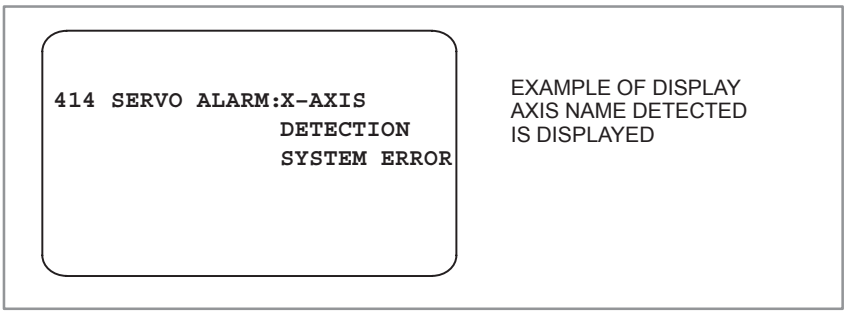
8.22 ALARM 414 (DIGITAL SERVO SYSTEM IS ABNORMAL)



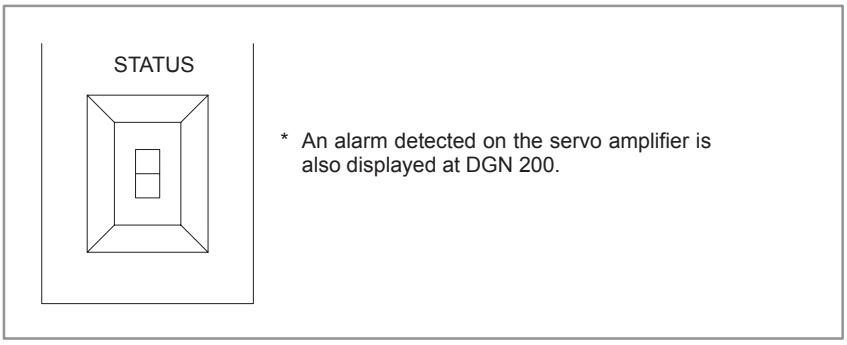
Points

Check details by CNC's diagnostic fucntion and LED display on the servo amplifier.

1)

		#7	#6	#5	#4	#3	#2	#1	#0
DGN	0200		LV	OVC	HCA	HVA	DCA	FBA	OFA

2) LED display on the servo amplifier



3)

