A217 COPIER

Service Manual
– *Insert Version* –

The A217 machine is based on the A133 copier.

Only the differences from the base copier are described in the following pages. Therefore, this documentation should be treated as an insert version of the base copier's service manual. It should always be utilized together with the base copier's service manual.

⚠**IMPORTANT SAFETY NOTICES**

PREVENTION OF PHYSICAL INJURY

1. Before disassembling or assembling parts of the copier and peripherals, make sure that the copier power cord is unplugged.

2. The wall outlet should be near the copier and easily accessible.

3. Note that some components of the copier and the paper tray unit are supplied with electrical voltage even if the main switch is turned off.

4. If any adjustment or operation check has to be made with exterior covers off or open while the main switch is turned on, keep hands away from electrified or mechanically driven components.

5. If the Start key is pressed before the copier completes the warming-up period (the Start key starts blinking red and green alternatively), keep hands away from the mechanical and electrical components as the copier starts making copies as soon as the warming-up period is completed.

6. The inside and the metal parts of the fusing unit become extremely hot while the copier is operating. Be careful to avoid touching those components with your bare hands.

HEALTH SAFETY CONDITIONS

1. Never operate the copier without the ozone filters installed.

2. Always replace the ozone filters with the specified ones at the specified intervals.

3. Toner and developer are non-toxic, but if you get either of them in your eyes by accident, use eye drops or flush with water as first aid. If unsuccessful, get medical attention.

OBSERVANCE OF ELECTRICAL SAFETY STANDARDS

1. The copier and its peripherals must be installed and maintained by a customer service representative who has completed the training course on those models.

2. The NVRAM on the system control board has a lithium battery which can explode if replaced incorrectly. Replace the NVRAM only with an identical one. The manufacturer recommends replacing the entire NVRAM. Do not recharge or burn the battery. Used batteries must be handled in accordance with local regulations.

SAFETY AND ECOLOGICAL NOTICE FOR DISPOSAL

1. Do not incinerate toner bottles or used toner. Toner dust may ignite suddenly when exposed to an open flame.

2. Dispose of used toner, developer, and organic photoconductors according to local regulations. (These are non-toxic supplies.)

3. Dispose of replaced parts in accordance with local regulations

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) prohibits the repair of laser-based optical units in the field. The optical housing unit can only be repaired in a factory or at a location with the requisite equipment. The laser subsystem is replaceable in the field by a qualified Customer Engineer. The laser chassis is not repairable in the field. Customer Engineers are therefore directed to return all chassis and laser subsystems to the factory or service depot when replacement of the optical subsystem is required.
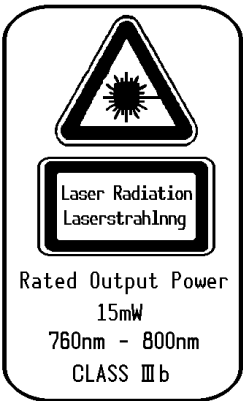
⚠WARNING

Use of controls, or adjustment, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

⚠WARNING FOR LASER UNIT

WARNING: Turn off the main switch before attempting any of the procedures in the Laser Unit section. Laser beams can seriously damage your eyes.

CAUTION MARKINGS:

Laser Radiation
Laserstrahlnng

Rated Output Power
15mW
760nm – 800nm
CLASS Ⅲb

For the 115 V version

DANGER | INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM

For the 230 V version

CAUTION | INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM

VORSICHT | UNSICHTBARE LASERSTRAHLUNG. WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN
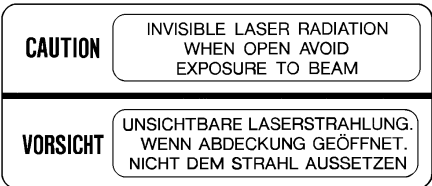
1. OVERALL MACHINE INFORMATION

1.1 SPECIFICATIONS

NOTE: Only items marked with ✽ are different from the A133 copier.

Configuration: Desktop

Copy Process: Dry electrostatic transfer system

Originals: Sheet/Book

Original Size: Maximum A3/11" x 17"

Copy Paper Size: Maximum
                      A3/11" x 17" (Paper tray and By-pass tray)
                      A5/8$\frac{1}{2}$" x 5$\frac{1}{2}$" sideways Paper tray)
             Minimum
                      A6/5$\frac{1}{2}$" x 8$\frac{1}{2}$" lengthwise (By-pass)
             LCT
                      A4/11" x 8$\frac{1}{2}$" sideways only

Duplex Copying: Maximum   A3/11" x 17"
                        Minimum   A5/8$\frac{1}{2}$" x 5$\frac{1}{2}$" sideways

Copy Paper Weight: Paper tray:
                      60 ~ 105 g/m^2, 16 ~ 24 lb
             By-pass:
                      60 ~ 157 g/m^2, 16 ~ 42 lb
             LCT:
                      60 ~ 128 g/m^2, 16 ~ 34 lb
             Duplex copying:
                      64 ~ 105 g/m^2, 17 ~ 24 lb

✽ Reproduction Ratios: 5 Enlargement and 7 Reduction

	A4/A3 Version	LT/DLT Version
Enlargement	400%	400%
	200%	200%
	141%	155%
	122%	129%
	115%	121%
Full size	100%	100%
Reduction	93%	93%
	87%	85%
	82%	77%
	71%	74%
	65%	65%
	50%	50%
	35%	35%

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∗ Zoom: 32% to 400% in 1% steps

Power Source: 120V/60Hz:
                            More than 12 A (for North America)
                      220V ~ 240V/50Hz:
                            More than 7 A (for Europe)
                      220V ~ 240V/60Hz:
                            More than 7 A (for Asia)

∗ Power Consumption:

	Copier Only	Full System
115 V Machine		
Maximum	Less than 1.44 kW	Less than 1.44 kW
Copying	Less than 1.30 kW	Less than 1.35 kW
Warm-up	Less than 1.05 kW	Less than 1.07 kW
Stand-by	Less than 0.22 kW	Less than 0.24 kW
230 V Machine		
Maximum	Less than 1.50 kW	Less than 1.50 kW
Copying	Less than 1.30 kW	Less than 1.35 kW
Warm-up	Less than 1.10 kW	Less than 1.12 kW
Stand-by	Less than 0.27 kW	Less than 0.29 kW

NOTE: Full System: Copier + ADF + Paper Tray Unit + Finisher

∗ Noise Emission:

	Copier Only	Full System
1. Sound Power Level		
Copying	67 dB(A)	69 dB(A)
Stand-by	40 dB(A)	41 dB(A)
2. Sound Pressure Level at the Operator Position		
Copying	53 dB(A)	59 dB(A)
Stand-by	28 dB(A)	28 dB(A)

NOTE: The above measurements are to be made in accordance
with ISO 7779.
Full System: Copier + ADF + Paper Tray Unit + Finisher.

Dimensions (W x D x H):   880 x 655 x 602 mm (34.7" x 25.8" x 23.8")
                          Measurement Conditions
                          1) With by-pass feed table closed
                          2) With copy tray attached
                          3) With LCT cover closed
                          4) Without the 500-sheet copy tray

∗ Weight: 97 kg (214 lb)

✲ Copying Speed (copies/minute):

| A4 sideways/ 11" x 81/2"	A3/11" x 17"	B4/81/2" x 14"
50 (US, France) 51 (EU, ASIA)	22	32

Warm-Up Time   Less than 140 seconds (20°C, 68°F)

✲First Copy Time: Less than 4.5 s (from LCT)

Copy Number Input: Ten-key pad, 1 to 999 (count up or count down)

Manual Image Density   7 steps
Selection:

Automatic Reset: 30 s is the standard setting; it can be changed with
                               a UP mode.

Copy Paper Capacity:

Paper Tray	By-pass Feed	LCT
About 500 sheets x1	About 40 sheets	About 1000 sheets

Hard Disk: More than 1.0 GB, Fast SCSI-2

Duplex Tray Capacity   A4/11" x 81/2": 50 sheets
                               A3/11" x 17": 50 sheets (80 g/m^2, 20 lb paper)
                                             30 sheets (81 ~ 105 g/m^2,
                                                       21.5 ~ 27.9 lb paper)

Toner Replenishment: Cartridge exchange (700 g/cartridge)

Toner Yield: 20K copies (A4, 6% full black, ID Level 4)

Optional Equipment: • Platen cover
                               • Document feeder
                               • Paper tray unit with two paper trays
                               • Paper tray unit with three paper trays
                               • Finisher
                               • Key counter
                               • Tray heater
                               • Optical anti-condensation heater
                               • Drum heater
                               • 500-sheet receiving tray

Copy Tray Capacity   B4/81/2" x 14" ~ A4/81/2" x 11"   500 sheets
                               A3/11" x 17"   200 sheets
                               Less than B5/51/2" x 81/2":   200 sheets

1.2 MACHINE CONFIGURATION
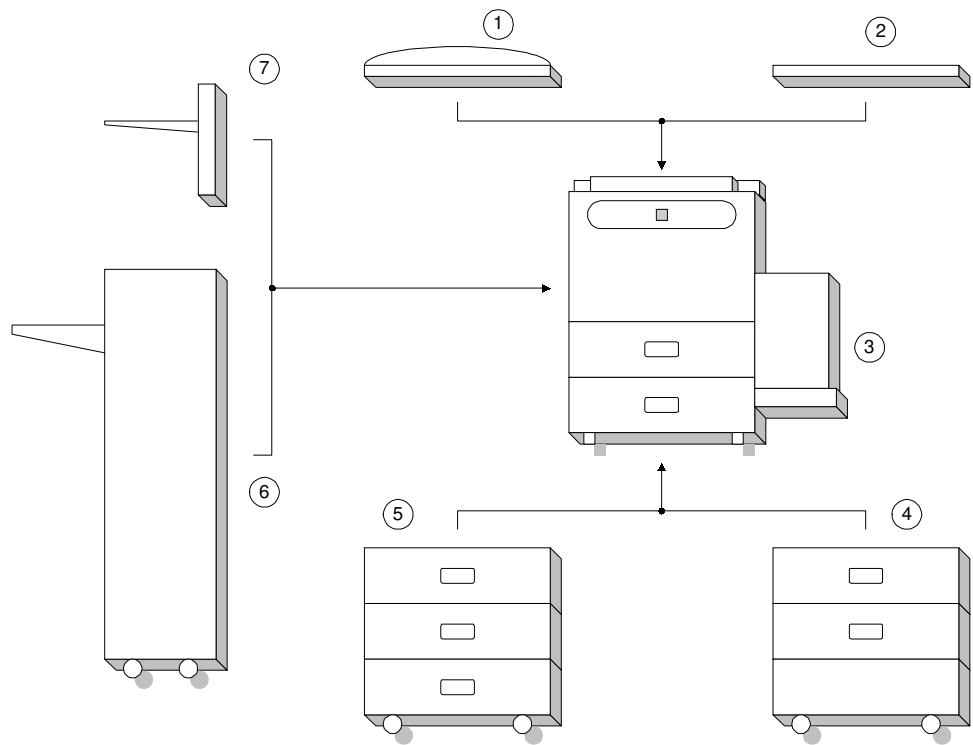
A217V500.vsd

NOTE: Only items marked ✽ are new items.

Item	Machine Code	No.
Copier	A217	3
✽ADF (Option)	A663	1
Paper Feed Unit (Option)	A549	5
	A550	4
✽Finisher (Option)	A612	6
500-sheet Receiving Tray (Option)	A615	7
Platen Cover (Option)	A381	2

1.3 ELECTRICAL COMPONENT DESCRIPTIONS

Refer to the electrical component layout and the point-to-point diagram on the waterproof paper in the pocket for the locations of these components.

✽: New or modified components.

Symbol	Index No.	Description	Note
Printed Circuit Boards			
PCB1	90	SCU	Controls all copier functions both directly or through other control boards.
PCB2	89	AC Drive	Provides ac power to the exposure lamp and fusing lamps.
PCB3	92	DC Power Supply	Provides dc power.
PCB4	93	BCU	Controls the mechanical parts of the printer.
PCB5	80	Charge High Voltage Supply	Supplies high voltage to the charge corona unit.
PCB6	85	High Voltage Control	Controls the high voltage boards and the quenching lamp.
PCB7	87	Operation Panel	Controls the touch panel display and LED matrix, and monitors the key matrix.
PCB8	95	Scanner Drive	Drives the scanner motor.
PCB9	81	EX-IPU	Processes the video signal from the SBU and sends the video signal to the LD unit.
PCB10	84	SBU	Contains the CCD, and outputs a video signal to the EX-IPU board.
PCB11	94	Lamp Stabilizer	Provides dc power for the exposure lamp.
PCB12	86	Main Scan Synchronization Detector - 1	Detects the laser beam at the start of the main scan.
PCB13	83	Main Scan Synchronization Detector - 2	Detects the laser beam at the end of the main scan.
PCB14	31	Transfer High Voltage	Supplies high voltage to the transfer belt.
PCB15	33	Development Bias Power Pack	Supplies high voltage to the development roller.
PCB16	40	Duplex Control	Controls the operation of the duplex tray.
PCB17	N/A	Liquid Crystal Display	Controls the guidance display and displays guidance for machine operation.
PCB18	51	LCT Interface	Interfaces the LCT control signal between the main board and the LCT.
PCB19	91	Relay Board	Switches ac power to either the dc drive board (if the main switch is on) or to the heaters (if the main switch is off).
PCB20	7	Laser Diode Drive	Controls the laser diode.
Motors			
M1	57	Main	Drives the main body components.

Symbol	Index No.	Description	Note
M2	66	Toner Bottle Drive	Rotates the toner bottle to supply toner to the toner supply unit.
M3	73	Tray Lift	Raises the bottom plate in the paper tray.
M4	56	Polygonal Mirror	Turns the polygonal mirror.
M5	48	LCT Lift	Lifts up and lowers the LCT bottom plate.
M6	74	Optics Exhaust Fan	Removes heat from the optics unit.
M7	65	IPU Fan	Removes heat from the IPU board.
M8	78	Exhaust Fan	Removes heat from around the fusing unit.
M9	60	Ozone Fan	Removes ozone-laden air from inside the machine.
M10	55	Scanner Drive	Drives the 1st and 2nd scanners (dc stepper motor).
M11	36	Duplex Feed	Drives the feed roller and moves the bottom plate up and down.
M12	39	End Fence Jogger	Drives the end fence jogger to square the paper stack.
M13	38	Side Fence Jogger	Drives the side fence jogger to square the paper stack.
M14	75	DC Drive Board Fan	Removes heat from around the DC drive board.
M15	68	Charge Inlet Fan	Provides air flow around the charge corona unit section.
∗ M16	59	Development Drive	Drives the development unit.
Sensors			
S1	13	By-pass Feed Paper Width	Informs the CPU what width paper is in the by-pass feed table.
S2	15	By-pass Feed Paper End	Informs the CPU that there is no paper in the by-pass tray.
S3	18	Tray Paper End	Informs the CPU when the paper tray runs out of paper.
S4	46	Upper Relay	Detects the leading edge of paper from the paper tray and duplex unit to determine the stop timing of the paper feed clutch and duplex feed motor. Also detects misfeeds.
S5	16	Tray Upper Limit	Detects the height of the paper stack in the paper tray to stop the upper tray lift motor.
S6	47	Lower Relay	Detects misfeeds.
S7	49	LCT Lower Limit	Sends a signal to the CPU to stop lowering the LCT bottom plate.
S8	50	LCT Paper End	Informs the CPU when the LCT runs out of paper.
S9	12	LCT Upper Limit	Signals the CPU to stop lifting the LCT bottom plate.

