9.2, 9.2s, 9.20, 9.20s Treadmill

Warning: This service manual is for use by Precor trained service providers only.
If you are not a Precor Trained Servicer, you must not attempt to service any Precor Product;
Call your dealer for service.

This document contains information required to perform the majority of troubleshooting, and replacement procedures required to repair and maintain this product.

This document contains general product information, software diagnostic procedures (when available), preventative maintenance procedures, inspection and adjustment procedures, troubleshooting procedures, replacement procedures and electrical block and wiring diagrams.

To move directly to a procedure, click the appropriate procedure in the bookmark section to the left of this page. You may “drag” the separator bar between this page and the bookmark section to change the size of the page being viewed.

Section One - Things you Should Know

About This Appendix

Section One, Things You Should Know. This section includes technical specifications and a procedure matrix. Read this section, as well as the appropriate treadmill owner's manual, before you perform the maintenance procedures in this manual.

Section Two, Software Features. Precor's 9.2, 9.2S, 9.20 and 9.20S Treadmills are programmed with several diagnostic and setup features. This section contains the procedures you need to access the diagnostic features on this treadmill.

Section Three, Checking Treadmill Operation. This section provides you with a quick way of checking treadmill operation. Check treadmill operation at the end of a maintenance procedure and when it is necessary to ensure that the treadmill is operating properly.

Section Four, Inspection and Adjustment Procedures. Perform inspection procedures when a trouble symptom points to a particular problem and after removing and replacing major components. Many maintenance problems can be fixed by adjusting various treadmill components. This section also provides you with the step-by-step procedures required to make these adjustments.

Section Five, Troubleshooting Procedures. The diagnostic and troubleshooting procedures contained in this section should be performed when it is necessary to isolate a problem to a particular component.

Section Six, Replacement Procedures. When a treadmill component must be replaced, go to this section and follow the step-by-step procedures required to remove and replace the component.

Section Seven, Technical Diagrams. This section includes wiring diagrams and block diagrams for the 9.2, 9.2s, 9.20 and 9.20s Treadmills.

General Information

For the latest exploded view, part number and part pricing information, visit the Precor dealer website at “www.precor.com/Dealer.

Technical Specifications

Length:	67.75 inches
Width:	26.75 inches
Height:	43.5 inches
Running surface:	51 inches by 17 inches
Motor:	1.5 hp continuous duty DC
Speed:	0.5 to 9 mph in .10 mph increments
Incline:	0 to 10%
Power:	50/60Hz 120v AC
Weight:	160 lbs
Shipping weight:	9.2 and 9.2s Treadmills 214 lbs 9.20 and 9.20SsTreadmills 235 lbs

Procedure 2.1 - Placing the 9.2, 9.2s, 9.20 and 9.20s Treadmills in Calibration Mode

Placing the 9.2/9.2s Treadmills in Calibration Mode causes the software to perform the following operations:

- Display the PROM version number;
- Check the LED's that are mounted on the upper PCA; and
- Display a potentiometer calibration number.

When the treadmill is in calibration mode and the **SPEED ▲** key is selected, the treadmill speed will increase at twice the rate that it does when the treadmill is in a normal operating mode.

Procedure

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

Note:
Diagram 2.1 shows the 9.2/9.2s and 9.20/9.20s Treadmill electronic console.

2. Press and hold the **SPEED ▲** key, **SPEED ▼** key, **STOP** and **SCAN/ENTER** keys simultaneously.

3. The electronic console displays the version number of the PROM mounted on the upper PCA. Record the PROM version number.

4. After the PROM version is displayed, a horizontal line sweeps from top to bottom and then a vertical line sweeps from right to left. The lines check the LED's that are mounted on the upper PCA.

5. After the horizontal and vertical LED test lines, the electronic console displays the potentiometer increment number.

6. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

Diagram 2.1 - Display Console

Procedure 2.2 - Displaying the Odometer

This procedure allows you to display the number of miles logged on the treadmill. Total miles logged on the treadmill is different from workout time. Workout time is displayed as described in the owners manuals provided with the 9.2, 9.2s, 9.20 and 9.20s Treadmills.

Procedure

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. With the Enter Your Weight banner scrolling, press the **STOP** key, the **SPEED ▼** key, and then the **SPEED ▲** keys, sequentially.

Note:
After you perform Step 2, the electronic console displays the number of miles logged on the treadmill.

3. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

Procedure 2.3 - Selecting United States Standard or Metric Units

Selecting United States standard units causes information to be displayed in miles and pounds. Information is displayed in kilometers and kilograms if metric units are selected. After you have selected a measurement standard, the software compiles and records workout information in the units of the measurement standard selected. Changing to the alternate measurement standard after your workout has started will cause invalid data to be displayed. For this reason, change the measurement standard only after turning on the treadmill.

Procedure

The measurement standard must be changed within five seconds of turning on the treadmill.

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. With the Enter Your Weight banner scrolling, press and hold the **SPEED ▲** and **SCAN/ ENTER** keys simultaneously until the **Press ▲ for MPH & miles or ▼ for KPH & kilometer**s message scrolls across the screen.

3. Use the **SPEED ▲** or **SPEED ▼** key to select the measurement standard.

Note:
When the treadmill is turned off or unplugged it will remember the last measurement standard selected.

Procedure 2.4 - Determining Software Version Numbers

Software version numbers are invaluable for tracking and identifying problems and staying aware of changes to the operation and features of the product.

Procedure

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. Press and hold the **SPEED ▲** key, **SPEED ▼** key, **STOP** and **SCAN/ENTER** keys simultaneously.

3. Note the software version number displayed on the electronic console.

Note:
If you cannot determine the software version number in this manner, look at the PROM (U3) mounted on the upper PCA. A label on U3 indicates the software version number and the treadmill model number of the PROM.

Procedure 2.5 - Checking the LED's

Procedure

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. Press and hold the **SPEED ▲** key, **SPEED ▼** key, **STOP** and **SCAN/ENTER** keys simultaneously.

3. After the software version number is displayed on the electronic console, watch the illuminated lines sweep from top to bottom and then right to left.

Note:
The lines check the LED's mounted on the upper PCA. If the lines are broken when they sweep across the electronic console, one or more of the LED chips (DS1, DS2, DS3, DS4, or DS5) is defective.

Procedure 2.6 - Placing the 9.2, 9.2s, 9.20 and 9.20s Treadmills in Power Bit Mode

Procedure

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. Press and hold the **SPEED ▲** key, **SPEED ▼** key, **STOP** and **SCAN/ENTER** keys simultaneously.

3. Watch the electronic console. When the potentiometer increment number is displayed on the electronic console, enter power bit mode by pressing the **SPEED ▲** key.

Note:
When you remove your finger from the SPEED ▲ key, the number of power bits will be displayed. Power bits are directly related to the drive motor input signal.