		#7	#6	#5	#4	#3	#2	#1	#0
DGN	0204		OFS	MCC					

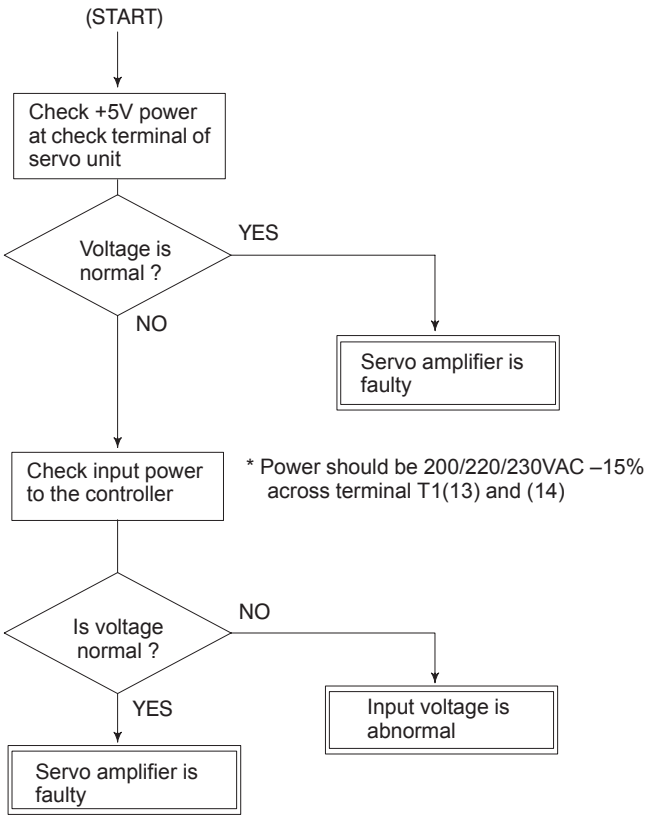
- **When DGN200 shows "1"**

		#7	#6	#5	#4	#3	#2	#1	#0
DGN	0200		LV	OVC	HCA	HVA	DCA	FBA	OFA

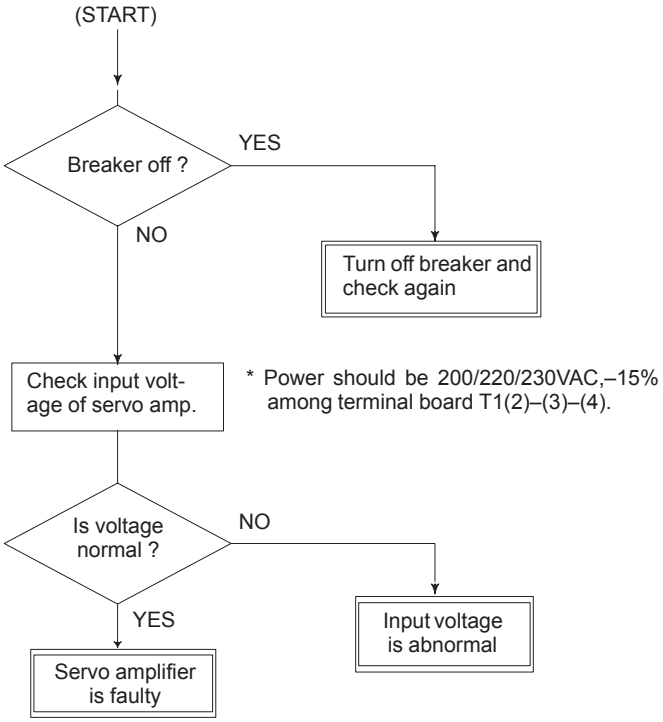
#6(LV): Low voltage alarm → LED [2] or [3] lights
#5(OVC): Over current alarm
#4(HCA): Abnormal current alarm → LED [8] lights
#3(HVA): Over current alarm → LED [1] lights
#2(DCA): Discharge alarm → LED [4] or [5] lights
#1(FBA): Disconnection alarm
#0(OFA): Overflow alarm

