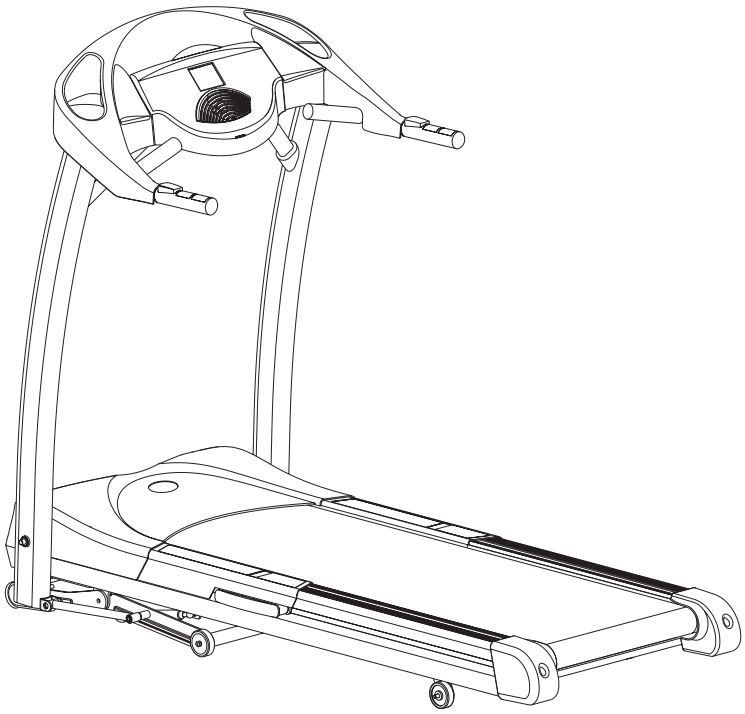
Horizon Fitness



Models

T61, T62, T63, T64,

CST 3.5, CST 4.5,

DT650, DT850, WT950,

PST 6, PST 8,

1.2T, 2.2T, 3.2T, 4.2T,

5.2T

Designed for life.™

2006
Treadmill Service Manual

Table of Contents

REFER TO THE SUPPLEMENTAL SHEET ON THE LAST PAGE OF THE SERVICE MANUAL FOR THE MID SEASON PRODUCTION CHANGE ON THE LOWER CONTROL BOARD.

LIMITED HOME-USE WARRANTY

Horizon Fitness extends the following exclusive, limited warranty, which shall apply to the use of the device in the home, for residential, non-commercial purposes only. ***Any other use shall void this warranty****.*

Horizon Fitness hereby offers the following limited warranties for the following components of the device, for the time period indicated:

Model	Labor	Parts	Motor	Elevation	Frame
T61	1 Year	1 Year	7 Years	7 Years	Lifetime
T62	1 Year	1 Year	10 Years	10 Years	Lifetime
T63	1 Year	1 Year	12 Years	12 Years	Lifetime
T64	1 Year	1 Year	15 Years	15 Years	Lifetime
DT650	1 Year	1 Year	7 Years	7 Years	Lifetime
DT850	1 Year	1 Year	10 Years	10 Years	Lifetime
CST 3.5	1 Year	1 Year	12 Years	12 Years	Lifetime
CST 4.5	1 Year	1 Year	15 Years	15 Years	Lifetime
PST 6	1 Year	1 Year	20 Years	20 Years	Lifetime
PST 8	1 Year	1 Year	22 Years	22 Years	Lifetime
1.2T	1 Year	2 Years	25 Years	25 Years	Lifetime
2.2T	1 Year	2 Years	25 Years	25 Years	Lifetime
3.2T	1 Year	2 Years	25 Years	25 Years	Lifetime
4.2T	1 Year	2 Years	25 Years	25 Years	Lifetime
5.2T	1 Year	2 Years	25 Years	25 Years	Lifetime
WT950	1 Year	1 Year	12 Years	12 Years	Lifetime

Horizon Fitness warranties the frame, electronics, and parts against defects in workmanship and materials for the above warranty periods, so long as it remains in the possession of the original owner.

Horizon Fitness shall cover the labor cost for the repair of the device for the above warranty periods, so long as the device remains in the possession of the original owner.

EXCLUSIONS AND LIMITATIONS

This warranty applies only to the original owner and is not transferable. This warranty is expressly limited to the repair or replacement of a defective frame, electronic component, or defective part. The warranty does not cover normal wear and tear, improper assembly or maintenance, or installation of parts or accessories not originally intended or compatible with the treadmill as sold. The warranty does not apply to damage or failure due to accident, abuse, corrosion, discoloration of paint or plastic, or neglect. Horizon Fitness shall not be responsible for incidental or consequential damages. All returns must be pre-authorized by Horizon Fitness. Horizon Fitness' obligation under this warranty is limited to replacing or repairing, at Horizon Fitness' option, the product at one of its authorized service centers. A Horizon authorized service center must receive all products for which a warranty claim is made. These products must be received with all freight and other transportation charges prepaid, accompanied by sufficient proof of purchase. Parts and electronic components reconditioned to As New Condition by Horizon Fitness or its vendors may sometimes be supplied as warranty replacement parts and constitute fulfillment of warranty terms. This warranty gives you specific legal rights, and your rights may vary from state to state.

WARRANTY REGISTRATION

Your warranty card must be completed and sent to Horizon Fitness or register on line at www.horizonfitness.com, before a warranty claim can be processed.

Important Safety Instructions

Warning statements indicate a particularly dangerous activity.
You should be extremely cautious when doing the following:

• Removing power from the treadmill, or removing the power cord from the wall outlet. Always ensure that the treadmill is unplugged from the wall outlet when you inspect or adjust the treadmill, or when you isolate, remove, or replace a treadmill component.

• Removing the motor cover exposes high voltage components and potentially dangerous machinery. Exercise extreme caution when you perform maintenance procedures with the motor cover removed.

• During service operations you will be very close to moving machinery and high voltage components. When you perform maintenance procedures with the hood removed, remove jewelry (especially from ears and neck), tie up long hair, remove neckties, and do not wear loose clothing.

• When the treadmill is operating, the capacitor will hold a lethal amount of charge. Do not touch the capacitor as serious injury or death might result.

• When the treadmill is turned off and the power cord is removed from the wall outlet, the capacitor will hold voltage for 30-60 seconds. Allow the capacitor to discharge for a period of one minute before you touch or work near the capacitor. Do not attempt to discharge the capacitor by any other means.

• Exercise caution when touching any wire or electrical component during treadmill operation.

• When it is necessary to lift the treadmill, ensure that the treadmill has adequate support. Do not lift the
treadmill by the front.

Safety guidelines you should know and follow include:

• Read the owner's manual and follow all operation instructions.

• Operate the treadmill on a solid, level surface. Locate the rear of the treadmill at least four feet from walls or furniture. Keep the area behind the treadmill clear.

• Visually check the treadmill before beginning service or maintenance operations. If it is not completely
assembled or is damaged in any way, exercise extreme caution while operating and checking the treadmill.

• When operating the treadmill, do not wear loose clothing. Do not wear shoes with heels or leather soles. Check the soles of your shoes and remove any embedded stones. Tie long hair back.

• Use care when getting on or off the treadmill. Use the handrails whenever possible. Do not get on or off the treadmill when the running belt is moving.

• Before starting the running belt, straddle the belt by placing your feet firmly on the guiderails of the treadmill. You should also step off the belt and onto the guiderails of the treadmill after turning off the running belt.

• Do not rock the unit. Do not stand or climb on the handrails, electronic console, or motor cover.

• Do not set anything on the handrails, electronic console, or motor cover. Never place liquids on any part of the treadmill.

• To prevent electrical shock, keep all electrical components, such as the drive motor, power cord, and circuit breaker away from water and other liquids.

• Do not use accessory attachments that are not recommended by the manufacturer-such attachments might cause injuries.

• Turn off the treadmill when adjusting or working near the rear roller. Do not make any adjustments to the running belt when someone is standing on the machine.

• Keep all loose items away from the treadmill running surface. A treadmill running belt will not stop immediately if an object becomes caught in the belt or rollers.

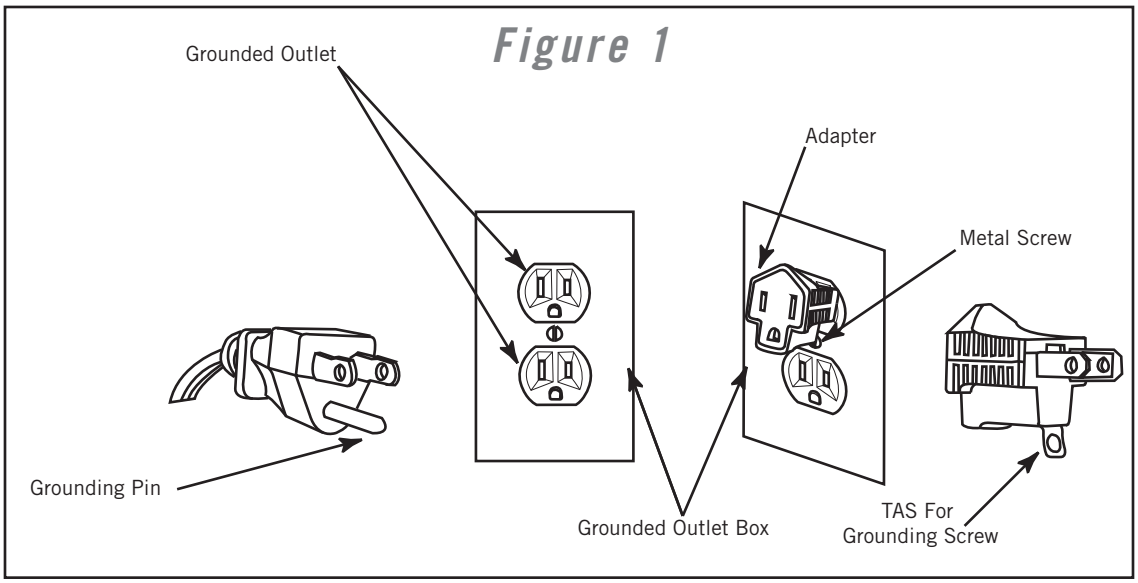
⚠ WARNING *Connect this appliance to a properly grounded, dedicated 20-amp outlet only. See grounding Instructions.*

GROUNDING INSTRUCTIONS

This product must be grounded. If a treadmill should malfunction or breakdown, grounding provide a path of least resistance for electrical current to reduce the risk of electrical shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with local codes and ordinances.