Procedure 2.7 - Documenting Software Problems

When a problem is found with either the PROM or upper or lower PCA's, record the information listed below. If you isolated the problem to either the PROM, upper PCA, or lower PCA, include the information with the malfunctioning PROM or PCA when you ship it to Precor Customer Service.

When a problem occurs, record the following information:

- Model and serial number
- Software version number

Note:
Determine the version number of the PROM mounted on the upper PCA as described in Procedure 2.4 of this appendix.

- User and program number running when the problem occurred
- A description of:

    a. What happened or failed to happen.

    b. The action taken by the user just before the problem occurred.

    c. Problem-related information (such as how far into the program the problem occurred, the work level being used when the problem occurred, etc.).

- The frequency of occurrence.

Section Three - Checking Treadmill Operation

This section provides you with a quick method of checking treadmill operation. Check treadmill operation at the end of a maintenance procedure and when it is necessary to ensure that the treadmill is operating properly.

Procedure

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. Adjust the speed of the running belt to 2–3 mph.

3. Operate the treadmill for at least 5 minutes.

    a. Concentrate on the feel of the running belt and the sound of the drive motor and rollers. Be on the alert for unusual noises, smells or vibrations.

    b. Measure and log the AC input current under loaded and unloaded conditions.

    c. Press the **SCAN** key while observing the LEDs on the electronic console. Make sure that each LED lights as the information corresponding to that LED is displayed on the electronic console.

3. Press the **STOP** key. When the treadmill comes to a stop, press the **SCAN** key and view the electronic console as the treadmill scans time, speed, distance and percent.

4. Press the INCLINE ▲ key while viewing the electronic console. Confirm that the running bed inclines and the incline display increments to ten percent as the INCLINE ▼ key is pressed.

5. Press the INCLINE ▼ key while viewing the electronic console. Confirm that the running bed returns to a level position and the incline display increments to zero percent as the INCLINE ▼ key is pressed.

6. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

Section Four - Lift Motor Calibration

Procedure

1. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. Place the treadmill on its right side.

Note:
Place a drop cloth under the treadmill to protect the flooring and to ensure that the treadmill handrails are not scratched or damaged.

3. Remove the hitch pin that secures the clevis pin holding the base of the lift guide to the lift motor tube (see Diagram 2.2).

4. Remove the clevis pin, then pull the lift guide 10–12” out of the column.

5. Plug the power cord into the wall outlet, then place the magnetic safety key in the **ACTIVATE** position. Turn on the treadmill with the circuit breaker.

6. Enter the calibration mode per Procedure 2.1.

7. If the potentiometer increment number displayed is not 20**...**

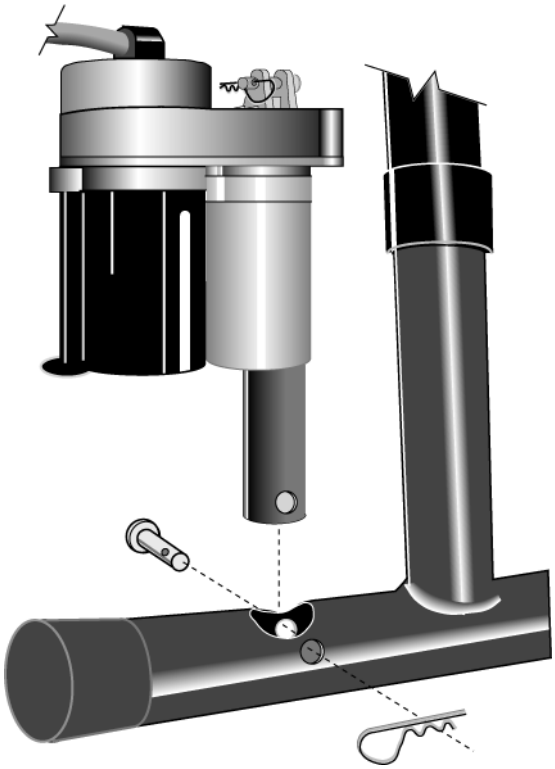
THEN...	**OTHERWISE...**
Use the **INCLINE** keys to set the potentiometer increment number to 20.	Continue with the next step.

8. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

9. Position the clevis pin through the lift motor tube.

10. Kneel at the left side of the treadmill and, using the clevis pin as a handle, turn the lift motor tube clockwise until the tube will no longer turn.

Diagram 2.2 - Lift Motor Mounting



11. Turn the lift motor tube counterclockwise 1 - 1/2 turns.

12. Remove the clevis pin, then return the lift guide to its mounting position.

13. Line up the holes in the lift guide base with the holes in the lift motor tube.

14. Push the clevis pin through the holes, then position the hitch pin through the clevis pin.

15. Return the treadmill to an upright position.

16. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

17. Check the calibration of the lift system by performing the following steps:

    a Press the **INCLINE ▲** key until the electronic console displays ten percent incline;

    b Use the I**NCLINE ▼** key to return the treadmill to zero percent incline.

Procedure 5.1 - Troubleshooting the keypad and Upper PCA

1. Set the circuit breaker in the “off” position.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. Remove the screws that secure the upper display assembly to the upper handrail. Carefully, pull some excess interconnect cable out from the targa upright. Rotate the display housing, so that the rear of the upper PCA is facing upward, and set the display housing on the upper handrail.

3. Attach the wrist strap to your arm, then connect the ground lead of the wrist strap to the treadmill frame.

4. Set the voltmeter to a range that will conveniently read +6 Vdc.

5. Set the circuit breaker in the “on” position.

6. Use a DVM, set for DC volts, and read between pin 5 of J1 and the each of the pins in Table 5.1 (no keys pressed) and Table 5.2 (with the appropriate key pressed)...

Table 5.1. Voltage Tests (Function Keys Not Pressed)

Place the positive lead of the voltmeter on:	The voltmeter should read:
Pin 4 of J1	5 Vdc ± 500 mVdc
Pin 3 of J1	5 Vdc ± 500 mVdc
Pin 6 of J1	5 Vdc ± 500 mVdc
Pin 7 of J1	5 Vdc ± 500 mVdc
Pin 1 of J1	5 Vdc ± 500 mVdc
Pin 2 of J1	5 Vdc ± 500 mVdc

Table 5.2. Voltage Tests (Function Keys Pressed)

Place the positive lead of the voltmeter on:	Press key:	The voltmeter should read:
Pin 4 of J1	ENTER	0 Vdc and 500 mVdc
Pin 3 of J1	STOP	0 Vdc and 500 mVdc
Pin 6 of J1	SPEED ▼	0 Vdc and 500 mVdc
Pin 7 of J1	SPEED ▲	0 Vdc and 500 mVdc
Pin 1 of J1	INCLINE ▲	0 Vdc and 500 mVdc
Pin 2 of J1	INCLINE ▼	0 Vdc and 500 mVdc

7. If the voltage readings match those listed in Tables 5.1 and 5.2 and one or more keys do not function, replace the upper PCA.