Symbol	Index No.	Description	Note
S10	19	Registration	Detects the leading edge of the copy paper to determine the stop timing of the paper feed clutch, and detects misfeeds.
S11	29	Image Density (ID)	Detects the density of various patterns on the drum during process control.
S12	30	Toner Density (TD)	Detects the amount of toner inside the development unit.
S13	1	Scanner HP	Informs the CPU when the 1st and 2nd scanners are at the home position.
S14	8	Original Length-1	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S15	9	Original Length-2	Detects the length of the original. This is one of the APS (Auto Paper Select) sensors.
S16	24	Fusing Exit	Detects misfeeds.
S17	6	Platen Cover	Informs the CPU whether the platen cover is up or down (related to APS/ARE functions). ARE: Auto Reduce and Enlarge
S18	32	Toner End	Instructs the CPU to add toner to the toner supply unit, and detects toner end conditions.
S19	28	Auto Response	Returns the operation panel display and exits from the energy saver mode.
S20	10	Transfer Belt Position	Informs the CPU of the current position of the transfer belt unit.
S21	2	Original Width	Detects the width of the original. This is one of the APS (Auto Paper Select) sensors.
S22	34	Duplex Paper End	Detects paper in the duplex tray.
S23	35	Duplex Turn	Detects the trailing edge of the copy paper to determine the jogging timing, and detects misfeeds.
S24	42	Duplex Entrance	Detects misfeeds.
S25	37	Side Fence Jogger HP	Detects the home position of the duplex side fence jogger.
S26	41	End Fence Jogger HP	Detects the home position of the duplex end fence jogger.
S27	23	Toner Overflow	Detects when the used toner collection bottle is full.
S28	14	By-pass Relay	Detects misfeeds.
Switches			
SW1	11	By-pass Feed Table	Detects whether the by-pass feed table is open or closed.
SW2	53	Tray Down	Sends a signal to the CPU to lower the LCT bottom plate.
SW3	20	Tray Paper Size	Determines what size of paper is in the paper tray.
SW4	54	LCT	Cuts the dc power line and detects whether the LCT is open or not.
SW5	52	LCT Cover	Cuts the dc power line of the LCT lift motor.

Symbol	Index No.	Description	Note
SW6	27	Main	Supplies power to the copier.
SW7	26	Front Cover Safety	Cuts the dc power line and detects whether the front cover is open or not.
Magnetic Clutches			
CL1	61	Toner Supply	Turns the toner supply roller to supply toner to the development unit.
∗ CL2		Not used	
CL3	76	Transfer Belt Lift	Controls the touch and release movement of the transfer belt unit.
CL4	58	Registration	Drives the registration rollers.
CL5	63	By-pass Feed	Starts paper feed from the by-pass feed table or LCT.
CL6	71	Relay	Drives the relay rollers.
CL7	72	Paper Feed	Starts paper feed from the paper tray.
CL8	62	By-pass Relay	Drives the by-pass relay rollers.
Solenoids			
SOL1	67	By-pass Pick-up	Drops the pick-up roller to the by-pass paper feed position. When paper is fed from the LCT, this solenoid assists SOL3.
SOL2	77	Junction Gate	Moves the junction gate to direct copies to the duplex tray or to the paper exit.
SOL3	64	LCT Pick-up	Drops the pick-up roller all the way down to the LCT paper feed position from the by-pass paper feed position.
SOL4	69	Pick-up	Controls the up/down movement of the pick-up roller in the paper tray.
SOL5	70	Separation	Controls the up/down movement of the separation roller at the paper tray feed station.
Lamps			
L1	3	Exposure	Applies high intensity light to the original for exposure.
L2	43	Fusing	Provides heat to the hot roller.
L3	88	Quenching	Neutralizes any charge remaining on the drum surface after cleaning.
Heaters			
H1	21	Drum (option)	Turns on when the main switch is off to prevent moisture from forming around the drum.
H2	5	Optics Anti-condensation (option)	Turns on when the main switch is off to prevent moisture from forming on the optics.

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Symbol	Index No.	Description	Note
H3	22	Tray (option)	Turns on when the main switch is off to keep paper dry in the paper tray.
Thermistors			
TH1	45	Fusing	Monitors the temperature at the central area of the hot roller.
Thermofuses			
TF1	44	Fusing	Provides back-up overheat protection in the fusing unit.
Thermoswitch			
TS1	4	Exposure Lamp	Opens the exposure lamp circuit if the 1st scanner overheats.
Counters			
CO1	25	Total	Keeps track of the total number of copies made.
CO2	N/A	Key (option)	Used for control of authorized use. The copier will not operate until it is installed.
Others			
CB1	17	Circuit Breaker (220 ~ 240V machines only)	Provides back-up high current protection for electrical components.
HDD	82	Hard Disk Drive	Scanned image data is compressed and held here temporarily during copying; also holds user stamp data.

1.4   DRIVE LAYOUT

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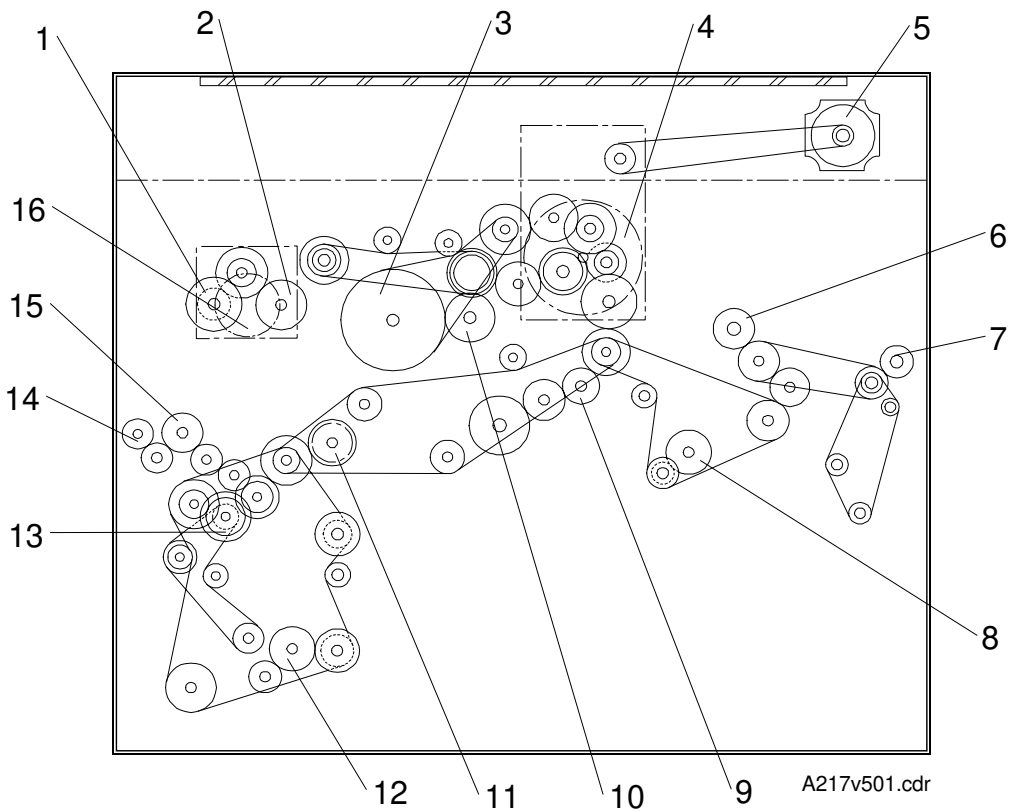
The development drive mechanism has been changed. (See Drive Mechanism for more information.)

✳: New or modified components.

1. Toner Supply Clutch	9. Transfer Belt Drive Gear
✳ 2. Development Gear	10. Cleaning Blade Drive Gear
3. Drum Drive Pulley	11. Registration Clutch
4. Main Motor	12. Paper Feed Clutch
5. Scanner Drive Gear	13. Relay Clutch
6. Fusing Drive Gear	14. By-pass Feed Clutch
7. Exit Drive Gear	15. By-pass Relay Relay Clutch
8. Toner Collection Bottle Drive Gear	✳16. Development Drive Motor

2. DIFFERENCES FROM THE A133 MACHINE

Unit	Item	Details		Main Reasons
		A133	**A217**	
Scanner	Scanner speed	200 mm/s	250 mm/s	Increased CPM
	Scanner lamp	75V 200W	75V 140W	High sensitivity CCD
Image Processing	Analog Process IC	1 pc	2 pcs	Faster image processing
Laser Exposure	Laser power on the OPC surface	1.3 mW	1.66 mW	Increased CPM
	Polygon motor rotation speed	31,496 rpm	39,370 rpm	Increased CPM
Toner Supply	Operation	---	When opening the toner supply unit over 60 degrees, the toner supply unit automatically opens out to 90 degrees.	To facilitate toner bottle replacement.
Paper Tray	Side fence	---	Secured with screws	To prevent image skew
	Housing	---	A pawl has been added	To remove jammed paper in the machine when the tray is drawn out.
Fusing Unit	Material of the housing	Plastic	Metal	Increased fusing pressure
	Fusing lamp	790W	930W	Increased CPM

3.   IMAGE PROCESSING

3.1   EX-IPU

3.1.1 OVERVIEW

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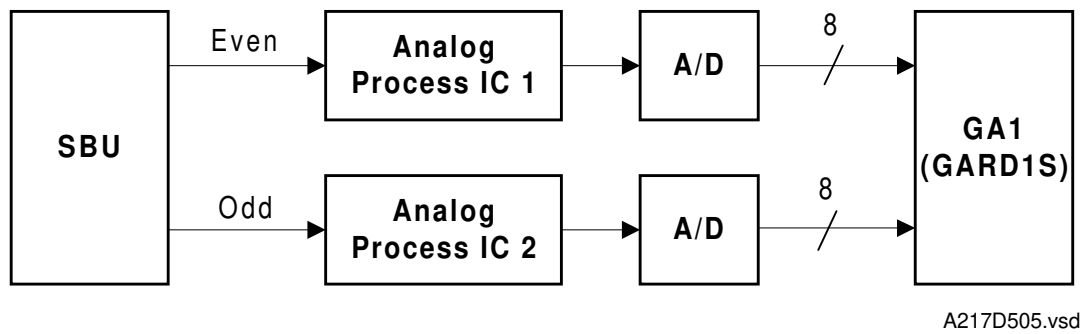
Analog signals for odd and even pixels from the SBU undergo analog processing and A/D conversion individually, then these signals go to GA1. This is to speed up the image processing.
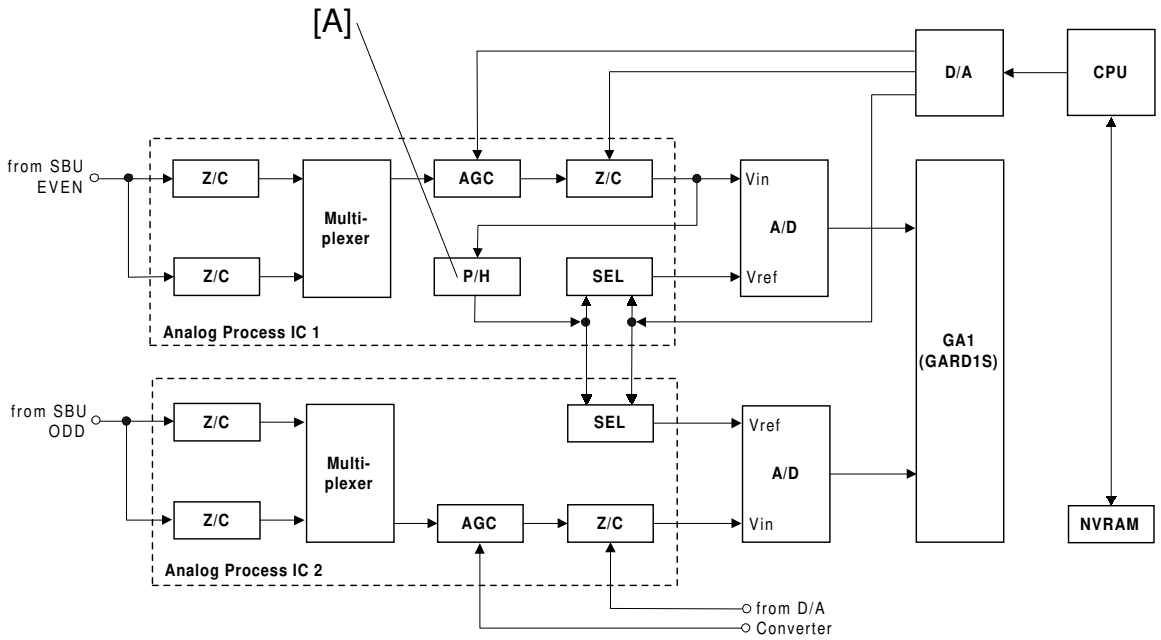
3.1.2 ANALOG PROCESSING

A217 Copier

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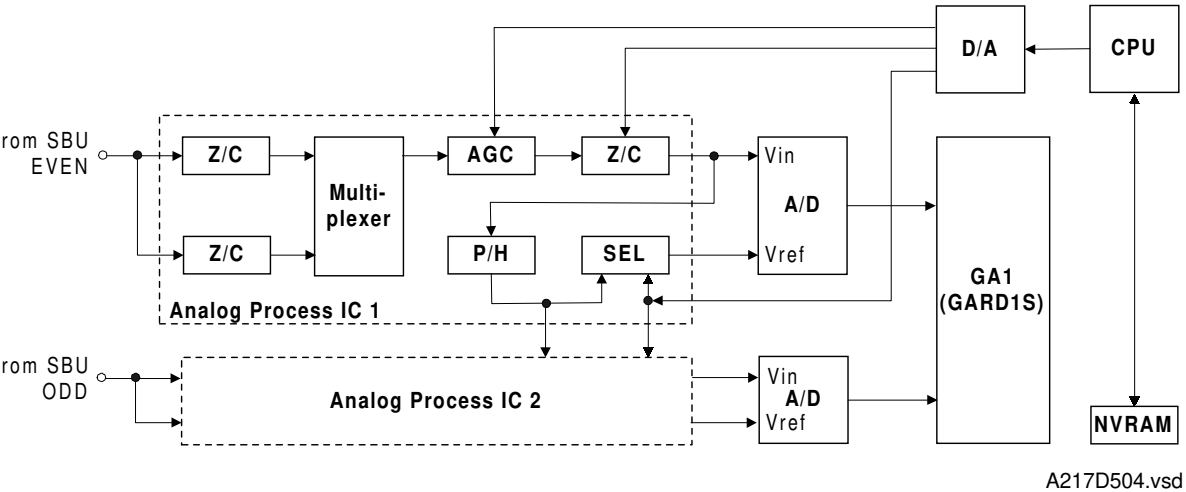
1. Signal Composition

   Analog signals for odd and even pixels are merged by a switching device in the GA1, not in the Analog Process ICs.

