

- (a) Excessive regenerated power  
Regeneration is impossible. The PSM does not have a sufficient capacity.  
⇒ Check the specification of the PSM.
- (b) The output impedance of the AC power source is too high.  
⇒ Check the power source output impedance.
- (c) Regeneration circuit failure  
Check whether there is an overvoltage at check terminal IR or IS.  
⇒ Replace the wiring board or control printed circuit board.
- (d) IGBT (or IPM) defective  
⇒ Replace the IGBT (or IPM).

### 3.2 SERVO AMPLIFIER MODULE TROUBLESHOOTING

#### 3.2.1 Abnormal Current Alarms (8, 9, A, b, C, d, and E in the LED display)

- (1) Make sure that the following parameters are set to the standard values. If they are not, abnormal current control is performed.

No. 1809	No. 1884	NO. 1954 (15- A) , 1955 (15- B)	
No. 2004    No. 8X04	No. 2006    No. 8X06	No. 2011	No. 8X10
No. 1852	No. 1853	No. 1967	No. 1991
No. 2040    No. 8X40	No. 2041    No. 8X41	No. 2074    No. 8X74	No. 2098    No. 8X98

- (1) Remove the power line wires from the amplifier terminals, and release an emergency stop state.  
If an abnormal current alarm occurs, go to (4).  
If not, go to (3).
- (2) Check for insulation between PE and each of the removed power wires U, V, and W. If insulation is perfect, go to (4). If not, disconnect the power wires from the motor connector. Then check for insulation between PE and each of the U, V, and W terminals on the motor.  
⇒ If there is a short-circuit between PE and U, V, or W of the motor, replace the motor.  
⇒ If insulation is perfect, replace the power wires.
- (3) Connect the power wires. Attach the check board (A06B-6071-K290) to connector JX5 to measure the waveform of the actual current (IR and IS) in the servo amplifier module. Accelerate or decelerate the motor, and measure the actual current (IR and IS) of the amplifier.

If an abnormal current alarm occurs right after an emergency stop state is released, go to (5).

Release an emergency stop state, and start the motor.

Check whether the waveform of the actual current (IR and IS) is a normal sine wave.

⇒ If normal, go to (5).

⇒ If not, replace the amplifier.

- (5) Check whether there is noise on the actual current (IR and IS) waveform.

⇒ If there is no noise, replace the amplifier.

⇒ If there is noise, use a shielding wire, and ground the shielding, or take other countermeasures as required.

- (6) If still there is noise, a probable cause is a defective command cable or a hardware failure in the CNC.

### 3.2.2 IPM Alarms (8., 9., A., b., C., d., and E in the LED display; note these codes are displayed simultaneously with a period.)

- (1) Wait for about 10 minutes. Then release the emergency stop state. If an IPM alarm still occurs, go to (2).

If the cause is IPM overheat, the IPM alarm will not recur. IPM overheat can occur if the ambient temperature is high or the motor is overloaded. Check the operating condition.

- (2) Remove the power wires from the amplifier terminals, and release an emergency stop state.

If the IPM alarm does not recur, go to (3).

If the IPM alarm recurs, the probable cause is the operation of the IPM protective function (for overcurrent or power failure). Replace the amplifier and see.

⇒ If the IPM does not recur, go to (3).

- (3) Check for insulation between PE and each of the removed power wires U, V, and W. If insulation is perfect, go to (4). If not, disconnect the power wires from the motor connector. Then check for insulation between PE and each of the U, V, and W terminals on the motor.

⇒ If there is a short-circuit between PE and U, V, or W of the motor, replace the motor.

⇒ If insulation is perfect, replace the power wires.

- (4) Connect the power wires. Attach the check board (A06B-6071-K290) to connector JX5 to measure the waveform of the actual current (IR and IS) in the servo amplifier module. Accelerate or decelerate the motor, and measure the actual current (IR and IS) of the amplifier.

If an overcurrent alarm occurs right after an emergency stop state is released, go to (5).

Release an emergency stop state, and start the motor.

Check whether the waveform of the actual current (IR and IS) is a normal sine wave.

⇒ If normal, go to (5).

⇒ If not, replace the amplifier.

- (5) Check whether there is noise on the actual current (IR and IS) waveform.

- ⇒ If there is no noise, replace the amplifier.
  - ⇒ If there is noise, use a shielding wire, and ground the shielding, or take other countermeasures as required.
- (6) If still there is noise, a probable cause is a defective command cable or a hardware failure in the CNC.

### 3.2.3 Control Power Supply Undervoltage Alarm (2 in the LED display)

- (1) Check the three-phase input voltage to the amplifier.
  - ⇒ If the voltage is below 0.85 times the rating, adjust it to the rated value.
- (2) Replace the servo amplifier.

### 3.2.4 DC link Undervoltage Alarm (5 in the LED display)

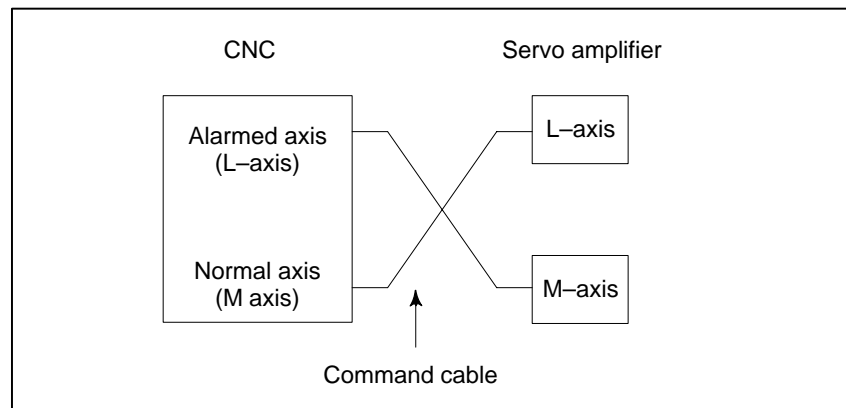
- (1) Check the three-phase input voltage to the amplifier.
  - ⇒ If the voltage is below 0.85 times the rating, adjust it to the rated value.
- (2) Replace the servo amplifier.

### 3.2.5 Fan Stopped Alarm (1 in the LED display)

- (1) Make sure that the fan is not clogged up.
- (2) Check the power line connector of the fan for secure connection.
- (3) Replace the fan or servo amplifier as required.

### 3.2.6 Current Conversion Error Alarm

- (1) Exchange the command cable with the cable for the axis on which no alarm has occurred. If the alarm occurs on the same axis, go to (3).
  - If the alarm occurs on the new axis, go to (2).
- (2) The command cable is defective. Replace it.
- (3) Exchange the command cables according to the diagram here. When switching the CNC on, do so in an emergency stop state.
  - If the alarm recurs on the same axis, go to (5).
  - If the alarm occurs on the other axis, go to (4).



- (4) The servo amplifier is defective.
- (5) The module for current conversion in the CNC is defective.