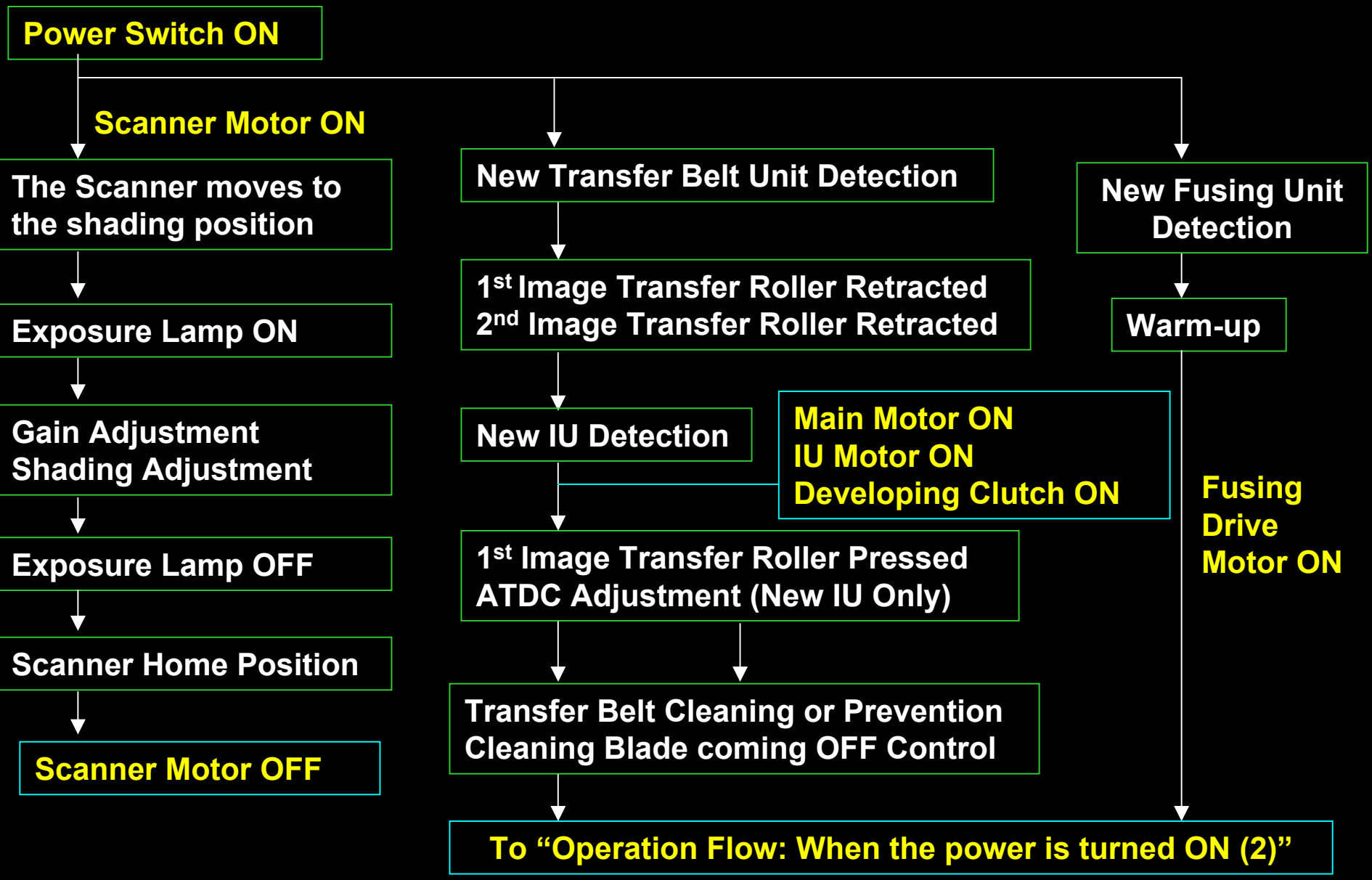
V Mechanical / Electrical Theory

1. Operation Flow
2. System Control Block Diagram
3. IR Section
4. PIC Section
5. IU Section
6. Hopper Section
7. Transfer Section
8. Fusing Section
9. Paper Take-Up/Transport Section
10. Image Stabilizer

1. Operation Flow: When the power is turned ON (1)



Operation Flow: When the power is turned ON (2)

From "Operation Flow: When the power is turned ON (1)"

2nd Image Transfer Roller Pressed
2nd Image Transfer Roller Cleaning (Bias ON)
2nd Image Transfer Roller Retracted

1st Image Transfer Roller ATVC Control

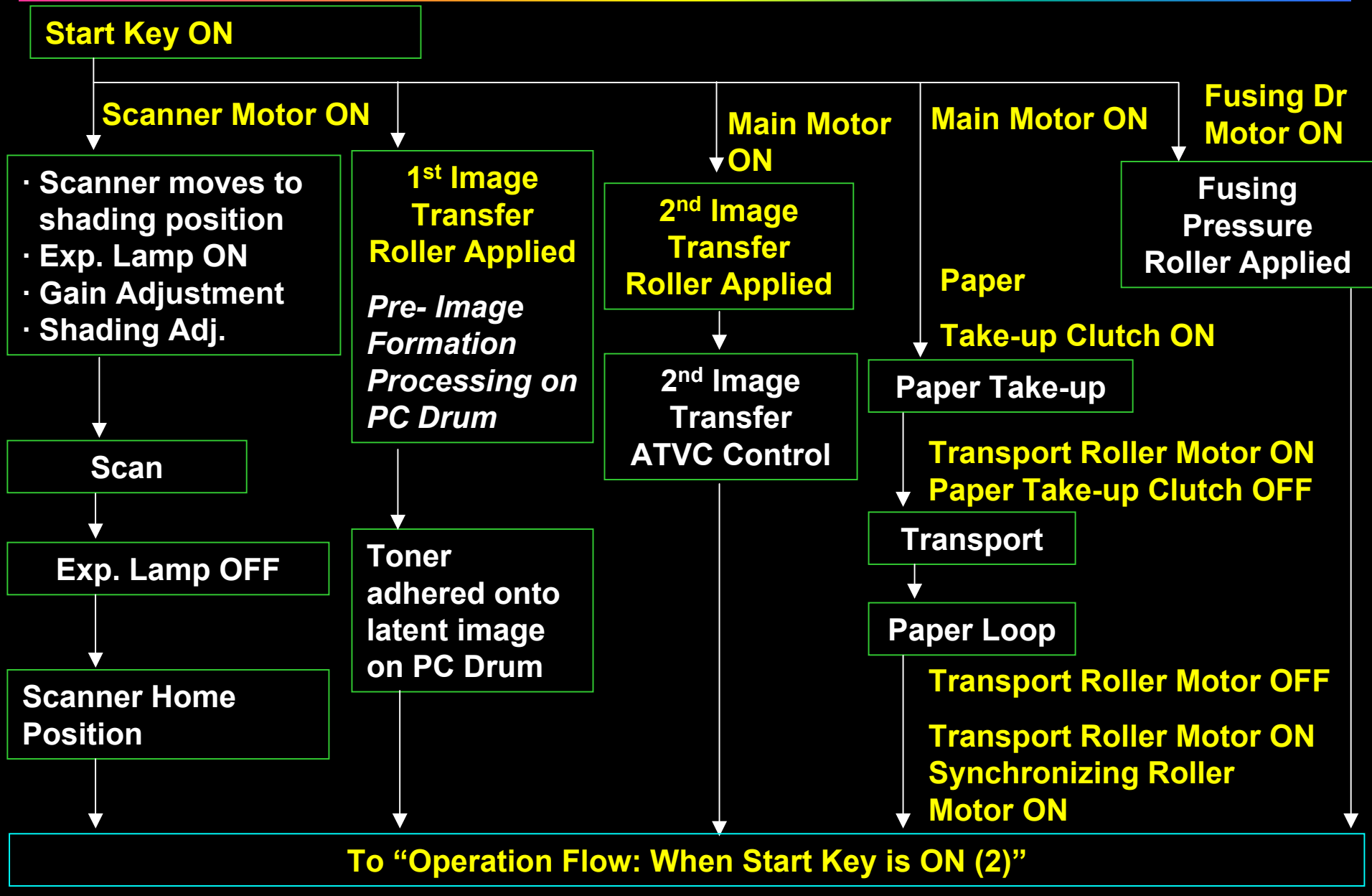
Image Stabilizer
Color Shift Correction
1st Image Transfer Roller Retracted