⚠ WARNING *Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product, if it will not fit in the outlet; have a proper outlet installed by a qualified electrician.*

Figure 1



SAFETY TIPS

- *Never use the treadmill before securing the safety tether clip to your clothing.*
- *If you experience chest pains, nausea, dizziness, or shortness of breath, stop exercising immediately and consult your physician before continuing.*
- *Do not wear clothes that might catch on any part of the treadmill.*
- *Keep power cord away from heated surfaces.*
- *Keep children off of treadmill at all times.*
- *Do not use treadmill outdoors.*
- *Unplug treadmill before moving it.*
- *Do not remove the treadmill motor cover or roller covers.*
- *Treadmill should be plugged into a dedicated 20 amp circuit for optimal performance.*

Required Tools and Equipment

The following list is a summary of the tools and equipment required by the procedures in this manual.

Tools are not supplied by Horizon Fitness.

- *Phillips screwdrivers*
- *Anti-static wrist strap (when handling electronic parts)*
- *Flat-head screwdrivers*
- *Digital multi-meter*
- *Drive belt tension gauge*
- *Allen wrench set (Metric)*
- *Open-end wrenches of assorted sizes (Metric)*
- *Clamp-on amp meter*
- *1⁄2" drive ratchet and sockets of assorted sizes*
- *Blue Thread Lock*
- *Cable ties*
- *Motor commutator stone*
- *Needle nose pliers*
- *Damp cloth*
- *Rubber mallet*
- *Drop cloth*
- *Ruler*
- *Snap ring pliers*
- *Wire cutters*

Note:

The motor commutator stone can be ordered from Horizon Fitness.

Preventative Maintenance Procedures

Cleanliness of your Horizon Fitness treadmill and its operating environment will keep maintenance problems and service calls to a minimum. For this reason, Horizon Fitness recommends that the following preventive maintenance schedule be followed.

After Each Use

- *Turn off the treadmill with the on/off switch, and unplug the power cord from the wall outlet.*

To remove power from the treadmill, the power cord must be disconected from the wall outlet.

- *Wipe down the running belt, deck, motor cover, and console casing with a damp cloth. Never use solvents, as they can cause damage to the treadmill.*
- *Inspect the power cord. If the power cord is damaged, contact Horizon Fitness.*
- *Make sure the power cord is not underneath the treadmill or in any other area where it can become pinched or cut.*
- *Check the tension and alignment of the running belt. Make sure that the treadmill belt will not damage any other components on the treadmill by being misaligned.*

Every Week

Clean underneath the treadmill, following these steps:

- *Turn off the treadmill with the on/off switch.*
- *Unplug the power cord at the wall outlet.*
- *Fold the treadmill into the upright position; making sure that the foot lock latch is secure.*
- *Move the treadmill to a remote location.*
- *Wipe or vacuum any dust particles or other objects that may have accumulated underneath the treadmill.*
- *Return the treadmill to its previous position.*

Every Month

- *Inspect all assembly bolts of the machine for proper tightness.*

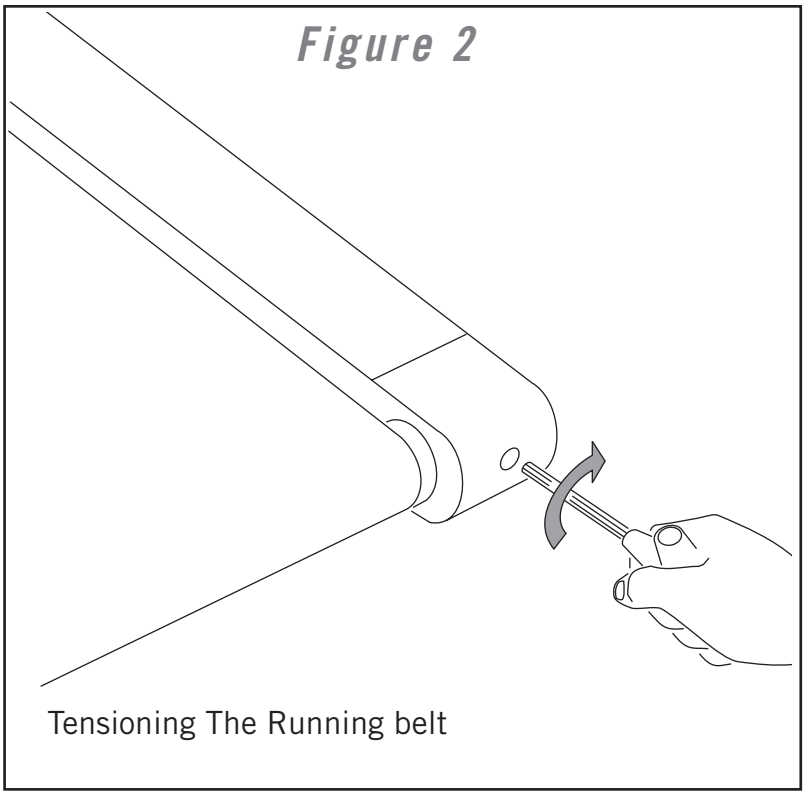
Each 3-6 months

- *Add lubrication to deck and running belt. Use lubrication provided by Horizon Fitness only!*
- *Lubricate the air shocks with a Teflon based spray.*

Tensioning the Running Belt

If you can feel a slipping sensation when running on the treadmill, the running belt must be tightened. In most cases, the belt has stretched from use, causing the belt to slip. This is a normal and common adjustment. Make sure that the unit is turned off and not running. To eliminate this slipping, tension both the rear roller bolts with the appropriate sized Allen wrench, turning both the left and right bolt 1/4 TURN as shown below. Try the treadmill again to check for slipping. Repeat if necessary, but NEVER TURN the roller bolts more than 1/4 turn at a time.

Figure 2



Tensioning The Running belt

Aligining the Running Belt

1) If the running belt moves rapidly to one side when performing the next step, press the Stop button immediately.

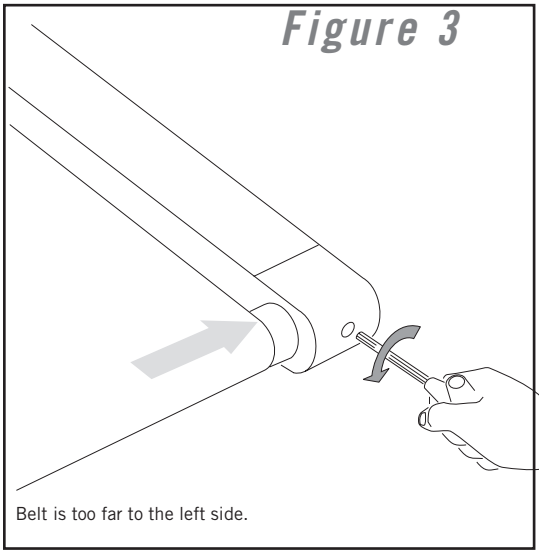
• Turn on the treadmill. With the treadmill speed between 6-8 mph, stand behind the treadmill and watch the movement of the running belt. As you watch the running belt, make sure that the belt runs without moving from one side to the other and that the belt is centered between the side rails.

2) If the running belt is not tracking properly, follow the procedures below:

• If the running belt tracks to the left, turn the left roller bolt clockwise 1⁄4 of a turn, keeping the belt tension in mind. Over-tightening the running belt may cause damage to the running belt and roller bearings.

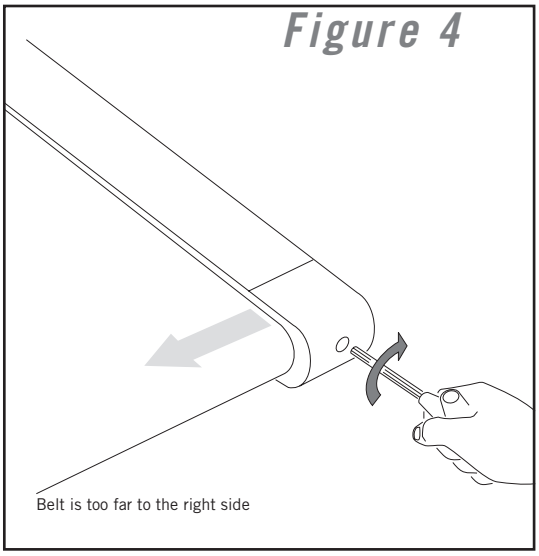
• If the running belt tracks to the right, turn the right roller bolt clockwise 1⁄4 of a turn, keeping the belt tension in mind. Over-tightening the running belt may cause damage to the running belt and roller bearings.

Figure 3



Belt is too far to the left side.

Figure 4



Belt is too far to the right side

Tensioning the Drive Belt

(Models: T61, T62, T63, T64, CST 3.5, CST 4.5, DT650, 1.2T, 2.2T, 3.2T, 4.2T, DT850, WT950)

Figure 5

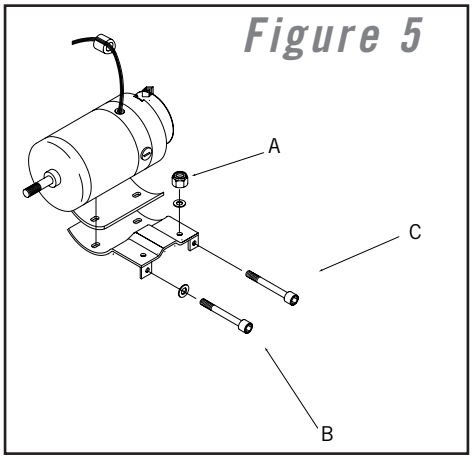
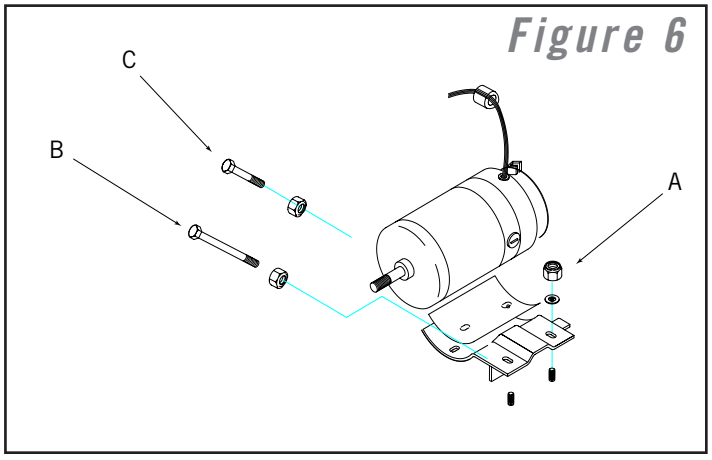


Figure 6



Procedure:

1) Turn off the power to the treadmill and remove the power cord from the wall outlet.

2) Remove the motor cover.

3) Unplug the motor wires from the motor control board.

