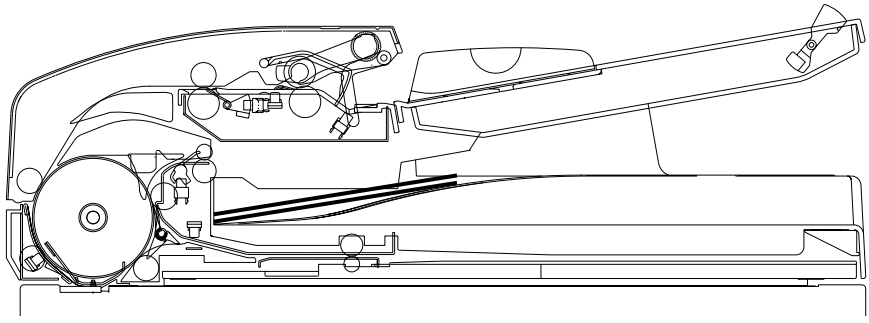
Scanning is completed when the trailing edge of the next original has passed the scanning position and the original is carried toward the receiving tray.

(11) Exit sensor OFF (next original)



After the exit sensor is turned OFF, the feed motor rotates for a certain number of pulses till the original is completely discharged.

(12) Completion of original discharge (next original)

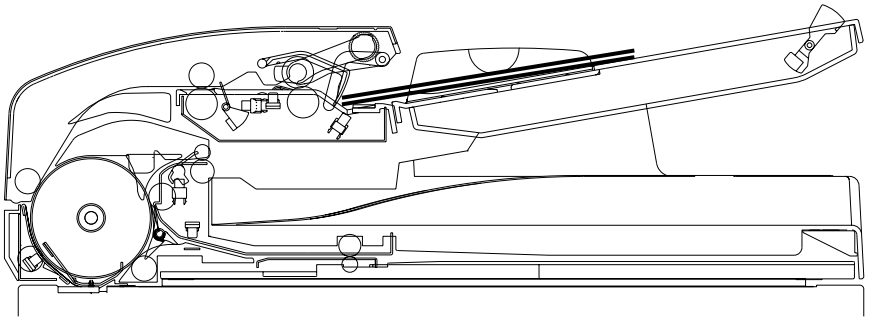


The read motor is stopped when the next original is completely discharged into the receiving tray.

5.2 Duplex Feeding

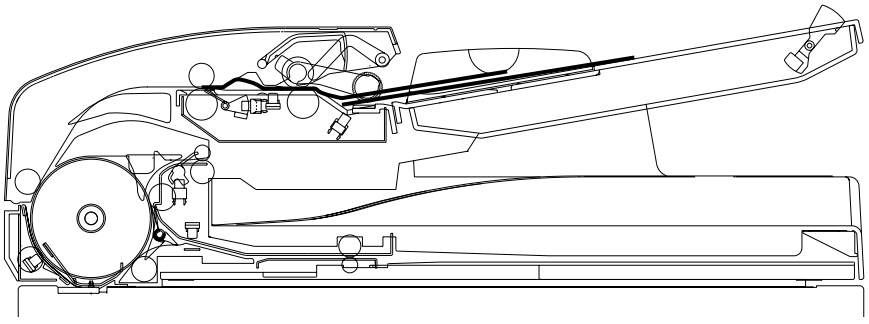
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(1) Setting original



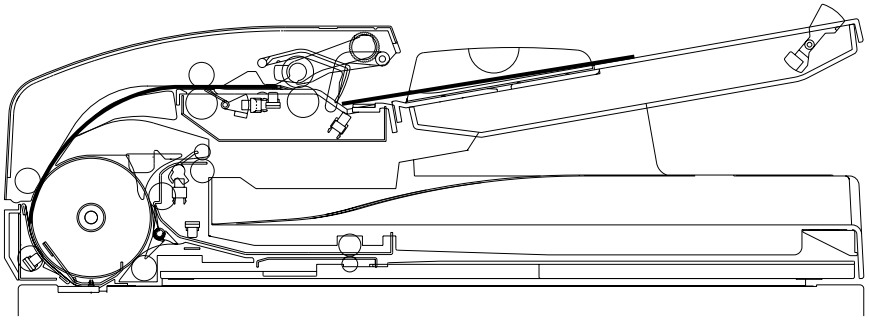
The original is set on the tray and the empty sensor is turned ON.
The original set signal becomes ON.

(2) Start of pre-feeding operation → Completion of pre-feeding operation



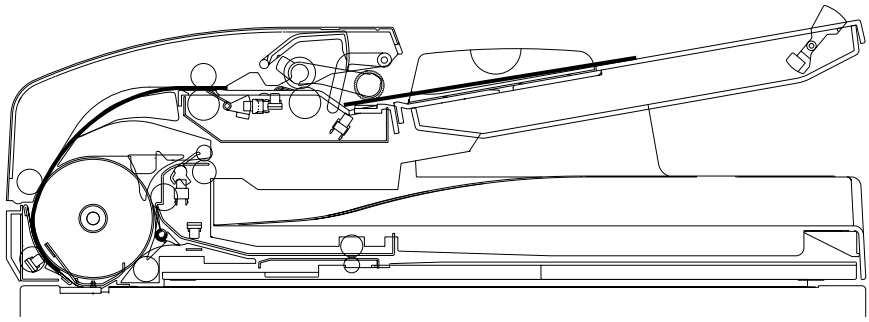
A feed signal is sent from the main unit, and the feed motor starts to rotate forward and rotates the pickup roller and feed roller to start the pre-feeding operation. After the registration sensor detected the leading edge of the original, the feed motor transports the original for a certain number of pulses, performs registration and stops.

(3) Start of feeding operation → Original length sensor OFF



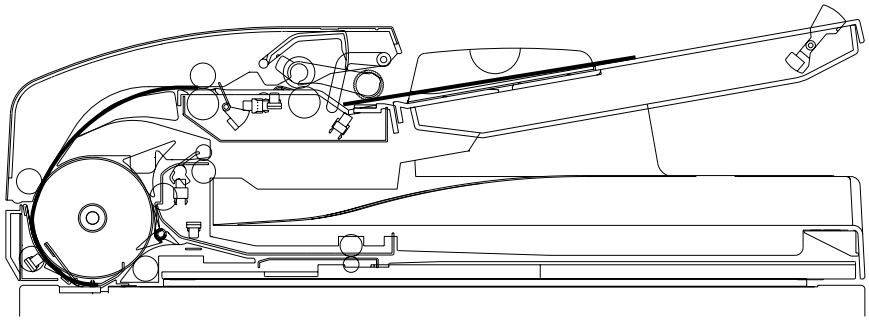
The feed motor starts to rotate in reverse and the read motor starts to rotate forward to start feeding the original waiting in front of the registration roller and the read roller. The feed motor is stopped after the original length sensor is turned OFF.

(4) Original length sensor OFF → Completion of feeding operation



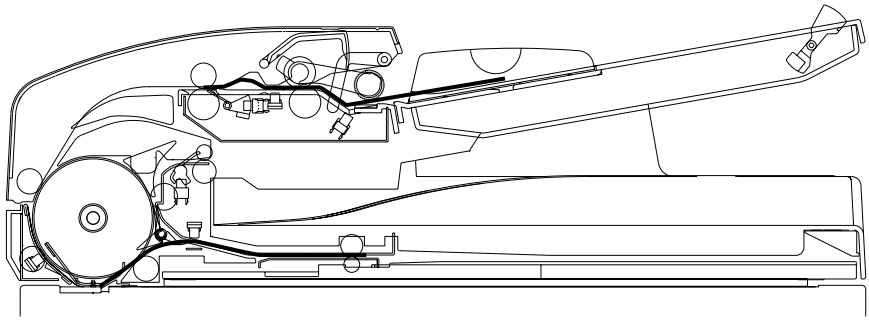
If the next original is waiting on the tray, the pickup roller is lowered after the feed motor started to rotate forward rotates for a certain number of pulse. (The pickup roller waits for next pre-feeding operation in that lowered position.)
The read motor rotates for a certain number of pulses and stops after the read sensor is turned ON. (The leading edge of the original reaches the pre-front side scanning position.)

(5) Start of front side scanning operation → Start of pre-feeding operation for next original



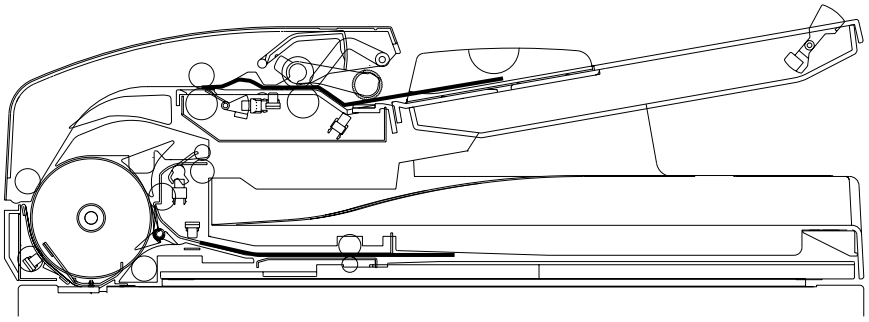
An original transport signal is sent from the main unit, and the read motor and reverse motor start to rotate forward. The read roller, exit roller and reverse roller are then rotated. The reverse flapper is switched toward the reverse position by turning ON the reverse solenoid and the front side of the original, starts to be scanned.
The feed motor rotates the pickup roller and feed roller after the trailing edge of the original has passed the registration roller, to start the pre-feeding operation for the next original.

(6) Start of pre-feeding operation for next original → Completion of pre-feeding operation → Completion of front-side scanning operation



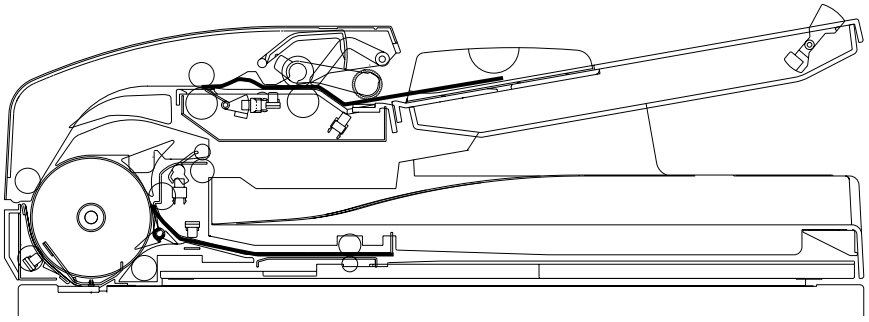
After the registration sensor has detected the leading edge of the next original, the feed motor transports the original for a certain number of pulses, performs registration and stops. Scanning of the front side of original is completed when the trailing edge of the original being scanned has passed the scanning position.

(7) Completion of transport operation for front side of original (original paused at reverse position)



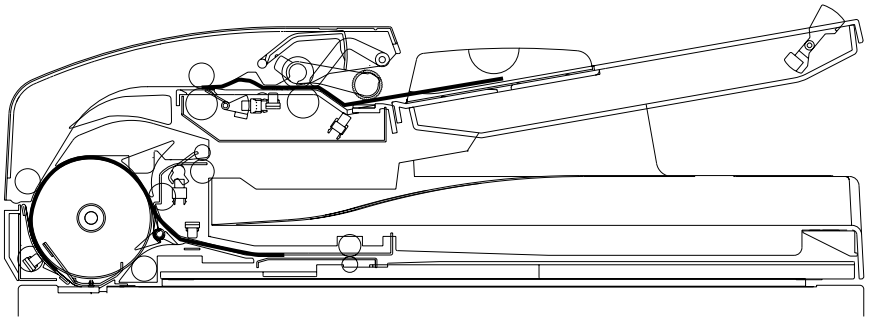
The read motor and reverse motor are stopped after the reverse sensor is turned OFF to complete transportation of the front side of the original.

(8) Start of back side registration operation → Completion of registration



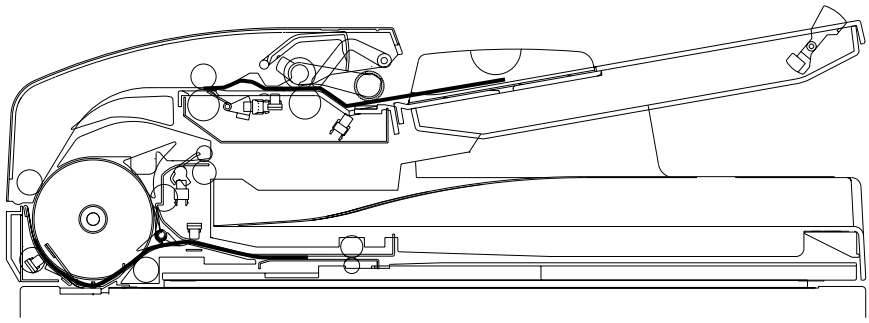
The reverse motor starts to rotate in reverse and rotates the reverse roller in reverse to start the registration operation for the back side of the original pausing at the reverse position.
After the reverse sensor has detected the trailing edge of the original, the feed motor transports the original for a certain number of pulses, performs registration and stops.

(9) Start of reverse feeding operation → Completion of reverse feeding operation



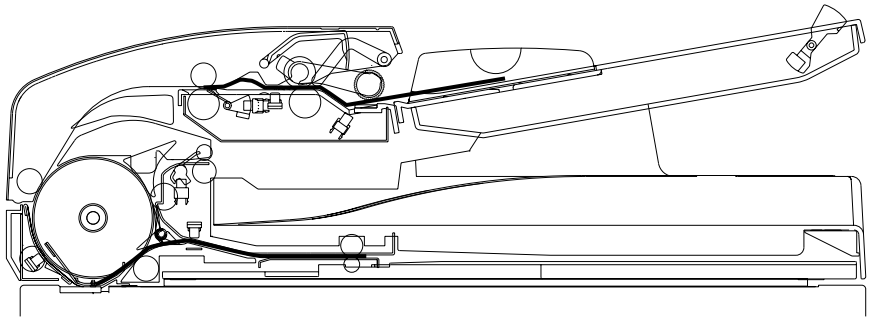
The read motor starts to rotate forward and the reverse motor starts to rotate in reverse. The read roller, exit roller and reverse roller are rotated to start the reverse feeding operation for the original waiting at the back side registration position. The read motor and reverse motor rotate for a certain number of pulses and stop after the read sensor is turned ON. (The leading edge of the original reaches the pre-back side scanning position.)

(10) Start of back side scanning operation → Original passing reverse position



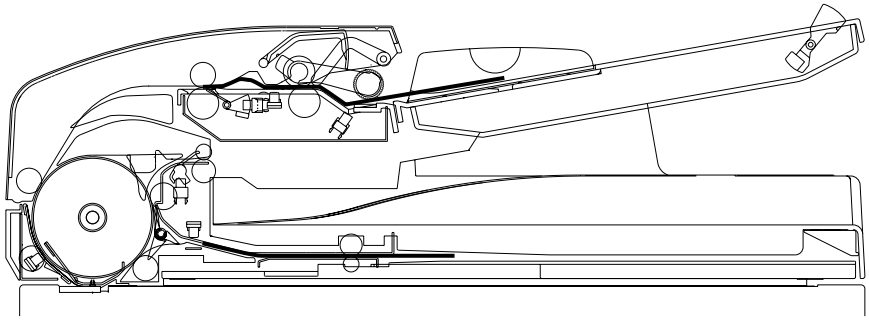
An original transport signal is sent from the main unit, and the read motor starts to rotate forward and reverse motor starts its reverse rotation activated by read rotate in reverse to rotate the read roller, exit roller and reverse roller. The reverse flapper is switched toward the reverse position by turning ON the reverse solenoid to start scanning the back side of the original.
The reversal motor rotates for a certain number of pulses and stops after the trailing edge of the original has passed the reverse roller.

(11) Original passing reverse position → Completion of back side scanning operation



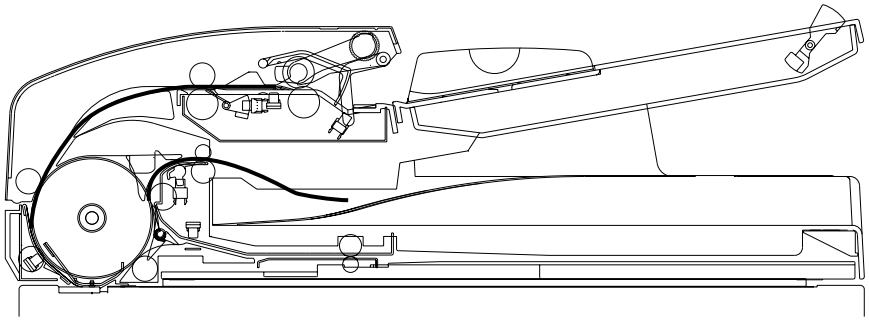
The reversal motor starts to rotate forward and rotates the reverse roller to be ready for the leading edge of the original to come into the reverse position.
The scanning operation for the back side of the original is completed when the trailing edge of the original has passed the scanning position.

(12) Completion of transport operation for back side of original (original paused at reverse position)



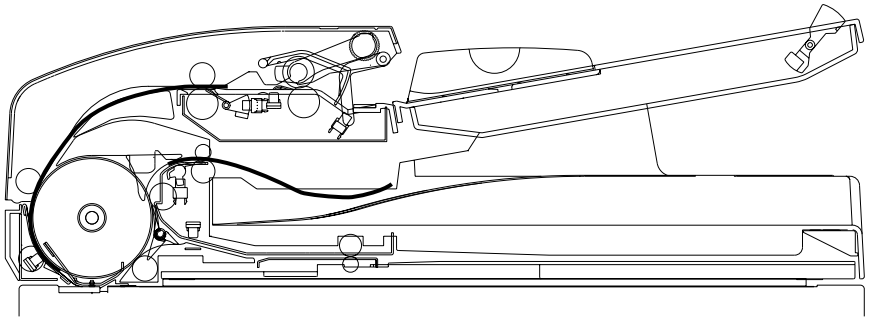
The read motor and reverse motor are stopped after the reverse sensor is turned OFF to complete transportation of the back side of the original.
The reverse flapper is switched to the exit side by turning OFF the reverse solenoid.

(13) Start of reverse discharge → Start of feeding operation for next original → Original length sensor OFF



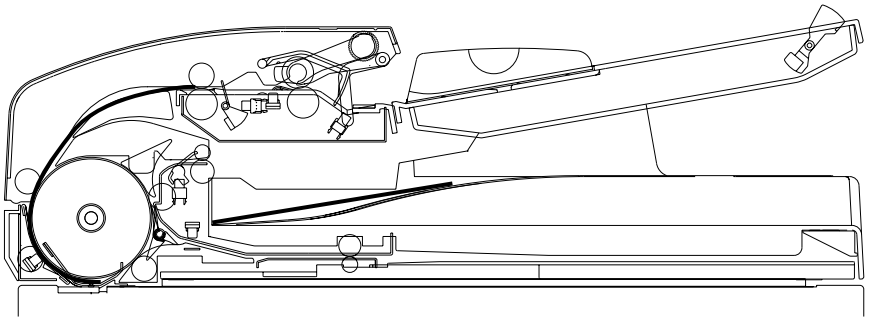
The read motor starts to rotate forward and the reverse motor starts to rotate in reverse. The read roller, exit roller and reverse roller are rotated to start reverse discharge of the original paused at the reverse position. The feed motor rotates for a certain number of pulses after the reverse sensor is turned ON. It then starts to rotate in reverse to rotate the registration roller, and starts the feeding operation for the next original waiting in front of the read roller and registration roller.
The original set signal is reset when the empty sensor is turned OFF.
The reverse motor is stopped after the reverse sensor is turned OFF.
The feed motor is stopped after the original length sensor is turned OFF.

(14) Original length sensor OFF → Completion of feeding operation for next original



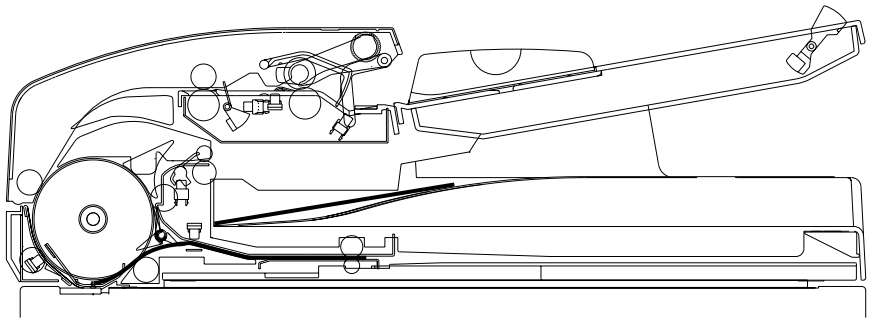
The read motor rotates for a certain number of pulses and stops after the read sensor is turned ON. (The leading edge of the next original reaches the pre-scanning position for front side of original.)

(15) Start of front side scanning operation pre-scanning position for front side of original → Completion of reverse discharge operation



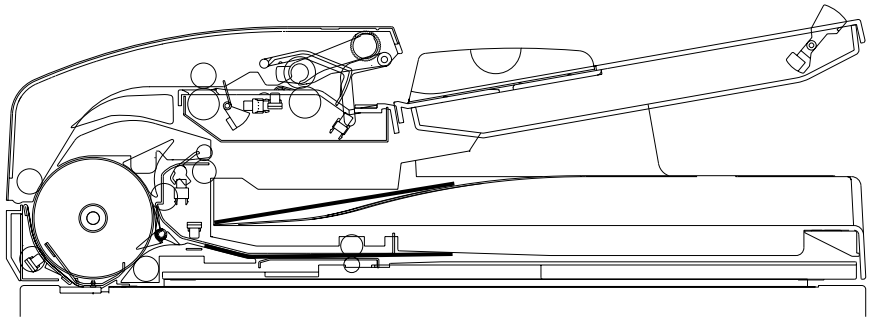
The read motor and reverse motor start to rotate forward to rotate the read roller, exit roller and reverse roller.
The reverse flapper is switched toward the reverse position by turning ON the reverse solenoid to start the scanning of the front side of next original.
The reverse discharge operation is completed when the trailing edge of the original has passed the exit roller.

(16) Completion of front side scanning operation



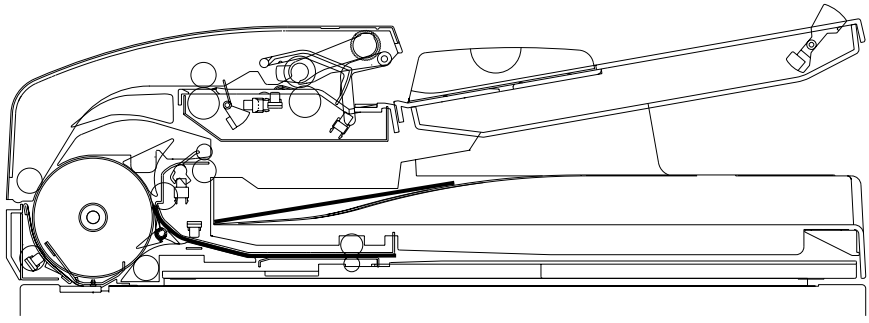
The scanning operation for the front side of the original is completed when the trailing edge of next original has passed the scanning position.

(17) Completion of transport operation for the front side of next original (original paused at reverse position)



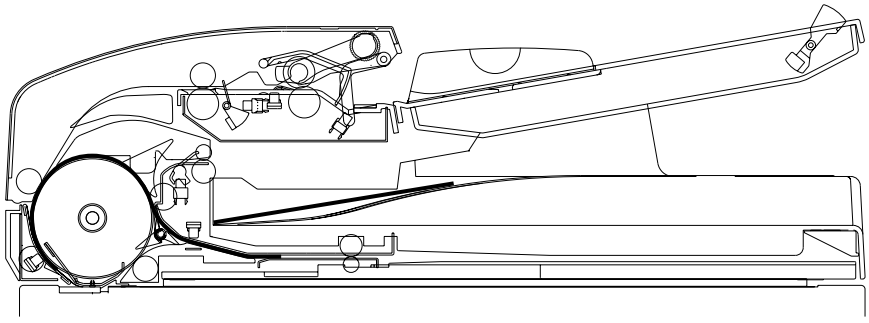
The read motor and reverse motor are stopped when the reverse sensor is turned OFF to complete the transport operation for the front side of the original.

(18) Start of back side registration → Completion of back side registration



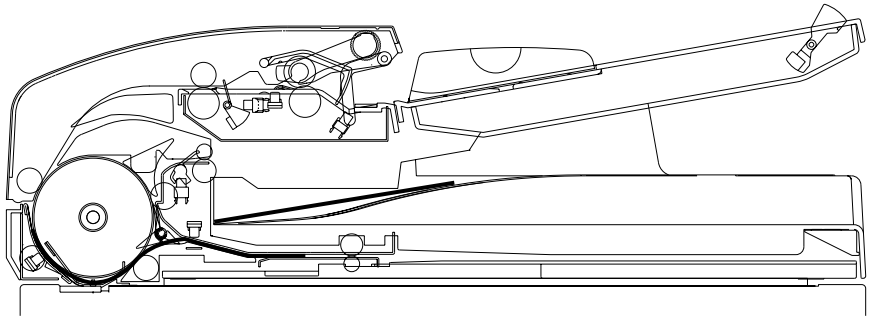
The reverse motor starts to rotate in reverse and the reverse roller rotates in reverse to start the registration of the next original paused at the reverse position.
After the reverse sensor has detected the leading edge of the original, the reverse motor transports the original for a certain number of pulses, performs registration and stops.

(19) Start of reverse feeding operation for next original → Completion of reverse feeding operation



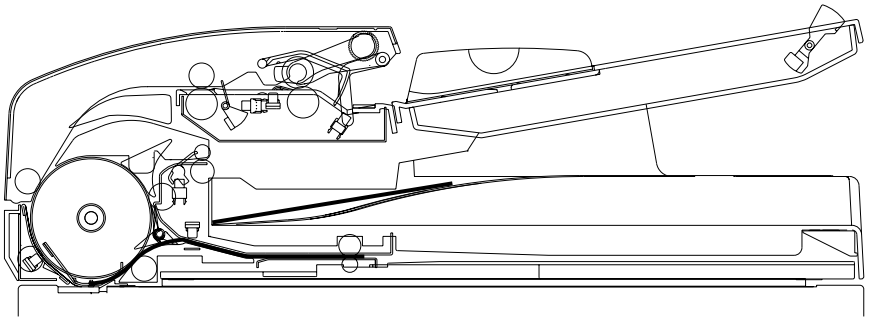
The read motor starts to rotate forward and the revese motor starts to rotate in reverse. The read roller, exit roller and reverse roller are rotated to start the reverse feeding operation for the next original waiting at the back side registration position. The read motor and reverse motor rotate for a certain number of pulses and stop after the read sensor has been turned ON.
(The leading edge of next original reaches the pre-scanning position for the back side of the original.)

(20) Start of back side scanning operation → Original passing reverse position



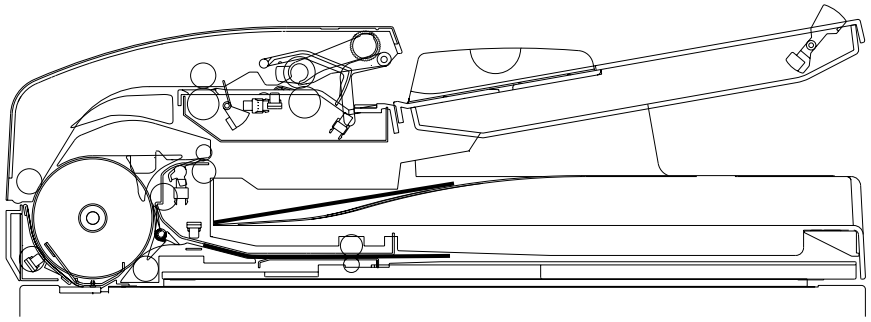
The read motor starts to rotate forward and the reverse motor starts to rotate in reverse to rotate the read roller, exit roller and reverse roller. The reverse flapper is switched toward the reverse position by turning ON the reverse solenoid to start scanning the back side of the next original.
The reverse motor rotates for a certain number of pulses and stops after the trailing edge of the next original has passed the reverse roller.

(21) Next original passing reverse position → Completion of back side scanning



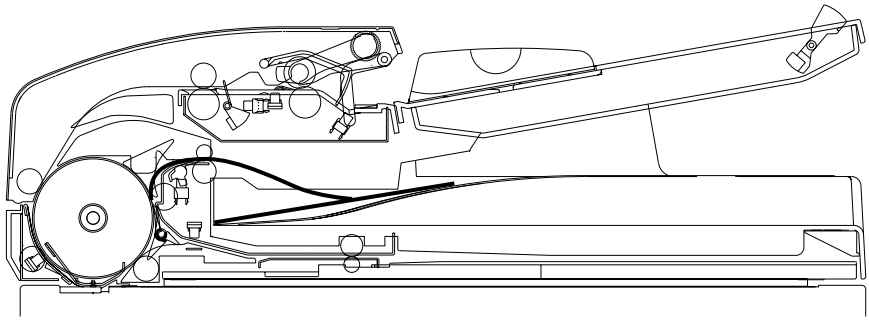
The reverse motor starts to rotate forward and the reverse roller is rotated to be ready for the leading edge of the next original to come into the reverse position.
The scanning of the back side of the original is completed when the trailing edge of the next original has passed the scanning position.

(22) Completion of transport operation for back side of next original (original paused at reverse position)



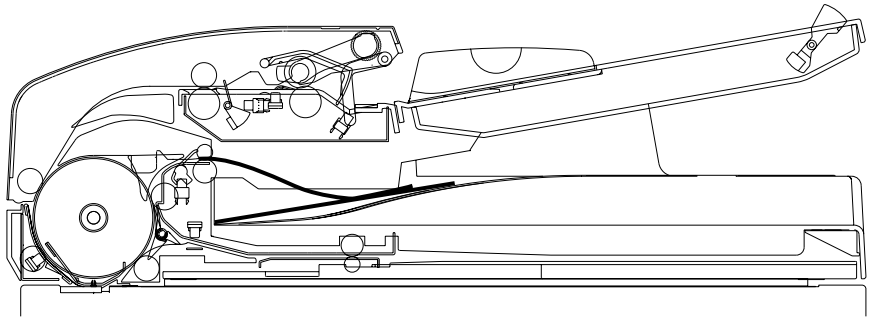
The read motor and reverse motor stop after the reverse sensor is turned OFF to complete transportation of the back side of the original. The reverse flapper is switched to the exit side by turning OFF the reverse solenoid.

(23) Start of reverse discharge operation of next original → Start of feeding operation for next original → Original length sensor OFF



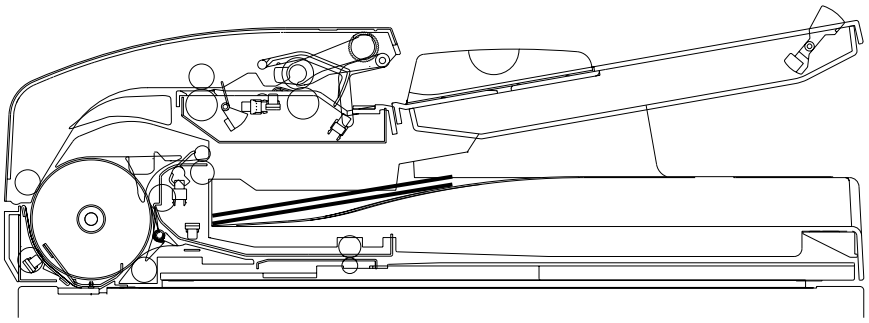
The read motor starts to rotate forward and the reverse motor starts to rotate in reverse. The read roller, exit roller and reverse roller are rotated to start the reverse discharge of the next original paused at the reverse position. The reverse motor stops after the reverse sensor has been turned OFF.

(24) Exit sensor OFF



After the exit sensor has been turned OFF, read motor rotates for a certain number of pulses till the next original has completely discharge.

(25) Completion of reverse discharge operation for next original

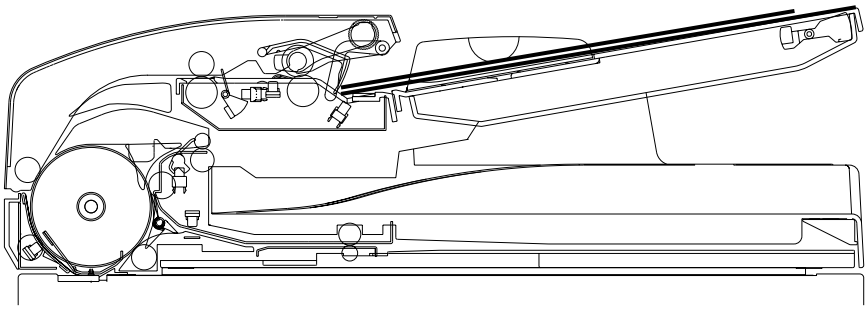


The read motor is stopped when the next original is completely discharged into the original receiving tray to terminate the reverse discharge operation.

5.3 Single Side Feeding (for Mixed Sized Originals)

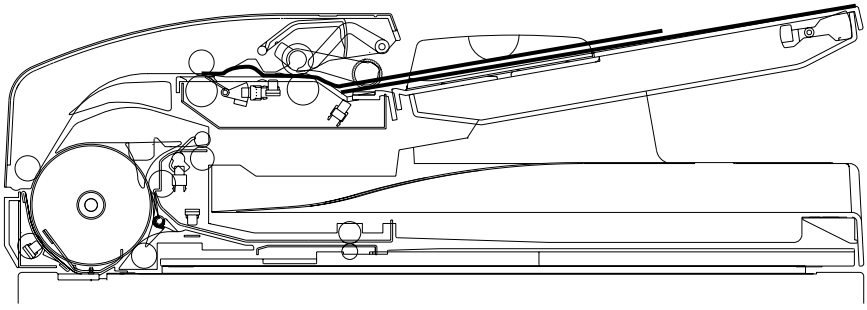
(Mixture of A4-R and FOLIO (LTR/LG), reproduction ratio 100%)

(1) Setting original



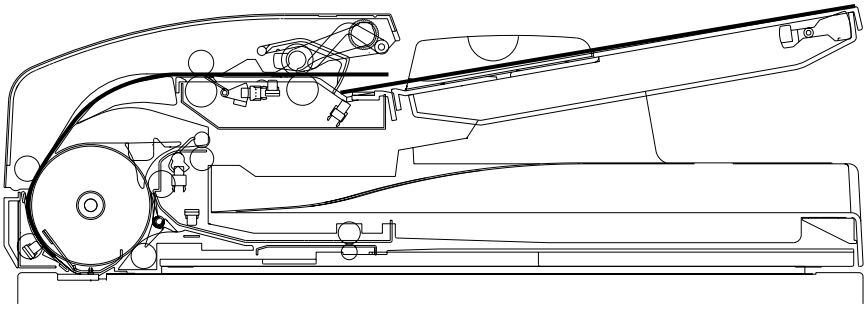
An original is set on the tray and the empty sensor is turned ON.
The original set signal becomes ON.

(2) Start of pre-feeding operation → Completion of pre-feeding operation



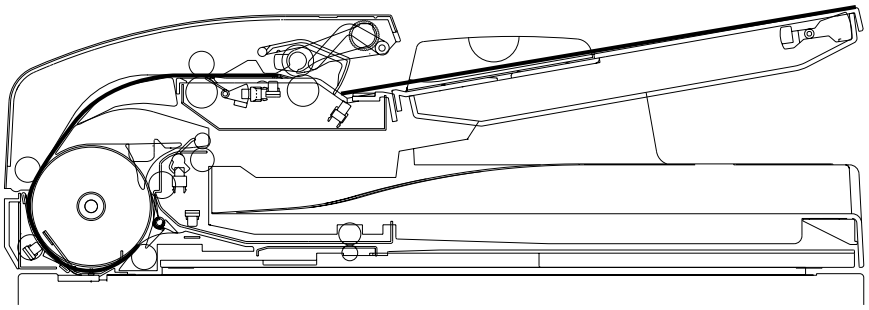
The feed signal is sent from the main unit, and the feed motor starts to rotate forward. The pickup roller and feed roller are rotated to start the pre-feeding operation. After the registration sensor has detected the leading edge of the original, the feed motor transports the original for a certain number of pulses, performs registration and stops.

(3) Start of feeding operation → Completion of feeding operation



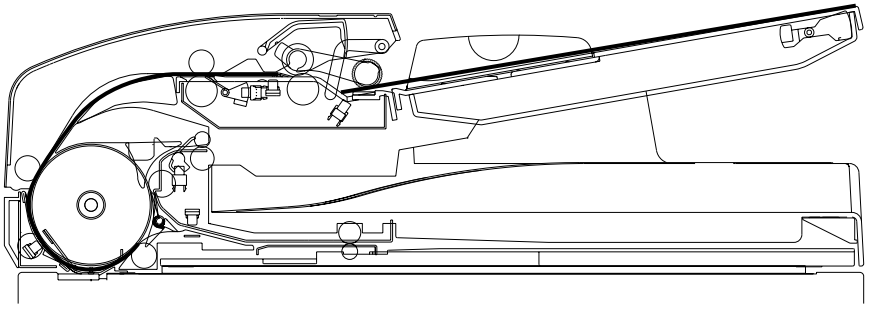
The feed motor starts to rotate in reverse and the read motor starts to rotate forward. The registration roller and read roller, exit roller are rotated to start feeding the original waiting in front of the registration roller and read roller.
The feed motor stops and the read motor rotates for a certain number of pulses and stops when the read sensor is turned ON. (The leading edge of the original reaches the pre-scanning position)

(4) Start of transport operation → Original length sensor OFF



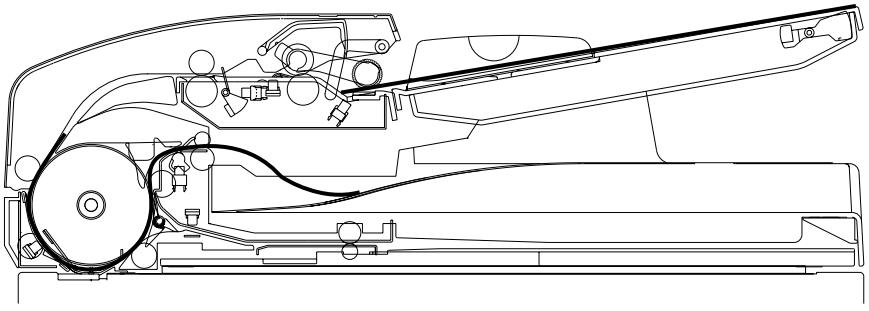
The read motor starts to rotate forward and rotates the read roller and exit roller to start transportation of the original paused at the scanning position. (The original is transported to determine its lengthwise size along the feeding direction.)

(5) Original length sensor OFF → Completion of downswing operation of pickup roller



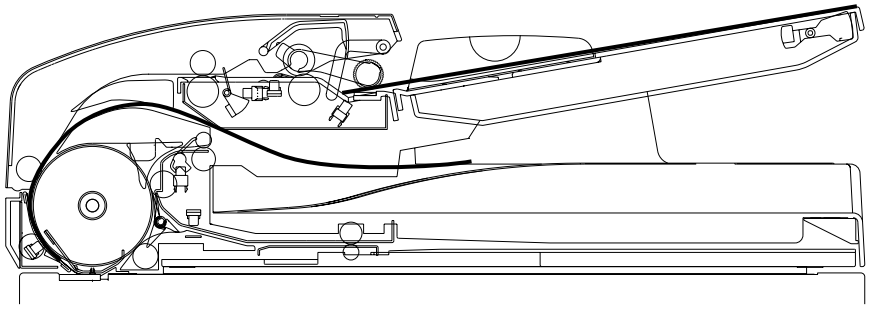
The pickup roller is lowered after the feed motor has started to rotate forward and has rotated for a certain number of pulses. (The pickup roller waits for the next pre-feeding operation in the lowered position.)