Developing Clutch OFF
IU Motor OFF
Main Motor OFF

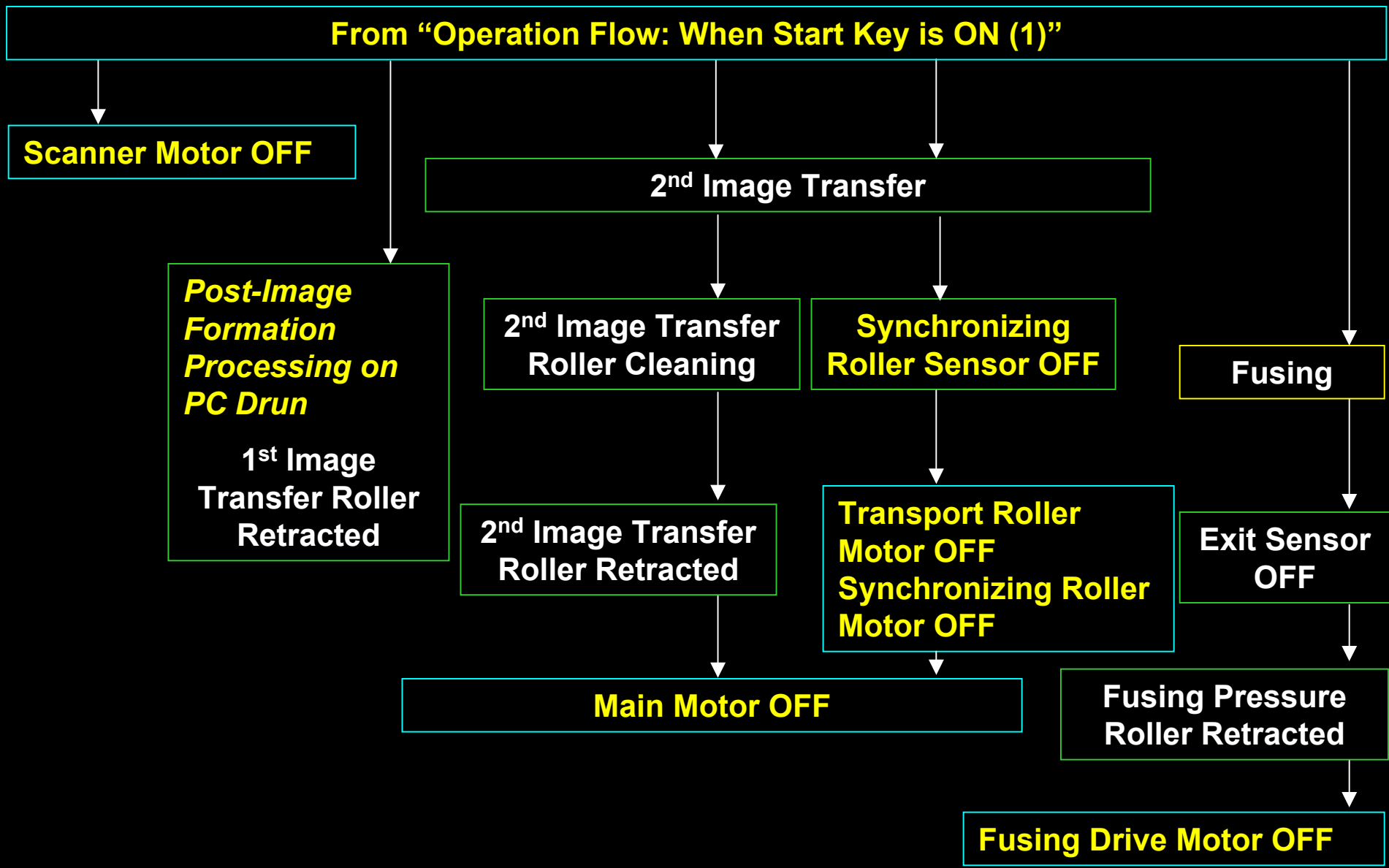
Fusing Drive Motor OFF

Fusing Temperature Control

Operation Flow: When Start Key is ON (1)



Operation Flow: When Start Key is ON (2)



Operation Flow: *Pre/Post- Image Processing on PC Drum*

Start Key ON

↓

Pre-Image Formation Processing on PC Drum

Dev. Bias DC (Min. Output Value) ON

↓

IU Motor ON, Main Erase Lamp ON

↓

PC Drum Charger Output ON

↓

Dev. Bias DC Switched (Output value for printing)
Dev. Clutch ON, ATDC Sensor Window Bias (Y,M,C) ON

↓

Toner on latent image on PC Drum

At dev. point , Dev. Bias AC ON

↓

After dev. point has been passed, Dev. Bias AC OFF

↓

Post- Image Formation Processing on PC Drum

Dev. Clutch OFF, ATDC Sensor Window Bias (Y,M,C) OFF

↓

PC Drum Charger Output OFF

↓

Dev. Bias DC Switched (Min. Output Value)

↓

Main Erase Lamp OFF

↓

1st Image Transfer Roller Retracted

↓

IU Motor (Y,M,C) OFF

↓

Dev. Bias DC (Min. Output Value) OFF

↓

1st Image Transfer Roller Separated

↓

IU Motor (Bk) OFF

Operation Flow: Fan Motors (1)

Power Switch ON or Start Key ON

Fan Motors synchronize with the Exposure Lamp	ON	OFF
IR Power Supply Cooling Fan Mtr.	ON	OFF
IR Drive Board Cooling Fan Mtr.	ON	OFF

Fan Motors synchronize with the temperature detected by Image Transfer Thermistor	35 degree C or more	Less then 35 degree C
Cooling Fan Motor 4, 5	ON	OFF

Fan Motors synchronize with the IU motor or Developing Clutch	ON	OFF
Power Supply Fan Motor	Full Speed	Half Speed
Ozone Ventilation Fan Motor *1	ON	OFF

*1: Ozone Ventilation Fan Motor will be turned OFF 10 minutes after having turned OFF the IU motor or Developing Clutch

To “Operation Flow: Fan Motors (2)”

Operation Flow: Fan Motors (2)