IMPORTANT *Before continuing, it is a good idea to weigh down the treadmill deck to prevent the treadmill from springing up. Removing the weight of the motor will significantly reduce the weight in the front end of the treadmill.*

4) Loosen the attachment nuts (A) holding the motor bracket to the frame. (Figures 5 & 6)

5) Tighten bolt (B) to increase tension on drive belt. (Figures 5 & 6)

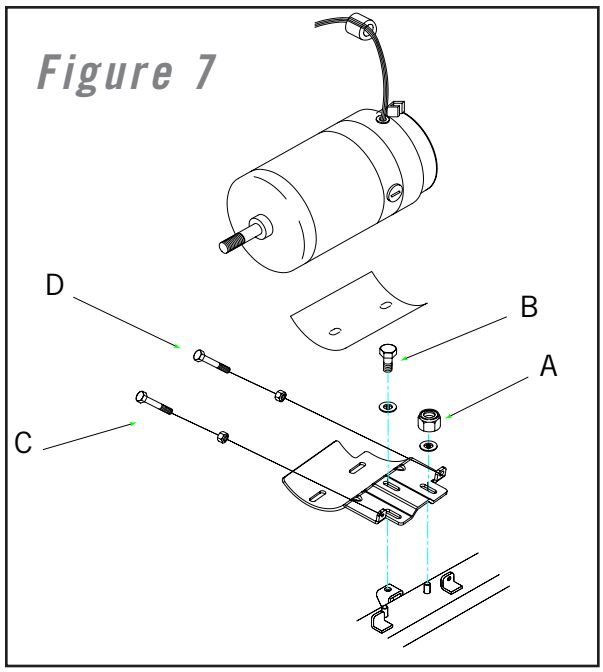
6) Tighten or loosen bolt (C) to straighten motor bracket and ensure that the pulleys on the motor and front roller are properly aligned. (Figures 5 & 6)

7) Tighten the two motor bracket attachment nuts (A) when finished. (Figures 5 & 6)

8) Verify the proper tension on the drive belt. Using a timing belt tension gauge, the proper tension should be between 65 to 75 lbs. If a timing belt tension gauge is not available, the drive belt should have approximately 3/8 of inch deflection. If the drive belt tension is not set properly, loosen the motor attachment bolts and adjust.

Tensioning the Drive Belt

(Models: PST6, PST 8, 5.2T)



Procedure:

1) Turn off the power to the treadmill and remove the power cord from the wall outlet.

2) Remove the motor cover.

3) Unplug the motor wires from the mo tor control board.

IMPORTANT *Before continuing, it is a good idea to weigh down the treadmill deck to prevent the treadmill from springing up. Removing the weight of the motor will significantly reduce the weight in the front end of the treadmill.*

4) Loosen the attachment nuts (A) holding the motor bracket to the frame. (Figure 7)

5) Loosen Bolt (B). (Figure 7)

6) Tighten bolt (C) to increase tension on drive belt. (Figure 7)

7) Tighten or loosen bolt (D) to straighten motor bracket and ensure that the pulleys on the motor and front roller are properly aligned. (Figure 7)

8) Tighten the two motor bracket attachment nuts (A) and bolt (B) when finished. (Figure 7)

9) Verify the proper tension on the drive belt. Using a timing belt tension gauge, the proper tension should be between 65 to 75 lbs. If a timing belt tension gauge is not available, the drive belt should have approximately 3/8 of inch deflection. If the drive belt tension is not set properly, loosen the motor attachment bolts and adjust.

Stoning the Motor Commutator

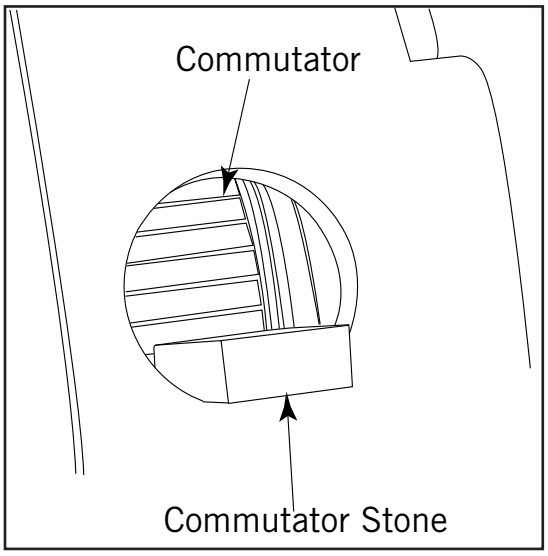
1) Unplug the power cord from the wall outlet.

IMPORTANT *Do not plug in the power cord and do not turn on the treadmill when the motor brushes are removed from the drive motor.*

2) Remove the brush covers on the drive motor.

3) Gently insert commutator stone into motor so that it makes contact with commutator.

Figure 49



4) Spin the motor flywheel by hand until any abnormal marks are removed and the commutator has a shiny copper finish.

5) Blow any dust and particles with compressed air from the motor commutator when finished.

6) Run the treadmill for 15 minutes at 3-5 mph to seat the brushes properly.

7) Inspect the motor commutator again for any unusual wear.

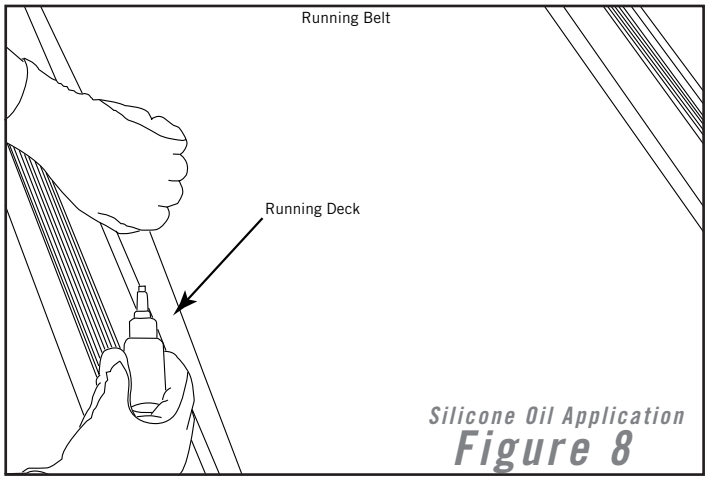
8) Repeat stoning process if necessary.

Treadmill Deck Procedures

There are three different situations where you would be required to add lubrication to a Horizon Fitness treadmill.

1. MAINTENANCE

Silicone needs to be applied to a Horizon Fitness treadmill regularly. Horizon Fitness recommends that lubrication be applied every three to six months depending on the number of users and the frequency of use.



Silicone Oil Application
Figure 8

2. BELT REPLACEMENT

When lubrication is added to a treadmill deck at the factory it is infused into the filament backing of the running belt, providing a low friction, long lasting coat. When replacing the original belt on a treadmill, this new belt will not be properly coated. Always add lubrication when replacing the belt.

3. BREAKER TRIPS

With time, the lubrication between the running deck and running belt of the treadmill will wear down. The lack of lubrication between the deck and belt will cause a high amount of friction when running on the treadmill. This, in turn, will cause the treadmill breaker to trip. If this happens, lubrication should be added.

a. With the 6mm Allen wrench loosen the bolts that hold the rear roller in place. It is not necessary to take off the roller, just loosen it enough so that you can fit your hands underneath the belt comfortably.

IMPORTANT *It is a good idea to note the position of the rear roller before removing. For best results, place two removable marks on the left and right side of the deck and the running belt. When reinstalling, match up the marks for proper tension.*

b. Take a small amount of silicon oil (20 cc squeeze bottle provided by Horizon Fitness) and apply it to the entire top surface of the running deck.

c. Tighten rear roller to proper position.

d. Wipe off any excessive silicon oil that may have seeped out from underneath the running belt with a damp cloth.

Please contact the Horizon Fitness service department to obtain the proper lubrication for reapplication.

Proper Heart Rate Usage

HAND GRIPS

Place the palm of you hands directly on the grip pulse handlebars. Both hands must grip the bars for your heart rate to register. It takes 5 consecutive heartbeats (15-20 seconds) for your heart rate to register accuratly. When gripping the pulse handlebars, do not grip tightly. Holding the grips tightly may elevate your blood pressure. Keep a loose, cupping hold. You may experience an erratic readout if consistently holding the grip pulse handlebars. Make sure to clean the pulse sensors to ensure proper contact can be maintained.

WIRELESS CHEST TRANSMITTER

(T64 & 4.2 Chest strap sold separately, PST 8, 5.2T)

Prior to wearing the wireless chest transmitter, moisten the two rubber electrodes with water. Center the chest strap just below the breast or pectoral muscles, directly over your sternum, with the logo facing out.

IMPORTANT *The chest strap must be tight and properly placed to receive an accurate and consistent readout. If the chest strap is too loose, or positioned improperly, you may receive an erratic or inconsistent heart rate readout.*

⚠WARNING *The heart rate function is not a medical device. Various factors may affect the accuracy of your heart rate reading. The heart rate reading is intended only as an exercise aid.*

Figure 9

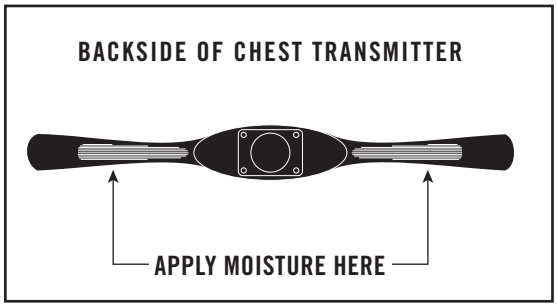
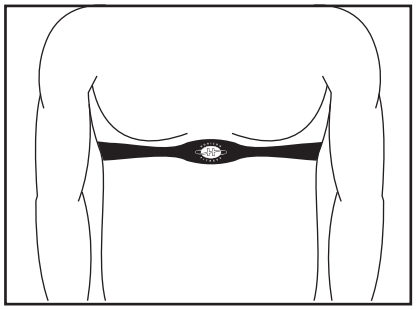


Figure 10



TROUBLESHOOTING-HEART RATE

Check your exercise environment for sources of interference such as fluorescent lights, computers, underground fencing, home security systems or appliances containing large motors. These items may cause erratic heart rate readouts.

