

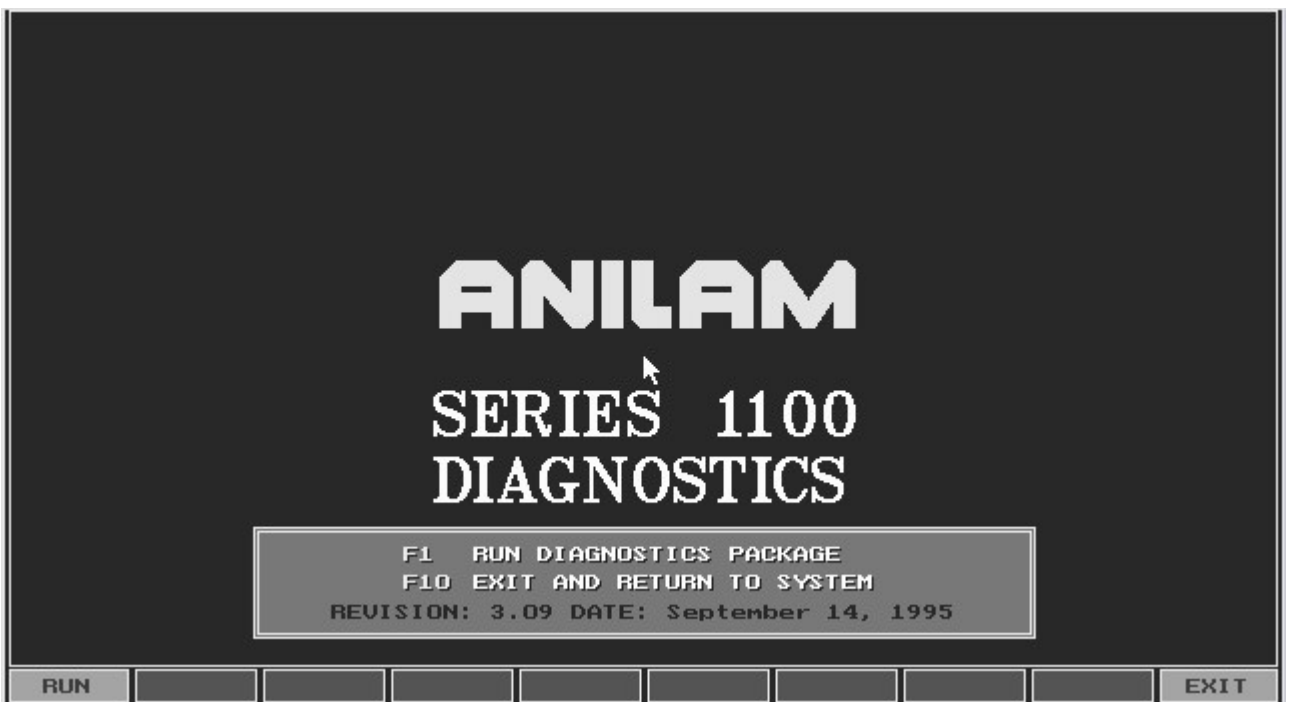
Balance 1100

Step 1. For an M2 motion board system.

- 1) Turn off the 110 VAC to the control
- 2) For a double box system continue, for a single box system M3 motion board go to **step 2.**
- 3) Open the door to the servo box and the door to the computer and remove the cover on the computer.
- 4) Turn on the 110 VAC power and turn back on the 3 phase disconnect switch, take a crescent wrench and rotate the shaft clockwise about a $\frac{1}{4}$ turn until the disconnect switch is on.



- 5)
- 6) Boot up to the software options screen. You have two possible options, either Diagnostics or Motion Setup and Testing.
- 7) If you have the Diagnostics choice continue but if you see Motion Setup and Testing go to **step 3.**
- 8) For Diagnostic setup you will need to get your Diagnostic disk and put it in to the floppy drive and then select Diagnostics from the menu and follow the directions on the screen to boot on the disk.
- 9) If you don't have a diagnostic disk and need to make one click on this link **[DIAGNOSTIC DISK](#) and then follow the directions on the screen.**
- 10) After the disk has been created then do the following: put this disk into the floppy drive and then select Diagnostics from the menu and follow the directions on the screen to boot on the disk.
- 11) Press the F1 key (RUN) diagnostics.



12)

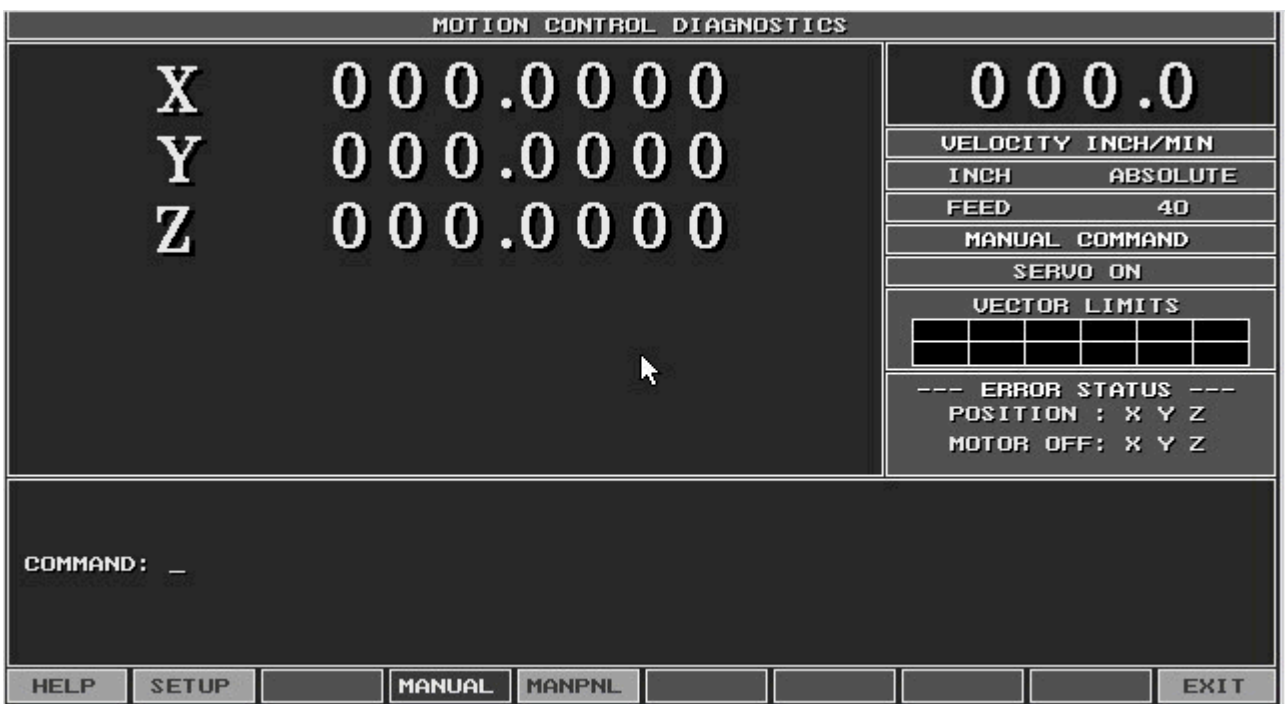
13)

After the screen comes up move over to motion and press the Enter key.