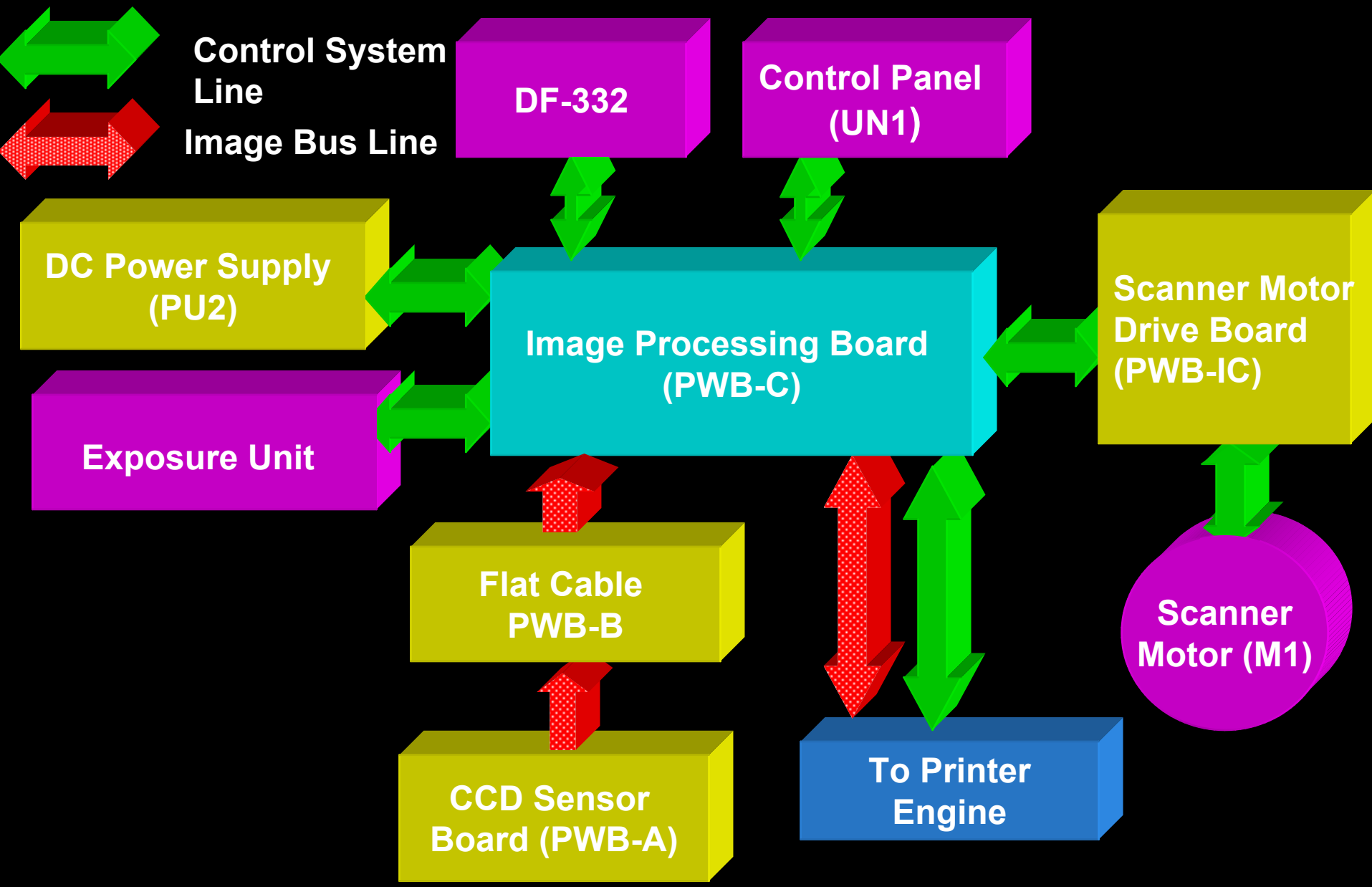
From "Operation Flow: Fan Motors (1)"

Fan Motors synchronize with the Main Motor and Fusing Drive Motor	ON	OFF
Fusing Cooling Fan Motor *2	Full Speed	Half Speed
Suction Fan Motor *2	ON	OFF
Cooling Fan Motor 1 *2	Full Speed	Half Speed
Cooling Fan Motor 2 *2	ON	OFF

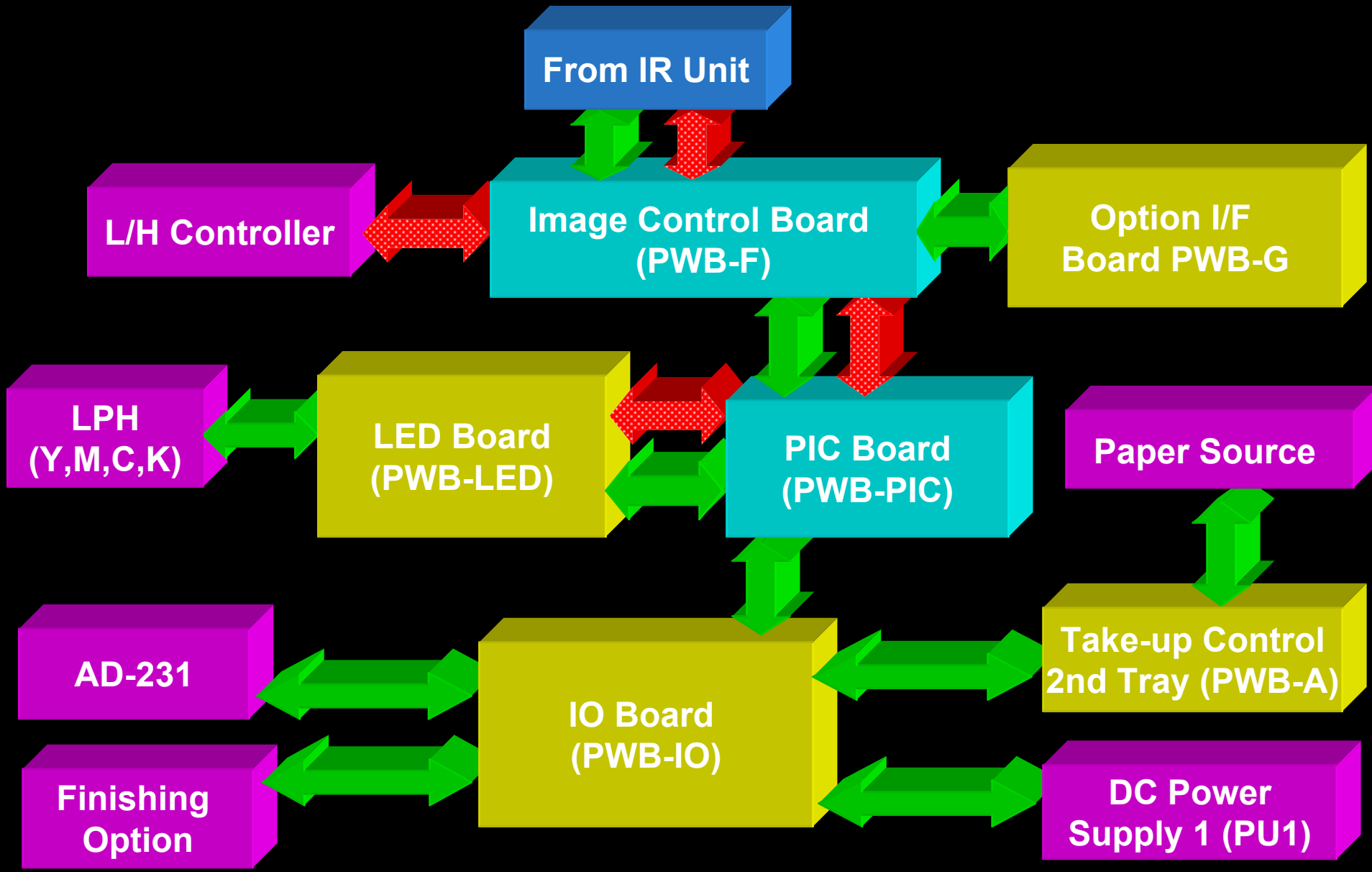
*2: Motors will be turned OFF 30 sec. after having turned OFF the Main Motor and Fusing Drive Motor