8. If the voltage readings in Table 5.1 are incorrect, disconnect the keypad cable from the key pad connector and repeat the voltage measurements in 5.1. If the voltage readings are now correct, replace the display housing (keypad). If the voltage readings are still incorrect, replace the upper PCA.

9. If the voltage readings in Table 5.1 are correct and one or more voltage readings in Table 5.2 are incorrect, replace the display housing (keypad).

10. Set the circuit breaker in the “off” position.

11. If necessary, carefully re-connect the keypad cable to the keypad connector.

12. Remove the ground lead of the wrist strap from the treadmill frame, then remove the wrist strap from your arm.

13. Position the display enclosure on the display plate. Install the screws that secure the display enclosure to the display plate.

14. Check the operation of the treadmill as described in Section Three of this appendix.

Procedure 5.2 - Troubleshooting the Lift system

System Description

The lift system is powered by a 120 Vac lift motor that uses two independent motors windings, one operates the motor in an upward direction and one operates the motor in a downward direction. The motor contains a 10 KΩ potentiometer, driven by the motor, that indicates lift position. AC power to operate the lift motor is provided by a pair of triacs (relays on older units). One triac provides power to the “up” winding of the lift motor and the other triac provides power to the “down” winding of the lift motor. The triacs are controlled either manually or by software control from the upper PCA.

1. If the lift motor will not move skip to step 7. If the lift motor moves and an error occurs continue with step 2.

2. Access the diagnostics program per Procedure 3.2 and proceed to the lift calibration portion of the diagnostics program. If the lift calibration number is 0 or 255 skip to step 3. Operate the lift, if the lift calibration number does not increment as the lift moves, skip to step 3. If the calibration number increments as the lift moves, recalibrate the lift per Procedure 5.3. If recalibration does not correct the problem, continue with step 3.

3. Set the treadmill circuit breaker in the “off” position. Using an ohmmeter, measure between terminal 4 (white wire) and terminal 6 (orange wire) of the P2 connector on the lower PCA. The measurement should be approximately 10 KΩ. If the measurement is open (∞) or significantly high or low, replace the lift motor.

4. Using an ohmmeter, measure between terminals 4 and 5 of P2 and measure between 5 and 6 of P2 on the lower PCA. The two measurements should total approximately 10 KΩ. If the measurement is open (∞) or significantly high or low, replace the lift motor.

5. If you have performed all of the above tests and an error still occurs when the lift motor operates, there are three parts that could cause the problem. There are not any good tests to check these parts other than substituting a known good part. They are lower PCA, ribbon cable and upper PCA. Replace only one part at a time. If the new part does not correct the problem replace the original part.

6. If you have performed all of the above tests and the lift system is still not functioning, call Precor Technical Support.

7. Set the treadmill circuit breaker in the “off” position. Remove the F2 (2 amp slow blow) fuse from the lower PCA. Measure the fuse with an ohmmeter. The measurement should be 1Ω or less. If the fuse is good, re-insert the fuse and skip to step 9. If the fuse is open (∞)or significantly high, replace the fuse. Before operating the lift motor it is necessary to perform a continuity test on the lift motor.

8. Remove the P2 connector from the lower board. Using an ohmmeter, measure between terminals 1 and 3 of P2, between terminals 1 and 2 of P2 and between terminals 2 and 3 of P2. The measurements should be approximately 14.5Ω, 14.5Ω and 29Ω, respectively. If any of the measurements are significantly low or high, replace the lift motor.

9. Re-insert the P2 connector in the lower PCA. Set the treadmill circuit breaker in the “on” position. Using an AC voltmeter, monitor the voltage between terminals 1 and 2 (red and white wires) of the P2 connector. Enter the manual program and press the **INCLINE ▲** key. The measurement should be approximately 120 Vac (line voltage). If the voltage is present and the lift motor moves normally, skip to step 10. The voltage will only be present until such time as an error occurs. If line voltage is not present skip to step 11. If line voltage is measured but the motor does not move, replace the lift motor.

10. Monitor terminals 1 and 3 (white and black wires) of P2. Enter the manual program and press the **INCLINE ▼** key. The measurement should be approximately 120 Vac (line voltage). If the voltage is present and the lift motor moves normally skip to step 12. The voltage will only be present until such time as an error occurs. If line voltage is measured but the motor does not move, replace the lift motor.

11. If line voltage is not present in both steps 9 and 10, there are three parts that could cause the problem. There are not any good tests to check these parts other than substituting a known good part. They are lower PCA, ribbon cable and upper PCA. Replace only one part at a time. If the new part does not correct the problem replace the original part.

12. If you have performed all of the above tests and the lift system is still not functioning, call Precor Technical Support.

Procedure 5.3 - Troubleshooting the External A.C. Power Source

It is extremely important that any Precor treadmill be connected to and operated on a dedicated 20 amp A.C. circuit. A 20 amp dedicated circuit is defined as: a circuit fed by a 20 amp circuit breaker that feeds a single load. A treadmill operating from a non-dedicated circuit or a circuit breaker of less than 20 amps capacity will not have the necessary power available to operate normally under higher load conditions. The lack of available power can cause any number of symptoms ranging from numerous intermittent (seemingly inexplicable) error conditions, poor speed control, or tripping the house circuit breaker.
If any of the above symptoms exist the external A.C. circuit must be checked and confirmed to be a 20 amp dedicated circuit **before** troubleshooting the treadmill.
In addition the A.C. voltage must be checked. Nominal A.C. operating voltage on 120 Vac circuits is 105 Vac to 120 Vac. Nominal A.C. operating voltage on 240 Vac circuits is 208 Vac to 240 Vac.
For operator safety considerations and to minimize electrostatic discharge conditions the A.C. frame ground continuity must also be verified to be a low resistance connection to the A.C. distribution ground bar.

Important
If the A.C. circuit feeding a treadmill is found to be a non-dedicated circuit or a circuit equipped with a circuit breaker with a capacity of less than 20 amps, the A.C. circuit must be corrected to be a 20 amp dedicated circuit **before** any reliable troubleshooting can be performed on the treadmill. More importantly, a non-dedicated circuit may constitute a safety hazard to the treadmill operator.

120 Vac Systems

120 Vac distribution systems utilize a single pole circuit breaker (hot lead) and a neutral lead connected to a common neutral (ground) bar. The A.C. safety ground (green wire) is connected to a separate ground bar in the distribution system.

The most common problems found are (1) the circuit is fed by a circuit breaker of less than 20 amp capacity, (2) the circuit breaker correctly feeds a single A.C. outlet but the neutral is common between several A.C. outlets and (3) both the hot and neutral leads feed several A.C. outlets. The appropriate correction action or actions (see below) must be followed if any of the above conditions exist. **Corrective actions should only be undertaken by a licensed electrician.**

1. **The circuit breaker feeding the treadmill is not a 20 amp circuit breaker.**
   If the circuit breaker is greater than 20 amps, the circuit breaker should be replaced with a 20 amp circuit breaker. If the circuit breaker is less than 20 amps the circuit breaker must be replaced with a 20 amp circuit breaker and the wiring from the A.C. distribution must be capable of safely handing 20 amps. If the A.C. wiring is under sized, it must be replaced with wire capable of safely handling 20 amps. Please, refer to local electrical codes when determining the appropriate wire size for a 20 amp circuit.