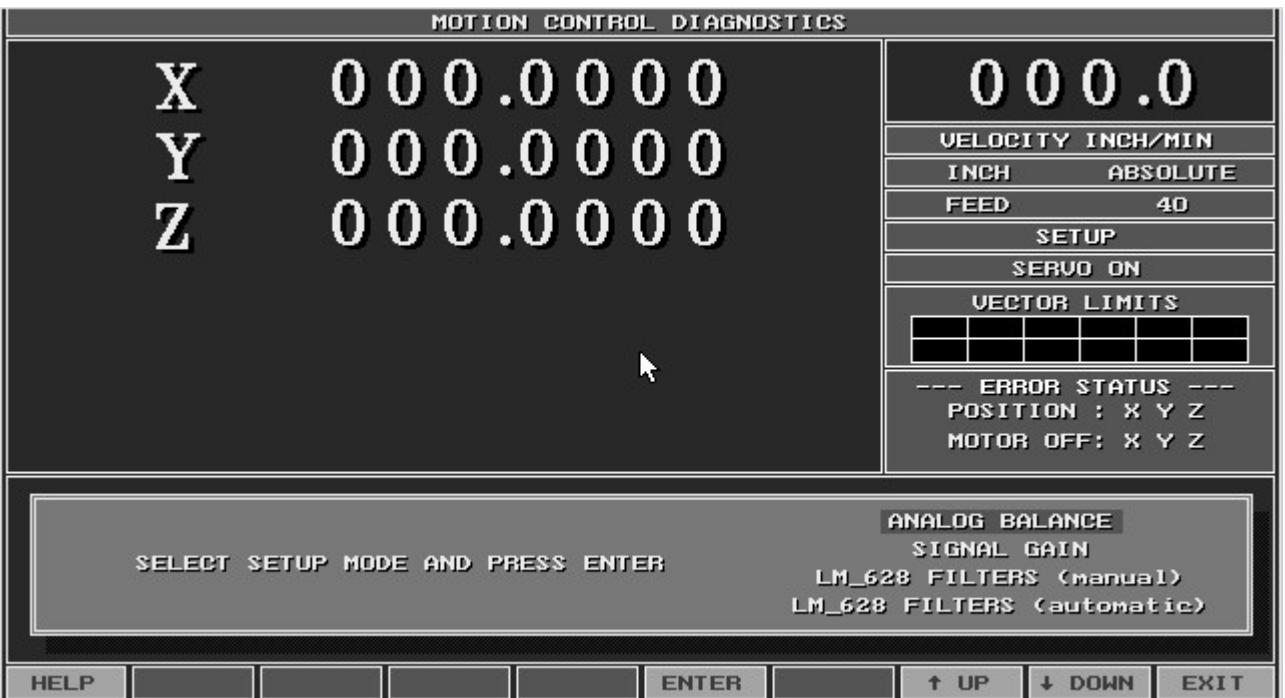


14)

Press F2 (SETUP)



15) Select Analog Balance and press the Enter key.



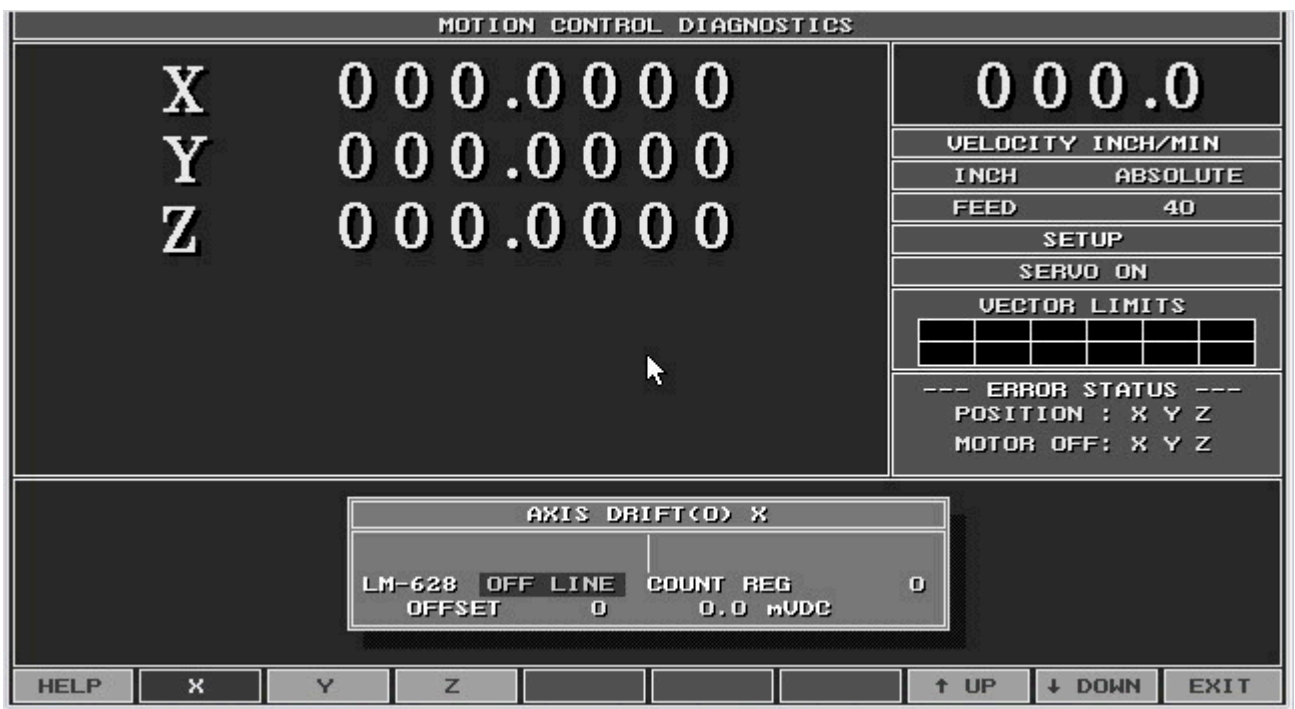
16)

17) Press F2 (X)



18)

19) Look at the screen below, there is a vertical line on the screen which has just appeared. There could be bars to either the left or right side. If there are bars, then you need balance the drive board and possibly the motion board.