(6) Completion of downswing operation of pickup roller → Pre-reverse position for mixed sized original



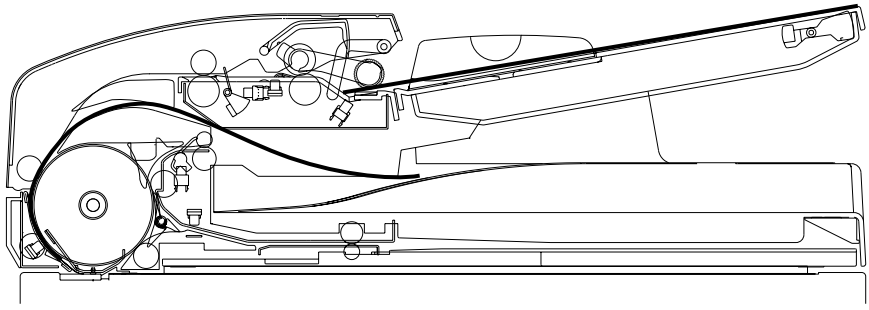
The read motor rotates for a certain number of pulse and stops after the original length sensor has been turned OFF. (The trailing edge of the original reaches the pre-reverse position.)

(7) Start of reverse operation for mixed sized originals → Completion of reverse operation



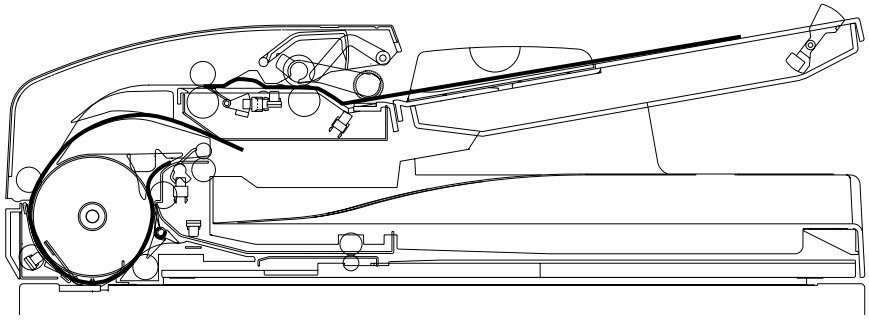
The gate for the reverse path is switched after a certain period of time. The read motor starts to rotate in reverse and rotates the read roller and exit roller in reverse to start the reverse operation.
The read motor rotates for a certain number of pulses and stops after the read sensor has been turned OFF.

(8) Start of transportation → Completion of transportation



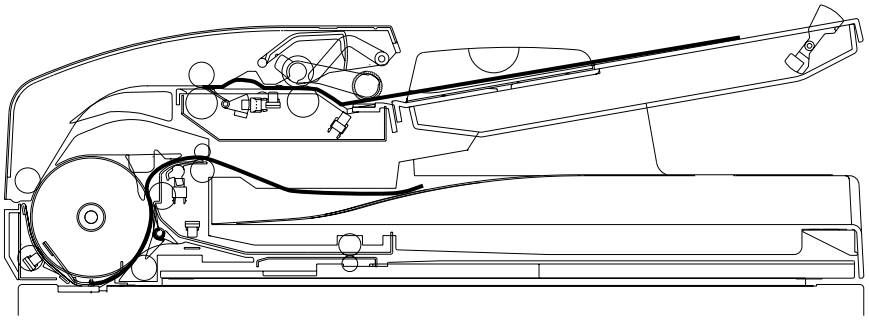
The read motor starts to rotate forward and rotates the read roller and exit roller to start the transportation of the original to the pre-scanning position.
The read motor rotates for a certain number of pulses and stops after the read sensor has been turned ON. (The leading edge of the original reaches the pre-scanning position.)

(9) Start of scanning operation → Start of pre-feeding operation for next original → Completion of pre-feeding operation



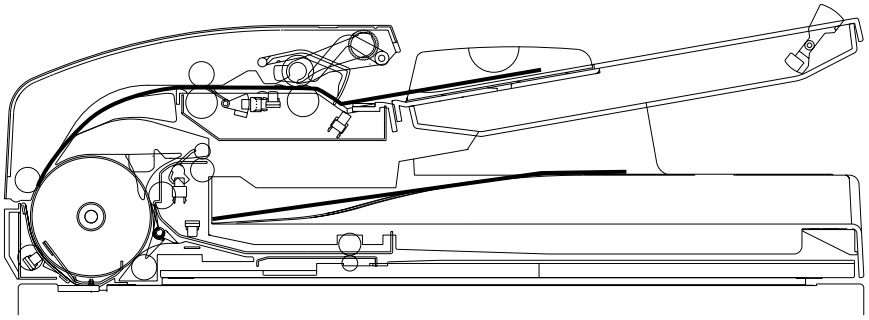
A transport signal is sent from the main unit, and the read motor starts to rotate forward. The read roller and exit roller is rotated to start scanning the original. The feed motor rotates pickup roller and feed roller to start the pre-feeding operation for the next original.
After the registration sensor has detected the leading edge of the original, the feed motor transports the original for a certain number of pulses, performs registration and stops.

(10) Completion of scanning operation



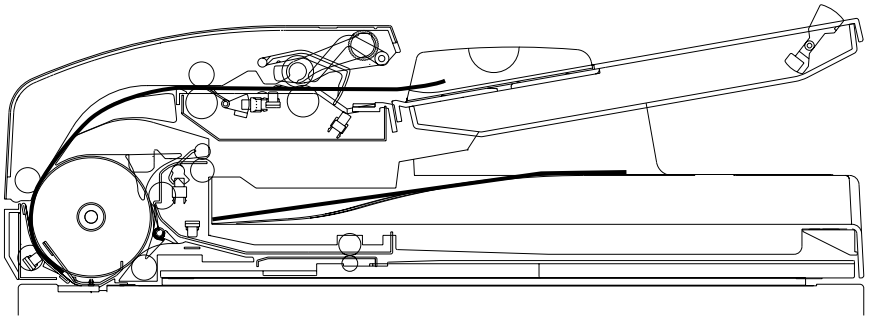
Scanning is completed when the trailing edge of the original has passed the scanning position.

(11) Exit sensor OFF → Start of feeding operation for next original



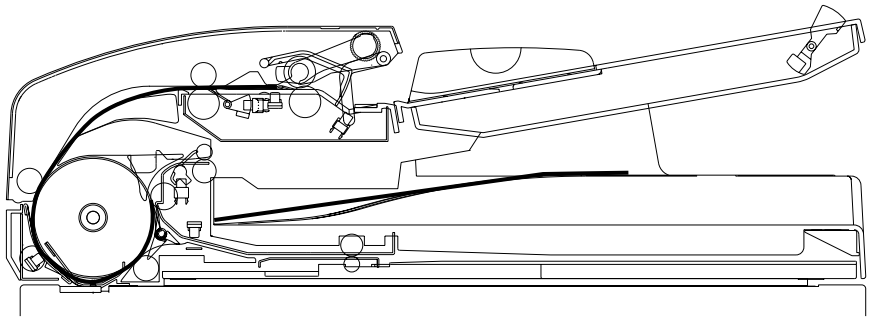
The feed motor starts to rotate in reverse after the exit sensor has been turned OFF and rotates the registration roller to start feeding the next original waiting in front of the registration roller and read roller.
The original discharge operation is completed when the trailing edge of the original has passed the exit roller.

(12) Completion of feeding operation for next original



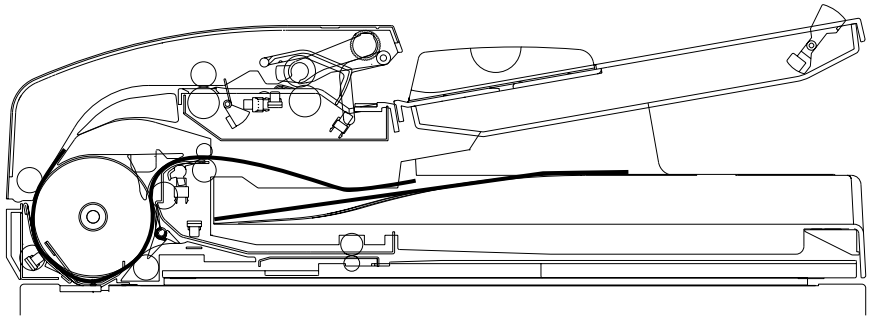
The feed motor stops and the read motor rotates for a certain number of pulses and stops when the read sensor has been turned ON. (The leading edge of the next original reaches the pre-scanning position.)

(13) Start of transportation of next original → Original length sensor OFF



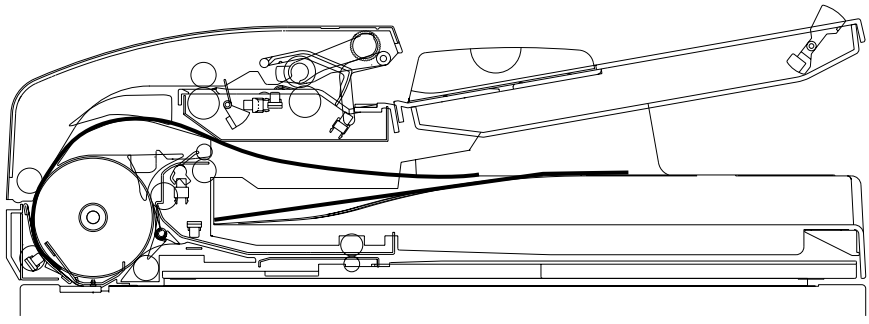
The read motor starts to rotate forward and rotates the read roller and exit roller to transport the next original paused at the scanning position.
(The original is transported to determine its lengthwise size along the feeding direction.)
The original set signal is reset when the empty sensor is turned OFF.

(14) Original length sensor OFF (for next original) → Pre-reverse position for mixed sized originals



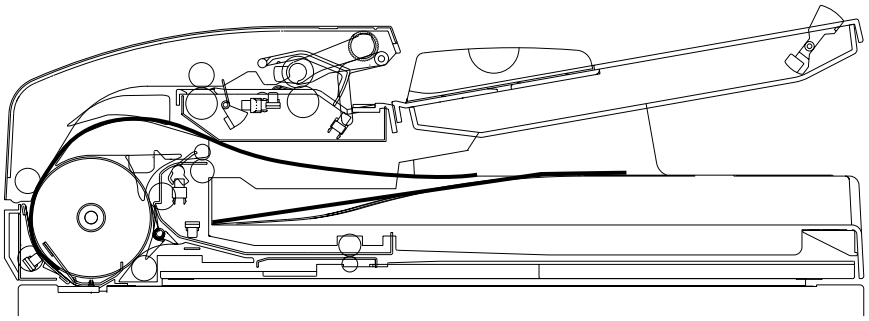
The read motor rotates for a certain number of pulses and stops after the original length sensor has been turned OFF. (The trailing edge of the next original reaches the pre-reverse position.)

(15) Start of reverse operation for the next mixed sized original → Completion of reverse operation



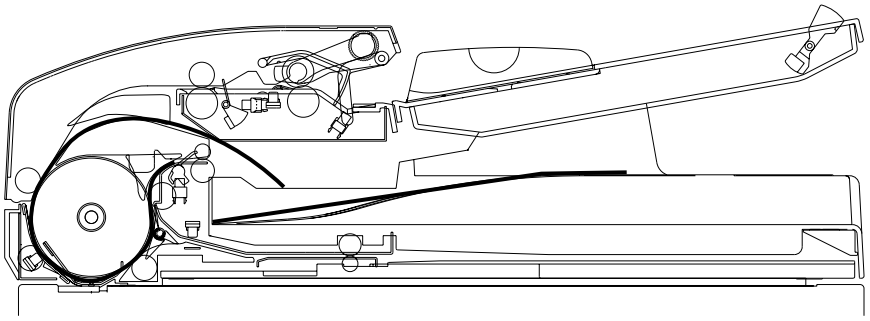
The gate for the reverse path is switched after a certain period of time. The read motor starts to rotate in reverse and rotates the read roller and exit roller in reverse to start the reverse operation.
The read motor rotates for a certain number of pulses and stops after the read sensor has been turned OFF.

(16) Start of transportation of next original → Completion of transportation



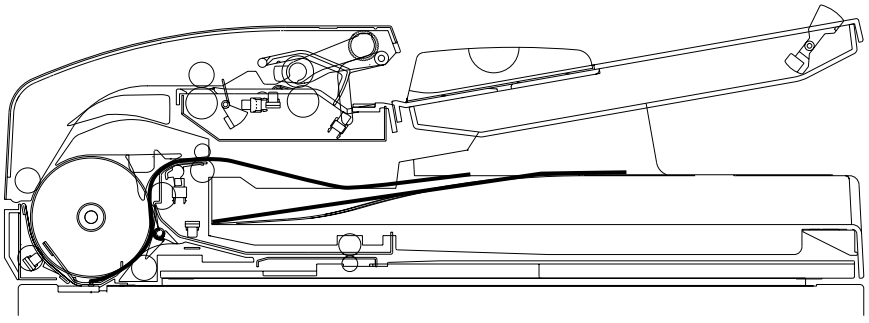
The read motor starts to rotate forward and rotates the read roller and exit roller to start the transportation of the next original to the pre-scanning position.
The read motor rotates for a certain number of pulses and stops after the read sensor has been turned ON. (The leading edge of the next original reaches the pre-scanning position.)

(17) Start of scanning operation for next original



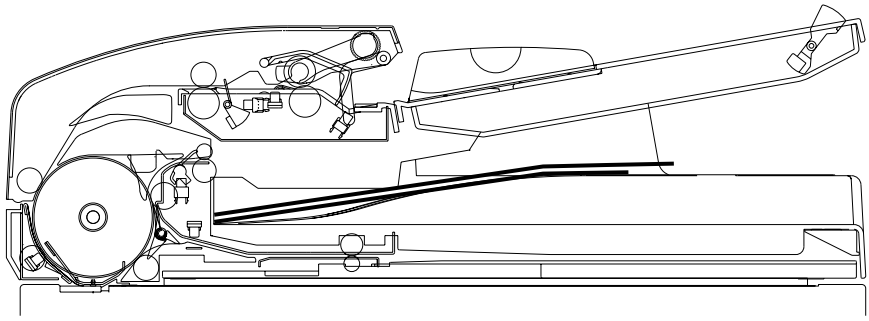
A transport signal is sent from the main unit and the read motor starts to rotate forward. The read roller and exit roller is rotated to start scanning the next original.

(18) Completion of scanning operation for next original



Scanning is completed when the trailing edge of the next original has passed the scanning position.

(19) Exit sensor OFF → Completion of discharge operation for next original



After the exit sensor has been turned OFF, the read motor rotates for a certain number of pulses till the next original is completely discharge into the tray. The read motor is stopped when the next original is completely discharge into the receiving tray to complete the original discharge operation.

None: (Duplex feeding of mixed-sized originals)

The reverse mechanism detects the size of the mixed-sized originals consisting of A4-R/FOLIO or LT-R/LG, then the scanning operation is started.

6. JAMMING

6.1 Feeding Jam

(1) Original not reaching registration sensor

- Jam detection:
  Jam detection is performed after the feed motor starts to rotate forward to start the pre-feeding operation, until the leading edge of the original has reaches the registration sensor.
- Jam timer setting
  The setting value of thrice the amount of time after the original turns on the empty sensor till it reaches the registration sensor is set for the jam timer.

6.2 Transport Jam

(1) Original jamming at registration sensor

- Jam detection for single-sided/duplex originals:
  Jam detection is performed after the read motor starts to rotate forward to start scanning the front side of the original, until the trailing edge of the original has passed the registration sensor.
- Jam pulse setting
  [In the normal mode]
  Assume that the longest original (LD) is at the pre-scanning position. The setting value of an added +30mm to the distance till the trailing edge of the original has passed the registration sensor is set as the jam pulse.
  [In the length is irregularly long mode]
  Assume then the longest original (original length approx. 1m) is at the pre-scanning position. The setting value of an added +50mm to the distance till the trailing edge of the original has passed the registration sensor is set as the jam pulse.

(2) Original not reaching read sensor (1)

- Jam detection for single-sided/duplex originals:
  Jam detection is performed after the leading edge of the original reaches the first small roller of the read roller during the pre-feeding operation, until it has reached the read sensor.
- Jam pulse setting
  The setting value of an added +60mm to the distance from the first small roller of the read roller to the position where the read sensor is turned ON is set as the jam pulse.

(3) Original not reaching read sensor (2)

- Jam detection for duplex originals:
  Jam detection is performed after the read motor starts to rotate forward to start switchback feeding, until the leading edge of the original has reached the read sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance from the back side registration position (= the position where the 4th small roller of the read sensor is located) till the read sensor is turned ON is set as the jam pulse.

(4) Original jamming at read sensor (1)

- Jam detection for single-sided/duplex originals:
  Jam detection is performed after the trailing edge of the original has passed the registration sensor during the pre-feeding operation, until it has passed the read sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance from the position where the registration sensor is turned OFF till the read sensor is turned OFF is set as the jam pulse.

(5) Original jamming at read sensor (2)

- Jam detection for duplex originals:
  Jam detection is performed after the original waiting at the back side registration position reaches the read sensor during the reverse feeding operation, until the trailing edge of the original has passed the read sensor during scanning.
- Jam pulse setting
  The setting value of an added +30mm to the distance till the longest original (LD) passes the read sensor is set as the jam pulse.

(6) Original not reaching exit sensor (1)

- Jam detection for single-sided/duplex originals:
  Jam detection is performed after the read motor starts to rotate forward to start scanning the original waiting at the pre-front side scanning position, until the leading edge of the original has reached the exit sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance from the pre-scanning position till the exit sensor is turned ON is set as the jam pulse.

(7) Original not reaching reverse sensor (1)

- Jam detection for duplex originals:
  Jam detection is performed after the read motor starts to rotate forward to start scanning the front side of the original, until the leading edge of the original has reached the reverse sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance from the pre-scanning position till the reverse sensor is turned ON is set as the jam pulse.

6.3 Exit Jam

(1) Original jamming at exit sensor (1)

- Jam detection for duplex originals:
  Jam detection is performed after the trailing edge of original paused at the reverse position has passed the reverse sensor during the reverse operation, until it has passed the exit sensor.
- Jam pulse setting
  The setting value of an added +60mm to the distance from the position where the reverse sensor is turned OFF till the exit sensor is turned OFF is set as the jam pulse.

(2) Original jamming at exit sensor (2)

- Jam detection for single-sided/duplex originals:
  Jam detection is performed after the trailing edge of the original waiting at the pre-front side scanning position has passed the read sensor during the scanning operation, until it has passed the exit sensor.
- Jam pulse setting
  The setting value of an added +60mm to the distance from the position where the read sensor is turned OFF till the exit sensor is turned OFF is set as the jam pulse.

6.4 Reversing Jam

(1) Original not reaching exit sensor (2)

- Jam detection for duplex originals:
  Jam detection is performed after the leading edge of the original paused at the reverse position has reached the reverse sensor during the reverse discharge operation, until it has reached the exit sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance from the position where the reverse sensor is turned ON till the exit sensor is turned ON is set as the jam pulse.

(2) Original not reaching reverse sensor (2)

- Jam detection for duplex originals:
  Jam detection is performed after reverse motor starts rotating in reverse to start the reverse operation for the original paused at the reverse position, until the leading edge of the original has reached the reverse sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance from the pre-reverse position till the reverse sensor is turned ON is set as the jam pulse.

(3) Original jamming at reverse sensor (1)

- Jam detection for duplex originals:
  Jam detection is performed after the trailing edge of the original being scanned has passed the read sensor, until it has passed the reverse sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance from the position where the read sensor is turned OFF till the reverse sensor is turned OFF is set as the jam pulse.

(4) Original jamming at reverse sensor (2)

- Jam detection for duplex originals:
  Jam detection is performed after the leading edge of the original paused at the reverse position has reached the reverse sensor during the reverse discharge operation, until the trailing edge of the original has passed the reverse sensor.
- Jam pulse setting
  The setting value of an added +30mm to the distance till the longest original (LD) passes the reverse sensor is set as the jam pulse.

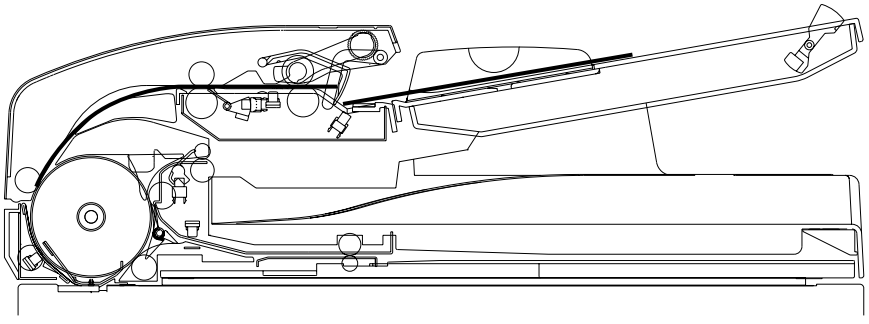
7. ORIGINAL SIZE DETECTION

Original size is detected when it is sent out of the tray, and informed (unit:mm) to the copier before the start of the scanning of the original.

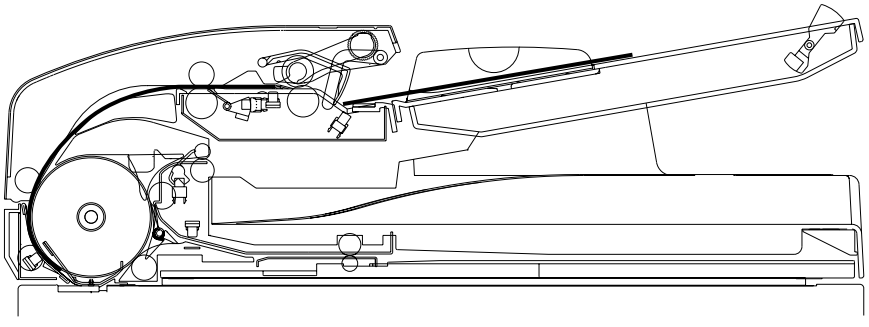
7.1 Method of Original Size Detection (for Standard Sized Originals)

1) Width
   When the original waiting at the pre-feeding position has started to be fed and its leading edge reaches the first small roller of the read roller, its width of the original is detected using the original width sensors 1 and 3 and the size data are saved in EPROM.
2) Size along feeding direction
   When the trailing edge of the original (original size: LT of smaller) is detected by the original length sensor before the read sensor detects the leading edge of the original, or when the original length sensor has already detected the original (original size: B5-R or larger) when the read sensor detects the leading edge of the original, the original size along the feeding direction is assumed with the width size data saved in EPROM, then the size data are sent to the copier. At this time, the date for the size along the feeding direction are sent first.
   With an original whose length is irregularly long, if the size along the feeding direction is not determined by the scanning operation is started, the read motor counts the of distance pulses after the scanning operation is started till the trailing edge of the original is detected by original length sensor. Then the motor sends the measured value to the copier.

Original size: LT or smaller

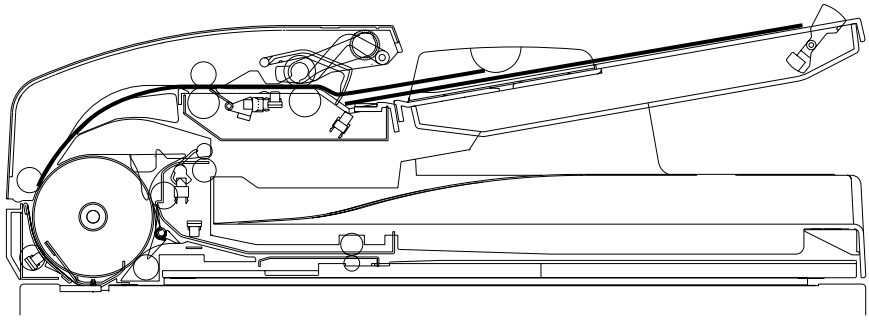


1) Timing to determine width

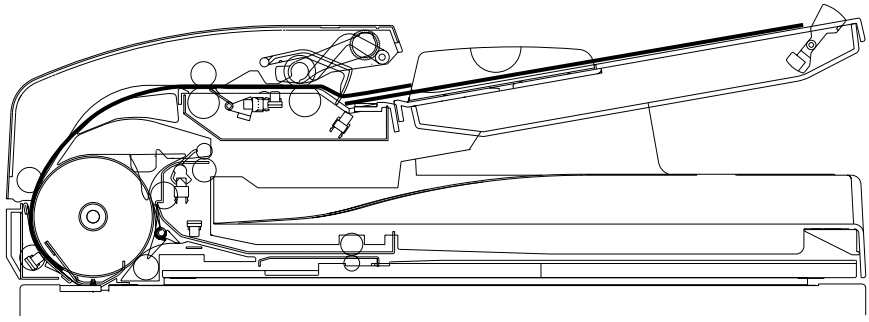


2) Timing to determine size along feeding direction

Size: B5-R or larger



1) Timing to determine width



2) Timing to determine size along feeding direction

7.2 Relation between Status of Sensor and Original Size (for Standard Sized Originals)

[For JE]

(mm)

Original width sensor 1	Original width sensor 2	Original width sensor 3	Tray sensor	Original length sensor	Original size data (Widthwise direction)	Original size data (Feeding direction)	Original size detected
OFF	OFF	OFF	ON/OFF	OFF	148	210	A5R
OFF	OFF	OFF	ON/OFF	ON	182	257	B5R
OFF	OFF	ON	ON/OFF	OFF	297	210	A4
OFF	OFF	ON	OFF	ON	210	297	A4R
OFF	OFF	ON	ON	ON	210	330	FOLIO
OFF	ON	ON/OFF	ON/OFF	OFF	257	182	B5
OFF	ON	ON/OFF	ON/OFF	ON	257	364	B4
ON	ON/OFF	ON/OFF	ON/OFF	OFF	297	210	A4
ON	ON/OFF	ON/OFF	ON/OFF	ON	297	420	A3

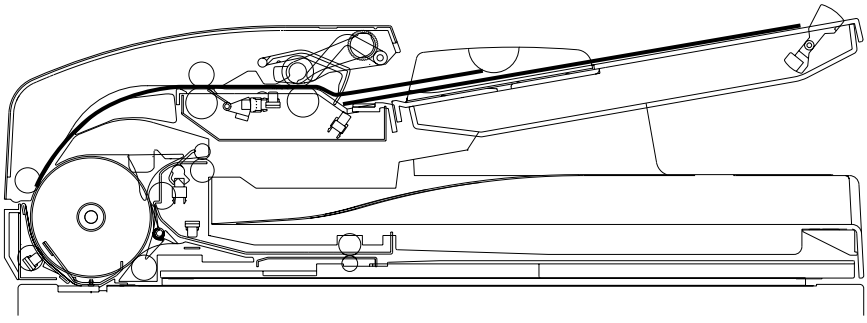
[For UC]

(mm)

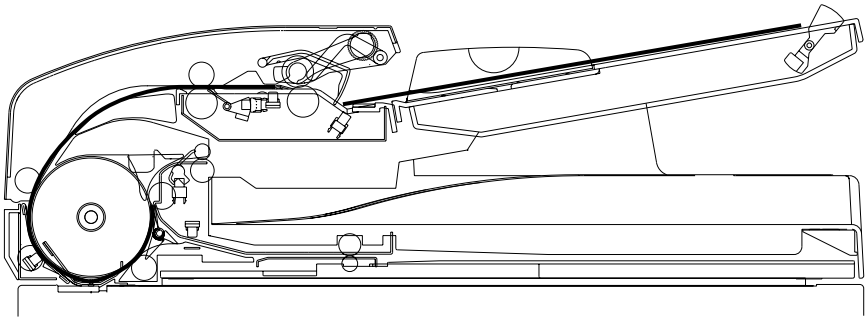
Original width sensor 1	Original width sensor 2	Original width sensor 3	Tray sensor	Original length sensor	Original size data (Widthwise direction)	Original size data (Feeding direction)	Original size detected
OFF	OFF	OFF	ON/OFF	OFF	140	216	STR
OFF	OFF	OFF	ON/OFF	ON	280	432	LD
OFF	OFF	ON	ON/OFF	OFF	216	216	8.5 × 8.5
OFF	OFF	ON	OFF	ON	216	280	LTR
OFF	OFF	ON	ON	ON	216	356	LG
OFF	ON	ON/OFF	ON/OFF	OFF	280	216	LT
OFF	ON	ON/OFF	ON/OFF	ON	258	356	COMPUTER
ON	ON/OFF	ON/OFF	ON/OFF	OFF	280	216	LT
ON	ON/OFF	ON/OFF	ON/OFF	ON	280	432	LD

7.3 Method of Original Size Detection (for Mixed Sized Original)

1) Width
   Width is detected by original width sensors 1,2 and 3 and the size data are saved when an original waiting at the pre-feeding position has started to be fed and its leading edge reaches the first small roller of the read roller.
2) Size along the feeding direction
   With original whose width is any of 210mm/216mm, if the original length sensor has already detected the original when the read sensor detects the leading edge of the original, reverse operation is performed to determine the size along the feeding direction. The read motor counts the pulse of the distance pulses till the original length sensor detects the trailing edge of the original. Original size is determined by the result of counting and threshold of size along the feeding direction, then size data are sent to the copier. At this time, data of the size along the feeding direction are sent first.
   The size along the feeding direction of B5-R or smaller originals is determined as with other standard sized originals. (reverse operation is performed after the size is determined.)



1) Timing to determine the width



2) Timing to determine the size along the feeding direction

7.4 Relation between Status of Sensor and Original Size (for Mixed Sized Originals)

[For JE]

(mm)

Original width sensor 1	Original width sensor 2	Original width sensor 3	Tray sensor	Original length sensor	Original size data (Widthwise direction)	Original size data (Feeding direction)	Original size detected
OFF	OFF	ON	OFF	ON	210	297	A4R
Threshould of size along feeding direction						313.5	
OFF	OFF	ON	ON	ON	210	330	FOLIO

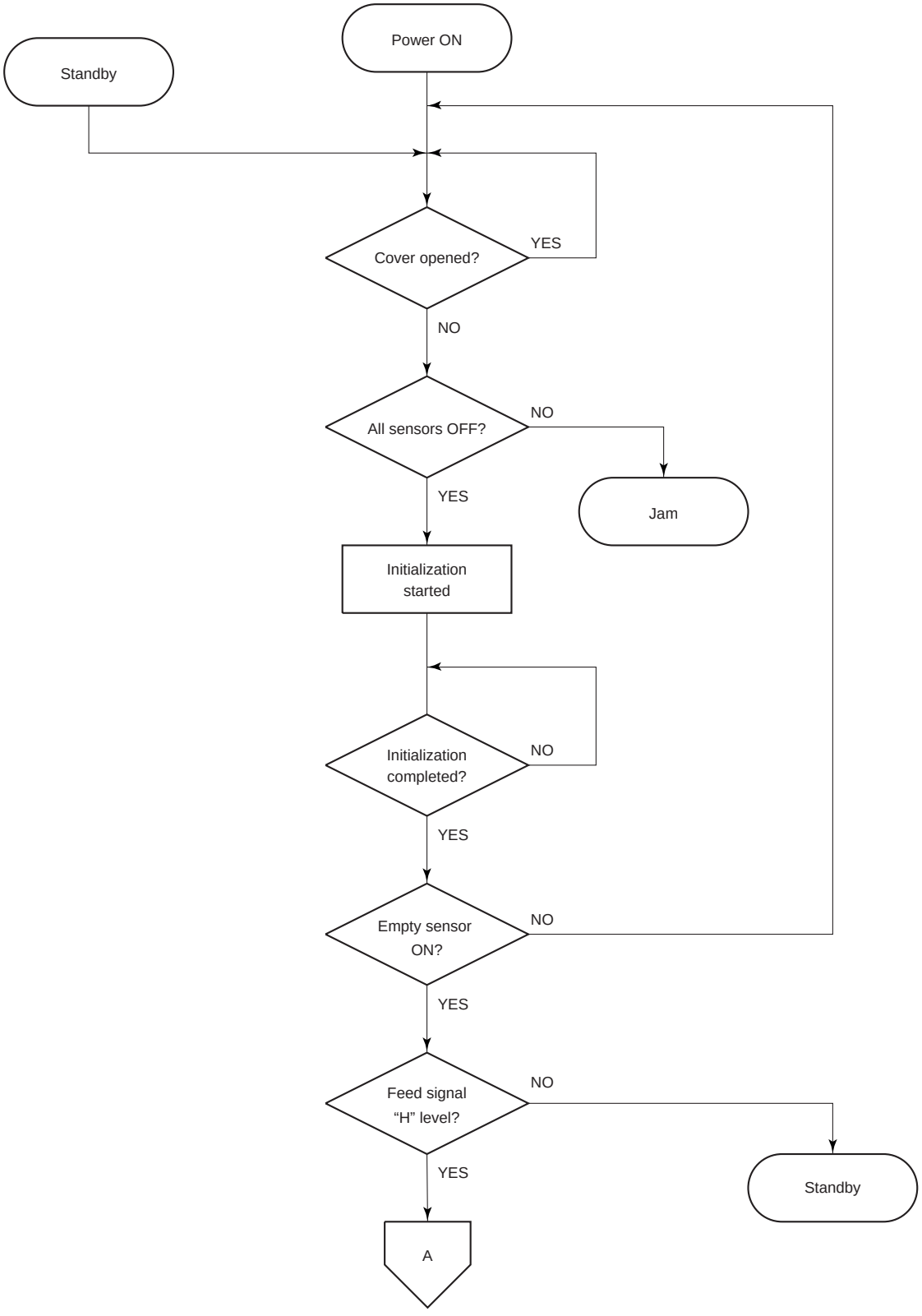
[For UC]

(mm)

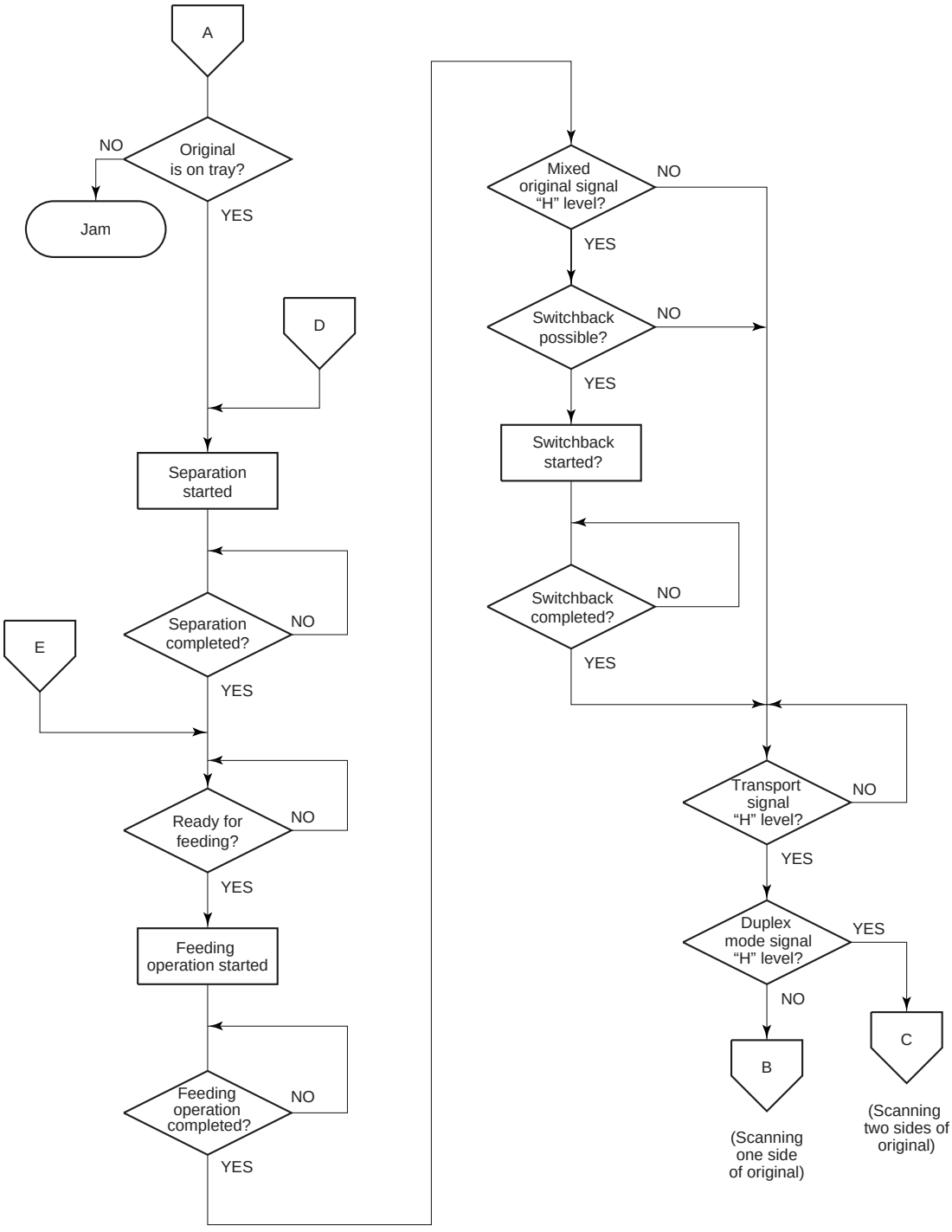
Original width sensor 1	Original width sensor 2	Original width sensor 3	Tray sensor	Original length sensor	Original size data (Widthwise direction)	Original size data (Feeding direction)	Original size detected
OFF	OFF	ON	OFF	ON	216	280	LTR
Threshould size of feeding direction						318	
OFF	OFF	ON	ON	ON	216	356	LG

