Circuit diagrams&Service manuals

VARIABLE RESISTORS

1. Main Board

Number	Function
VR147	**Adjusts** the OW (original width) sensor voltage
VR148	Adjusts the OL (original length) sensor voltage
VR201	Adjusts the ID (image density) sensor voltage
VR202	Adjusts the AD (auto density) sensor voltage

2. Lamp Regulator

Number	Function
VR1	Light adjustment
VR2	Factory Use
VR3	Factory Use

3. DF Main Board

Number	Function
VR101	Registration adjustment (0 ± 2.5 mm)
VR103	Belt drive motor speed adjustment (2,500 ± 30 rpm)
VR104	Original entrance sensor output (IC 116-5> + 8V : With paper) (IC 116-5< + 4V : Without paper)
VR105	Original width sensor output (IC 116-7> + 8V : With paper) (IC 116-7< + 4V : Without paper)

DIP SWITCHES

1. Operation Panel

DIP SW 1-1

DIP Switch	Normai	Function
1-1	OFF	Drum conditioning
1-2	OFF	Free run
1-3	OFF	Jam detection disable
1-4	OFF	Sorter instructions
1-5	OFF	Beeper sound disable
1-6	OFF	Oil end check off
1-7	OFF	Manual image density mode priority (ON: manual mode, OFF: ADS mode)
1-8	OFF	SP Mode

2. DF Main Board

DIP SW 101

101-1	101-2	101-3	101-4	Function
ON	OFF	OFF	OFF	Normal mode
ON	OFF	OFF	ON	Free run
ON	ON	OFF	ON	Belt speed adjustment (VR103)
ON	ON	ON	ON	All indicators on

SERVICE PROGRAM MODE (SP MODE) OPERATION

The service program mode is used to check and change electrical data or adjustment values.

1. Data Change Mode

1. Remove the DIP SW cover and turn on DIP SWI -8 on the operation panel. (The Service Call indicator will start blinking.)
2. Enter the desired SP Mode number using the numeral keys. (The entered number is displayed in the copy counter.)
3. Press the Enter key. (The SP Mode number is shifted into the Magnification indicator and the actual data is displayed in the copy counter.)
4. If the data is correct, press the Enter key.
5. Enter the desired data using numeral keys, (The data entered is displayed in the copy counter.)
6. Press the Enter key to place the new data in memory.
7. Turn off DIP SW1 -8. (The Service Call indicator goes off.)

2. Data Check Mode

1. **Perform steps 1 and 2 of the data change mode.**
2. **Press the Enter key. (The data is displayed in the Magnification indicator.)**
3. **Regarding** SP Modes (#5, #9, #10, #50, #54 #55, #56, #57, #60), please refer to the following table.
4. Turn off DIP SW1 -8.

NOTE: When the machine does not receive any data, press the Clear Mode key or turn off the main switch.
The Zoom key can be used to increment or decrement the SP Mode number.

SERVICE PROGRAM MODE TABLE

Mode No.	Function	Data	Factory Setting	Remarks
5 Exposure Lamp OFF Free Run	Free run with exposure lamp. Press the Start key to start free run. Press the C/S key to stop free run.	O: Lamp ON 1: Lamp OFF	--	This mode is also cleared by turnlng off main switch, or, by turning off DIP SW1 -8
9 Exposure Lamp Output	Turns on the exposure lamp and the main motor for about 10 seconds. Enter"1" and then press the Enter key to turn on the exposure lamp. Press the C/S key to turn off the lamp.	--	--	The main motor also rotates to turn the exposure lamp on. When checking the lamp voltage, CN3 on the lamp regulator board is used with this mode.
10 Drum Conditioning	Used to condition a new drum. "99" will appear in the copy counter. Press the Start key to activate.	--	--	This function is the same as Dip SW1 -1. Refer to NOTE 1.
11 All Indicators ON	Turns on all indicators on the operation panel. Turn off the main switch, or, turn off DIP SW1 -8 to stop.	--	--	Refer to NOTE 1.
15 Auto Reset Time	Selects auto reset of 1 or 3 minutes.	0:1 min. 1:3 min. 2: None	0	
16 Count Up/Down	Selects count up or count down.	0: up 1: Down	0	
17 Auto Cassette Shift	Selects Auto-Cassette Shift mode.	o: ON 1: OFF	o	Copier automatically shifts to another cassette holding the same size paper when paper runs out.
20 Feed Station Priority (LCT)	Selects feed station priority.	O: LCT 1: Cassette	o	
21 APS Priority	Selects APS or manual.	O: APS 1: Manual	o	If DF is installed, APS mode is selected when an original is placed on the DF.
22 Feed Station Priority (1st, 2nd, 3rd cassette)	Selects feed station priority.	o: 1st 1: 2nd 2: 3rd	o	Refer to Note 2.