2. **The circuit breaker correctly feeds a single A.C. outlet but the neutral is common between several A.C. outlets.**
   The common neutral lead must be removed from treadmill's A.C. outlet and a new neutral lead from the treadmill's A.C. outlet to the A.C. neutral distribution bar must be added.

3. **Both the hot and neutral leads feed several A.C. outlets.**
   Both the common neutral and hot leads must be removed from treadmill's A.C. outlet and a new neutral lead and hot lead from the treadmill's A.C. outlet to the A.C. neutral distribution bar and circuit breaker must be added.

240 Vac Systems

240 Vac distribution systems utilize a double pole circuit breaker (two hot leads) The A.C. safety ground (green wire) is connected to a ground bar in the distribution system.
The most common problems found are (1) the circuit is fed by a circuit breaker of less than 20 amp capacity and (2) both the hot leads feed several A.C. outlets. The appropriate correction action or actions (see below) must be followed if any of the above conditions exist. **Corrective actions should only be undertaken by a licensed electrician.**

1. **The circuit breaker feeding the treadmill is not a 20 amp circuit breaker.**
   If the circuit breaker is greater than 20 amps, the circuit breaker should be replaced with a 20 amp circuit breaker. If the circuit breaker is less than 20 amps the circuit breaker must be replaced with a 20 amp circuit breaker and the wiring from the A.C. distribution must be capable of safely handing 20 amps. If the A.C. wiring is under sized, it must be replaced with wire capable of safely handling 20 amps. Please, refer to local electrical codes when determining the appropriate wire size for a 20 amp circuit.

2. **Both the hot leads feed several A.C. outlets.**
   Both hot leads must be removed from treadmill's A.C. outlet and two new hot leads from the treadmill's A.C. outlet to the circuit breaker must be added.

A licensed electrician may use the followings hints to determine if an A.C. service is dedicated.

1. If, on a 120 Vac system, the A.C. distribution panel contains more circuit breakers than neutral leads, the system has shared neutral leads and is not dedicated.

2. If an A.C. outlet (120 or 240 Vac) has multiple hot and/or neutral leads, it is not a dedicated.

If either of the above conditions exist, the system is not dedicated. However, absence of the above conditions does not necessarily mean that the system is dedicated. If any doubt exists about A.C. systems dedication, point to point tracing of the A.C. wiring may be the only way to prove system dedication.

Procedure 6.1 - Replacing the Display Housing or Upper PCA

Wear an anti-static device (such as a wrist strap) when you perform this procedure. Anti-static kits can be ordered from Precor Customer Service (Precor part number 20024-101).

Removing the Display Housing

1. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. An access hole allows access to the screws that secure the electronic chassis to the upper handrail clamp. If the treadmill you are servicing does not have an access hole in the upper handrail clamp, remove the bolts and washers that secure the electronic console to the upper handrail clamp.

3. Remove the screws that secure the upper electronic chassis to the electronics housing assembly.

4. Disconnect the ribbon cable from the upper PCA.

5. If you are going to re-install the electronic console (without replacing either the upper PCA), set aside the electronic console until maintenance operations are complete. Skip to Step 13.

6. If you are replacing the upper PCA**...**

THEN...	**OTHERWISE...**
Continue with next step.	Skip to Step 13.

Removing the Upper PCA

7. Attach the wrist strap to your arm, then connect the ground lead of the wrist strap to the treadmill frame.

8. Carefully disconnect the keypad ribbon cable from the upper PCA.

9. Remove the screws that secure the upper PCA to the electronics housing assembly.

Note:
Notice the position of the ribbon cable connector on the upper PCA. You must mount the new upper PCA in the same manner.

10. Set aside the defective upper PCA for eventual shipment to Precor Customer Service.

Note:
When you package the upper PCA, document the problem as described in Procedure 2.7.

Replacing the Upper PCA

11. Position the new upper PCA at its mounting location, then use a phillips screwdriver to replace the four screws that secure the PCA to the electronics housing assembly.

12. Remove the ground lead of the wrist strap from the treadmill frame, then remove the wrist strap from your arm.

Replacing the Electronic Console

13. Connect the ribbon cable to the upper PCA.

Note:
If there is an access hole in the upper handrail clamp, the electronic chassis is mounted on the upper handrail clamp, when you perform the next step.

14. Install the screws that secure the electronics housing assembly to the electronic chassis.

15. If the treadmill you are servicing does not have an access hole in the upper handrail clamp, replace the bolts and washers that secure the electronic console to the upper handrail clamp.

16. Install the bolts and washers that secure the electronic console to the upper handrail clamp.

17. Check the operation of the treadmill as described in Section Three of this appendix.

Procedure 6.2 - Replacing the PROM

This procedure gives you the instructions for removing and replacing the PROM (U3) and the LED chips (DS1, DS2, DS3, DS4, and DS5) mounted on the upper PCA.

Wear an anti-static device (such as a wrist strap) when you perform this procedure. Anti-static kits can be ordered from Precor Customer Service (Precor part number 20024-101).

Dismounting the Upper PCA

1. Place the magnetic safety key in the **OFF** position.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. Remove the bolts and washers that secure the electronic console to the upper handrail clamp.

3. Remove the screws that secure the upper electronic chassis to the electronics housing assembly.

4. Attach the wrist strap to your arm, then connect the ground lead of the wrist strap to the treadmill frame.

5. Carefully disconnect the keypad ribbon cable from the upper PCA.

Remove the screws that secure the upper PCA to the electronics housing assembly. Keep the ribbon cable connected to the upper PCA.

Removing and Replacing the PROM (U3)

Keep the new PROM in its protective packaging until you are ready to insert it into the chip socket.

Caution
Notice the orientation notch on the PROM (U3). The new PROM must be positioned with the same notch orientation.

6. Using the chip puller, remove the PROM (U3) from the upper PCA (see Diagram 6.1).

7. Carefully insert the new PROM with the correct software version number in the chip socket. Take care not to bend the legs of the PROM.