2. Signal Amplification

   This function is the same as in the A133 machine.

3. A/D conversion

   Converts individual pixels to 8-bit digital signals.

4. Feedback - D/A Conversion

   There are no D/A converters in the Analog Process ICs. Instead of this, there is a D/A converter outside the IC, and the CPU controls the feedback signal for the Analog Process ICs via the D/A converter.

   The CPU ignores the Z/C which is before the multiplexer.

3.1.3 AUTO IMAGE DENSITY (ADS)

[A]

D/A	CPU

from SBU EVEN

Z/C

Z/C

Multi-plexer

AGC

Z/C

P/H

SEL

Vin

A/D

Vref

Analog Process IC 1

from SBU ODD

Z/C

Z/C

Multi-plexer

SEL

Vref

A/D

Vin

AGC

Z/C

Analog Process IC 2

GA1 (GARD1S)

NVRAM

from D/A
Converter

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This function is the same as in the A133 machine. However, in this machine, the CPU detects the peak white level only for even pixels using the P/H (Peak Hold) circuit [A]. This data will be used for the odd pixels.

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4.   DEVELOPMENT

4.1   DEVELOPMENT DRIVE MECHANISM

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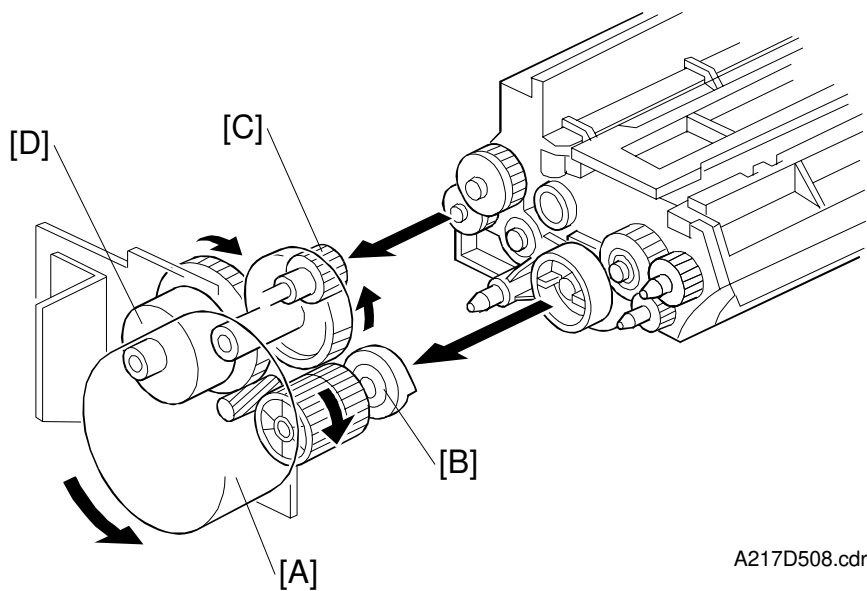
In the A133 machine, the main motor drives the development roller and the toner supply roller. However, in this machine, the development drive motor [A] drives the development drive gear [B], which drives the gears in the development unit and the toner supply roller, which is driven by the gear [C] when the toner supply clutch [D] activates.

This reduces the main motor torque.

5. IMAGE FUSING

5.1 FUSING TEMPERATURE CONTROL

5.1.1 OVERVIEW
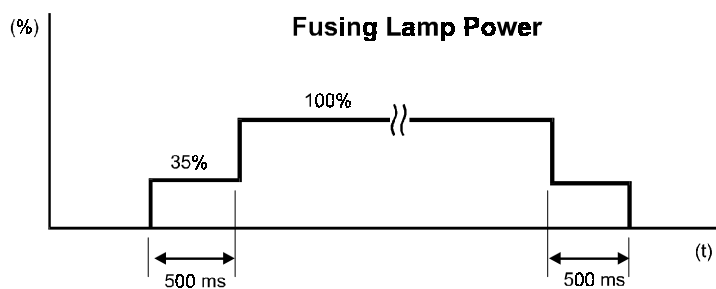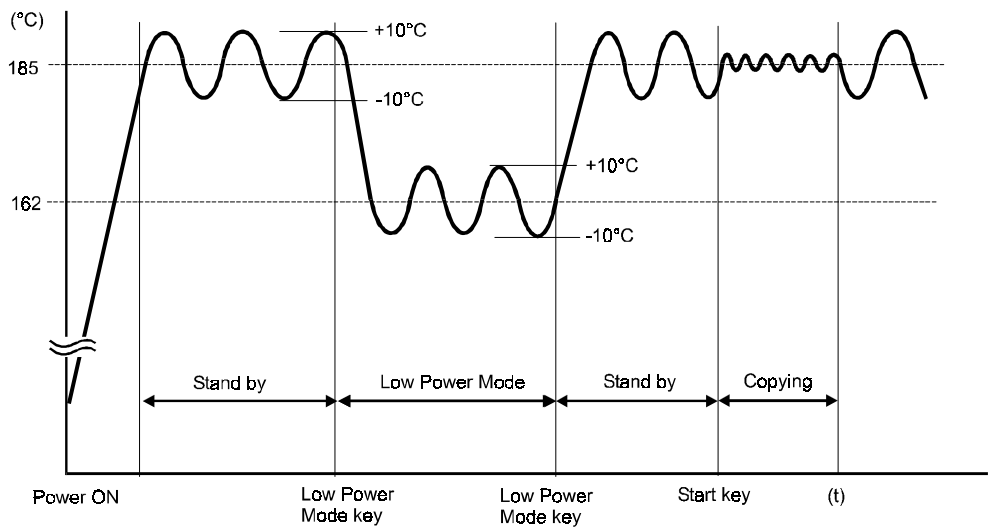
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5.1.2 ON/OFF CONTROL

NOTE: The following explanation is for the 230V machine only.

To prevent the power supply from the inlet from fluctuating when the fusing lamp turns on, this machine controls the fusing temperature as follows.

1. When the fusing lamp turns on, 35% of the ac power is applied to the lamp for 500 ms, then full ac power is applied. In the fusing lamp off condition, ac power is reduced to 35% for 500 ms, then cut.

2. When not copying, the BCU keeps the fusing temperature at the appropriate fusing temperature ± 10°C.
    This reduces the number of times the fusing lamp switches on/off.

6. ENERGY SAVER AND ENERGY STAR

The energy star and energy saver functions are the same as for the A133 machine. The programming modes for these energy saver functions are as follows.

- 115V machine -

Mode	Method	Selectable values	Default	Unit/Step
Auto off timer	UP mode	10 ~ 240 min	60 min	10 min
Low power timer	UP mode	1 ~ 240 min	15 min	1 min
Recovery time from the low power mode	SP mode	10 s (175ºC) 20 s (162ºC) 30 s (150ºC)	20 s (162ºC)	
Duplex priority	UP mode	1 sided to 1 sided 1 sided to 2 sided 2 sided to 2 sided	1 sided to 2 sided	
Auto off mode	SP mode	Enabled Disabled	Enabled	

- 230V machine -

Mode	Method	Selectable values	Default	Unit/Step
Auto off timer	This function only works in 115V machines.			
Low power timer	UP mode	1 ~ 15 min	10 min	1 min
Recovery time from the low power mode	SP mode	10 s (175ºC) 20 s (162ºC) 30 s (150ºC)	20 s (162ºC)	
Duplex priority	UP mode	1 sided to 1 sided 1 sided to 2 sided 2 sided to 2 sided	1 sided to 1 sided	
Auto off mode	This function only works in 115V machines.			

7.   INSTALLATION PROCEDURE

The installation procedure of this machine is completely the same as for the A133 machine except for the followings.

1. Do the following step after step 31 of the installation procedure for the A133 machine.

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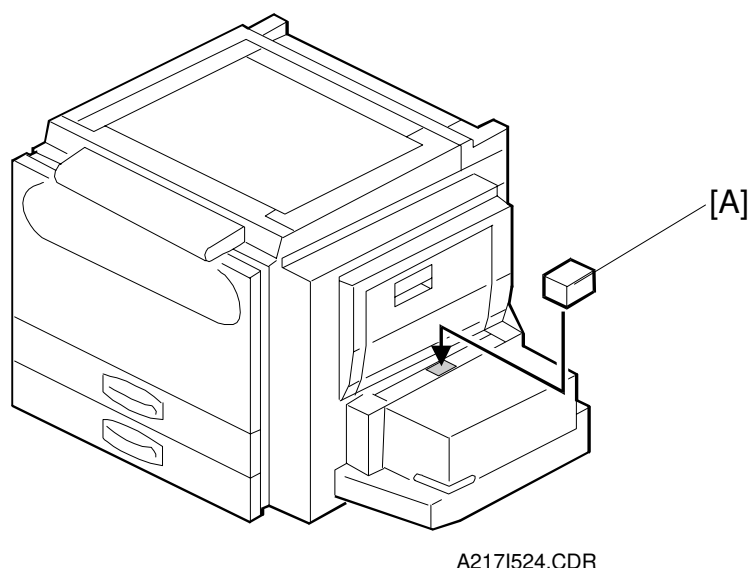
32. Attach the sponge [A] to the LCT as shown above illustration.

2. When the machine is installed in France, do the following step after step 35 of the installation procedure for the A133 machine.

- France Only

36. Change switch. 8 of DIP SW 201 on the BCU to "ON".

8. SERVICE TABLES

8.1 SP MODE

NOTE: 1) Items marked "#" are new or modified items.
2) In the Function column, comments are in italics.
3) In the Settings column, the default value is in bold letters.
4) An asterisk " * " after the mode number means that this mode is stored in the NVRAM. If you do a RAM reset, all these SP modes will be reset to their factory settings.

Mode No.			Function	Settings
Class 1	Class 2			
1001 *		Leading Edge Registration	Adjusts the printing leading edge registration using Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✳ key to toggle between + and -. *The specification is 3 ±2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	
1002 *	1 *	Side-to-Side Registration (Duplex)	Adjusts the printing side-to-side registration from the duplex tray using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✳ key to toggle between + and -. *The specification is 2 ±1.5 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details on SP1002*	
	2 *	Side-to-Side Registration (1st paper feed)	Adjusts the printing side-to-side registration from the 1st paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✳ key to toggle between + and -. *The specification is 2 ±1.5 mm.*	
	3 *	Side-to-Side Registration (2nd paper feed: Option PFU tray 1)	Adjusts the printing side-to-side registration from the 2nd paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✳ key to toggle between + and -. *The specification is 2 ±1.5 mm.*	

Mode No.			Function	Settings
Class 1	Class 2			
1002 *	4 *	Side-to-Side Registration (3rd paper feed: Option PFU tray 2 if present)	Adjusts the printing side-to-side registration from the 3rd paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✴ key to toggle between + and -. *The specification is 2 ±1.5 mm.*	
	5 *	Side-to-Side Registration (4th paper feed: Option PFU tray 3 if present)	Adjusts the printing side-to-side registration from the 4th paper feed station using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✴ key to toggle between + and -. *The specification is 2 ±1.5 mm.*	
	6 *	Side-to-Side Registration (By-pass feed)	Adjusts the printing side-to-side registration from the by-pass feed table using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✴ key to toggle between + and -. *The specification is 2 ±1.5 mm.*	
	7 *	Side-to-Side Registration (LCT)	Adjusts the printing side-to-side registration from the LCT using the Trimming Area Pattern (SP2902-3, No.10).	+9 ~ -9 0.1 mm/step **+ 0.0 mm**
			Use the ●/✴ key to toggle between + and -. *The specification is 2 ±1.5 mm.*	
1003 *	1 *	Paper Feed Timing (Paper Feed Trays)	Adjusts the relay clutch timing at registration. The relay clutch timing determines the amount of paper buckle at registration. (A +ve setting leads to more buckling.)	+9 ~ -9 1 mm/step **+ 0 mm**
	2 *	Paper Feed Timing (By-pass, LCT)		
1006 *		Double copy side-to-side registration	Adjusts the image position from the center line in double copy mode.	+9 ~ -9 1 mm/step **+ 0 mm**
			Use the ●/✴ key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.	
1007		By-pass Feed Paper Size Display	Displays the paper width sensor data for the by-pass feed table.	

Mode No.			Function	Settings
Class 1	Class 2			
1008 *	1 *	Duplex Jogger Fence Adjustment (Side Fence)	Adjusts the stop position of the side jogger fence span of the duplex unit.	+4 ~ -4 0.5 mm/step **+ 0.0 mm**
			Use the ●/✻ key to toggle between + and -.	
	2 *	Duplex Jogger Fence Adjustment (End Fence)	Adjusts the stop position of the end jogger fence span of the duplex unit.	+4 ~ -4 0.5 mm/step **+ 0.0 mm**
			Use the ●/✻ key to toggle between + and -.	
1103 *		Fusing Idling	Selects whether fusing idling is done or not.	On **Off**
			Normally disabled in this machine. However, if fusing is incomplete on the 1st and 2nd copies, switch it on. This may occur if the room is cold.	
1104 *		Fusing Temperature Control	Selects the fusing temperature control mode.	**On**/**Off** Phase
1105 *		Fusing Temperature Adjustment	Adjusts the fusing temperature.	170 ~ 200 1°C/step **185°C**
1106		Fusing Temperature Display	Displays the fusing temperature.	
# 1900		By-pass Feed 8.5" Width	Selects the paper length of the 8.5" width paper.	**X11" (8.5"x11")** X14" (8.5"x14")
			This SP is 115V version only	
2001 *	1 *	Grid Voltage Adjustment (For copying)	Adjusts the voltage applied to the grid plate during copying.	600 ~ 1000 1 V/step **940 V**
			Do not adjust.	
	2 *	Grid Voltage Adjustment (For ID sensor pattern)	Adjusts the voltage applied to the grid plate when making the ID sensor pattern.	600 ~ 1000 1 V/step **650 V**
			Do not adjust.	
	5 *	Charge Corona Current Adjustment	Adjusts the current applied to the charge corona wire.	900 ~ 1300 1 μA/step **1100 μA**
			Do not adjust.	
2101 *	1 *	Leading Edge Erase Margin (Printing)	Adjusts the leading edge erase margin.	0.0 ~ 9.0 0.1 mm/step **3.0 mm**

Mode No.		Function	Settings
Class 1	Class 2		
		The specification is 3 ±2 mm. See "Replacement and Adjustment - Copy Image Adjustments" for details on SP2101.	
2101 *	2 *	Trailing Edge Erase Margin (Printing)	Adjusts the trailing edge erase margin.	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
		The specification is 2 ±2 mm.	
	3 *	Left Side Edge Erase Margin (Printing)	Adjusts the left side erase margin.	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
		The specification is 2 ±1.5 mm.	
	4 *	Right Side Edge Erase Margin (Printing)	Adjusts the right side erase margin.	0.0 ~ 9.0 0.1 mm/step **2.0 mm**
		The specification is $2 \, {}^{+ \, 2.5}_{- \, 1.5}$ mm.	
2103 *		LD Power Adjustment	Adjusts the LD power.	-127 ~ +127 2.1 μW/step **+0**
		Do not change the value.	
2201 *	1 *	Development Bias Adjustment (for copying)	Adjusts the development bias during copying.	200 ~ 700 1 V/step **550 V**
		This can be adjusted as a temporary measure if faint copies appear due to an aging drum.	
	2 *	Development Bias Adjustment (for ID sensor pattern)	Adjusts the development bias when making the ID sensor pattern.	200 ~ 700 1 V/step **310 V**
		This can be adjusted as a temporary measure if faint copies appear due to an aging drum.	
2207		Forced Toner Supply	Forces the toner bottle to supply toner to the toner supply unit for 30 seconds.	
		Toner supply finishes automatically after 30 seconds. This process is not normally needed in the field for this model. At installation, doing the 50-page free run also supplies toner to the development unit.	
2208 *	1 *	Toner Supply Mode	Selects the toner supply mode.	**Detect** Fixed
		Use fixed supply mode only as a temporary measure if process control is not working.	

