

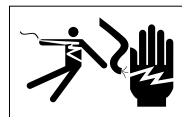
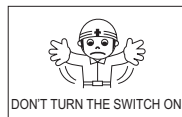
Section 9.2

Troubleshooting for Electronics

9.2.1	Normal State	9.2-2
	[1] Immediately after Power ON	9.2-2
	[2] In Running	9.2-2
	[3] On Halt	9.2-2
9.2.2	Abnormal State (Troubleshooting)	9.2-3
	[1] Troubleshooting from the Function Panel.....	9.2-3
	[2] Malfunction of Control Board	9.2-4
	[3] Function Panel Failure.....	9.2-13
	[4] The Weft Insertion Solenoid does not Operate Normally	9.2-15
	[5] Troubleshooting from Error Messages	9.2-18

9. INSTRUMENTATION

9.2 Troubleshooting for Electronics



WARNING

- When accessing wiring or devices in the control panel, turn OFF the power switch (circuit breaker CB1) and also disconnect the main power supply of the distribution panel.
- If the machine is equipped with a group-control inverter, turn OFF the inverter power. (Otherwise, the MSI primary side remains electrically charged.)

- (1) You can get almost all of information required for operation and maintenance from the function panel.
- (2) If an error occurs or the machine stops, the signal indicator comes on or flashes, signalling operator intervention is required.
- (3) This section first describes the indications of the signal indicator and function panel in the normal state, then provides troubleshooting procedures to be taken if an error occurs.

9.2.1 Normal State

[1] Immediately after Power ON

Signal indicator — The white signal lamp stays on.
Function panel — No indication

- Brake — ON (Terminals 103 – 101 = 24 VDC)
- Motor — OFF
- Electromagnetic switches — All OFF

[2] In Running

Signal indicator — Red lamp blinking.
Function panel — No indication

- Brake — OFF (Terminals 103 – 101 = 0 V)
- Motor — ON
- Electromagnetic switchMSL — ON
MSF — ON
MSY — ON

[3] On Halt

Signal indicator — One or more signal lamps stay on or flash.
Function panel — Displays the error source making the machine stop.

- Brake — ON (Terminals 103 – 101 = 24 VDC)
- Motor — OFF
- Electromagnetic switches — All OFF

REFERENCE: Four signal lamps are provided. One or more signal lamps come on or flash depending upon the error source.

9.2.2 Abnormal State (Troubleshooting)

If an electric error occurs, troubleshoot it according to the following procedures:

<p>1. Check the function panel to see the displayed message and the detailed description & recovery action.</p>	→	<p>According to the displayed recovery action to be taken, you can solve almost all of problems. The examples of troubleshooting from the function panel are shown in [1].</p>
<p>2. Check the LEDs on the control board in each of the main control box, let-off motion, function panel, EDP unit, and electrical take-up motion.</p>	→	<p>You can judge malfunctioning of the control board according to the LED status. Details are explained in [2].</p>
<p>3. Observe the phenomenon in the machine.</p>	→	<ul style="list-style-type: none"> • Abnormality of function panel Explained in detail in [3]. • The corrective action upon malfunction of weft insertion solenoid is explained in [4].

[1] Troubleshooting from the Function Panel

Trouble examples when the machine is in operation (48 V POWER UNIT FAILURE).

(1) Message screen (Option)

ERROR < 48 V POWER UNIT FAILURE >

(2) Detailed message screen (Touching the ERROR shows the following message on the screen.)

< 48 VDC FAILURE >

The error detector for the 48 VDC power supply operates.

(Recovery Action)

- 1) Check pin Nos. [3] and [6] of connector [CN3] in the power supply unit [DCPS2] and pin Nos. [1] and [5] of connector [CN10] on the IO1 board.
- 2) Replace fuse [F1] on the power supply unit [DCPS2] if it has been blown.
- 3) If the same error recurs,
 - Check the measuring pin, gripper, rotary valve and ABS for any abnormality.
 - Check the wiring for any short circuit.
 - Replace the IO1 or IO2 board.
 - Replace the LH1 or LH2 board.

9. INSTRUMENTATION

[2] Malfunction of Control Board

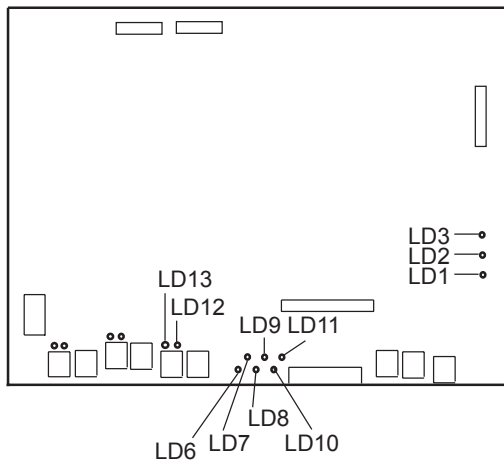
The functioning status of the control boards for the main control box, function panel, let-off motion, EDP unit and electric take-up motion can be checked by respective LEDs. The table below lists the checked LEDs and their status when the control boards are normal.

If each checker LED is not in the status shown below, take necessary actions by referring to [2.1] “Control Board Troubleshooting” or [2.2] “Communication Loop Troubleshooting”.

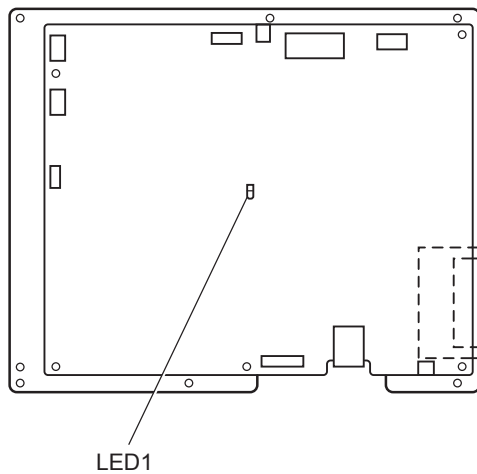
■ LED status when control boards are normal

Unit	Printed circuit board	Checker LED		LED status and function when the control boards are normal	
		LED ID	Color	Status	Function
Main control box	CPU board	LD1	Red	Off	To check communication with the function panel
		LD2	Yellow	Blinking	
		LD3	Green	Blinking	
		LD6	Red	Off	To check control microprocessor operation
		LD7	Green	Off	
		LD8	Yellow	On	
		LD9	Yellow	On	
		LD10	Yellow	On	
		LD11	Green	On	To check communication with the LH control box (Ch0)
		LD12	Green	On	
LD13	Red	Off			
Function panel	Panel control board	LED1	Green	On	To check control board operation (10.4-inch color only)
Let-off motion Take-up motion	Servo amplifier board	LED1	Red	On	To check servo amplifier board operation
		LED2	Green	On	To check control power supply voltage
		LED3	Yellow	Blinking	For CPU operation check
EDP control box	LH1 control board LH2 control board	LED1	Yellow	On	To check communication with main control box
		LED2	Red	Off	
		LED3	Green	Off	

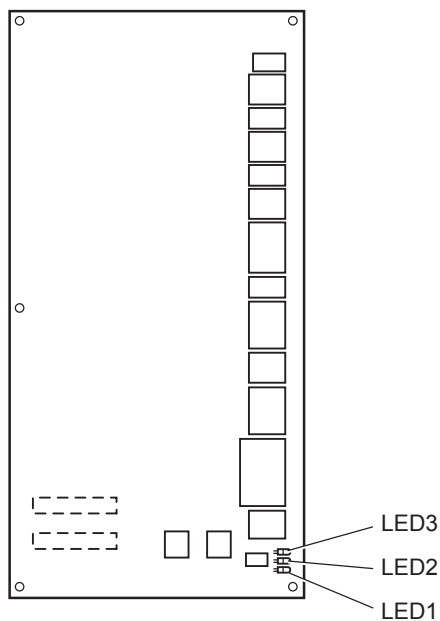
Main control box (CPU board)



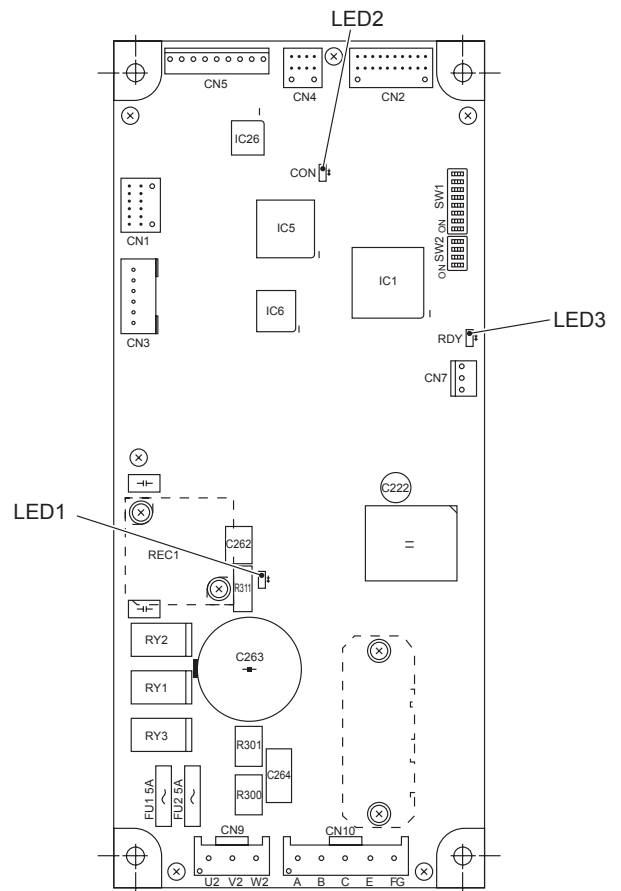
In the function panel



EDP control box (LH board)