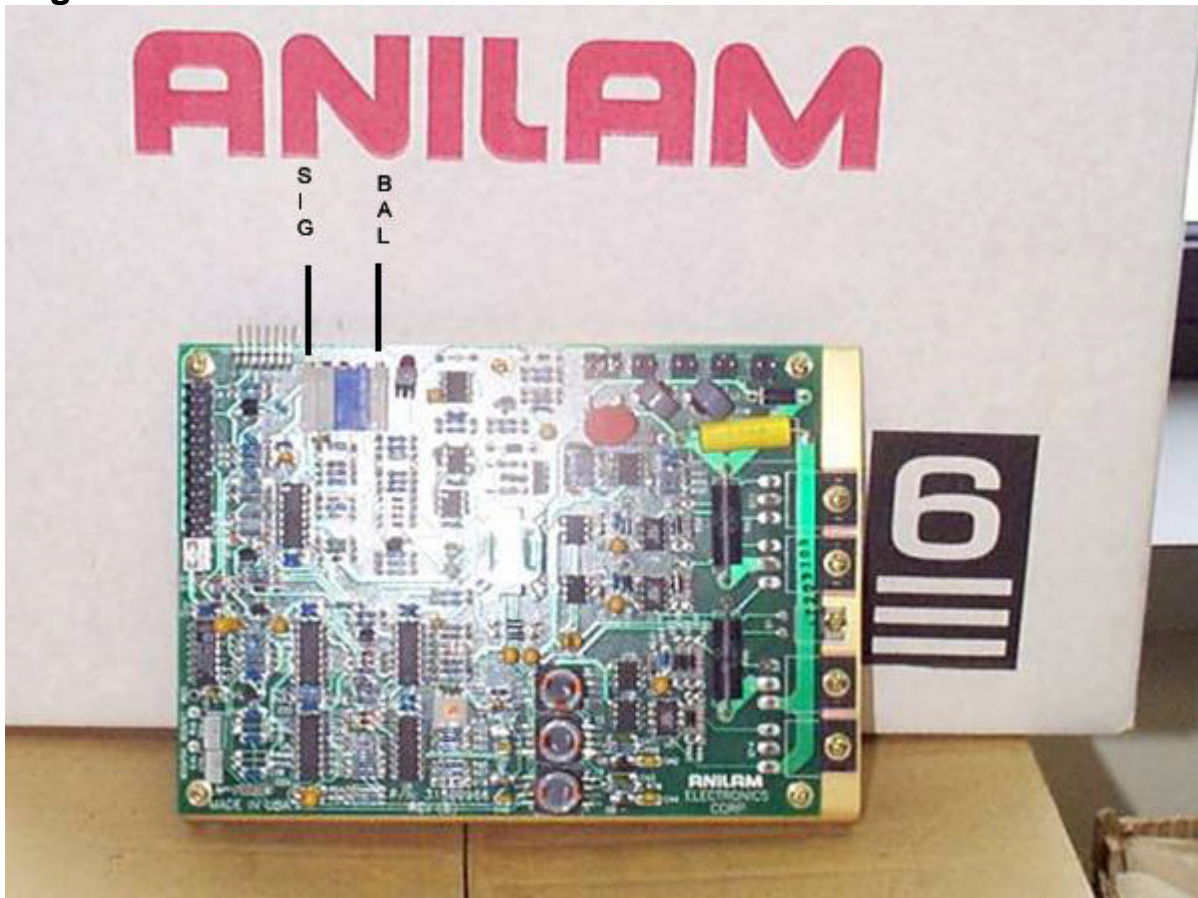
20)

21)

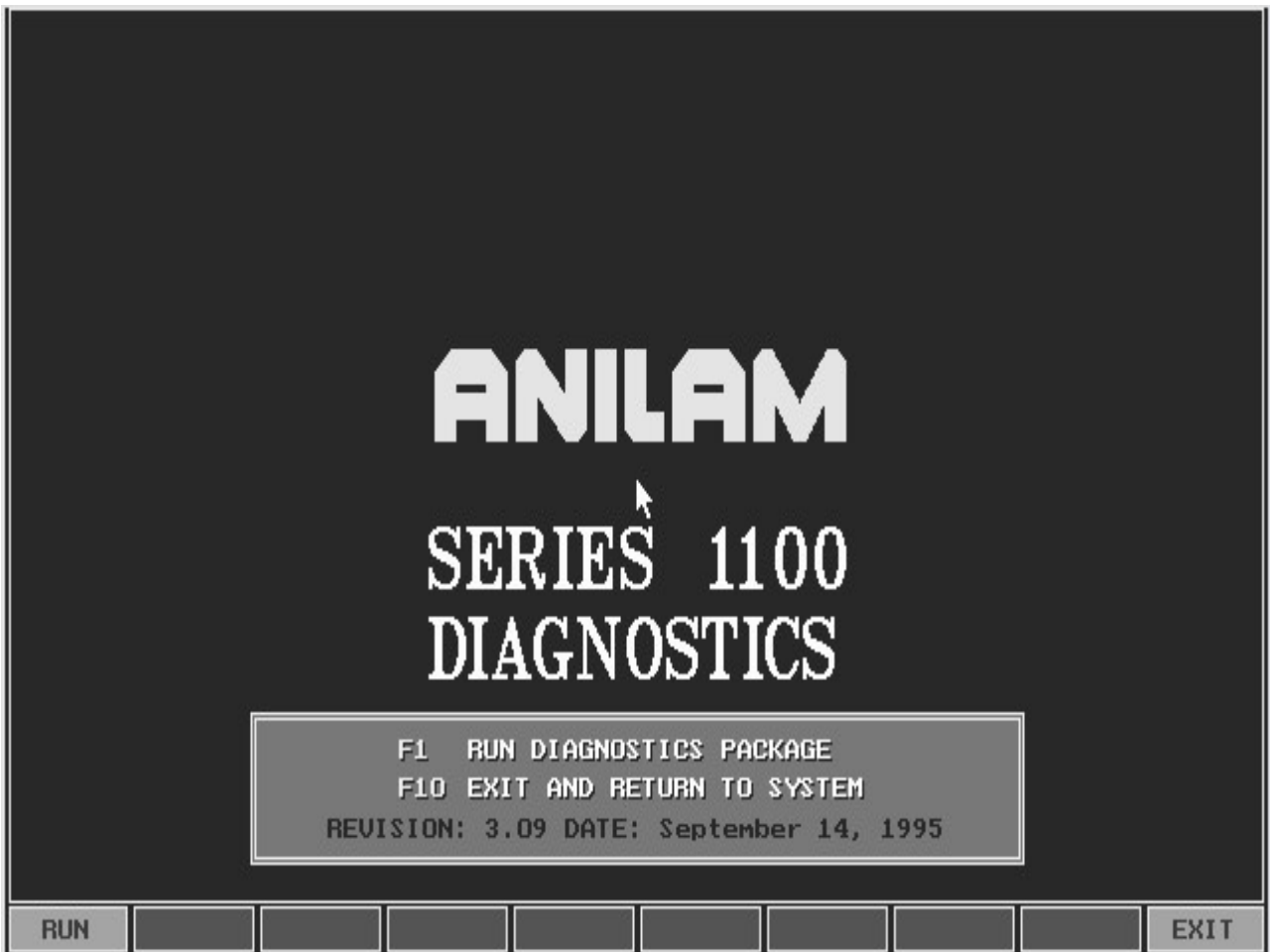
To check to see what needs to be adjusted do the following:

- Take out your voltmeter and put it on D.C. millivolts.
- Look at the drive board part # 31500966S figure 1.

