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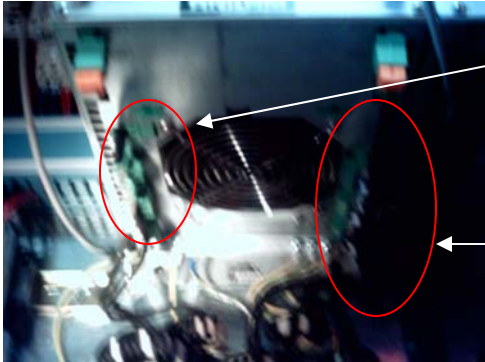http://www.acergroup.com
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Axis Lag Over Max Error
1. Check power for driver "X31" (L1, L2, L3). Must be 390-410V 3-phase even.
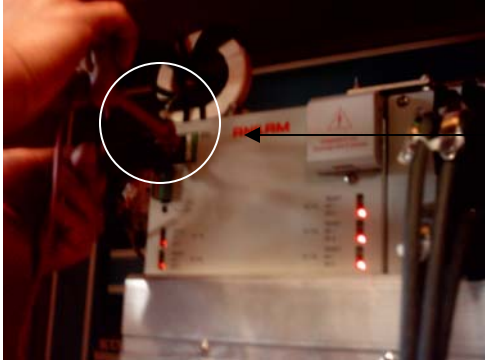
X31
L1, L2, L3 input power line

2. Check control cable and wire connection. Turn of machine.
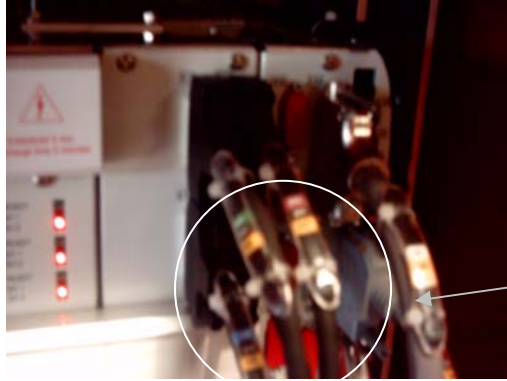
Spindle X80 (U, V, W)

X81, X82, X83, X84

Check servo power cable.
X axis
X81 (U1, V1, W1)
Y axis
X82 (U2, V2, W2)
Z axis
X83 (U3, V3, W3)
Spindle axis
X80 (U, V, W)
4th axis
X84 (U9, V9, W9)
Check encoder cable

X15, X16, X17, X18

X axis X15
Y axis X16
Z axis X17
4th axis X18
Spindle axis X19

3. Check motor power/encoder cable. If the lag over max error always happens on any axis (X, Y, Z or spindle) when you run the machine, go directly to check the connection of the power cable and encoder cable. Make sure it will connect.

   If you are not sure which axis has the problem, please check the following:
   1. Deactivate the spindle motor:
   Software Options →2. Setup Utility, Press Enter →1. Machine Constants (MC), Press Enter → Press F7 (hard key) "Find" → type "2903", Press Enter → MC2903 will display "Spindle Motor Type:" (for example, SM075C) **write down the displayed model number!!**, Press Enter → Password: **Z48** press Enter → highlight None, Press Enter.
   Press F10 (Exit) twice → back to Software Options → Press F1, F2, F9, F10 to reboot machine → Press Enter twice to reach main screen → Press Servo Reset → Home Machine
   Make simple loop program for X, Y, Z movement test, for example Loop 20; X6; X0; End.

   If error goes away, then we know the problem occurs on the spindle.
   If error still occurs,

   2. Deactivate the Z axis (MC2203) and test:
   Perform the same process as 1.

   If error goes away, then problem occurs on the Z axis, if not,

   3. Deactivate the Y axis (MC 2103) and test.
   If error goes away, then problem occurs on Y axis, if not,
   the only problem will be the X axis.