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Mode No.			Function	Settings
Class 1	Class 2			
	2 *	Toner Supply Ratio (Fixed Supply Mode)	Selects the toner supply ratio for Fixed Supply Mode.	**6%** 15% 30%
			Use a higher value if the user tends to make lots of copies that have a high proportion of black.	
2209 *		Toner Supply Rate (Detect Supply Mode)	Adjusts the toner supply rate for Detect Supply Mode.	50 ~ 200 1 mg/s / step **116 mg/s**
			Increasing this value reduces the toner supply clutch on time. Use a lower value if the user tends to make lots of copies that have a high proportion of black.	
2210 *		ID Detection Interval	Changes the interval for making the ID sensor pattern (VSP/VSG detection).	10 ~ 200 1 copy/step **200 copies**
			Reducing the interval will also reduce the CPM. *Do not adjust this.*	
2220 *		VTREF Manual Setting	Adjust the VTREF of the TD sensor.	1.50 ~ 3.00 0.01V/step **2.52V**
			Change this value after replacing the development unit with another one that already contains toner. *For example, when using a development unit from another machine for test purposes, do the following:* *1. Check the value of SP2220 in both the machine containing the test unit and the machine that you are going to move it to.* *2. Install the test development unit, then input the VTREF for this unit into SP2220.* *3. After the test, put back the old development unit, and change SP2220 back to the original value.*	
2223 *		VT Display	Displays the TD sensor output voltage.	
2301 *	1 *	Transfer Current Adjustment (1st side of the paper)	Adjusts the current applied to the transfer belt during copying on the 1st side of the paper.	10 ~ 60 1 μA/step **40 μA**

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Mode No.		Function	Settings
Class 1	Class 2		
		If the user uses thicker paper, the current may have to be increased to ensure sufficient transfer of toner.	
	2 *	Transfer Current Adjustment (2nd side of the paper)	Adjusts the current applied to the transfer belt during copying on the 2nd side of the paper.	10 ~ 60 1 μA/step **40 μA**
			See above.	
2301 *	6 *	Transfer Current Adjustment (By-pass Feed)	Adjusts the current applied to the transfer belt during copying from the by-pass feed table.	10 ~ 60 1 μA/step **60 μA**
			See above; note that thicker paper can be fed from the bypass feed tray, so the factory setting is higher.	
2801		TD Sensor Initial Setting	Performs the TD sensor initial setting. This SP mode controls the voltage applied to the TD sensor to make the TD sensor output about 2.5 V.	
			Use this mode only after installing the machine, changing the TD sensor, or the adding new developer.	
2803		Forced Charge Corona Wire Cleaning	Forces the charge corona wire cleaning motor to start cleaning.	
			This only works if the optional wire cleaning motor is installed.	
2804 *	1 *	Charge Corona Wire Cleaning Enable/Disable	Determines whether to clean the charge corona wire every time interval set with SP 2804-2.	Enabled **Disabled**
			This only works if the optional wire cleaning motor is installed.	
	2 *	Charge Corona Wire Cleaning Interval	Changes the interval for charge corona wire cleaning.	100 ~ 10000 100 copies/step **2500 copies**
			This only works if the optional wire cleaning motor is installed.	
2902	1	Test Pattern Printing (Analog Video Processing)	Prints the test patterns for analog video processing. See section 2.2.2 for how to print test patterns. 0. Not used 1. 16 gradations 2. 128-dot intervals 3. 64-dot intervals	
			This SP mode is useful for finding whether the SBU or EX-IPU failed. If the printout is OK, the SBU is defective. If the printout is not OK, the EX-IPU is defective.	

Mode No.		Function		Settings
Class 1	Class 2			
	2	Test Pattern Printing (Digital Video Processing)	Prints the test patterns for digital video processing. See section 2.2.2 for how to print test patterns. 0. Not used 1. Vertical Stripes 2. Grayscales 3. Cross Pattern 4. Black Bands 5. 300 dpi 6. 600 dpi	
			This SP mode is useful for finding whether the printer or the EX-IPU failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.	
2902	3	Test Pattern Printing (Printing)	Prints the printer test patterns. See section 2.2.2 for how to print test patterns. Example: 10. Trimming Area For the other test patterns, refer to section 2.2.2.	
			This SP mode is useful for finding the part that failed. If the printout is OK, the EX-IPU is defective. If the printout is not OK, the printer is defective.	
	7	Test Pattern Printing (GA5)	Prints the test pattern for the GA5 (IC for image compression) 0: Not used 1: Print out	
2905 *		LD PWM Laser Pulse Positioning	Selects the laser pulse positioning type that is used for test printouts and when in binary picture processing mode.	**2: Center** 3. Left 4. Right 5. Concentrated
			If SP 4904-1 is set to NO, this SP mode is ignored. The "center" setting will be used.	
2906 *		TD Sensor Input Voltage	Use to input the TD sensor control voltage.	4 ~ 10 0.1 V/step **8.0 V**
			Factory use only	
2909 *		Main Scan Magnification	Adjusts the magnification in the main scan direction for the printer.	- 2.54~+ 2.54 0.02 %/step **+ 0.00 %**
			Use the ●/✳ key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.	
2950 *		Side-to-Side Registration (Base)	Changes the printing start position.	- 12.7~+ 12.7 0.1 mm/step **+ 0.0 mm**
			Factory use only	
3001		ID Sensor Initial Setting	Performs the ID sensor initial setting. The ID sensor output for the bare area of the drum (VSG) is adjusted to $4.0 \pm 0.2V$.	
			This SP mode should be performed after replacing or cleaning the ID sensor or replacing the drum.	

Mode No.		Function		Settings
Class 1	Class 2			
3103 *		ID Sensor Output Display	Displays the current VSG and VSP output.	VSP= ■.■■V VSG= ■.■■V
			If the ID sensor does not detect the ID pattern, "VSP=5.0v/VSG=5.0v" is displayed. *If the ID sensor does not detect the bare area of the drum, "VSP=0.0v/VSG=0.0v" is displayed.*	
4008 *		Sub Scan Magnification (Scanning)	Adjusts the magnification in the sub scan direction for scanning. If this value is changed, the scanner motor speed is changed.	- 9.0 ~ + 9.0 0.1 %/step **+ 0.0 %**
			Use the ●/✽ key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.	
4010 *		Leading Edge Registration (Scanning)	Adjusts the leading edge registration for scanning.	- 9.0 ~ + 9.0 0.1 mm/step **+ 0.0 mm**
			(-): the image moves in the direction of the leading edge *Use the ●/✽ key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	
4011 *		Side-to Side Registration (Scanning)	Adjusts the side-to-side registration for scanning.	- 9.0 ~ + 9.0 0.1 mm/step **+ 0.0 mm**
			(-): the image disappears at the left side. *(+): The image appears.* *Use the ●/✽ key to toggle between + and -. See "Replacement and Adjustment - Copy Image Adjustments" for details.*	
4012 *	1 *	Leading Edge Erase Margin (Scanning)	Adjusts the leading edge margin for scanning.	0.0 ~ 0.9 0.1 mm/step **1.0 mm**
			Do not adjust this unless the user wishes to have a scanner margin that is greater than the printer margin.	

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Mode No.		Function	Settings
Class 1	Class 2		
	2 *	Trailing Edge Erase Margin (Scanning)	Adjusts the trailing edge margin for scanning.	0.0 ~ 0.9 0.1 mm/step **0.5 mm**
			See the comment for SP 4012-1.	
	3 *	Left Side Erase Margin (Scanning)	Adjusts the left side margin for scanning.	0.0 ~ 0.9 0.1 mm/step **1.0 mm**
			See the comment for SP 4012-1.	
	4 *	Right Side Erase Margin (Scanning)	Adjusts the right side margin for scanning.	0.0 ~ 0.9 0.1 mm/step **0.5 mm**
			See the comment for SP 4012-1.	
4013		Scanner Free Run	Performs a scanner free run with the exposure lamp off.	
4301		APS Sensor Output Display	Displays the size of an original placed on the exposure glass.	
			If A5 or 51/2" x 81/2" is displayed, check the current setting of SP 4303; depending on that SP mode setting, A5 or 51/2" x 81/2" may be displayed if the APS sensors cannot detect the paper size.	
4303 *		APS Small Size Original Detection	Selects whether or not the copier determines that the original is A5/HLT size when the APS sensor does not detect the size.	**Not detected** A5 length / 51/2" X81/2"
			If "A5 length / 51/2" x 81/2" is selected, paper sizes that cannot be detected by the APS sensors are regarded as A5 lengthwise or 51/2" x 81/2". If "Not detected" is selected, "Cannot detect original size" will be displayed.	
4428		Standard White Level Adjustment	Corrects the standard white level of the white plate.	
			This SP mode is for factory use only. Do not change the value.	
# 4901 *	1 *	GA 1 Setting (L-GAIN1)	The value of the standard AGC gain for the analog processing IC 1 after automatic white level adjustment in the factory.	0 ~ 255 1 /step **65**
			This SP mode is for factory use only. Do not change the value.	

Mode No.			Function	Settings
Class 1	Class 2			
	2 *	GA 1 Setting (L-GAIN2)	The value of the standard AGC gain for the analog processing IC 2 after automatic white level adjustment in the factory.	0 ~ 255 1 /step **65**
			This SP mode is for factory use only. ***Do not change the value.***	
	3 *	GA 1 Setting (W-GAIN1)	The value of the standard AGC gain for the analog processing IC 1 when the main switch is turned on.	0 ~ 255 1 /step **65**
			Do not change the value.	
	4 *	GA 1 Setting (W-GAIN2)	The value of the standard AGC gain for the analog processing IC 2 when the main switch is turned on.	0 ~ 255 1 /step **65**
			Do not change the value.	
#4901 *	5 *	GA 1 Setting (B-GAIN 1)	The value of the black level for the analog processing IC 1.	0 ~ 255 1 /step **40**
			Do not change the value.	
	6 *	GA 1 Setting (B-GAIN2)	The value of the black level for the analog processing IC 2.	0 ~ 255 1 /step **40**
			Do not change the value.	
	7 *	GA 1 Setting (REF)	The value of the standard AGC gain for scanning the white plate.	0 ~ 255 1 /step **170**
			Do not change the value.	
4903 *	1 *	GA 3 Setting (Filter Level)	Selects the strengths of the MTF and smoothing filters. **bit 7, 6: Letter Mode (MTF)** 00: Normal 01: Weak 10: Weaker 11: Weakest **bit 5, 4: Generation Mode (MTF)** 00: Normal 01: Weak 10: Weaker 11: Weakest **bit 3: Not used** Keep at "0" **bit 2: Letter/Photo Mode (Smoothing)** 0: Sharp 1: Smooth **bit 1: Photo Mode (MTF)** 0: Weak 1: Strong **bit 0: Photo Mode (Smoothing)** 0: Smooth 1: Sharp	0 ~ 255 **0**

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Mode No.		Function	Settings
Class 1	Class 2		
		Input the setting for all 8 bits at once as a decimal value. *(e.g. To set the MTF filter strength of the the generation mode to 'weak', the input value should be 16 as shown below, assuming all other parameters are at the 'zero' setting.* *00010000 → 16* *The type of filter used in Photo mode depends on the setting of SP4904-3.*	
	2 *	GA 3 Setting (Filter Mode)	Selects the coefficients and strengths of the MTF filter and smoothing filter. ***Do not change the value.***	0 ~ 16 1 /step **3**
	3	Not used		
	4 *	GA 3 Setting (White Threshold)	Changes the threshold level for dot screen detection processing. ***Do not change the value.***	0 ~ 255 1 /step **80**
4903 *	5 *	GA3 Setting (Full Size)	Selects whether the copy image is always in the full size mode even if the magnification ratio has been changed. *This SP mode is used for checking the magnification function in the main scan direction, which is performed by the GA3 chip.*	**0: Normal Operation** 1: Always full size mode
	6	GA 3 Setting (Test Pattern Output)	Prints the test pattern for the GA3 or selects one of the following video data outputs for printing. **0. Normal** 1. Test pattern print out 2. Skips the magnification processing. 3. Skips the filter processing 4. Skips the GA3 functions *This SP mode is used for checking the GA3 functions.*	
	7 *	GA 3 Setting (Main Shift High)	Changes the image shift amount for the main scan direction in magnification mode.	0 ~ 255 1 /step **0**
	8 *	GA 3 Setting (Main Shift Low)	***Do not change the values of 4903-7 and 4903-8.***	
	9 *	GA 3 Setting (Switch Separation)	Changes the threshold ratio for auto text/photo separation processing.	25 ~ 255 1 %/step **170 %**

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Mode No.		Function		Settings
Class 1	Class 2			
			This is used only in the Japanese model.	
4904 *	1 *	GA4 Setting (Laser Pulse Positioning)	Selects whether LD PWM laser pulse positioning feature is performed or not.	0: OFF **1: ON**
			If "OFF" is selected, the copier always uses the "center" setting (pixels will always have a small separation).	
	2 *	GA4 Setting (Photo Matrix)	Selects the matrix size for photo mode.	0: 4 x 4 **1: 6 x 6** 2: 8 x 8 3: 6 x 6 (New)
			● *8 x 8 is only used if 4904-4 is set to "binary". Also, if 4904-4 is set to binary, 4904-2 will be ignored if the setting is other than 8 x 8.* ● *6 x 6 (New) should be selected when a light original is used.* ● *4 x 4 leads to a sharper image.*	
4904 *	3 *	GA4 Setting (Filter Select in Photo Mode)	Selects either the MTF filter or the smoothing filter in Photo mode.	0: MTF filter **1:Smoothing filter**
			The strength of the MTF filter can be selected with SP4903-1, bit 1. The strength of the Smoothing filter can be selected with SP4903-1, bit 0. If you select the MTF filter, the image resolution is improved. However, the dot screen areas will be faint.	
	4 *	GA4 Setting (Binary Process Mode)	Selects whether binary picture processing mode is performed or not.	**0: NO** 1: YES
			If "YES" is selected, all image processing modes are handled using binary picture processing mode.	
	6 *	GA4 Setting (Generation Mode)	Selects the line width correction type in the generation mode.	0: Not corrected 1: Thin line-1 **2: Thin line-2** 3: Thick line
			In generation mode, lines may bulge in the main scan direction. Adjust this SP mode until the result is satisfactory.	