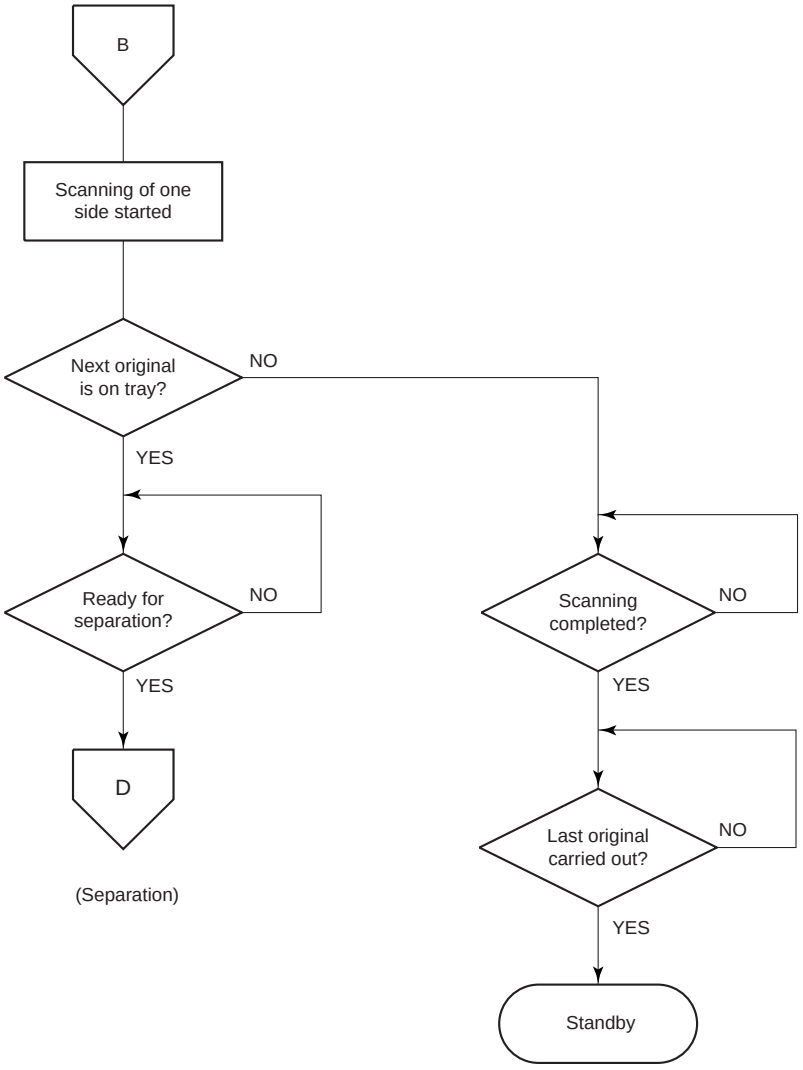
8. FLOW CHART

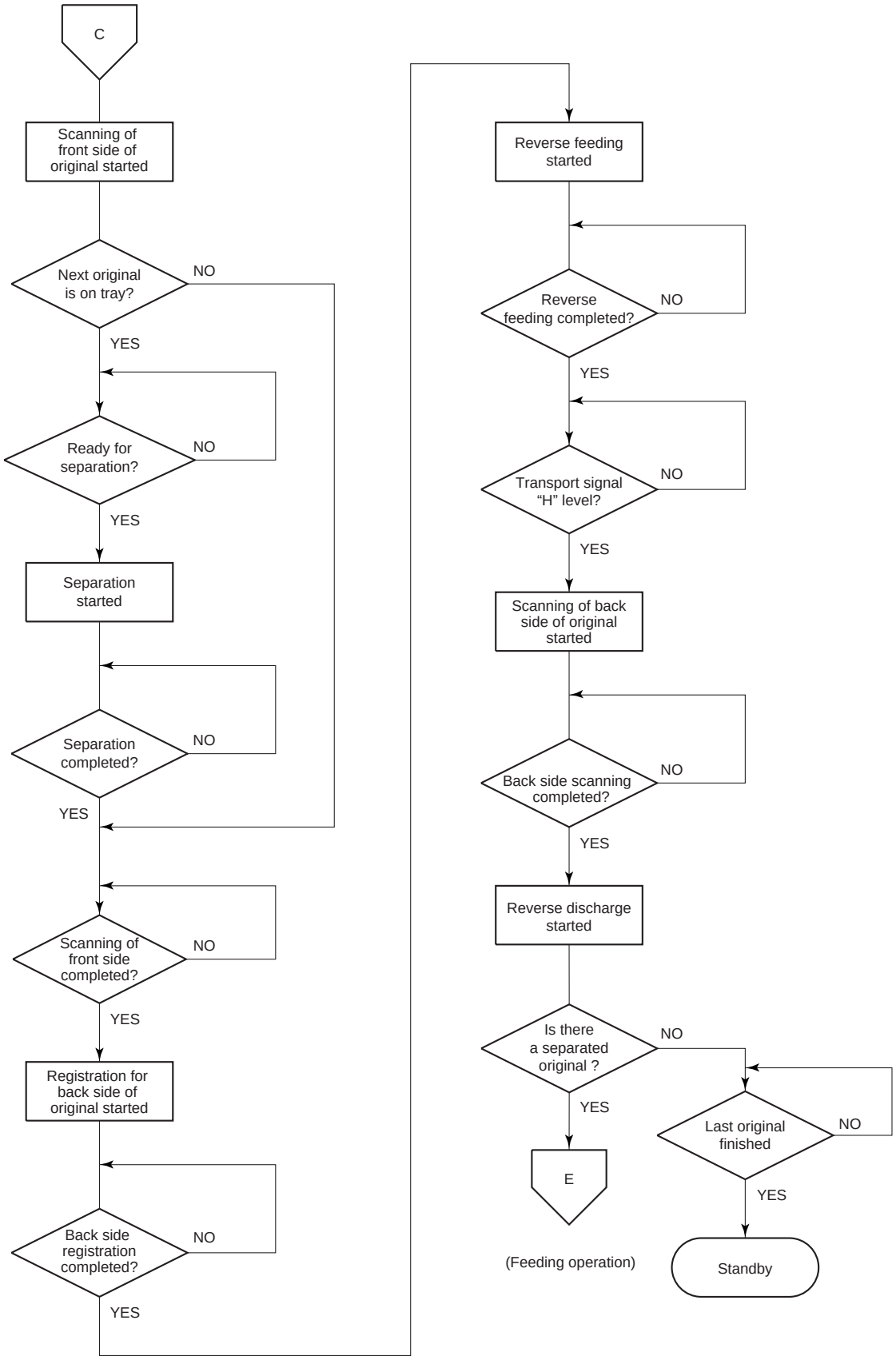
8.1 Power ON → Completion of Discharge for Last Original Carried Out



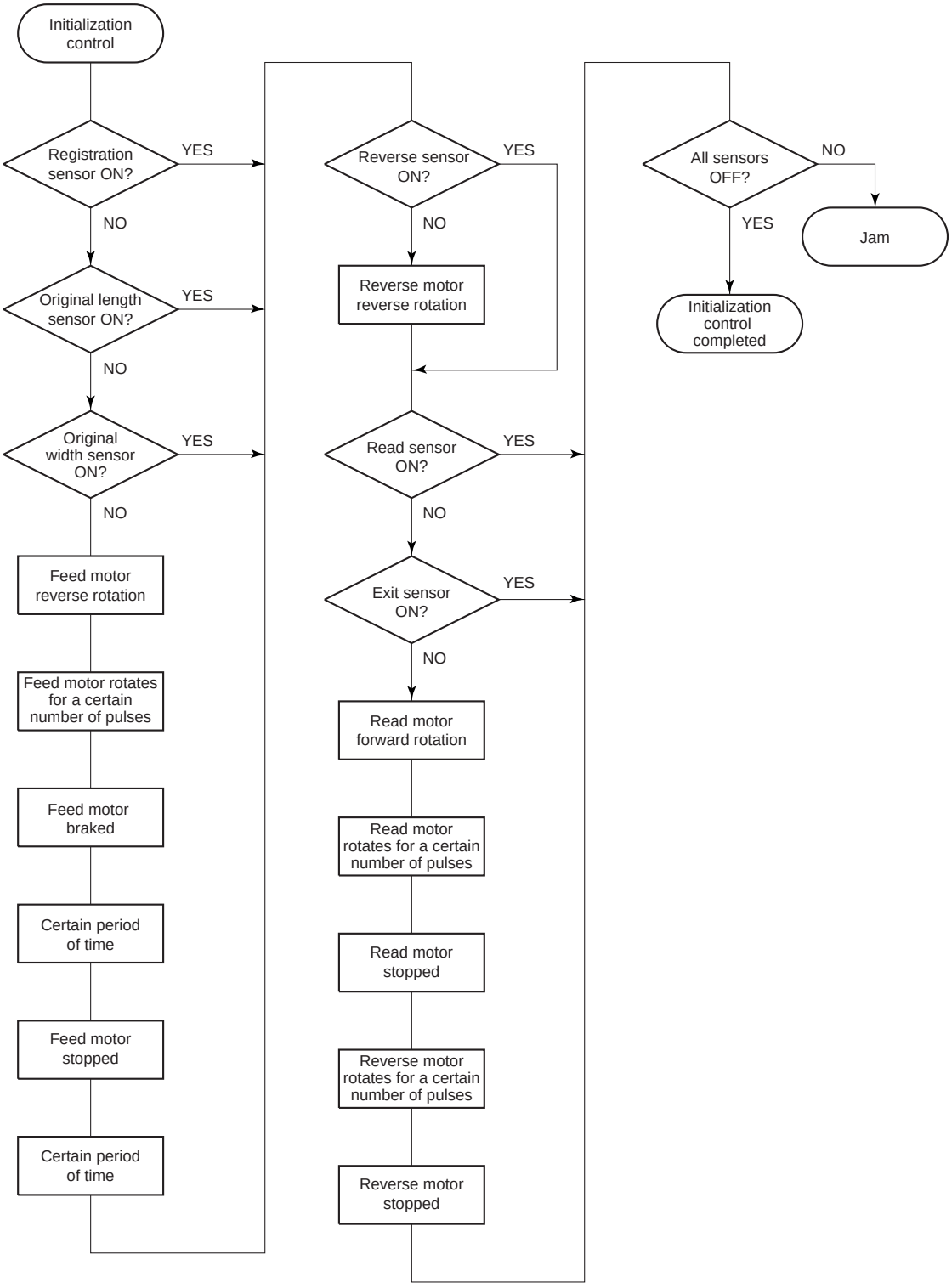
(Feeding Operation)


A
Original is on tray?
NO
Jam
YES
D
Separation started
Separation completed?
NO
YES
E
Ready for feeding?
NO
YES
Feeding operation started
Feeding operation completed?
NO
YES
Mixed original signal "H" level?
NO
YES
Switchback possible?
NO
YES
Switchback started?
Switchback completed?
NO
YES
Transport signal "H" level?
NO
YES
Duplex mode signal "H" level?
YES
NO
B
(Scanning one side of original)
C
(Scanning two sides of original)

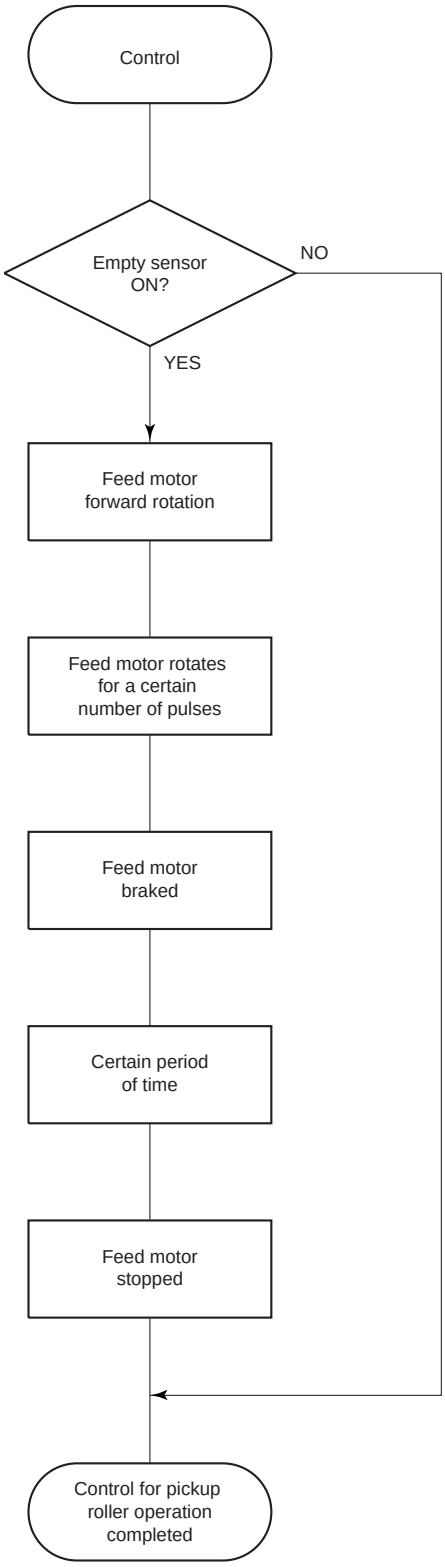

B
Scanning of one side started
Next original is on tray?
NO
YES
Ready for separation?
NO
YES
D
(Separation)
Scanning completed?
NO
YES
Last original carried out?
NO
YES
Standby


C
Scanning of front side of original started
Next original is on tray?
NO
YES
Ready for separation?
NO
YES
Separation started
Separation completed?
NO
YES
Scanning of front side completed?
NO
YES
Registration for back side of original started
Back side registration completed?
NO
YES
Reverse feeding started
Reverse feeding completed?
NO
YES
Transport signal "H" level?
NO
YES
Scanning of back side of original started
Back side scanning completed?
NO
YES
Reverse discharge started
Is there a separated original ?
NO
YES
E
(Feeding operation)
Last original finished
NO
YES
Standby

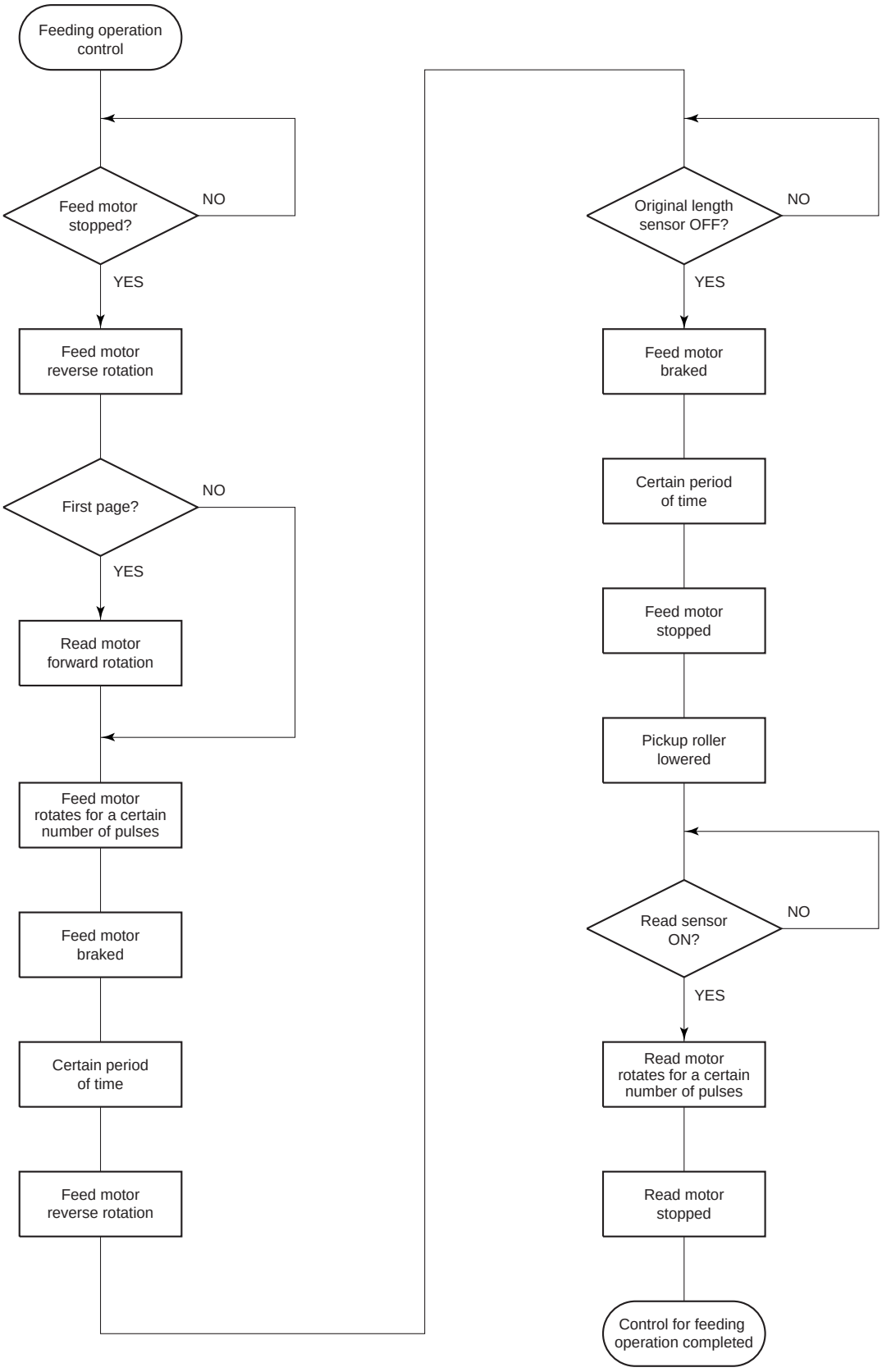
8.2 Initialization Control



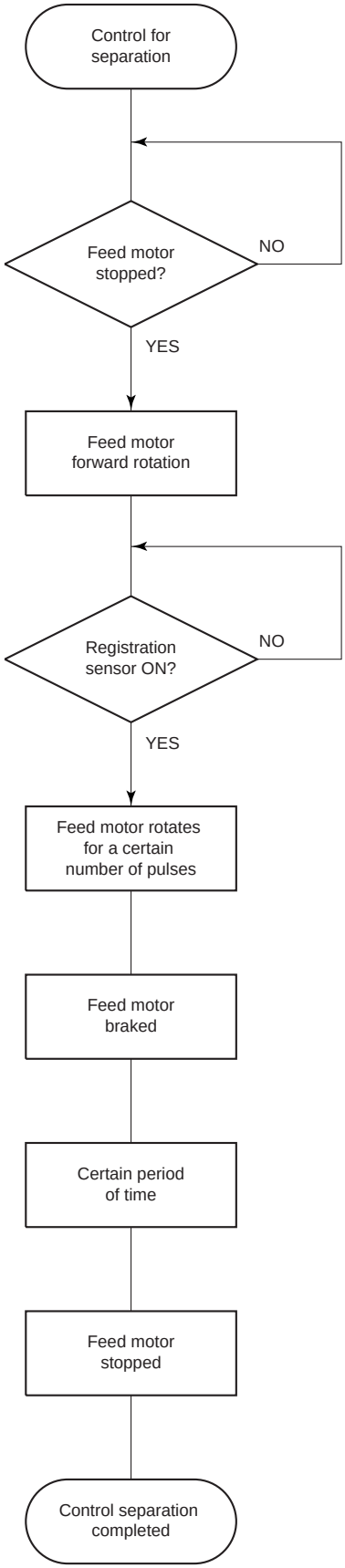
8.3 Control for Operation of Pickup Roller



