



HS - Auxiliary (Aux) Axis Alarms

Auxiliary Axis - Alarm Descriptions and Troubleshooting Guidelines

There are two types of alarms generated in relation to the Aux Axis control.

354 AUX AXIS DISCONNECT - communication error between the aux axis pcb and the processor.

398 AUX AXIS SERVO OFF – caused by motor, encoder, switch, cable or voltage error.

The front panel display is to be used on Horizontal Machine Centers to diagnose 354 and 398 alarms. DO NOT PRESS RESET once an alarm has been generated.

Open the electrical cabinet door without shutting the power off.

Connect the ribbon cable to the bottom port of the Aux Axis PCB, connector P6.

The cable connector is keyed so it can only go in one way.

Connect the opposite end of the cable to the Aux Axis Display.

Alarm codes will be displayed on the Aux Axis Display.

See the following page for a list of alarm descriptions and troubleshooting guidelines.



AUX AXIS DISPLAY PART # 93-4210

If the alarm is intermittent, leave the front panel display connected to the Aux Axis PCB until the alarm occurs.

AUX AXIS alarms can be viewed two different ways, with the Aux Axis Display or the operator's pendant. To use the operator's pendant do the following:

DO NOT PRESS RESET once an alarm has been generated.

Change setting 7 PARAMETER LOCK to OFF.

Enter DEBUG mode.

Enter the MESSAGES page (press the ALARM/MESSAGE button 2 times)

A code will appear on the MESSAGES page, i.e. WO7

Note: If alarm codes do not appear on the MESSAGES page or are unreadable (garbled data) it will be necessary to use the Aux Axis Display to view the alarm codes.

Auxiliary Axis - Alarm Codes and Descriptions

DEBUG MODE DESCRIPTION

WO1 = POWER WAS JUST TURNED ON OR FAILED PREV.

Check the ribbon cables from the Aux Axis PCB to the processor. If the ribbon cables are routed incorrectly a communication problem between the processor and the Aux Axis PCB will occur. Note: see the following page for correct cable routing guidelines.

WO2 = SERVO FOLLOWING ERROR TOO LARGE. Check the encoder for contamination. Inspect the electrical connection at both ends of the tool changer motor cable.

WO3 = EMERGENCY STOP. The e-stop button was pressed or an e-stop condition occurred.

WO4 = HI LOAD. Check for mechanical obstruction in the tool changer gearbox and motor. Rotate the tool carousel by hand to make sure that there is no binding. Make sure that the tool holders are the correct weight.

WO5 = REMOTE RS-232 COMMANDED OFF. Inspect the ribbon cable and voltage to the Aux Axis PCB. Measure the 115vac on the Aux Axis PCB from the main transformer; must be 115vac minimum. Inspect the fuse and fuse holder that are in-line with this cable.

WO6 = AIR OR LIMIT SWITCH OR MOTOR OVERHEAT. Make sure that the tool changer motor is not hot. Check for mechanical obstruction and overweight tools.

WO7 = Z CHANNEL FAULT. Faulty encoder or encoder cable.

WO8 = OVER CURRENT LIMIT/STALLED OR PCB FAULT. Check for mechanical obstruction in the tool changer gearbox. Make sure that the tool changer drive belt is not over tightened. Ohm out the tool changer motor cable. Check pins G to F and G to H, should be open. F to H should read 2.5 to 5 ohms. Inspect all electrical connections on the Aux Axis PCB and the tool changer motor cable.

WO9 = ENCODE ES. Z channel missing. Faulty encoder or encoder cable. See WO7.

WOA = HI VOLT. Measure the incoming voltage to the Aux Axis PCB. it must be 115 vac. See WO5

WOB = CABLE. Check the cable from the tool changer motor to the Aux Axis PCB. Inspect the cable for loose connections at both ends.

FRONT PANEL DESCRIPTION

POR ON = Same as WO1

SER ERR = Same as WO2

E-STOP = Same as WO3

HI LOAD = Same as WO4

RS-232 = same as WO5

AIR-HOT = Same as WO6

ENCODER = Same as WO7

HI CURR = Same as WO8

ENCODES = Same as WO9

HI VOLT = Same as WOA

CABLE = Same as WOB

Auxiliary Axis - Additional Alarms and Troubleshooting

354 alarms, or RS-232 communication problems, are typically caused by noise interference. The primary source of noise interference is the servos. In order to minimize noise on the RS-232 serial port, re-route the ribbon cables between the main processor and the Aux Axis PCB. Route the cables straight up the left hand side of the CNC control to the processor stack. Disconnect both shield connections on the RS-232 ribbon cables also. One of the connectors is on the chassis of the Aux Axis PCB assembly. The other is located at the processor stack with the shields for the relay ribbon cables. Cover the shield connectors to ensure that they don't inadvertently contact any active circuitry. These simple alterations significantly improve the quality of the signals and will minimize and possibly eliminate RS-232 communication problems.