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Mode No.		Function	Settings
Class 1	Class 2		
	7 *	GA4 Setting (Image Process mode in Letter/ Photo mode: Letter areas)	Selects the image processing mode used for Letter areas in Letter/Photo mode. **0: 1 x 1 dot processing** 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing 3: Error diffusion with 2 x 1 dot processing *A larger value cases the image to became lighter. Only works if 4904-4 is at 0.*	
	8 *	GA4 Setting (Image Process mode in Letter/Photo mode: Photo Areas)	Selects the image processing mode used for photo areas in the Letter/Photo mode. 0: 1 x 1 dot processing 1: Error diffusion with 1 x 1 dot processing 2: 2 x 1 dot processing **3: Error diffusion with 2 x 1 dot processing** *A smaller value causes the image to become more sharp in focus. Only works if 4904-4 is at 0.*	
4904 *	10	GA4 Setting (GA4 Test Data)	Prints the test pattern for the GA4 IC, to test the GA4 chip on the EX-IPU. **0: No Print** 1: Gradation 2: Cross 3: Black bands	
	12 *	GA4 Setting (BK Thresh Level)	Changes the threshold level for binary picture processing mode. *A larger value causes the image to become lighter.*	0 ~ 255 1 /step **40**
	13 *	GA4 Setting (Top point Level)	The value for pixels at an edge in binary picture processing mode. ***Do not change the value.***	0 ~ 255 1 /step **128**
	14 *	GA4 Setting (All Black Level)	The value for black areas in binary picture processing mode. ***Do not change the value.***	0 ~ 255 1 /step **255**
	16 *	GA4 Setting (Print Top Point Level)	The value for pixels at an edge in stamp mode. ***Do not change the value.***	0 ~ 255 1 /step **128**
	17 *	GA4 Setting (Print All Black Level)	The value for black areas in stamp mode. ***Do not change the value.***	0 ~ 255 1 /step **255**
	18 *	GA4 Setting (Dither Pattern)	Selects the dither pattern used in binary picture processing mode.	**0: 70-line** 1: 95-line

Mode No.			Function	Settings
Class 1	Class 2			
			Do not change the value.	2: 140-line 3: 180-line
4905	1	Path setting (MSU video in)	**Do not change the value**	0
4907 *		GA4 Setting (Auto letter/photo separation)	Selects whether the auto letter/photo separation is performed in the Letter/Photo mode or not. *Test purposes only*	Disabled **Enabled**
4909 *	1 *	GA4 Setting (Pulse Width Modulation)	Decides the threshold level for selecting the type of pulse width modulation that is used. *Do not change the value.*	0 ~ 255 1 /step **32**
	2 *	GA4 Setting (Line Width Correction 1 : White	Decides the threshold value for a pixel to be white when line width correction type 1 is performed. *Do not change the value.*	0 ~ 255 1 /step **48**
	3 *	GA4 Setting (Line Width Correction 1 : Black	Decides the threshold value for a pixel to be black when line width correction type 1 is performed. *Do not change the value.*	0 ~ 255 1 /step **208**
4909 *	4 *	GA4 Setting (Line Width Correction 2 : White	Decides the threshold value for a pixel to be white when line width correction type 2 is performed. *Do not change the value.*	0 ~ 255 1 /step **60**
	5 *	GA4 Setting (Line Width Correction 2 : Black	Decides the threshold value for a pixel to be black when line width correction type 2 is performed. *Do not change the value.*	0 ~ 255 1 /step **192**
	6 *	GA4 Setting (Error Diffusion Gamma)	Selects the gamma type for error diffusion. *Do not change the value.*	0 ~ 7 1 /step **0**
	7 *	GA4 Setting (Edge Detection 1)	Decides the threshold value to calculate the difference value between the object pixel and the surrounding pixels. *Do not change the value.*	0 ~ 255 1 /step **16**
	8 *	GA4 Setting (Edge Detection 2)	Decides the threshold value for detecting the edge area. *Do not change the value.*	0 ~ 255 1 /step 128

Mode No.			Function	Settings
Class 1	Class 2			
	17 *	GA4 Setting (Background Pattern Merge Method)	Selects whether an image which overlaps a background numbering pattern is converted from positive to negative or not.	**0: Not converted** 1: Converted
			This SP mode is used when a background numbering pattern is overlapping a solid black area.	
	18 *	GA4 Setting (Stamp Pattern Merge Method)	Selects whether an image which overlaps a stamp pattern is converted from positive to negative or not. The settings 0 and 1 are the same as for 4909-17 above. The setting 2 means that the black level of the stamp (SP4904-17) is inverted (e.g. when the black level of the stamp is 200, the stamp pattern is printed at black level 55.)	**0: Not converted** 1: Converted 2: Inverted
			This SP mode is used when a stamp pattern is overlapping a solid black area.	
	19	GA4 Setting (Data Path Selection 1)	*These SP modes are used for design purposes only.* *Do not change the settings.*	0
	20	GA4 Setting (Data Path Selection 2)	*These SP modes are used for design purposes only.* *Do not change the settings.*	0
4911	1	HDD Setting (Media Test)	Checks for bad sectors on the hard disk that develop during machine use. This takes 4 minutes.	
			This SP mode should be done when an abnormal image is printed. There is no need to do this at installation as the hard disk firmware already contains bad sector information, and damage is not likely during transportation. *Bad sectors detected with this SP mode will be stored in the E^2PROM on the EX-IPU board with the bad sector data copied across from the firmware.*	
	2	HDD Setting (Formatting)	Formats the hard disk. This takes 8 minutes. **Do not turn off the main switch during this process.**	

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Mode No.			Function	Settings
Class 1	Class 2			
	3	HDD Setting (Spindle Control)	Decides the disk drive motor (spindle motor) stop timing. Yes: The hard disk stops in low power mode. The first copy after returning to standby will take longer. No: The hard disk keeps going in low power mode	
	4	HDD Setting (Head Retraction)	Press Enter to move the head of the hard disk away from the disk while the disk is turning. The head automatically moves back when a copy is made.	
			This SP should be performed when the machine will be moved without turning the main switch off.	
	5	HDD Setting (Total Storage Capacity)	Input the total storage capacity of the hard disk at replacement.	
			In future, hard disks of various sizes may be available. In this case, use this SP mode when installing a new disk.	
	6	HDD Setting (Bad Sector Information Reset)	Resets the bad sector information which is stored in the E^2PROM on the EX-IPU board.	
			This SP should be performed when the hard disk is replaced.	
4911	7	HDD Setting (Bad Sector Display)	Displays the number of bad sectors there are on the hard disk.	
5019		LCT Paper Size Setting	Selects the paper size for the LCT.	A4 (230V machines) 8 1/2" X 11" (115V machines)
			When changing the setting, the position of the side fences for the LCT should be changed.	
5104 *		A3/11"x17" Double Count	Specifies whether the counter is doubled for A3/11"x17" paper.	**No** Yes
			If "YES" is selected, the total counter and the current user code counter counts up twice when A3/11"x17" paper is used.	

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Mode No.		Function		Settings
Class 1	Class 2			
5106 *		ADS Level Selection	Selects the image density level that is used in ADS mode.	1 ~ 7 1 notch /step **4**
5118 *		Disable Copying	Selects whether the copy function is disabled or not.	**No** Yes
5220 *		Auto Stamp Function	Selects whether the auto stamp function is enabled or not.	On (115V machine) Off (230V machine)
5305		Auto Off Mode	**This SP mode is used only for 115V machines (Energy Star standardization).** Selects whether the auto off timer setting is enabled or disabled *When "disabled" is selected, the auto off timer range will be wider than the default timer range. (In UP mode, the user will be able to select a time between 0 and 120 minutes.) If "0" is selected, the auto off timer function is disabled.*	**Enabled** Disabled
5501 *	1	PM Alarm	Selects whether the PM alarm is enabled or not.	Enabled **Disabled**
	2	PM Alarm Interval	Sets the PM interval, with an alarm. When the setting is "0", this function is disabled.	0 ~ 255 1k copies/step **120 k copies**
5801		Memory All Clear	Resets all correction data for process control and all software counters. Also, returns all modes and adjustments to the default settings. See the "MEMORY ALL CLEAR" section for how to use this SP mode correctly. ***Normally, this SP mode should not be used.*** *It is used only after replacing the NVRAM, or when the copier malfunctions due to a damaged NVRAM.*	
5802		Free Run	Performs a free run. The scanner scans once and the printer prints for the number of copies requested.	

Mode No.			Function	Settings
Class 1	Class 2			
5803	1 ~ 9	Input Check	Displays the signals received from sensors and switches. See the "INPUT CHECK" section for details.	
5804		Output Check	Turns on the electrical components individually for test purposes. See the "OUTPUT CHECK" section for details.	
5807		Option Connection Check	Checks the connectors to the options.	
5811 *		Machine Serial Number	Use to input the machine serial number. *This serial number will be printed on the system parameter list.*	
5812 *		Service Telephone Number	Use this to input the telephone number of the service representative (this is displayed when a service call condition occurs.) *Press the "●/#" key to input a pause (—).* *Press the "Clear modes" key to delete the telephone number.*	
5902		Duplex Tray Capacity Limit for except A3/DLT Copies	Selects the total capacity of the duplex tray for except A3/DLT size paper. *If there are frequent jams at the duplex unit when using A3 paper, try setting this to 30.* *For A3/DLT size paper, the total capacity is always 30 sheets.*	**50 sheets** 30 sheets
# 5903		Max. Copies for Image Rotation	Selects the maximum sets of copies for image rotation in the APS made when the original set at lengthwise direction. *When input more the number of the sets of copies than the SP value, the machine automatically rotate the image from lengthwise direction to sideways direction.* *Value "0" means the image always rotates.* *Value "999" means enabling this function.*	0 ~ 999 1 sheet/step **0 sheet**
#5920 *		Fusing Temp. Setting - Low Power Mode	Selects the fusing temperature that will be used in low power mode.	175ºC **162ºC** 150ºC

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Mode No.			Function	Settings
Class 1	Class 2			
			If a low temperature is selected, it takes more time to reach the ready condition.	
5990	1	SP Mode Data Printing (All Data)	Prints all the system parameter lists. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists. *Printing takes 6 minutes.*	
	2	SP Mode Data Printing (SP Mode Data)	Prints the SP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists. *Printing takes 2 minutes.*	
	3	SP Mode Data Printing (UP Mode Data)	Prints the UP mode data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists. *Printing takes 2 minutes.*	
	4	SP Mode Data Printing (Machine Status Data)	Prints the machine status history data list. See the "SYSTEM PARAMETER AND DATA LISTS" section for how to print the lists. *Printing takes 2 minutes.*	
6006 *	1 *	ADF Side-to Side Registration	Adjusts the printing side-to-side registration in the ADF mode. *Use the ●/✳ key to toggle between + and -.*	-3 ~ +3 0.1 mm/step **+ 0.0 mm**
6006 *	2 *	ADF Leading Edge Registration (Simplex)	Adjusts the original stop position. *Use the ●/✳ key to toggle between + and -.*	-3 ~ +3 0.1 mm/step **+ 0.0 mm**
	3 *	ADF Leading Edge Registration (Duplex-front)	Adjusts the original stop position against the original left scale in one-sided original mode. *Use the ●/✳ key to toggle between + and -.*	-3 ~ +3 0.1 mm/step **+ 0.0 mm**
	4 *	ADF Leading Edge Registration (Duplex-rear)	Adjusts the original stop position against the original left scale in two-sided original mode.	-3 ~ +3 0.1 mm/step **+ 0.0 mm**

Mode No.		Function	Settings
Class 1	Class 2		
		Use the ●/✳ key to toggle between + and -.	
		For details on the correct way to use SP 6006, see the ADF service manual.	
6009		ADF Free Run	Performs an ADF free run.	
			This is a general free run controlled from the copier. For more detailed free run modes, see the DF manual.	
6105 *		Finisher Staple Position Adjustment	Adjusts the staple position when using the finisher.	- 1~ +3.5 0.5 mm/step **+0.0 mm**
			Use the ●/✳ key to toggle between + and -. **One staple position:** *A larger value causes the staple position to shift inward.* **Two staple position:** *A larger value causes both staple positions to shift to the rear side of the machine.*	
6107		Finisher Free Run	Performs a finisher free run (without stapler).	
			This is a general free run controlled from the copier. For more detailed free run modes, see the finisher manual.	
7004		Total Copy Counter Reset	**Japanese version only.** **Do not change this value.**	
7804		PM Counter Reset	Resets the PM counter.	To see the current counter values, print the SP mode data lists (SP 5990).
7807		SC/Jam Counter Reset	Resets the SC and jam counters.	
7808		Resets Counters (except for the total counter)	Resets the following counters: On the data list, between "Total No of Org from ADF" and "Number of SCs: Others", and between "Counter from ADF" and "Staple Mode".	
7810		User Code Number Reset	Resets the user code numbers.	
7901	1	ROM/CPU Version (Operation Panel)	Displays the operation panel board ROM version.	
	2	ROM/CPU Version (MSIS)	Displays the ROM version for the MSIS on the SCU board.	

Mode No.			Function	Settings
Class 1	Class 2			
	3	ROM/CPU Version (Copy App.)	Displays the ROM version for the copy application on the SCU board.	
	4	ROM/CPU Version (BCU:68340)	Displays the CPU version for the fusing controller on the BCU board.	
	5	ROM/CPU Version (AC Power Control)	Displays the ROM version for AC power control on the AC drive board.	
	6	ROM/CPU Version (High Voltage)	Displays the ROM version for the high voltage control board.	
	7	ROM/CPU Version (EX-IPU)	Displays the ROM version for the EX-IPU board.	
	8	ROM/CPU Version (ADF)	Displays the ROM version for the ADF.	
	9	ROM/CPU Version (Paper Feed Unit)	Displays the ROM version for the paper feed unit.	
	10	ROM/CPU Version (Sorter/Finisher)	Displays the ROM version for the sorter/finisher.	