Mode No.	Function	Data	Factory Setting	Remarks
23 DF Original Size	Enables originals of various sizes to be fed from the same stack.	o: OFF 1:ON	o	ADF Mode only.
24 SADF Shut-off Time	Selects the shut-off time for SADF mode.	0:4s 1:60s	o	
28 Auto Sort Mode	Sorl mode is automatically selected when more than 2 originals are set on the DF original table and the entered quantity is greater than 2.	0: Manual 1: Auto	o	Sorter and DF must be installed.
29 Fusing Unit Idle	Selects fusing unit idling mode.	0: No idling 1: idling	0	Copier will idle for 10 seconds. Refer to NOTE 3.
30 Toner Suppiy Mode	Selects toner suppiy mode.	O: Detect B 1: Fixed 2: Detect A	o	
31 Toner Suppiy Amount (Detect Mode A)	Determines how much toner is supplied in detect mode A.	o: 30% 1: 15% 2: 45% 3: 60%	o	
32 Toner Supply Amount (Fixed Mode)	Determines how much toner is supplied in fixed mode.	o: 7% 1:3.5% 2: 10.5% 3: 14%	o	
33 ID Sensor Bias	Sets the bias voltage applied to the bias roller when sensing image density.	0: 470V 1: 440V 2: 500V 3: 530V	o	47oV = Normal 44oV = Lighter 500V = Darker 530V = Darkest
34 Toner Supply Amount (Detect Mode B)	Determines how much toner is supplied in detect mode B.	o: 2% 1: 4%	o	
35 Toner Supply	Changes toner supply interval. a) ID sensor checks every 5 copies. b) Toner end level changes to 0.65V.	0: Standard 1: increase	0	Standard: Every 10 copies, 0.75V.
38 Edge Erase	Sets the width of margin erase.	0: 10mm 1: 5mm 2: 15mm 3: 20mm	o	

Mode No.	Function	Data	Factory Setting	Remarks
39 Center Erase	Sets the width of center erase.	O: 20mm 1: 10mm 2: 15mm 3: 25mm	o	
41 Lead Edge Erase Margin Adjustment	Adjusts the lead edge margin.	0 - 1 5	8 (3,5 mm)	1 mm per step + 10.5 mm to –4.5mm
42 Registration Adjustment	Adjusts registration.	0 - 1 5	8 (Omm)	1 mm per step + 7mm to -8mm
43 Vertical Magnification Adjustment	Adjusts magnification in the paper travel direction.	0 - 1 5	8 (0%)	0.2% per step + 1.4% to –1 .6%
44 Horizontal Magnification Adjustment	Adjusts magnification perpendicular to the direction of paper travel.	0 - 1 5	8 (0%)	0.2% per step + 1.4% to –1 .6%
46 Size Detection Error . Correction	Corrects size detection.	0 - 1 5	8 (Omm)	1 mm per step -7mm to + 8mm
49 Fusing Temperature Change	Changes fusing temperature.	o: Standard 1: Low 2: Higher 3: Highest	0	180 ± 5°C 175 ± 5°C 185 ± 5°C 190 ± 5°C
50 Original Length Detection Check	Displays the length detected by the size detection circuit.	--	--	When pressing the Enter key after entering "50", the original length is detected automatically.
52 Fusing Temperature	Displays the fusing temperature.	--	--	
53 Drum Temperature	Displays the drum temperature.	--	--	
54 Vsg Adjustment	Turns on the ID sensor LED	--	--	The PTL and QL turns on, and the drum rotates for about 30 seconds. The Vsg voltage is also displayed in the magnification indicator.
55 VSG, VSP Voltage	Displays VSG and VSP voltage. This mode is used with drum conditioning mode.	--	--	When the machine is detecting the ID sensor output voltage the Vsp is displayed while holding the Enter key.