Additional Alarms and Troubleshooting Guidelines:

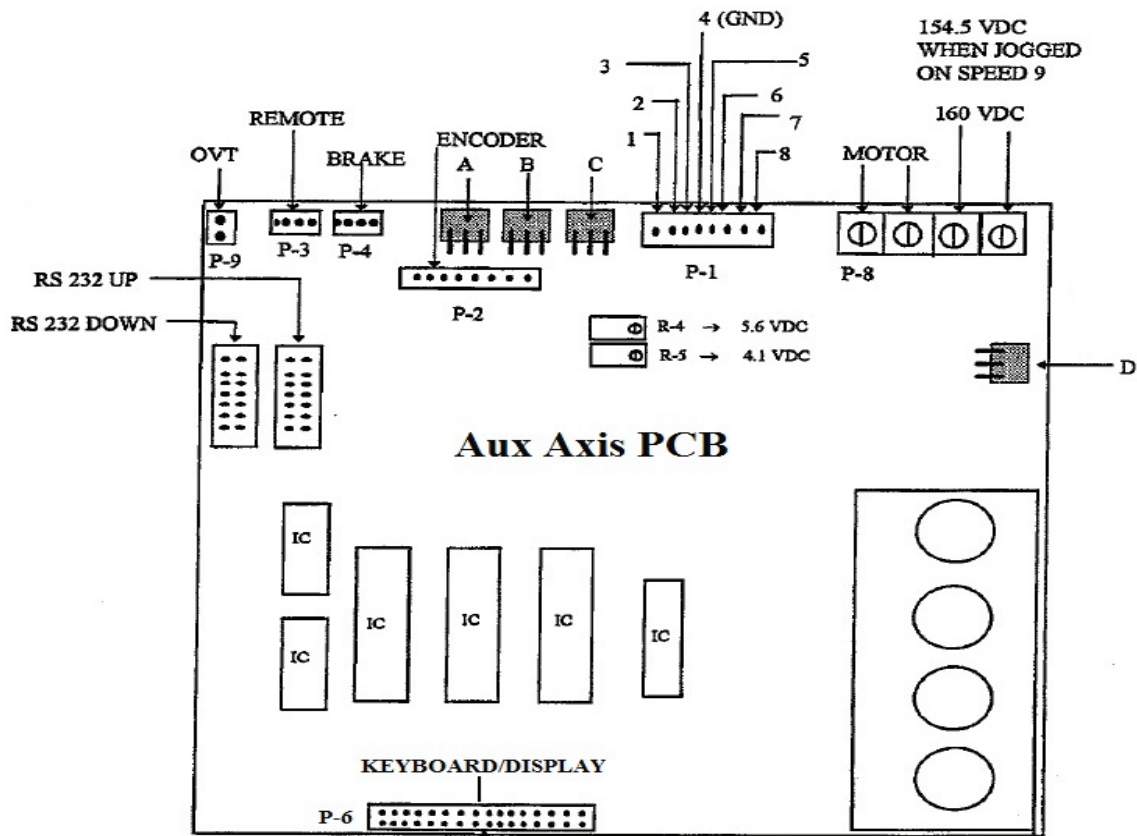
E-7 / LOW VOLT

1. Measure the line voltage to the Aux Axis PCB. it must be 115 VAC +/- 5%.
2. Measure the voltage on R4 and R5 potentiometers (pots). R4 should measure 4.3 VDC, R5 should measure 6.15 VDC. If either of the two pots can not be adjusted to the specified readings, replace the Aux Axis PCB.