In the let-off • take-up motion (Servo amplifier board)

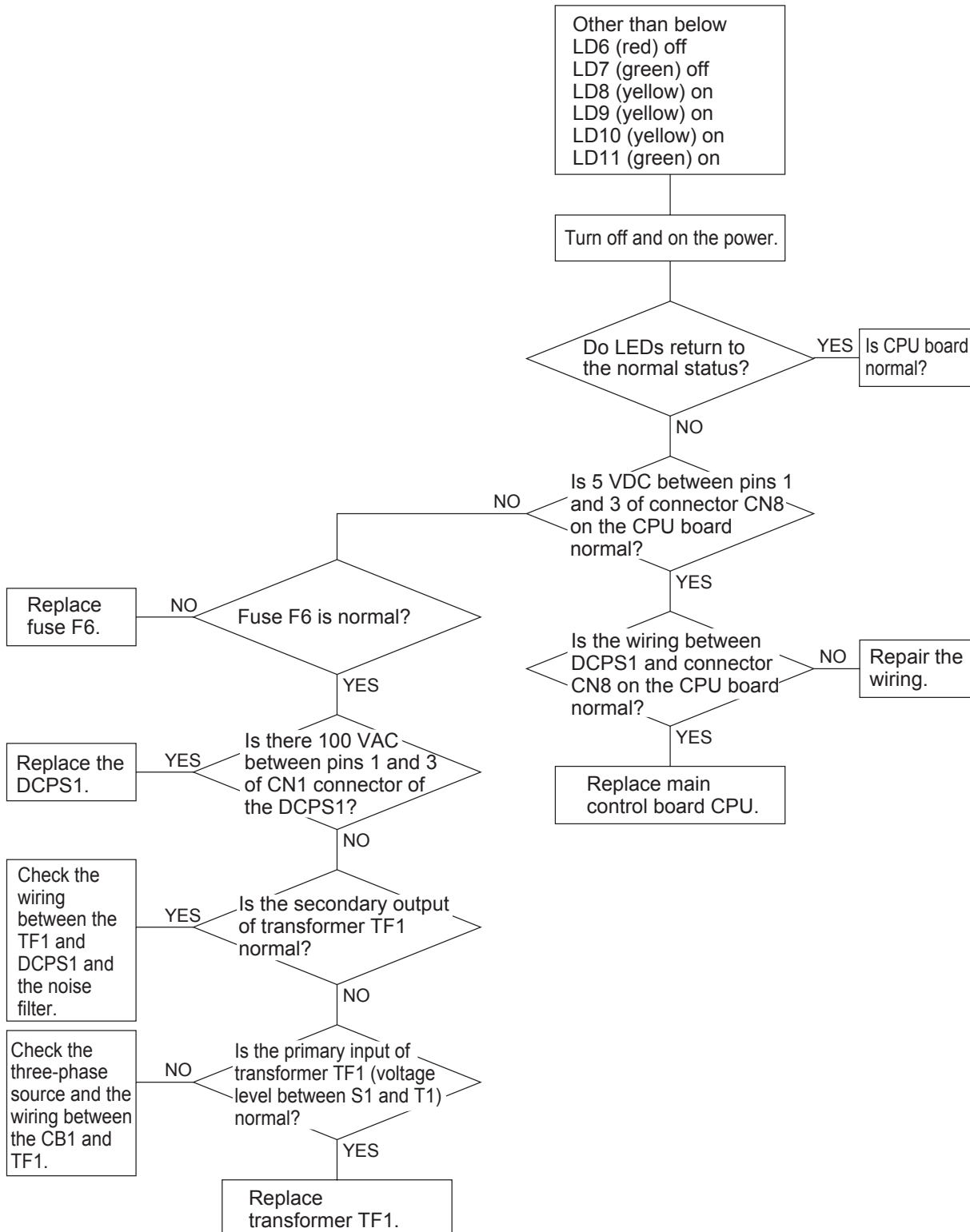


9. INSTRUMENTATION

[2.1] Control Board Troubleshooting

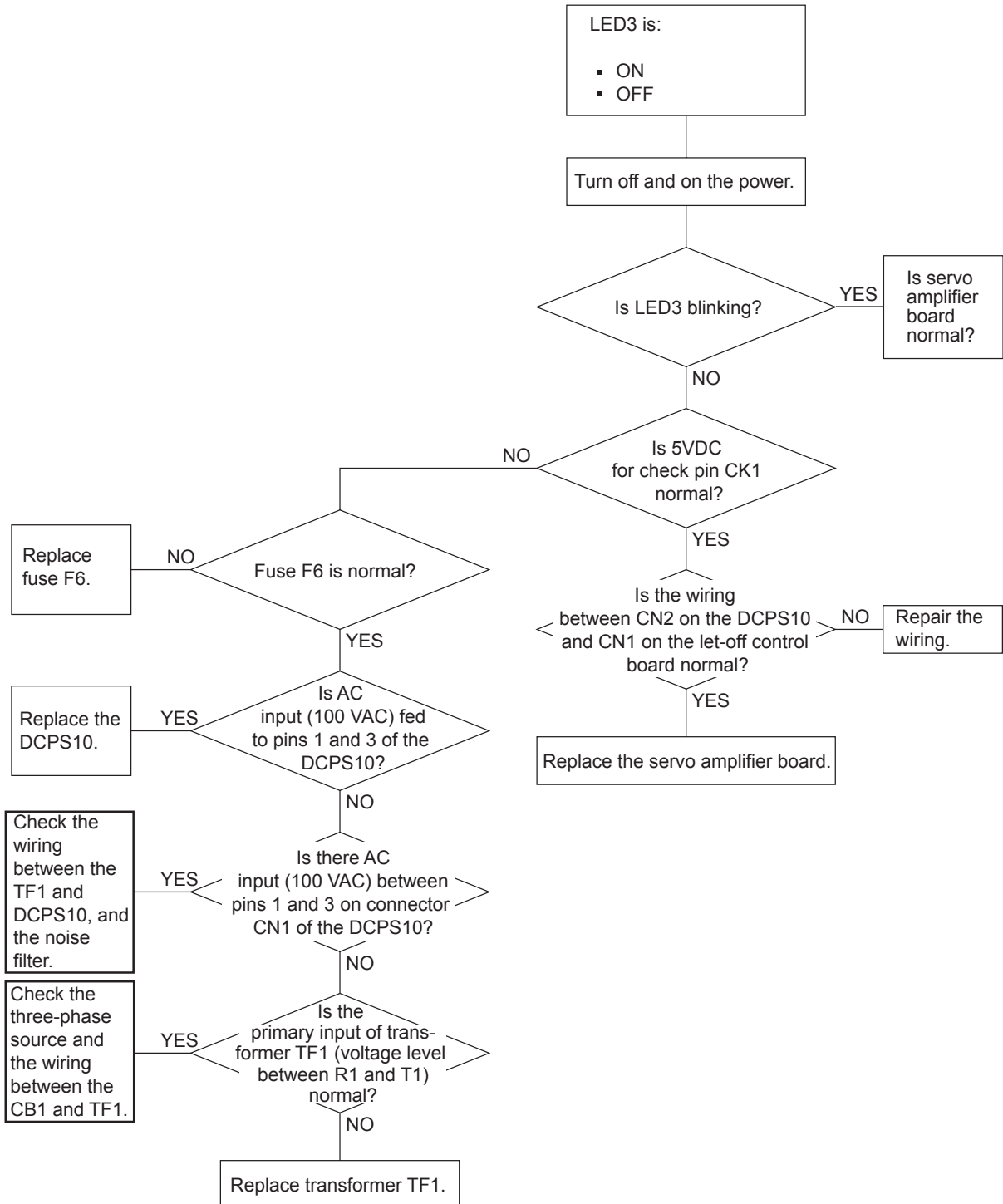
(1) Main control box

When LD 8 to LD11 on the CPU board are not on while LD6 and LD7 are not off, follow the flowchart shown below.