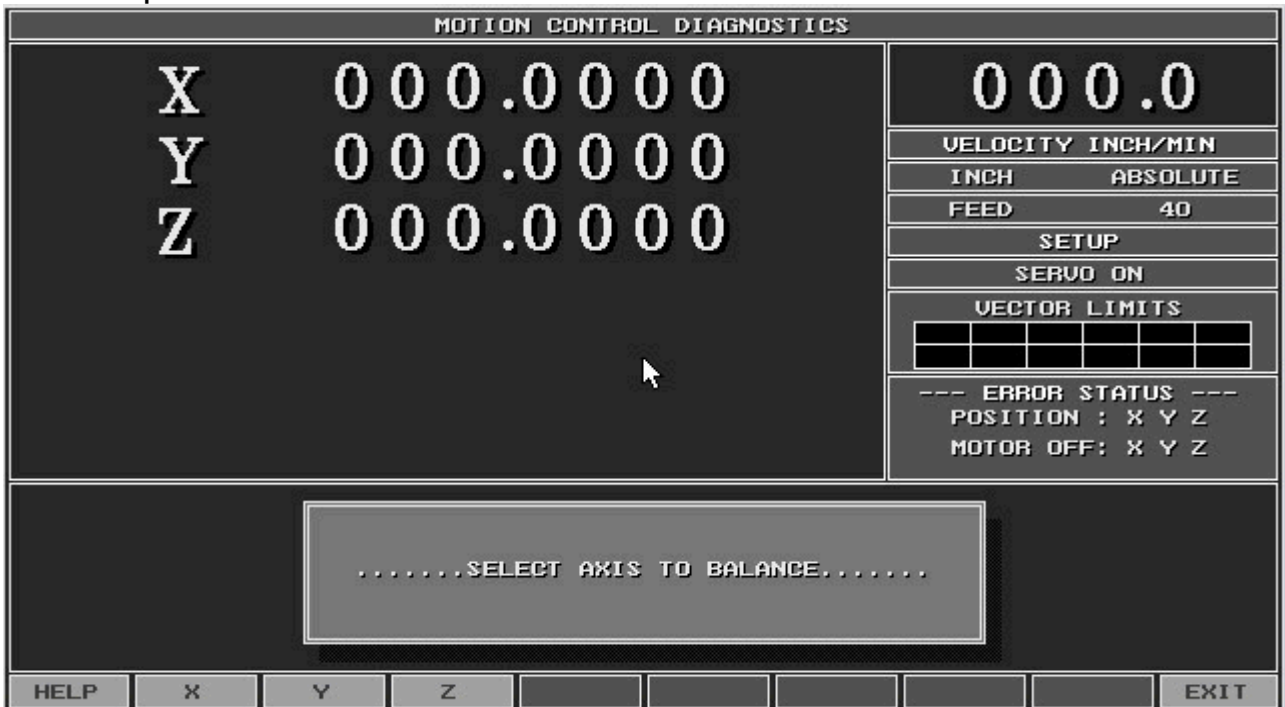
Figure 1



- On the front edge of the drive board usually at the bottom of the board there is a row of 7 test points.
- Pin 1 is common, pin 2 is the signal from the motion board. Check the voltage across pins 1 and 2 of the drive board. The value needs to be adjusted to get 0 millivolts D.C.
- If you check pins 1 and 2 and it is not 0, leave your leads touching pins 1 and 2 and walk over to the computer cabinet. In the computer there is a motion board. On the motion board there are pairs of potentiometers. Locate R5A = X, R5B = Y, and R5C = Z.



- f.
- g. In this example you are checking the X axis. If pins 1 and 2 on the X drive board are not equal to 0, then adjust R5A to get it down to 0.
- h. After pins 1 and 2 are adjusted to 0, then move your meter lead to pins 1 and 3 on the drive board. We once again are looking for 0. If pins 1 and 3 do not have 0 as the value, then locate on the drive board the potentiometer labeled BAL, usually the top potentiometer. Adjust the BAL pot. Until you obtain a 0 value. Once both Pins 1 and 2 and pins 1 and 3 are adjusted to 0, then what you should see is just the vertical line on the screen without any bars to the left or right of the vertical line. See the next photo in the axis drift window.



- i.
- j. Press the F3 (Y) axis button and move your meter leads over to the Y axis drive board.



- k.
- l. Repeat steps 21 a – l.
- m. Adjust R5B for the Y axis adjustment from the motion board.
- n. After Y axis is adjusted to 0. Press the F4 (Z) axis button and move your meter leads over to the Z axis drive board.

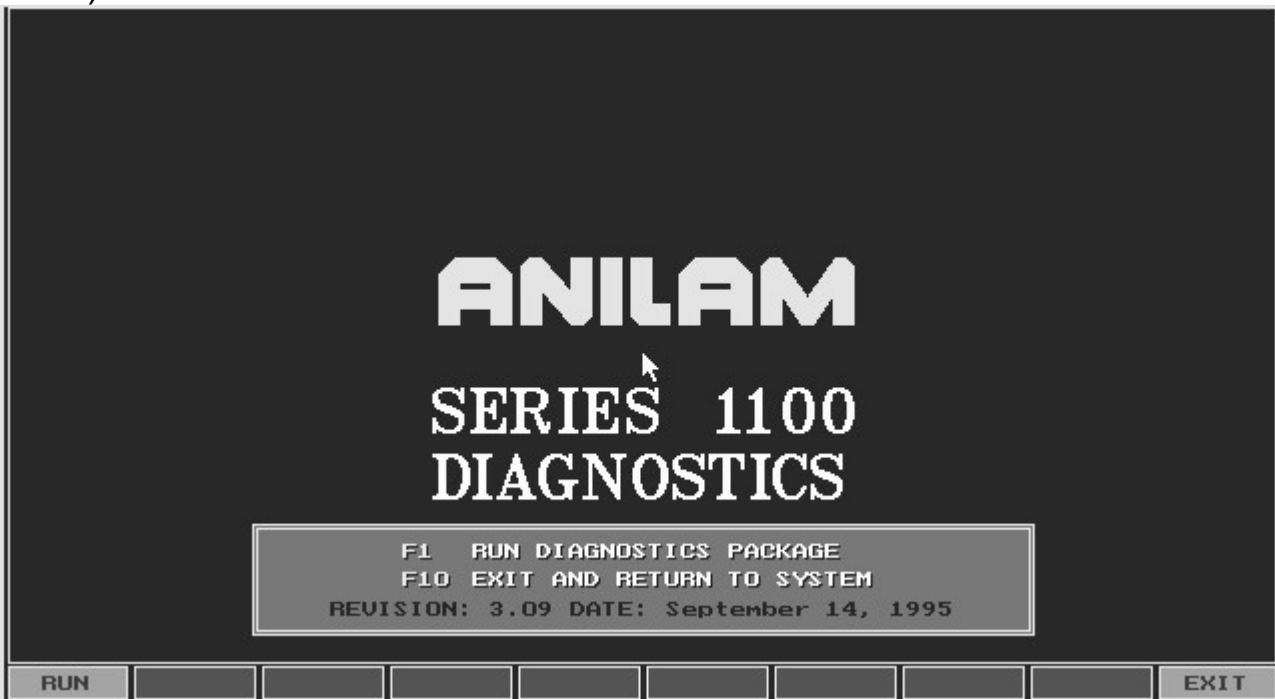


- o.
- p. Repeat steps 21 a – p.
- q. Adjust R5C for the Z axis adjustment from the motion board.
- r. After Z axis is adjusted to 0. Press the F10 (EXIT) key 1 time, you are done with the balance procedure.
- s. After all axes have been set to 0, the next step is to check the signal adjustment. Click on the link in order to open the next document **[1100-signal adjustment](#)**.

Step 2. For single box system with M3 motion board do the following:

- 1) Open the servo box door.
- 2) Remove the cover from the computer.
- 3) There usually is a bypass switch mounted on the edge of the servo box. Gently pull on the shaft so the switch will lock into the out position.
- 4) Put in the diagnostic disk into Drive A, and turn on the 110 VAC power. Select Diagnostics from the menu and follow the directions on the screen to boot on the disk.
- 5) If you don't have a diagnostic disk and need to make one click on this link **[DIAGNOSTIC DISK](#)** and then follow the directions on the screen.
- 6) After the disk has been created then do the following: put this disk into the floppy drive and then select Diagnostics from the menu and follow the directions on the screen to boot on the disk.
- 7) Press the F1 key (RUN) diagnostics.