Fan Motors synchronize with the Main Motor		ON	OFF
Cooling Fan Motor 3	OHP Mode	Full Speed	OFF at 10 sec. after Main Motor: OFF
	Except OHP Mode	Half Speed	OFF at 10 sec. after Main Motor: OFF
Fusing Roll Cooling Fan Motor 1, 2	OHP, 2-sided of Plain Paper	Full Speed	Half Speed at 6 sec. after Main Motor: OFF
	Except above mode	OFF	Full Speed for 10 sec. after Main Motor: OFF, and then Half Speed

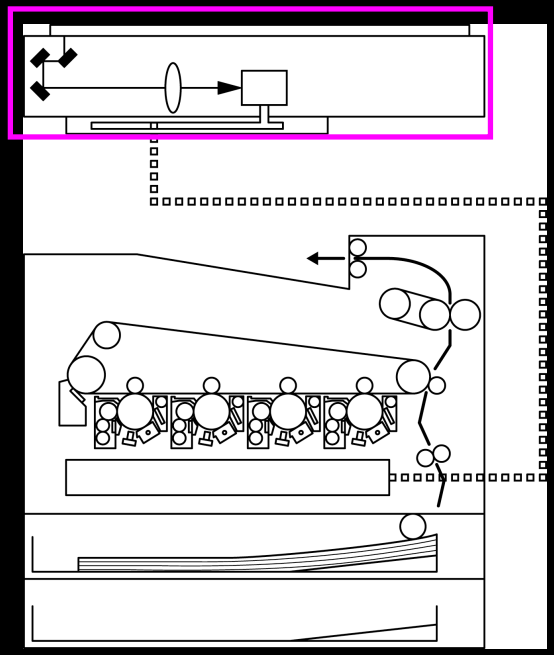
2. System Control Block Diagram: Scanner Section



System Control Block Diagram: Printer Engine Section



3. IR Section



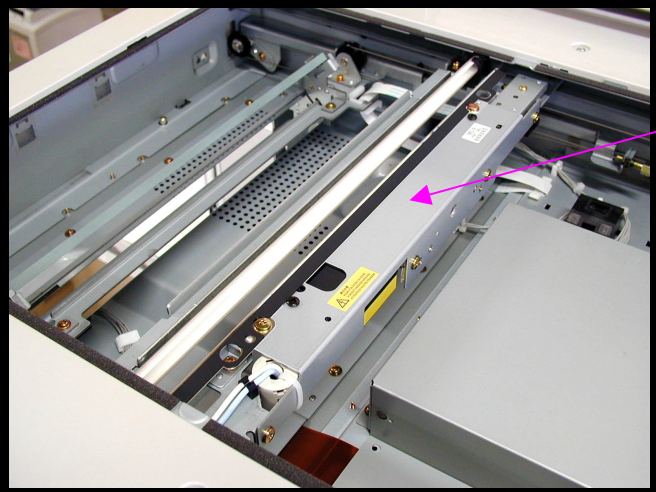
1. Improvements from 7920
2. Component Identification
3. Scanner Drive
4. Original Size Detection
5. CCD Sensor
6. Scanner Control
7. Image Processing Flow

3.1 Improvements

- Exposure Lamp, Exposure Unit
- Scan Speed (Full Size)
  - 135 mm/sec. >> 177 mm/sec.
- Control Panel
- Dust Prevention
- Scanner Reference & Shading Sheet Position
- Discontinuation of Movable Scale for ADF
- CCD Clamp Adjustment
- Magnification Range
  - 50% to 400% >> 25% to 400%
- Length of Interface Cable: 2.5 m to 3 m

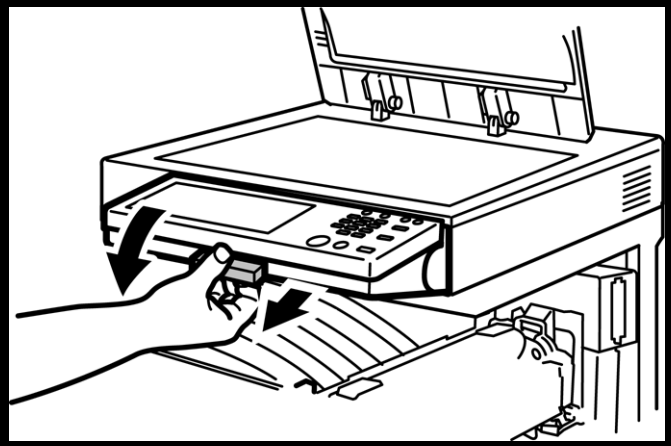
3.1.1 Exposure Lamp, Exposure Unit

- **Exposure Lamp**
  - Halogen Lamp to Fluorescent Lamp (30W/24V)
    - **Reduction of Power Consumption**
- **Exposure Unit**
  - Exposure Lamp, Scanner and Inverter Board are now a single unit.
    - **Increase of Service Efficiency for field**



3.1.2 Control Panel

- Wide Display
- Changeable Angle (Universal Design)
  - 7, 27 or 45 degree



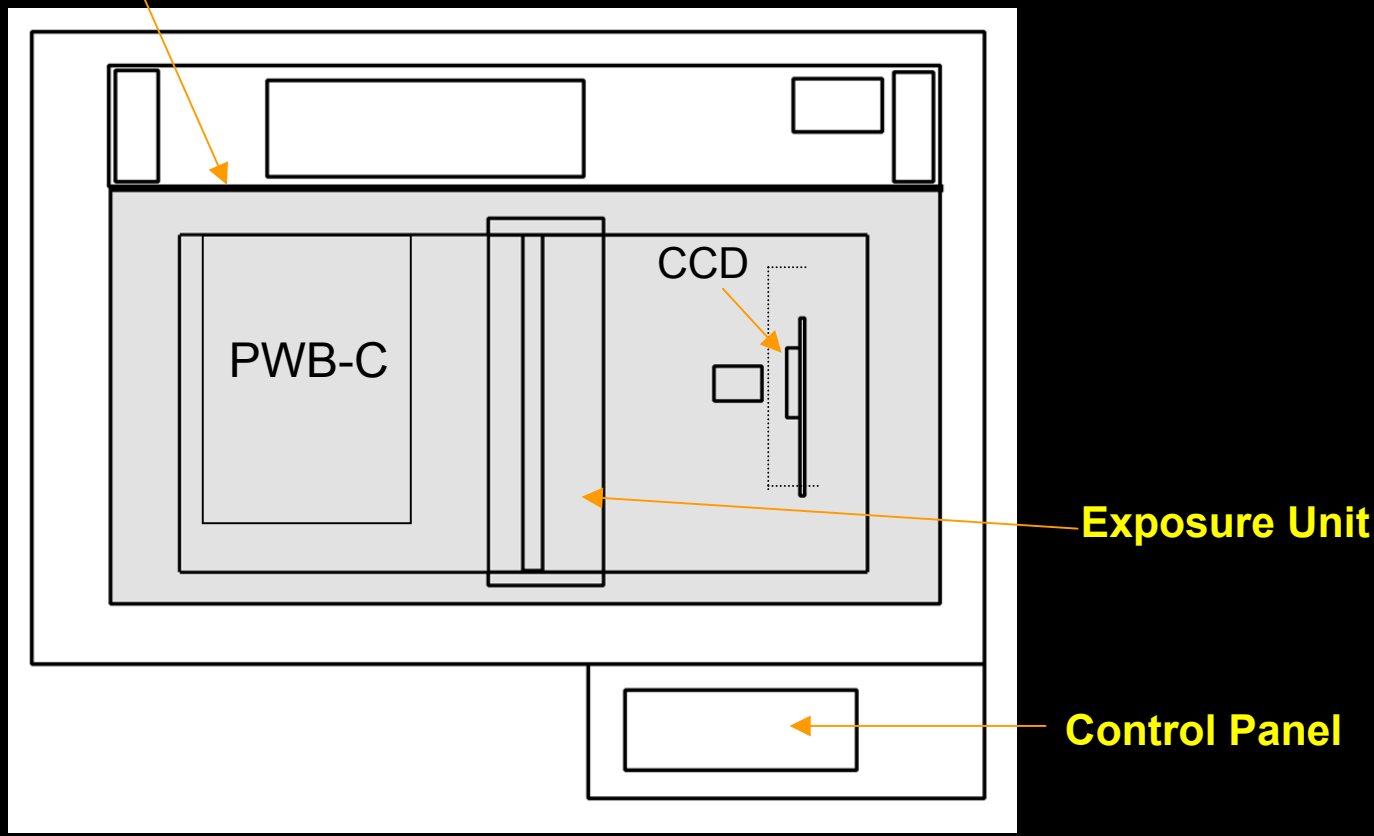
- Display Enlargement Function
  (will be added in future firmware update.)