(2) Let-off motion

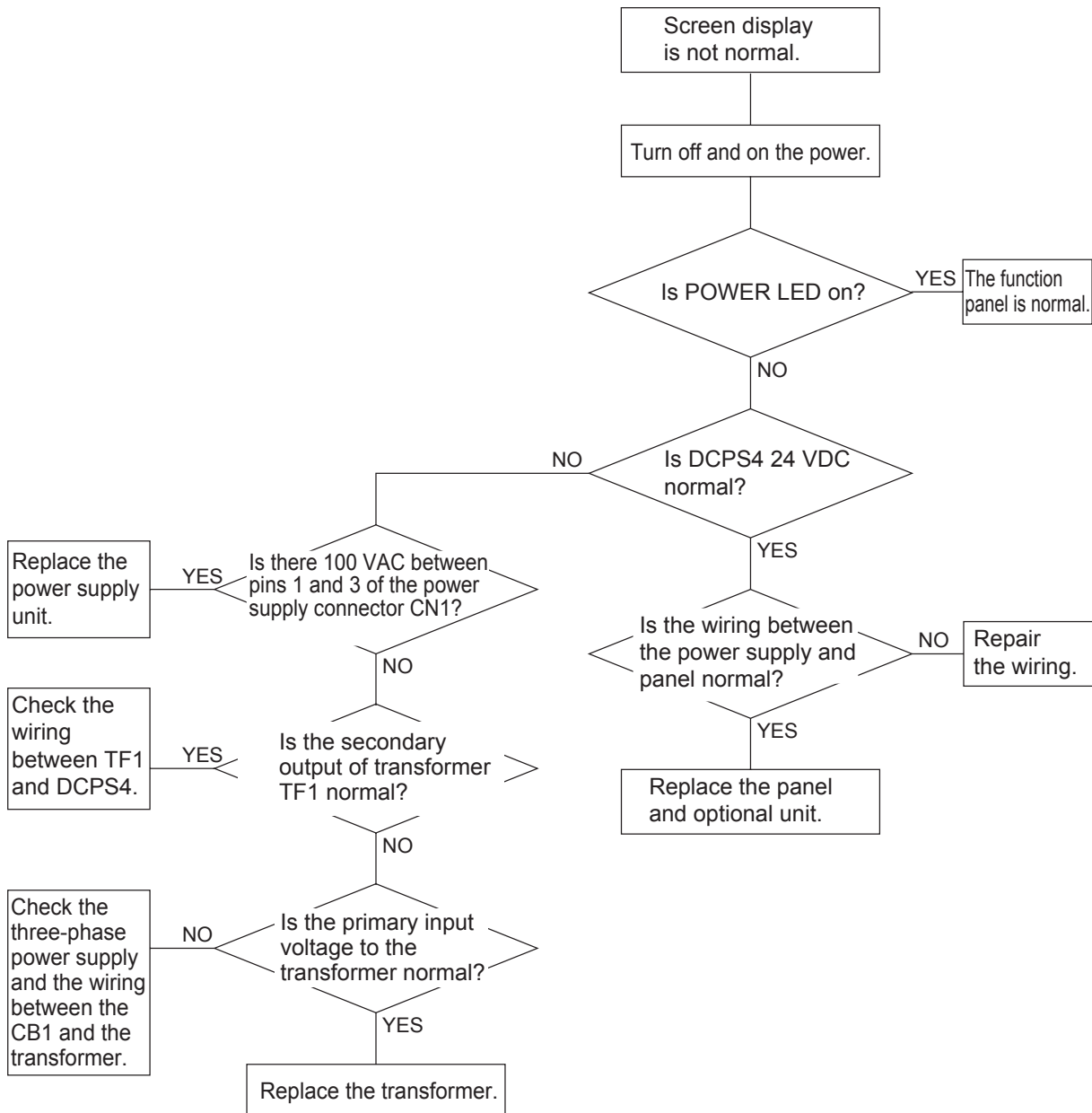
If LED3 (yellow) on the servo amplifier board is not blinking follow the flow shown below.



9. INSTRUMENTATION

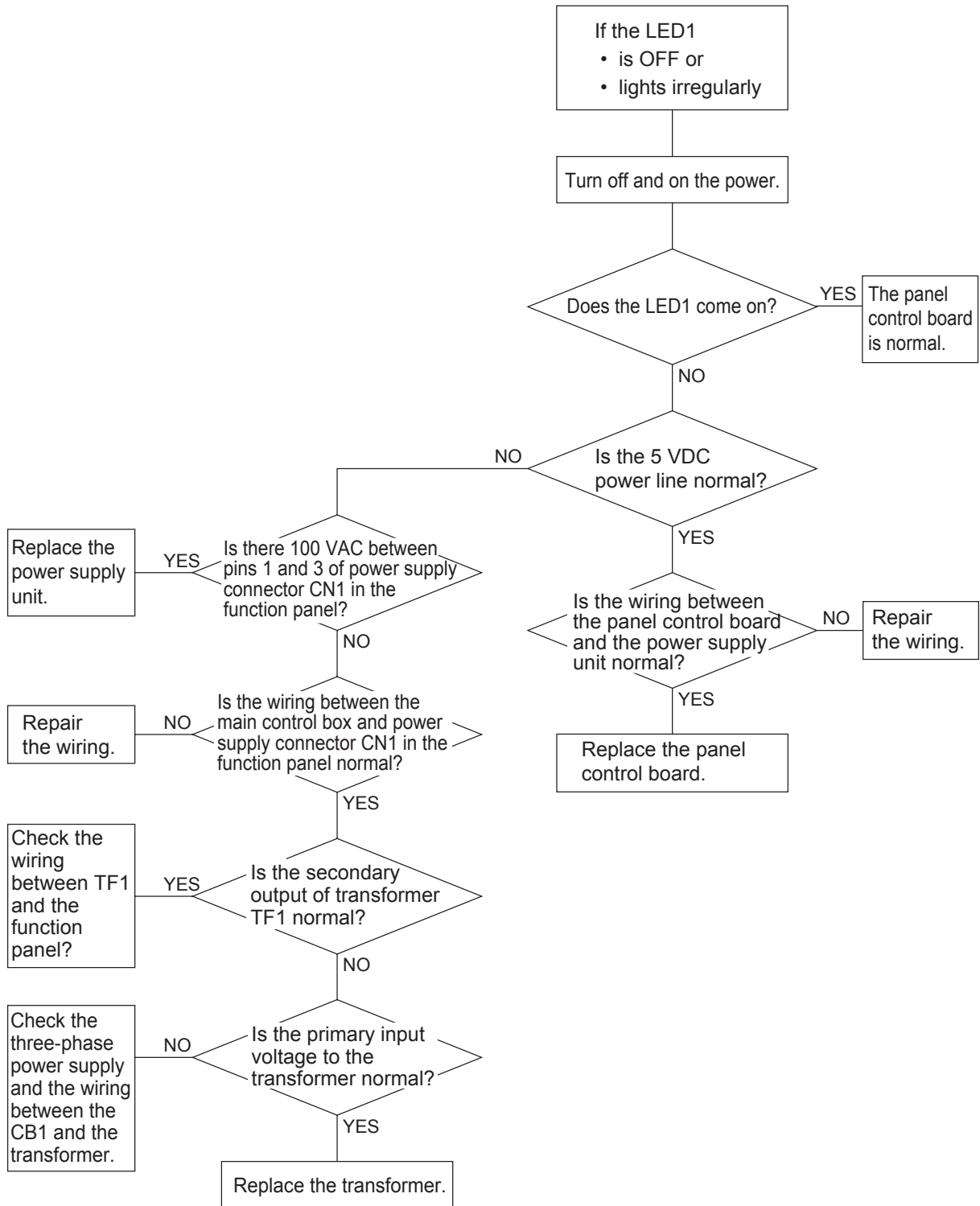
(3) 5.7-inch function panel

If the LED1 (green) on the panel control board is not ON, follow the flowchart given below.



(4) 10.4-inch function panel (optional)

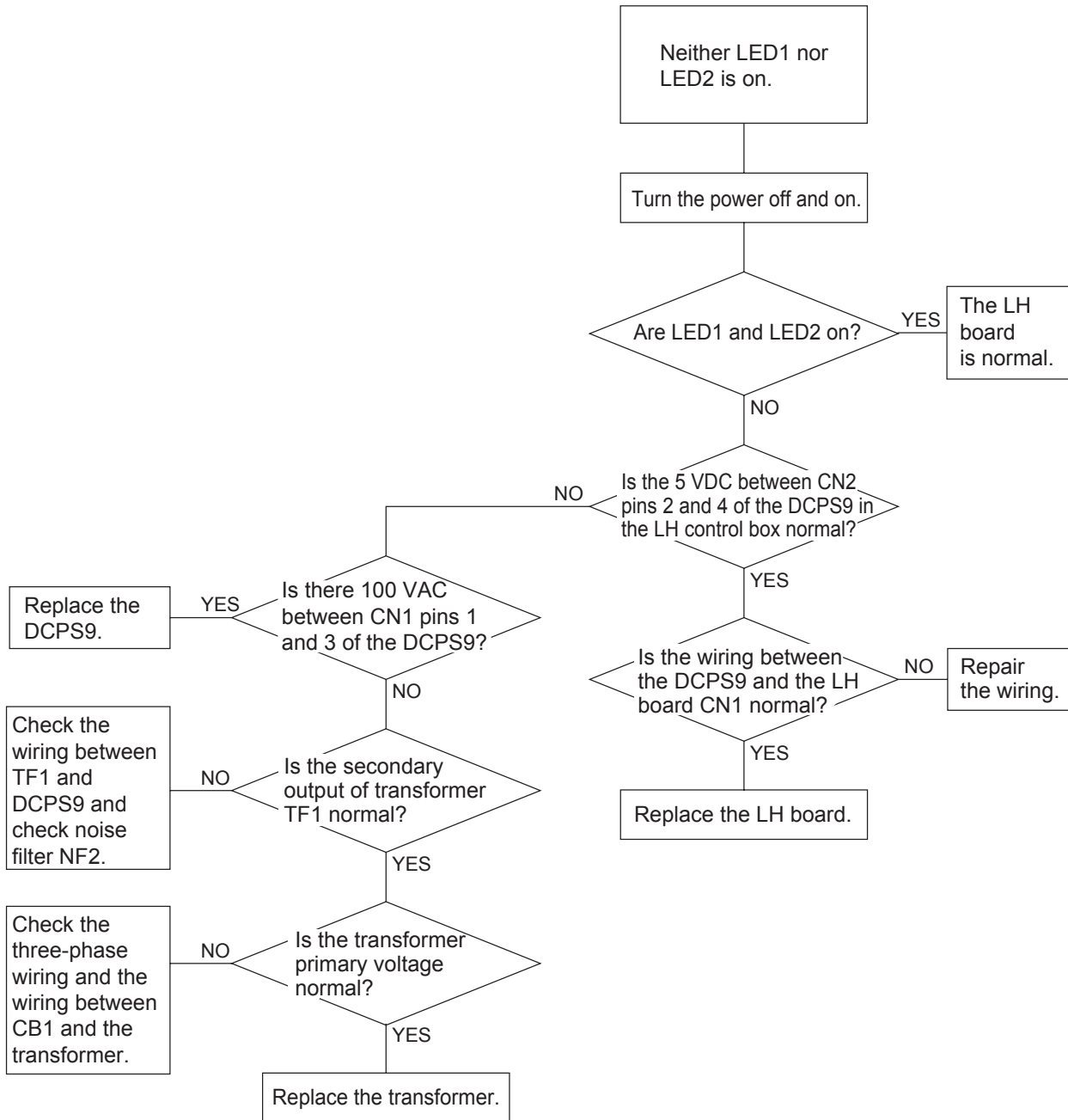
If the LED1 (green) on the panel control board is not ON, follow the flowchart given below.