- **#6(LV):Insufficient voltage alarm**

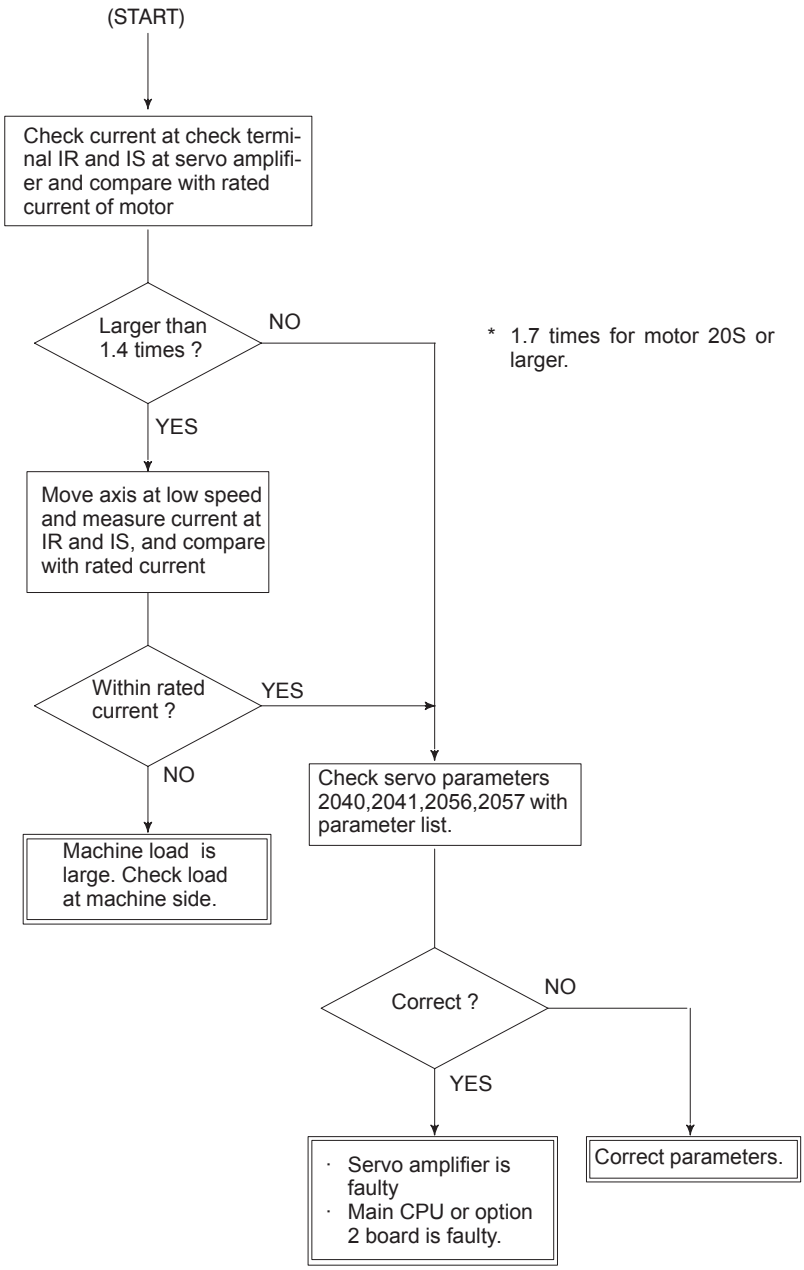
1) Servo amp LED [2] turns on (control power shortage)



2) Servo amp LED [3] turns on (DC power shortage)



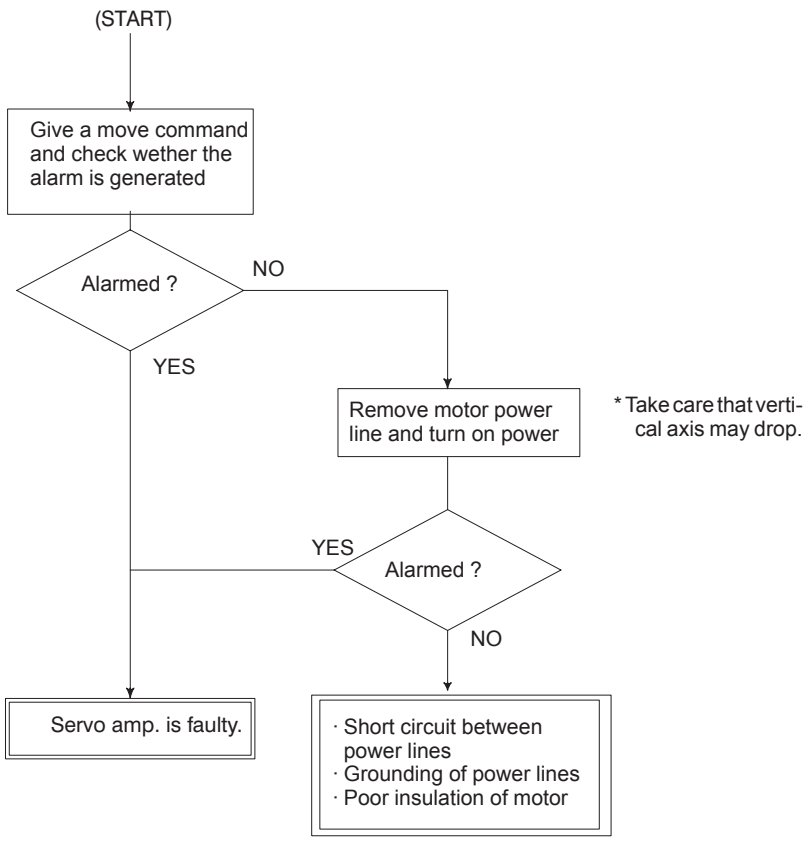
- **#5(OVC):Over current detection by software**