3.1.3 Dust Prevention

Cooling Fans are not needed due to the adoption of the Fluorescent Lamp and Airtight structure to prevent dust from coming into the IR Unit.

Airtight Structure of IR Optical Unit

All holes are sealed at the border between the Power Supply Section and Main Frame.

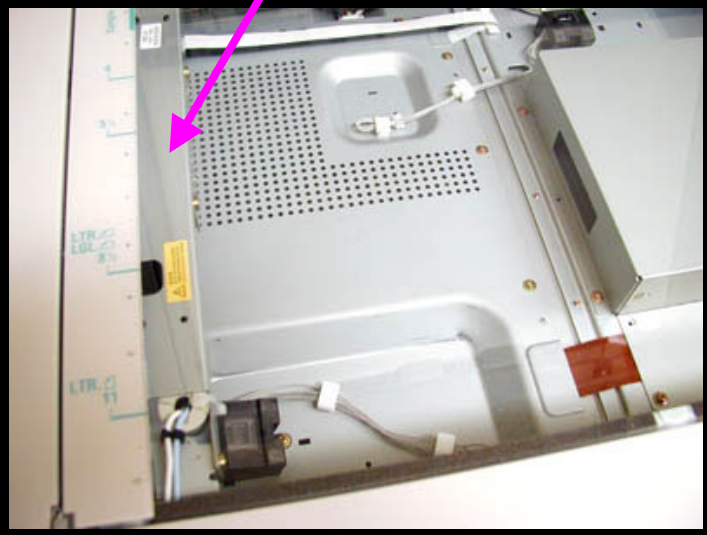


3.1.4 Scanner Home Position

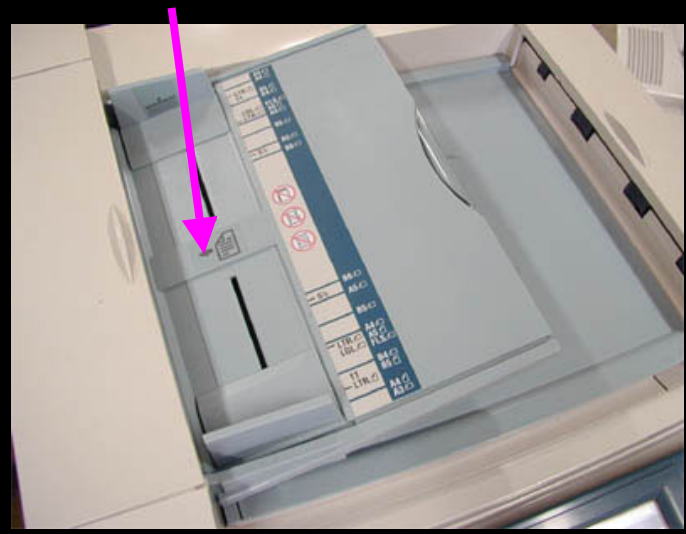
-Scanner Home Position now located at the left end for smaller originals.

-Original set position for the ADF is now at the left side to correspond to standards in the copier industry.

Scanner Home Position



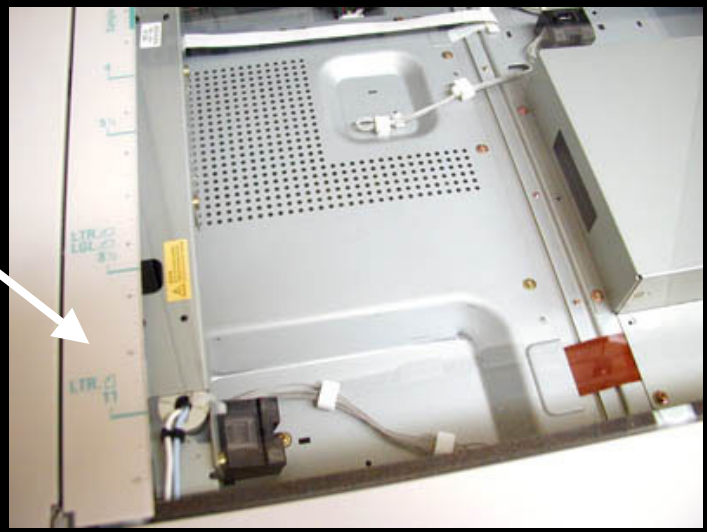
Original Set Position



3.1.5 Discontinuation of Movable Scale for ADF

Use of movable scale is not required because original set position of ADF become left side of machine.

Fixed scale

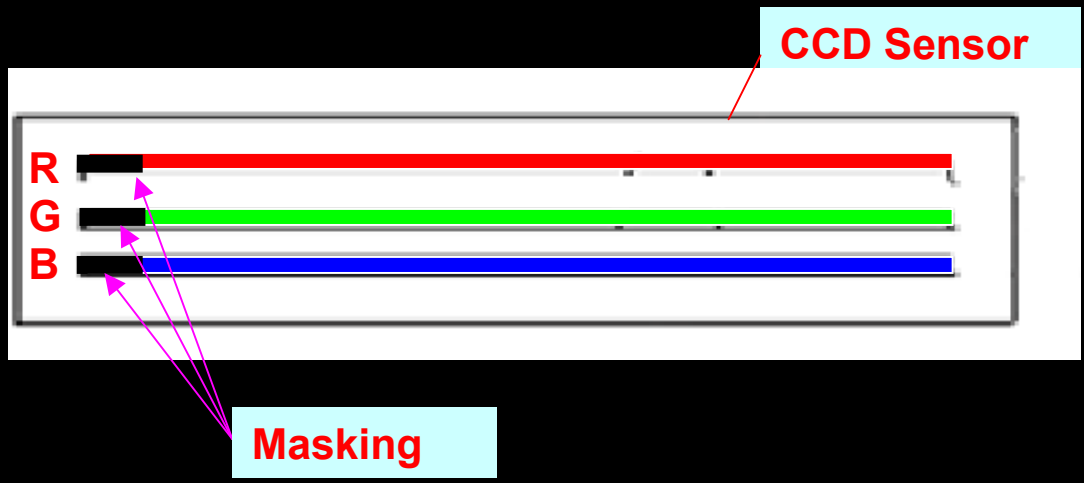


3.1.6 CCD Clamp Adjustment

With the 7920, CCD Clamp Adjustment was made in a series of adjustment sequences (when power was turned ON etc.)