9. INSTRUMENTATION

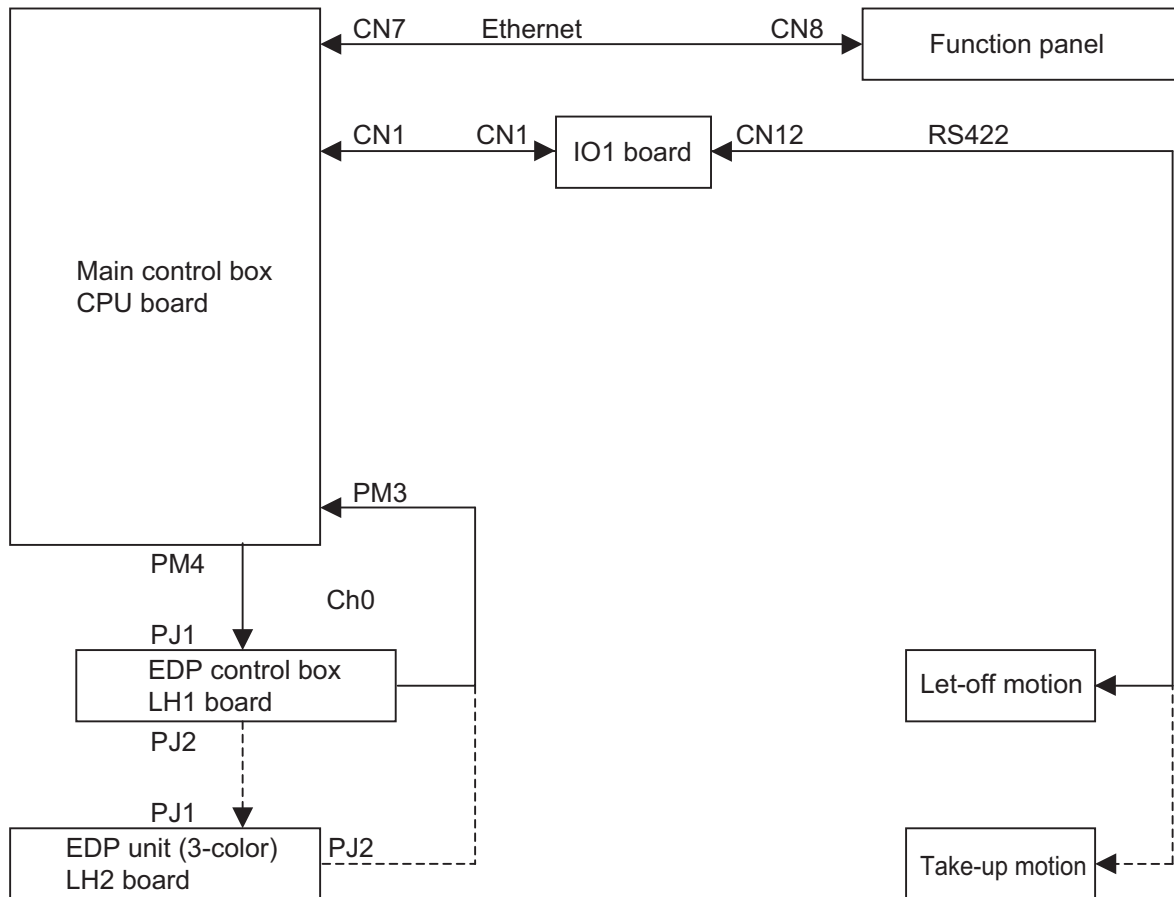
(5) EDP control box

Follow the flowchart given below if both of LED1 (yellow) and LED2 (red) on the LH1 (LH2) board are off.



[2.2] Communication Loop Troubleshooting

■ Communication loop configuration



REFERENCE:

- (1) Each arrow in the communication loop diagram shows the data flow (Send a receive).
- (2) Communication through Ethernet and RS422 is both-way.

9. INSTRUMENTATION

■ Communication loop troubleshooting

- (1) Ethernet communication
(Main control box - Function panel)

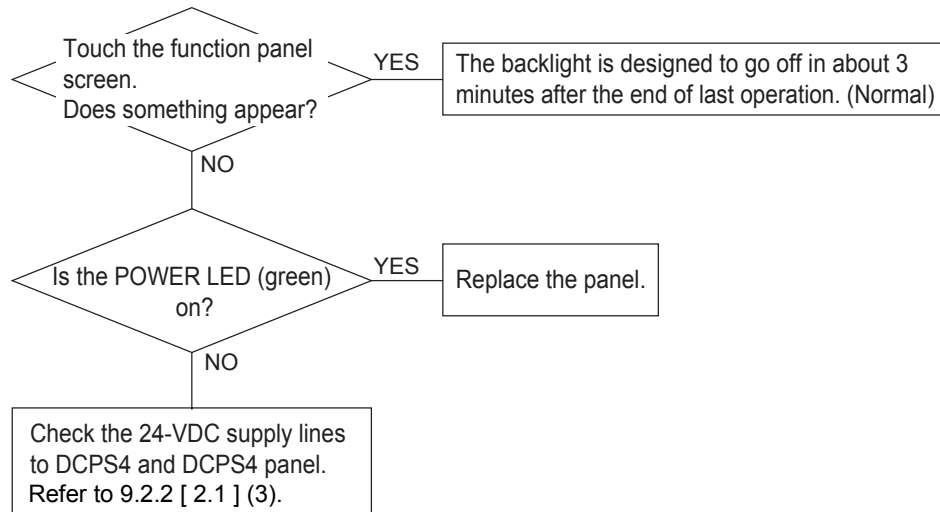
Unit	Printer circuit board	Checker LED			Communication status (trouble phenomenon)	Corrective action
		LD1 Red	LD2 Yellow	LD3 Green		
Main control box	CPU board	Off	Blinking	On	Normal	—
LED status (*: On or blinking)		On	*	*	Communication collision (simultaneous data transmission from multiple units)	<ul style="list-style-type: none"> Replace the CPU board or function panel control board. Check the external unit if it is connected to the Ethernet.
		*	On	Blinking	Receiving error (Receiving fails at the CPU board. (Sending possible.))	<ul style="list-style-type: none"> Check the connection of the communication cable. Replace the function panel control board.
		*	Blinking	On	Transmission error (Sending from the CPU board fails.)	<ul style="list-style-type: none"> Replace the CPU board.
		*	On	On	Sending-receiving error (Both sending from and receiving fail at the CPU board.)	<ul style="list-style-type: none"> Replace the CPU board, check the communication cable and/or replace the function panel control board.
		Off	Off	Off	Sending-receiving error (CPU board malfunction)	<ul style="list-style-type: none"> Check the CPU board power supply (5 VDC). Replace the CPU board.

- (2) Ch0 Communication loop
(Ch0: Main control box - EDP control box)

Unit	Printed circuit board	Checker LED		Communication status (trouble phenomenon)	Corrective action
		LD12 Green	LD13 Red		
Main control box	CPU board	LED1 Yellow	LED2 Red		
EDP control box	LH board	LED1 Yellow	LED2 Red		
LED status (*: On or blinking)		On	Off	Normal	—
		On	On	Receiving data abnormality (Communication is normal but data is abnormal.)	<ul style="list-style-type: none"> Check the communication cable on the receiving side of this unit (for any fold or bend).
		Off	Off	Receiving error (board operation abnormality)	<ul style="list-style-type: none"> Replace the printed circuit board where LEDs are off.
		Off	On	Receiving error (Receiving fails at the printed circuit board having LEDs not on.)	<ul style="list-style-type: none"> Check the boards upstream and this board. If LEDs are off on multiple consecutive boards, check from the one most upstream. If LEDs are off on all boards, check connection of the communication cable between the main control box and the LH control box or replace the CPU board.