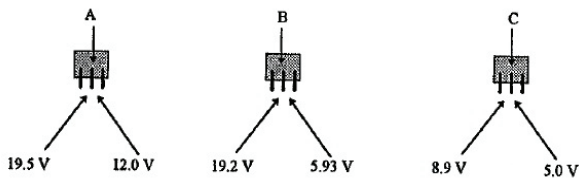
OFF A / HI VOLT

1. Measure the line voltage to the Aux Axis PCB. it must be 115 VAC +/- 5%.
2. Inspect the thermostat and connection at OVT. The OVT connector is located on the back left corner of the Aux Axis PCB or the bottom of the Power PCB on older Aux Axis assemblies.
3. Measure R7 pot on the Power PCB. Note: the power to the Aux Axis assembly must be off for several minutes before making adjustments, test between 4.5V and ref. the reading should be 750-760 ohms. If adjustment is not possible, the Power PCB must be replaced.

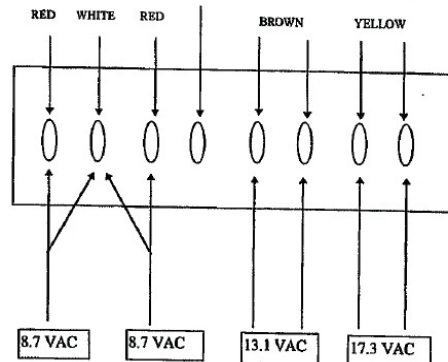
Auxiliary Axis PCB - Electrical Diagram



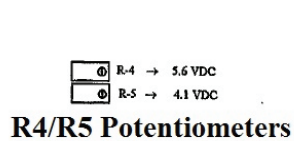
A/B/C Connectors



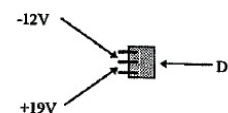
P1 Connector



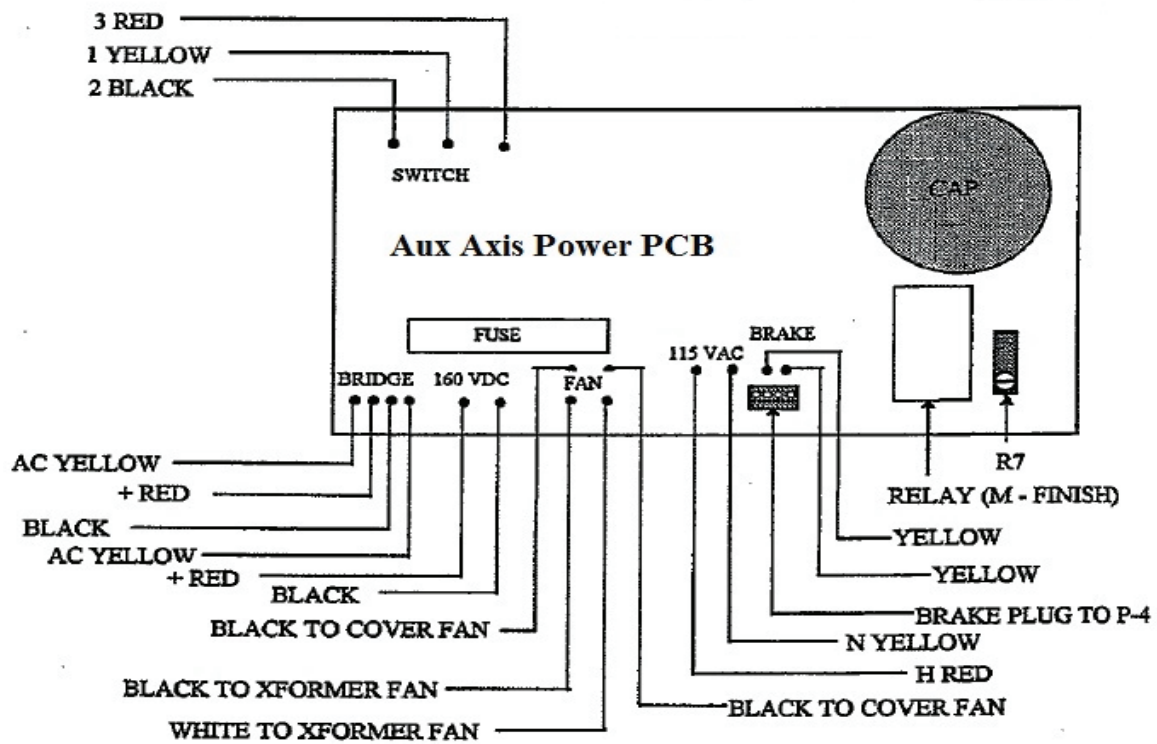
Aux Axis PCB Voltage Chart



D Connector



Auxiliary Axis Power PCB - Electrical Diagram



Auxiliary Axis - Tool Changer Fuses

