Running Belt Adjustments in the *Preventive Maintenance* chapter. Then continue with step 17.

17. **Attach the motor cover.**

   A. Lower the motor cover and in position and install the two Phillips head screws that hold it in place.

Error Codes

Cybex provides error code descriptions for your information. Cybex recommends that these errors be addressed by a qualified service technician. These codes notify you of a problem condition and errors which jeopardize safety will shut the treadmill down. The codes also help to indicate the part of the treadmill most likely to be causing the problem.

ERROR 1:	No Speed Signal at Startup
ERROR 2:	Excessive Current Draw
ERROR 3:	Loss of Speed Signal
ERROR 50:	Overspeed (stored as ERR 6)
ERROR 70:	Loss of NOVRAM Information (stored as ERR 7)

If you have a problem that interrupts an important operational area of the treadmill, you may see one of the above error codes displayed in the control panel. If an Error Code is generated during operation, the treadmill's drive motor will stop. In order to restart the treadmill, the Error Code must be cleared by cycling the power to the machine by switching the ON/OFF switch to "OFF" for five seconds and then switching it back "ON" again. Should a code reappear soon after cycling off, then on again, report the problem to your Cybex dealer, authorized Cybex service representative or directly to Cybex Technical Support.

ERROR 1: No Speed Signal at Startup
This error code usually occurs only during start-up and indicates that the computer in the control panel is not receiving any indication of motor speed.

To isolate the source of this problem, you need to determine whether the drive motor tried to start up and did rotate or whether it never came on at all.

If the drive motor (and running belt) rotates, even if only for a second or so, the error code usually indicates that the speed sensor is malfunctioning. The quick way to check this is to remove the motor cover and the front panel to witness the SPEED LED on the motor control board. If it blinks when the flywheel is rotated by hand, the problem is most likely the console cable. After that, suspect the lower board and then the display board. This signal can also be seen on a diagnostic LED of the display board.

If the drive motor (and running belt) does not rotate at all, the problem is more difficult to diagnose. First, suspect the power relay and check it by going into diagnostics, C18, and press the **v** elevation button in conjunction with the **SPEED +** button. This will toggle the relay on/off. You should be able to hear the relay toggle and note as well that the value in the center window reads "1." If it reads zero, the problem is most likely the console cable.

If none of these prove to be the problem, have a qualified service technician check the wiring for wear or abrasion and also inspect the motor brushes. Any arcing, pitting or burning of the brushes, or a brush that is less than .438" (7/16"/11.13mm) indicates the need for brush replacement. The tightness of the brush cap and brush holder mount in the drive motor housing should also be checked. ***NOTE:*** *There are two lower board fuses which allow power to the display and to the motor drives. The upper display is not likely to light up at all if one or both of the fuses need to be replaced. Have a qualified service technician replace these only with equivalent value fuses.*

ERROR 2: EXCESSIVE CURRENT DRAW
This error code is generated by exceeding the current limit of the motor drive system for two seconds. The error is generated to help prolong the life of the treadmill and alert the owner to a potentially damaging situation. Most common occurrences of this are high belt/deck friction due to wear or contamination, a worn motor, or a breakdown of the choke. Problems in the drive motor brush area, such as worn, pitted or arcing motor brushes, a loose drive motor brush cap, or a loose drive motor brush holder can also cause this error code to be generated.

Another source of this problem could be excessive friction between the deck and belt, usually caused by a lack of routine belt/deck cleaning (see Chapter 5), or by a worn deck.

A third cause for this code could be a defective choke or a poor connection at the choke assembly.

Last, the failure of an electronic component in the motor control or loss of magnetism in the drive motor permanent magnet could also generate this error code.

ERROR 3: LOSS OF SPEED SIGNAL
This error code occurs after the treadmill has successfully started and indicates that the computer in the display control panel has lost the motor speed signal from the speed sensor. The causes for this error are similar to those listed for Error 1.

ERROR 50: OVERSPEED
This error code indicates a problem with the speed control circuitry. This error is stored as ERROR 6 but displayed as ERROR 50.

It can occur if the treadmill recognizes a discrepancy in the actual belt speed vs. the speed set at the control panel. If the actual speed of the belt is 1 mph (1.6 kph) over the set speed for 0.2 seconds or 2 mph (3.2 kph) below the set speed for 2 seconds, this error code will be displayed.

If the speed attempts to increase, it may be because of a defect in the power supply circuitry to the drive motor, the speed sensor, or the filter capacitor.

If the speed attempts to decrease, it is most often because a person is pushing on the belt. Or it may be because of a defect in the drive motor, the speed sensor, or a worn running deck.

If either of these conditions exist, call your local Cybex dealer, authorized Cybex service representative or directly to Cybex Technical Support. An authorized Cybex technician can usually detect the source of the problem with a service visit.

Error 70: LOSS OF NOVRAM INFORMATION
This error code indicates a problem with the nonvolatile random access memory (NOVRAM) contents. This chip is located on the DDM. Its contents may have become lost or destroyed. Among other data, this chip holds the accumulated miles and speed information. You can reset the NOVRAM by turning the treadmill off and then on again, but you may lose all the accumulated data. Should the problem recur, you need to replace the NOVRAM chip.