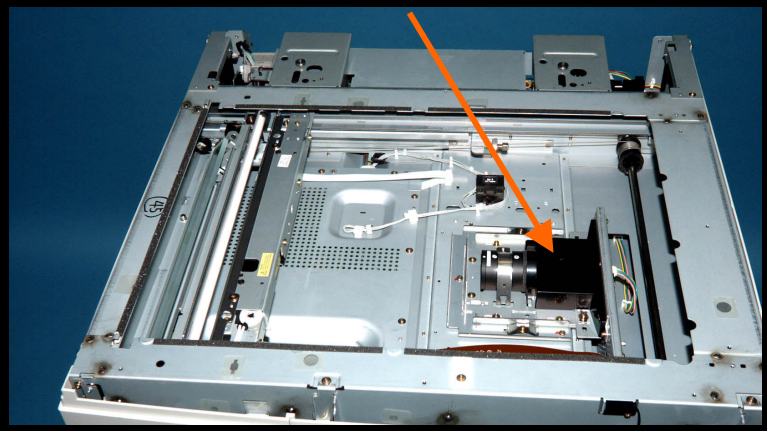
With the 8020/8031, the CCD Clamp Adjustment is made by measuring the output voltage, in the masking area of CCD Sensor where the Image Data is not read (invalid area) with CCD Board (PWB-A).

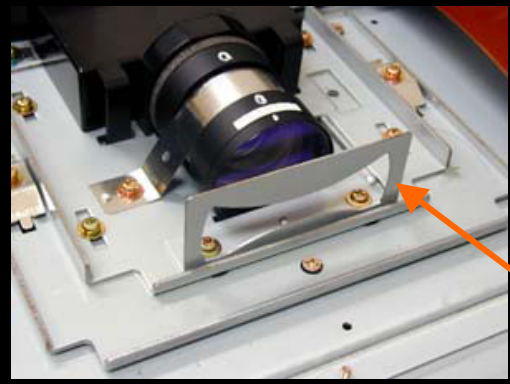
The CCD Clamp Adjustment is always operated except when in the Energy Save Mode.



3.2 Component Identification

CCD Unit





Light Intensity Compensation Plate

Original Size Detection Sensors

Scanner Motor

CCD Sensor

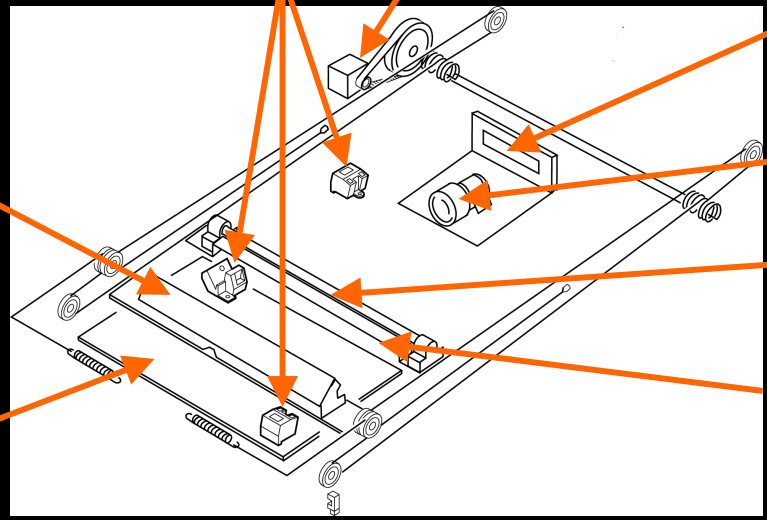
2nd/3rd Mirrors Carriage

Lens

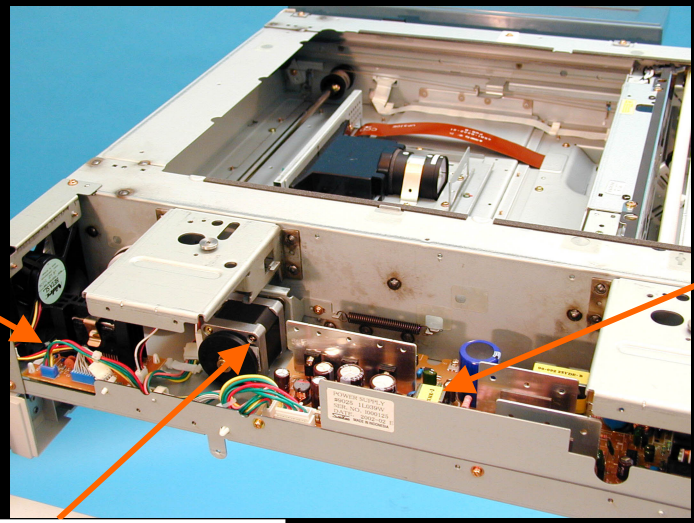
Exposure Lamp

Scanner

Image Processing Board (PWB-C)