8)

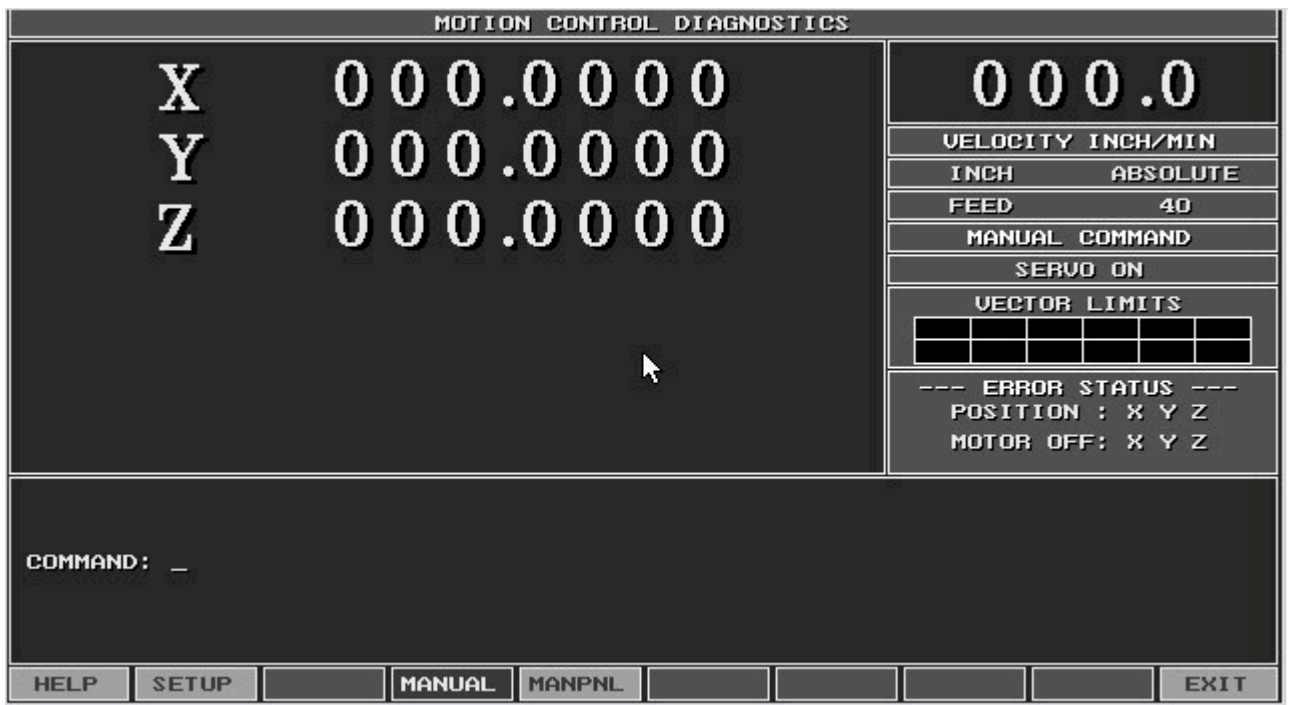


9) After the screen comes up move over to motion and press the Enter key.

10)



11) Press F2 (SETUP)



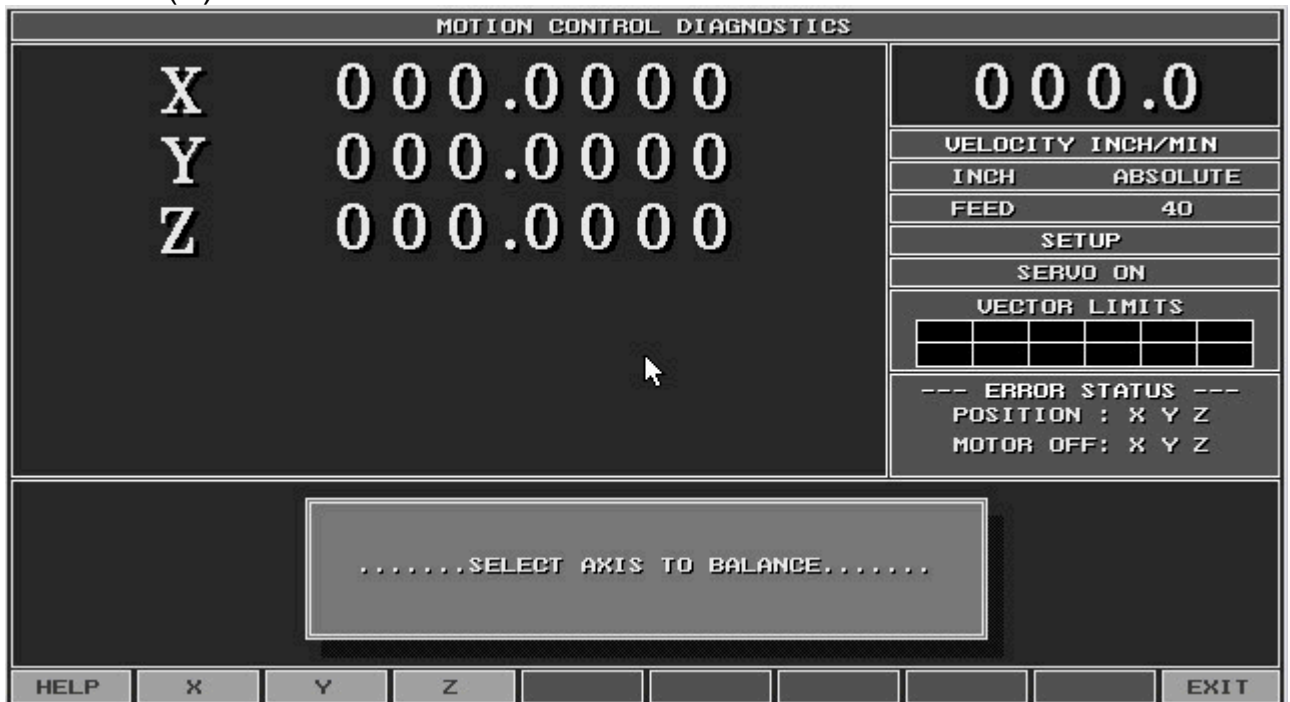
12)

Select Analog Balance and press the Enter key.



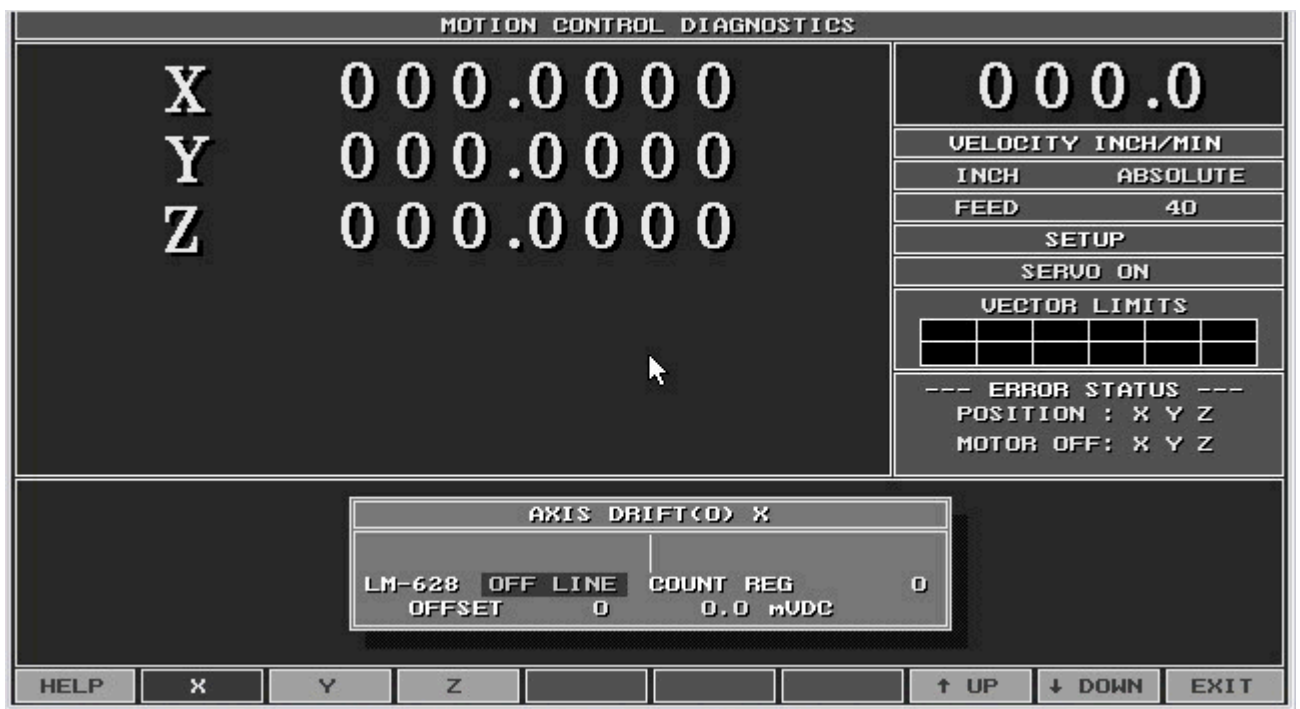
13)

Press F2 (X)



14)

15) Look at the screen below, there is a vertical line on the screen which has just appeared. There could be bars to either the left or right side. If there are bars, then you need balance the drive board and possibly the motion board.