8.2 OUTPUT CHECK TABLE (SP5804)

NOTE: Items marked "#" are new or modified items.

No.	Description	No.	Description
1	Not used	45	Not used
2	Not used	46	Not used
3	Not used	47	Not used
4	Relay Clutch	48	Not used
5	Registration Clutch	49	Not used
6	Paper Feed Clutch	50	Not used
7	Pick-up Solenoid	51	Transport Drive Motor (Op. Finisher)
8	Separation Solenoid	52	Junction Gate Sol. (Op. Finisher)
9	Main Motor	53	Shift Tray Lift Motor (Op. Finisher)
10	Quenching Lamp	54	Jogger Motor (Op. Finisher)
11	Charge Corona and Grid Bias	55	Not used
12	Development Bias	56	Staple Motor (Op. Finisher)
13	Transfer Belt Bias	57	Not used
14	Not used	58	Not used
15	Not used	59	Not used
# 16	Development Drive Motor	60	Duplex Motor (Forward)
17	Toner Supply Motor	61	Duplex Motor (Reverse)
18	Toner Bottle Drive Motor	62	Side Jogger Motor (Duplex tray)
19	Not used	63	End Jogger Motor (Duplex tray)
20	Not used	64	Main Switch (Test auto off mode)
21	ID Sensor	65	Not used
22	Transfer Belt Lift Clutch (Up)	66	Ozone Fan Motor
23	Transfer Belt Lift Clutch (Down)	67	Cooling Fan Motor
24	Junction Gate Solenoid	68	Exhaust Fan Motor
25	Not used	69	Not used
26	1 st Paper Feed Cl. (Optional PFU)	70	Not used
27	1 st Pick-up Sol. (Optional PFU)	71	Not used
28	1 st Separation Sol. (Optional PFU)	72	Not used
29	2 nd Paper Feed Cl. (Optional PFU)	73	Not used
30	2 nd Pick-up Sol. (Optional PFU)	74	Not used
31	2 nd Separation Sol. (Optional PFU)	75	Corona Wire Cleaner (Option)
32	Main Motor (Optional PFU)	76	Charge Corona Bias
33	3 rd Paper Feed Cl. (Optional PFU)	77	Grid Bias
34	3 rd Pick-up Sol. (Optional PFU)	78	Not used
35	3 rd Separation Sol. (Optional PFU)	79	Not used
36	Relay Clutch (Optional PFU)	80	Not used
37	By-pass Feed Clutch	81	DF Feed-in Motor (Forward)
38	Not used	82	DF Feed-in Motor (Reverse)
39	LCT Pick-up Solenoid	83	DF Belt Motor (Forward)
40	LCT/By-pass Pick-up Solenoid	84	DF Belt Motor (Reverse)
41	LCT/By-pass Relay Clutch	85	DF Feed-out Motor (Forward)
42	Not used	86	DF Solenoid
43	Not used	87	DF LEDs

44	Not used	88	Not used

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8.3 TEST POINTS/DIP SWITCHES/LEDS

8.3.1 DIP SWITCHES

BCU (Base Engine Control Unit): DIP SW201

No.	Function	ON	OFF
1	Copy Speed	**200 mm/s**	250 mm/s
2	Development Unit Type	Twin color	**Mono color**
3	Duplex Unit	**Installed**	Not installed
4	SC Generation	Disabled	**Enabled**
5 6	Destination	Off) Japan On) N. America Off) Europe On) Not used Off Off On On	
7	Not used	Keep at "**OFF**"	
8	CPM	50 cpm (A4 size)	51 cpm (A4 size)

Do not change the setting of switches 1 ~ 4, and 7. They should be kept at the setting indicated in bold type in the above table.

SCU (System Control Unit): DIP SW401

No.	Function	ON	OFF
1~8	Not Used		

They should be kept at the "OFF" position.

8.3.2 TEST POINTS

BCU, SCU, and EX-IPU

There are no test points on these boards.

8.3.3 LEDS

Same as those of the A133 machine.

8.3.4 VARIABLE RESISTORS

EX-IPU

There are no variable resistors.

9.   REPLACEMENT AND ADJUSTMENT

9.1   HDD UNIT REPLACEMENT
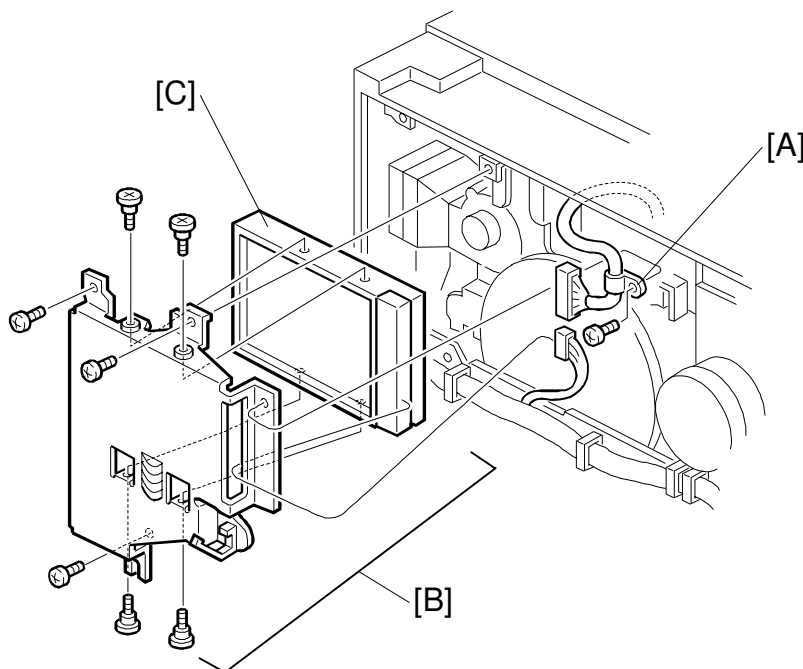
A217R506.cdr

1.   Turn off the main switch and unplug the machine

2.   Remove the rear cover.

3.   Remove the wire clamp [A] (1 screw).

4.   Remove the HDD unit assembly [B] (3 screws, 2 connectors).

5.   Replace the HDD unit [C] (4 screws).

NOTE: 1) Reset the bad sector information (SP4911-6)
2) If the user has registered user stamps in the previous HDD unit, advise the user that they may need to register them again.

9.2 DEVELOPMENT MOTOR & TONER SUPPLY CLUTCH REPLACEMENT

A217R507.cdr

A217R508.cdr
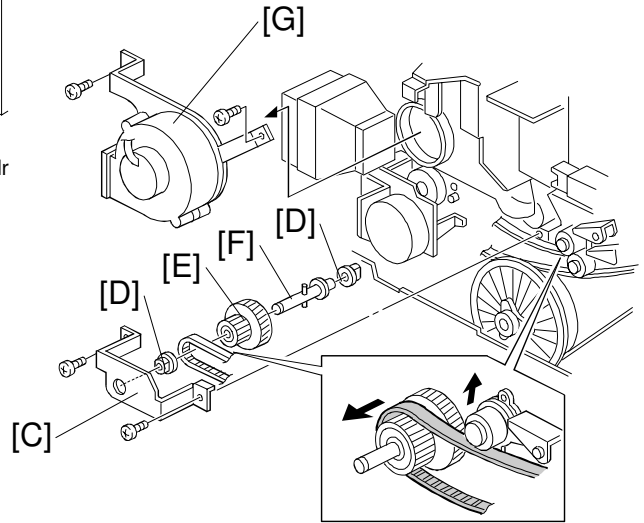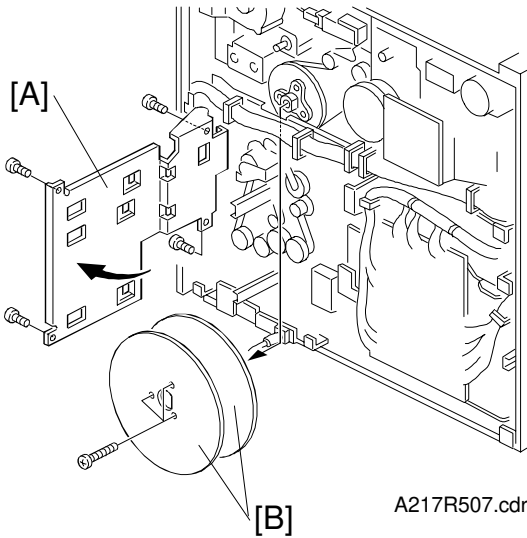
1. Turn off the main switch and unplug the machine.

2. Remove the rear cover.

3. Remove the HDD unit (see HDD unit replacement).

4. Swing out the SCU board plate [A] (4 screws).

5. Remove the fly wheels [B] (3 screws).

6. Remove the drive gear holder [C] (2 screws).

7. Remove 2 bushings [D], 1 gear [E], and 1 shaft [F].
   NOTE: The bushings drop easily.

8. Remove the fan motor [G] (2 screws, 1 connector).

A217R509.cdr

A217R510.CDR
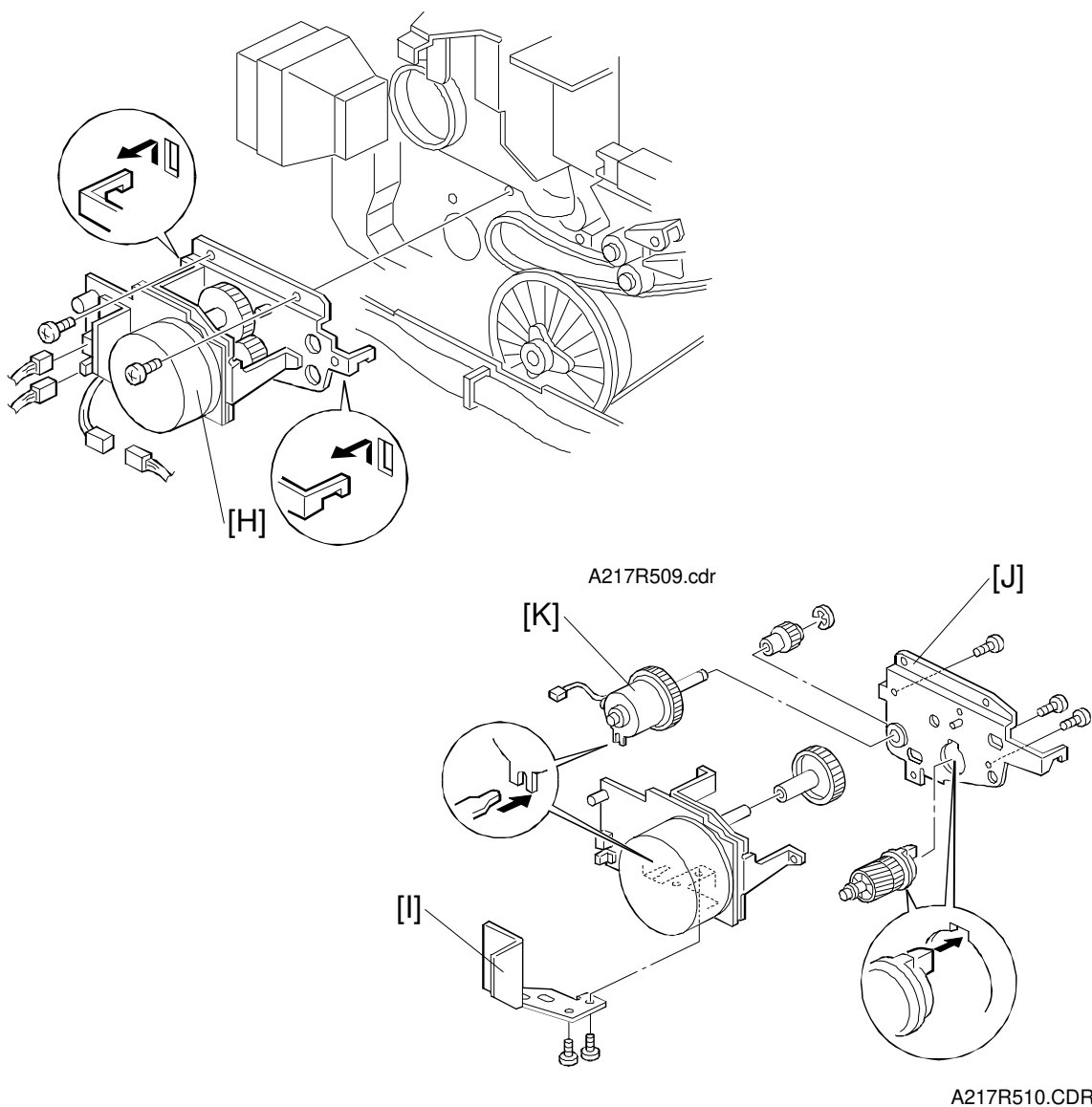
9. Remove the development drive motor assembly [H] (3 screws, 3 connectors).

10. Remove the gear cover [I] (2 screws).

11. Remove the development drive holder [J] (1 E-ring, 3 screws).

12. Replace the toner supply clutch [K] (2 allen screws).

9.3 FUSING UNIT REMOVAL

⚠️**CAUTION**

Allow time for the unit to cool before doing the following procedure.
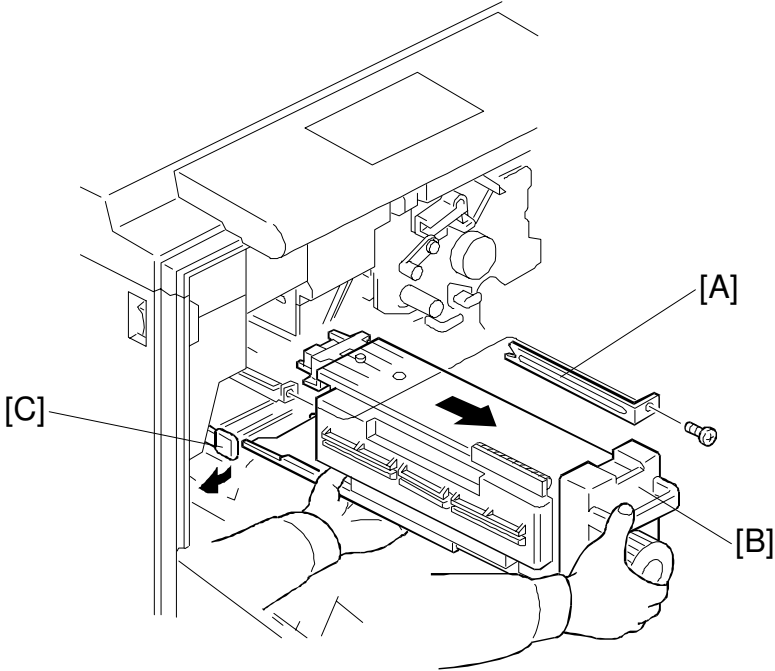
A217R511.CDR

1. Turn off the main switch and unplug the machine.

2. Open the front cover.

3. Remove the stopper bracket [A] (1 screw).

4. Hold the fusing unit cover [B] while pushing the release lever [C] to the left, and pull out the fusing unit until it stops.