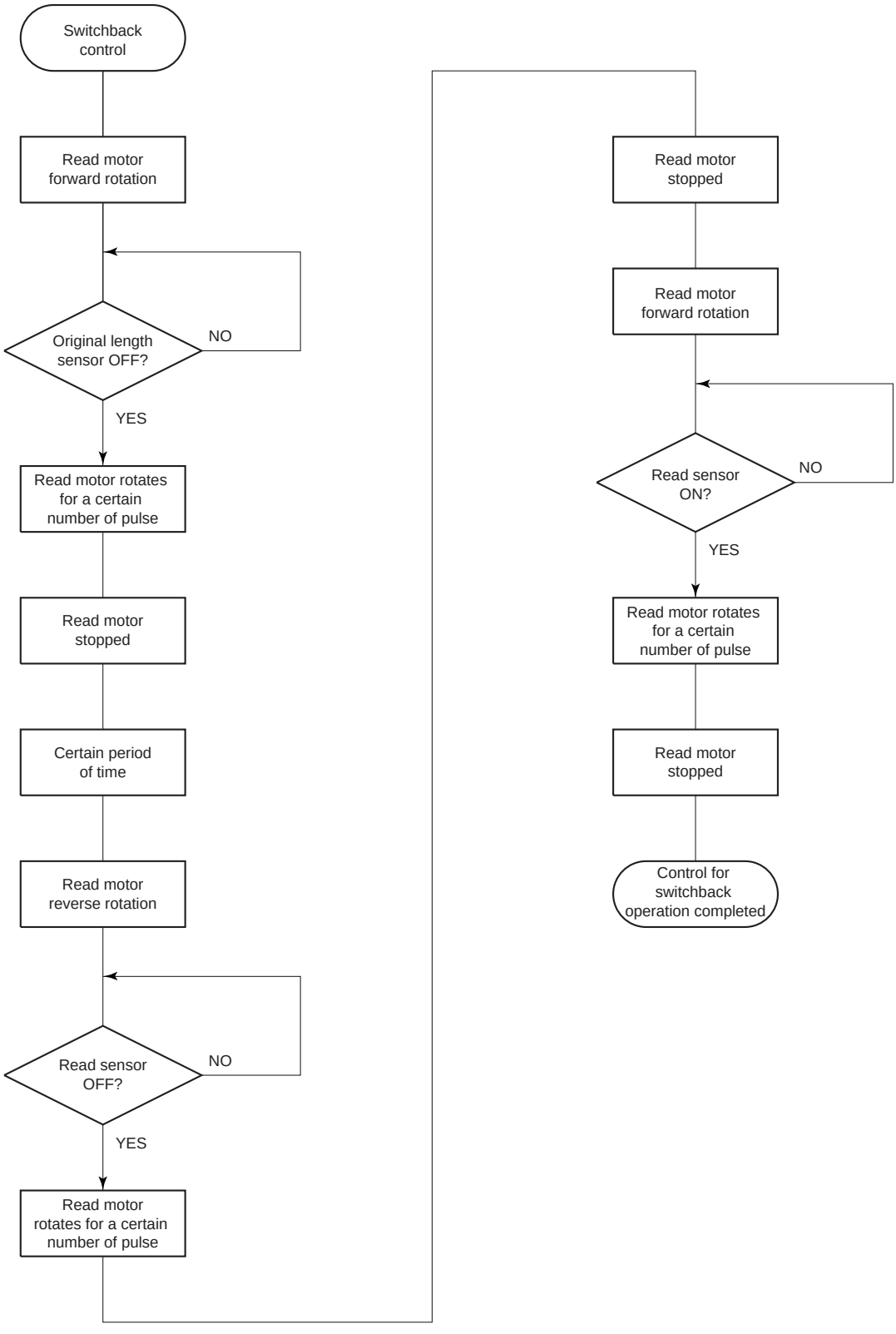
8.4 Control for Feeding Operation



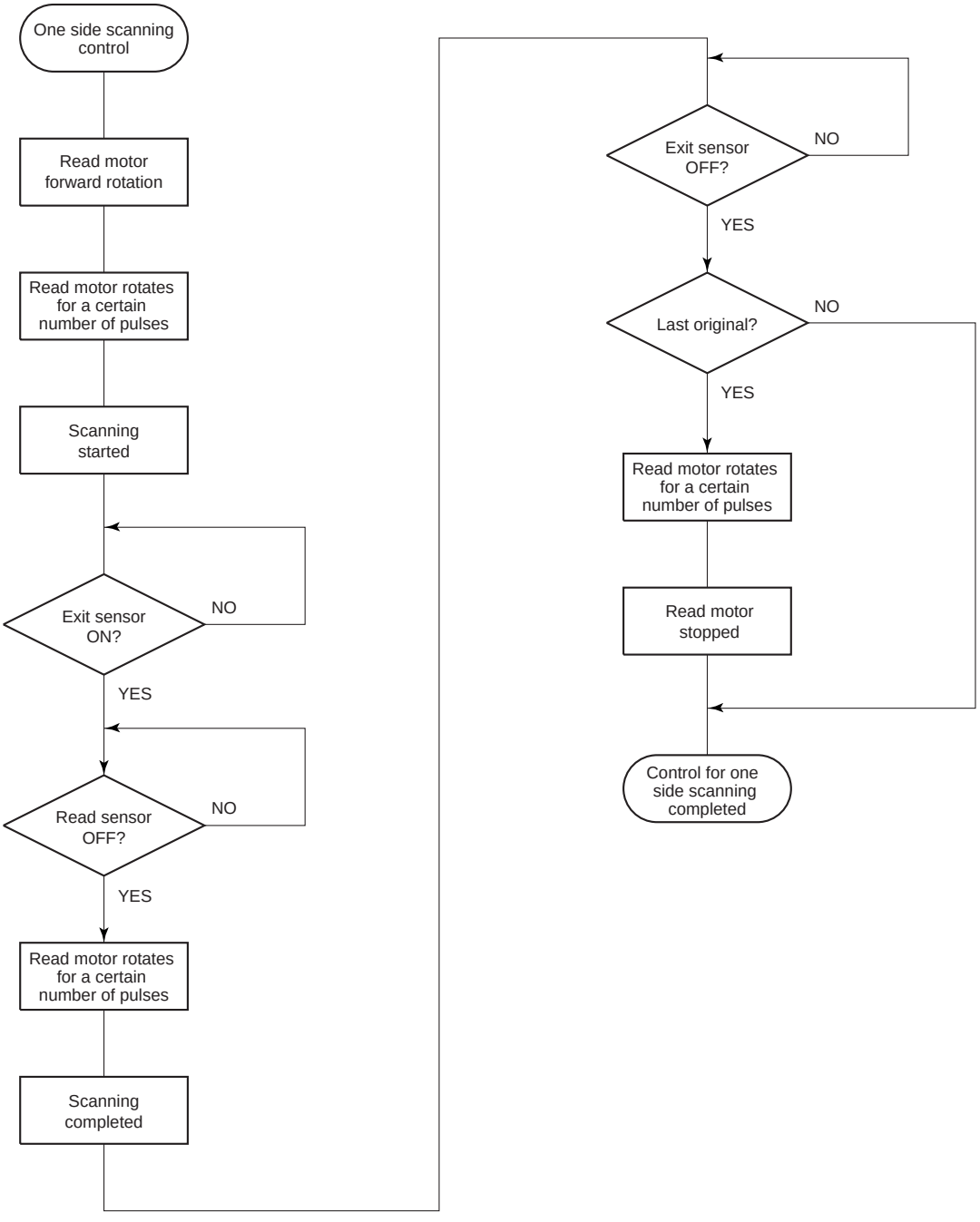
8.5 Control for Separation



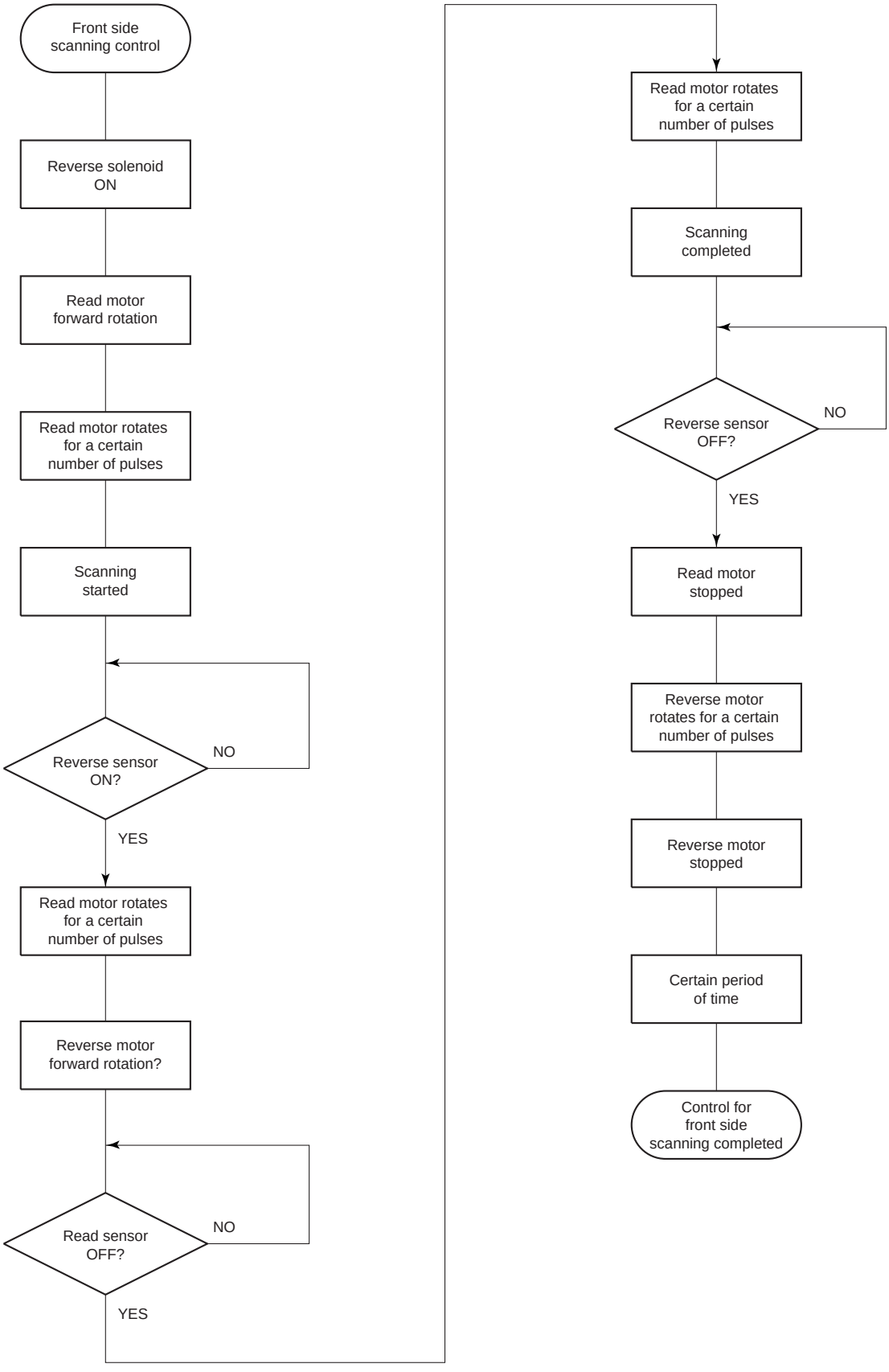
8.6 Control for Switchback Operation



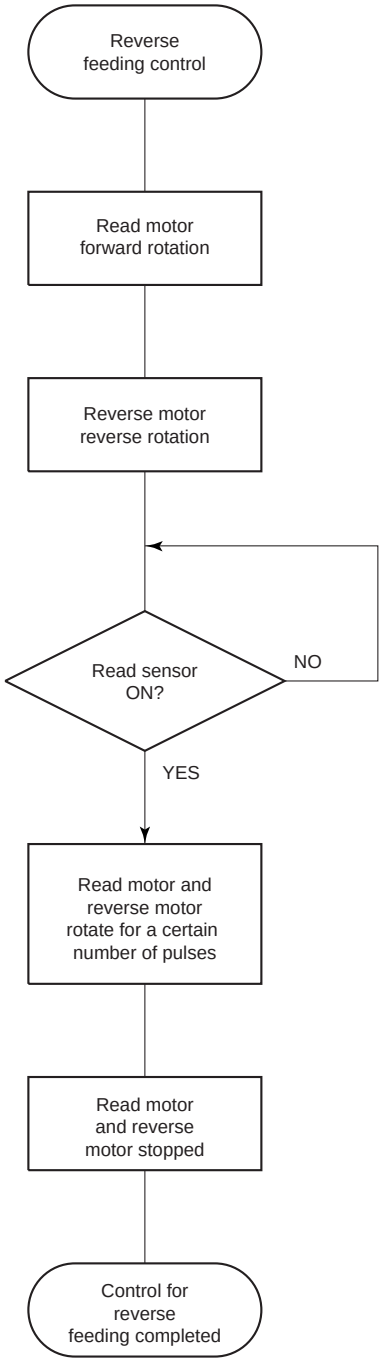
8.7 Control for One Side Scanning



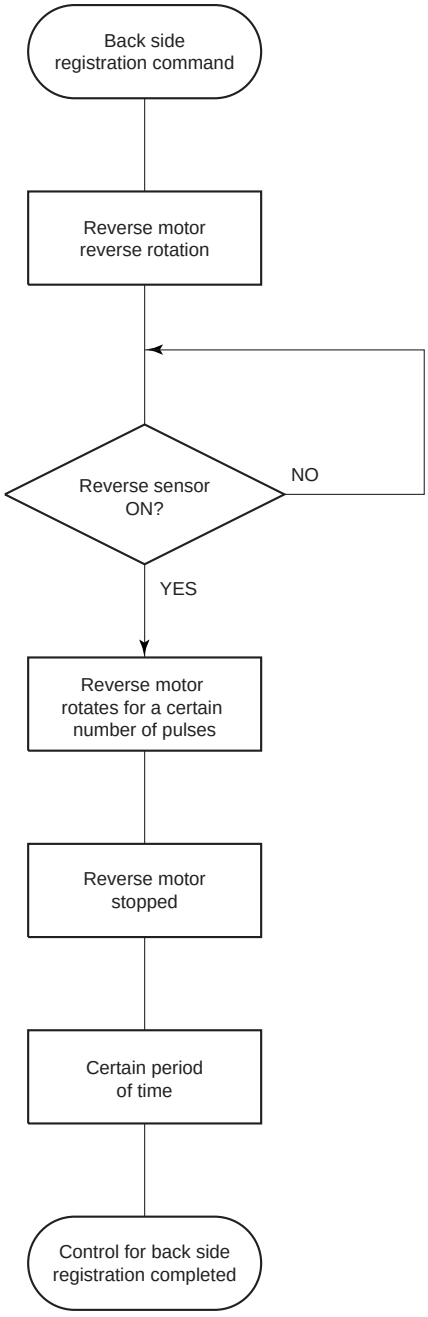
8.8 Control for Front Side Scanning



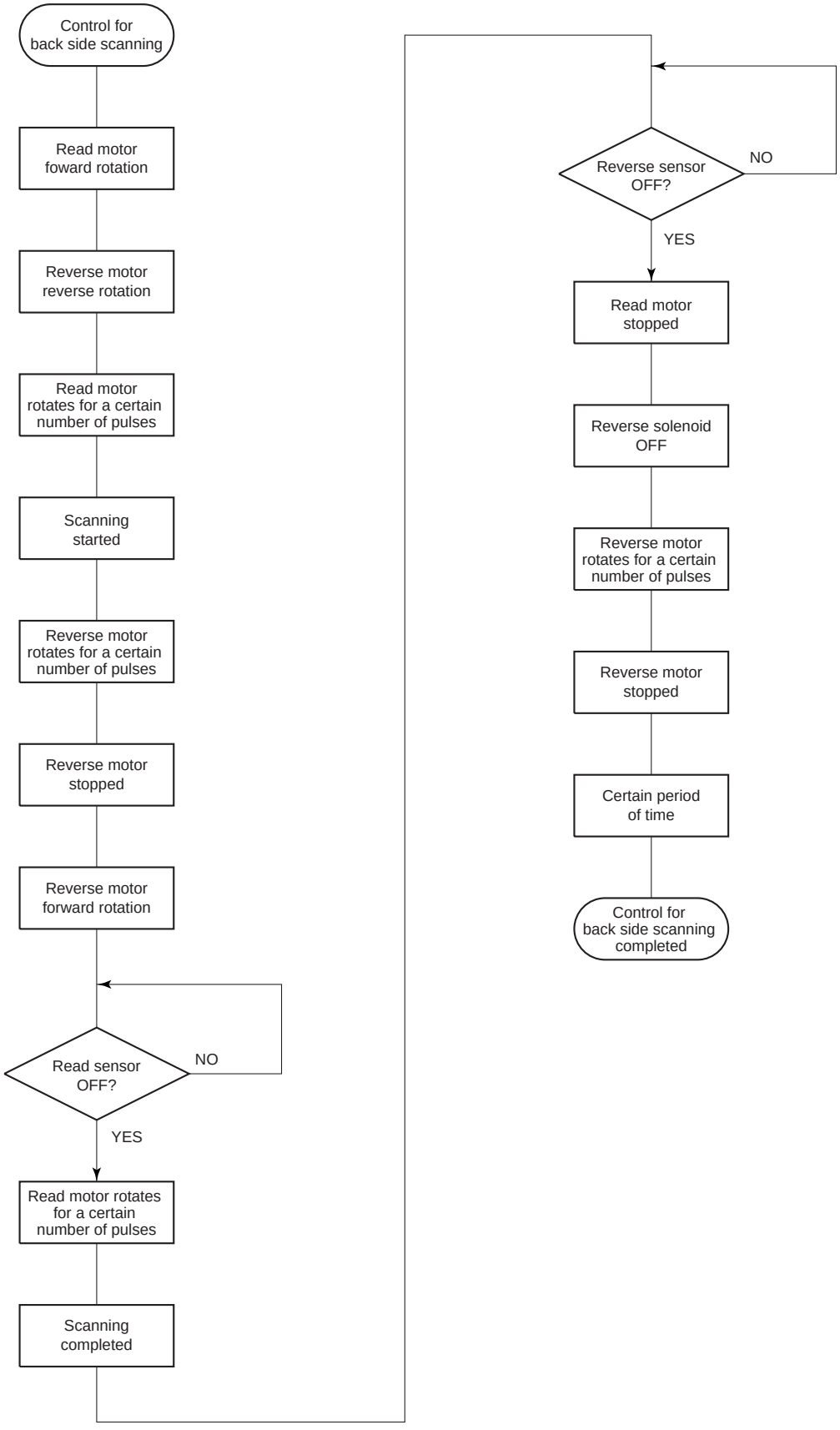
8.9 Control for Reverse Feeding



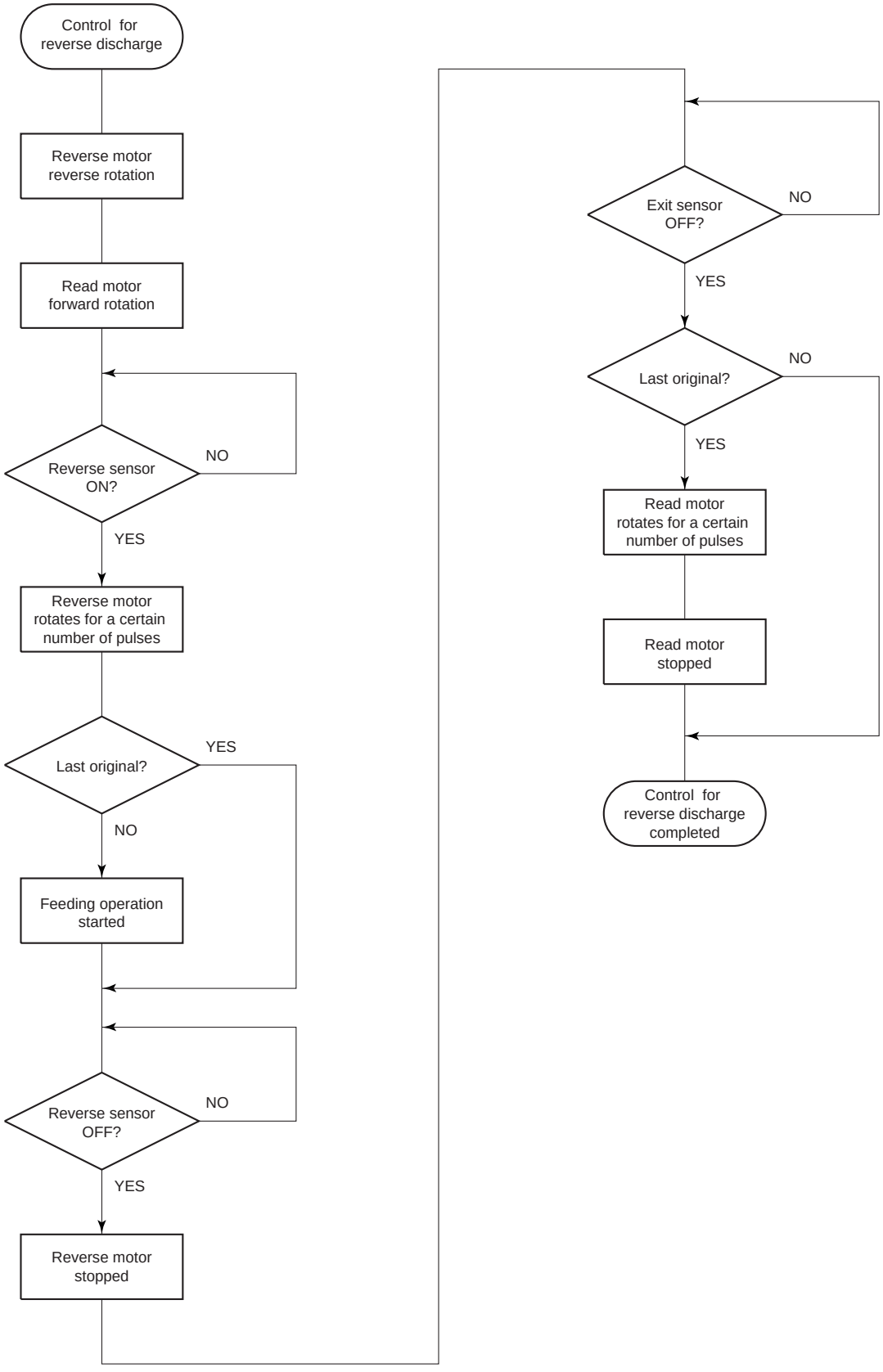
8.10 Control for Back Side Registration



8.11 Control for Back Side Scanning

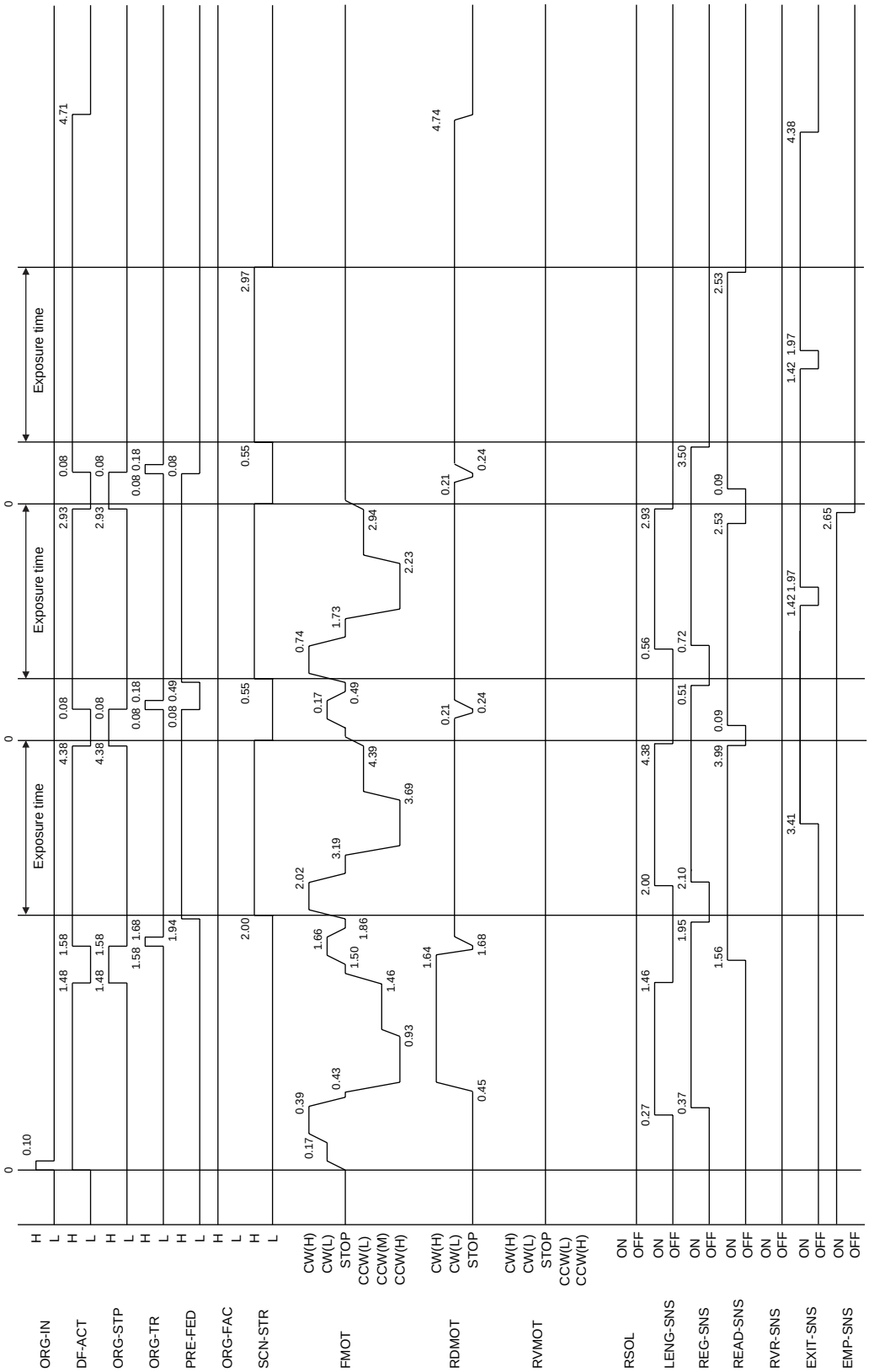


8.12 Control for Reverse Discharge

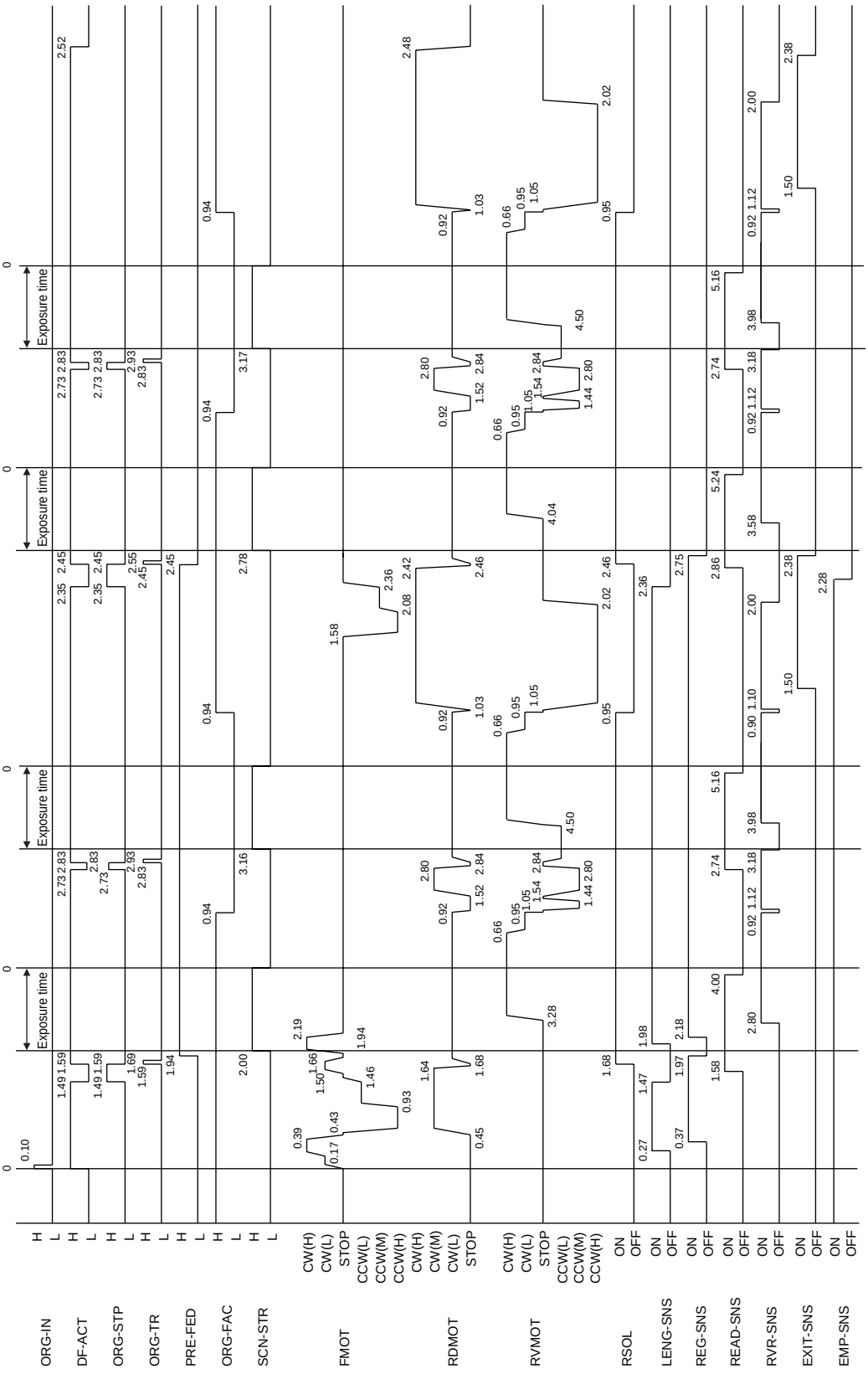


9. TIMING CHART

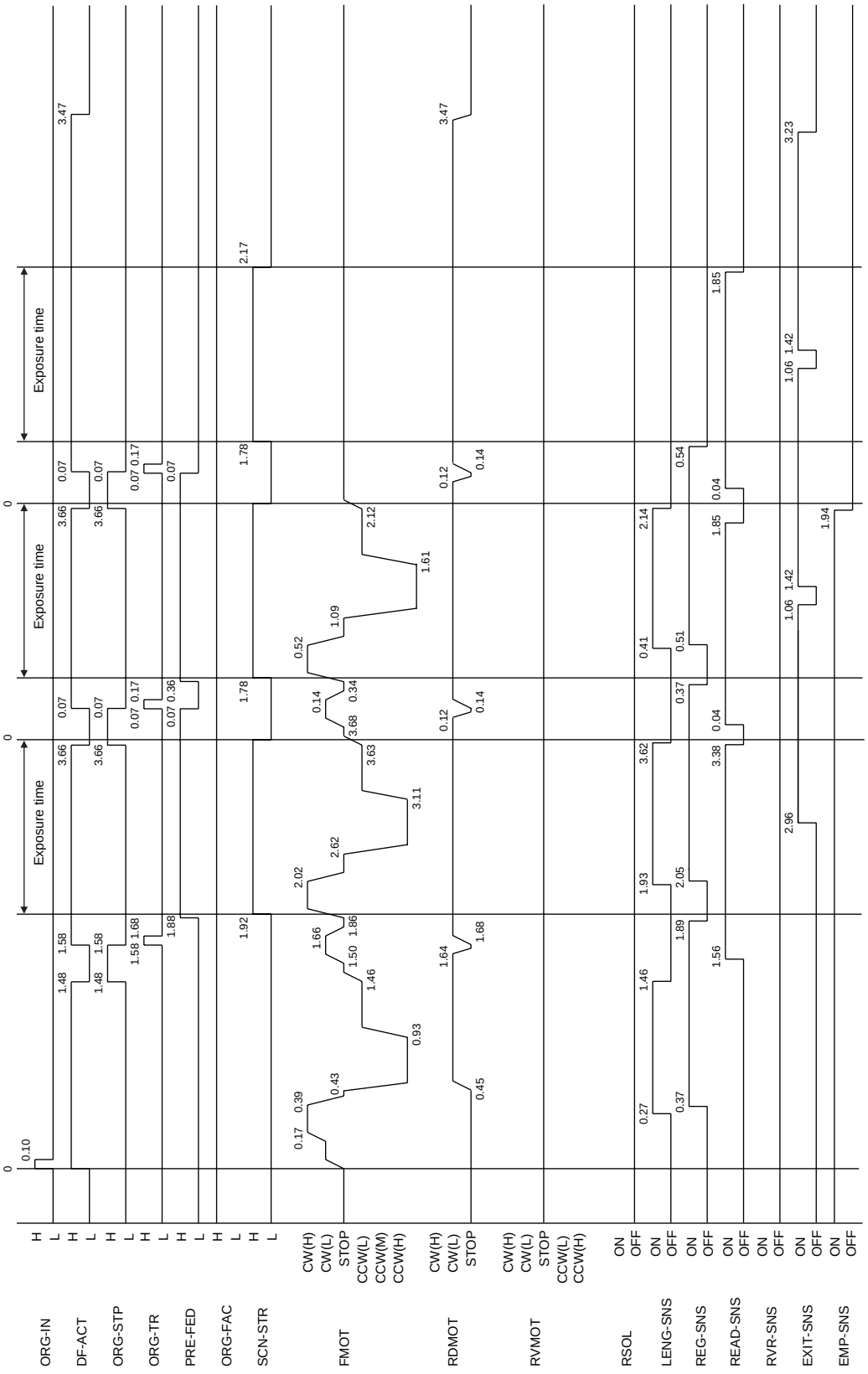
9.1 DP1600 Three A4 sheets single-side feeding



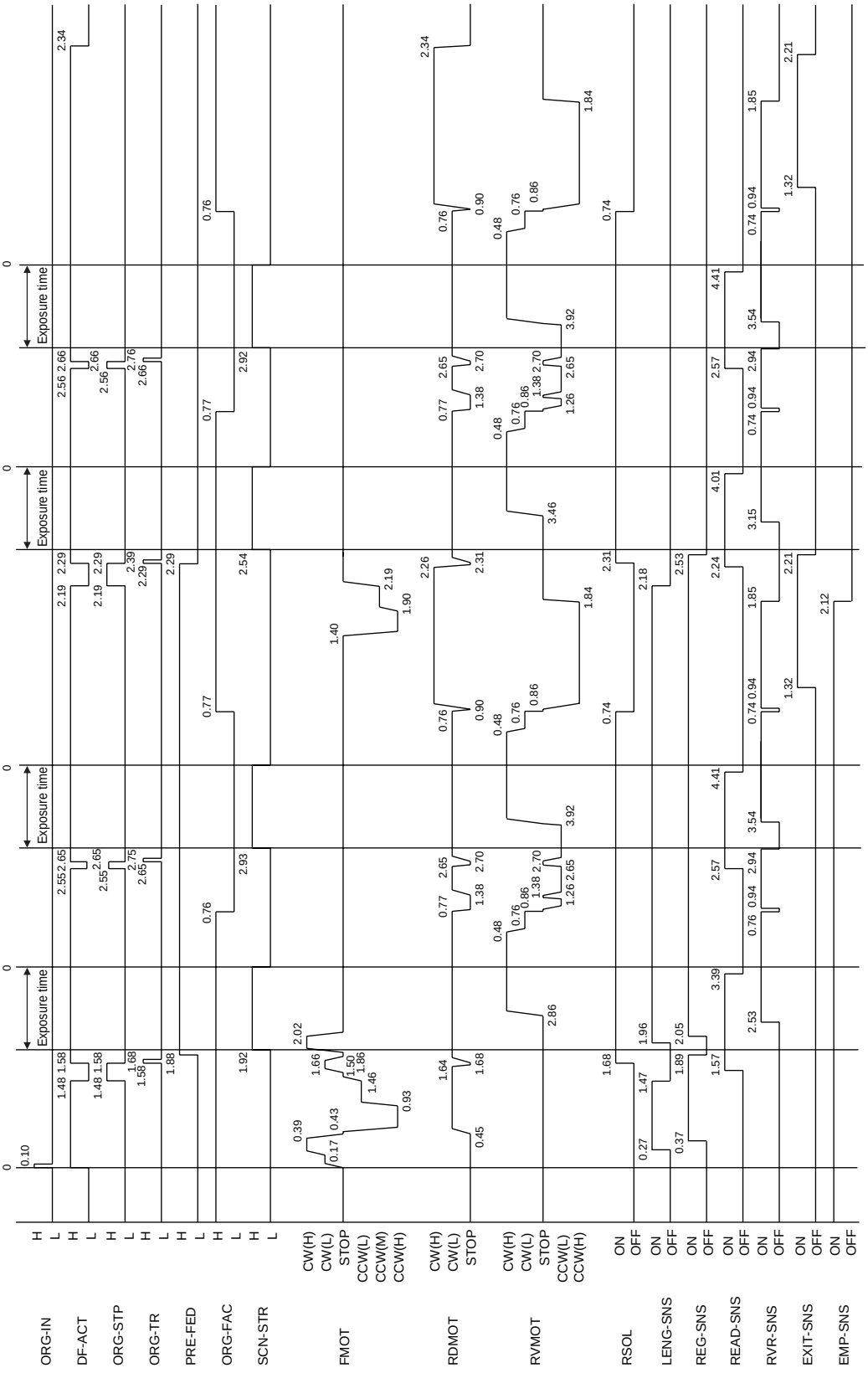
9.2 DP1600 Two A4 sheets duplex feeding



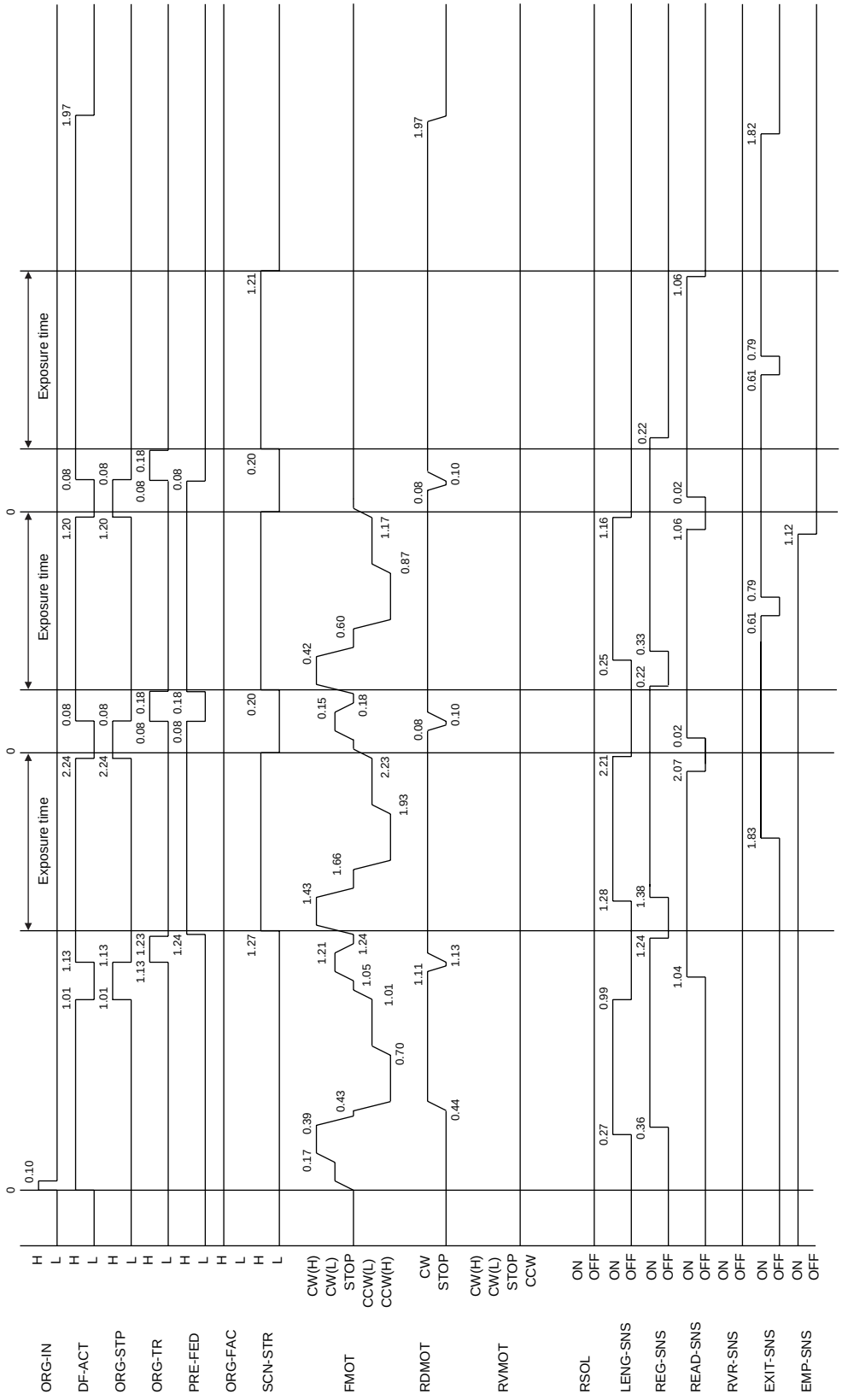
9.3 DP2500 Three A4 sheets single-side feeding



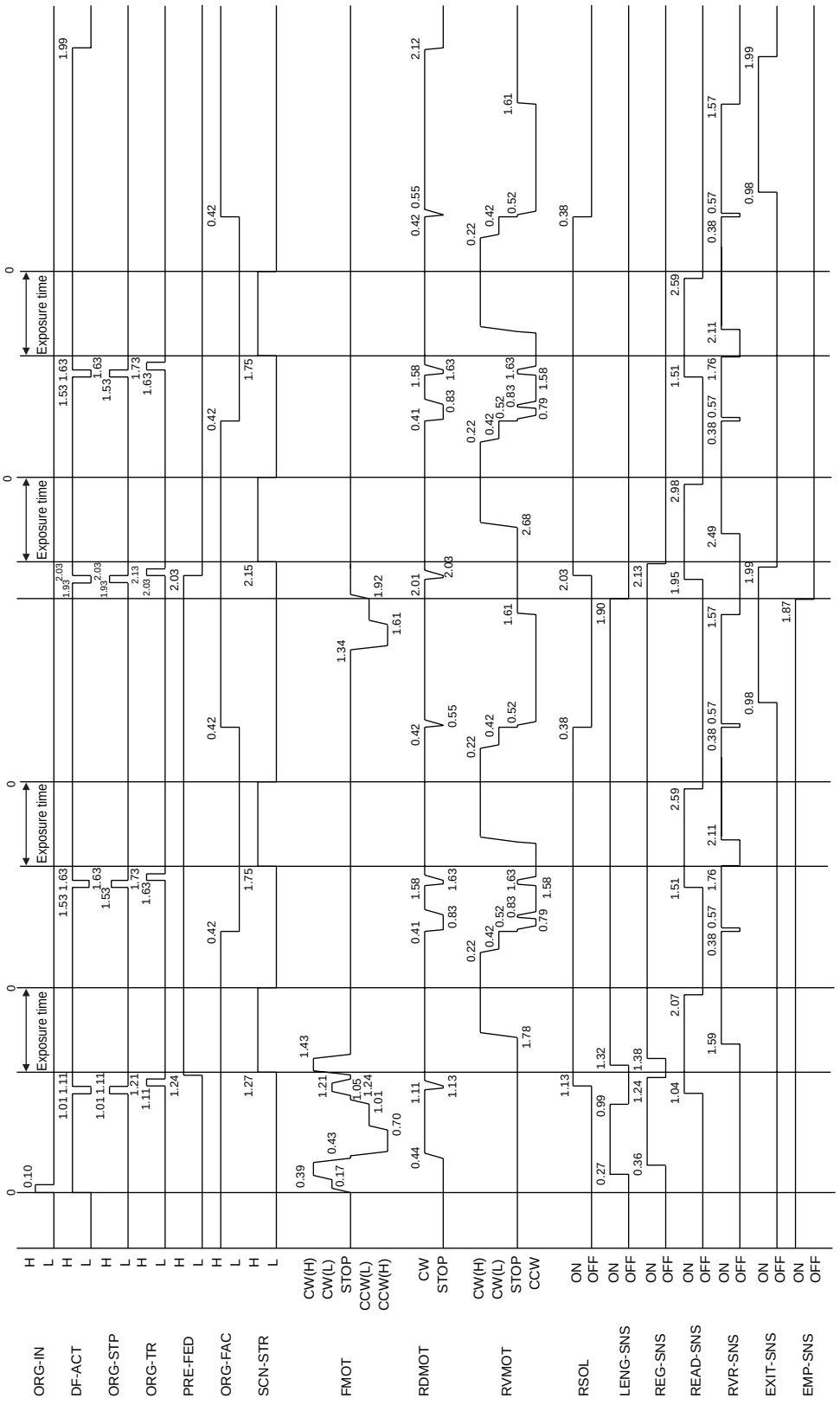
9.4 DP2500 Two A4 sheets duplex feeding



9.5 DP3500/4500 Three A4 sheets single-side feeding



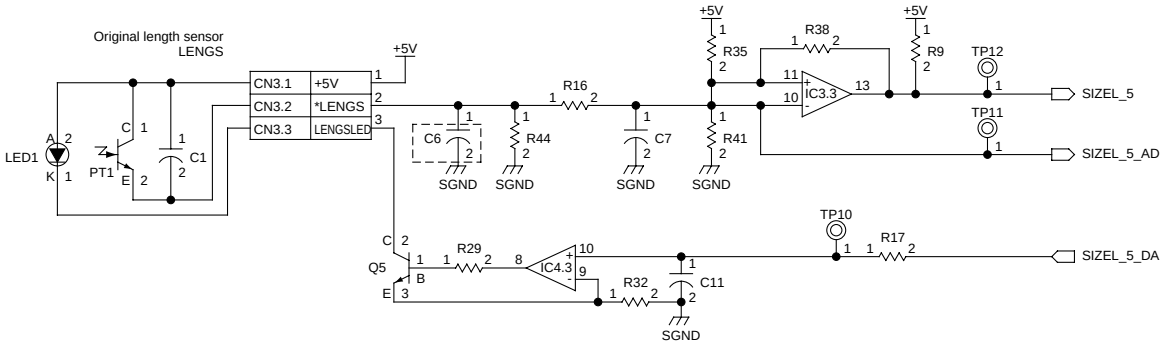
9.6 DP3500/4500 Two A4 sheets duplex feeding



10. DESCRIPTION OF CIRCUITS

10.1 Input Circuits for Original Length Sensor, Read Sensor and Reverse Sensor

Since original length sensor, read sensor and reverse sensor have almost the same circuit configurations (the reference voltage of comparator for read sensor input circuit can be set by D/A output), the input circuits for the read sensor and reverse sensor are not described. The following is the input circuit for the original length sensor.



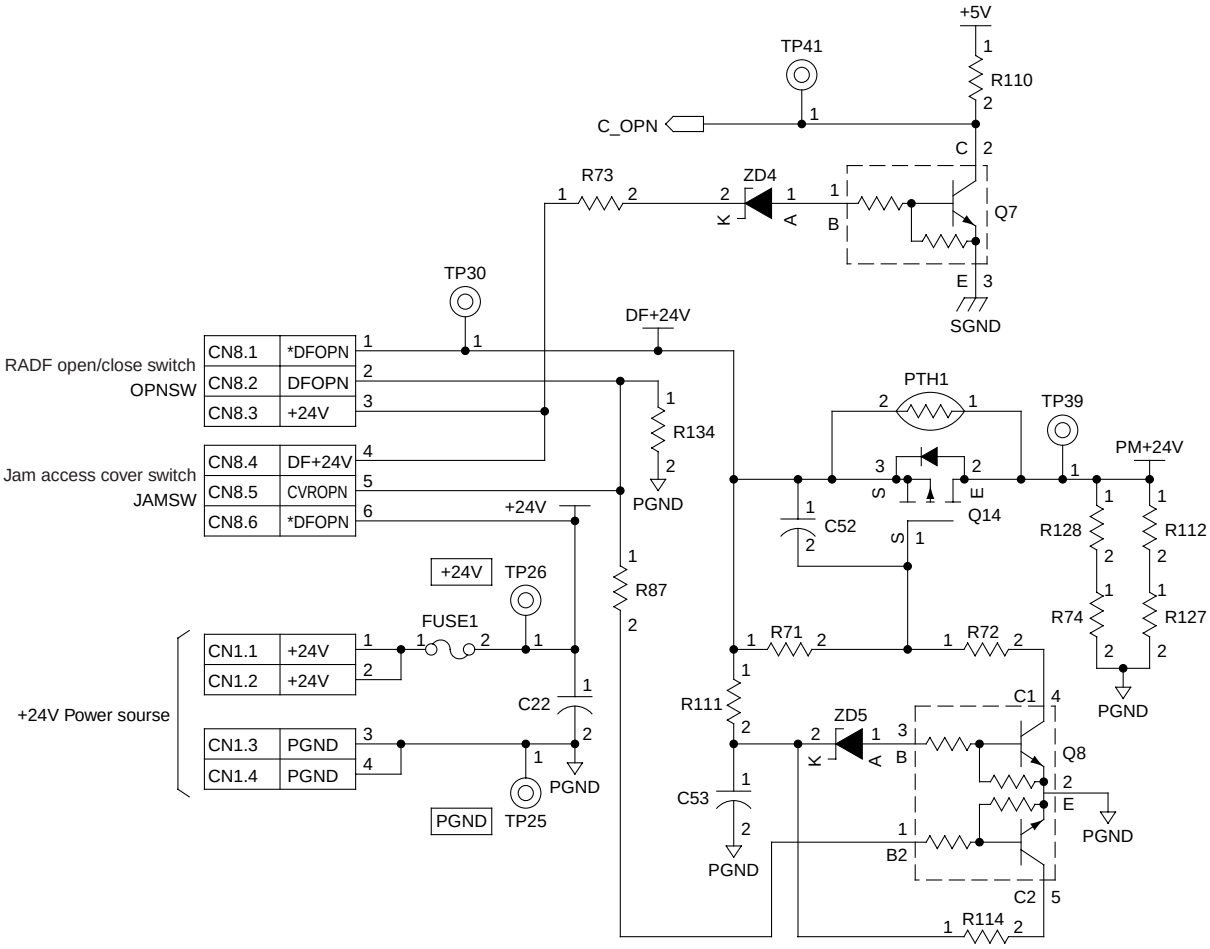
This circuit is an input circuit for the original length sensor and consists of a voltage-current conversion circuit which adjusts the amount of light of the infrared LED and the voltage comparison circuit which compares the voltage output from a phototransistor (PTR) with a reference voltage and converts the output voltage into digital signals.

The original length sensor is a mirror reflection sensor, and consists of a pair of emission elements (infrared LEDs) and a light receiving element (PTR). Both elements have a light axis running in the same direction. There is a mirror on the extended light axis of these elements. When there is no original between the elements and the mirror, infrared light emitted from LED is reflected by PTR in high reflectance. If there is an original, light emission to the mirror and reflected light from the mirror are blocked by the original, and the reflected light entering PTR becomes extremely small.

When a large amount of light is entering PTR (this means there is no original) the optical current flowing in the PTR is increased, and the voltage of IC3-10pin becomes higher due to a drop in voltage caused by R44. IC3 is a comparator which compares the reference voltage input to 11pin (non-reverse input terminal) with the signal voltage of 10pin (reverse input terminal). If the voltage of 10pin is higher, the output level (IC3-10pin) is "L". On the contrary, when the amount of the incoming light is small (this means there is an original), the voltage of IC3-10pin is low and the level becomes "H". R16, C6 and C7 are noise filters. This circuit has an automatic sensitivity adjustment function to control the unevenness of the sensor sensitivity. Uneven sensor sensitivity is corrected by controlling the machine to have a constant PTR voltage when there is no original. The intensity of the infrared light emitted from the LEDs is changed to adjust the PTR voltage.

When the sensor sensitivity adjustment mode is selected, the PTR output voltage (analog value) is measured by the A/D input terminals of the CPU (scanner side). The D/A output voltage of the CPU is changed to keep the PTR output voltage to a certain level, and the LED current is adjusted by a voltage-current conversion circuit consisting of IC4, R29, Q5, etc. Each machine has a different D/A output voltage value, which is stored in the volatile memory.

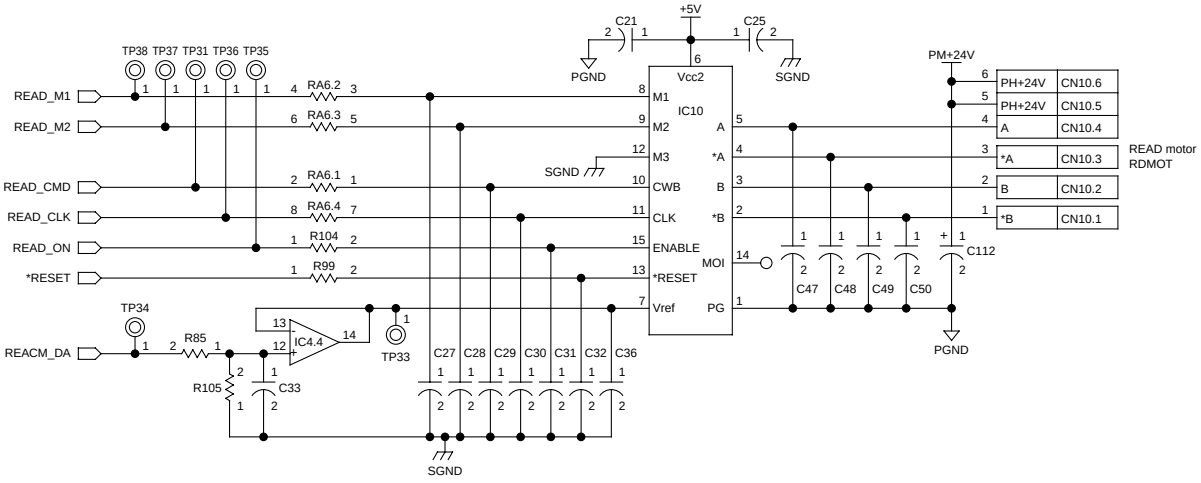
10.2 Irruptive Current Control Circuit



This circuit controls the irruptive current flowing into the current regeneration condensers (C40 and C112) mounted on the drive circuits for the read motor and reverse motor to a certain value. The circuit consists of a posister (PTH1) which controls the current and FET (Q14) which supplies the current in normal conditions. Base current is not supplied to Q8 and it becomes OFF after the RADF open/close switch and jam access cover switch are turned OFF till the cathode voltage of ZD5 reaches the zener voltage. At this time, both voltages are set by R111 and C53. Q14 is turned OFF correspondingly to supply the current to PTH1.
When the cathode voltage of ZD5 exceeds the zener voltage after the time allowance given by R111 and C53, a base current is supplied to Q8 to turn it ON and Q14 comes ON correspondingly. The current limitation is canceled and the current flowing in the PTH1 starts to be supplied to Q14.

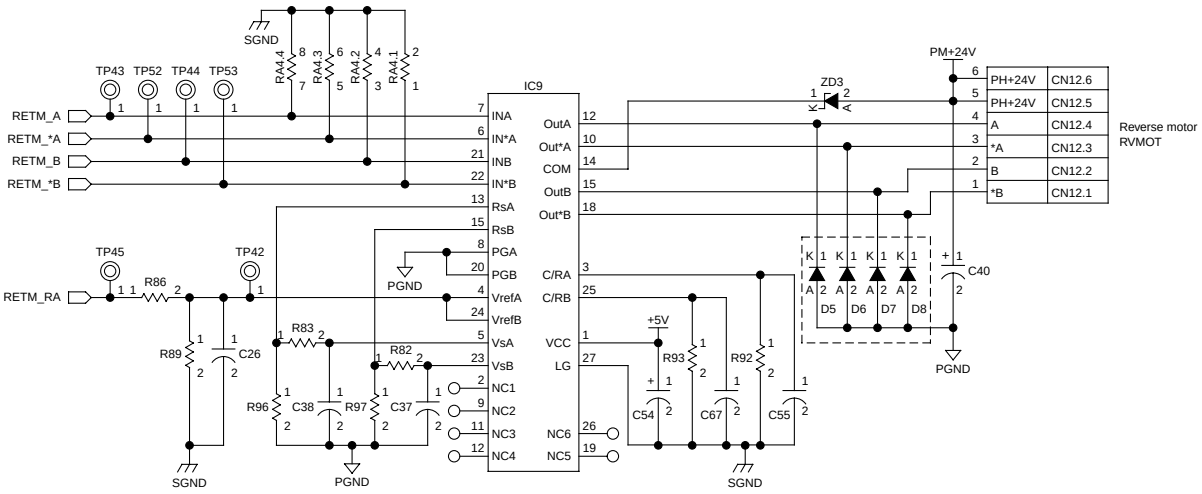
R74, R112, R127 and R128 are discharge resistors to capture charge stored in consisting C40 and C112 right after either of the RADF open/close switch or jam access cover switch is opened. The circuit consisted of R87, R114 and Q8 captures the charge stored in C53 right after either the RADF open/close switch or the jam access cover switch is opened, and also controls irruptive current for instantaneous opening/closing of the cover.

10.3 Drive Circuit for Read Motor



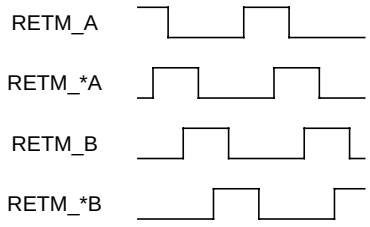
This circuit controls the rotation/stoppage and the direction of rotation, excitation mode and motor current of the read motor.
A drive clock signal (READM_CLK) and rotation direction signal (CWB) are input to control the speed and direction of the motor rotation. When the CPU judges the level of the enabling signal is "L", IC10-15pin (READ_EN) becomes "L" level and turns OFF all the outputs from the drive IC regardless of the state of other signals.
The output voltage of the D/A converter is separated at R85 and R105, and input into IC10-7pin to set the motor current value. The motor current value can be changed by altering the D/A output voltage.

10.4 Drive Circuit for Reverse Motor

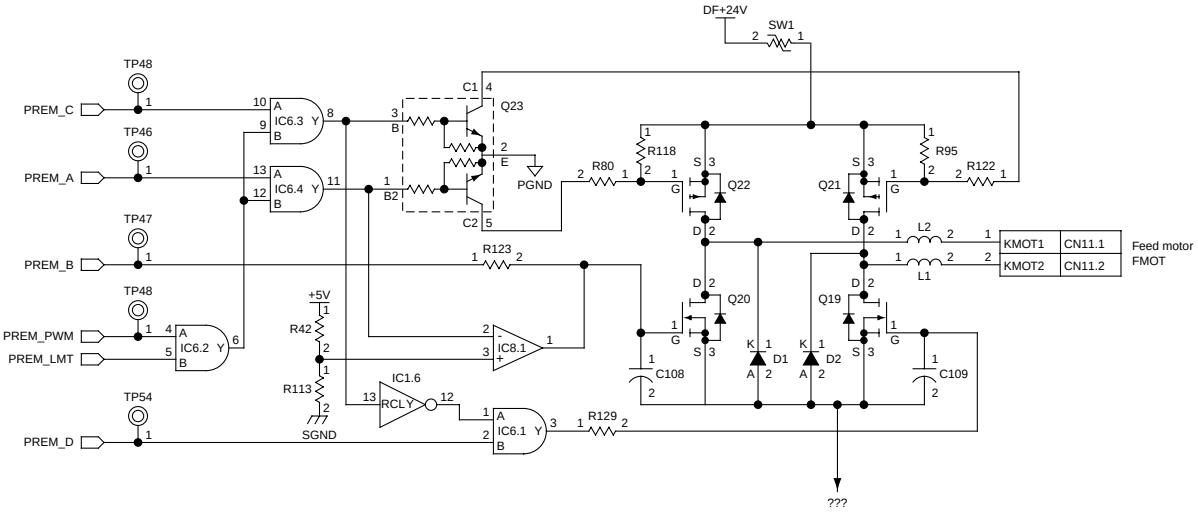


This circuit controls the rotation/stoppage, direction of rotation and motor current of the reverse motor.
The following drive pattern signals are input to IC9-6, 7, 21 and 22pins to control the direction and speed of motor rotation. The motor current value is set by separating the output voltage of the D/A converter at R86 and R89, and inputting it into IC9-4 and 24pins. Motor current value can be changed by changing the D/A output voltage.

Drive pattern signals....1-2 phase excitation



10.5 Drive Circuit for Feed Motor

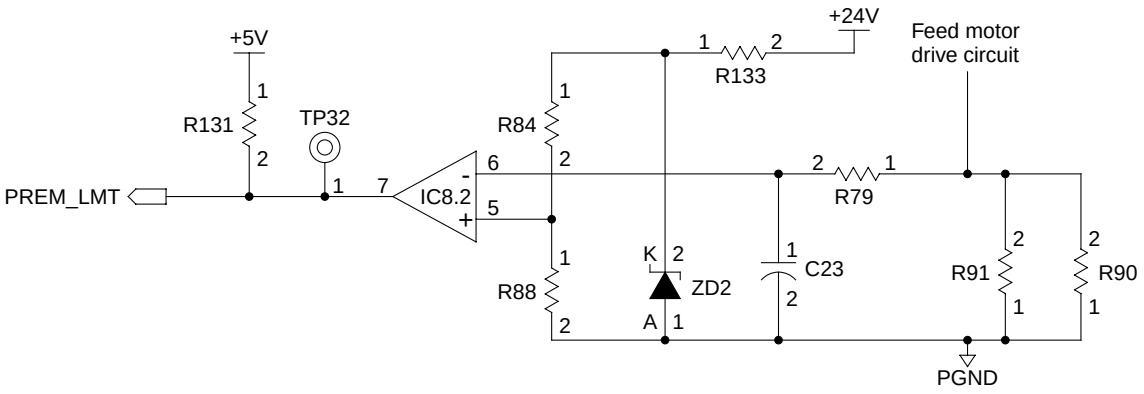


This circuit controls the rotation/stoppage and the direction of the rotation of the feed motor.
The feed motor has an encoder sensor to feed back signals controlling the number and stoppage of rotations to the CPU. Control signals from the CPU controls the direction and stoppage of the motor rotation. These control signals (PREM_A, PREM_B, PREM_C and PREM_D) are changed as shown in the table below.