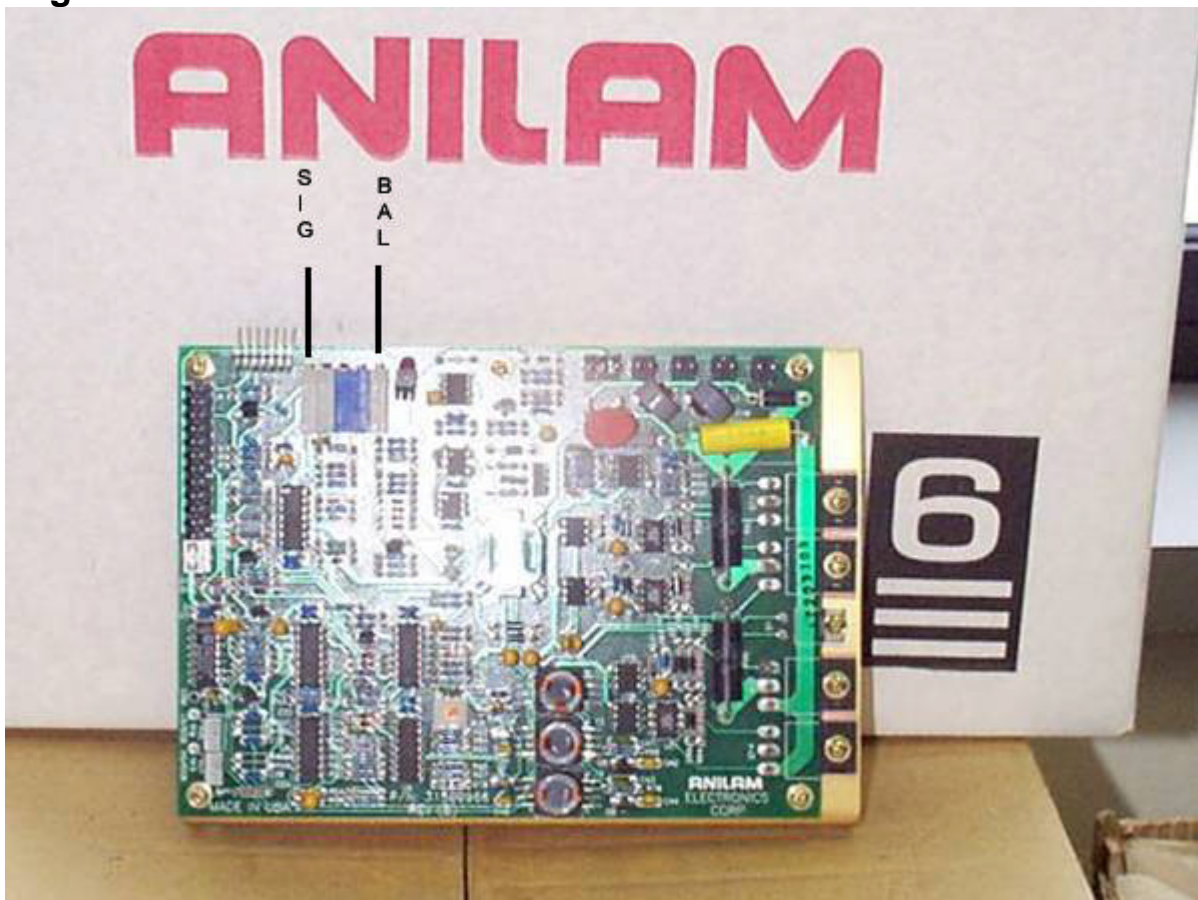
16)

17)

To check to see what needs to be adjusted do the following:

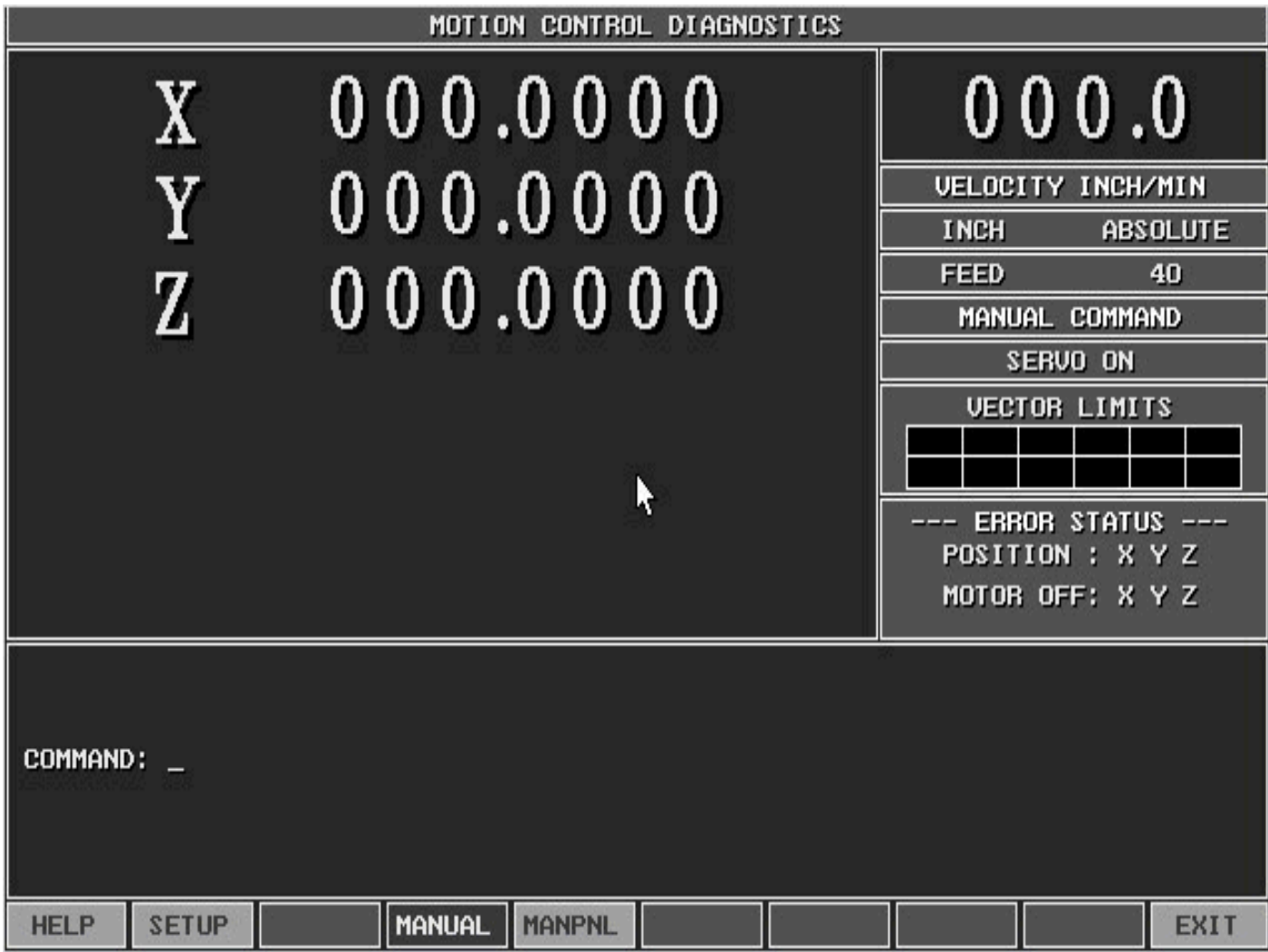
- a. Take out your voltmeter and put it on D.C. millivolts.
- b. Look at the drive board part # 31500966S figure 1.