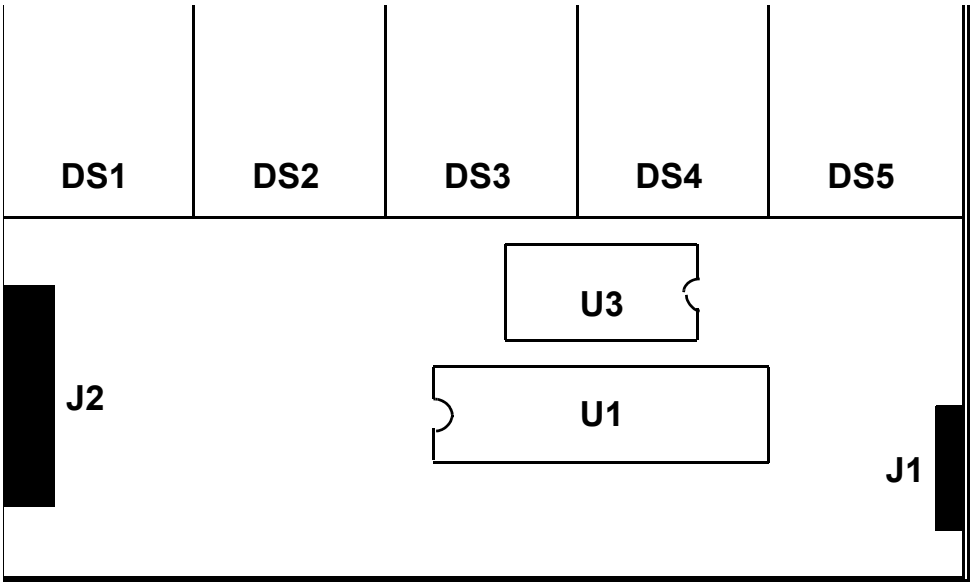
Note:
The software version number is labeled on the PROM (U3).

8. Position the upper PCA at its mounting location, then replace the screws that secure the upper PCA to the electronics housing assembly.

9. Carefully connect the keypad to the upper PCA.

10. Turn the electronics housing assembly so that the display label is facing up. Carefully move the electronics housing assembly until it can rest on the right handrail.

Diagram 6.1 - Partial Layout of the Upper PCA



11. Remove the ground lead of the wrist strap from the treadmill frame, then remove the wrist strap from your arm.

12. Check the operation of the treadmill as described in Section Three of this appendix.

13. Stop the treadmill by placing the magnetic safety key in the **OFF** position, then unplug the power cord from the wall outlet.

Procedure 6.3 - Replacing the Ribbon Cable on 9.2 and 9.2s Treadmills Made Before September 13, 1994

Before you perform this procedure, ensure that the ribbon cable is defective by connecting a spare ribbon cable to the upper PCA and lower PCA as described in Procedure 4.1 of the Residential Treadmill Service Manual.

Removing the Ribbon Cable

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. Incline the treadmill to its maximum elevation.

3. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

4. Lift the hood as described in Procedure 5.1 of the Residential Treadmill Service Manual.

5. Disconnect the ribbon cable from the lower PCA.

6. Remove the bolts and washers that secure the electronic console to the upper handrail clamp.

7. Disconnect the ribbon cable from the upper PCA. Set aside the electronic console until you are ready to replace the ribbon cable.

8. If the ribbon cable you are replacing is secured by cable ties**...**

THEN...	**OTHERWISE...**
Continue with the next step.	Skip to Step 10.

9. Cut the cable ties that secure the ribbon cable to the cable tie mounts on the column and cross beam.

10. Cut the connector from the lower end of the ribbon cable.

11. Pull the ribbon cable from the top of the lift column and discard.

Replacing the Ribbon Cable

12. If there are no cable tie mounts on the column and cross beam, position and press cable tie mounts onto the lower lift column and cross beam.

13. Feed the new ribbon cable through the hole in the upper handrail clamp and into the trim strip until 6–8 inches of cable are visible at the lower end of the trim strip.

14. Connect the ribbon cable to the lower PCA.

15. Hold the electronic console over the lift column. Attach the ribbon cable to the upper PCA.

16. Position the electronic console on the upper handrail clamp. Replace the bolts and washers that secure the electronic console to the upper handrail clamp.

17. Using the cable ties, secure the ribbon cable to the cable tie mounts on the lift column.

Caution
Make sure that the ribbon cable does not come in contact with the flywheel.

18. Replace the hood.

19. Check the operation of the treadmill as described in Section Three of the Residential Treadmill Service Manual.

Procedure 6.4 - Replacing the Ribbon Cable on All 9.2 and 9.2s Treadmills and 9.20 and 9.20s Treadmills Made After September 13, 1994

Before you perform this procedure, ensure that the ribbon cable is defective by connecting a spare ribbon cable to the upper PCA and lower PCA as described in Procedure 4.1 of the Residential Treadmill Service Manual.

Removing the Ribbon Cable

1. Place the magnetic safety key in the **ACTIVATE** position, then turn on the treadmill with the circuit breaker.

2. Incline the treadmill to its maximum elevation.

3. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

4. Lift the hood as described in Procedure 5.1 of the Residential Treadmill Service Manual.

5. Disconnect the ribbon cable from the lower PCA.

6. Remove the bolts and washers that secure the electronic console to the upper handrail clamp.

7. Disconnect the ribbon cable from the upper PCA. Set aside the electronic console until you are ready to install the ribbon cable.

8. Grasp the top and lower ends of the lift column trim. Firmly pull the trim away from the lift column.

9. Cut the cable ties that secure the ribbon cable to the cable tie mounts on the lift column.

Replacing the Ribbon Cable

10. Remove the old cable ties, then push new ties through the cable tie mounts on the lift column.

11. Connect the ribbon cable to the lower PCA.

12. Slide the connector and ribbon cable through the slot on the upper handrail clamp.

13. Hold the electronic console over the lift column. Connect the ribbon cable to the upper PCA.

14. Position the electronic console on the upper handrail clamp. Install the two bolts and washers that secure the electronic console to the upper handrail clamp.

15. Using the cable ties, secure the ribbon cable to the cable tie mounts on the lift column.

Note:
Refer to Diagram 6.2 when you perform Step 16.

16. Attach the lift column trim by following the steps listed below:

    a. Position the trim so that the notched end points up.