3.3 Scanner Drive

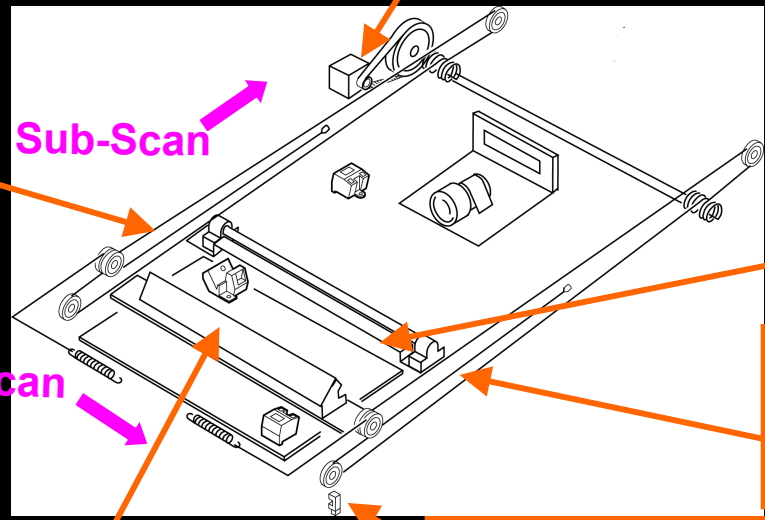


Scanner Motor Drive Board

DC Power Supply 3

Scanner Motor

Scanner Motor



Rear Scanner Drive Cable

Scanner

Front Scanner Drive Cable

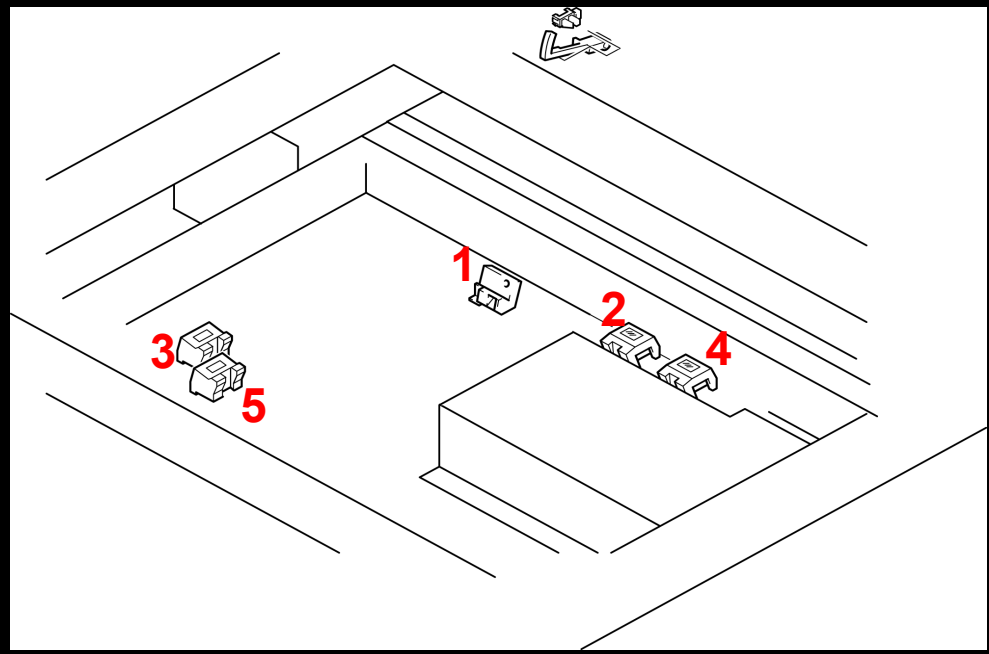
2nd/3rd Mirrors Carriage

Scanner Home Position Sensor

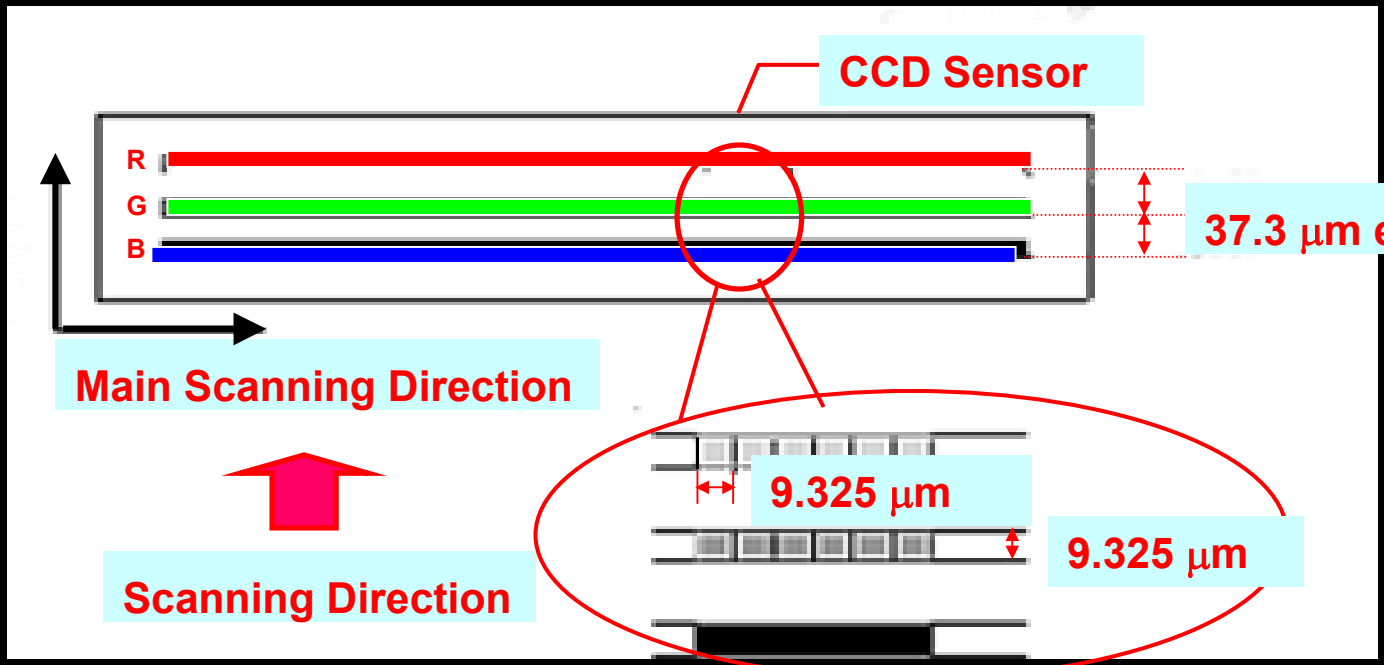
3.4 Original Size Detection

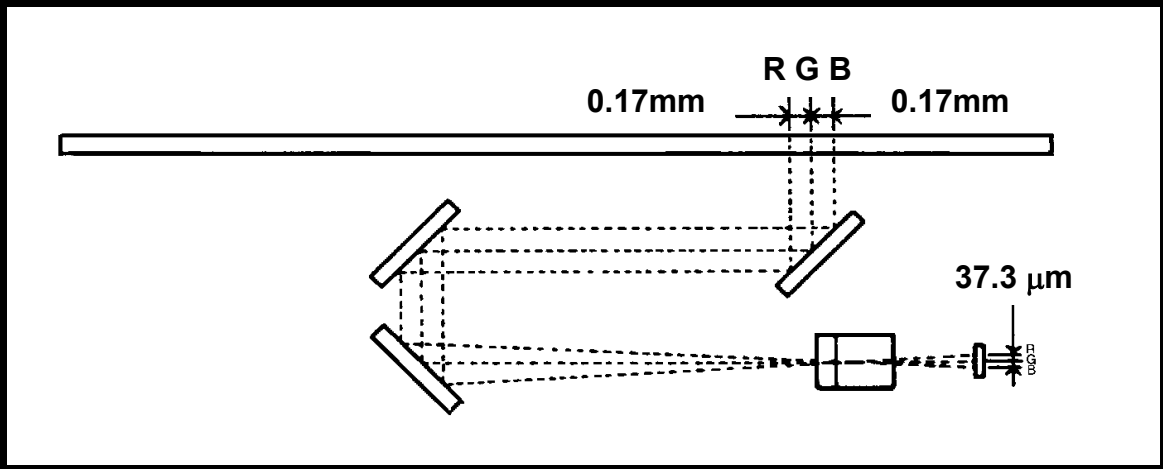
Location of Original Size Detection Sensors

No.	Sensor	Metric Area	Inch Area
1	Original Size Detection Sensor FD1 (PC203)	Standard	Option
2	Original Size Detection Sensor FD2 (PC204)	Standard	Standard
3	Original Size Detection Sensor CD1 (PC205)	Standard	Standard
4	Original Size Detection Sensor FD3 (PC206)	Option	Option
5	Original Size Detection Sensor CD2 (PC207)	Option	Option