From 1st axis to 4th axis are main CPU board.
5th axis or later are option 2 board.

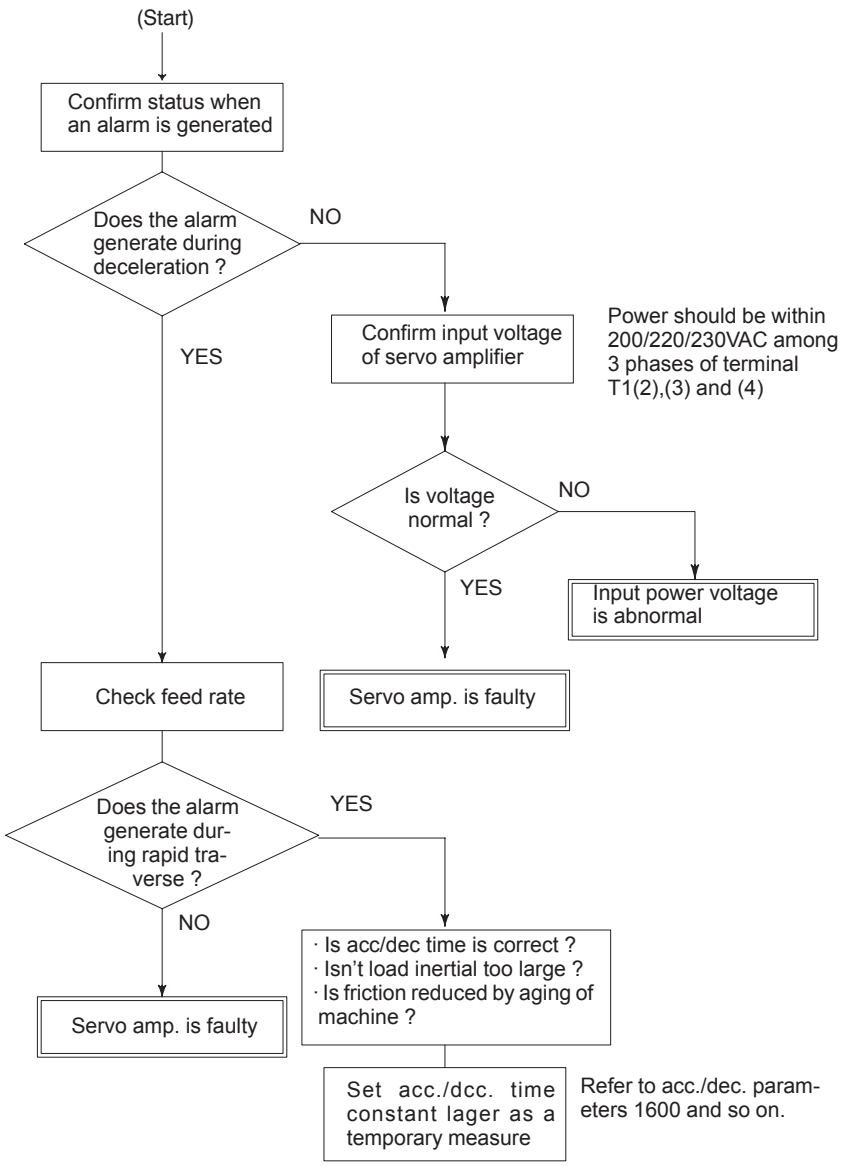
NOTE : When the main CUP board is replaced, all the data in memory is lost.Reset NC data, referring to chapter 3 “input/output of data” .