You may experience an erratic readout under the following conditions:

- *Gripping the heart rate handlebars too tight. Try to maintain moderate pressure while holding onto the heart rate handlebars.*
- *Constant movement and vibration due to constantly holding the heart rate handlebars while exercising. If you are receiving erratic heart rate readouts, try to only hold the grips long enough to monitor your heart rate.*
- *When you are breathing heavily during a workout.*
- *When your hands are constricted by wearing a ring.*
- *When your hands are dry or cold. Try to moisten your palms by rubbing them together to warm them.*
- *Anyone with heavy arrhythmia.*
- *Anyone with arteriosclerosis or peripheral circulation disorder.*
- *Anyone whose skin on the measuring palm is especially thick.*

Lubricating the Air Shock

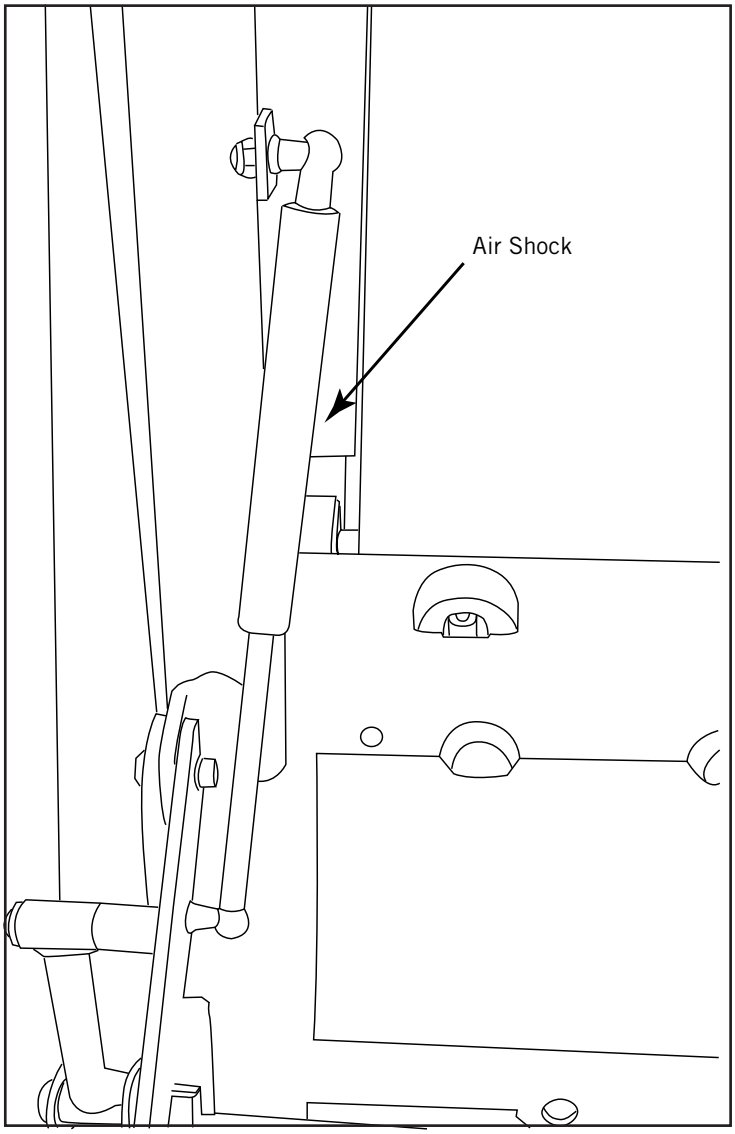
Procedure:

1) Fold the treadmill to the upright position; making sure the treadmill is locked securely.

2) Add lubricating oil on the shaft of the air shock.

3) Lift the frame up and down, repeating this several times to allow the lubricating oil blend into air shock

Figure 11



Five-Step Diagnosis Process

IMPORTANT *The following steps are provided as routine checkpoints when diagnosing problems on a Horizon Fitness treadmill. If followed correctly, these checkpoints should help diagnos the majority of problems that may be encountered.*

1. Proper supplying power to treadmill.

• Make sure the treadmill is not on an extension cord or surge protector. Extension cords and surge protectors create energy loss, which prevents proper voltage from being supplied to the treadmill.

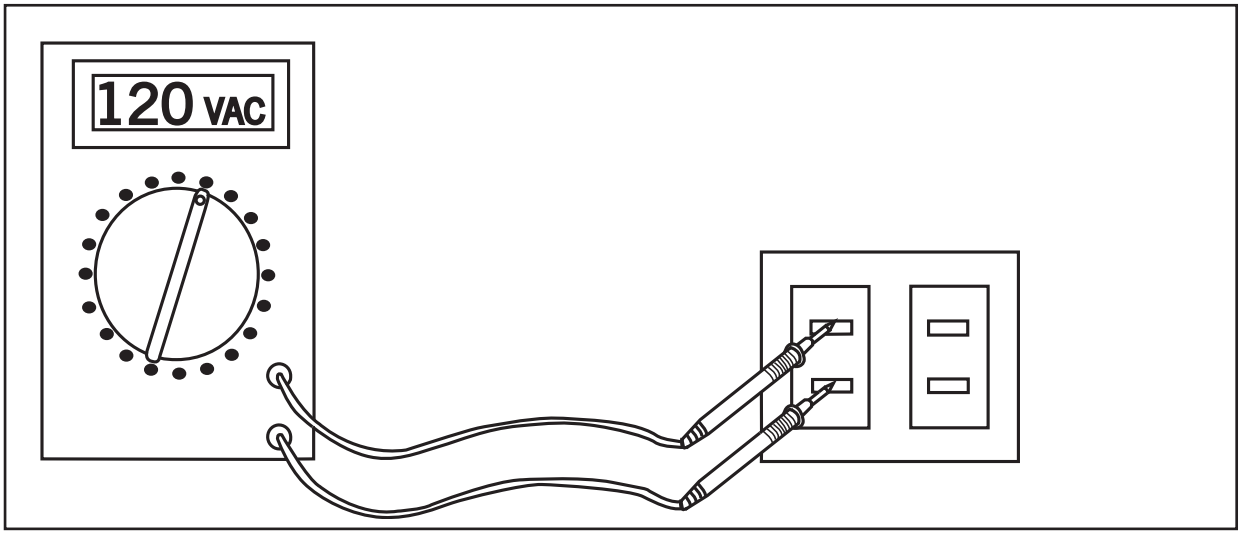
• Make sure the treadmill is on a dedicated circuit. Horizon Fitness recommends a 20 amp dedicated circuit, but a 15 amp dedicated circuit may be sufficient.

• Make sure that proper voltage is being supplied from the wall outlet.

⚠ WARNING *Hazardous voltages will be tested in the following procedure. Exercise extreme caution when performing these procedures. Do not connect or disconnect any wiring, connectors, or other components with the power applied to the treadmill.*

• Disconnect the treadmill power cord from the wall outlet. Using an AC voltmeter, verify that the proper AC voltage is present at the wall outlet. Nominal 120 volts AC may vary between approximately 105 volts AC and 135 volts AC. If the AC voltage is missing or incorrect, check the AC service or consult an electrician.

Figure 12



2. Proper Wiring

*• Verify that all wires are secure and attached in the correct position. (**Reference Wiring Diagrams and Scematics section.)***

• Verify that there aren't any pinches or cuts in any of the wires, especially the console cable connecting from the motor control board to the upper board. Replace any wires that are pinched or cut.

3. Proper Motor Function

*• Verify that the treadmill is properly lubricated (**Reference Maintenance Section**) and drive motor is operating at the proper amperage rating. To verify the current draw, place a clamp meter around the red motor wire. If a clamp meter is not available, an additional wire harness can be produced to measure amperage with a standard voltmeter.*

Figure 13

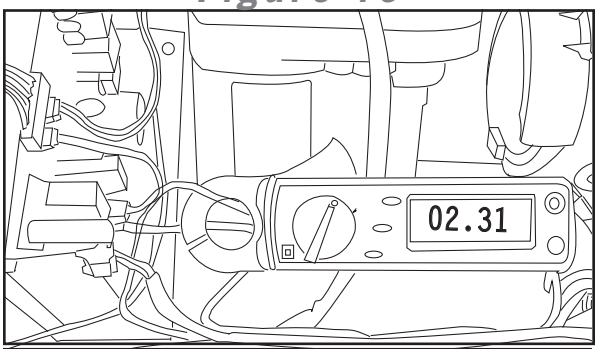
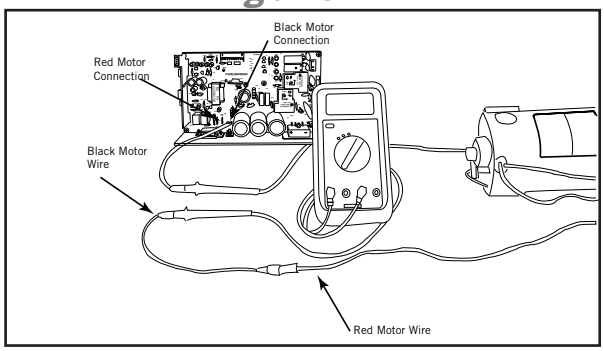


Figure 14



*• Remove the brush covers on the drive motor and inspect the brushes and the motor commutator for any uneven wear. If the surface of the motor brush is pitted, rough, has burn marks, or the commutator has a black residue on it, replace the motor brush and stone the motor commutator. (**Reference Motor Brush Replacement and Stoning the Commutator in Spare Parts Replacement Section.**)*

4. Proper Speed Calibration

*• To ensure proper belt speed and proper calibration use engineering mode to verify that machine is running in MPH not KM (all models) and that the correct roller diameter is set (1.2T - 5.2T only). (**Reference Engineering Mode Section.**)*

*• Auto-calibrate the machine from engineering mode if the belt speed is erratic or the belt speed does not correspond to what is displayed on the console. (**Reference Engineering Mode Section.)***

5. Voltage Checkpoints/Diagnostic LED's

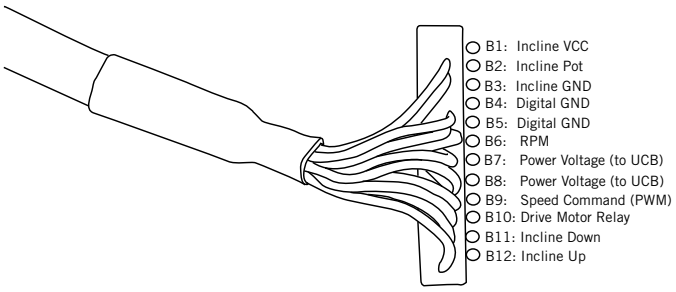
*• Verify that the motor control board is functioning properly by referencing the Diagnostic LED's located on the lower control board. (**Reference Voltage Checks & LED Diagnosis Section.)***

• Verify that proper voltage is being transferred through the console cable.