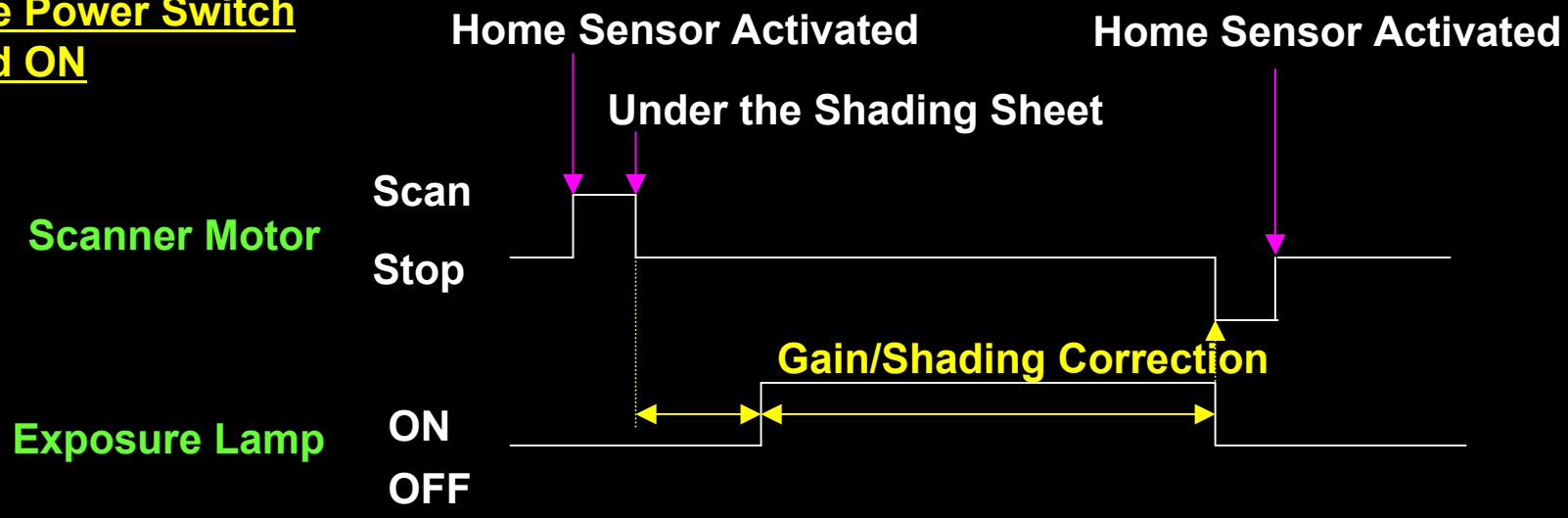
3.5 CCD Sensor



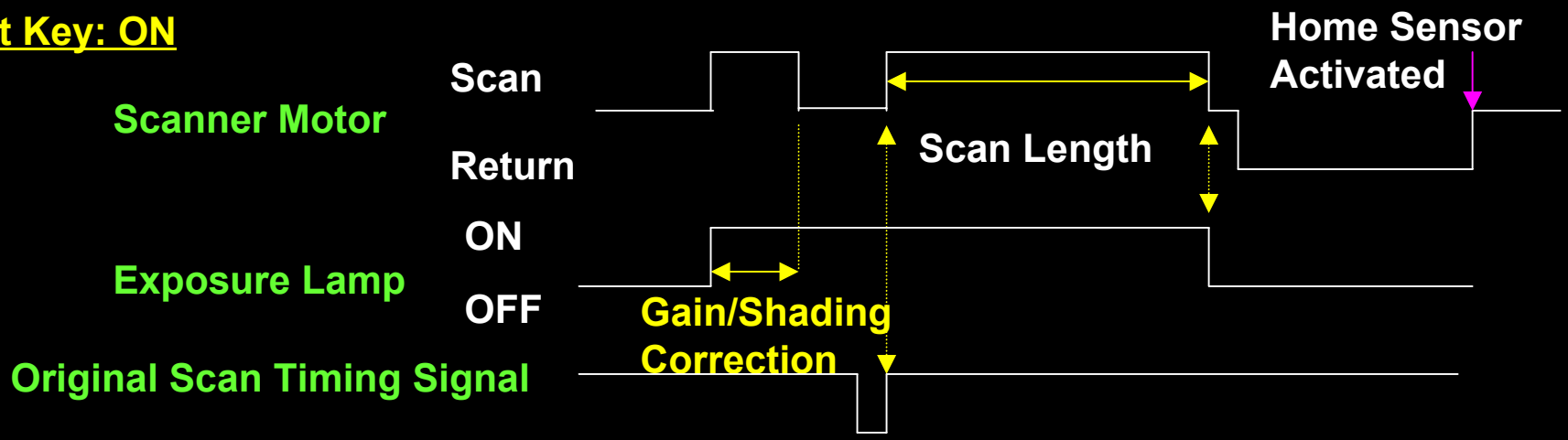


3.6 Scanner Control

When the Power Switch is Turned ON



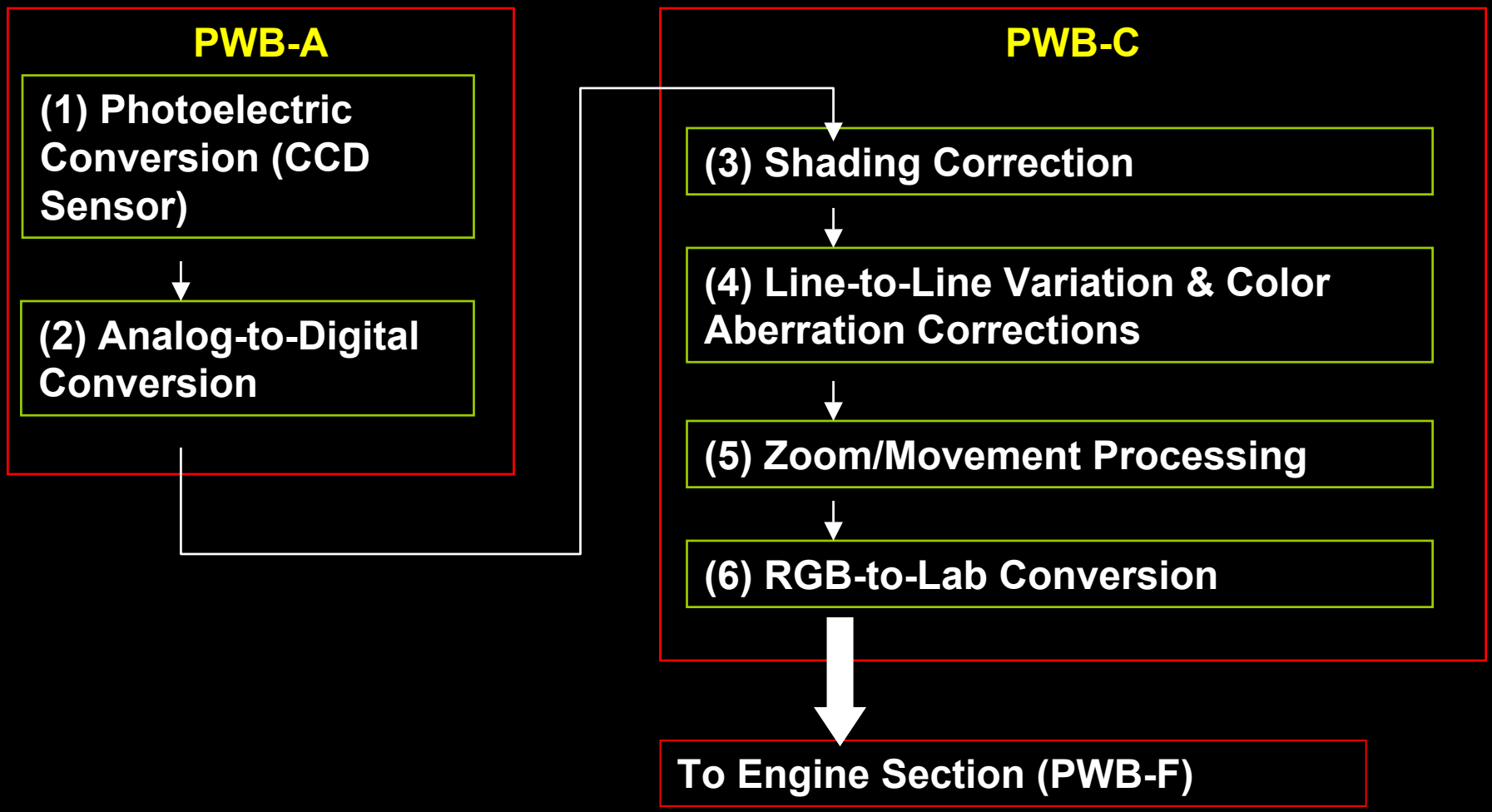
Start Key: ON



Shading Correction Timing: When the Start key is pressed.

3.7 Image Processing Flow: IR Side

IR Side



3.8 Image Processing Flow: Engine Side

Engine Side