5. Push the release lever again, and remove the fusing unit completely.
    NOTE: Before completely removing the fusing unit, support the bottom of the fusing unit.
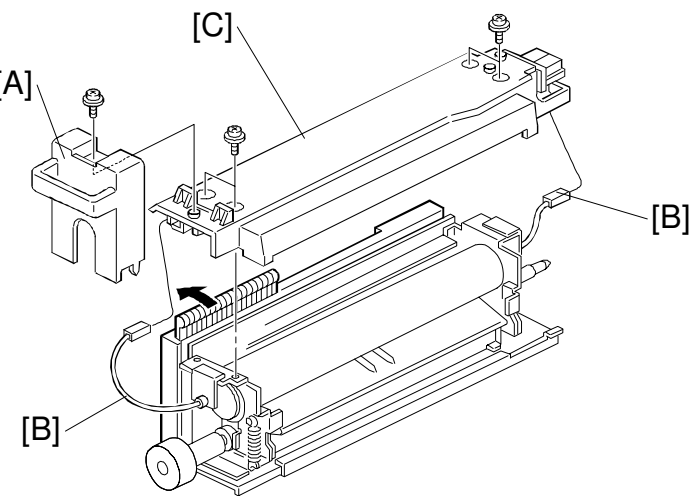
9.4   CLEANING ROLLER REPLACEMENT
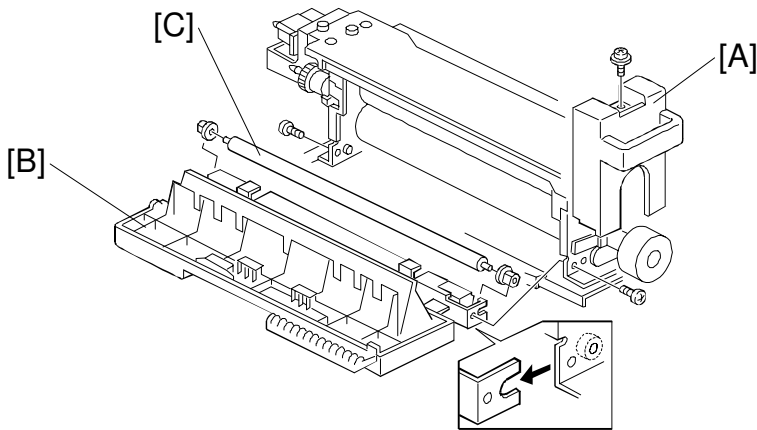
A217R512.cdr

1. Remove the fusing unit (see Fusing Unit Removal).

2. Remove the fusing unit cover [A] (1 screw).

3. Open the fusing exit cover [B], then remove the fusing exit cover/cleaning roller assembly (2 screws).

4. Remove the cleaning roller [C]

9.5   HOT ROLLER STRIPPER PAWL REMOVAL
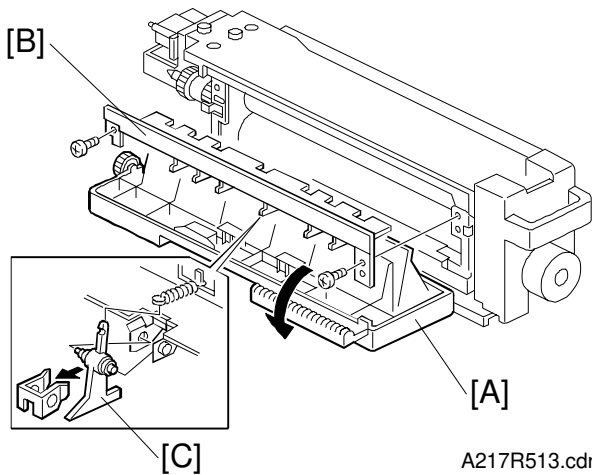
A217R513.cdr

1. Remove the fusing unit (see Fusing Unit Removal).

2. Open the fusing exit cover [A].

3. Remove the hot roller stripper pawl bracket [B] (2 screws).

4. Remove the hot roller stripper pawls [C] (1 bracket, and 1 spring each).

9.6 **THERMISTOR AND THERMOFUSE REPLACEMENT**
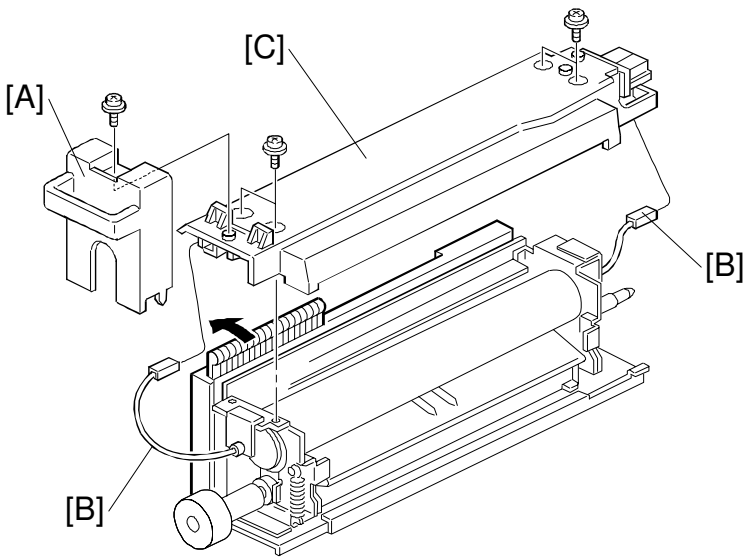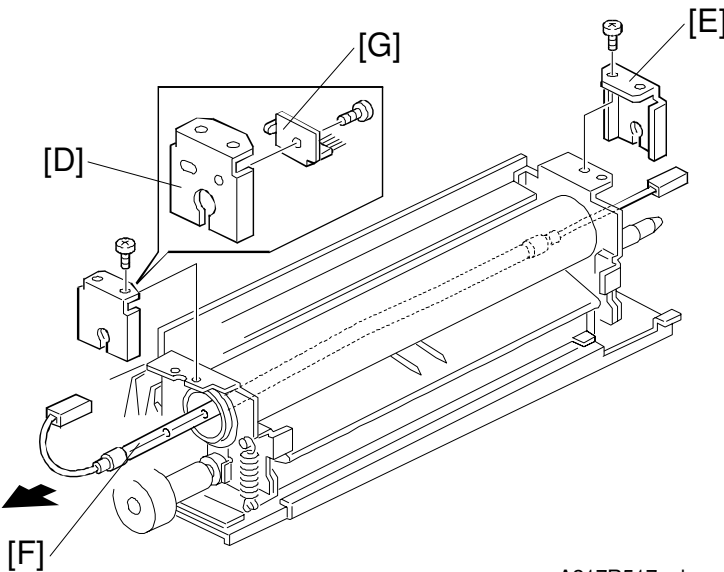

A217R514.cdr
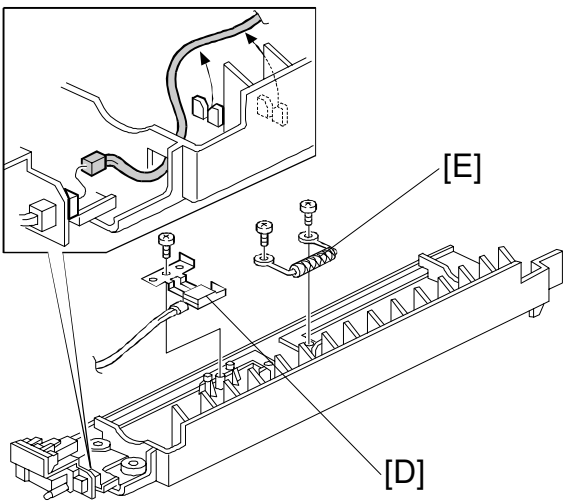
A217R515.cdr

1. Remove the fusing unit (see Fusing Unit Removal).

2. Remove the fusing unit cover [A] (1 screw).

3. Disconnect the fusing lamp harnesses [B].

4. Remove the fusing upper cover [C] (4 screws).

5. Remove the thermistor [D] (1 screw, 1 connector).

6. Remove the thermofuse [E] (2 screws).

9.7 FUSING LAMP REPLACEMENT

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A217R516.cdr

A217R517.cdr

1. Remove the fusing unit (see Fusing Unit Removal).

2. Remove the fusing unit cover [A] (1 screw).

3. Disconnect the fusing lamp harnesses [B].

4. Remove the fusing upper cover [C] (4 screws).

5. Remove the front lamp holder [D] (1 screw).

6. Remove the rear lamp holder [E] (1 screw).

7. Remove the fusing lamp [F]

NOTE: 1) Do not touch the glass part of the fusing lamp with bare hands.
2) When reinstalling the front lamp holder, make sure that the antistatic brush [G] contacts the hot roller.
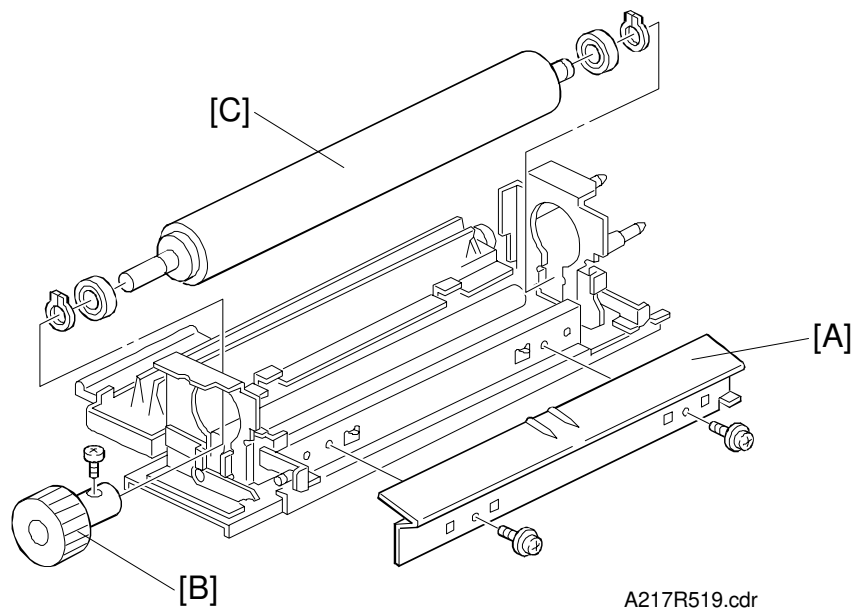
9.8 HOT ROLLER REPLACEMENT
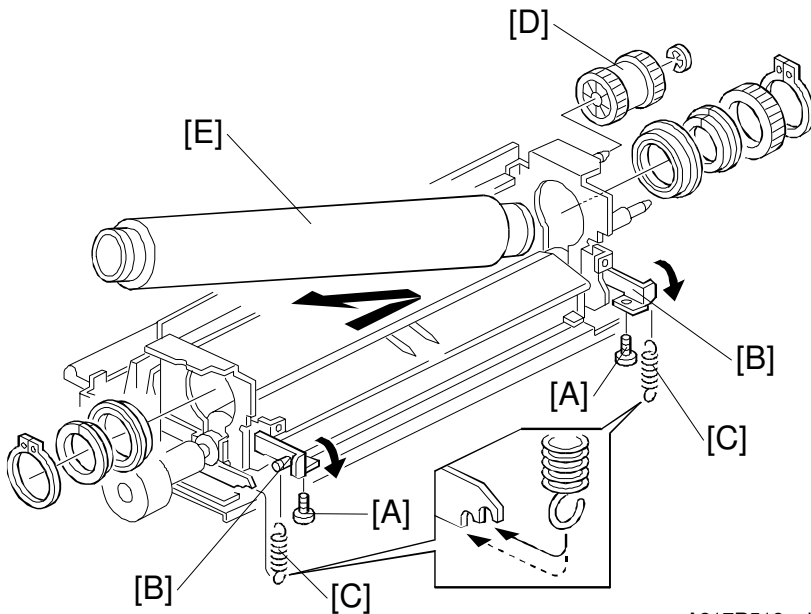
A217R518.cdr

1. Remove the fusing lamp (see Fusing Lamp Replacement).

2. Remove the hot roller stripper pawl bracket (see the Hot Roller Stripper Pawl Removal).

3. Remove the screws [A] and swing down the pressure levers [B], then remove the pressure springs [C].

4. Remove the gear [D] (1 E-ring).

5. Remove the hot roller [E] (2 C-rings, 1 gear, 2 bushings, 2 bearings).

NOTE: 1) Before installing the hot roller, peel off 3 mm (1 inch) from both ends of the protective sheet on the new one.
      2) The standard pressure spring position is at the upper position.
      3) Do not touch the surface of the roller.
      4) Be careful not to damage the surface of the hot roller.

9.9 **PRESSURE ROLLER REPLACEMENT**

A217R519.cdr

1. Remove the hot roller (see Hot Roller Replacement)

2. Remove the lower fusing entrance guide [A] (2 screws).

3. Remove the fusing knob [B] (1 screw).

4. Remove the pressure roller [C] (2 C-rings, 2 bearings).

NOTE: 1) When reinstalling the lower fusing entrance guide, tighten the screws using the middle hole on each side (this is the lowest fusing guide position).

2) The standard pressure spring position is at the upper position.

10. SERVICE CALL CONDITION

10.1 SC CODE DESCRIPTIONS

The following A133 SC codes have been re-assigned.

NOTE: The meanings of these new SC codes are exactly the same as the previous SC codes.