- **#4(HCA):Abnormal current alarm (Servo amp. LED:[8] lights)**

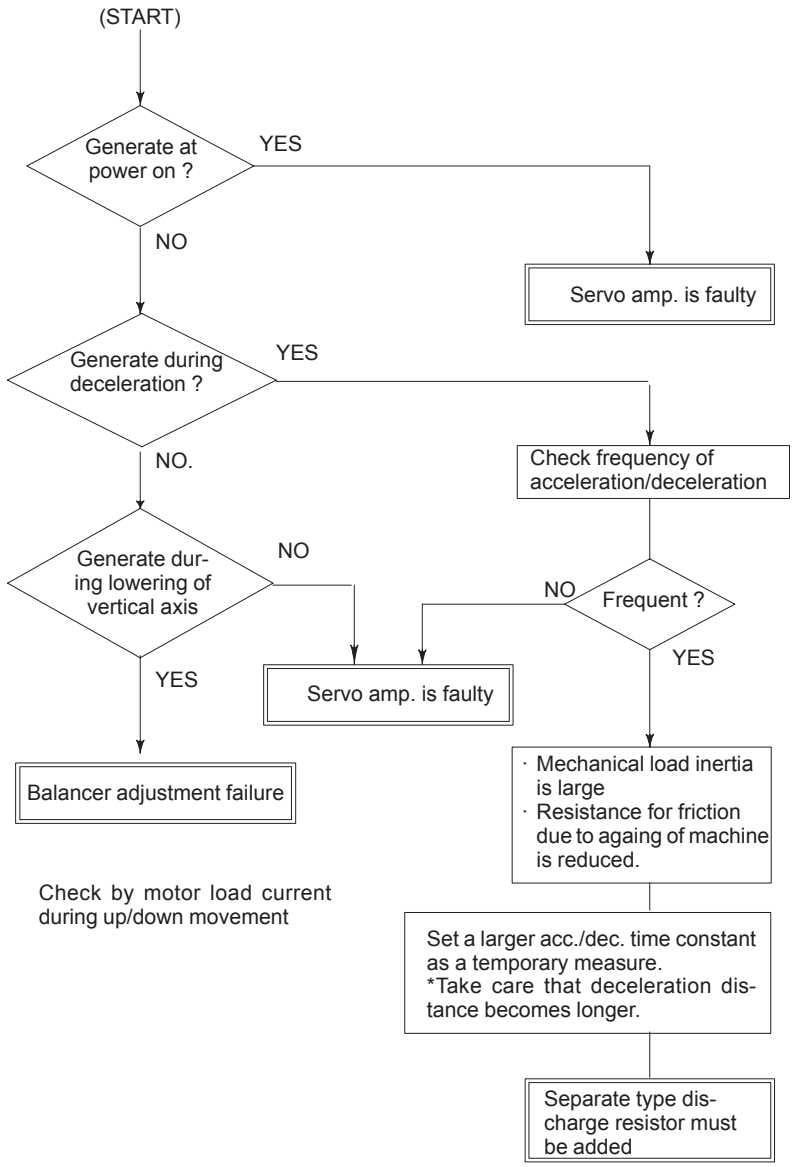


- **#3(HVA):Over voltage alarm (Servo amp.LED [1] lights)**

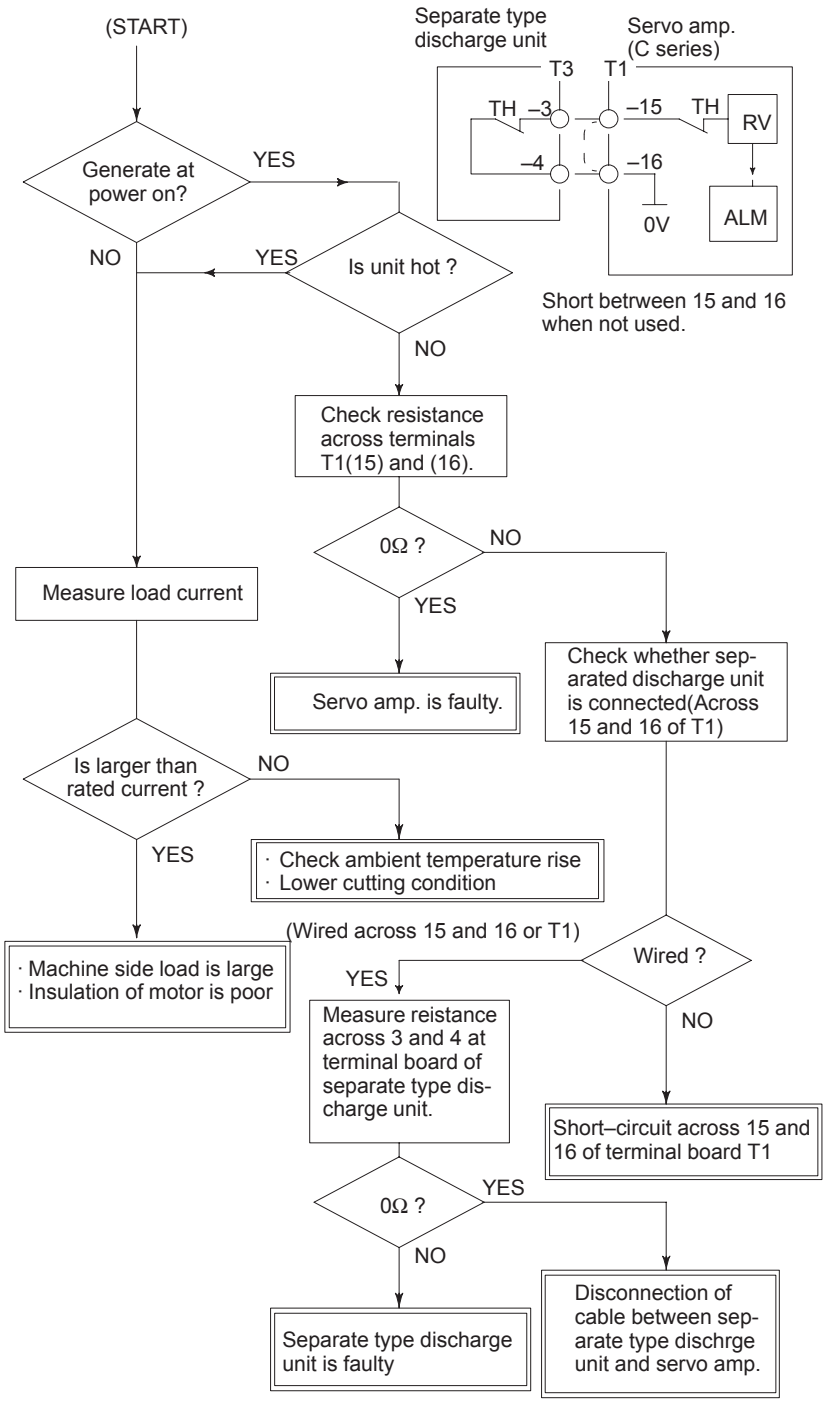
DC voltage in servo amp. is excessive.



- **#2(DCA):Discharge alarm** 1 Servo amp LED 4 lights (discharge control circuit is abnormal)



2 Servo amp LED 5 lights (discharge circuit overheat)



- **#1(FBA):DISCONNECTION ALARM** Position detection signal line is disconnected or short–circuited.