PREM_A	PREM_B	PREM_C	PREM_D	Q19	Q20	Q21	Q22	State of Motor
Low	Low	Low	Low	OFF	OFF	OFF	OFF	OFF
Low	High	High	Low	OFF	ON	ON	OFF	Forward rotation
High	Low	Low	High	ON	OFF	OFF	ON	Reverse rotation
High	High	Low	Low	ON	ON	OFF	OFF	Braked

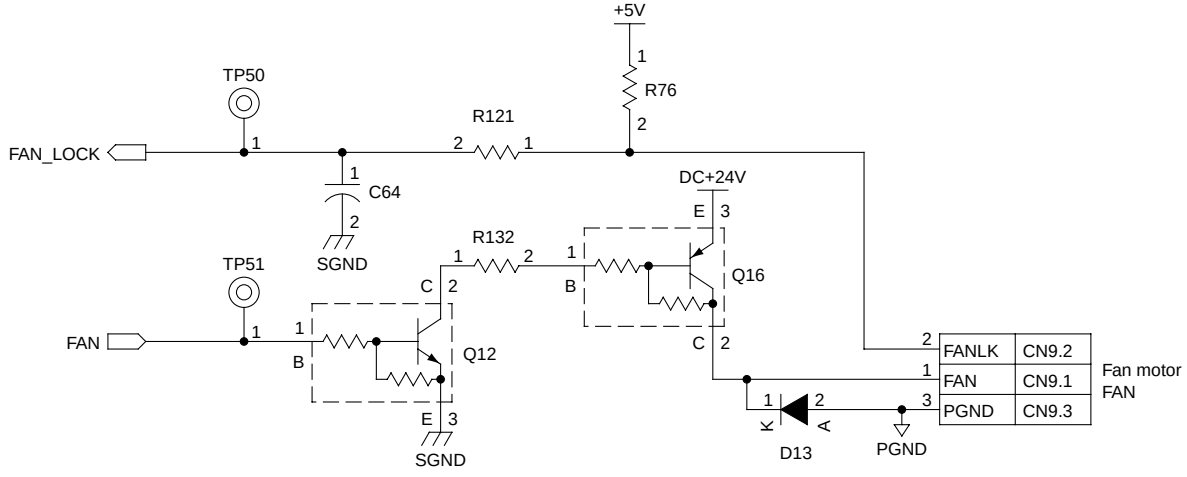
PREM_PWM is a signal output for speed control, and outputs pulse width modulation waves by comparing the reference clock in the CPU with the output from the clock sensor of the feed motor.

10.6 Current Control Circuit for Feed Motor



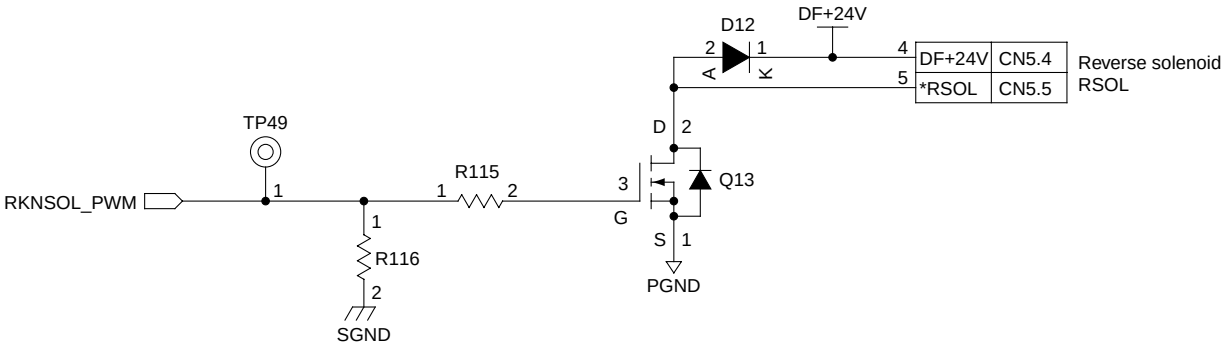
This circuit is a current control circuit to control the current consumption by the DC+24V power supply, and consists of a resistor for current detection and a voltage comparator.
Current supplied to the feed motor is converted into voltage at R90 and R91. If the voltage value is higher than the reference voltage which is the total of R84, R88, R133 and ZD2, the output level of IC8 (comparator) is judged as "L" and the feed motor is turned OFF. The feed motor is turned ON again when the current consumption is decreased to the reference voltage or becomes lower.

10.7 Drive Circuit for Fan Motor



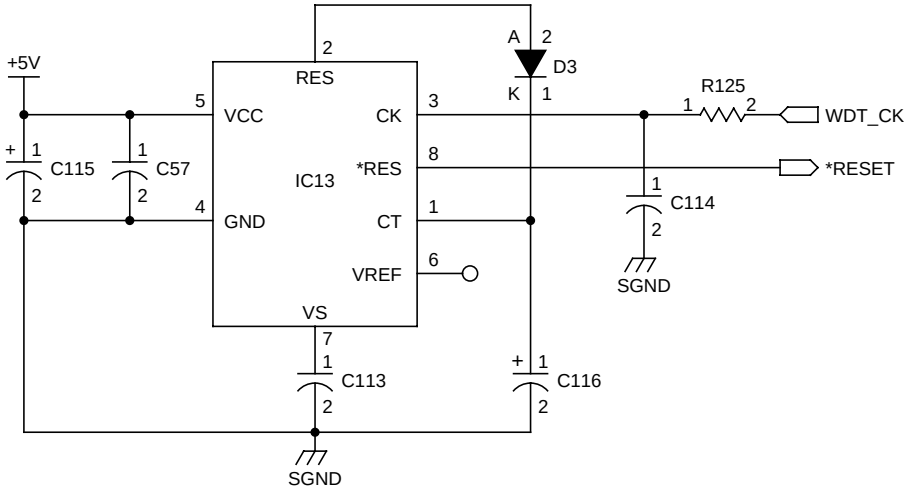
This circuit controls the rotation/stoppage of the fan motor.
When the output level of CPU is "H", Q12 and Q16 are turned ON and drive the fan motor. At this time, a lock detection signal is output from the fan motor and sent to the CPU. The level of the lock detection signal is "L" during normal operation and becomes "H" during abnormal operation.

10.8 Drive Circuit for Reverse Solenoid



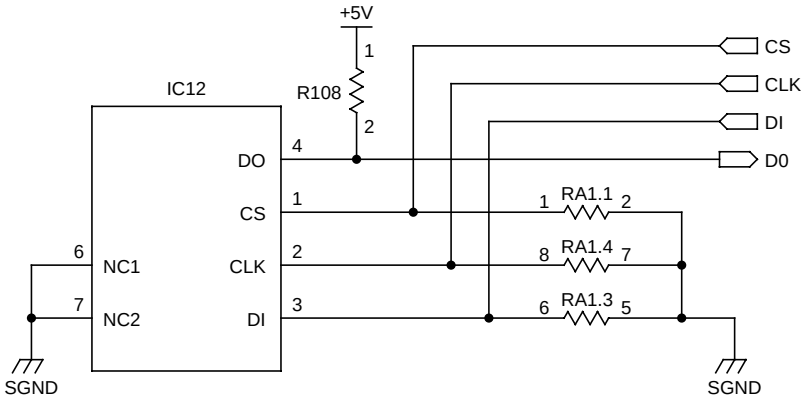
This circuit controls the closing/opening of the flapper of the reverse solenoid.
When the level of RKNSOL_PWM is "H", Q13 is turned ON and the flapper is closed. The drive signal for the solenoid is a PWM signal. The flapper is closed in the maximum torque of the solenoid and the duty value becomes 100% when the flapper is started to be closed. The duty value is then decreased down to 50% and the flapper is kept closed while the temperature rising of the solenoid is lowered.

10.9 Reset Circuit



This circuit generates a CPU reset signal when the power is turned ON and the power voltage is cut off or lowered instantaneously. This circuit has a watchdog timer for diagnosis of the CPU system operation.
The level of IC13-8pin (*RES) is normally "H" after the power is turned ON. However, when the power is turned OFF or the voltage of the +5V power supply is decreased to 4.2V or lower for some reason, the level of IC3-8pin becomes "L" and the CPU is reset. A clock with a fixed cycle is input to IC13-3pin (CK) from the CPU to clear the watchdog timer of IC13. If the clock is not input from CPU due to a system error, the level of IC13-8pin becomes "L" to reset CPU and system operation is stopped.

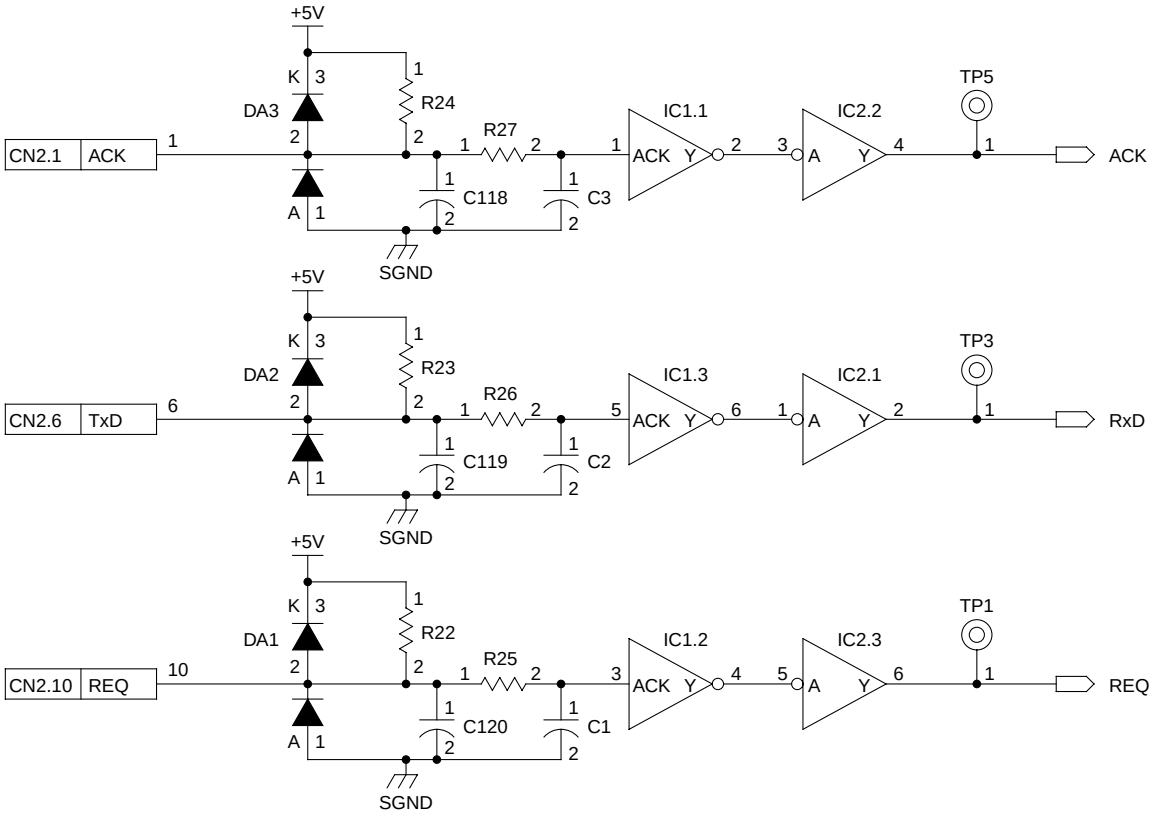
10.10 EEPROM Circuit



This circuit is an EEPROM to store ADF data and its peripheral circuit.
IC12 is a memory to store the adjustment value for reflection-type sensors, and data are sent/received between IC12 and CPU using a 4-line type serial interface. Data saved in the IC12 is not erased even if the power is turned OFF.
IC12-1pin (CS) is a chip selection terminal and its level is "H" when data are being sent/received.
IC12-2pin (CLK) is a serial clock terminal, and the serial data are sent in synchronization with the clock input which is input to this terminal.
IC12-3pin (DI) is a input terminal for serial data and 4pin (DO) is an output terminal for serial data.

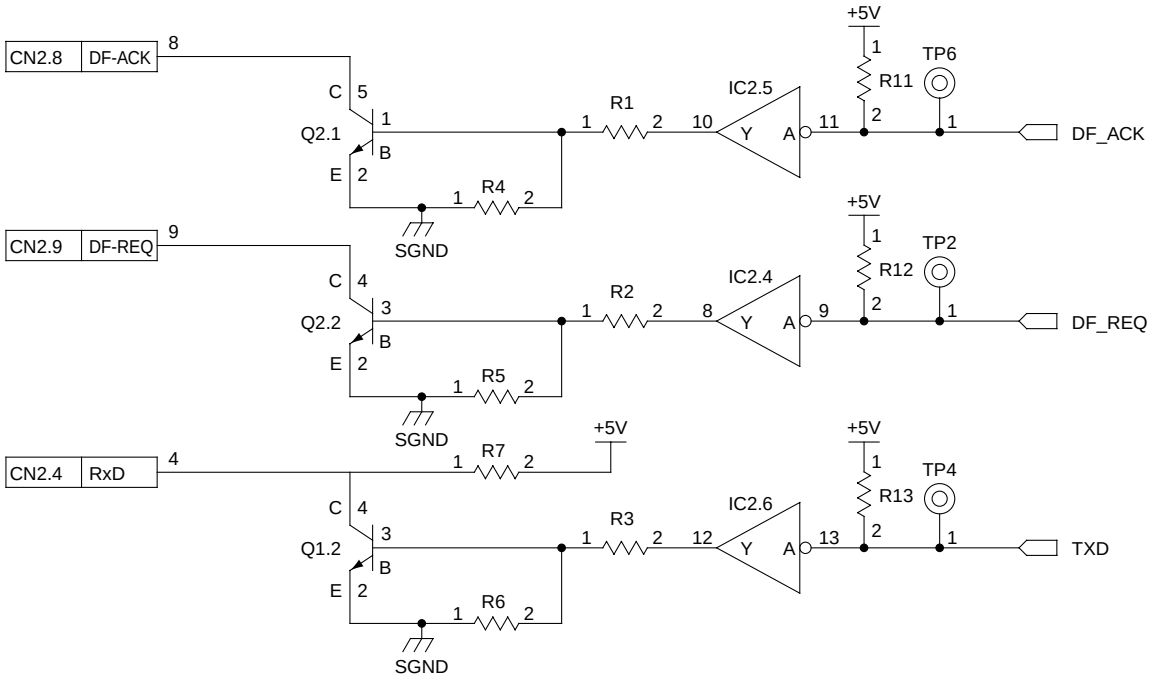
11. DESCRIPTION OF INPUT/OUTPUT SIGNALS

11.1 REQ Signal, ACK Signal and TxD Signal



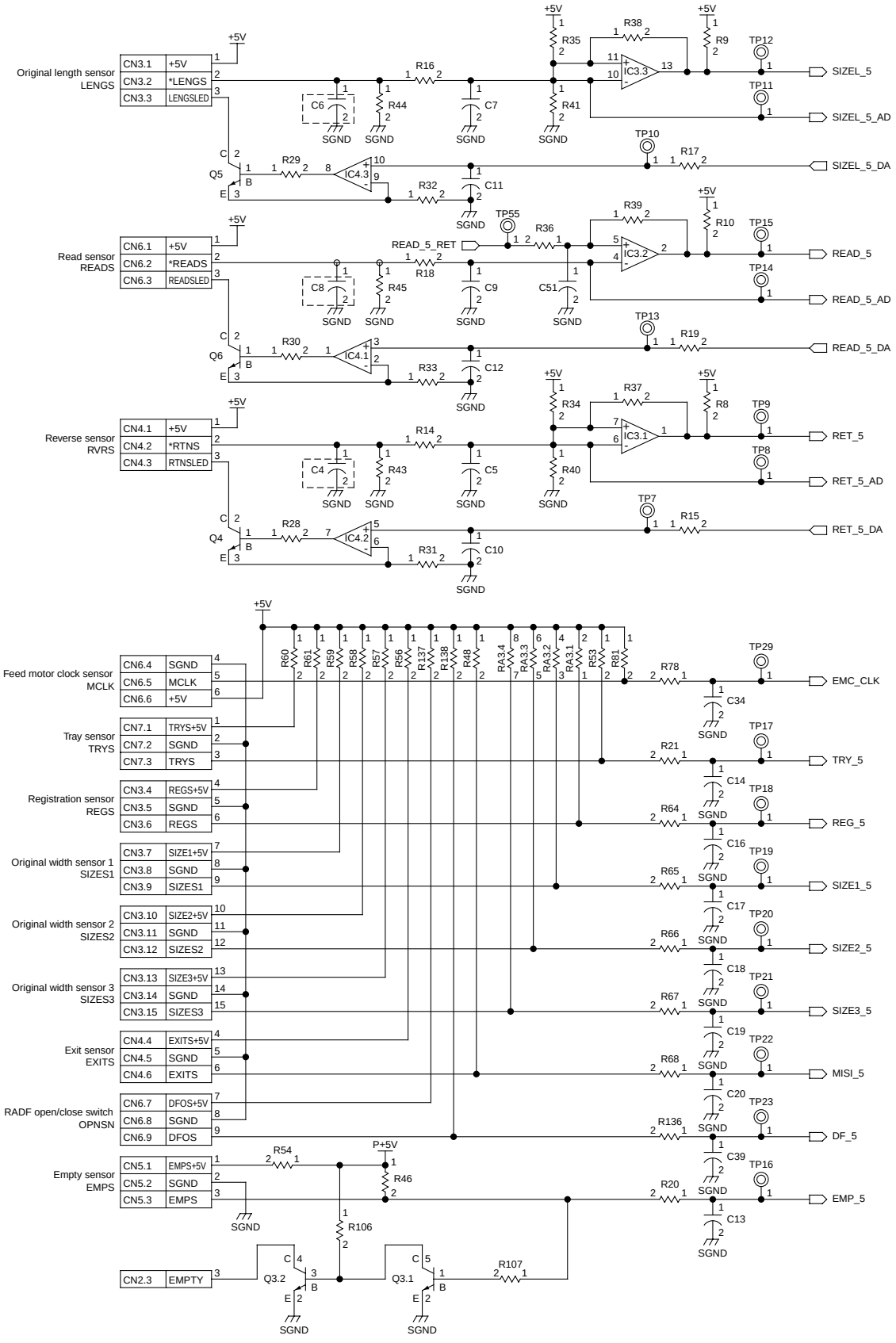
This circuit is an input circuit for communication with the scanner. The input is "1" for 5V and "0" for 0V. The logic for the connector area and that for the input port of CPU are the same.

11.2 DF-ACK Signal, DF-REQ Signal and RxD Signal



This circuit is an output circuit for communication with the scanner. The output is "1" for 5V and "0" for 0V. The logic for the connector area and that for the output port of CPU are the same.

11.3 Input Circuits for Sensors



The above are circuits for the input signals from an optical sensor.

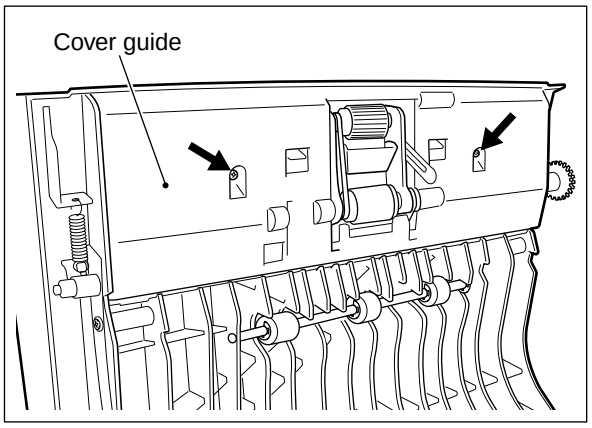
Siginal logic

Name	Connector level 5V ("1")	Connector level 0V ("0")
EMPS (Empty sensor)	Original not exist	Original exists
REGS (Registration sensor)	Original exists	Original not exist
EXITS (Exit sensor)	Original exists	Original not exist
SIZES 1 (Original width sensor 1)	Original exists	Original not exist
SIZES 2 (Original width sensor 2)	Original exists	Original not exist
SIZES 3 (Original width sensor 3)	Original exists	Original not exist
TRYS (Tray sensor)	Original exists	Original not exist
OPNSN (RADF open/close sensor)	RADF closed	RADF opened
MCLK (Feed motor clock sensor)	Light path blocked	Light path not blocked
LENGS (Original length sensor)	Original not exist (connector voltage 1.69V or higher)	Original exists (connector voltage lower than 1.69V)
READS (Read sensor)	Original not exist (connector voltage 1.70V or higher)	Original exists (connector voltage lower than 1.70V)
RVRS (Reverse sensor)	Original not exist (connector voltage 1.69V or higher)	Original exists (connector voltage lower than 1.69V)

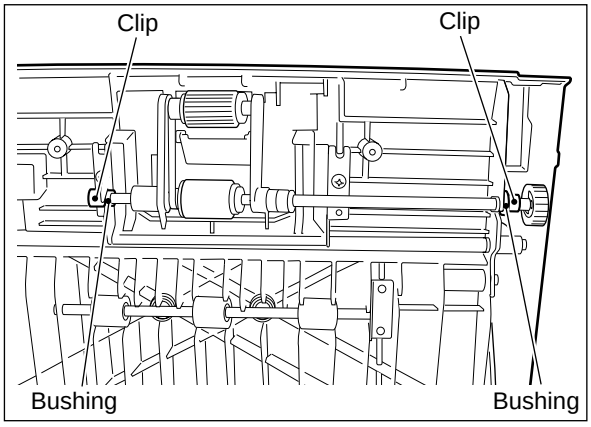
12. DISASSEMBLY AND ADJUSTMENT

12.1 Pickup Roller and Feed Roller

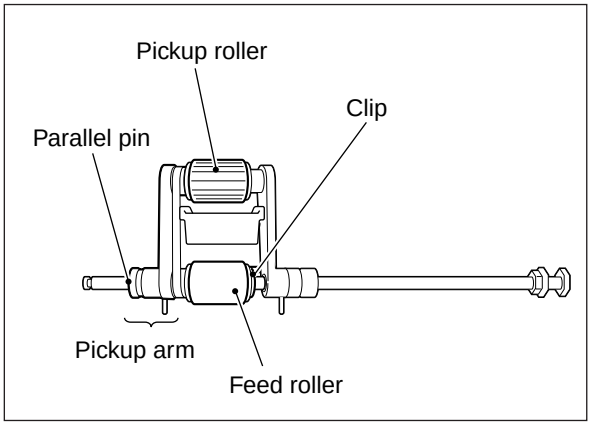
(1) Open the jam access cover.
(2) Remove 2 screws and take off the cover guide.



(3) Remove the clips at the both sides of the pickup roller unit. Slide the bushings and take off the pickup roller unit.

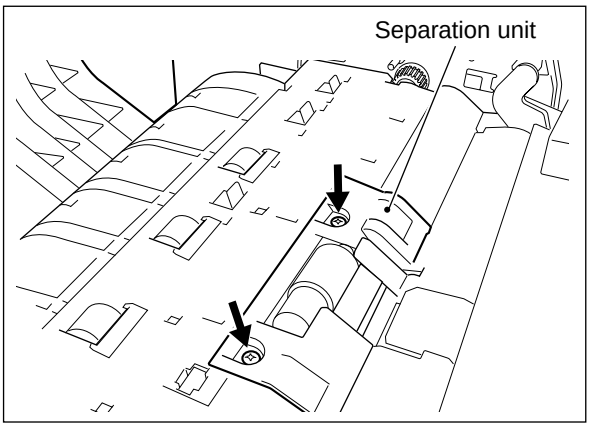


(4) Remove 2 clips and slide the feed roller, pickup roller and pickup arm. Pull out the parallel pin and remove the pickup arm, pickup roller and feed roller.

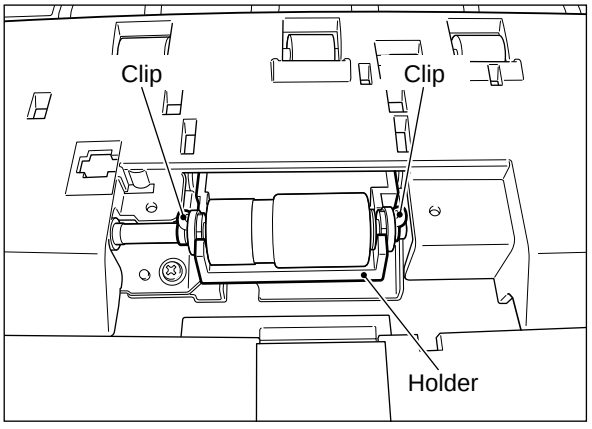


12.2 Separation Roller

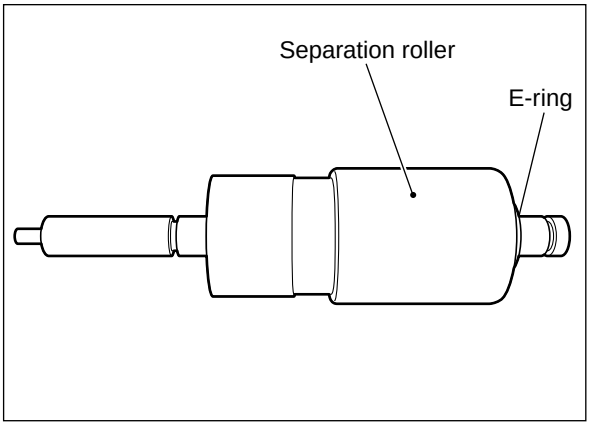
(1) Open the jam access cover.
(2) Remove 2 screws and take off the separation unit.



(3) Remove 2 clips and slide 2 bushings to remove the separation roller from the holder.

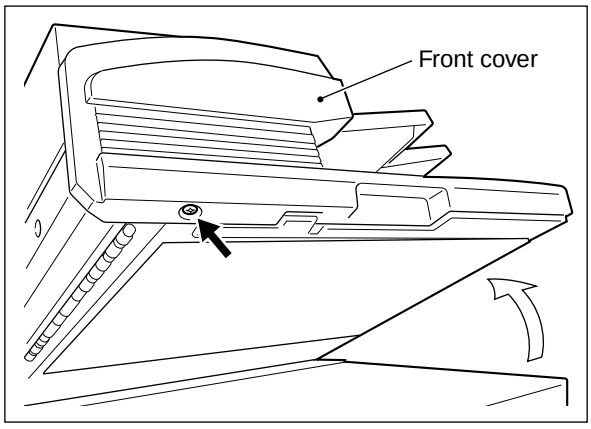


(4) Remove the E-ring, and pull out the shaft from the serapation roller.

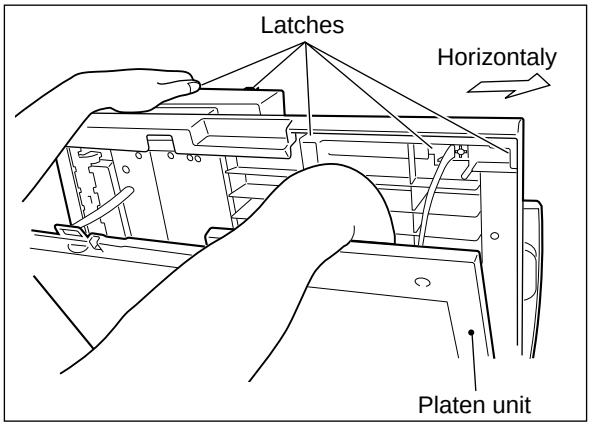


12.3 Reverse Solenoid

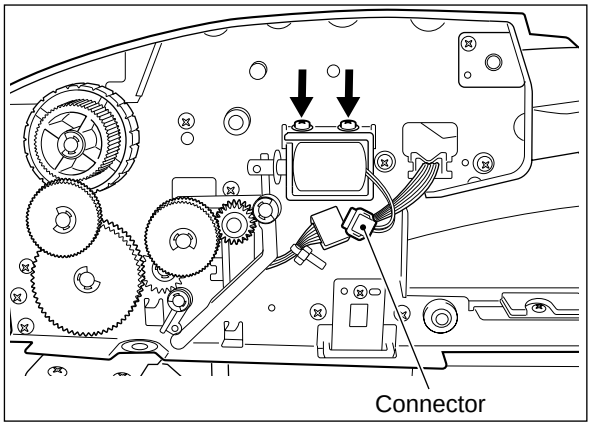
(1) Open the RADF. Remove one screw at the lower part of the front cover.



(2) Release 5 latches. Slide the front cover horizontally and remove it.



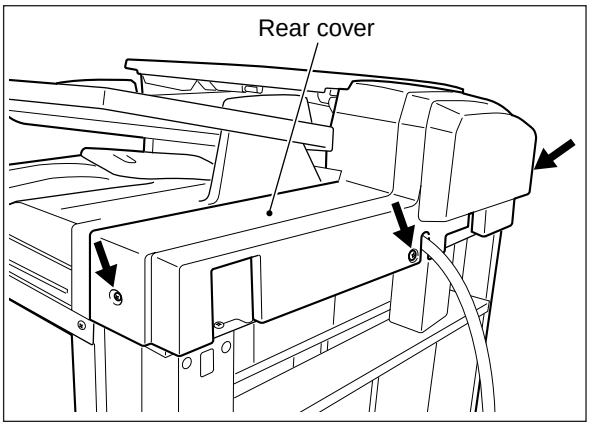
(3) Open the platen unit. Disconnect one connector and remove 2 screws. Take off the reverse solenoid.



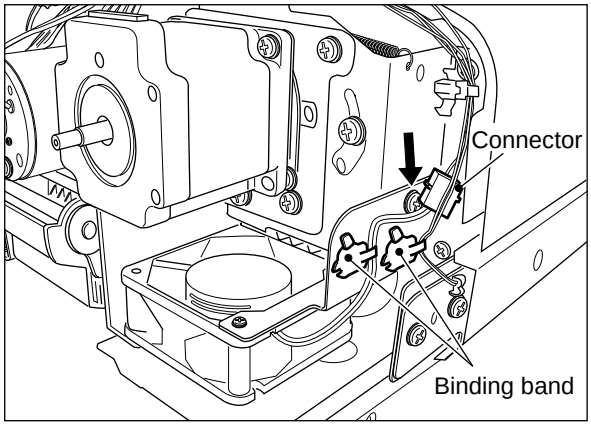
12.4 Drive System

12.4.1 Fan motor

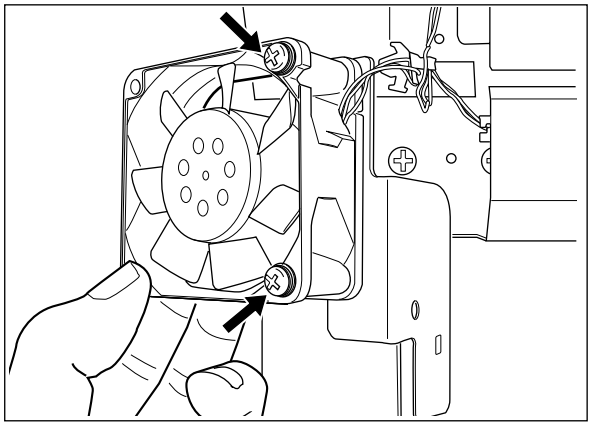
(1) Remove 3 screws and take off the rear cover.



(2) Disconnect one connector and take off the binding band from the fan motor bracket. Remove one screw and take off the fan motor with the bracket attached.



(3) Remove 2 screws and remove the fan motor from the bracket.

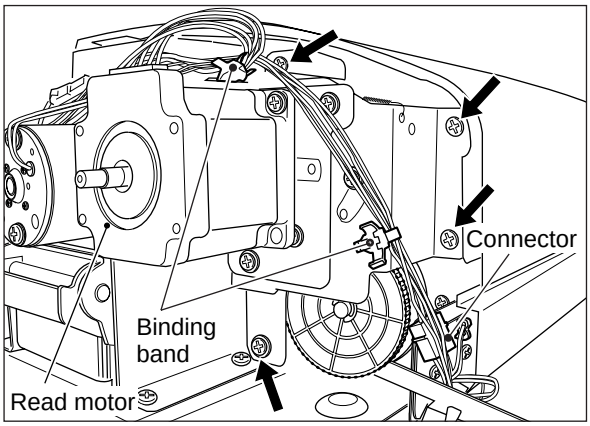


12.4.2 Read motor (MR-3011)

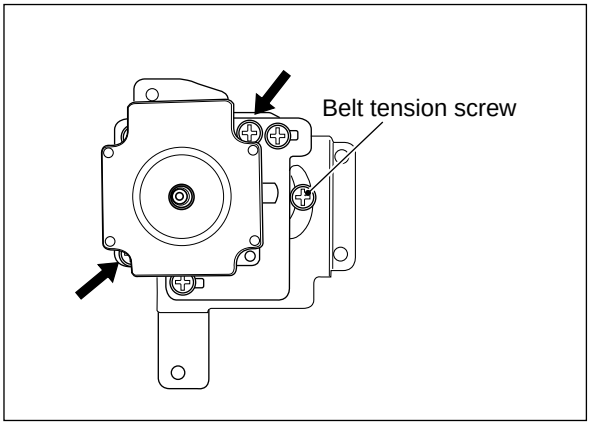
[A] Disassembly

(1) Disconnect 2 connectors and take off the 2 binding band from read motor bracket.

(2) Remove 4 screws and take off the read motor with the bracket attached.

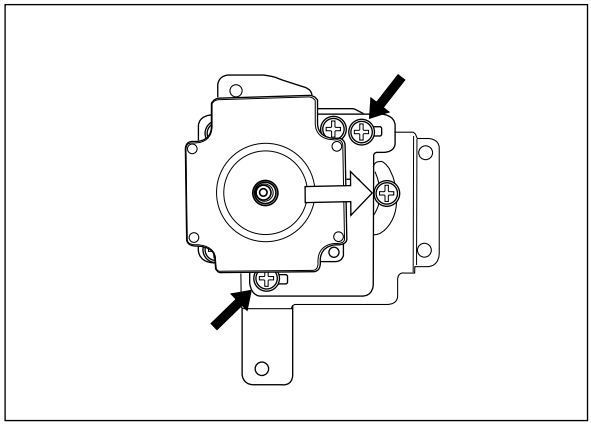


(3) Loosen one belt tension screw. Remove 2 screws and take the read motor apart from the bracket.

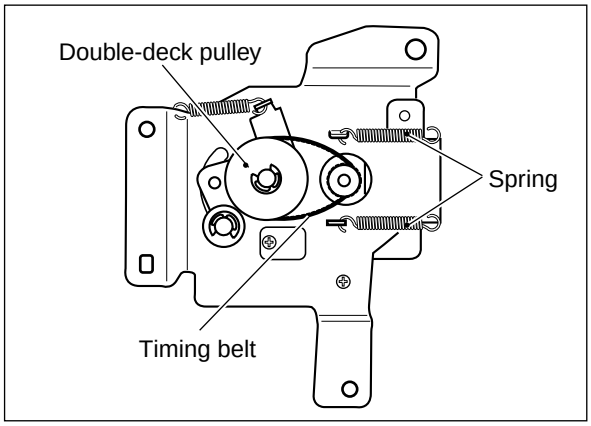


[B] Assembly and adjustment

(4) Attach the read motor to the bracket, and fix it temporarily with 2 screws while holding the read motor to the direction of the arrow.

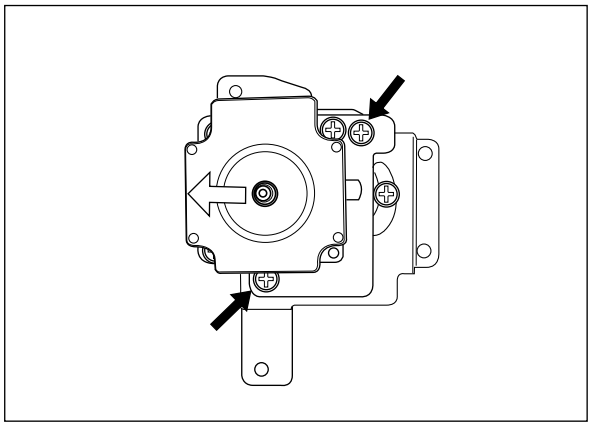


(5) Attach the timing belt and hook on 2 springs.

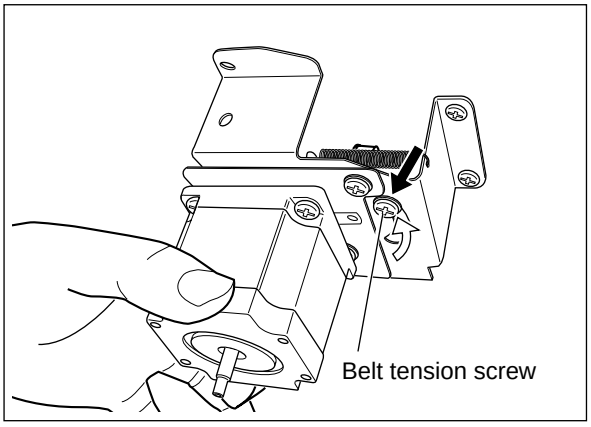


(6) Loosen 2 screws which have been temporarily fixed. Tighten then again to strain the timing belt.

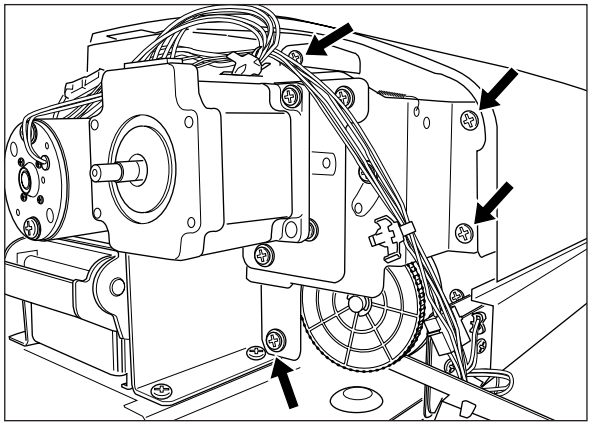
Note: Make sure that the belt is not twisting.



(7) Tighten the belt tension screw temporarily while bringing it up fully to the direction of the while arrow.

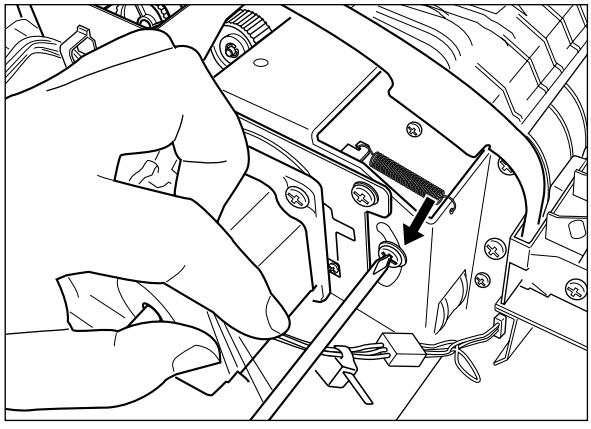


(8) Put the timing belt on the double-deck pulley and pulley of the main unit. Attach the bracket with the read motor on the rear frame with 4 screws.



(9) Loosen one belt tension screw and tighten it again to strain the timing belt.

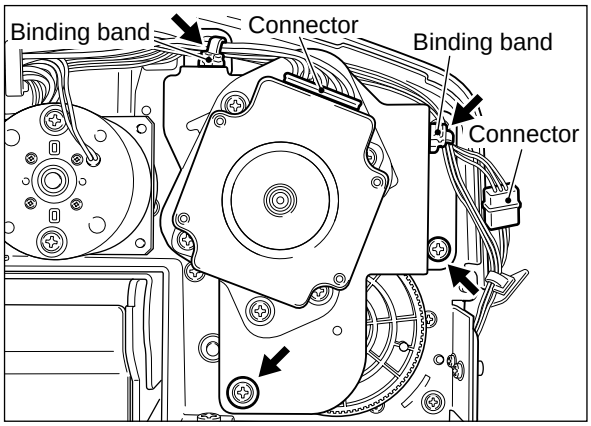
Note: Make sure that the belt is not twisting.