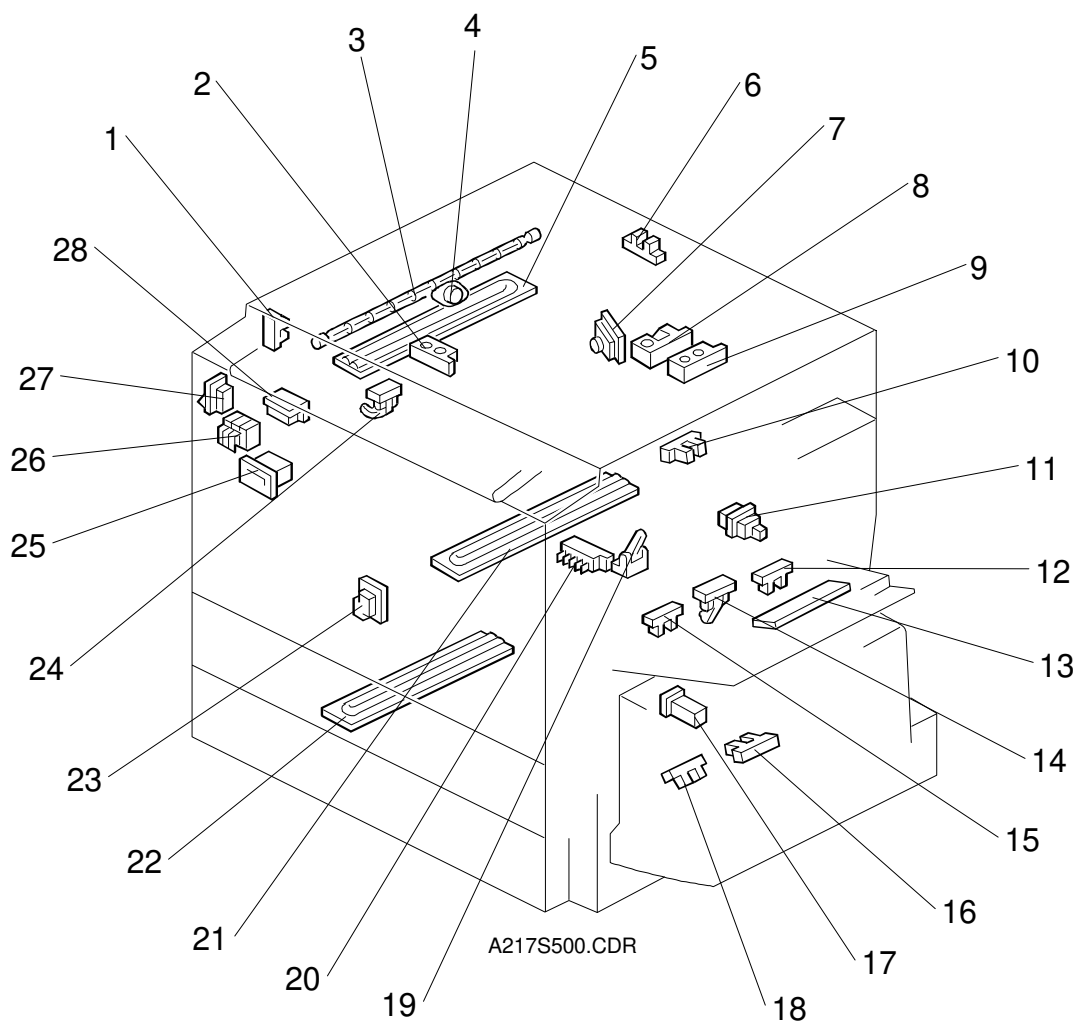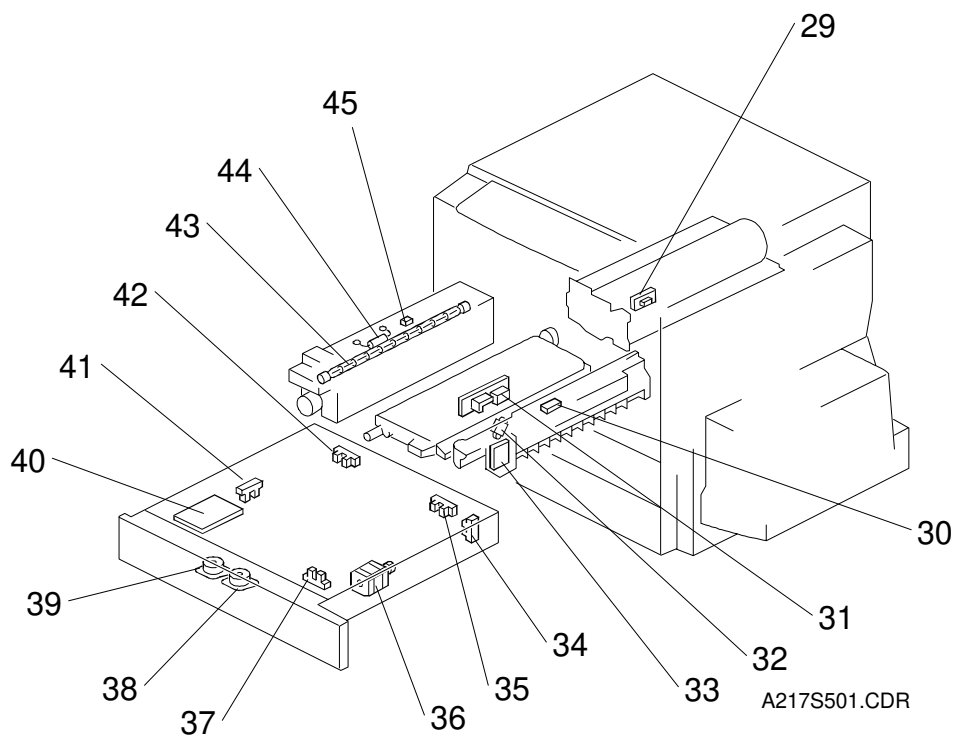| A133 machine		A217 machine
SC Code	Description	SC Code
SC303	Time out error for printer	SC363
SC305	Time out error for memory	SC364
SC392	Image stored address error	SC365
SC405	Time out error for scanner	SC192
SC623	Communication error between BCU and paper tray unit	SC624
SC625	FTBC (GA5) error	SC362
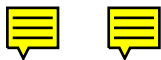
COPIER (A217) ELECTRICAL COMPONENT LAYOUT

Symbol	Index No.	Description	P-to P
Printed Circuit Boards			
PCB1	90	SCU	H1 (1/2), G2 (2/2)
PCB2	89	AC Drive	A2 (1/2), A3 (2/2)
PCB3	92	DC Power Supply	G1 (1/2), E1 (2/2)
PCB4	93	BCU	D5 (1/2), D6 (2/2)
PCB5	80	Charge High Voltage Supply	G5 (1/2)
PCB6	85	High Voltage Control	H5 (1/2), F6 (2/2)
PCB7	87	Operation Panel	H1 (1/2), G1 (2/2)
PCB8	79	Scanner Drive	D2 (1/2), C2(2/2)
PCB9	81	EX-IPU	D2 (1/2), C1 (2/2)
PCB10	84	SBU	B1 (1/2)
PCB11	94	Lamp Stabilizer	B2 (1/2), C2 (2/2)
PCB12	86	Main Scan Synchronization Detector - 1	B2 (1/2)
PCB13	83	Main Scan Synchronization Detector - 2	C2 (1/2)
PCB14	31	Transfer High Voltage	G6 (1/2)
PCB15	33	Development Bias Power Pack	H3 (1/2)
PCB16	40	Duplex Control	A6 (1/2)
PCB17	N/A	Liquid Crystal Display	N/A
PCB18	51	LCT Interface	F2 (1/2)
PCB19	91	Relay Board	A4 (1/2) B5 (2/2)
PCB20	7	Laser Diode Drive	E2 (1/2)
Motors			
M1	57	Main	C3 (1/2), C5 (2/2)
M2	66	Toner Bottle Drive	F6 (1/2)
M3	73	Tray Lift	D6 (1/2)
M4	56	Polygonal Mirror	B2 (1/2), C2 (2/2)
M5	48	LCT Lift	F3 (1/2)
M6	74	Optics Exhaust Fan	C2 (1/2)
M7	65	IPU Fan	C2 (1/2)
M8	78	Exhaust Fan	C3 (1/2)
M9	60	Ozone Fan	C3 (1/2)
M10	55	Scanner Drive	C2 (1/2)
M11	36	Duplex Feed	A6 (1/2)
M12	39	End Fence Jogger	A6 (1/2)
M13	38	Side Fence Jogger	A6 (1/2)
M14	75	DC Drive Board Fan	F7 (2/2)
M15	68	Charge Inlet Fan	F6 (1/2)
M16	59	Development Drive	C2 (1/2), D4 (2/2)
Sensors			

S1	13	By-pass Feed Paper Width	E6 (1/2)
S2	15	By-pass Feed Paper End	E6 (1/2)
S3	18	Tray Paper End	C6 (1/2)
S4	46	Upper Relay	D3 (1/2)
S5	16	Tray Upper Limit	C6 (1/2)
S6	47	Lower Relay	E3 (1/2)
S7	49	LCT Lower Limit	F3 (1/2)
S8	50	LCT Paper End	F3 (1/2)
S9	12	LCT Upper Limit	G6 (1/2)
S10	19	Registration	D6 (1/2)
S11	29	Image Density (ID)	F6 (1/2)
S12	30	Toner Density (TD)	G3 (1/2)
S13	1	Scanner HP	F2 (1/2)
S14	8	Original Length-1	F2 (1/2)
S15	9	Original Length-2	C2 (1/2)
S16	24	Fusing Exit	G4 (1/2)
S17	6	Platen Cover	F2 (1/2)
S18	32	Toner End	G3 (1/2)
S19	28	Auto Response	H2 (2/2)
S20	10	Transfer Belt Position	C4 (1/2)
S21	2	Original Width	F2 (1/2)
S22	34	Duplex Paper End	B6 (1/2)
S23	35	Duplex Turn	B6 (1/2)
S24	42	Duplex Entrance	B6 (1/2)
S25	37	Side Fence Jogger HP	B6 (1/2)
S26	41	End Fence Jogger HP	B6 (1/2)
S27	23	Toner Overflow	F6 (1/2)
S28	14	By-pass Relay	G6 (1/2)
Switches			
SW1	11	By-pass Feed Table	E6 (1/2)
SW2	53	Tray Down	F3 (1/2)
SW3	20	Tray Paper Size	C6 (1/2)
SW4	54	LCT	E3 (1/2)
SW5	52	LCT Cover	F3 (1/2)
SW6	27	Main	A4 (1/2), B4 (2/2)
SW7	26	Front Cover Safety	D2 (1/2)
Magnetic Clutches			
CL1	61	Toner Supply	D6 (1/2)
CL2	N/A	Not used	
CL3	76	Transfer Belt Lift	D3 (1/2)
CL4	58	Registration	E6 (1/2)
CL5	63	By-pass Feed	E6 (1/2)
CL6	71	Relay	D6 (1/2)
CL7	72	Paper Feed	D6 (1/2)
CL8	62	By-pass Relay	B4 (1/2)
Solenoids			

SOL1	67	By-pass Pick-up	E3 (1/2)
SOL2	77	Junction Gate	E3 (1/2)
SOL3	64	LCT Pick-up	F6 (1/2)
SOL4	69	Pick-up	C6 (1/2)
SOL5	70	Separation	C6 (1/2)
Lamps			
L1	3	Exposure	B2 (1/2)
L2	43	Fusing	B3 (1/2)
L3	88	Quenching	G5 (1/2)
Heaters			
H1	21	Drum (option)	B1 (2/2)
H2	5	Optics Anti-condensation (option)	B1 (2/2)
H3	22	Tray (option)	A1 (1/2)
Thermistors			
TH1	45	Fusing	A6 (2/2)
Thermofuses			
TF1	44	Fusing	B3 (1/2), A5 (2/2)
Thermoswitch			
TS1	4	Exposure Lamp	B2 (1/2)
Counters			
CO1	25	Total	H3 (2/2)
CO2	N/A	Key (option)	H2 (2/2)
Others			
CB1	17	Circuit Breaker (220 ~ 240V machines only)	A4 (2/2)
HDD	82	Hard Disk Drive	F2 (1/2), C2 (2/2)

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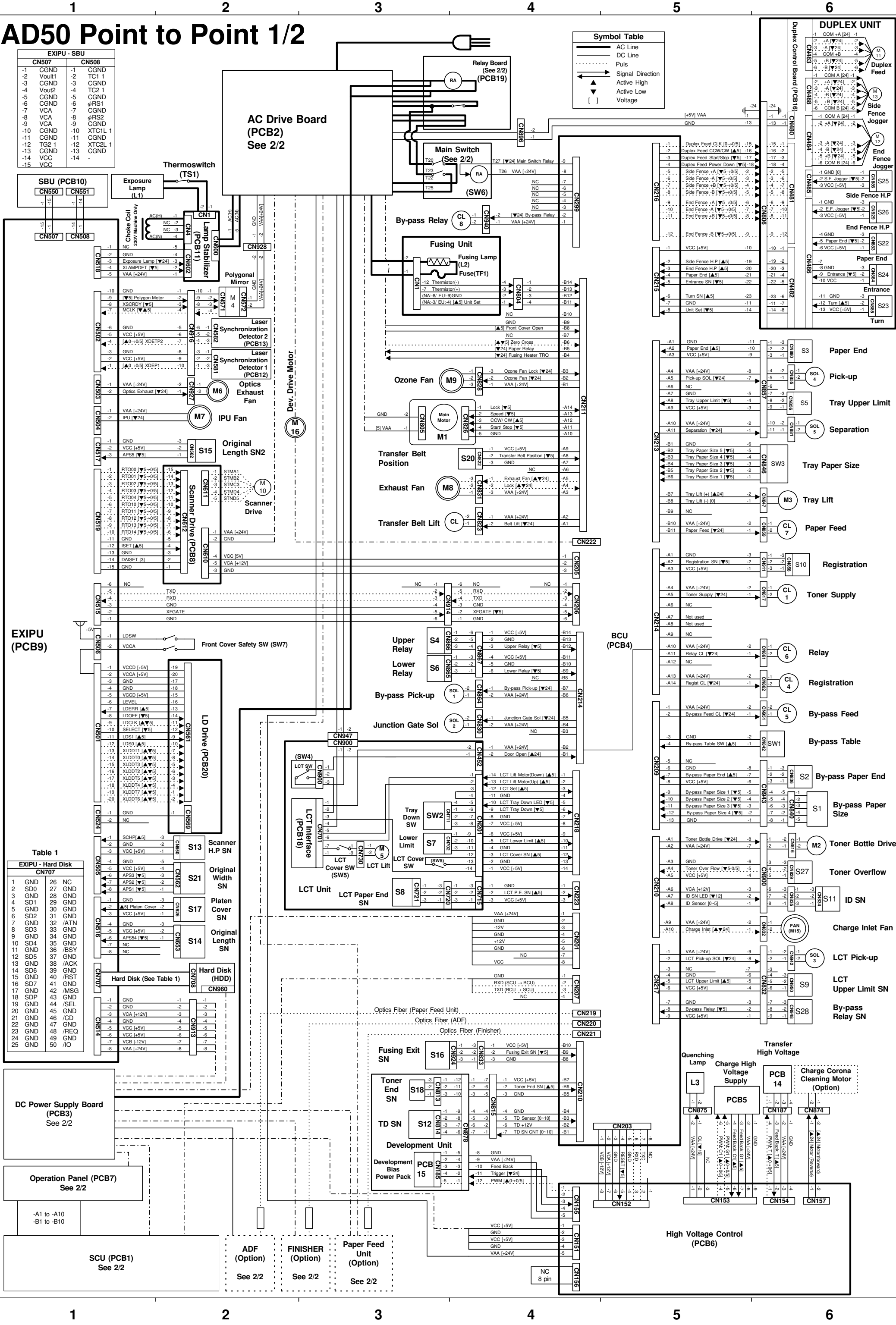A217S501.CDR

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AD50 Point to Point 1/2

AD50 Point to Point 2/2