IMPORTANT *If the techniques described in the five-step diagnostic process did not resolve the problem, reference the symptoms in the table of contents and review other possible causes in the troubleshooting section.*

Console Cable Voltage Chart (DC Volts)

Figure 15

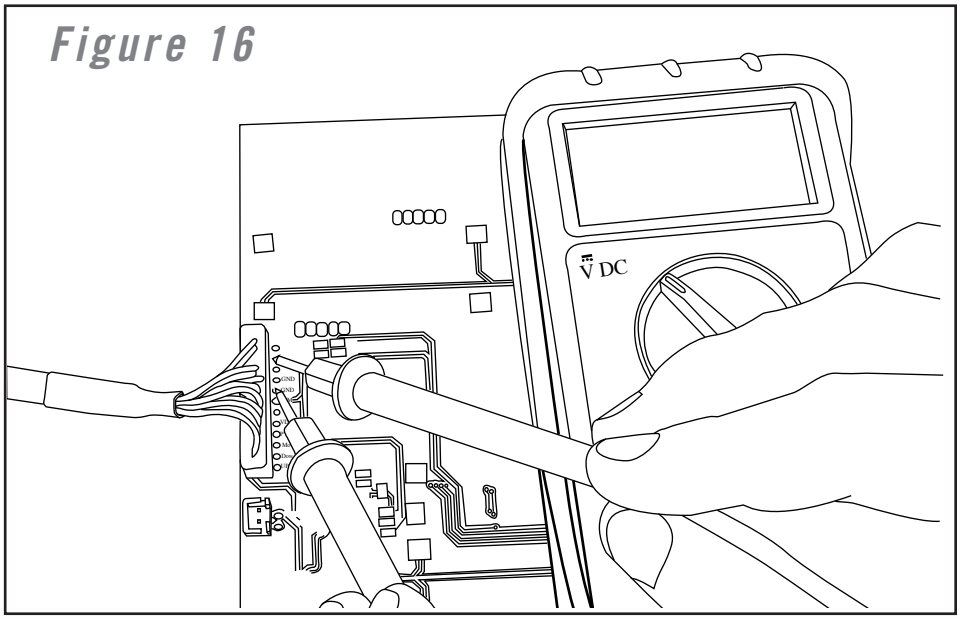


CORRECT VOLTAGE FOR WIRE HARNESS

B1: Black 2.5 vdc constant
B2: Brown 2.5 vdc at 0.0% incline, +0.5 vdc at max incline. Voltage changes with each change in incline.
B3: Brown n/a ground
B4: Orange n/a ground
B5: Yellow n/a ground
B6: Green When speed sensor aligned to magnet: short, 0.0 vdc. When sensor not aligned: open, +5.0 vdc.
B7: Blue +15 vdc constant Range = +15.0 to +17.0 vddc
B8: Purple +15 vdc constant Range = +15.0 to 17.0 vdc
B9: Grey 0.0 vdc before started, +0.5 vdc at 0.5 mph, +4 vdc at 10 mph. Voltage changes as speed changes.
B10: White +1.6 vdc before started 0.0 vdc after started.
B11: Pink 0.0 vdc before started, 0.0 vdc while inclining, +1.9 vdc while declining. Voltage constant while inclining/declining
B12: Lt. Blue 0.0 vdc before started, +1.9 vdc while inclinig, 0.0 vdc while declining. Voltage constant while inclining/declining.

Console Cable Voltage Check

Figure 16

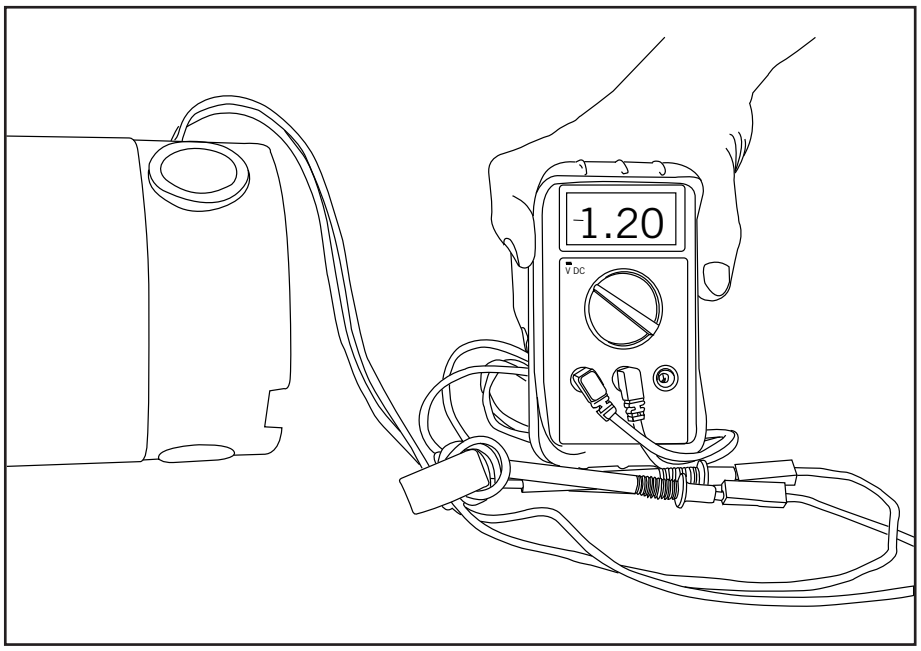


To check the voltage of a specific function (i.e. elevation, motor control, etc), place the negative lead of your multi-meter on pin B3, B4 or B5, and place the positive lead on the desired pin. Follow the voltage chart above for the correct voltages.

Wire colors are subject to change.