Figure 1

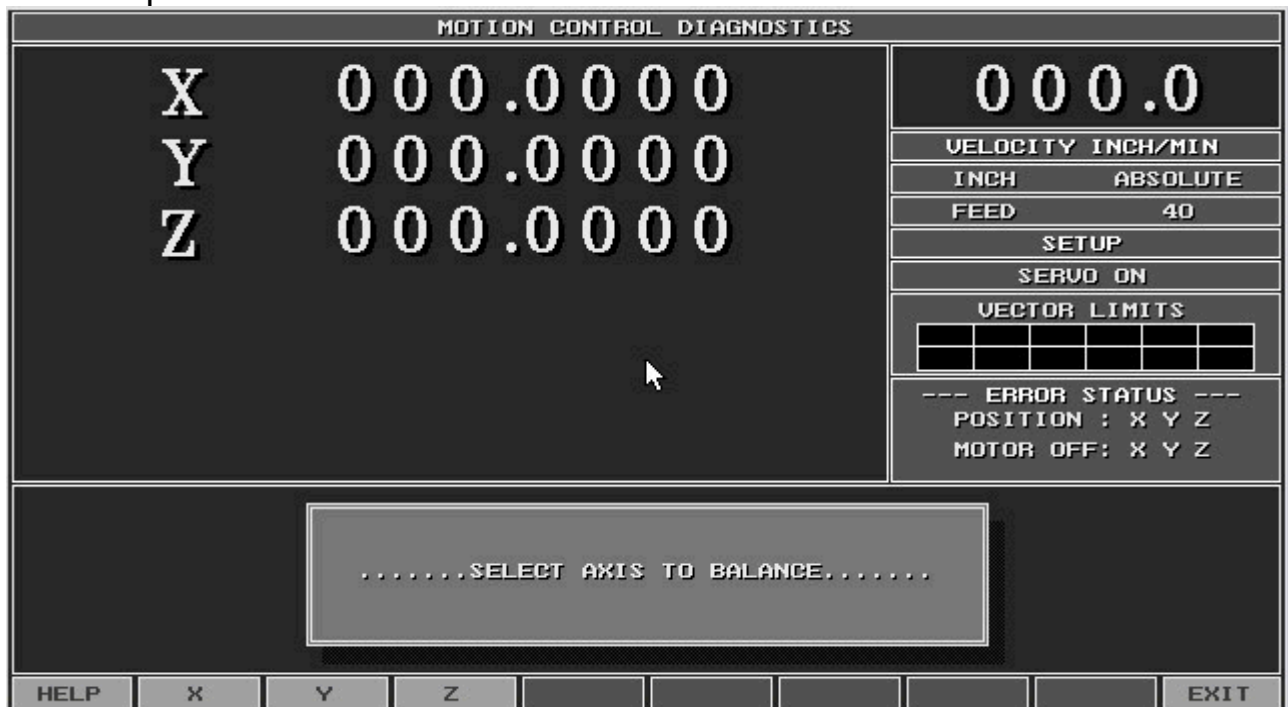


- c. On the front edge of the drive board usually at the bottom of the board there is a row of 7 test points.
- d. Pin 1 is common, pin 2 is the signal from the motion board. Check the voltage across pins 1 and 2 of the drive board. The value needs to be adjusted to get 0 millivolts D.C.
- e. If you check pins 1 and 2 and it is not 0, leave your leads touching pins 1 and 2 and walk over to the computer cabinet. In the computer there is a motion board. On the motion board there are pairs of potentiometers. Locate R5A = X, R5B = Y, and R5C = Z.
- e. If you check pins 1 and 2 and it is not 0, leave your leads touching pins 1 and 2. In the computer there is a motion board. On the motion board there are pairs of potentiometers. Locate R5A = X, R5B = Y.

f.



- g. In this example you are checking the X axis. If pins 1 and 2 on the X drive board are not equal to 0, then adjust R5A to get it down to 0.
- h. After pins 1 and 2 are adjusted to 0, then move your meter lead to pins 1 and 3 on the drive board. We once again are looking for 0. If pins 1 and 3 do not have 0 as the value, then locate on the drive board the potentiometer labeled BAL, usually the top potentiometer. Adjust the BAL pot. Until you obtain a 0 value. Once both Pins 1 and 2 and pins 1 and 3 are adjusted to 0, then what you should see is just the vertical line on the screen without any bars to the left or right of the vertical line. See the next photo in the axis drift window.



- i.
- j. Press the F3 (Y) axis button and move your meter leads over to the Y axis drive board.