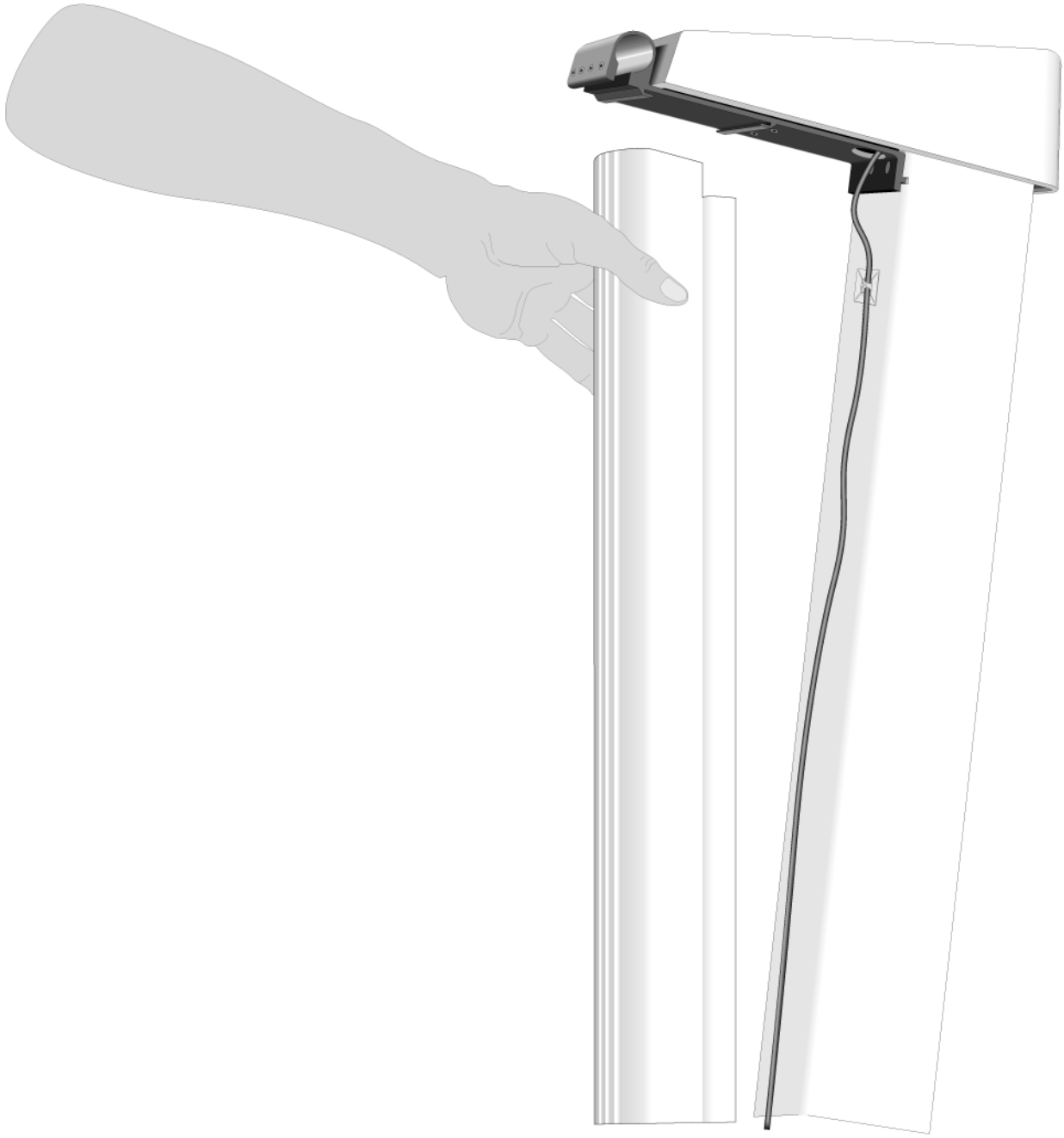
    b. Insert the base of the trim through the opening in the hood.

    c. Raise the trim until the notched end of the trim touches the underside of the upper handrail clamp. Be careful to maintain the vertical alignment of the trim with the lift column.

CAUTION
Make sure that the ribbon cable is situated in the trim's center slot before you perform the following step.

    d. While maintaining alignment, attach the trim by pressing firmly against the lift column until the hook and loop pads fasten securely to each other.

Diagram 6.2 - Installing the Trim Strip



17. Replace the hood as described in Procedure 5.1 of the Residential Treadmill Service Manual.

18. Check the operation of the treadmill as described in Section Three of the Residential Treadmill Service Manual.

Procedure 6.5 - Replacing the Lower PCA

Removing the Lower PCA

1. Lift the hood as described in Procedure 5.1 of the Residential Treadmill Service Manual.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. Incline the treadmill to its maximum elevation.

3. Disconnect the ribbon cable from the lower PCA.

4. Disconnect the wires listed in Table 6.1 from the lower PCA connectors.

Table 6.1. Wires Connected to the Lower PCA

WIRE COLOR	LOWER PCA CONNECTOR
Red	M+
Black	M-
Brown	AC-L
Blue (White)	AC-N

5. Disconnect the lift motor cable from connector J2 on the lower PCA and the safety trip cable from connector J3.

6. Remove the bolts and nuts that secure the lower PCA to the motor chassis.

7. Remove the lower PCA from the motor chassis groove. Set aside the lower PCA for eventual shipment to Precor.

Note:
When you package the lower PCA, provide the information listed in Procedure 2.7 of this appendix.

Replacing the Lower PCA

8. Position the new lower PCA in the motor chassis groove.

9. Thread the nuts onto the lower PCA mounting bolts and finger-tighten.

10. Inspect and adjust the target gap as described in Procedure 3.4 of the Residential Treadmill Service Manual.

11. Tighten the bolts and nuts that secure the lower PCA to the motor chassis.

12. Reconnect the ribbon cable to lower PCA.

13. Reconnect the wires listed in Table 9.2-3 to the lower PCA.

14. Reconnect the lift motor cable to connector J2 on the lower PCA and the safety trip cable to connector J3.

15. Replace the hood as described in Procedure 5.1 of the Residential Treadmill Service Manual.

16. Check the operation of the treadmill as described in Section Three of this appendix.

Procedure 6.6 - Replacing the Lift Guide and Lift Column

Removing the Lift Guide

1. Place the magnetic safety key in the OFF position, then unplug the treadmill from the wall outlet.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. Remove the bolts and washers that secure the electronic console to the upper handrail clamp.

3. Disconnect the ribbon cable from the upper PCA. Set aside the electronic console.

4. Place the treadmill on its right side.

Note
Place a drop cloth under the treadmill to protect the flooring and to ensure that the treadmill handrail is not scratched or damaged.

5. Remove the hitch pin from the clevis pin that holds the base of the lift guide to the lift tube (see Diagram 6.1).

6. Remove the clevis pin, then pull the lift guide out of the column (see Diagram 6.3).

7. If you are removing the lift column**...**

THEN...	**OTHERWISE...**
Continue with the next step.	Skip to Step 18.