Figure 17

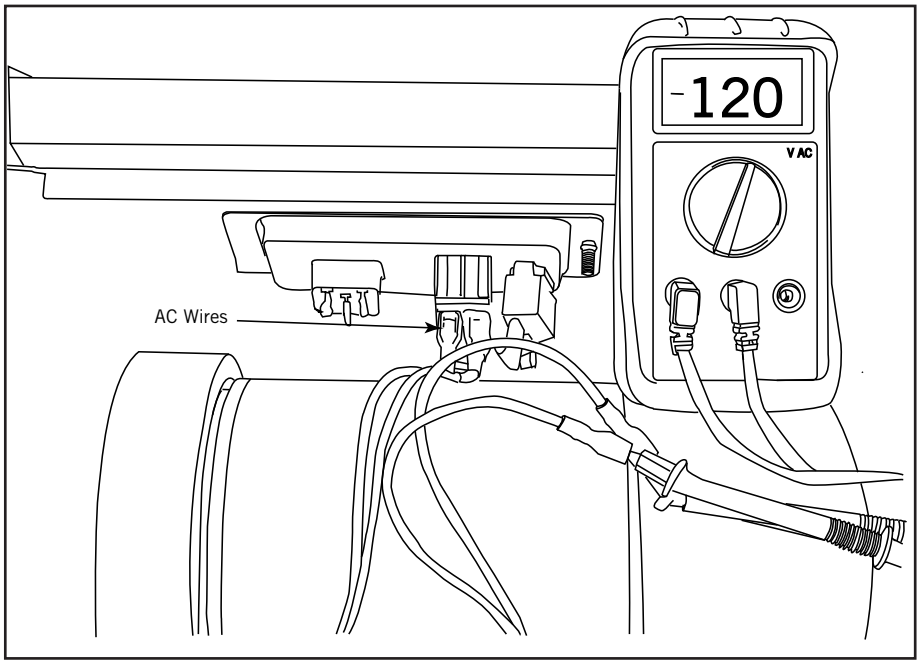
Motor Voltage Check



Spin motor flywheel to produce voltage

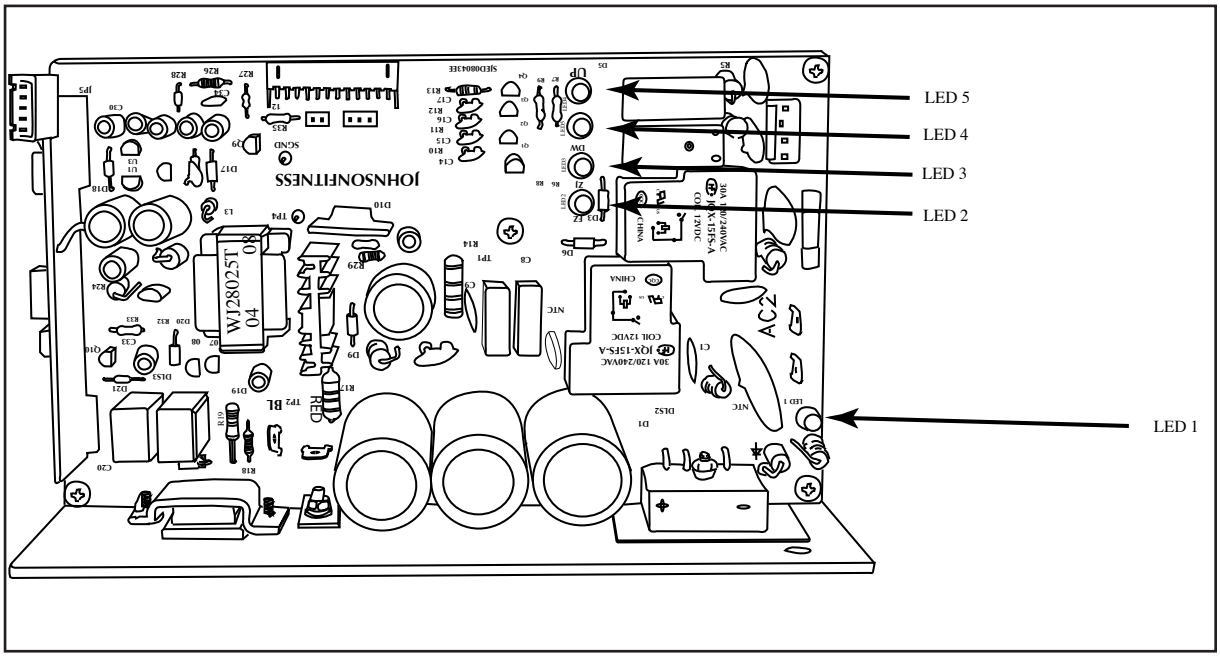
Figure 18

AC Wire Voltage Check



Lower Board LED Diagnosis

Figure 19 a

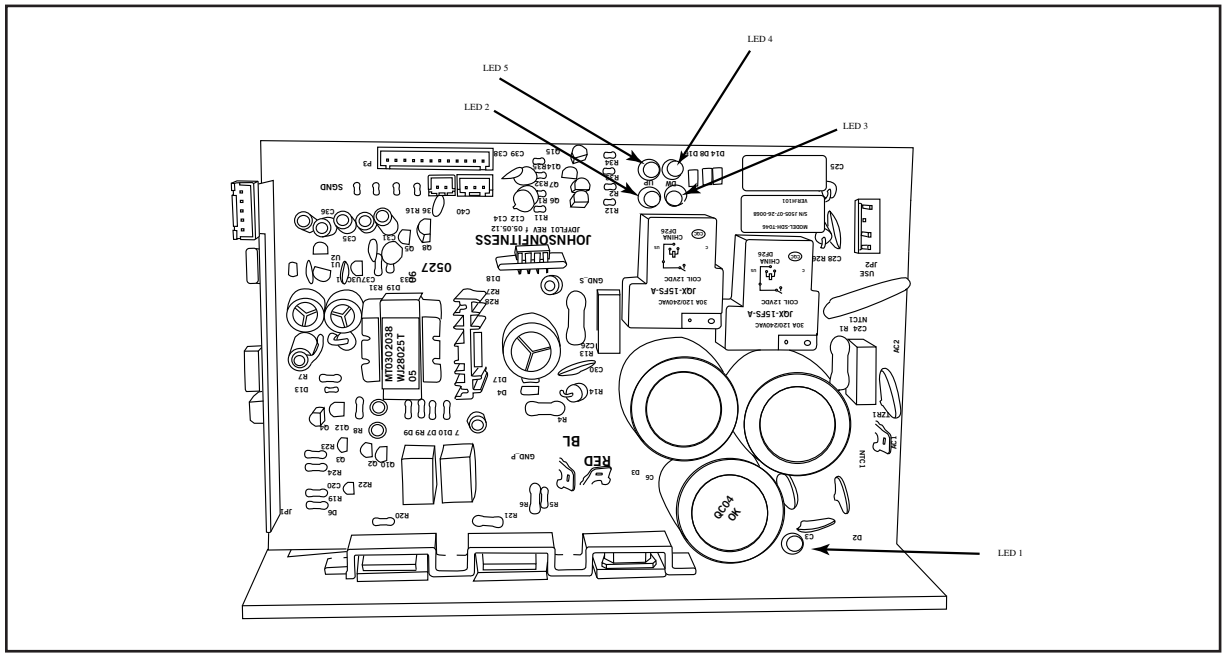


***LED 1**: Transfer indicators - When the power switch is turned on, LED 1 lights up, meaning that power is supplied to the lower board. This LED should remain on while operating the drive motor and elevation motor. If the LED's are not lit, check the AC service from the wall outlet.*

***LED 2 & 3**: Motor indicator - The LED 3 will come on if the motor starts to run. The motor control board will begin detecting the status of the motor and if everything is OK then LED 2 will turn on in 1 or 2 seconds.*

***LED 4 & 5**: Incline Motor Indicator - When the upper board is commanding the incline motor to move UP or DOWN, the LED's go on. LED 4 is for the UP function, and LED 5 is for the DOWN function.*

Figure 19 b



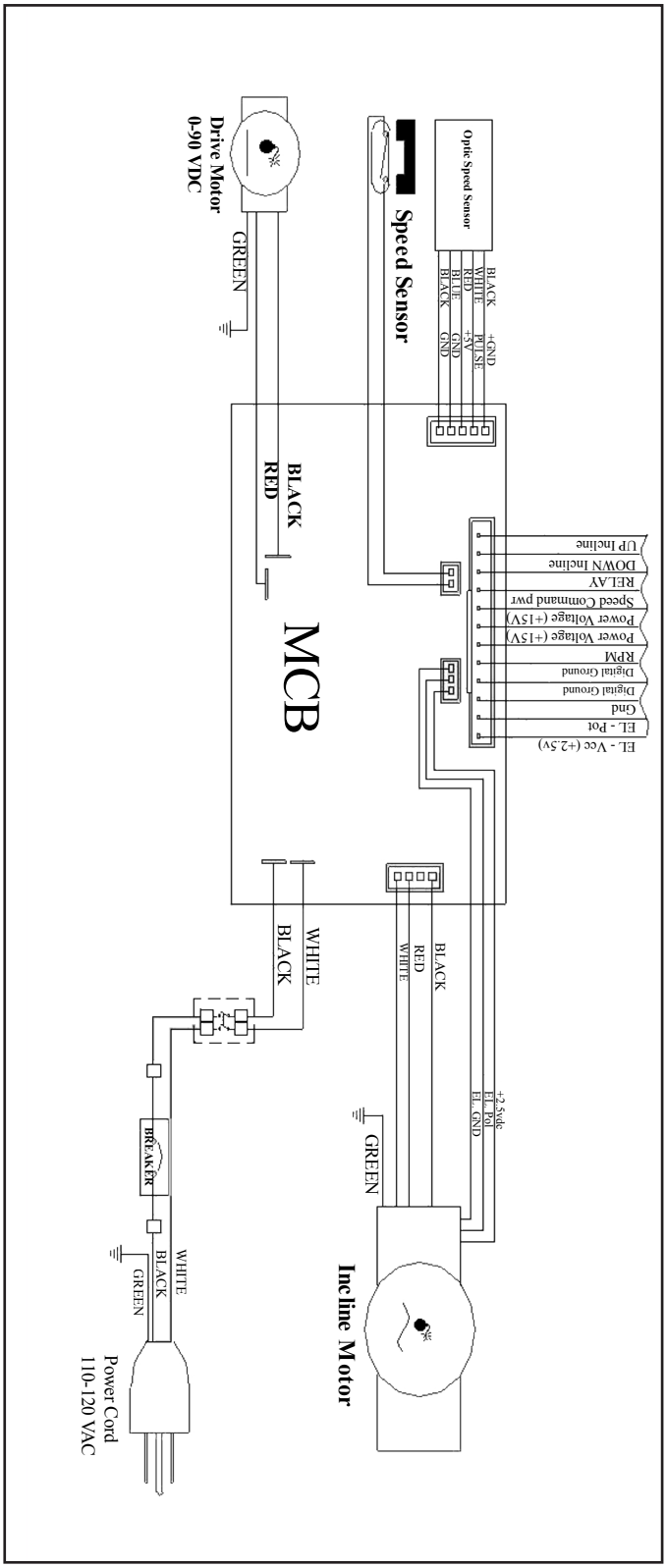
***LED 1**: DC Voltage Indicator - When the power switch is turned on, LED 1 dimly lights up. If the belt begins to run LED1 will remain. Power is stored in the board, do not touch.*

***LED 2 & 3**: Motor indicator - The LED 3 will come on if the motor starts to run. The motor control board will begin detecting the status of the motor and if everything is OK then LED 2 will turn on in 1 or 2 seconds.*

***LED 4 & 5**: Incline Motor Indicator - When the upper board is commanding the incline motor to move UP or DOWN, the LED's go on. LED 4 is for the UP function, and LED 5 is for the DOWN function.*

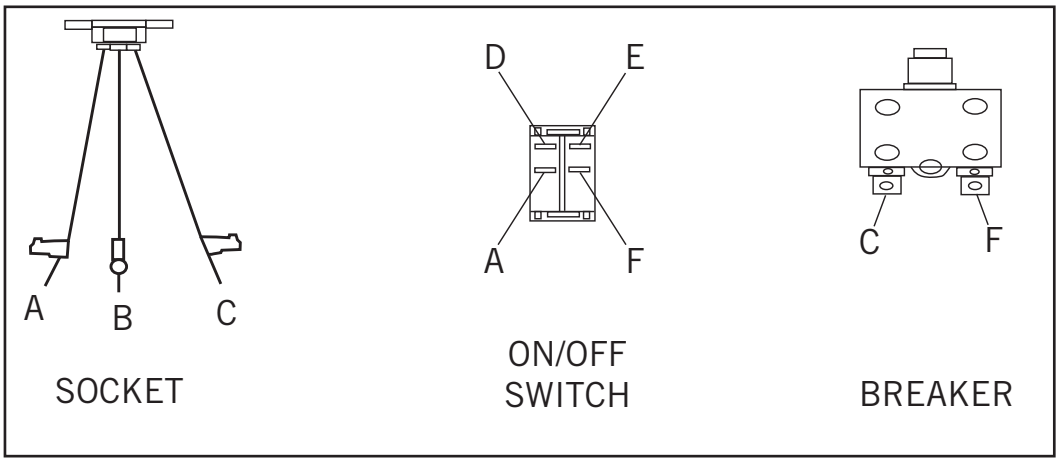
Digital Drive Wiring Diagram

Figure 20



Power Source Wiring Diagram

Figure 21



A – Socket wire to breaker or on/off switch. ***Wire length will determine connection point.***

B – Ground

C – Socket wire to breaker or on/off switch. ***Wire length will determine connection point.***

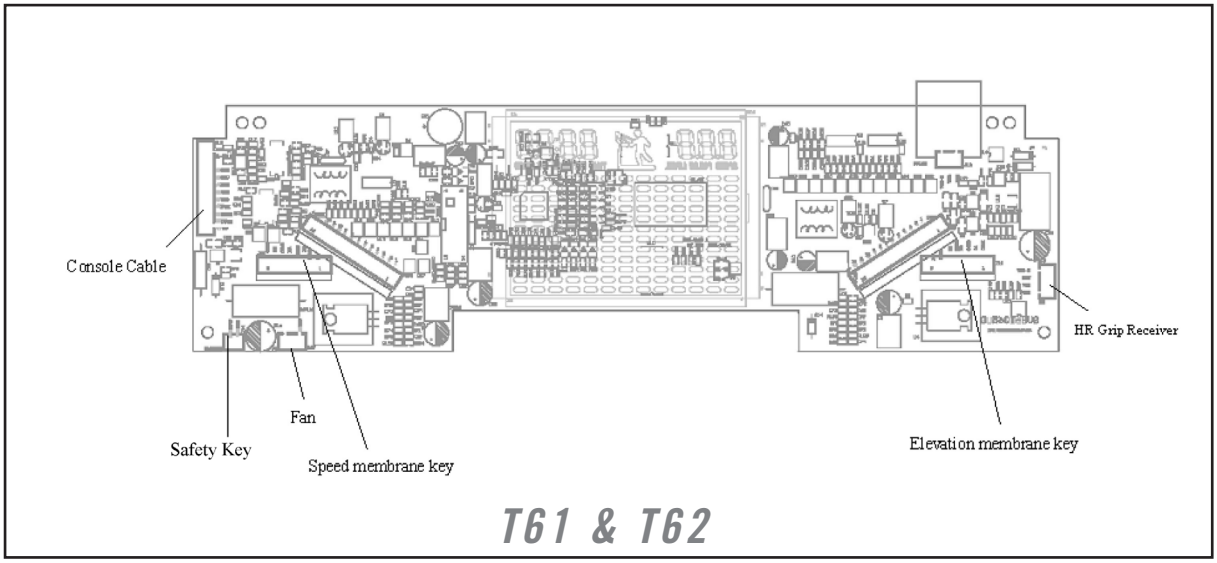
D – On/Off switch to motor control board.

E – On/Off switch to motor control board.

F – On/Off switch to breaker.