Diagnostic Tests

These tests display status information about the treadmill to help you isolate the cause of a problem or to monitor accumulated usage data. Some of the tests also give quantitative information (such as motor current readings and elevation encoder counts) to help you further evaluate the machine's condition.

C1: PROGRAM REVISION LEVEL
C2: ACTUAL SPEED
C3: CURRENT DRAW
C4: LED TEST
C5: OVERLAY TEST
C6: CSAFE PORT CHECK
C7: TONE GENERATOR CHECK
C8: SPEED SENSOR COUNT
C9: INCLINE SENSOR
C10: TOTAL MILEAGE
C11: TOTAL HOURS
C12: ERROR LOG
C13: NUMBER OF STARTS
C14: PROGRAM LOCKOUT
C15: TIME LIMIT
C16: SPEED LIMIT
C17: PAUSE TIME

C18: POWER RELAY TESTS
C19: SERVICE REMINDERS

NOTE: *Press* **STOP** *to exit Diagnostic Test Mode.*

You can perform any of the service diagnostic tests from any treadmill state, that is, before, during, or after a program (manual or preset). Since C2, C3, C8 and C9 are dynamic tests, you will usually want to enter the *Diagnostic Test Mode* while the treadmill is running.

To run a service diagnostic test, press and hold **SCAN/SAVE** and then press **–**. You will see the message "DIAGNOSTIC TESTS . . . PRESS **v** OR **∧** TO SELECT."

The message scrolls across the display from the far right to the far left. Then, three seconds later, the message repeats. This display sequence continues until you press **∧** or **v**. If you do not press either key for five minutes, the treadmill turns off the display.

If you press **∧**, the treadmill displays the first diagnostic test menu choice: "C1: PROGRAM REVISION LEVEL." If you press **∧** again, the treadmill advances to the second choice: "C2: ACTUAL SPEED," and so on. Similarly, if you first press **v** the treadmill displays the diagnostic test menu choices in reverse order, starting with the last choice: "C18: SERVICE REMINDERS" and moving backward through the menu (C19, C18, etc.).

When you have selected a test, press **START/ENTER** to begin. If you do not press **START/ENTER** within five minutes, the treadmill returns to the *Dormant Mode*.

After a diagnostic test finishes, press the **START/ENTER** key to return to the diagnostic test menu choices.

To exit a diagnostic test or the diagnostic test menu, press **STOP** and the treadmill returns to the *Dormant Mode*.

C1: PROGRAM REVISION LEVEL
This test displays configuration information for the main program chip in the control panel. The test displays the treadmill model number for which the program chip is intended, followed by the revision level of the main program. The control panel displays the test results until you press **START/ENTER** which returns the display to the test menu choices. For example:

600 series   r 2.01

Also active in this diagnostic window is the test for the heart rate. The right decimal point in the % GRADE window (the left window) will pulse with each pulse received. Note that the usable range of the Polar® Transmitter is about 30° from the console cross rail where the pickup sensor is embedded.

C2: ACTUAL SPEED

This test displays the actual speed of the drive motor in miles per hour (mph) or kilometers per hour (kph) in hundredths. For example:

5.02 MPH

The control panel displays the test results until you press **START/ENTER**.

C3: CURRENT DRAW

This test displays the current draw of the treadmill in amperes. For example:

12.6 AMP

The control panel displays the test results until you press **START/ENTER**.

C4: LED TEST

This test illuminates each column of LEDs on the control panel independently, in both the red and green color.

The test begins by displaying the red color for the first vertical column of LEDs on the far left of the display. The test moves from left to right, one column at a time. After the test displays the far right column in the red color, it illuminates that same column in the green color and moves back across the display from right to left in the green mode.

The control panel repeats this sequence until you press **START/ENTER**.

Pressing combinations of the speed and elevation keys produces bands of color. Press **–** or **+** to verify red, then press **v** or **ʌ** to verify green. Press **–** (or **+**) and **v** (or **ʌ**) simultaneously to verify the amber display. With C4, you can easily locate any LED that may not be working properly. A trained technician can then disassemble and replace the block of 5 x 7 LEDs that contains the LED that does not illuminate.

C5: OVERLAY TEST

This test generates a tone signal when you press a key on the control panel. The test helps you isolate a defective key.

When you press **START/ENTER** to begin this test the console panel displays the message "**START**." Pressing any key generates a tone signal. A tone verifies that the key is operating properly.

NOTE: *Press the* **START/ENTER** *key last, because although it emits a tone, it will also cause you to exit the C5 test and return to the diagnostic menu. If you press* **STOP***, it will exit from the Diagnostic Test Mode.*

If you locate a key that is not functioning properly, a trained Cybex service technician can disassemble the control panel and replace the overlay switch membrane.