Removing the Lift Column

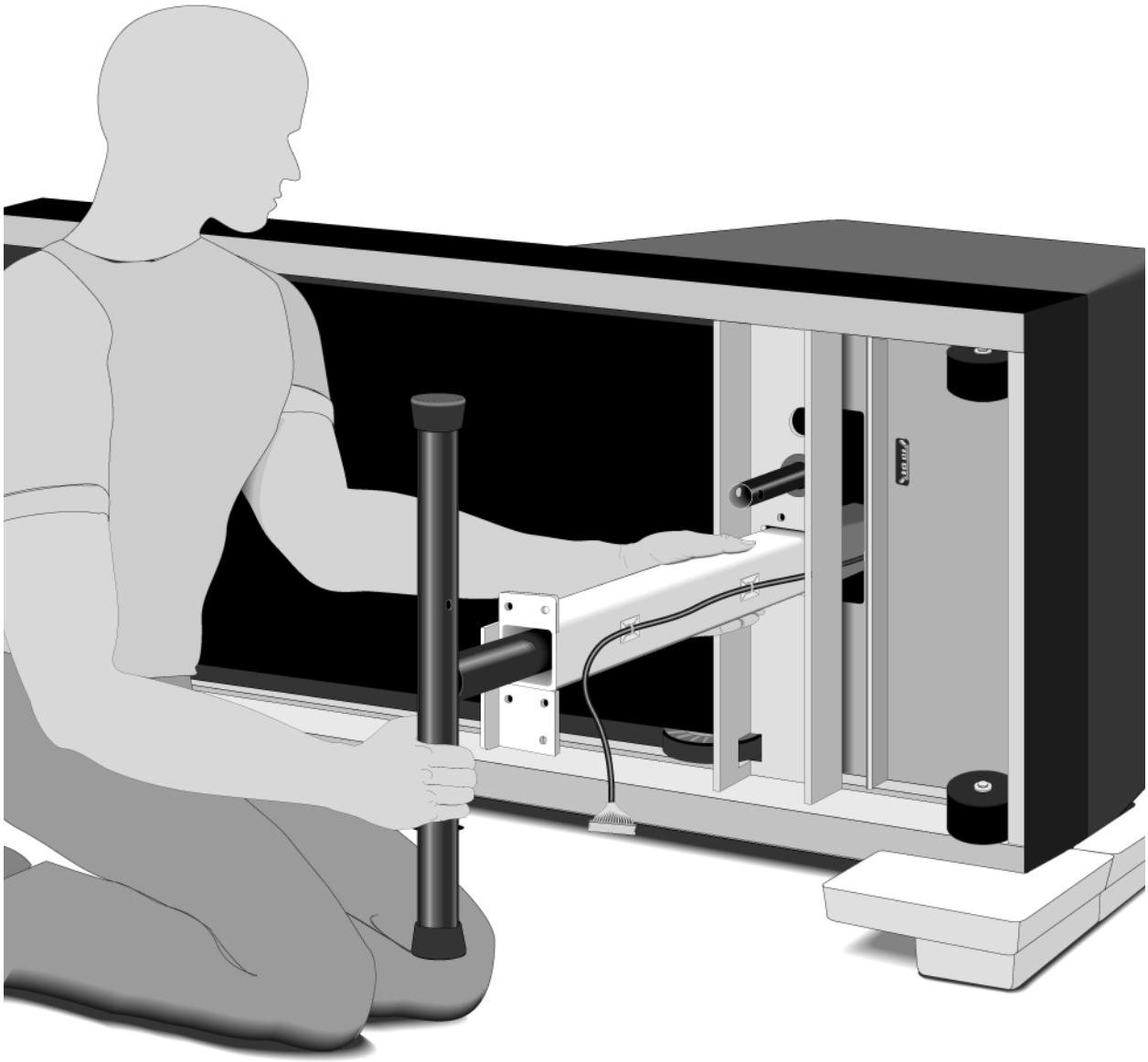
8. Remove the screws and washers that secure the upper handrail clamp to the lift column.

9. Remove the hardware that secures the lift column to the treadmill frame.

10. Slide the lift column through the base of the treadmill frame.

Note:
If necessary, use the rubber mallet to loosen the lift guide from its mounting position.

Diagram 6.3 - Removing the Lift Column



Replacing the Lift Column

11. Position the new column at its mounting location.

12. Install the hardware that secures the lift column to the treadmill frame.

13. Install the screws and washers that secure the upper handrail clamp to the lift column.

14. With the treadmill on its right side, insert the lift guide into the lift column. Line up the holes in the lift guide base with the holes in the lift tube.

Note:
If necessary, use the rubber mallet to force the lift guide cross tube into its mounting position.

15. Push the clevis pin through the holes, then push the hitch pin through the clevis pin.

16. Return the treadmill to an upright position.

17. Hold the electronic console over the lift column. Attach the ribbon cable to the upper PCA.

18. Position the electronic console on the upper handrail clamp. Replace the bolts and washers that secure the electronic console to the upper handrail clamp.

19. Place the treadmill on its right side.

Replacing the Lift Guide

20. If the lift tube was rotated during the performance of this procedure, calibrate the lift assembly as described in Procedure 4.1 of this appendix.

21. Check the operation of the treadmill as described in Section Three of the Residential Treadmill Service Manual.

Procedure 6.7 - Replacing the Lift Motor Assembly

Removing the Lift Motor

1. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. Lift the hood as described in Procedure 5.1 of the Residential Treadmill Service Manual.

3. Disconnect the lift motor cable from the lower PCA.

4. Remove the ground wire from the lift motor ground stud.

5. Remove the hitch pin from the clevis pin that holds the top of the lift motor to the treadmill frame.

6. Remove the clevis pin from the top of the lift motor.

Note:
If necessary, use the punch and mallet to force the clevis pin out of its mounting position.

7. Place the treadmill on its right side.

Note:
Place a drop cloth under the treadmill to protect the flooring and to ensure that the treadmill handrails are not scratched or damaged.

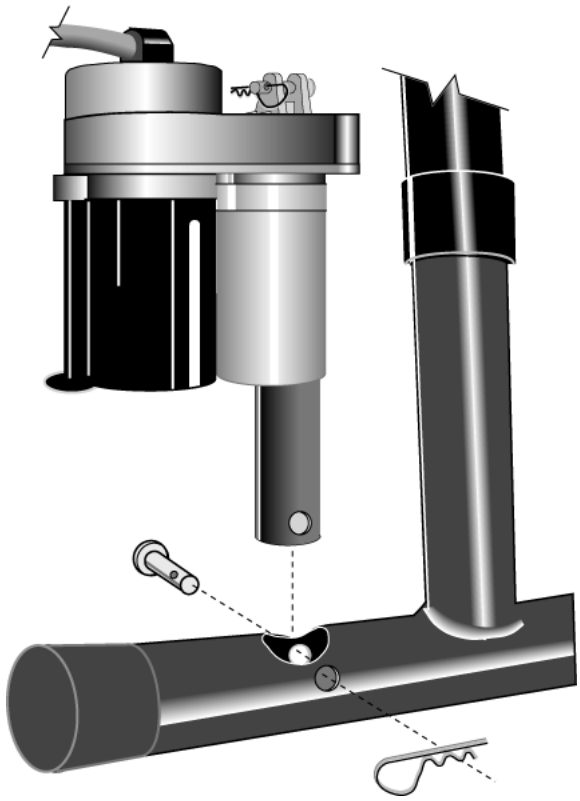
8. Remove the hitch pin from the clevis pin that holds the base of the lift guide to the lift motor tube (see Diagram 6.4).

9. Remove the clevis pin, then pull the lift guide out of the column.

10. Set aside the defective lift motor for eventual shipment to Precor Customer Service.

Note:
When you package the lift motor, document the problem as described in Procedure 2.7 of this appendix.