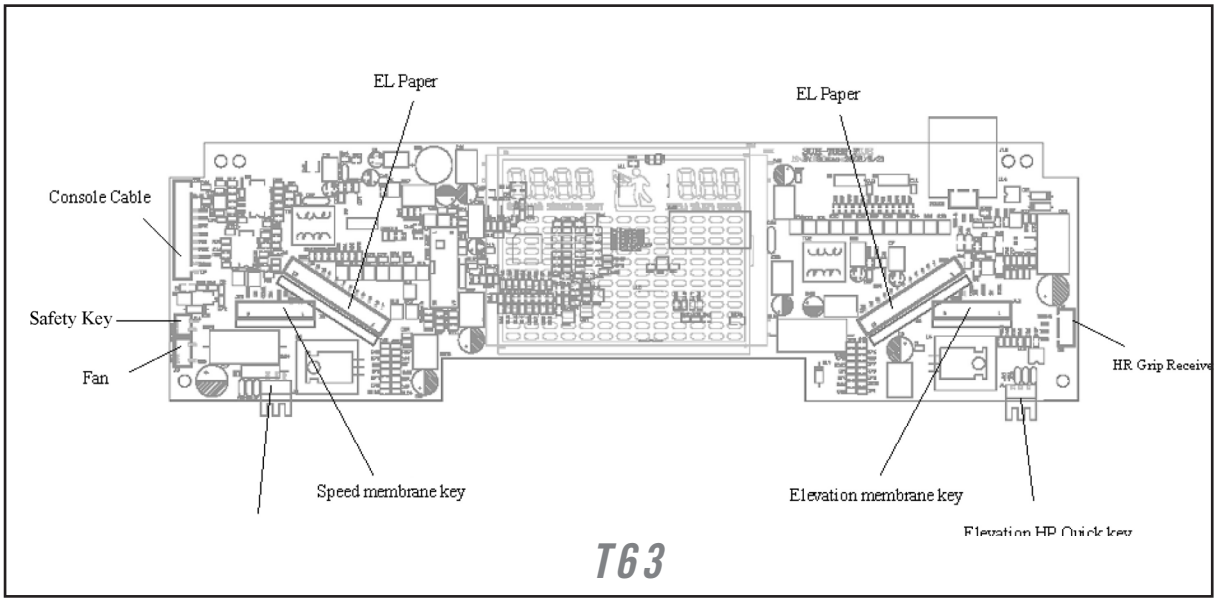
Upper Board Configurations

Figure 22



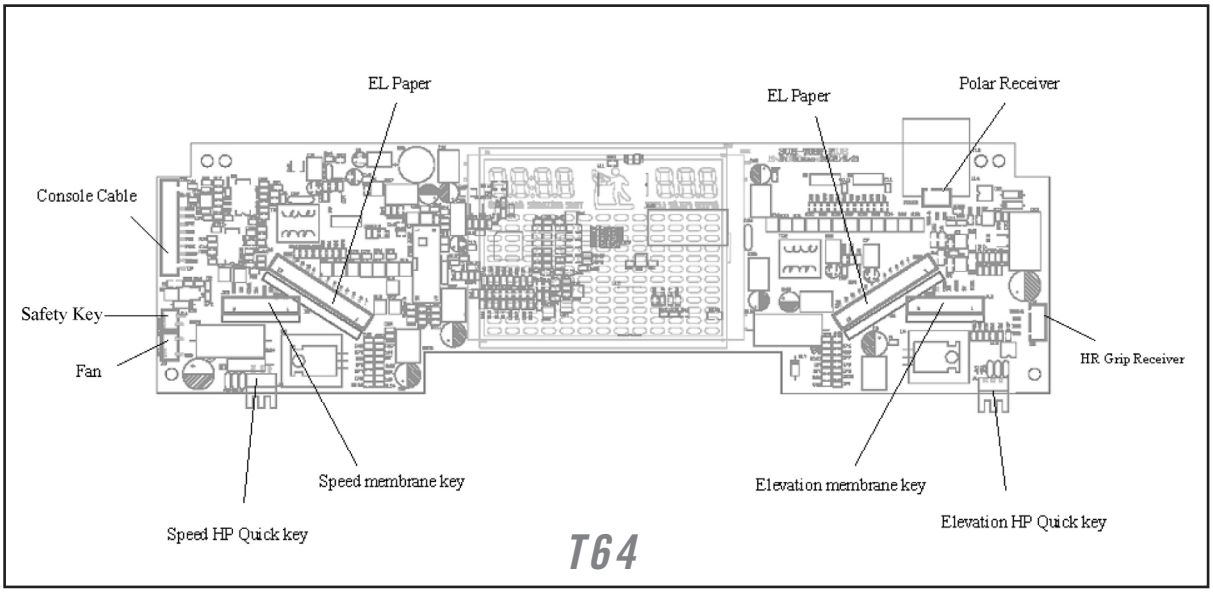
T61 & T62

Figure 23



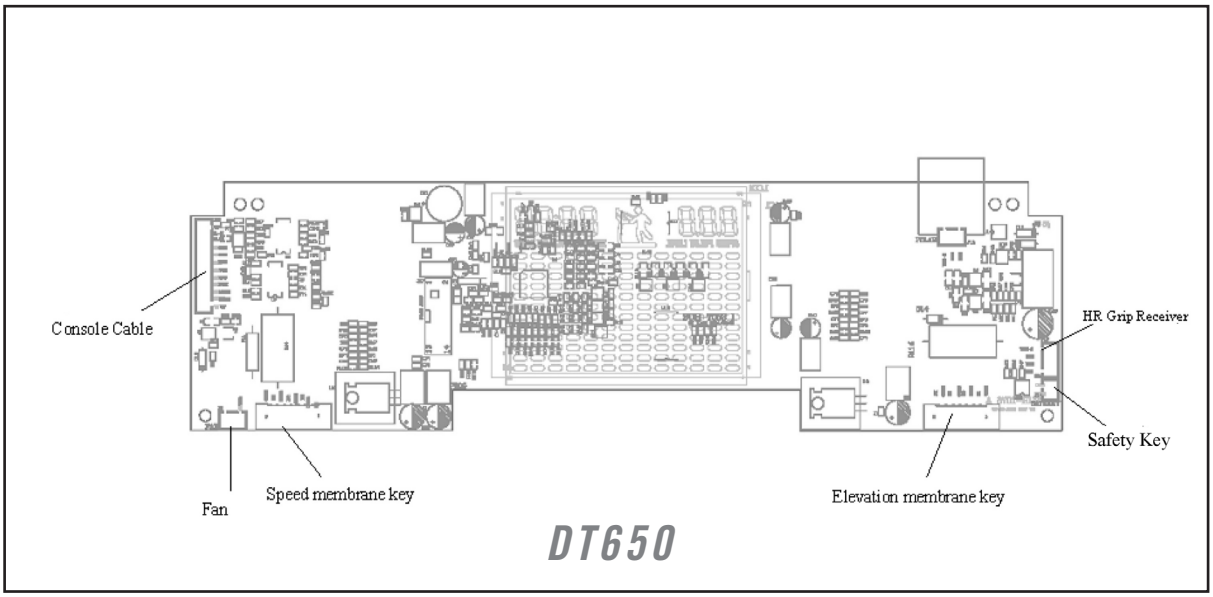
T63

Figure 24



T64

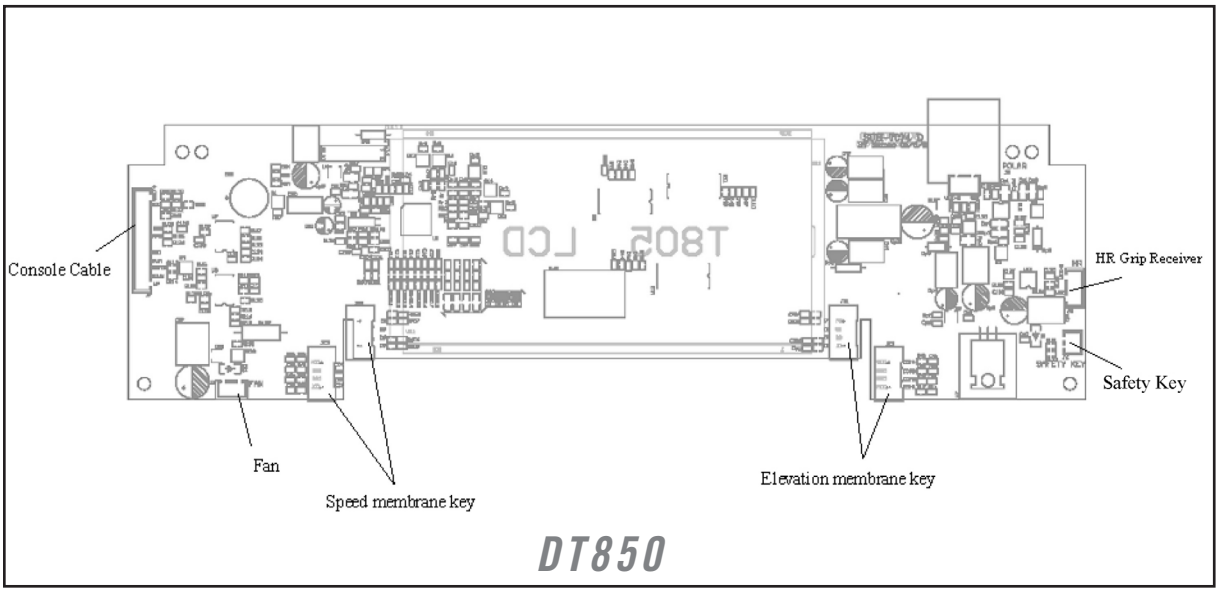
Figure 25



DT650

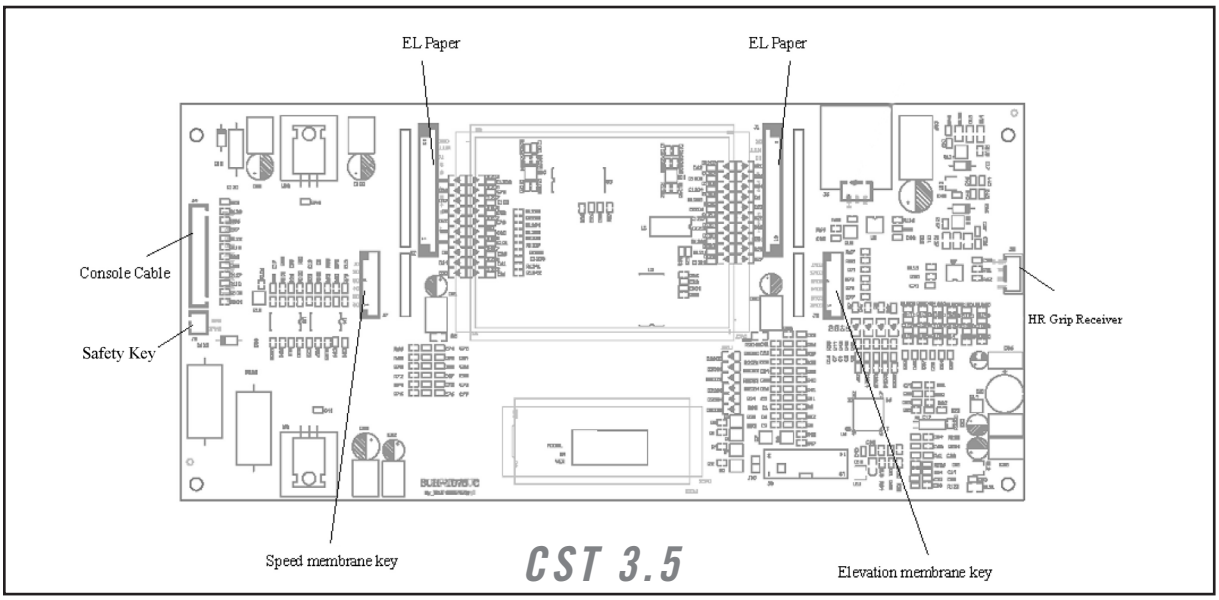
Upper Board Configurations