DGN 0201

#7	#6	#5	#4	#3	#2	#1	#0
ALD			EXP				

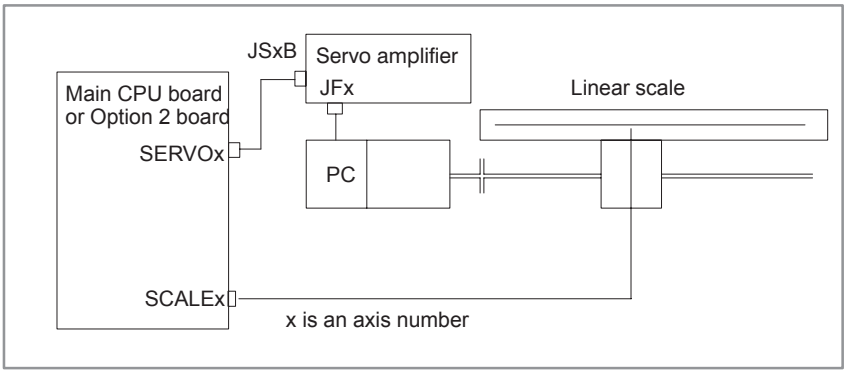
1	–	–	0	Built–in serial pulse coder disconnection	→JF_X
1	–	–	1	Separate type position detector connection	→$SCALE_X$
0	–	–	0	Pulse coder disconnection (software)	Note

NOTE
This alarm is related with full–closed system.

- **Causes**

1 Signal cable is disconnected or short–circuited.
2 Serial pulse coder or position detector is faulty Refer to Notes 1.
3 Main CPU board or option 2 board is faulty. Refer to Notes 2.

CAUTION
1 After the pulse coder is replaced, reference position or machine's standard position is different from former one. Adjust and set it correctly.
2 When the main CPU board is replaced, all the data stored in memory is lost. Set NC data again, referring to chapter 3 "input/output of data".



From 1st axis to 4th axis are main CPU board. 5th axis or later are option 2 board.

- **#0(OFA):Overflow alarm**

causes

1 Wrong setting of servo parameters 1800s.

2 Main CPU (1axis to 4 axes) or option 2 board (5 axes or more)

> **CAUTION**
> When the main CPU board is replaced, all the data stored in memory is lost. Set NC data again, referring to chapter 3 “input/output of data”.

When 1 is displayed at DGN 204

DGN	0204	#7	#6	#5	#4	#3	#2	#1	#0
			OFS	MCC					

#6(OFS): A/D converter used for current feedback in the digital servo is abnormal.

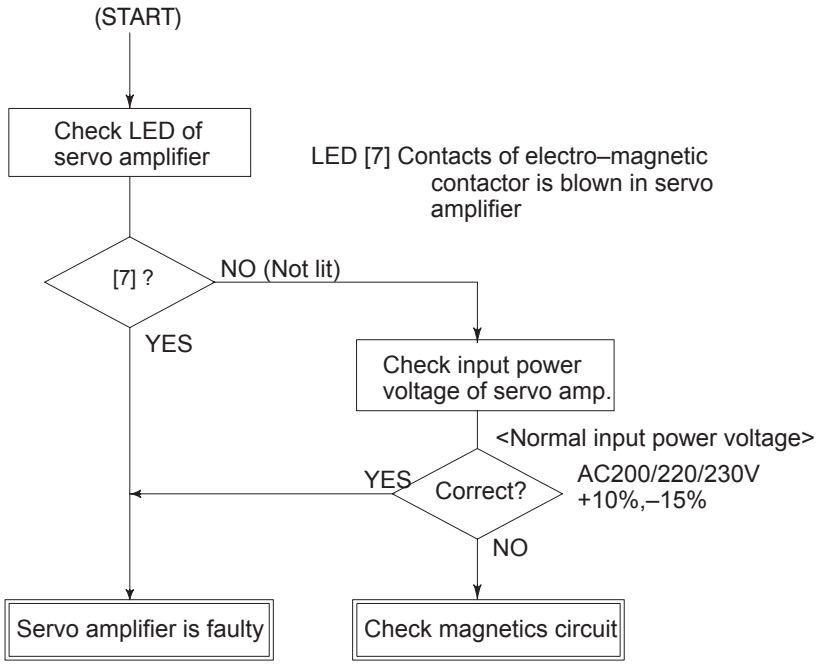
#5(MCC): Contacts of electromagnetic contactor in the servo amp. is blown.→LED 7 lights.