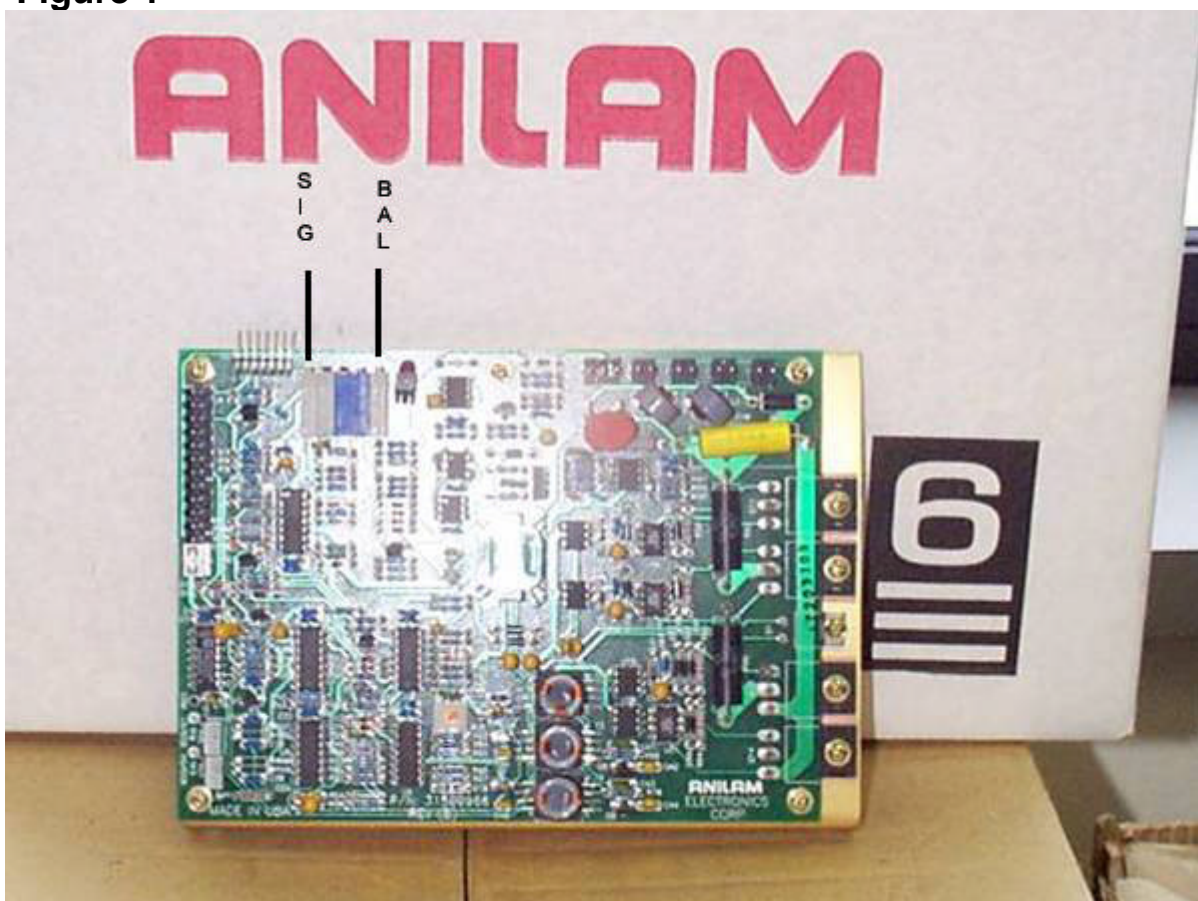


- k.
- l. Repeat steps 18 a – m.
- m. Adjust R5B for the Y axis adjustment from the motion board.
- 19) After Y axis is adjusted to 0. Press the F10 (EXIT) key 1 time, you are done with the balance procedure.
- 20) After all axes have been set to 0, the next step is to check the signal adjustment. Click on the link, to open the next document **1100-signal adjustment.**

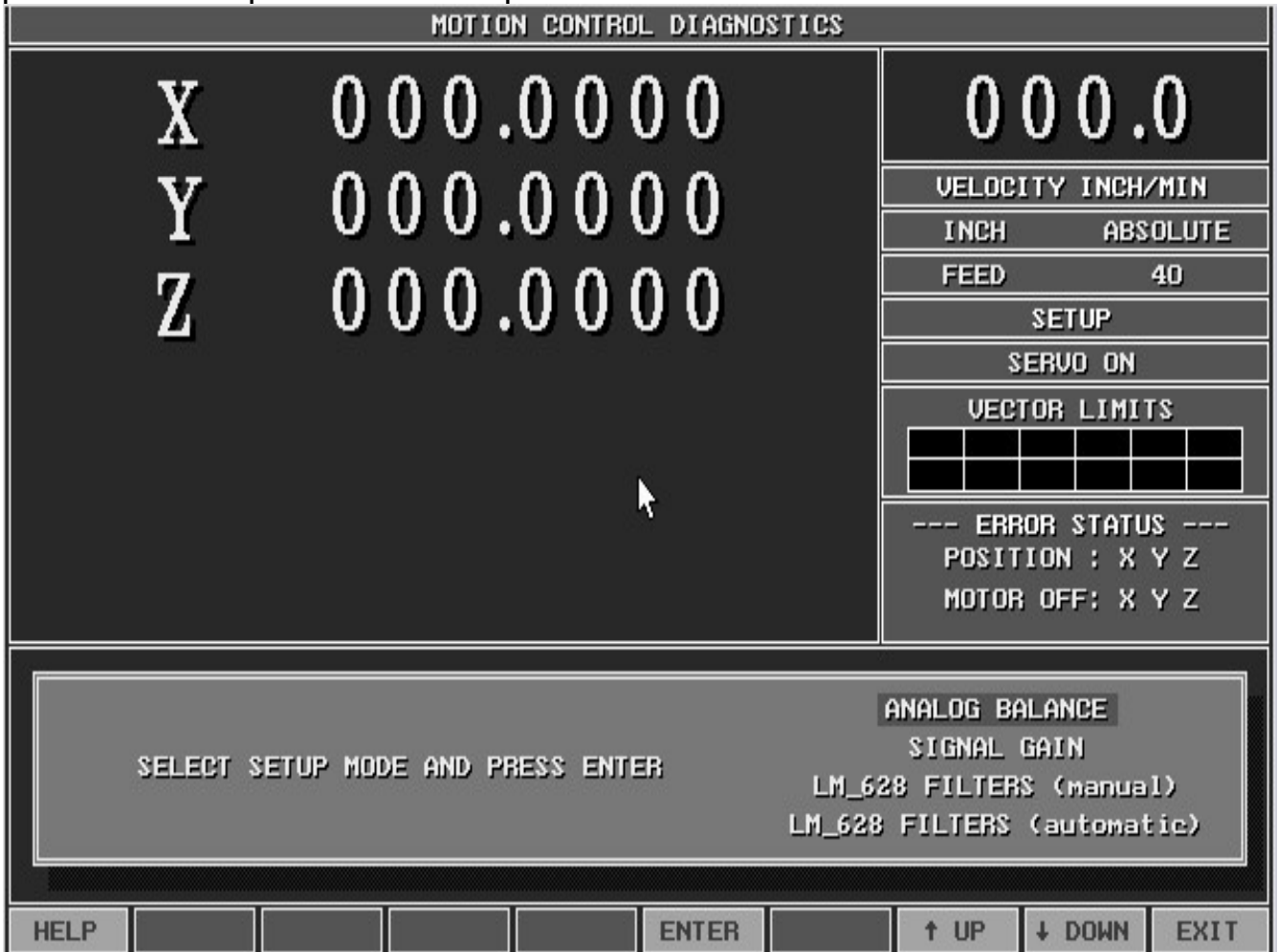
Step 3. For either the M4 or M5 motion board testing do the following:

- 1) Move down to the Motion Setup and Testing screen and press the Enter key.
- 2) Turn on your servos, pull out the Emergency stop button and press the Reset button.
- 3) Press the X key on the main CNC key board. In the top left hand corner it must say active axis X.
- 4) Next press the F6 (Balance) key.
- 5) Type in the password Y10 and press the Enter key.
- 6) Press the Start key.
- 7) To check to see what needs to be adjusted do the following:
 - a. Get out your voltmeter and put on D.C. milivolts.
 - b. Look at the drive board part # 31500966S figure 1.

Figure 1



- c. On the front edge of the drive board usually at the bottom of the board there is a row of 7 test points.
- d. Pin 1 is common, pin 2 is the signal from the motion board. Check the voltage across pins 1 and 2 of the drive board. The value needs to be adjusted to get 0 milivolts D.C.
- e. If you check pins 1 and 2 and it is not 0, leave your leads touching pins 1 and 2 and in the computer cabinet there is a motion board. On the motion board there are 4 potentiometers please view the picture below!



- f.
- g. Adjust the X potentiometer on the DSP motion board until your meter shows 0.
- h. Move your meter leads to Pins 1 and 3 on the drive board. If you don't have 0 adjust the potentiometer on the drive board labeled BAL.
- i. After both pins 1 and 2 and pins 1 and 3 on the drive board have been adjusted to 0 press F4 (Manual) key, to cancel the test.
- j. On the CNC key board press the Y axis key. In the top left corner it should now say Active axis Y!
- k. Repeat **step 3-3** through step 3-7i.
- l. After both pins 1 and 2 and pins 1 and 3 on the drive board have been adjusted to 0 press F4 (Manual) key, to cancel the test.
- m. On the CNC key board press the Z axis key. In the top left corner it should now say Active axis Z!
- n. Repeat **step 3-3** through step 3-7i.
- o. After all axes have been set to 0, the next step is to check the signal adjustment. Click on the link, to open the next document **1100-signal adjustment.**