12.4.3 Read motor (MR-3012)

[A] Disassembly

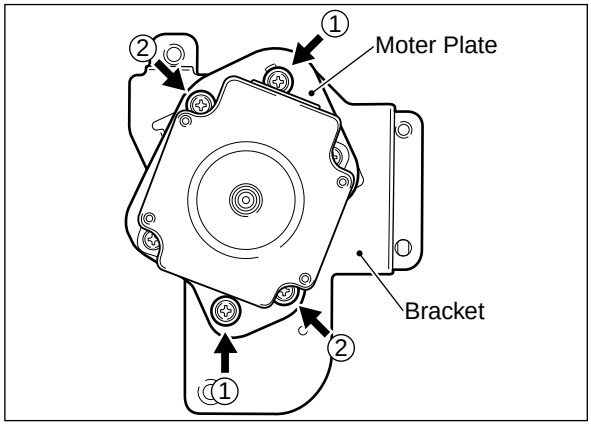
(1) Disconnect 2 connectors and remove 2 binding bands, from read motor bracket.
(2) Remove 4 screws and take off the read motor with the bracket attached.



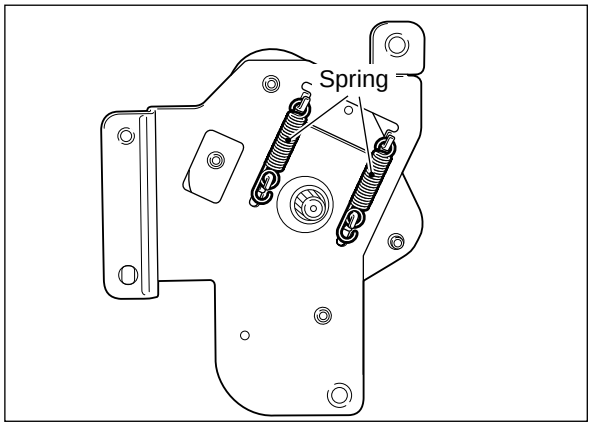
(3) Detach 2 springs at the back of the bracket. Remove 2 screws ① and take off the bracket.
(4) Remove 2 screws ② and take the read motor apart from the motor plate.

[B] Assembly and adjustment

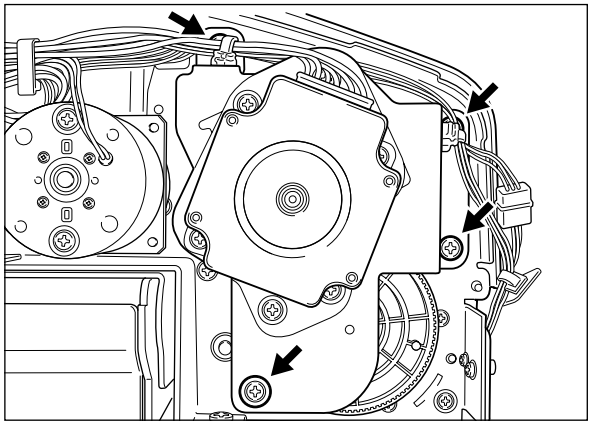
(5) Attach the read motor to the motor plate with 2 screws ②.
(6) Attach the motor plate to the bracket and fix it with 2 screws ① temporarily.



(7) Hook on 2 springs.

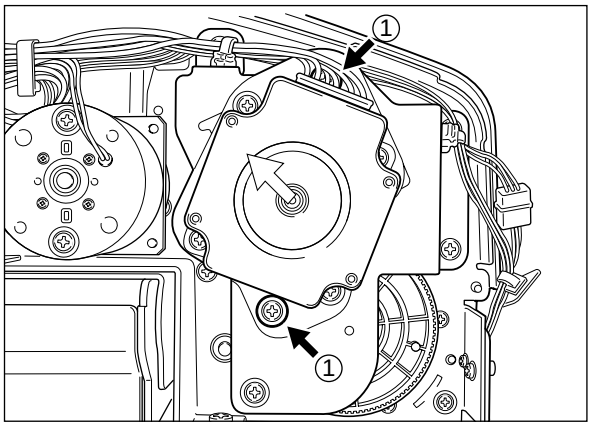


(8) Put the timing belt on the pulley of the main unit and gear of the motor shaft.
Attach the bracket with the read motor on the rear frame with 4 screws.



(9) Loosen 2 screws ① which have been temporarily fixed. Tighten them again to strain the timing belt.

Note: Make sure that the timing belt is not twisting.

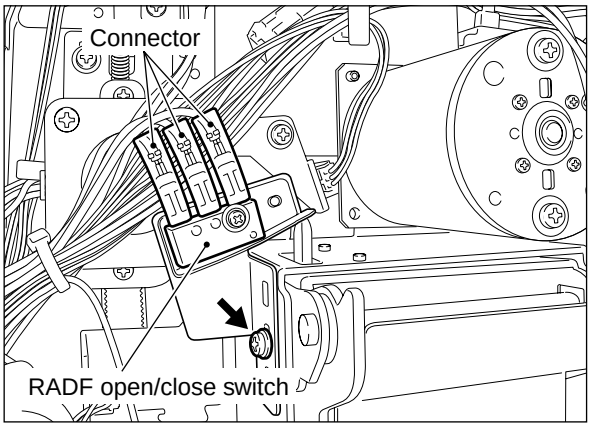


12.4.4 RADF open/close switch

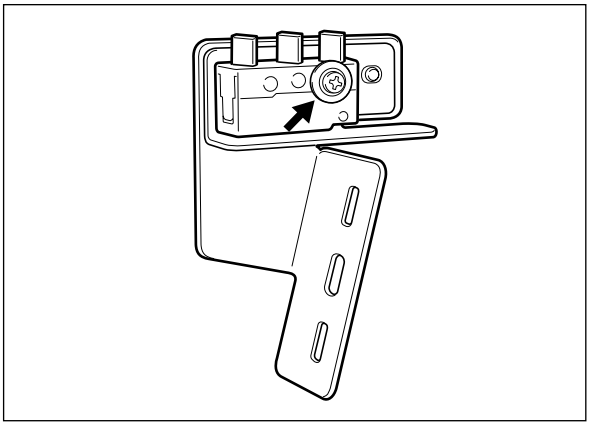
[A] Disassembly

(1) Disconnect 3 connectors.

(2) Remove one screw and take off the RADF open/close switch with the bracket attached.

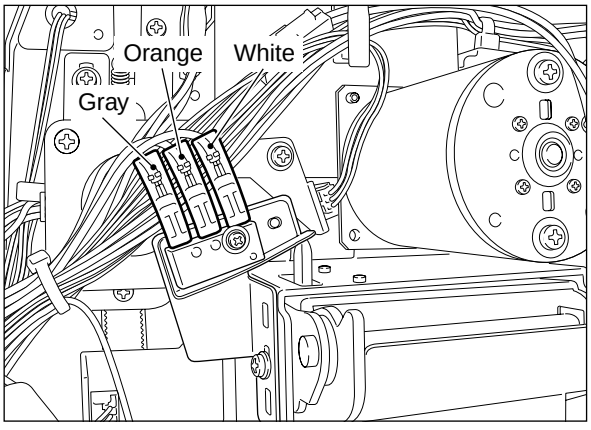


(3) Remove one screw and take the RADF open/close switch apart from the bracket.



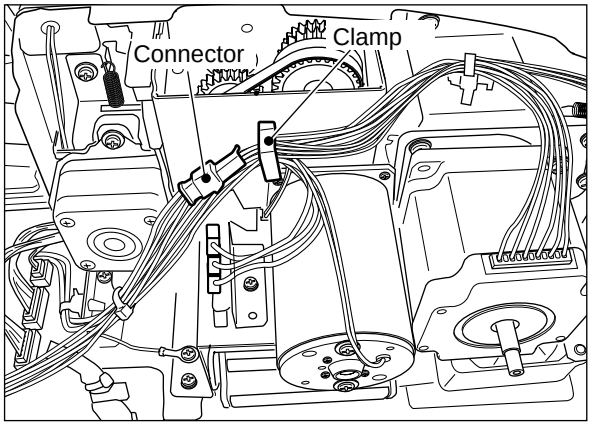
[B] Assembly and adjustment

(4) Attach the RADF open/close switch to the bracket. Connect the connectors as shown in the right figure.

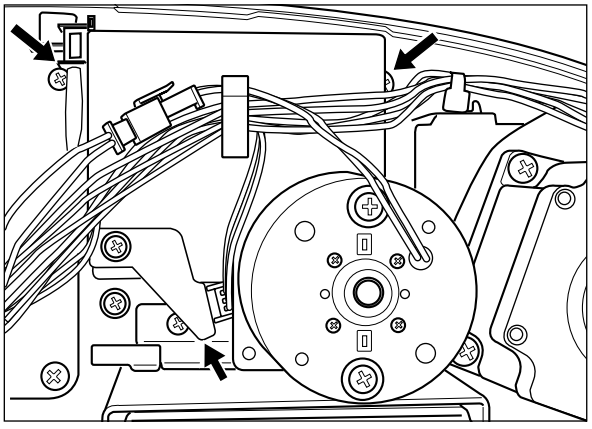


12.4.5 Feed motor

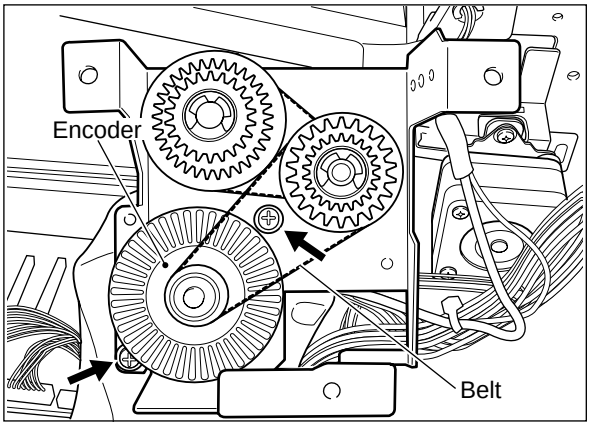
(1) Remove the harness from the clamp and disconnect one connector.



(2) Remove 3 screws and take off the feed motor with the bracket attached.

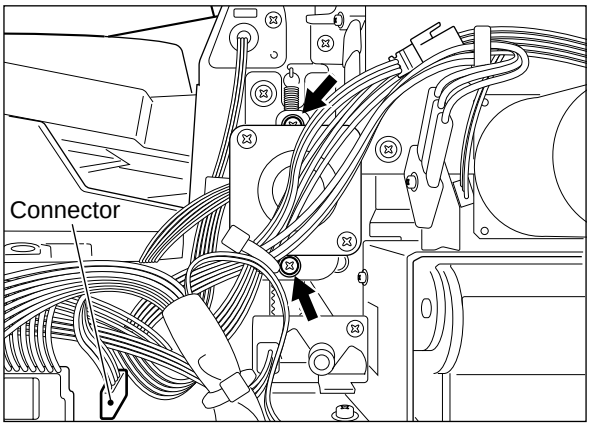


(3) Remove the belt and encoder.
Remove 2 screws and take off the feed motor from the bracket.



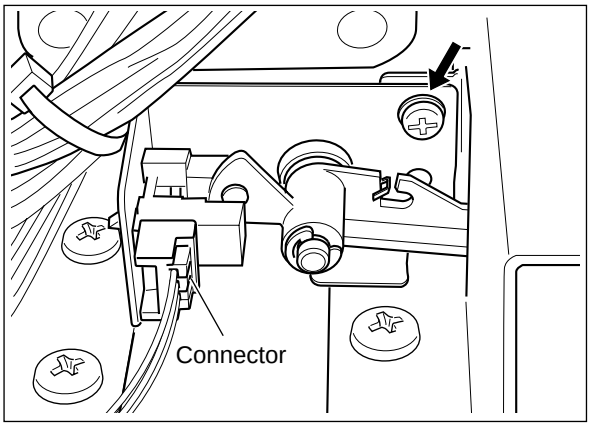
12.4.6 Reverse motor

(1) Disconnect one connector.
(2) Remove 2 screws and take off the reverse motor.



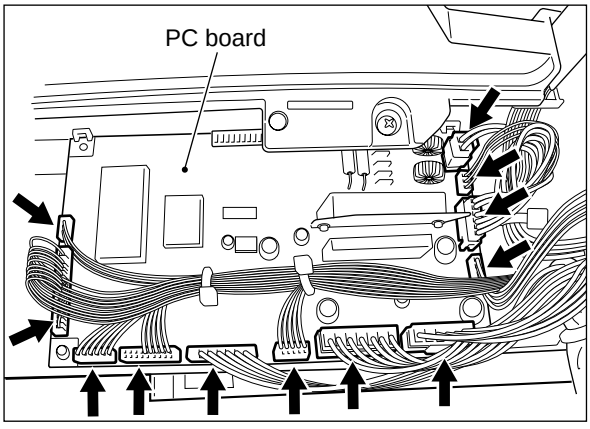
12.4.7 RADF open/close sensor

(1) Disconnect one connector.
(2) Remove one screw and take off the RADF open/close sensor with the bracket attached.
(3) Release the latches and remove the sensor from the bracket.



12.4.8 PC board

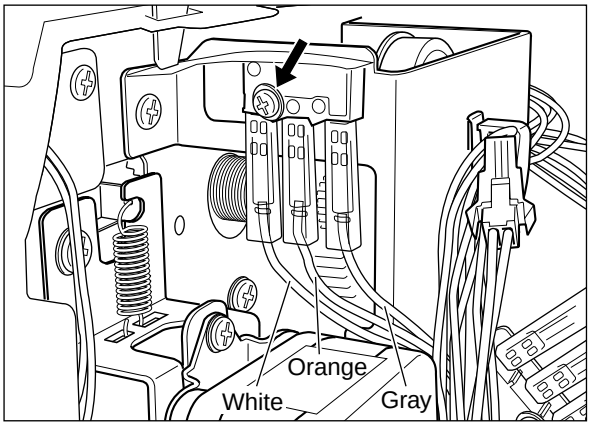
(1) Disconnect 12 connectors and release 4 lock supports.
Take out the PC board



12.4.9 Jam access cover switch

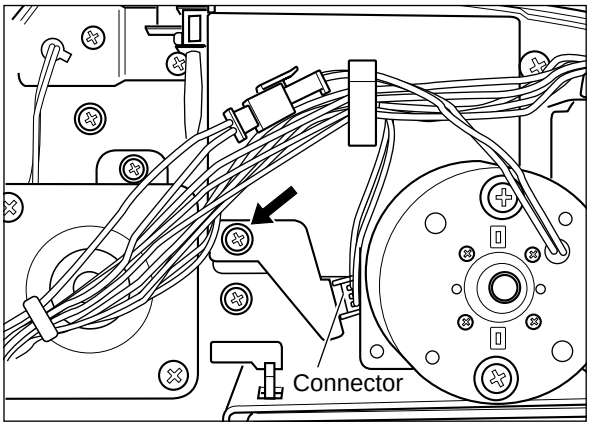
[A] Disassembly
Disconnect 3 connectors and remove one fixing screw. Take off the switch.

[B] Assembly and adjustment
Fix the jam access cover switch to the bracket. Connect the connectors as shown in the right figure.

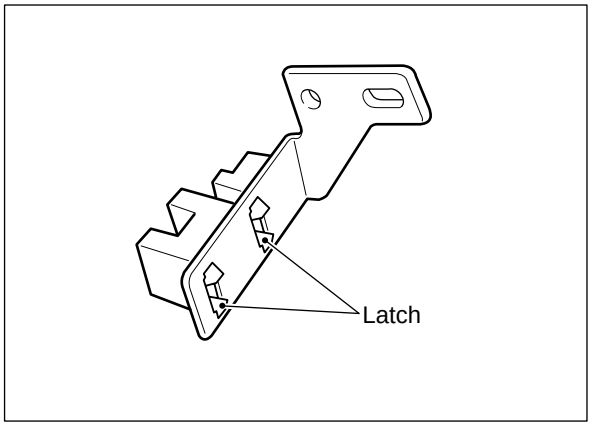


12.4.10 Feed motor clock sensor

(1) Disconnect one connector and remove one screw. Take off the feed motor clock sensor with the bracket attached.

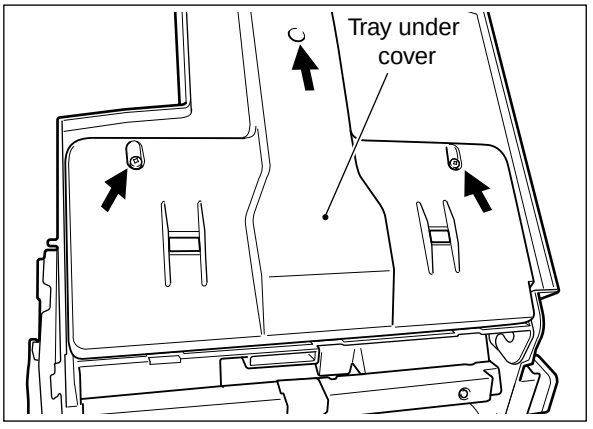


(2) Release the latches and remove the feed motor clock sensor.

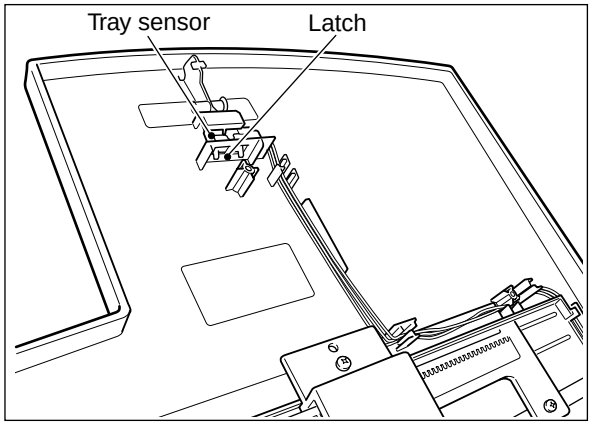


12.5 Tray sensor

(1) Remove 3 screws at the back of the tray and take off the cover from the tray.

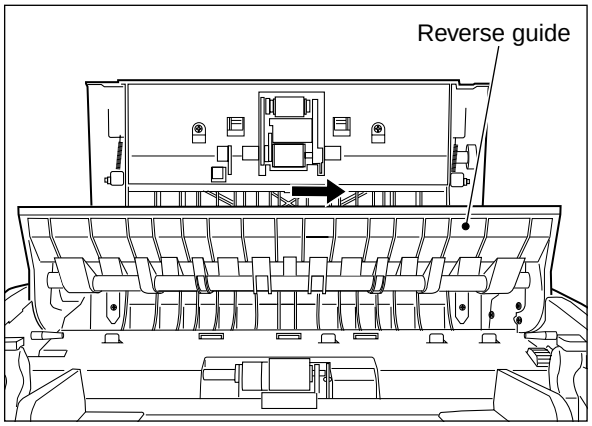


(2) Disconnect one connector.
(3) Release the latches of the sensor and take off the tray sensor.

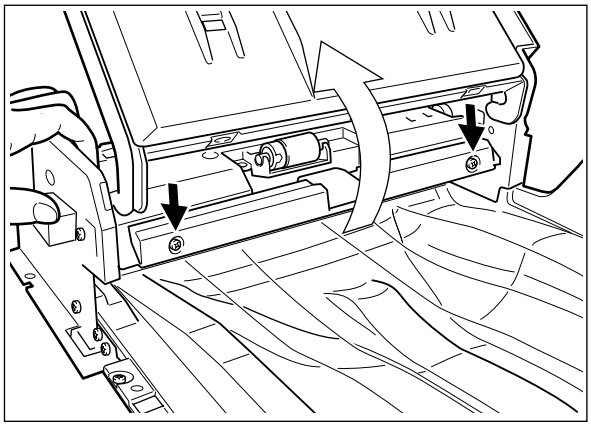


12.6 Empty Sensor, Registration Sensor, Original Width Sensor and Original Length Sensor

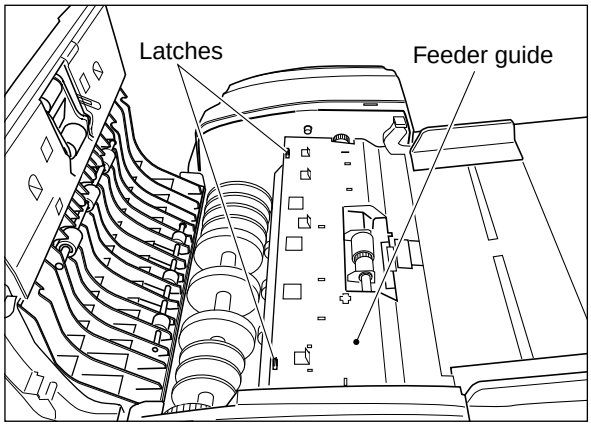
(1) Open the jam access cover.
Remove 2 screws and take off the separation unit.
(2) Open the reverse guide and take it off upward while pushing it to the direction of the arrow.



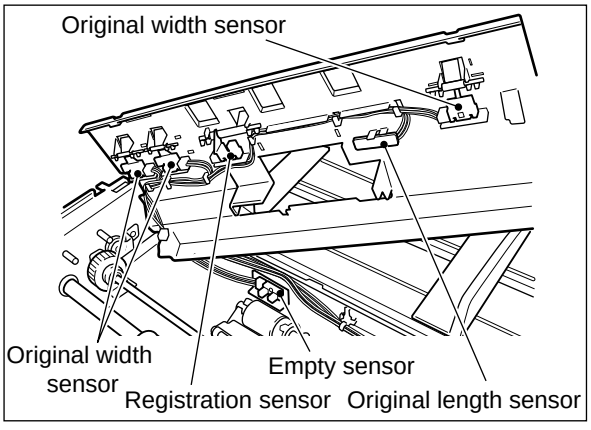
(3) Turn over the tray and remove 2 screws fixing the feeder guide.



(4) Release the latches of the feeder guide and turn it over.

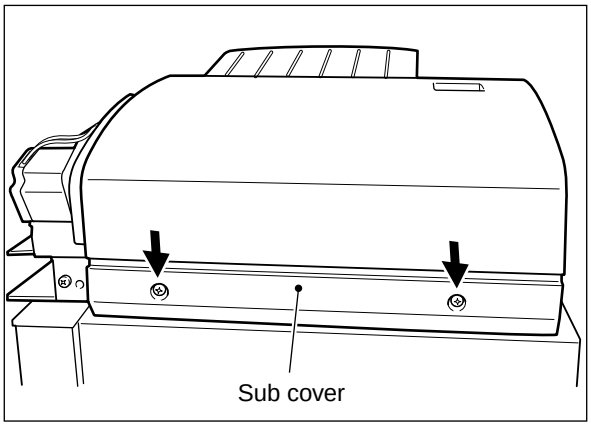


(5) Disconnect the connectors and release the latches.
Remove the registration sensor, original width sensor and original length sensor.

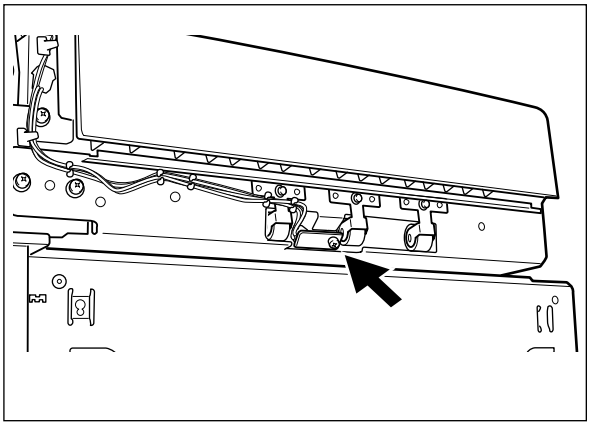


12.7 Read Sensor

(1) Remove 2 screws and take off the sub cover.

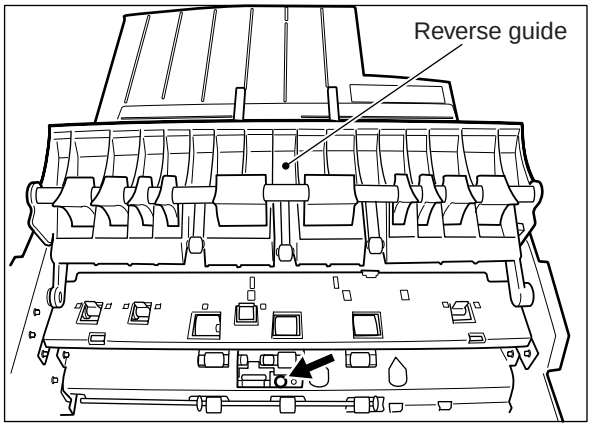


(2) Remove one screw and disconnect one connector.
Take off the read sensor.

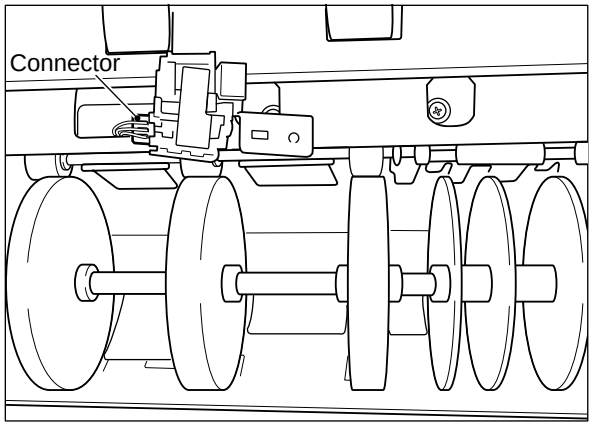


12.8 Exit Sensor

(1) Open the jam access cover and the reverse guide.
(2) Remove one screw and take off the exit sensor with the bracket attached.

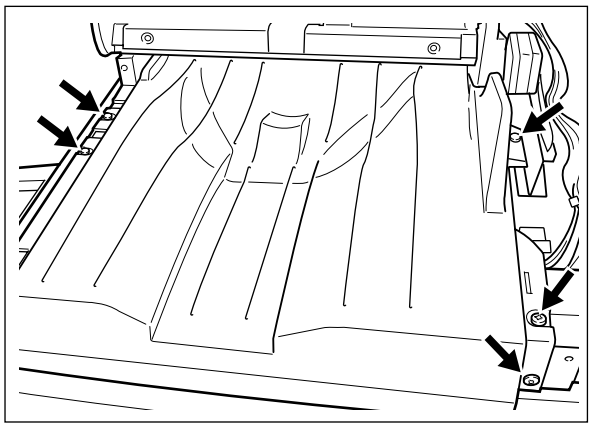


(3) Disconnect the connector and release the latches.
Remove the exit sensor from the bracket.

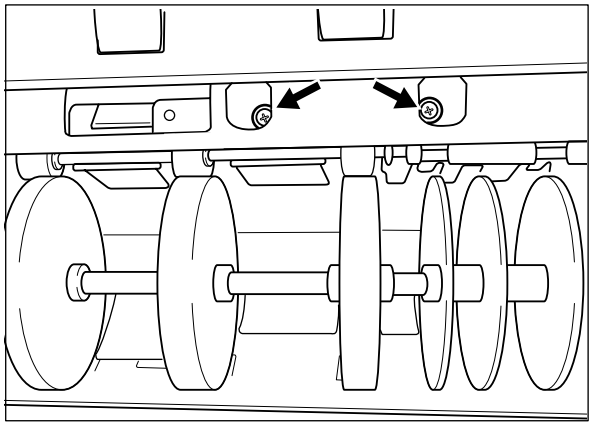


12.9 Reverse Sensor

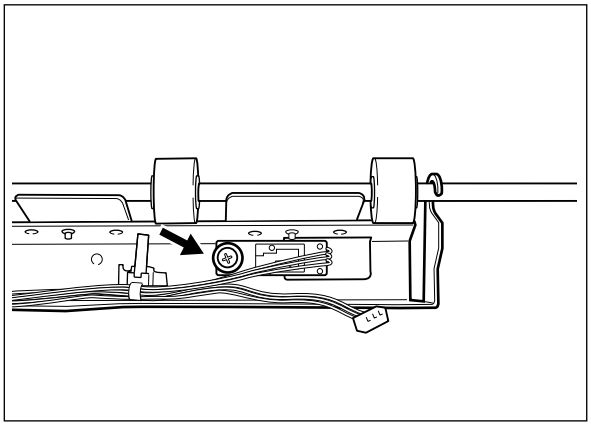
(1) Remove 5 screws and take off the original receiving tray.



(2) Remove 2 screws fixing the bracket of the reverse sensor. Pull out the bracket to the exit side.

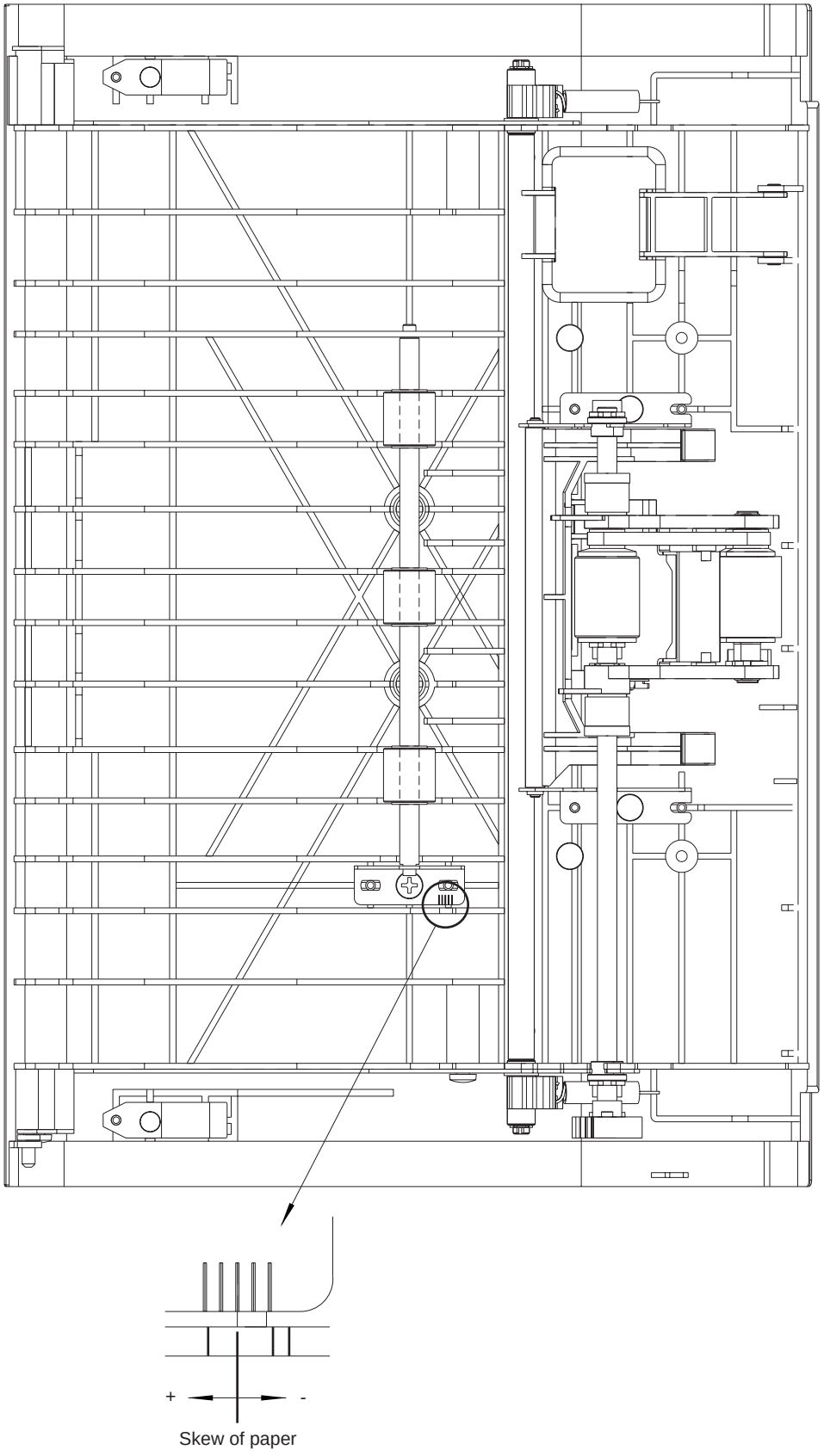


(3) Remove one screw and take the reverse sensor apart from the bracket.
(4) Disconnect one connector.
Take off the reverse sensor.



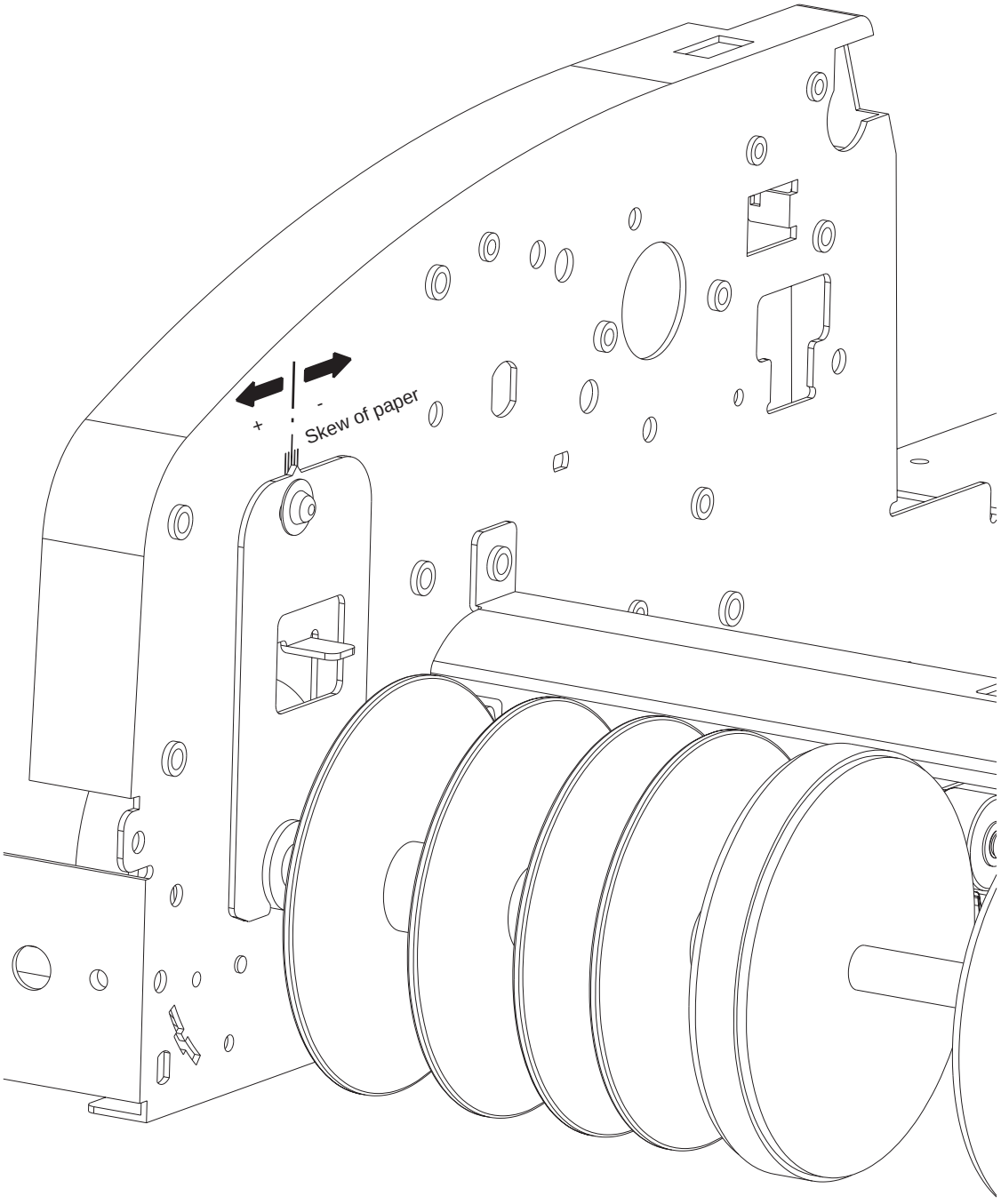
12.10 Adjustment of registration

Install the bracket while matching the center mark on it with the left edge of rib.
Perform test copying. Make adjustment if the skew amount does not satisfy the specification.



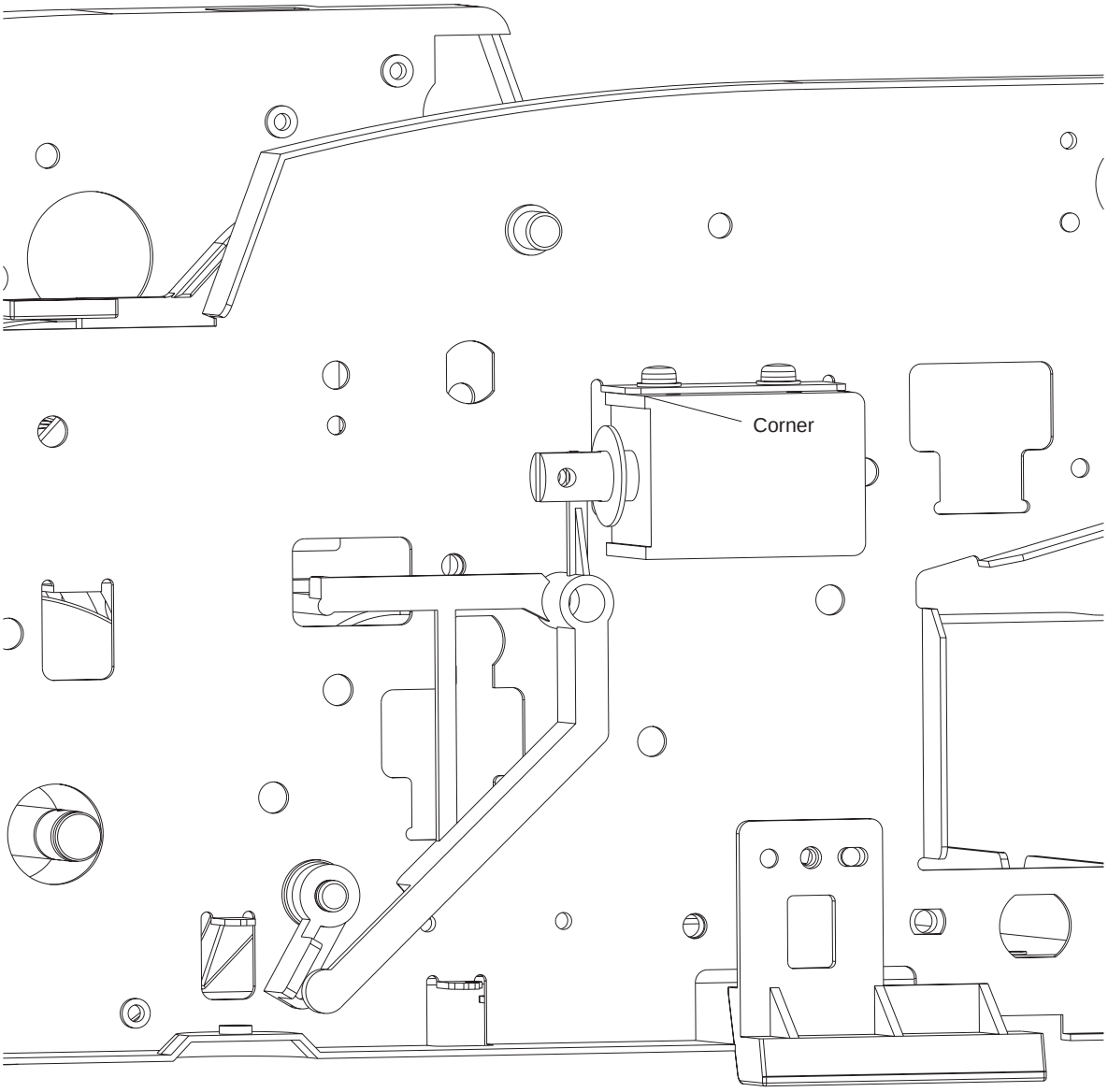
12.11 Adustment of original registration for reversing operation

Attach the bracket while matching protrusion with the center mark on the frame.
Perform test copying. Make adjustment if the skew amount does not satisfy the specification.