[3] Function Panel Failure**[3.1] 5.7-inch Function Panel Abnormality**

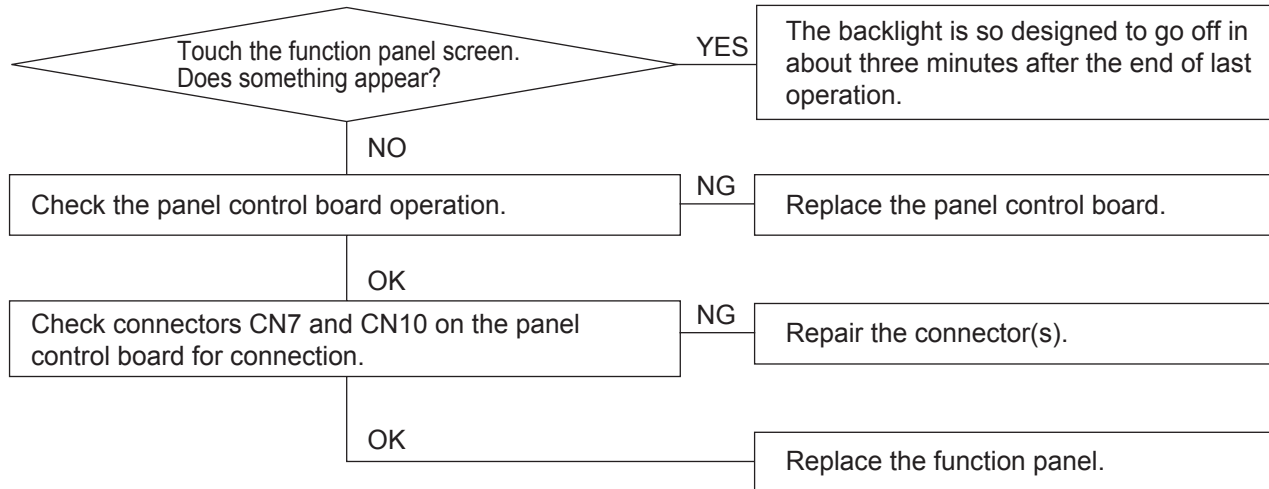
(1) Nothing is displayed on the function panel screen.



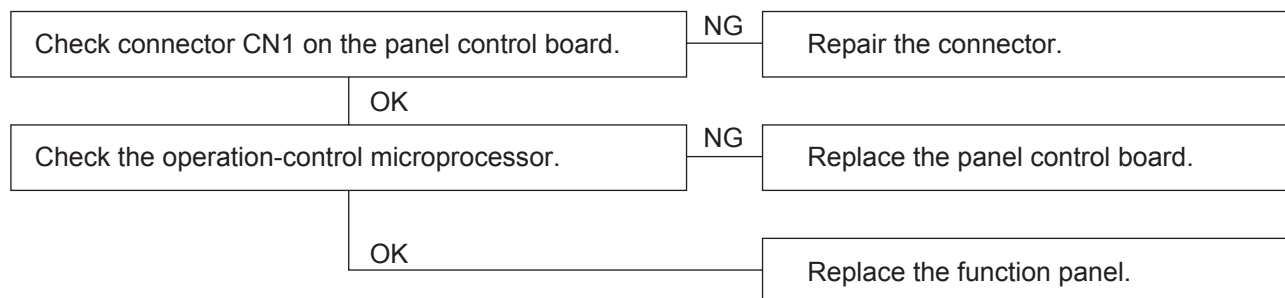
9. INSTRUMENTATION

[3.2] 10.4-inch Function Panel Failure

(1) Nothing is displayed on the function panel.



(2) The switches or buttons on the function panel are inoperative.

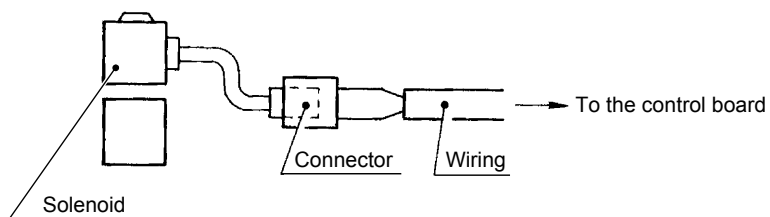
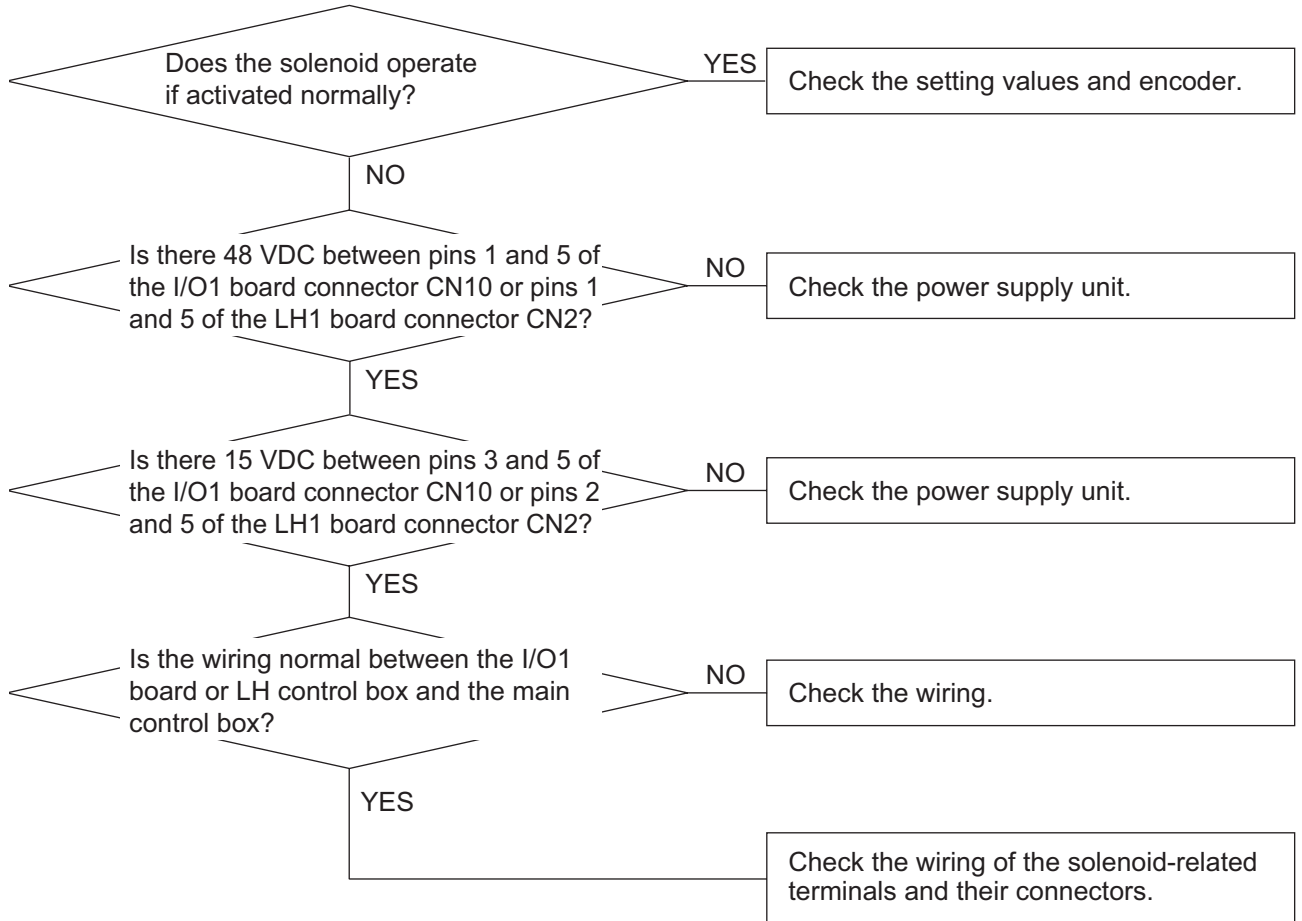


In the case of no screen display or inoperable switches on the screen, the communication between main control and panel may be faulty. In this case, replace the main control board and/or the Ethernet cable.

(3) Setting failure. (EDP setting is disabled during operation.)