C6: CSAFE PORT CHECK

This test checks the status of the CSAFE port on the back of the console. CSAFE is the industry standard for connecting to fitness equipment. The port is tested at the factory, but the status can be checked at any time. The test will indicate one of four states:

CSAFE OK   Communication has been established

OPEN   No comm. or open port

LOOP OK   Factory test using a test plug

NO POWER Factory test using a test plug

C7: TONE GENERATOR CHECK

This test checks the tone generator on the control panel. With C7, you can determine whether the tone generator needs to be replaced.

When you press **START/ENTER** to begin this test, the control panel displays the message "**START**."

The test sends seven electrical signals to the tone generator and you should hear seven audible tones in return. A defective tone generator will not produce any tones.

Press **START/ENTER** to end this test and return to the diagnostic test menu.

C8: SPEED SENSOR COUNT

This test displays the actual speed sensor's count of gear teeth. The speed sensor gear is mounted on the drive motor shaft.

At 1 mph the count is approximately 99.
At 2 mph the count is approximately 199.
At 3 mph the count is approximately 298.
At 4 mph the count is approximately 398.
At 5 mph the count is approximately 497.
At 6 mph the count is approximately 597.
At 7 mph the count is approximately 696.
At 8 mph the count is approximately 795.
At 9 mph the count is approximately 895.
At 10 mph the count is approximately 995.

The control panel displays the test results until you press **START/ENTER**.

An erratic or low count can indicate a problem with the speed pickup or the target decal on the flywheel. Inspect the flywheel decal for nicks, dirt, scratches, etc. and replace if any defects are found. If the speed pickup is loose, adjust it to within 1/4" of the flywheel and tighten securely.

C9: INCLINE SENSOR

This test allows you to elevate the treadmill up and down in any increment to evaluate the elevation position sensor. The test displays the % grade closest to the present position in the left window, and the actual elevation encoder count in the center window. Each % grade is equivalent to 88 counts of the encoder. Also, this test can be used to test the elevation zero switch, which activates as the treadmill passes through 0% grade, causing the center encoder count to go negative.

In this test window, the treadmill can be calibrated by holding the **v** key and the **+** key simultaneously.

C10: TOTAL MILEAGE

This test displays the actual accumulated total mileage, to date, in miles. The control panel displays the test results until you press **START/ENTER**.

C11: TOTAL HOURS

This test displays the actual accumulated total time, to date, in hours.The control panel displays the test results until you press **START/ENTER**.

C12: ERROR LOG

This test displays the last five error codes the treadmill has recorded. The information can be reset by pressing **+** or **–**. The control panel displays the test results until you press **START/ENTER**.

NOTE: *Pressing the* **SCAN/SAVE** *key in C12 will clear any active maintenance prompts.*

C13: NUMBER OF STARTS

This test logs the number of machine start-ups. The control panel displays the test results until you press **START/ENTER**.

C14: PGM LOCKOUT

This mode allows the programs to be turned off, for manual use only.

Press the **+** key to turn the lockout feature on, disabling all programs. Press the **–** key to turn the lockout feature off, enabling all programs. Press **START/ENTER** to set your selection.

C15: TIME LIMIT

Use the **SCAN/SAVE** key to toggle the time limit feature off and on, as shown on the display. When the time limit number of minutes (5 to 95 in 5-minute increments) is displayed, it may be incremented with **+** or **ʌ** key or decremented with **–** or **v** key.

The control panel displays the test results until you press **START/ENTER**.

NOTE: *When a time limit is set, the display scrolls* "MAX WORKOUT XX Min"*, when a workout is selected.*

C16: SPEED LIMIT

Use the **+** or **–** key to increment the speed limit from 1.1 to 10.0 mph (1.8 to 16 kph). At 10 mph (16 kph) it has no effect. At lower values it limits the speed in both the manual and program modes. Use **START/ENTER** to confirm and save.

C17: PAUSE TIME

Using the **+** and **–** keys, set the pause time to 0:10 Min or 5:00 Min, as shown on the display. Your selection determines the time that a workout may be delayed after the **STOP** key is pressed. If the workout is not re-accessed during this time period the workout terminates automatically.

C18: POWER RELAY TEST

This test allows you to test (activate) the power relay on the lower electronics PCB. Pressing the **v** elevation button in conjunction with the **SPEED +** button will toggle the relay on/off. You should be able to hear the relay toggle and note as well that the value in the right window should read "1." If the number displayed in the right control panel window is "1," then the power relay control wiring is OK. If the value displayed is "0," then the relay can not be controlled by the display.

C19: SERVICE REMINDERS

Service reminders occur every 5000 miles to bring your attention to the regular scheduled maintenance which should be performed for maximum treadmill life and performance. Once in this screen, you have the option to clear a service reminder and to turn this feature on or off. Use the **-** / **+** keys to toggle the displayed message. If a Service Reminder is active, this allows you to clear it. If no Service Reminders are active, you have the option of toggling the feature on and off. Press **START/ENTER** to accept any changes and exit the screen.

Press **STOP** to exit and return to the mode you were in before entering the diagnostic tests.