   After we determine the problem, check the power and encoder cable and make

sure it is not loose.
Y Axis

Z Axis

X axis

FYI: If spindle still can run up to certain rpm speed, for example 1200 rpm, but it fails when it exceeds this speed, "Axis lag over max" error message displays, the problem will be the control's CPU. If the spindle does not work at all, follow the same procedure for other axis.

4. Check motor and motor cable:
1. Turn on machine. Activate all motor (make sure right motor model number on

each axis, for example SM075 on spindle). Test machine to see if all machine functions are working properly.

2. If problem still exists, turn off machine. Turn off machine. Disconnect phoenix connector (lose two screws and unplug) for the problem axis, for example Y axis X82, use ohmmeter (use smallest indicator) check every two legs (U2-V2/U2-W2/V2-W2). The number should not be more than 10% different.

Disconnect motor cable and use ohmmeter to check the three legs. Every two legs should be even. If not even, problem is the motor. If even, the problem is the cable.
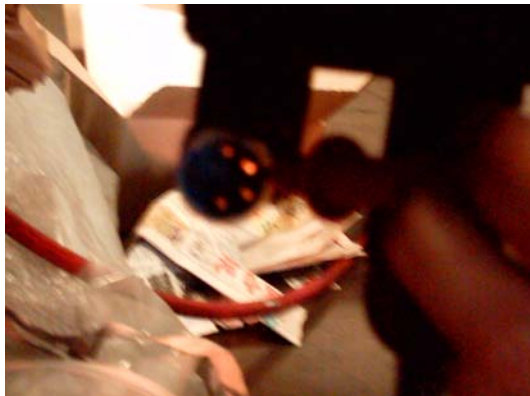
If the problem disappears after Step 1, the problem will be the driver and encoder. Check encoder first by unplugging X16 (Y axis) on control side and motor side, then plug new encoder cable directly to X16 and motor to test. If problem disappears, encoder problem. If problem still exists, the only problem is to change the driver.

Quick Reference

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┌─────────────────────────────┐       ┌──────────────────────────┐
│ Is the power supply (390-   │  No   │ Correct power supply     │
│ 410V) L1, L2, L3 to driver  │───────│ Problem solved           │
│ X31 even?                   │       │                          │
└─────────────────────────────┘       └──────────────────────────┘
              │ Yes
┌─────────────────────────────┐       ┌──────────────────────────┐
│ Is the cable and wire       │  No   │ Connect wire and cable   │
│ connection connected        │───────│ Problem solved           │
│ properly?                   │       │                          │
└─────────────────────────────┘       └──────────────────────────┘
              │ Yes
┌──────────────────┐  No  ┌─────────────────────┐  Yes  ┌──────────────────────┐
│ Check axis one   │──────│ Is the problem      │───────│ Go directly to       │
│ at a time by     │      │ identified to a     │       │ specific axis        │
│ deactivating     │      │ specific axis?      │       │                      │
│ motor (follow    │      └─────────────────────┘       └──────────────────────┘
│ step 3) and      │
│ pinpoint problem.│
└──────────────────┘
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┌──────────────────────────────┐      ┌──────────────────┐  No  ┌──────────────┐
│ Check motor and motor cable.  │ Yes  │ Check motor to   │──────│ Change motor │
│ Is motor cable and motor the  │──────│ see if working   │      │ Problem      │
│ problem?                       │      │ properly         │      │ solved       │
└──────────────────────────────┘      └──────────────────┘      └──────────────┘
              │ No                            │ Yes
┌──────────────────┐  No  ┌──────────────────┐      ┌──────────────────────┐
│ Problem is       │──────│ Check driver and │      │ Motor cable problem, │
│ encoder cable.   │      │ encoder. Is      │      │ change motor cable   │
│ Change encoder   │      │ encoder working  │      │                      │
│ cable.           │      │ properly?        │      └──────────────────────┘
└──────────────────┘      └──────────────────┘
                                │ Yes
                          ┌──────────────────┐
                          │ Problem is driver.│
                          │ Change driver.    │
                          └──────────────────┘
```