[4] The Weft Insertion Solenoid does not Operate Normally

[4.1] Check by Manual Operation



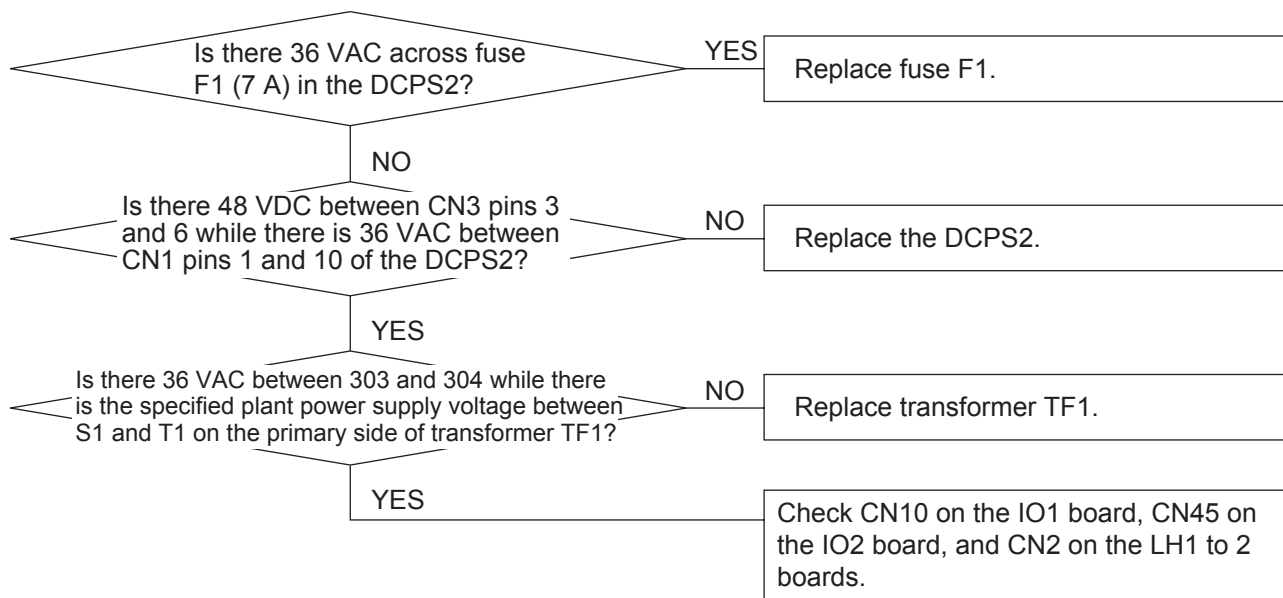
NOTE: The types of weft insertion solenoids and their control power supply voltages are as follows:

1	Pin solenoid	Controlled by 48 VDC and 12 VDC.
2	Gripper solenoid	
3	Water supply solenoid	
4	Rotary solenoid	Controlled by 48 VDC only.
5	ABS solenoid	

9. INSTRUMENTATION

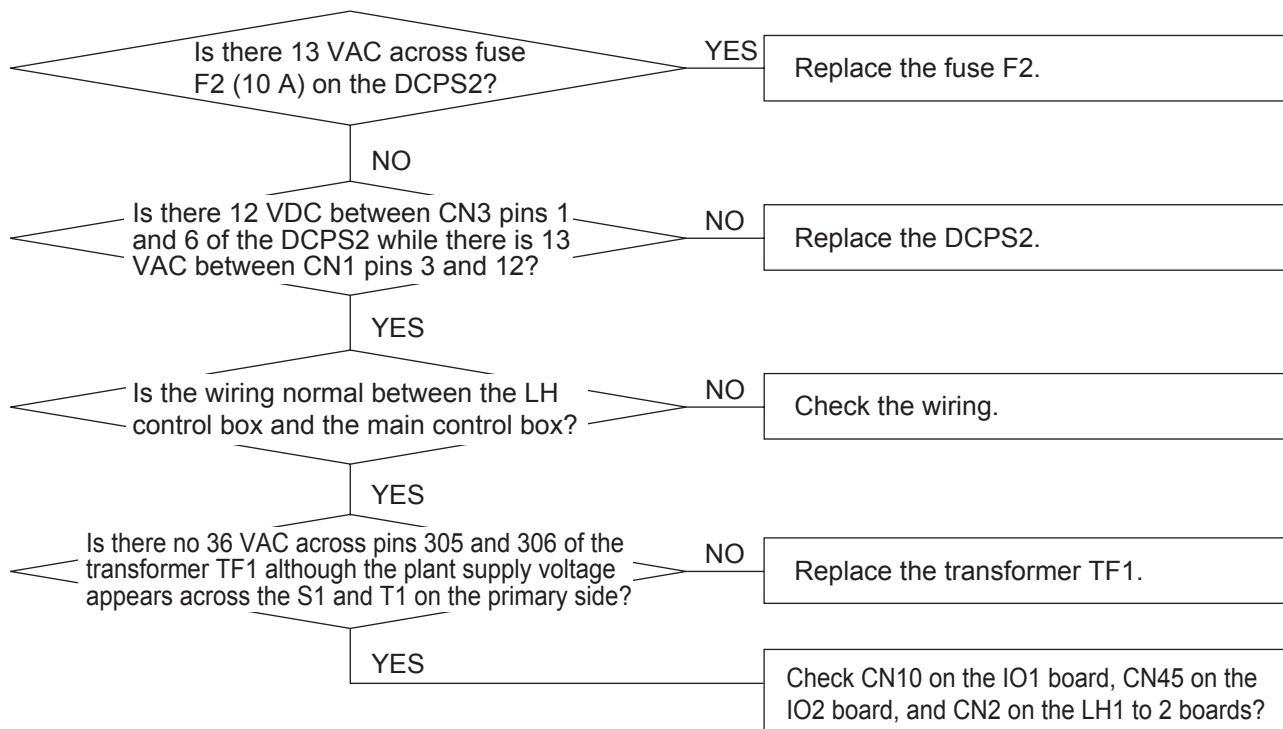
[4.2] Power Supply Unit Check

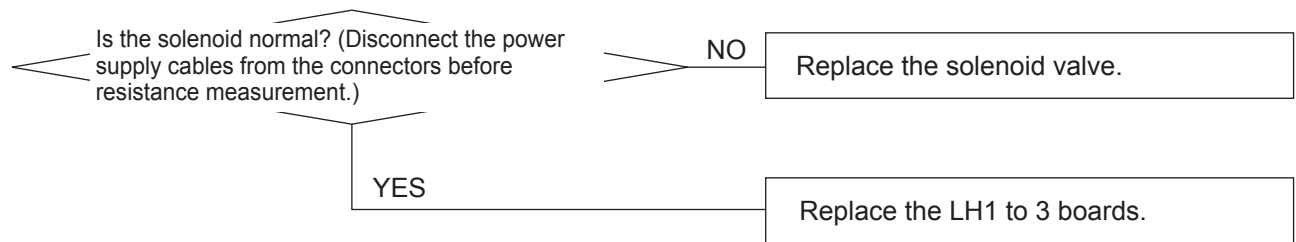
(1) When 48 VDC does not exist.



REFERENCE: See the overall check related to solenoids on the next page.

(2) When 15 VDC does not exist.



[4.3] Overall Check Related to Solenoids

Resistance value of each solenoid

- | | |
|---------------------------|-----|
| 1. Pin solenoid: | 30Ω |
| 2. Gripper solenoid: | 29Ω |
| 3. Water supply solenoid: | 71Ω |
| 4. Rotary solenoid: | 44Ω |
| 5. ABS solenoid: | 12Ω |

[4.4] Others

- 1) Be sure to check the operation of the error detectors (such as warp detectors) periodically (once a month).
- 2) Be sure to check that switches in the control boxes or on the machines are secured with screws periodically (once a month).
- 3) Do not leave the control box doors open or do not operate the machine with the doors being open. Otherwise, water entrance into the box or condensation or rusting trouble on the printed wiring board may occur.
Disconnection of connectors and terminals may also result.
- 4) Always keep the vinyl cover of the function panel installed during operation.
Panel operation without the vinyl cover may cause scratching on the screen or water splashing onto the panel, resulting in troubles.
- 5) In the case of the 5.7-inch function panel, always install the dust-proof cap on the memory card reader/writer connector after the operation. Otherwise, contact defect troubles may occur.

9. INSTRUMENTATION

[5] Troubleshooting from Error Messages

(1) Main Control

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
E-0015	The machine will not run.	EMERGENCY STOP BUTTON PRESSED	Is the board normal? Check the wiring for discontinuity. When released, is the emergency switch conducting between its pins?	Replace the IO1 board. Replace. Replace the emergency switch.	The emergency switch is normally closed.
M-0105	The machine will not run.	HANDLE COVER NOT INSTALLED	Limit switch installed in correct position? Wiring of the limit switch correct? Limit switch works normally? Is the board normal? Check the wiring for discontinuity.	Fix. Fix. Replace. Replace the IO1 board. Replace.	Wire NO and COM.
M-0207	The machine will not run.	BRAKE VOLTAGE FAILURE	Is the brake power (DCPS2) supplied? Brake resistance normal? Is the board normal?	Replace the DCPS2. Replace the brake. Replace the IO1 board.	Normal resistance: approx. 6Ω
M-0211	The machine will not run.	140VDC FAILURE	140 V power source normal? Is the board normal?	Replace the DCPS2. Replace the IO1 board.	140 V: Measure the voltage between CN2 pins 4 and 6 of the DCPS2.
M-0212	The machine will not run.	24V (DCPS2) POWER FAILURE	24 V power supply normal? Is the board normal?	Replace the DCPS2. Replace the IO1 board.	24 V: Measure the voltage between CN2 pins 1 and 6 of the DCPS2.
M-0213	The machine will not run.	24V (DCPS4) POWER FAILURE	24 V power supply normal? Is the board normal?	Replace the DCPS4. Replace the IO1 board.	24 V: Measure the voltage between CN2 pins 4 and 2 of the DCPS4.
M-0214	The machine will not run.	24V (DCPS2) POWER FAILURE	24 V power supply normal? Is the board normal?	Replace the DCPS2. Replace the IO1 board.	24 V: Measure the voltage between CN2 pins 1 and 6 of the DCPS2.
M-0215	The machine will not run.	48VDC FAILURE	48 V power source normal? Is the board normal?	Replace the DCPS2. Replace IO1 board.	48 V: Measure the voltage between CN3 pins 3 and 6 of the DCPS2.
M-0216	The machine will not run.	12V (DCPS2) POWER FAILURE	12 V power supply normal? Is the board normal?	Replace the DCPS2. Replace the IO1 board.	12 V: Measure the voltage between CN3 pins 1 and 6 of the DCPS2.