Diagram 6.4 - Lift Motor Mounting



Replacing the Lift Motor

11. Return the treadmill to an upright position.

12. Line up the mounting holes at the top of the lift motor with the lift motor mounting holes on the treadmill frame.

13. While an assistant holds the lift motor in place, position the clevis pin through the top of the lift motor and the treadmill frame.

14. Push the hitch pin through the clevis pin.

15. Place the treadmill on its right side.

16. Position the lift guide in the column, then line up the holes in the lift guide base with the holes in the lift motor tube.

17. Push the clevis pin through the holes, then push the hitch pin through the clevis pin.

18. Return the treadmill to an upright position.

19. Secure the ground wire to the lift motor ground stud.
20. Connect the lift motor cable to the lower PCA.
21. Calibrate the lift assembly as described in Procedure 4.1 of this appendix.
22. Check the operation of the treadmill as described in Section Three of this appendix.
23. Replace the hood as described in Procedure 5.1 of the Residential Treadmill Service Manual.

Procedure 6.8 - Replacing the Handrails

Removing the Handrails

1. Place the magnetic safety key in the **OFF** position, then unplug the treadmill from the wall outlet.

WARNING
Before continuing with this procedure, review the Warning and Caution statements listed in Section One of the Residential Treadmill Service Manual.

2. Loosen the screws that secure the handrail to the upper handrail clamp.

3. Remove the screws that secure the right lower handrail clamp to the treadmill frame and remove the right handrail from its mounting position.

4. Repeat Step 3 for the left handrail.

5. If you are removing the upper handrail clamp as well as the handrails**...**

THEN...	**OTHERWISE...**
Continue with next step.	Skip to Step 10.

Removing the Upper Handrail Assembly

6. Remove the electronic console as described in Procedure 6.1 of this appendix.

7. Remove the screws and washers that secure the upper handrail clamp to the lift column.

Replacing the Upper Handrail Assembly

8. Position the upper handrail assembly at its mounting location. Secure the screws and washers that mount the upper handrail clamp to the lift column.

9. Replace the electronic console as described in Procedure 6.1 of this appendix.

Note:
Do not tighten the screws that secure the electronic enclosure to the upper handrail assembly.

Replacing the Handrails

10. Place the end of the right handrail tube against the plastic cradle.

Note:
Set the end of the handrail tube on the projecting ledge of the cradle.

11. Insert the right handrail into the upper handrail clamp until the foam just touches the clamp.

Note:
When you position the lower handrail clamp, make sure that the clamp is lined up with the mounting holes on the treadmill frame.

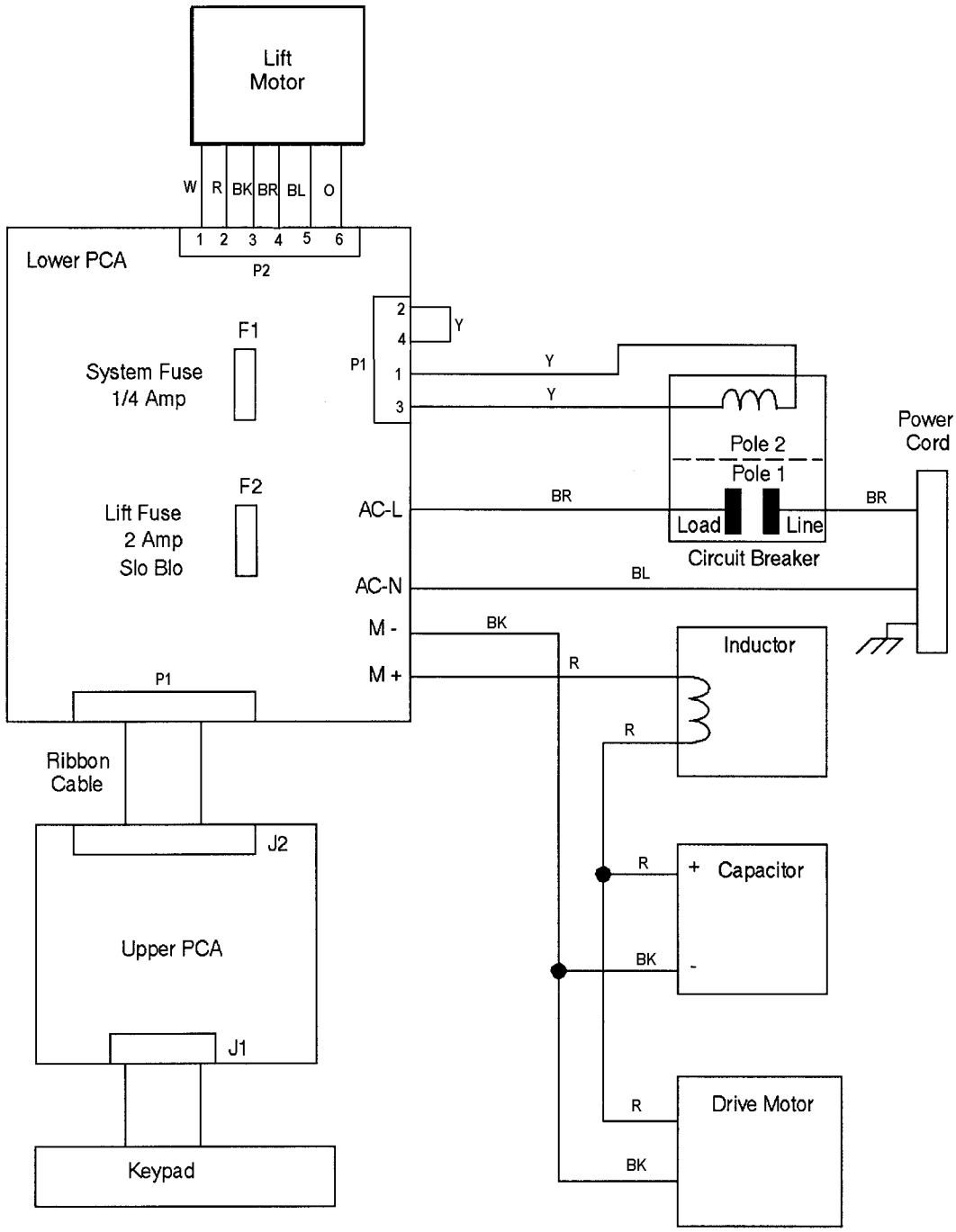
12. Position the right lower handrail clamp at its mounting location. Replace the screws that secure the clamp to the treadmill frame.

13. Repeat Steps 11 through 13 for the left handrail clamp.

14. Tighten the screws that secure the handrail to the upper handrail clamp.

15. Plug the power cord into the wall outlet.

Wiring Diagram, 7.1 - 9.2, 9.2s, 9.20, 9.20s



Block Diagram 7.2 - 9.2, 9.2s, 9.20, 9.20s