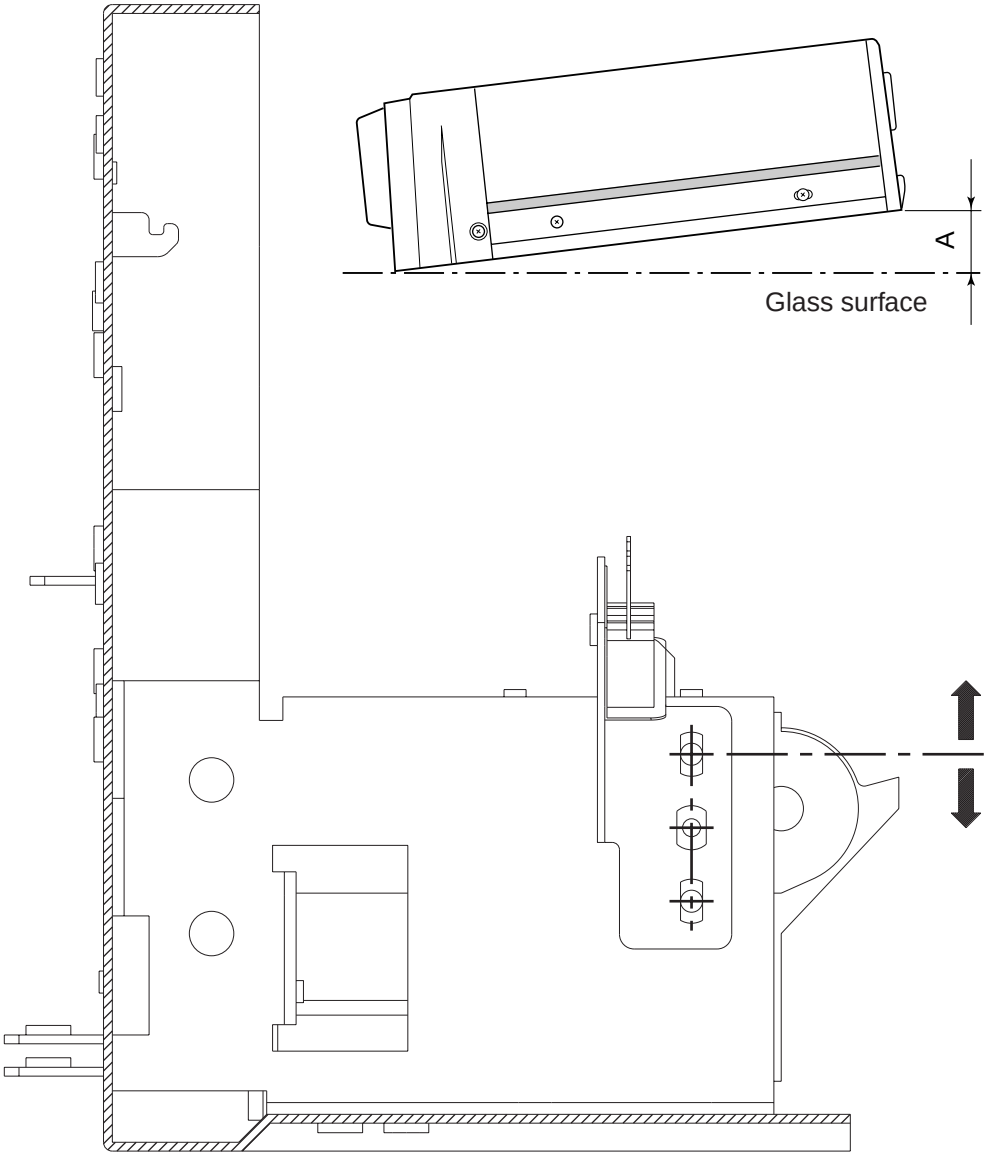
12.12 Adjustment of reverse solenoid

Attach the reverse solenoid while matching the corner of the solenoid with that of folded up plate of the front frame.
If the exit flapper does not move properly, loosen the screws and adjust the position of the solenoid.



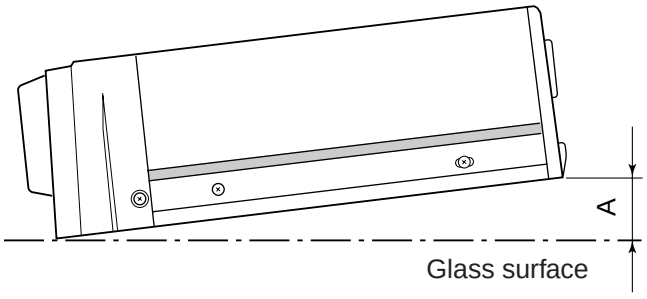
12.13 Adjustment of RADF open/close switch

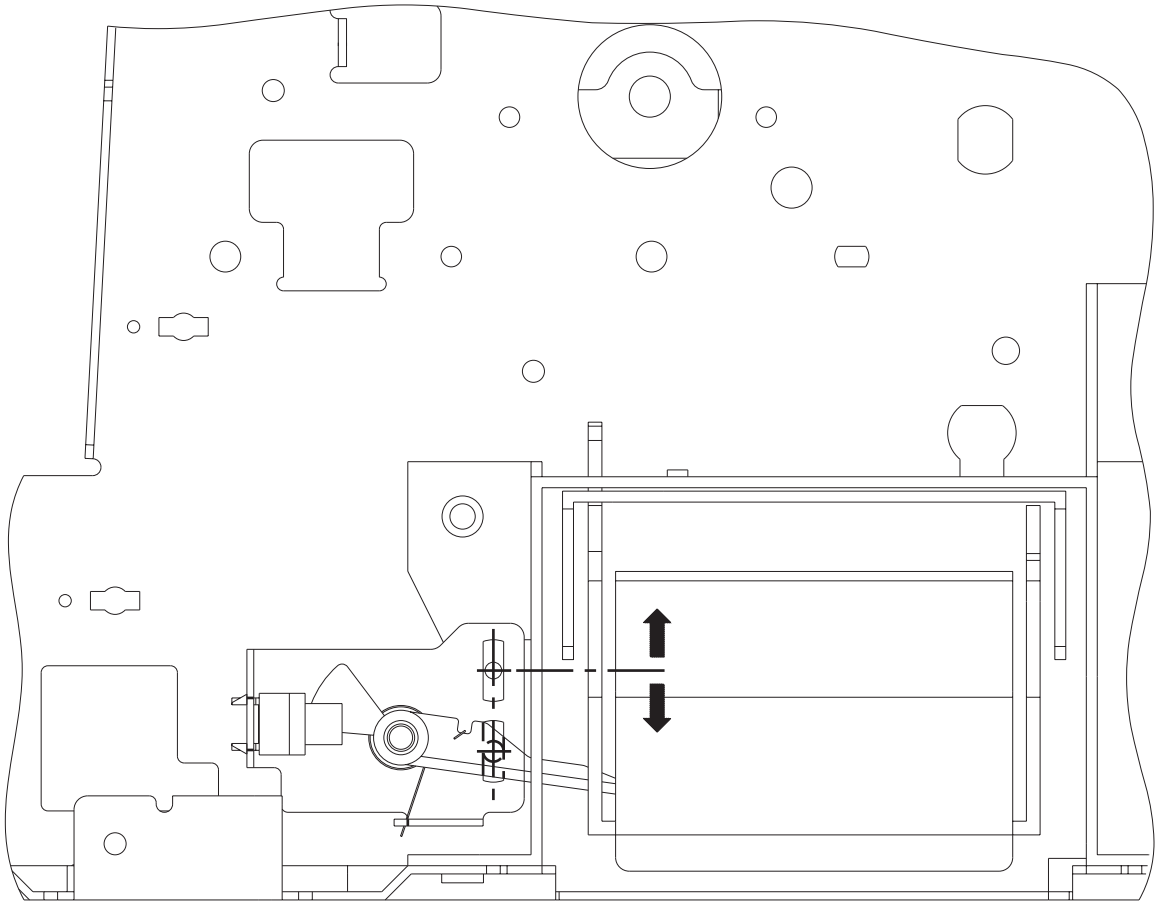
Adjust the position of the bracket so that the switch is turned ON while the RADF falls by its own weight (dimension A: 40 to 45 mm).



12.14 Adjustment of RADF open/close sensor

Adjust the position of the bracket so that the sensor is turned ON while the RADF falls by its own weight (dimension A: 30 to 35 mm).



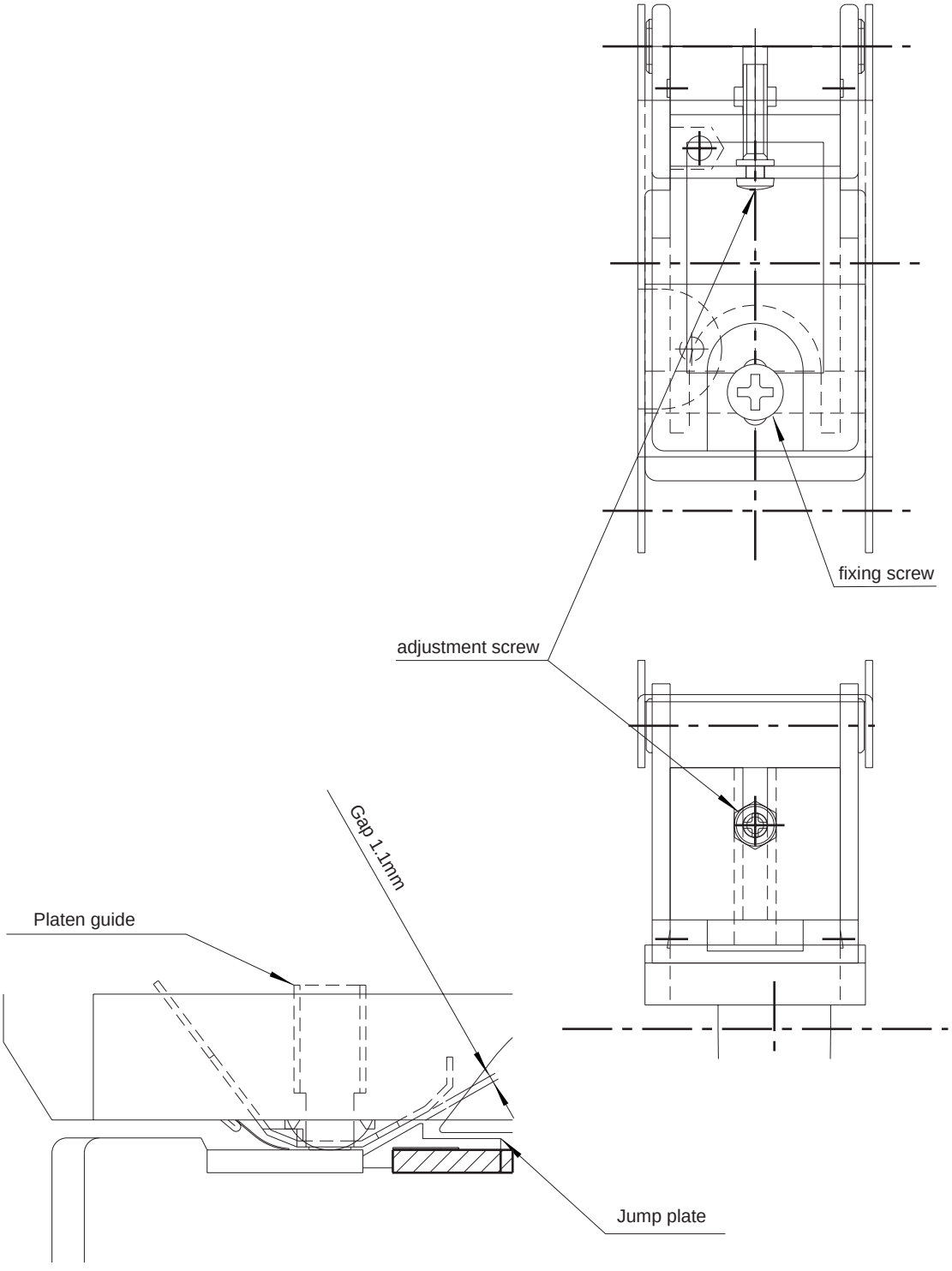


12.15 Adjustment of image skew

Assemble the scanning guide and jump plate using the adjustment screw located at the hinge so that the gap between them is 1.1mm.

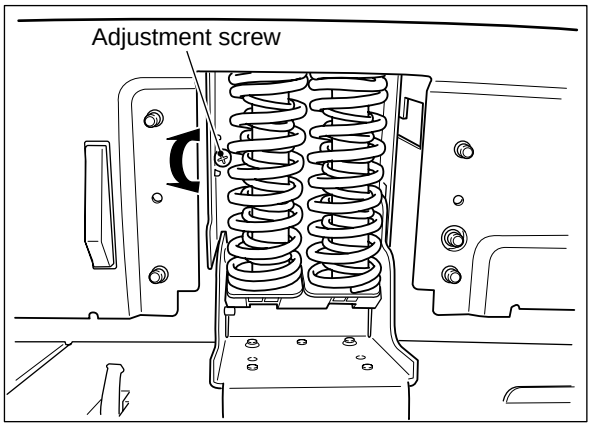
Perform copying test. If the image does not satisfy the specification, make finer adjustment by adjustment screw at right side of hinge.

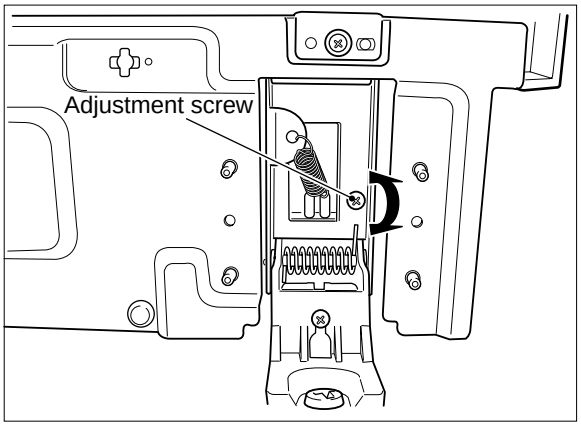
Note: Loosen the fixing screw to perform the adjustment, and make sure to tighten it when it is finished.

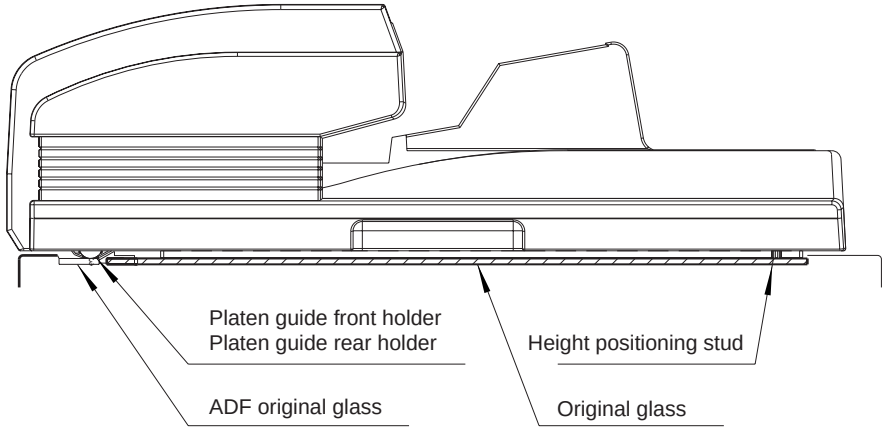


12.16 Adjustment of height (RADF)

Make adjustment using the adjustment screws located at the right and left hinges so that the platen guide front holder and platen guide rear holder contact with the ADF original glass, and the height positioning stud contacts with the original glass.





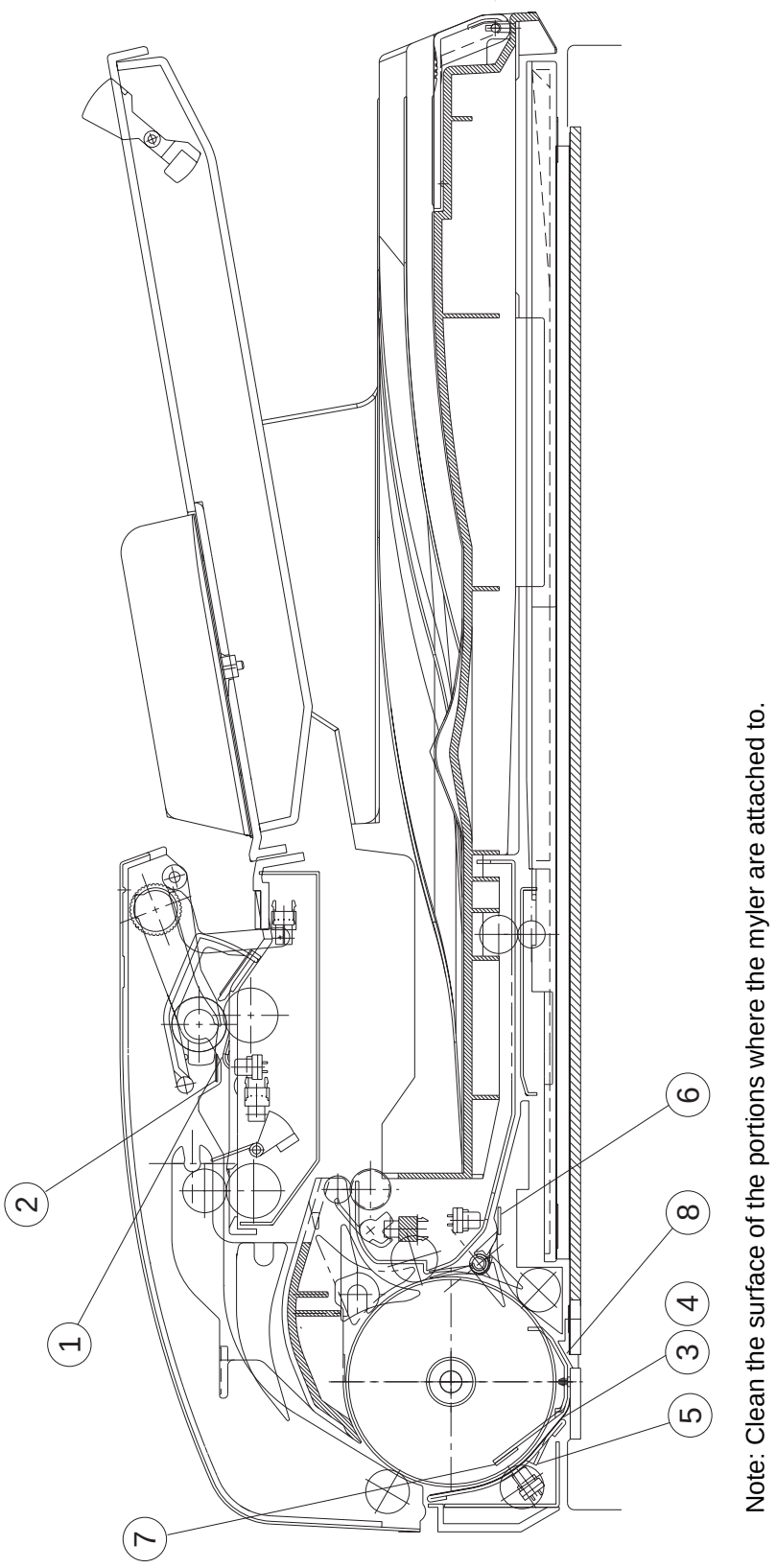


12.17 Intialization of EEPROM and Adjustment of Sensors

When any of the PC board, original length sensor, and reverse sensor was replaced with new one, initialization of the EEPROM and adjustment of the sensors must be performed in the adjustment mode (05). Make sure that there is no original on the sensors and the RADF unit is closed before performing these initialization and adjustment. See the adjustment mode (05) in the PPC Service Handbook for the details.

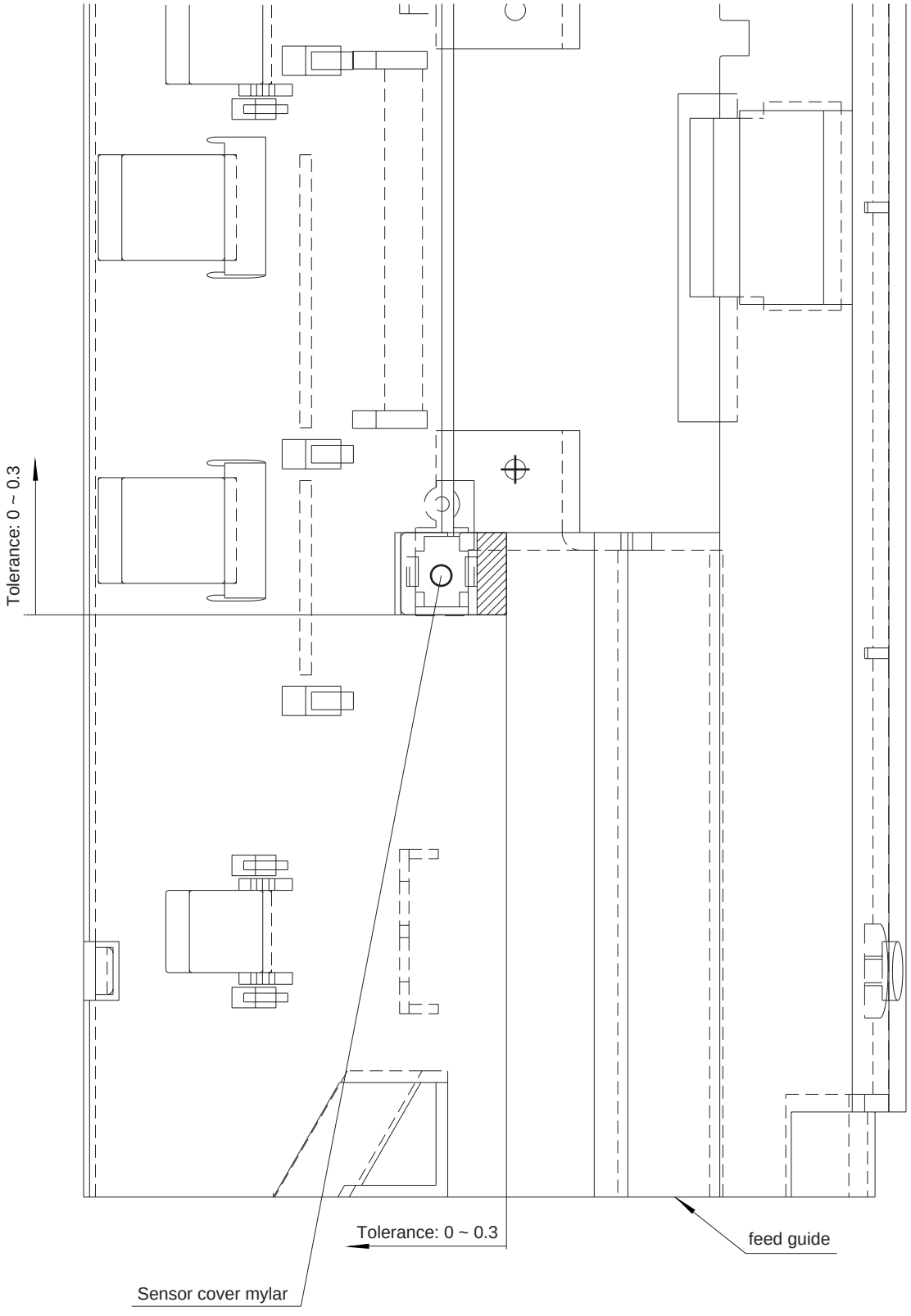
Errors such as paper jamming may occur if the EEPROM is not initialized and the sensors are not adjusted after the above mentioned parts were replaces.

12.18 Attachment of Mylars

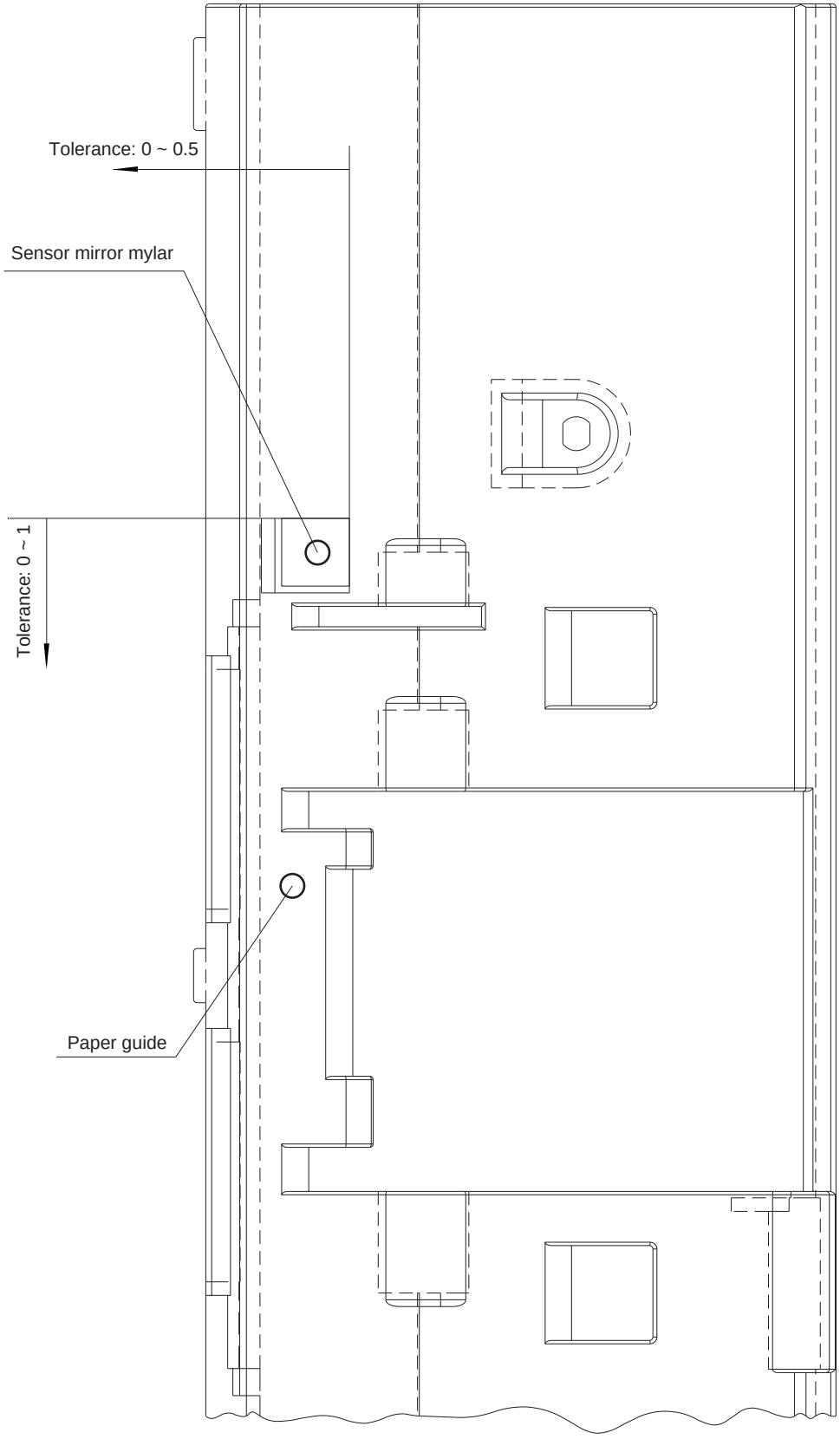


Note: Clean the surface of the portions where the myler are attached to.

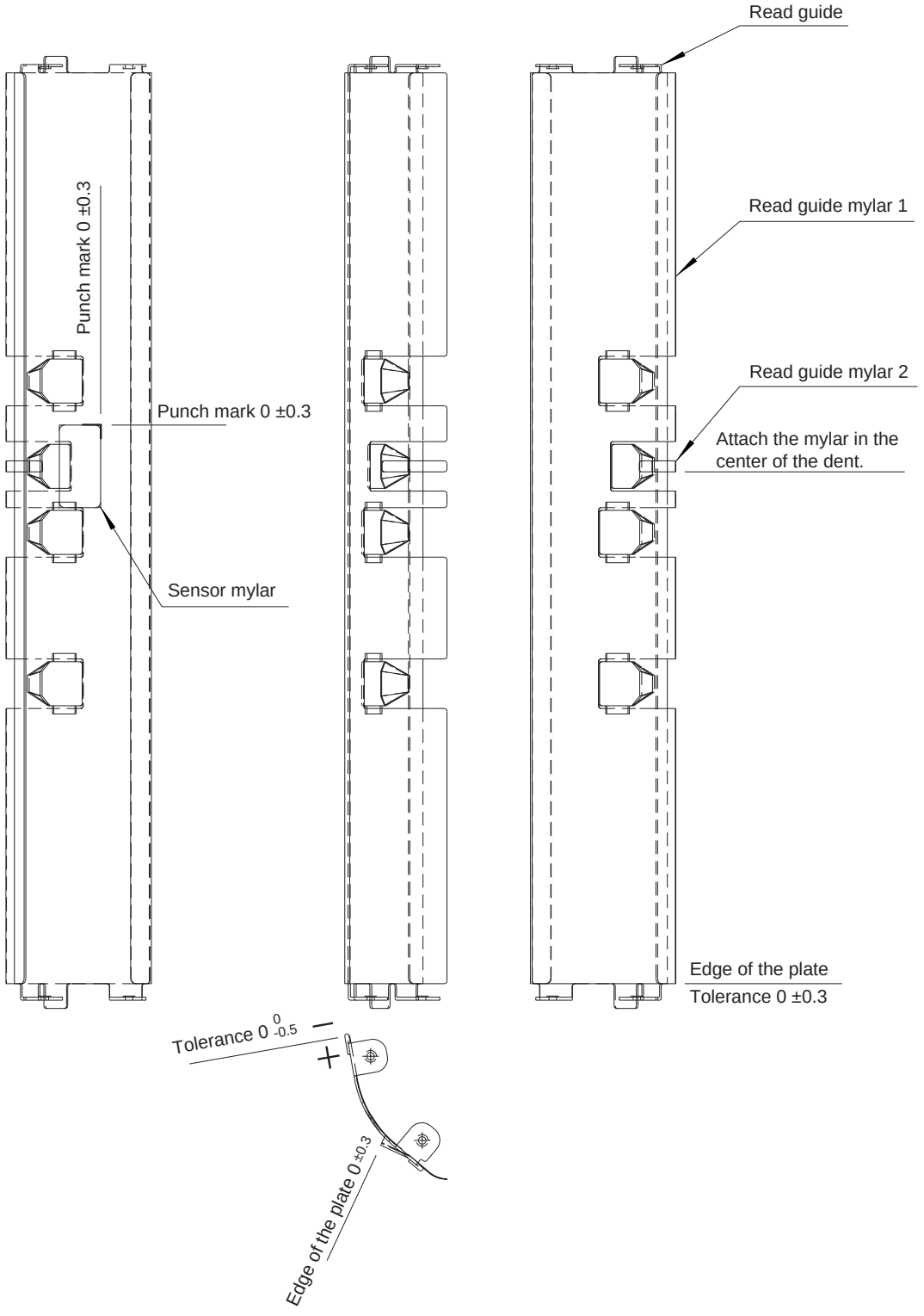
① Sensor cover mylar



② Sensor mirror mylar

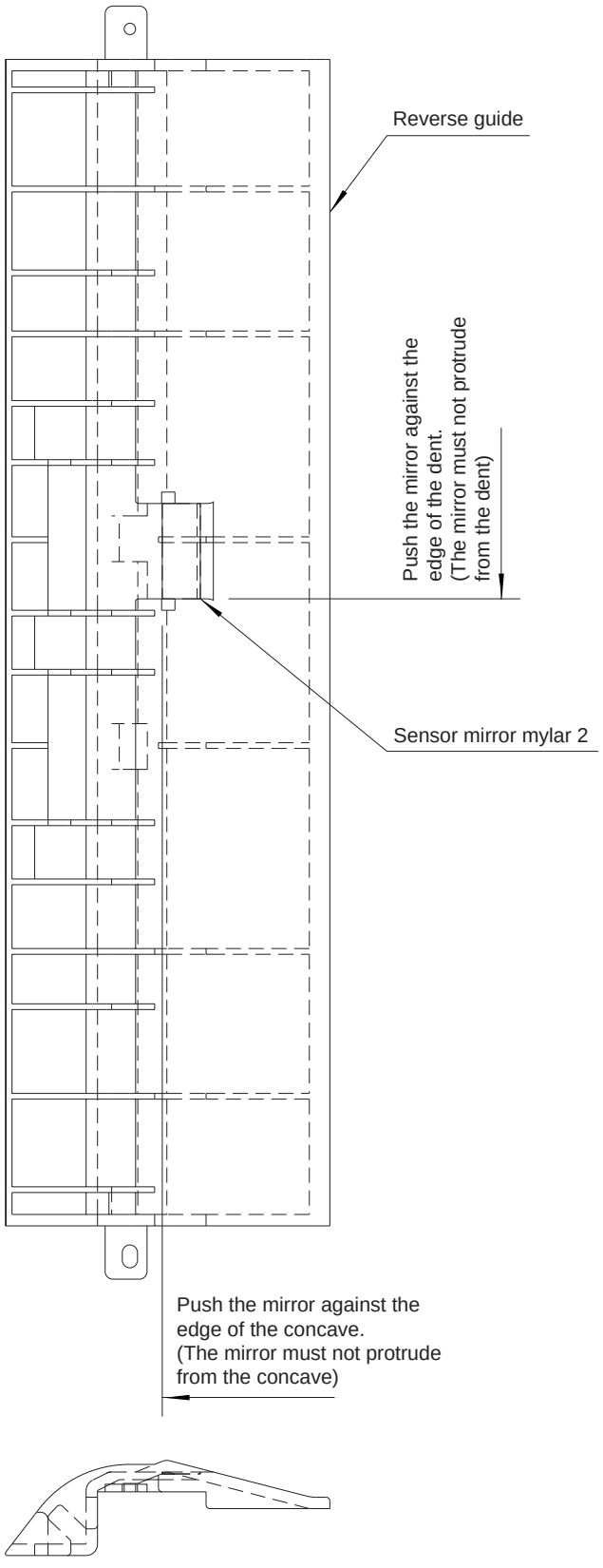


③ Read guide mylar 1
④ Read guide mylar 2
⑤ Sensor mylar
Clean the surface of portions to where the mylars are attached.
Attach the read guide mylar 1 and 2 and sensor mylar to the read guide.
Make sure there are no wrinkles or bubbling on the surface of the read guide.



⑥ Sensor mirror mylar 2

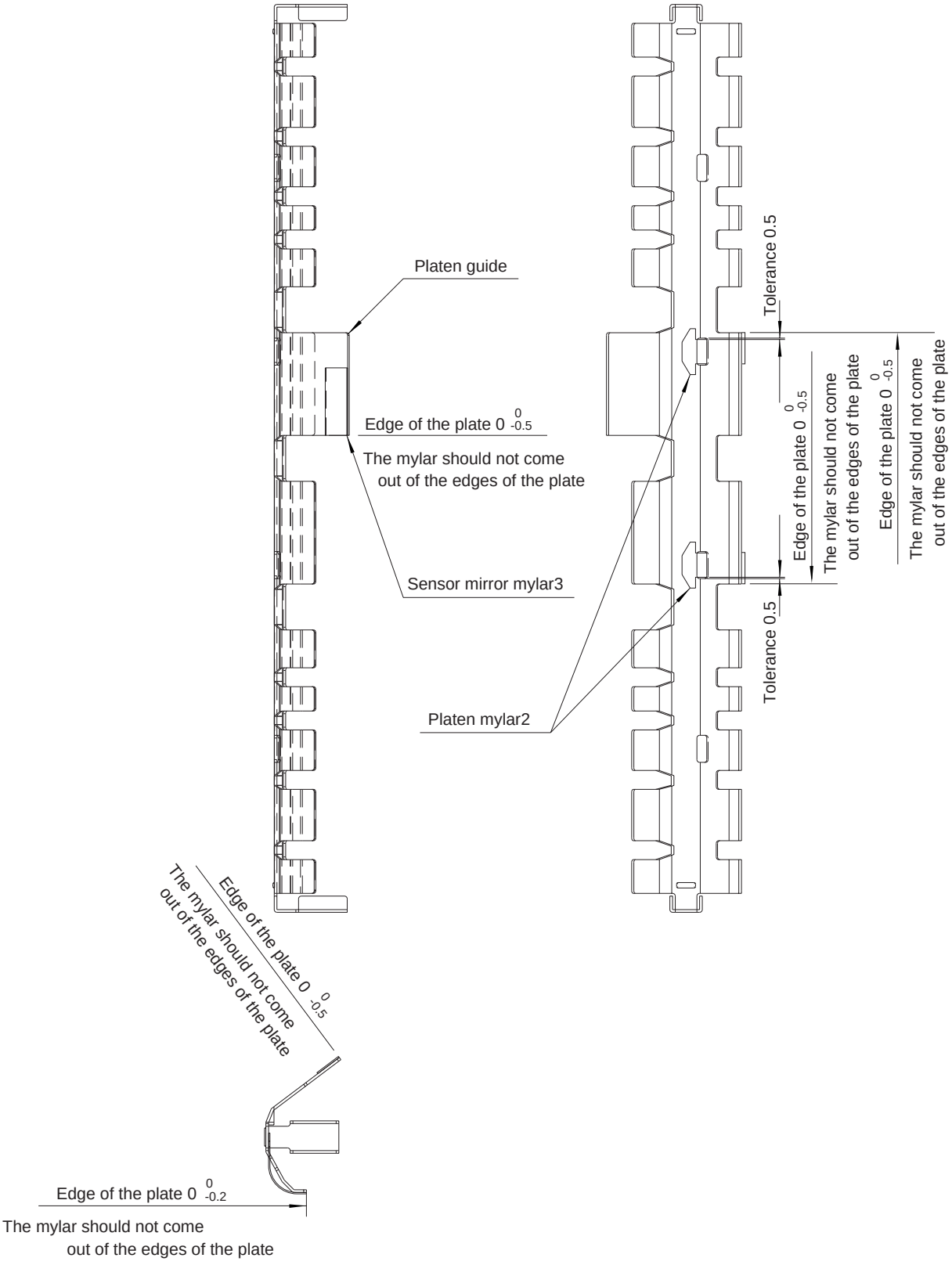
Clean the surface of the dent of the reverse guide 1 with alcohol.
Attach the sensor mirror mylar 2 in the dent.
Make sure there are no wrinkles or bubbling on the reverse guide.



⑦ Sensor mirror mylar 3

⑧ Platen mylar 2

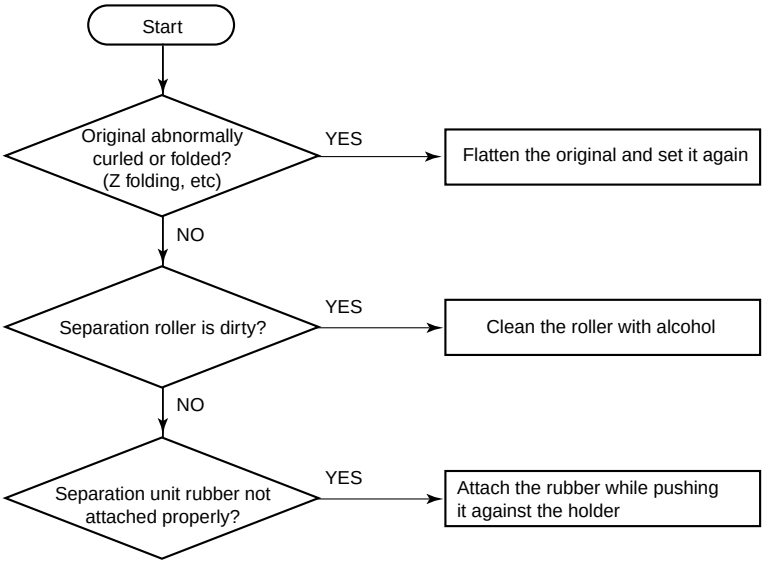
Clean the surface of portion to where the mylars are attached.
Attach the sensor mirror mylar 3 and platen mylar 2 to the platen guide.
Make sure there is no wrinkle or bubbling on the surface of the platen guide.