9.2 Troubleshooting for Electronics

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
M-0217	The machine will not run.	P15VDC FAILURE	15 V power source normal? Is the board normal?	Replace the DCPS10. Replace the let-off control board or take-up control board.	15 V: Measure the voltage between CN2 pins 4 and 3 of the DCPS10.
M-0218	The machine will not run.	M15VDC FAILURE	Is -15 V power source normal? Is the board normal?	Replace the DCPS10. Replace the let-off control board or take-up control board.	-15 V: Measure the voltage between CN2 pins 1 and 3 of the DCPS10.
M-0219	The machine will not run.	12V (DCPS3) POWER FAILURE	12 V power supply normal? Is the board normal?	Replace the DCPS3. Replace the IO1 board.	12 V: Measure the voltage between CN2 pins 4 and 2 of the DCPS3.
M-0220	The machine will not run.	5V POWER FAILURE	Is the board normal?	Replace the CPU board.	Change from 12 V to 5 V on the CPU board.
M-0222	The machine will not run.	MAIN MOTOR OVERHEAT	Any abnormal noise from the motor? Is the thermal switch closed (cold)? Is the board normal?	Replace the bearing. Replace the thermal switch. Replace the IO1 board.	Normally closed between pins 10 and 12.
M-0223	The machine will not run.	ENCODER Z-PHASE ERROR	12 V power supply normal? Does the LED on the encoder come on? Is the board normal?	Replace the DCPS3. Replace the encoder. Replace the IO1 board and the CPU board in this order.	12 V: Measure the voltage between CN2 pins 4 and 2 of the DCPS3. The LED comes on once per encoder rotation.
M-0224	The machine will not run.	ENCODER, A- OR B-PHASE ERROR	12 V power supply normal? Is the encoder normal? Does the magnet contactor operate normally? Are the control boards A and B normal? Group-control inverter tripped?	Replace the DCPS3. Replace the encoder. Replace the magnet contactor. Replace the IO1 board and the CPU board in this order. Reset the inverter.	12 V: Measure the voltage between CN2 pins 4 and 2 of the DCPS3. In reverse rotation: MSI, MSR and MSY are on. Controls up to three machines concurrently.

9. INSTRUMENTATION

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
M-0118	Automatic lubrication failure	OILING FAILED (PRESSURE IS LOW)	Air bubbles in grease? Pressure sensor normal? Is the pump discharging grease? Is the lubrication motor running? Is the distributing valve clogged?	Bleed air from grease. Replace the pressure sensor and IO1 board in this order. Clean the pump. (Replace it if necessary.) Replace the IO1 board and the lubrication motor in this order. Clean the valve. (Replace it if necessary.)	
M-0119	Automatic lubrication failure	OILING FAILED (PRESSURE IS HIGH)	Is the grease type correct? Is the pressure sensor normal? Is the board normal?	Use correct grease. Replace the pressure sensor. Replace the IO1 board.	Refer to Subsection M.3.1.
M-0304	The machine will not start full automatic operation.	NO INPUT FROM ENCODER Z-PHASE (IN OPERATION)	Is the machine provided with the SCI? Is the encoder normal? Does the magnet contactor operate normally? Is the board normal?	Replace the magnet contactor (small) in the SCI box. Replace the encoder. Replace the magnet contactor. Replace the IO1 board and the CPU board in this order.	Chattering at the contact The internal LED comes on when the Z-phase is detected.
M-0305	Abnormal machine stop	REVERSE-REV. PULSE FROM ENCODER (IN OPERATION)	Is the encoder normal? Are the control boards normal? Are heald frames well balanced?	Replace the encoder. Replace the IO1 board and the CPU board in this order. Insert a balance frame.	
M-0306	Abnormal machine stop	ENCODER FWD-REV. PULSE COUNT ERROR (IN OPERATION)	Is the encoder normal? Are the control boards normal?	Replace the encoder. Replace the IO1 board and the CPU board in this order.	
M-0402	Abnormal machine stop	MAIN CONTRL: WATCHDOG RESET	Is the control board normal?	Replace the CPU board.	Clearing the RAM may recover from this error state.
M-1000	Abnormal machine stop	EMERGENCY STOP SIGNAL FROM LET-OFF	Are the control boards normal. Is any other message related to let-off motion displayed? Check the wiring for discontinuity.	Replace the CPU board and the let-off control board in this order. Fix the problem indicated by any other message. Replace the wiring.	Check the settings carefully after replacing the let-off control board. Also check the connectors for any defective contact.

9.2 Troubleshooting for Electronics

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
M-1470	Abnormal machine stop	EMERGENCY STOP SIGNAL FROM TAKE-UP	Is any other message related to the take-up motion displayed? Are the control boards normal? Check the wiring for discontinuity.	Fix the error indicated by any other message. Replace the CPU board and the take-up control board in this order. Replace the wiring.	Check the settings carefully after replacing the take-up control board. Also check the connectors for any defective contact.
M-1700	Abnormal machine stop	MAIN CONTROL: EMERGENCY STOP SIGNAL INPUT FROM SCI	Is any other error message related to the SCI displayed? Are the control boards normal? Check the wiring for discontinuity.	Fix the error indicated by any other message. Replace the IO1 board and the CPU board in this order. Replace the wiring.	Also check the connectors for any defective contact.
M-1704	Abnormal machine stop	SCI: OVERCURRENT	Is the motor torque boost set too high? Is the hall-effect element (current sensor) normal? Is the control board normal? Are heald frames balanced well?	Decrease the set value. Replace the hall-effect element. Replace the SCI board. Insert a balance frame.	
M-1705	Abnormal machine stop	SCI: OVERVOLTAGE	Is the main motor speed uneven? Is the control board normal?	Insert a balance frame. Replace the SCI board.	Introduce a higher-capacity SCI.
M-1707	Abnormal machine stop	SCI: MAIN MOTOR RPM ERROR	Is the MS in the SCI on? Is the control board normal?	Replace the MS (small) with an MS (large). Replace the SCI board.	
M-1801	Abnormal machine stop	ELECTRONIC DOBBY: ABNORMAL SIGNALING FROM PROXIMITY SWITCH	Are the control boards normal? Is the proximity switch normal? Is the proximity switch installed in the correct position?	Replace the IO2 board and the CPU board in this order. Replace the proximity switch. Install the proximity switch in the correct position.	
M-1806 M-1825	Abnormal machine stop	ELECTRONIC DOBBY: OPEN CIRCUIT IN SOLENOID NO. **	Is the magnet module normal? Is the control board normal? Check the wiring for discontinuity.	Replace the magnet module. Replace the IO2 board. Replace the wiring.	Carefully check the connector on the dobbie side.
No error code	False pick		Is the feeler cable nearly disconnected? Is WF1 set to off? Are control boards normal? Is the feeler sensitivity normal? Isn't the screen removed?	Replace the feeler. Set WF1 to on. Replace the IO1 board and the CPU board in this order. Turn the VR knob clockwise (to decrease the sensitivity). Install the screen.	The feeler board is installed on the IO1 board.