Serial pulse coder C is an incremental pulse coder.

- **#6(OFS):A/D converter is abnormal**

Main CPU board or option 2 board is faulty
When the main CPU board is replaced, all the data stored in memory is lost.
Set NC data again, referring to chapter 3 “input/output of data”.

- **#5(MCC):Contacts of electro–magnetic contactor is blown within servo amp.**



- **LED display**

Display	Meaning	Explanation
	Power off	Power to the servo converter is not supplied.
	NOT READY	Internal MMC (electro–magnetic contactor) is not turned on.
	READY	Internal MMC is turned on and the motor becomes ready.
	HV Excessive voltage alarm	DC voltage for driving main circuit is considerabley high.
	LV5V Control power low alarm	+5V of control power is abnormally low.
	LVDC DC link voltage low alarm	DC voltage for main circuit is extremely low.
	DCSW Abnormal regenerative control circuit	Regenerative discharge energy in short time is large or regenerative discharge circuit is faulty.
	DCOH Excessive regenerative discharge	Average regenerative discharge energy is large or frequency of acc./dec. is large.
	OH Servo amplifier overheat	Lights when thermostat in the servo amplifier functions.
	MCC Electromagnetic contactor	Contacts of electro–magnetic contactor is blown.
	HCL L axis excess current	Lights when a large current flows through the main circuit of L axis.
	HCM M axis excess current	Lights when a large current flows through the main circuit of M axis.
	HCLM Excess current	Lights when a large current flows throught the main circuit of L axis and M axis.

NOTE
1st axis is L, 2nd axis is M.

- **LVDC alarm**

When the electro–magnetic contactor is turned on in the servo amp. or DC voltage for the main circuit becomes low, this LED is lit.
Causes are;

1) Input voltage is insufficient.
2) Contacts of electro–magnetic contactor in servo amp. is poor.
3) Power circuit in servo amp. is abnormal.

- **DCSW alarm**

This alarm is lit when the transistor for regenerative discharging turns on more than 1 second.
Its causes are;

1) Mulfunction of servo amplifier such as regenerative discharge circuit.
2) Regenerative discharge energy is excessive due to cutting conditions.

- **DCOH alarm**

This alarm is lit when regenerative discharge registance is overheated and the thermost operates.
Its causes are ;

1) Average discharge energy is excessive due to frequent acc./dec. or no use of balancer in vertical axis
2) Functioning of a thermostat in the power transformer when thermostat signal TH1 and TH2 are connected.

- **MCC alarm**

When turning on MCC, if the contacts are already on.

- **Check terminals on servo amp.**

When you open the cover of the terminal board, you can see the check terminal below LED.

- **Terminal name and meaning**

Terminal name	Meaning
OV	0V
5V	Control power +5V(+5 ± 0.25)
IRL	R–phase motor current of L axis
ISL	S–phase motor current of L axis
IRM	R–phase motor current of M axis
ISM	S–phase motor current of M axis

- **Current/volt**

Type of unit	A/V	Type of unit	(A/V)	
A06B–6066–H002	1	A06B–6066–H222	1/1	Left side L axis/Right side M axis
A06B–6066–H003	3	A06B–6066–H223	1/3	
A06B–6066–H004	10	A06B–6066–H224	1/10	
A06B–6066–H006	20	A06B–6066–H233	3/3	
		A06B–6066–H234	3/10	
		A06B–6066–H244	10/10	

- **Current waveform**