Mode No.	Function	Data	Factory Setting	Remarks
56 ADS Input Reference Voltage	Displays ADS voltage. Press the Start key to turn on. Press the C/S key to stop.	-	--	Refer to the ADS adjustment procedure.
57 APS Sensors Voltage Adjustment	Check operation of fiber optics sensors. Standard original, Press the Start key to turn on. Press the C/S key to stop.	--	--	Press the Enter key to display the voltage of the length sensor.
58 Bias Up (Black Development)	Increases the bias voltage	0: Standard 1: 90V up	0	
59 Bias Voltage	Displays the bias voltage	--	--	Press the Start key to indicate the voltage. This does not include the temperature compensation.
60 Toner Supply Recovery	Recover toner volume if the Vsp is above 0.5V. a) Press Start key. b) Toner supply clutch turns on. c) Free run starts. d) Vsp becomes less than 0.5V. e) Free run stops.	--	--	Use this mode if the image density is low. (Black toner only). Refer to NOTE 4 on color toner.
66 Original Check	Copier detects if there is an original left on the exposure glass by a user when using the DF.	0: ON 1 : OFF	o	if the copier detects the orlginal, the jam indicator turns on.
70 Color Toner supply Amount	Selects the color toner suppiy ratio.	0 : 14% 1 : 7% 2: 21% 3:28% 4: 35% 5: 42% 6: 49% 7: 56%	o	
72 Bias OFF	Turns off the bias according to the length of the lead edge erase margin.	0: OFF 1: ON	o	

Mode No.	Function	Data	Factory Setting	Remarks
73 Color Toner Copy Count	Shows the number of color copies made.	0: Red 1: Green 2: Blue	0	Multiply number by 100. Example: 24 = 2400 sheets
75 ID Sensor Bias (Color Toner)	Sets the bias voltage applied to the bias roller when sensing image density.	0: 590V 1: 620V	0	590V = Normal 620V = Darker
76 Sorter Bin Capacity	Sets the stack mode quantity limit.	0: No limit 1: Limit	0	Limit is determined by the paper size. Refer to NOTE 5.
86 PM Counter	Turns on the PM counter.	0: OFF I:ON	0	For PB machines, "O" Is ON "1 " iS OFF.
87 PM Copy Count	Sets the interval of the PM counter.	0: 80K 1: 60K 2: 120K	0	
88 PM Counter Check	Displays the PM counter.	--	--	When the PM count is exceeded, the Service Call and Key Counter indicators blink.
89 PM Counter Reset	Resets the PM counter.	--	--	Use after performing PM.
93 Maximum Copy Quantity	Limits the maximum copy quantity that can be entered.	--	0 (999)	The limit quantity is displayed in the copy counter. (Refer to NOTE 6.)
97 Clear Jam Counter	Clears all jam and service call counters. Enter"1", then press the Enter key to clear the touters.	--	--	DIP SW1 -1 must be on. Clear the following Counters: .SC Counters .Jam Counters
98 Clear All Counters	Clears all counters and returns modes which factory setting is "O" back to "O". Enter"1", then press the Enter key to clear the counters.	--	--	DIP SW1 -1 must be on. Clear the following Counters: .SC Counters • Jam Counters • Copy Counters
99 Clear All Memory	Clears all counters and returns all modes to factory setting. Enter"1", then press the Enter key to clear the memory.	--	--	DIP SW1-1 must be on.