9. INSTRUMENTATION

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
No error code	False pick (After trimmed selvage)		Is the touch bar painted too thick? Are the sensor functions deactivated in the TEST mode? Is the control board normal? Isn't there any discontinuity in wiring or connector disconnection?	File the paint off. Activate the sensor functions. Replace the IO1 board. Replace the wiring.	
	False pick (Before trimmed selvage)		Damaged sensor Board abnormality. Disconnected connector?	Replace the proximity switch. Replace IO1 board. Connect IO1 CN28 connector.	
	False pick (Leno selvage)		Check the reed switch installed position. Are feeler functions deactivated in the TEST mode? Is the control board normal? Check for any disconnected connector.	Adjust the clearance from the bobbin holder magnet. (2 to 3 mm). Activate the feeler functions. Replace the IO1 board. LH side: CN20 connector RH side: CN32 connector	
	Pattern disorder Pattern disorder (Dobby)		Does the main motor overrun when stopped? Is the magnet gap adjusted properly? Is the magnet module normal? Is the control board normal? Check the wiring for discontinuity.	Adjust the main motor brake clearance. Adjust the gap. Replace the magnet module. Replace the IO2 board. Replace the wiring.	Adjustment is necessary if the main motor stops near 0° Carefully check the connector on the doobby side.
M-0307 M-0319	Balloon sensor abnormality	BALLOON SENSOR FAILURE EXCESSIVE BALLOON SENSOR PULSES (COLOR*) INSUFFICIENT BALLOON SENSOR PULSES (COLOR*)	Is the balloon sensor normal? Is the balloon sensor installed correctly? Are the balloon sensor lens and reflector fouled? Are control boards normal?	Replace the balloon sensor. Fix the balloon sensor in the correct position. Clean the lens and reflector. Replace the EI, LH1, 2, IO1 and CPU boards in this order.	LH2 in case of color 3.
M-0103	Initialized data	MAIN CONTROL: SETTING VALES INITIALIZED	Is the battery voltage normal? Is the brake switch kept pressed?	Replace the battery. Replace the SW board.	Specified battery voltage: 3.6 V The switch is normally opened.
M-0301	Incorrect stop position	LACK OF BRAKE TORQUE	Is the 24 V power supplied? Is the 140 V power supplied? Is the brake normal? Is the brake clearance normal? Is the control board normal?	Replace the DCPS2. Replace the DCPS2. Replace the brake. Adjust the clearance. Replace the IO1 board.	24 V: Measure the voltage between CN4 pins 1 and 6. 140 V: Measure the voltage between CN4 pins 4 and 6. Standard clearance: 0.3 mm

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
M-0001	False stop (After trimmed selvage)	SELVAGE STOP, RIGHT-HAND	Is the control board normal? Is the wiring damaged?	Replace the IO1 board. Replace the wiring.	
M-0002	False stop (Before trimmed selvage)	SELVAGE STOP, RIGHT-HAND	Check the sensor for any fault. Isn't the board abnormal?	Replace the sensor. Replace IO1 board. Replace wiring.	
M-0003 M-0004	False stop (Leno selvage)	FULL-LENO SELVAGE STOP, RIGHT-HAND FULL-LENO SELVAGE STOP, LEFT-HAND	Is the control board normal? Check the sensor for any abnormality. Is the wiring damaged?	Replace the IO1 board. Replace the sensor. Replace the wiring.	
M-0005 M-0007	False pick (Feeler)	WEFT STOP BY WF1 (COLOR*)	Check the feeler cable for discontinuity. Is the feeler lens covered with fly or fleece? Is the feeler lens scratched? Is the feeler sensitivity adjusted properly? Loosened weft yarn. Feeler detection angle? Does the weft detection LED blink?	Replace WF1. Clean the lens. Replace WF1. Turn the VR counterclockwise (to increase the sensitivity). Adjust the head position and CC spindle. Widen the detection angle. Replace the IO1 board and the CPU board in this order.	The feeler board is mounted on the IO1 board.

9. INSTRUMENTATION

(2) EDP

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
E-0003	Abnormal machine stop	EDP: INVERTER OVERCURRENT	Any fly or fleece got into the drum? Does the winding arm rotate smoothly? Any problems with the control boards EI and EC?	Remove fly. Replace the bearing in the motor. Replace the EI board and the LH1, 2 board in this order.	LH2 board in case of color 3.
M-0009	Abnormal machine stop	EDP: DRUM MOTOR OVERHEAT	Amplifier gain too high? Temperature switch in the motor normal? Does the winding arm rotate smoothly? Any problems with the control board EI?	Decrease the amplifier gain. Replace the motor. Replace the bearing in the motor. Replace the EI board.	
E-0010	Abnormal machine stop	EDP: DRUM MOTOR REVOLUTION ERROR	Proximity switch in the motor normal? Any problems with the control board EI?	Replace the proximity switch. Replace the EI board.	Manually turn the arm to see if the LED comes on.
E-0013	Abnormal machine stop	EDP: NO ENCODER A-PHASE SIGNAL FROM MAIN CONTROL	Encoder normal? Any problems with the control boards B, EC, and EI?	Replace the encoder. Replace the IO1 board, LH1, 2 board and the EI board in this order.	LH2 board in case of color 3.
E-0006	The machine will not run.	EDP: INVERTER LOW VOLTAGE	200 VAC supplied to the EDP? Any problems with the control board EI?	Check the magnet contactor and transformer box. Replace the EI board.	Be sure to check for all of three phase lines.
E-0007	The machine will not run.	EDP: INVERTER DEFECTIVE	Transformer normal? Does the magnet contactor operate normally? Any problems with the control boards EI and EC?	Replace the transformer. Replace the magnet contactor. Replace the IO1 board and the LH1, 2 board in this order.	LH2 board in case of color 3.

(3) Let-off Motion

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
L-1001	Abnormal machine stop	TOO HIGH WARP TENSION	Encoder normal? Servomotor normal? Load cell normal? Any problems with the let-off control board and IO1 board. Any mechanism jerky? Warp-related set data correct? Power source normal?	Replace. Replace. Replace. Replace the servo amplifier board, and control IO1 board in this order. Make the mechanical adjustment. Correct the setting. Replace the DCPS10.	Tension roller and its related parts Weft density and beam dia. ±15 VDC
L-1002	Abnormal machine stop	TOO LOW WARP TENSION	Encoder normal? Servomotor normal? Load cell normal? Any problems with the let-off control board and IO1 board. Warp-related set data correct? Power source normal?	Replace. Replace. Replace. Replace the servo amplifier board, and control IO1 board in this order. Correct the setting. Replace the DCPS10.	Weft density and beam dia. ±15 VDC
L-1003 L-1005	Abnormal machine stop	LET-OFF: NO ENCODER SIGNAL	Encoder normal? Does the magnet contactor operate normally? Machine rotation direction correct? Is the loom rotating direction correct?	Replace. Replace. Replace the control IO1 board and servo amplifier board in this order. Correct the wiring.	Check both slow running and full running.
L-1008	Abnormal machine stop	LET-OFF: SERVO AMPLIFIER ERROR	Any problems with the let-off control board? Any other messages relating to the servo amplifier? Power source normal? Power supply cable normal?	Replace the servo amplifier board. Fix problems indicated by other messages. Replace the DCPS10. Replace the power supply cable.	Be careful with instantaneous power failure of the 5 VDC source. Be careful with contact failure of the 5 VDC power line.
L-100C	Abnormal machine stop	LET-OFF: SERVOMOTOR OVERHEAT (SOFTWARE-DETECTED)	Servo amplifier normal? Servomotor normal? Warp beam mechanically locked? Does the warp beam rotate smoothly? Resolver cable normal?	Replace. Replace. Check the easing motion for any jerky mechanism. Clear the RAM, set correct data, and press the Tension Restore switch to restore the preset tension. Replace.	

9. INSTRUMENTATION

Error code	Phenomenon	Error message	Check the following:	Do the following:	Comments
L-100D	Abnormal machine stop	LET-OFF: SERVO AMP., SPEED CONTROL AMP. SATURATED	Servo amplifier normal? Servomotor normal? Warp beam mechanically locked? Resolver cable normal?	Replace. Replace. Check the easing motion for any jerky mechanism. Replace.	
L-100E	Abnormal machine stop	LET-OFF: SERVO AMP. OVERCURRENT (SOFTWARE - DETECTED)	Servo amplifier normal? Servomotor normal? Warp beam mechanically locked?	Replace. Replace. Check the easing motion for any jerky mechanism.	
L-1018	Abnormal machine stop	LET-OFF: DROPPED MAIN AC POWER SUPPLY VOLTAGE TO SERVO AMP.	200 VAC supplied? Servo amplifier normal? Serious voltage drop at the start of let-off operation?	Check the circuit breaker of the transformer box. Replace. Replace the power cable with higher capacity one.	Except for 200/220 V versions
L-103A	Abnormal machine stop	LET-OFF: SERVO COUNTER OVERFLOW	Servomotor normal? Warp beam mechanically locked? Does the warp beam rotate smoothly? Resolver cable normal? Any problems with the let-off control board?	Replace. Check the easing motion for any jerky mechanism. Clear the RAM, set correct data, and press the Tension Restore switch to restore the preset tension. Replace. Replace the servo amplifier board.	
L-1006	The machine will not run.	LOAD CELL ERROR	Load cell normal? Any problems with the let-off control board? Power source normal?	Replace. Replace the servo amplifier board. Replace the DCPS10.	±15 VDC
L-1015	The machine will not run.	LET-OFF: RESOLVER CABLE BROKEN	Servo amplifier normal? Servomotor normal? Resolver cable normal? Power source normal?	Replace. Replace. Replace. Replace the DCPS10.	
L-1020	The machine will not run.	WARP TENSION CALIBRATION NECESSARY	Loosen the warp yarns, and calibrate the tension. Any problems with the let-off control board?	Calibrate the tension. Replace.	
L-1031	Initialized data	LET-OFF: SETTING VALUES INITIALIZED	Any problems with the let-off control board?	Replace.	
L-1023 L-1030	Manual driving fails.	LET-OFF: COMMAND NOT EXECUTABLE	Any problems with the let-off control board and panel control board? Is there any abnormality with RS422 communication? During let-off operation, have you attempted to command any other operation?	Replace the control IO1 board and servo amplifier board in this order. Check IO1 board connector CN12 and servo amplifier board CN4 for correct connection. No machine error.	