[9] SELF DIAG

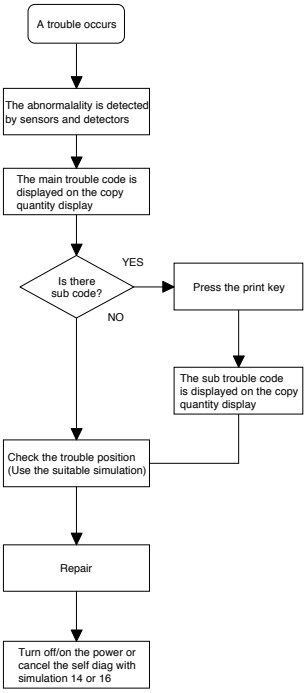
1. Summary/purpose

This model has the self diag function for the following purposes:

1) When a trouble occurs in the machine, the machine detects the trouble and displays the trouble content on the copy quantity display to alert the customer and the serviceman.
2) When any abnormality is detected, the power supply line is cut off immediately for safety and to protect the machine from damage.

2. Operation

The self diag content is displayed in the following procedure.



3. Clearing the self diag display

After repairing the trouble section, clear the self diag display according to the table below:
Clearing the self diag display

Self diag display	Display clearing procedure
L1, L3, L4, L5, L8	Turn off/on the power.
H3, H4	Execute simulation 14.
U2	Execute simulation 16.
CH, PC	When the trouble is cancelled,, the display is cleared.

4. Self diag contents

Error code		Item	Description	Ref. page
Main	Sub			
L1	0	Content	Scanner feed trouble	8-10
		Detail	1) 86 pulses (45 mm) of the scanner motor drive pulse have been outputted after the scanner unit started scanning, but the scanner home position sensor (MHPS) does not turn off. 2) The scanner unit is not at its home position (MHPS does not turn on) when the scanner unit starts scanning. 3) The scanner home position sensor (MHPS) does not turn on when the scanner performs the initial operation.	
		Cause	1) Scanner motor trouble 2) Scanner motor control circuit trouble 3) Scanner motor rotation sensor and its control circuit trouble 4) Scanner home position sensor (MHPS)and its input circuit trouble (main control circuit trouble) 5) Scanner unit drive mechanism trouble 6) An overload to the drive section	
		Remedy	Use simulations 1-1 and 1-2 to check the following: A. Check the mirror motor control circuit and its peripheral sections. 1) The scanner unit operates normally. 2) The scanner home position sensor ((MHPS) operates normally and its output signal is inputted to the main control PWB. 3) The scanner motor drive signal is outputted. 4) The scanner motor rotation sensor signal is inputted to the control circuit. B. Check the scanner unit drive mechanism. 1) Drive wire 2) Pulley 3) Gear After repair, turn off/on the power switch.	
L3	0	Content	Scanner return trouble	8-10
		Detail	1) The scanner motor drive pulses required for the scanner unit to return are shifted more than 50 pulses for the drive pulses required for feeding. (The corresponding distance is 10mm or more.) 2) The scanner motor drive pulses required for the scanner unit to return are within 50 pulses for the drive pulses required to feed. 3) The scanner unit does not return. Or through it returns, the scanner unit does not return to its home position (the MHPS does not turn on). (Though the scanner motor drive pulses required to return are 50 pulses greater than the drive pulses required for the scanner unit to feed, the scanner unit is not in the home position (the MHPS does not turn on). 4) After the scanner unit returns, the MHPS does not turn on.	
		Cause	1) Scanner motor trouble 2) Scanner motor control circuit trouble 3) Scanner motor rotation sensor and its peripheral sections trouble 4) Scanner home position sensor (MHPS) and its input circuit trouble 5) Scanner unit drive mechanism trouble 6) Overload at the scanner motor drive section	
		Remedy	Use simulation 1-1 and 1-2 to check the following: A. Check the mirror motor control circuit and its peripheral. 1) The scanner unit operates normally. 2) The scanner home position sensor (MHPS) operates normally and its output signal is inputted to the main control circuit. 3) The scanner motor drive signal is inputted. 4) The scanner motor rotation sensor signal is inputted to the control circuit. B. Check the scanner unit drive mechanism. 1) Drive wire 2) Pulley 3) Gear After repair, turn off/on the power switch.	
L4	1	Content	Main motor lock trouble	