Mode No.	Function	Data	Factory Setting	Remarks
120 Total Service Call	Displays the total number of times that the service call indicator has turned on.	--	--	NOTE 7
121 Service Call - optics	Displays the total number of service tails of the optics section.	--	--	SC21 , SC23, SC24, SC28, SC29, SC2A, SC2B, SC2C, SC2D NOTE 7
122 Service Call - Exposure Lamp	Displays the total number of service calls of, the exposure lamp.	--	--	NOTE 7
123 Service Call - Drive Section	Displays the total number of service calls of the drive section.	--	--	SC31 , SC32, SC41 , SC61 , SC91 NOTE 7
124 Service Call - Fusing Unit	Displays the total number of service cals of the fusing unit.	--	--	SC53, SC54, SC55, SC56 NOTE 7
125 Service Call - Data Transmission	Displays the total number of service calls of the data transmission.	--	--	SC93 NOTE 7
130 Paper Jams	Displays the total number of paper jams.	--	--	NOTE 7
131 Feed Jams	Displays the total number of entrance area paper jams.	--	--	NOTE 7
132 Fusing Jams	Displays the total number of fusing unit jams.	--	--	NOTE 7
138 Sorter Jams	Displays the total number of sorter jams.	--	--	NOTE 7
139 DF Jams	Displays the total number of DF jams.	--	--	NOTE 7

NOTE 1:

For sales demonstrations and/or installation, you can access the SP mode by the following procedure. However, this can only be used for SP Mode #1 O and #11 (without using DIP SW1 -8).

1. **Press the Clear Mode key.**
2. **Press the C/S key, then press the Enter key.**
3. Enter"1 O" or"1 1" using the numeral keys.
4. Press the Enter key. To clear this mode, press the Clear Mode key.

NOTE 2: SP Mode No.20 and 22

Feed Station Priority

	LCT Not Installed			LCT Installed			
SP Mode 20	X	X	X	0	1	1	1
SP Mode 22	0	1	2	X	0	1	2
First Priority	1st	2nd	3rd	2nd	1st	2nd	3rd
Second Priority	2nd	3rd	1st	3rd	2nd	3rd	1st
Third Priority	3rd	1st	2nd	1st	3rd	1st	2nd

- If no cassettes are installed, the machine returns to the first priority setting.
- The "X" mark means "don't care".
- If a cassette is not installed or the cassette is empty, the machine selects the next priority.

NOTE 3: SP Mode No.29

The idling mode may be necessary if the copier has been installed in an environment with low temperature conditions. The idling mode will warm up the fusing rollers enough to ensure fusing at the initial copy run.

Idling Mode: The copier will idle for 10 seconds when the Start key is pressed for the first time after the main switch is turned on.

NOTE: Idling will not be performed if the machine's temperature is more than 150°C when the main switch is turned on.

NOTE 4: SP Mode No.60

For the color toner supply recovery, the following procedure is required:

1. Turn off the main switch and turn on DIP switch 1-2.
2. Turn on the main switch, then press the Start key.
3. While pressing the enter key and the "O" key, the toner supply clutch turns on.
4. Press the Clear/Stop key and turn off the main switch, then turn off DIP switch 1-2.

NOTE 5: SP Mode No.76

Paper Size	Limit Capacity
A3/DLT	10 sheets
A4/LT	30 sheets
A5/HLT	30 sheets

NOTE 6: SP Mode No.93

To change the limit quantity, perform the following:

1. Turn DIP SW1-8 on.
2. Enter "93" using the numeral keys.
3. Press the Enter key.
4. Enter the desired number using the numeral keys.
5. Press the Enter key.

NOTE 7:

The first 3 digits are shown in the magnification indicator.
Press the point (" . ") key to display the second 3 digits.