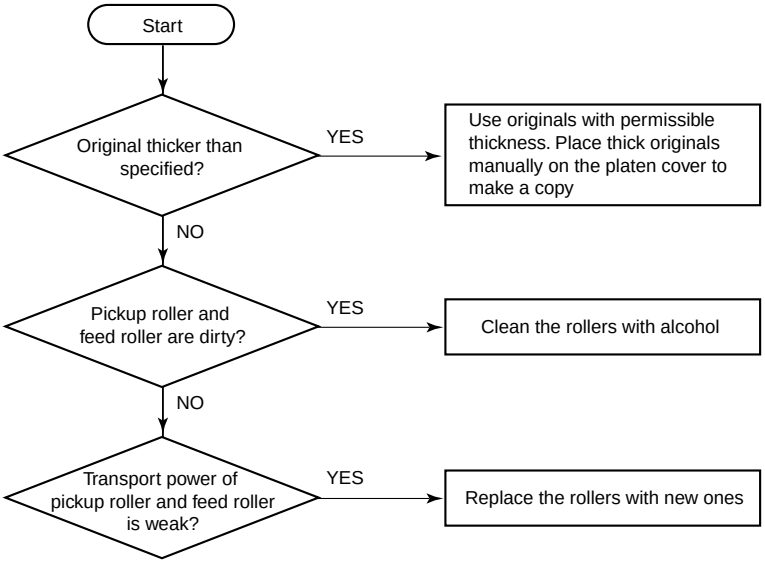
13. SERVICE

13.1 Troubleshooting for Mechanical Errors

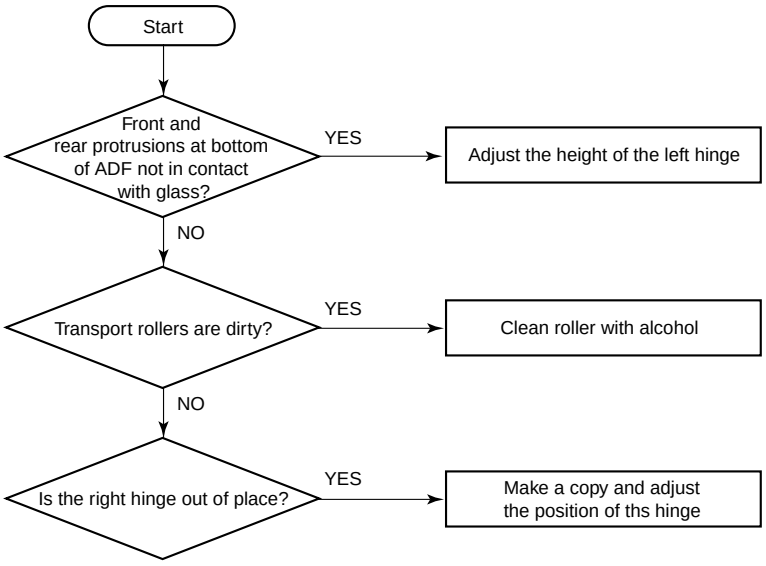
1) More than one original is transported simultaneously



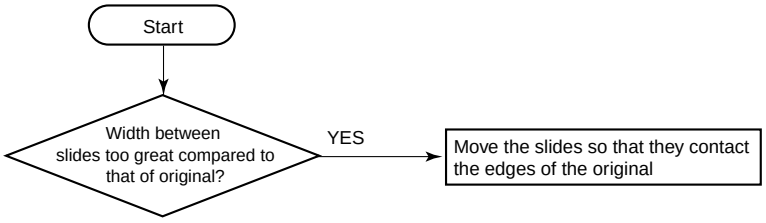
2) Original is not transported to registration roller



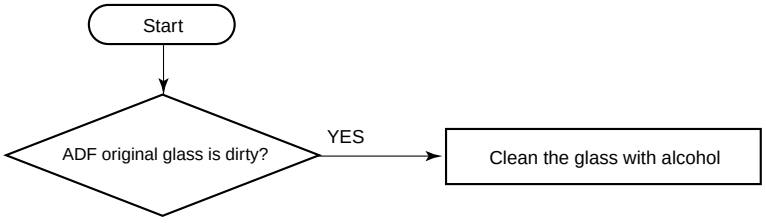
3) Leading edge of original is skewed



4) Edges of original and copied image are shifted

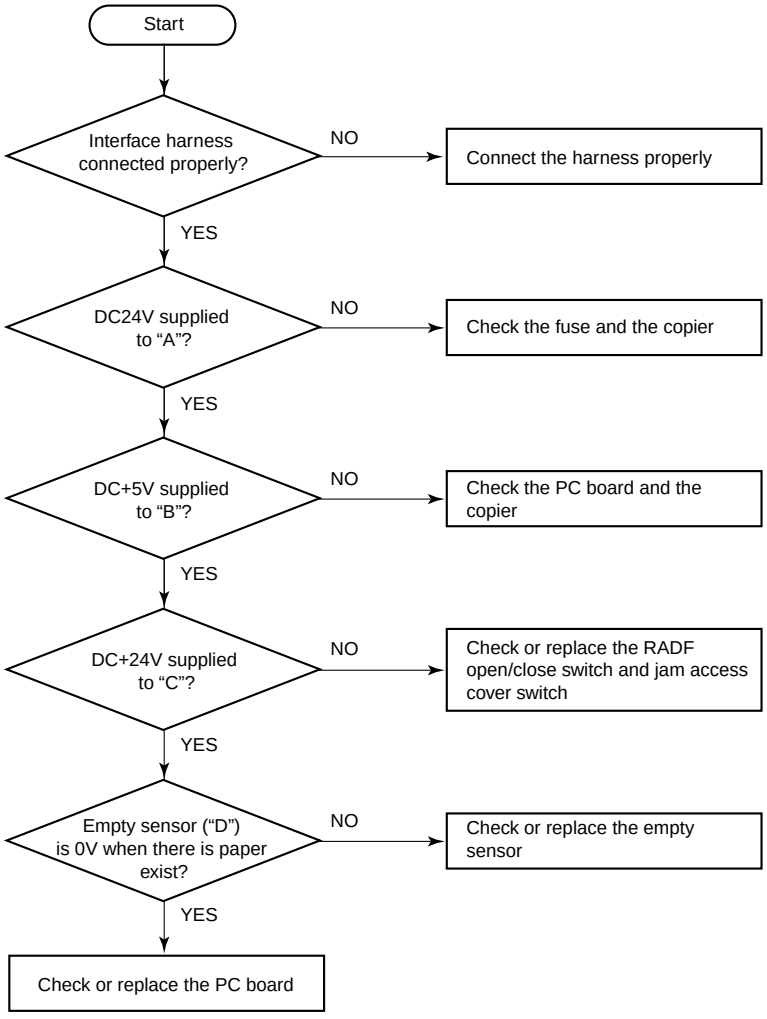


5) Black streaks appear on copied image



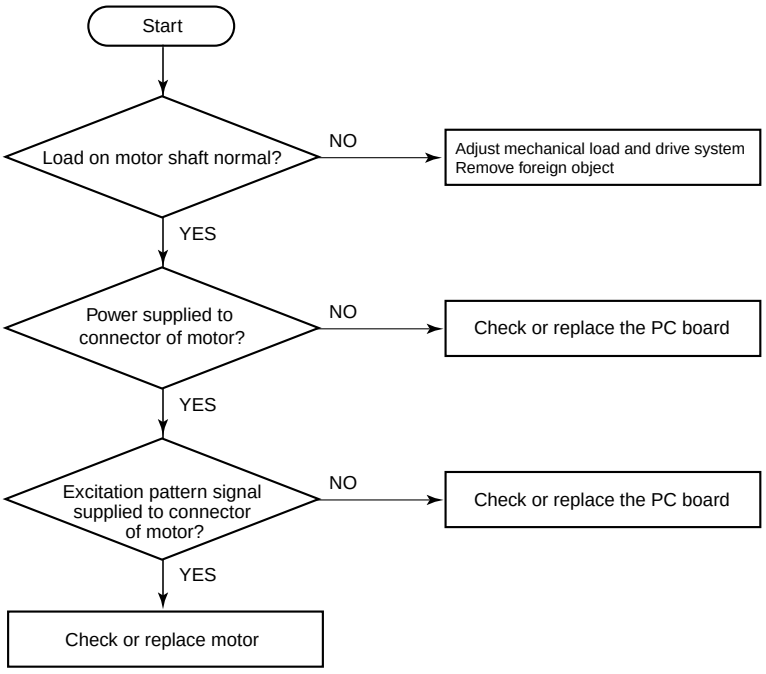
13.2 Troubleshooting for Electrical Errors

1) RADF does not work (except in the case of a jamming is occuring or when the cover is open)

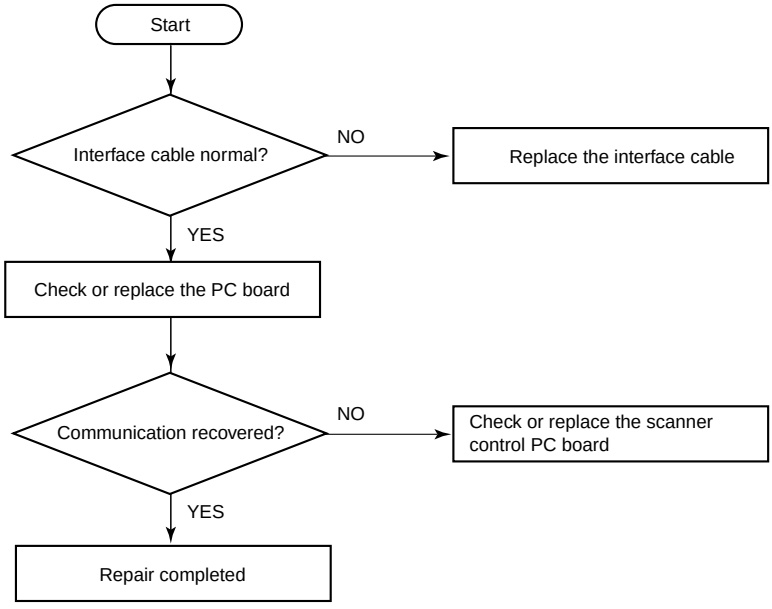


“A”	“B”	“C”	“D”
TP26	TP27 CN1_5pin	TP30	TP16

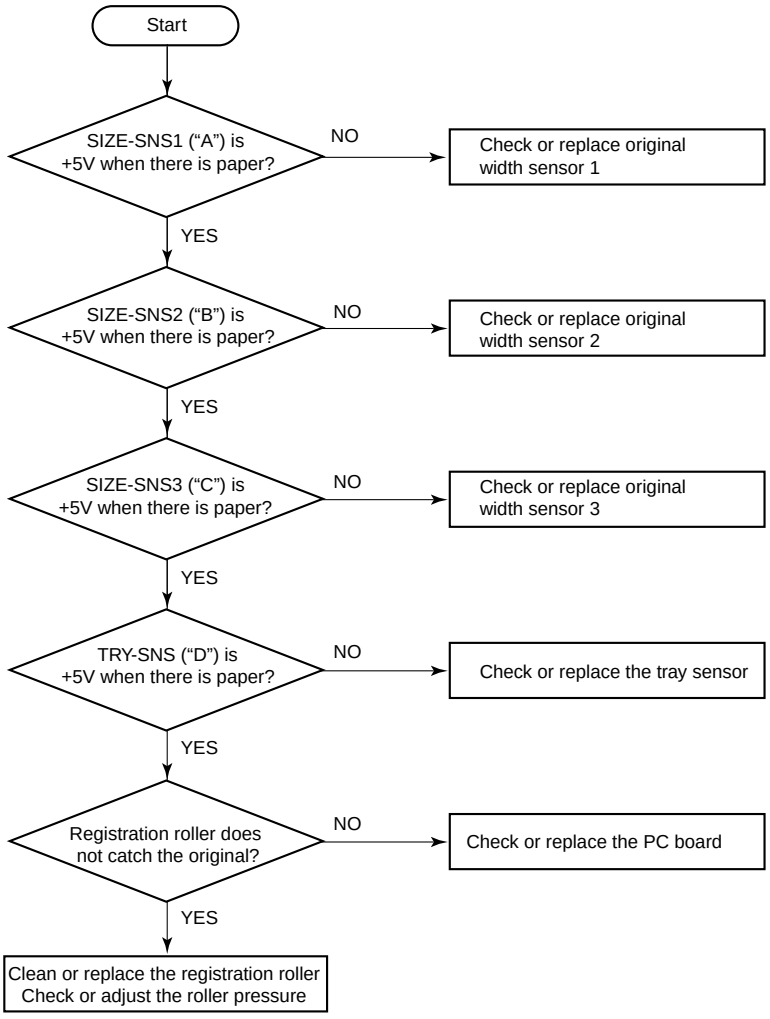
2) Abnormality of motor



3) Communication error

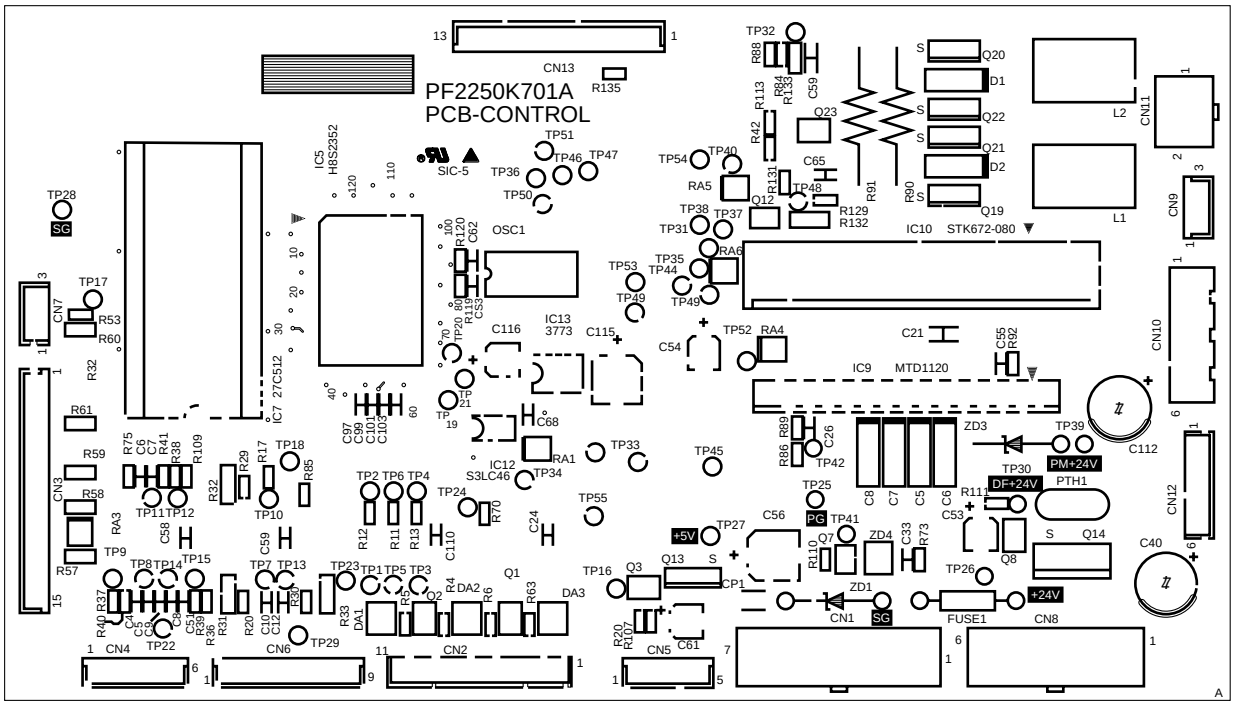


4) Size detection error

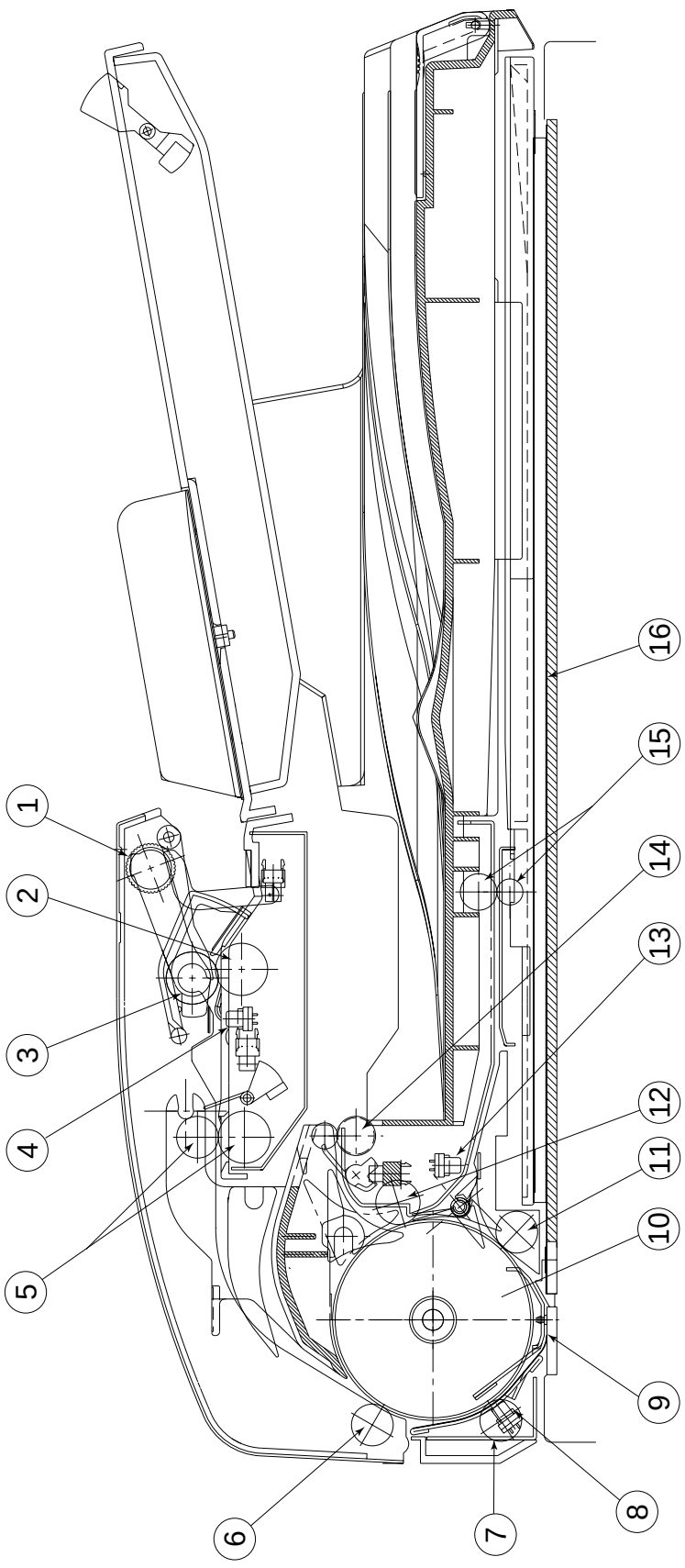


“A”	“B”	“C”	“D”
TP19	TP20	TP21	TP17

14. ASSEMBLY OF PC BOARD



15. PERIODIC MAINTENANCE



Symbols used in the checklist

Cleaning	Coating	Replacing	Data
A Cleaning with alcohol ◯ Cleaning with soft pad, cloth or vacuum cleaner	W White grease (Molycoat) AV Alvania No.2	80 Every 30k copies 116 Every 116k copies 150 Every 150k coopies △ Replace if deformed or damaged	Use's name Serial No. Inspector's name Remarks

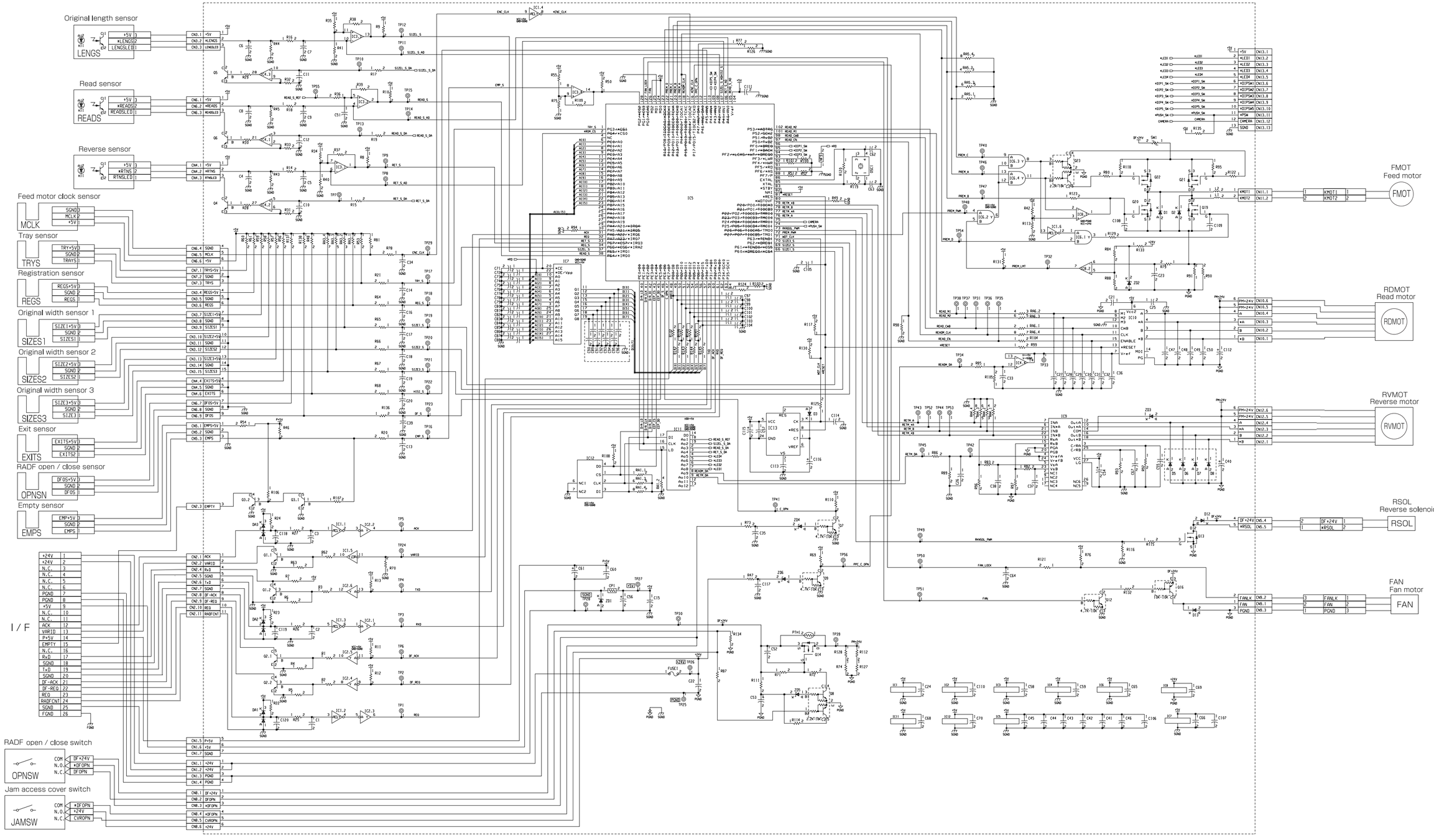
General Maintenance Checklist

*for the DP4500/3500 only

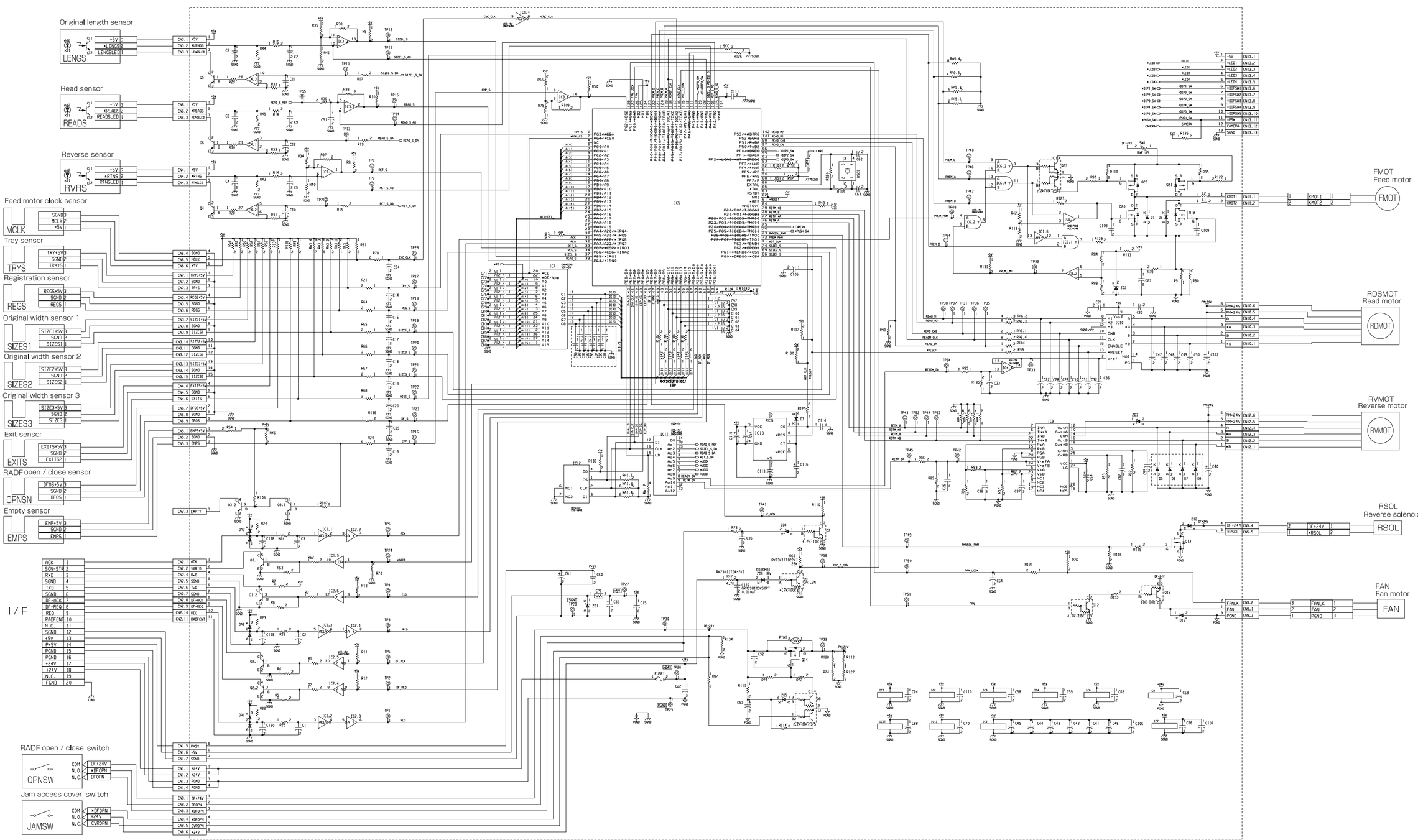
Item to inspect	Cleaning 80K *116K *150K	Coating	Replace every 1K copies ×1000	Remarks
1. Pickup roller			80,*116,*150	
2. Separation roller			80,*116,*150	
3. Feed roller			80,*116,*150	
4. Original length sensor	◯			
5. Registration roller	A			
6. Small roller 1	A			
7. Small roller 2	A			
8. Read sensor	◯			
9. Read guide	◯			
10. Read roller	A			
11. Small roller 3	A			
12. Small roller 4	A			
13. Reverse sensor	◯			
14. Exit sensor	A			
15. Reverse roller	A			
16. Platen sheet				

16. CIRCUIT DIAGRAM / HARNESS DIAGRAM

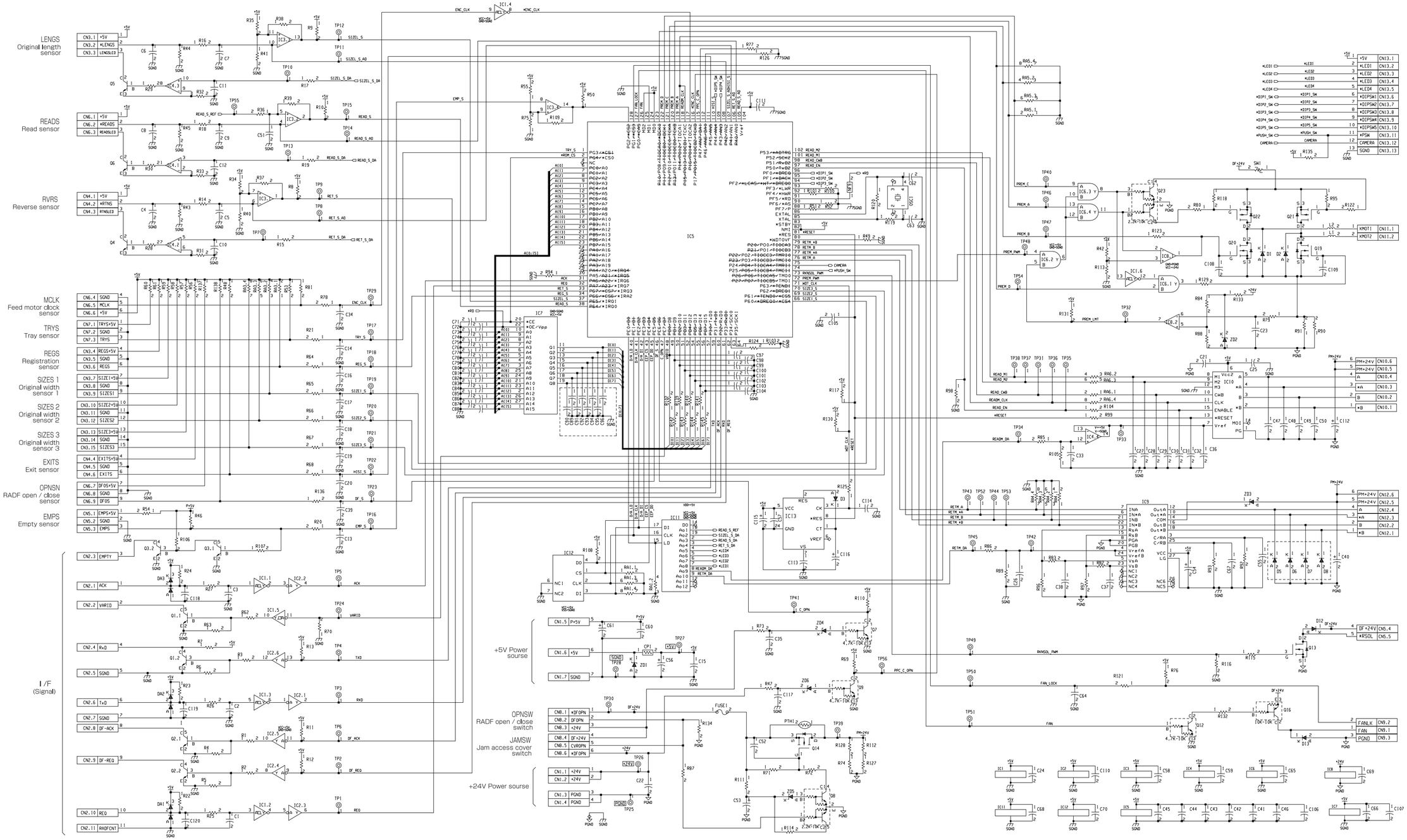
16.1 Circuit Diagram (MR-3011)



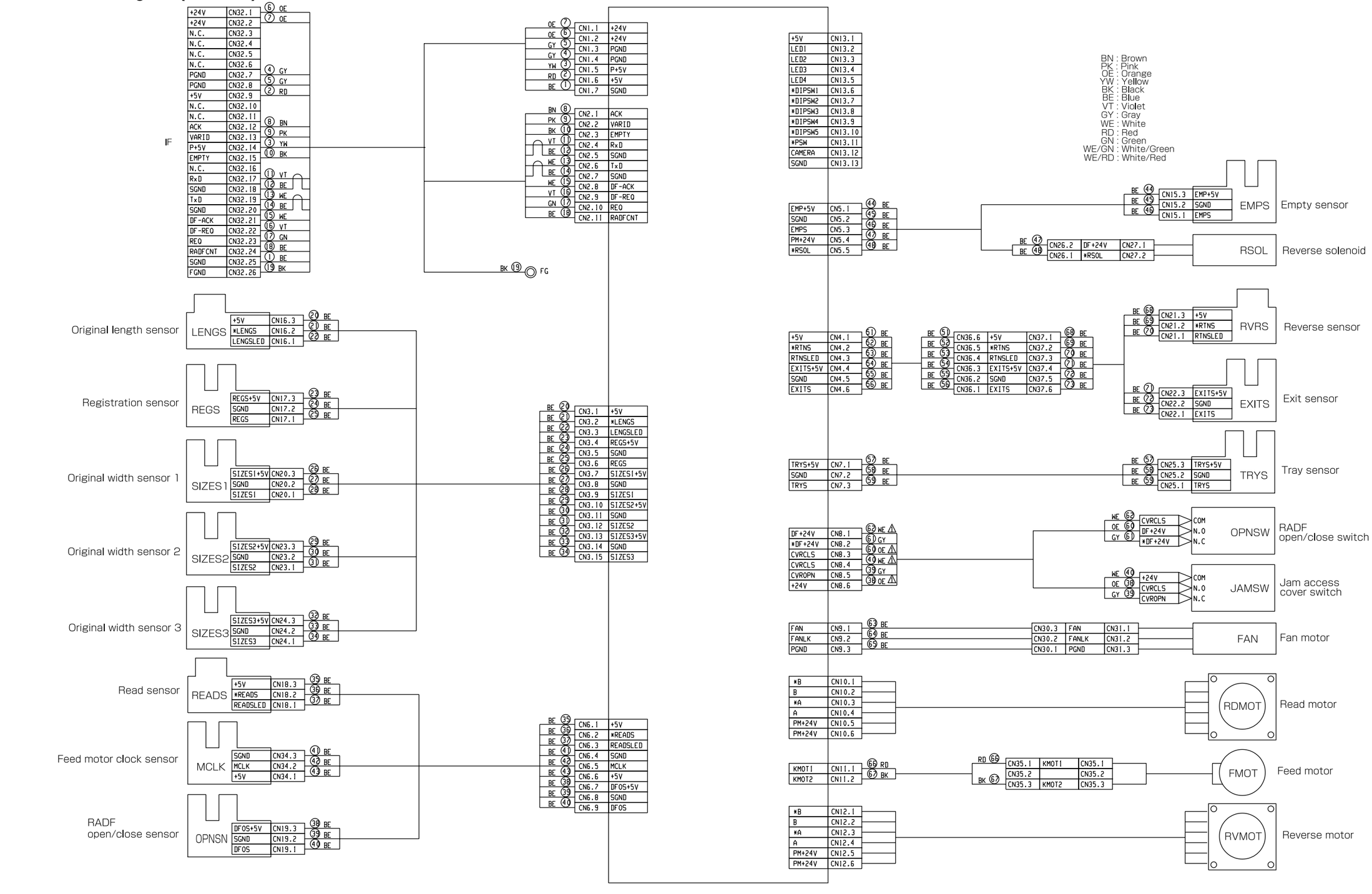
16.2 Circuit Diagram (MR-3012)



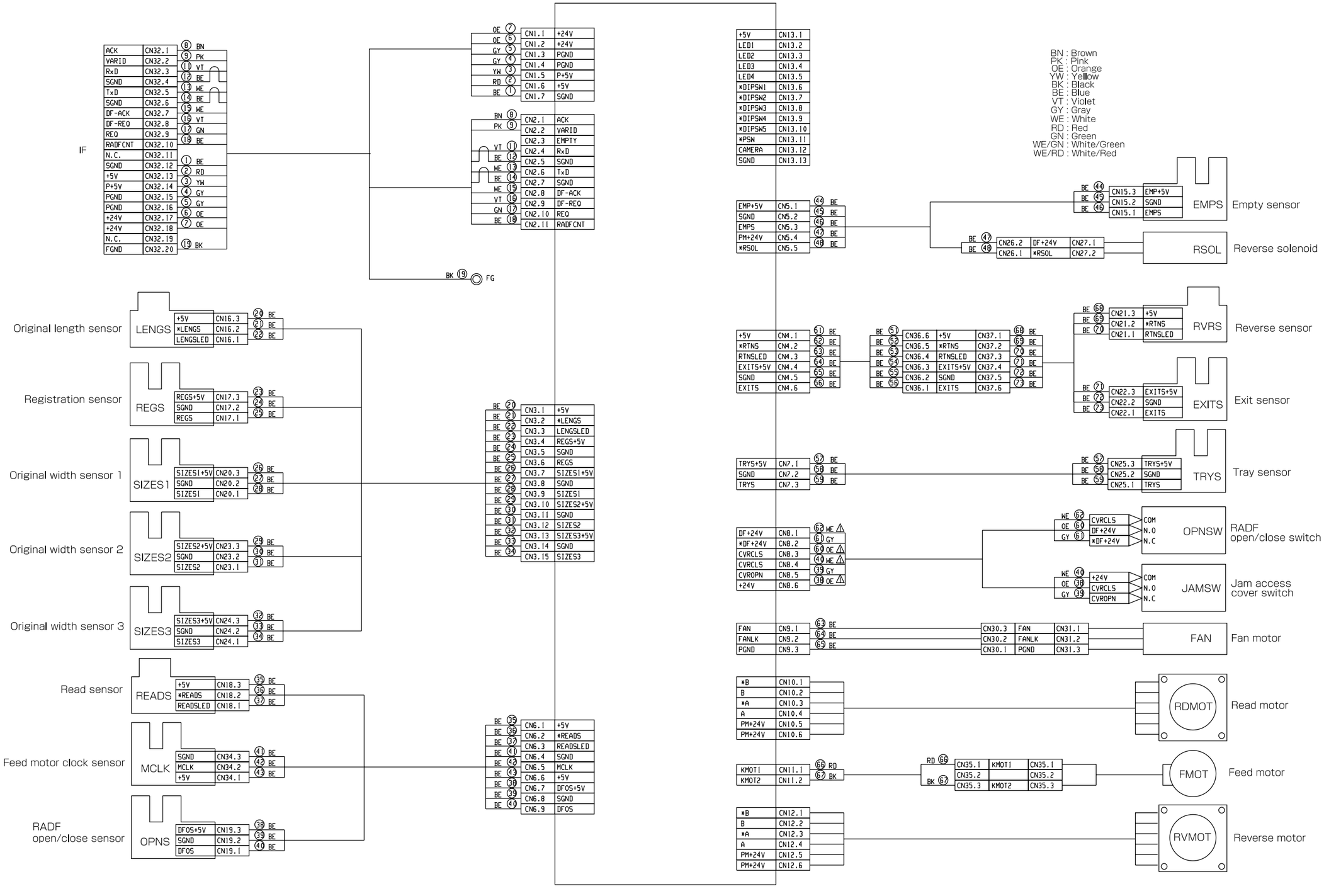
16.3 Control PC Board Circuit



16.4 Harness Diagram (MR-3011)



16.5 Harness Diagram (MR-3012)



SD-A-109, 00-10-AB

TOSHIBA

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