Error code		Item	Description	Ref. page
Main	Sub			
L4	1	Detail	The rotary encoder signal cannot be detected for more than 50ms during delivery of the main motor On signal output.	
		Cause	1) Main moor trouble 2) Main control circuit trouble 3) Main motor rotation sensor and its input circuit (main control circuit) trouble 4) Main motor drive mechanism trouble 5) An overload on the main motor drive section	
		Remedy	Check the following items: A. Check the main motor control circuit and its peripheral sections. 1) Main motor drive signal is inputted. 2) The main motor rotation sensor signal is inputted to the control circuit. B. Check the main motor drive mechanism. 1) Drive wire 2) Pulley 3) Gear After repair, turn off/on the power switch.	
L5	2	Content	Lens drive motor trouble	8-10
		Detail	1) During the initial operation, the lens does not move from the reduction copy position to the enlarged copy position. Or the lens home position sensor (LHPS) does not turn on even though the lens moves (130mm/lens motor drive pulse output). 2) During the initial operation, the lens does not move to the enlargement copy position. Or the lens moves (70mm/ 50 pulses of lens motor drive pulse are outputted) but the lens home position sensor (LHPS) does not turn off. 3) When the lens moves from the reduction coy position to the enlargement copy position, the specified number of pulses required for the lens home position sensor (LHPS) to move from ON position to OFF position is shifted by 20 pulses (4mm) or more. 4) AT the completion of lens movement, the lens home position sensor is not ON when in enlargement copying, or not OFF when in reduction copying.	8-11
		Cause	1) Lens motor trouble 2) Main control circuit trouble 3) Lens motor rotation sensor and its input circuit (main control PWB) trouble 4) Lens motor drive mechanism trouble 5) An overload on lens motor drive mechanism	
		Remedy	Use simulations 1-3 or 1-4 to check the following items: A. Check the lens motor control circuit and its peripheral sections. 1) The lens motor drive signal is outputted. 2) Lens motor rotation sensor signal is inputted to the control circuit. B. Check the lens motor drive mechanism. 1) Drive wire 2) Pulley 3) Gear After repair, turn off/on the power switch.	
L8	1	Content	Power frequency abnormality	
		Detail	The power frequency is shifted from the specified level by 5% or more for 10 cycles or more, or the FW signal cannot be detected for more than 5 sec.	
		Cause	1) FW is not outputted or the output waveform is abnormal. 2) Power circuit trouble (AC power unit/DC power unit) 3) FW input circuit trouble (main control circuit) 4) AC power trouble (waveform/voltage)	
		Remedy	Check the waveforms of the following units with an oscilloscope. 1) FW signal waveform in the DC power unit 2) FW signal waveform in the main control circuit 3) AC power line After repair, turn OFF/ON the power switch.	
	3	Content	During execution of simulation 47, the AE sensor output does not change according to change in the copy lamp voltage.	8-5
		Detail	AE sensor trouble	
		Cause	1) AE sensor or its input circuit (main control PWB) trouble 2) Copy lamp control circuit trouble (copy lamp control signal abnormality) 3) A white paper is not set on the document table or the document table or the document cover is dirty.	

Error code		Item	Description	Ref. page
Main	Sub			
L8	3	Remedy	Check the following items: 1) AE sensor or its input circuit 2) Copy lamp control circuit (copy lamp control signal) After repair, turn off/on the power switch.	
H2	0	Content	Fuser section thermistor trouble	
		Detail	The voltage across the thermistor input circuit remains 4.6V or more for 1500 ms or more.	
		Cause	1) Thermistor and its input circuit (main control PWB) trouble (disconnection)	
		Remedy	Check the thermistor and its input circuit (main control circuit) for disconnection. AFter repair, used simulations 14 to cancel the self diag.	
H3	0	Content	Abnormally high temperature in the fuse section	8-11
		Detail	The voltage across the thermistor input circuit remains 1.39V or less for 1500 ms or more. (A high temperature above 241 C is detected.)	
		CAuse	1) Thermistor and its input circuit (main control PWB) trouble (disconnection) 2) Heater lamp control signal and its control circuit trouble (The heater lamp remains ON.)	
		Remedy	Check the following items: 1) Thermistor and its input circuit (main control PWB) disconnection 2) Heater lamp control signal and its control circuit After repair, use simulations 14 to cancel the self diag.	
H4	0	Content	An abnormally high temperature in the fuse section	8-11
		Detail	1) The voltage across the thermistor input circuit remain 3.39V or more for 1500ms. (A temperature below 148˚C is detected.) 2) The temperature does not reach the specified temperature within 60 sec after starting warming up.	
		Cause	1) Thermistor and its input circuit (main control circuit) trouble (disconnection) 2) Heater lamp trouble 3) Heater lamp control signal and its control circuit trouble (The heater lamp remains ON.)	
		Remedy	Check the following items: 1) Check the thermistor and its input circuit (main control PWB) for disconnection or shot. 2) Heater lamp control signal and its control circuit 3) Heater lamp After repair, use simulations 14 to cancel the self diag.	
U2	1	Content	In the main PWB EEPROM data sum check, the data do not correspond to the CPU data.	8-12
		Cause	1) Main PWB EEPROM trouble 2) Main control circuit trouble 3) Communication line trouble between the main PWB EEPROM and the CPU 4) CPU trouble 5) Data bus line trouble	
		Remedy	Check the following items: 1) main PWB EEPROM 2) Memory control circuit 3) Communication line between main PWB EEPROM and CPU 4) CPU 5) Data bus line After repair, use simulations 16 to cancel the self diag. When the power is turned on, data in the main PWB EEPROM are transferred to the CPU to perform sum check. The operation can be checked at that time.	
	4	Content	memory line communication trouble	8-12
		Detail	1) In access to the main PWB EEPROM, the respond command ACK is not inputted to the CPU. 2) When writing data into the main PWB EEPROM, the write enable signal is not inputted to the CPU for 11ms or more.	
		Cause	1) Main EEPROM RAM trouble 2) Memory control circuit trouble 3) Communication line trouble between main PWB and CPU 4) CPU trouble 5) Data bus line trouble	

Error code		Item	Description	Ref. page
Main	Sub			
U2	4	Remedy	Check the following items: 1) Main PWB EEPROM 2) Memory control circuit 3) Communication line between main PWB EEPROM and CPU 4) CPU 5) Data bus line After repair, use simulation 16 to cancel the self diag When the power is turned on, data communication is performed with the main PWB EEPROM and the CPU. The operation can be checked at that time.	8-12
U5	5	Content	Abnormally high temperature on the original glass when using the SPF.	
		Detail	The thermistor detects 55˚C or above.	
		Cause	1) Thermistor and input circuit (main control PWB) trouble (disconnection) 2) Copy lamp control signal and control circuit trouble (Copy lamp remains ON.)	
		Remedy	Check the following items. 1) Thermistor and input circuit (main control PWB) disconnection 2) Copy lamp control signal and control circuit Turn OFF/ON the power to cancel the diagnostics.	
EE	EU	Content	Toner density initial setting trouble (undertoner)	8-6
		Detail	When setting the toner density initial level with simulation 25-2, the toner density sensor output is below the specified voltage (1.53V).	
		Cause	1) Toner sensor trouble 2) Toner sensor input circuit trouble (main control PWB)	
		Remedy	Use simulations 25-2 to check the following items: 1) Toner sensor 2) Toner sensor input circuit After repair, use simulations 14 to cancel the self diag.	
	EL	Content	Toner density initial setting trouble (overtoner)	8-6
		Detail	When setting the toner density initial level with simulation 25-2, the toner density sensor output is above the specified voltage (3.49V).	
		Cause	1) Toner sensor trouble 2) Toner sensor input circuit trouble (main control circuit) 3) Toner motor and its control circuit trouble	
		Remedy	Use simulations 25-2 to check the following items: 1) Toner sensor 2) Toner sensor input circuit 3) Toner motor and its control circuit After repair, use simulations 14 to cancel the self diag.	
CH	Light	Content	Paper feed section cover open	8-10
		Detail	1) The paper feed section cover open/close detector (CSDSD) and its input circuit remains Low (0V).	
		Cause	1) Paper feed section cover open/close mechanism trouble 2) Paper feed section cover open/close detector signal (CSDSW) and its control circuit trouble 3) Paper feed section cover open/close detector (CSDSW) trouble	
		Remedy	check the following items: 1) Paper feed section cover open/close mechanism 2) Paper feed section cover open/close detector signal (CSDSW) and its input circuit 3) Paper feed section cover open/close detector (CSDSW)	
	Light	Content	Manual paper feed unit installation trouble (MFD0, MFD1)	8-10
		Detail	1) The manual paper feed unit signal (CSDSW) and its control circuit remains MFD0 level and MFD1 level.	
		Cause	1) The manual paper feed unit signal (MFD1) line is not connected or disconnection in the line. (The manual paper feed unit is not installed.)	
		Remedy	Check the following item: 1) Manual paper feed unit signal (MFD1) line	
	Blink	Content	Developer detection trouble	8-6
		Detail	1) The toner density sensor input (main PWB) voltage is below 0.5V.	
		Cause	1) Toner density sensor and its input circuit (main PWB) trouble 2) Developer seal is not removed.	
		Remedy	Use simulation 25-2 to check the following items: 1) Toner density sensor and its control circuit (main PWB) 2) Developer seal	