Figure 26



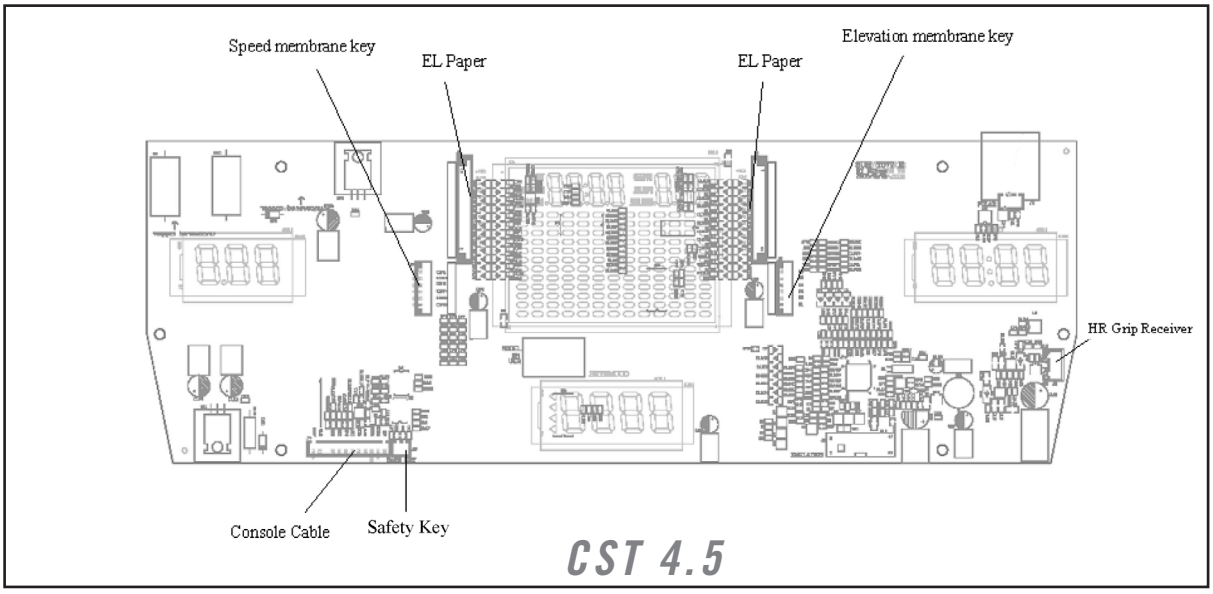
DT850

Figure 27



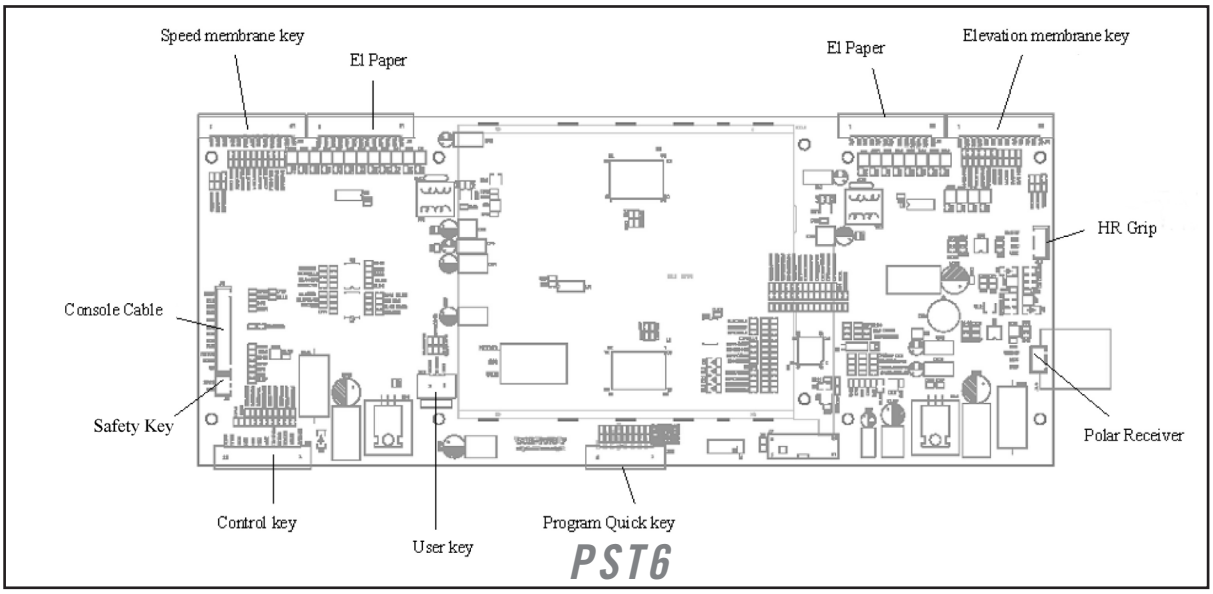
CST 3.5

Figure 28



CST 4.5

Figure 29



PST6

Upper Board Configurations

Figure 30

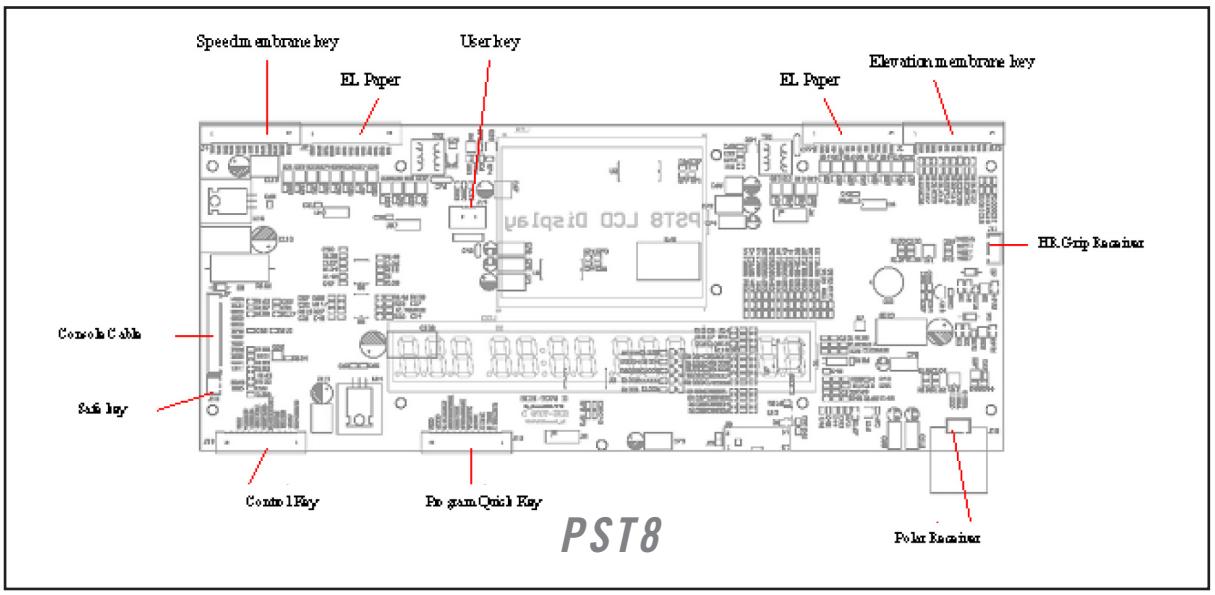
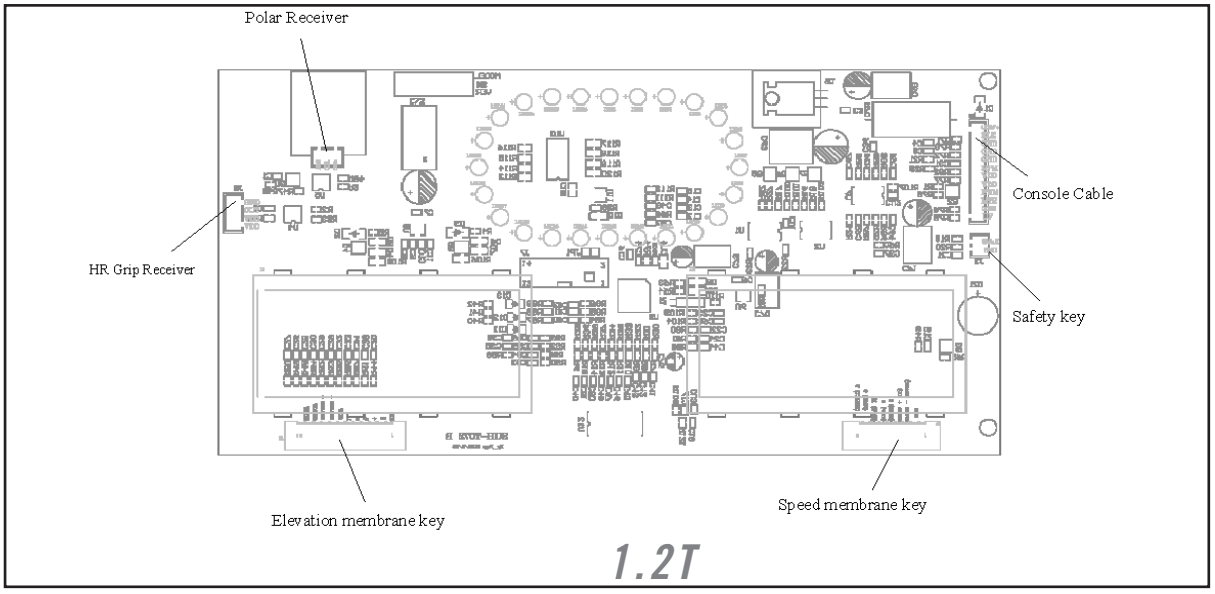


Figure 31



Upper Board Configurations

Figure 32

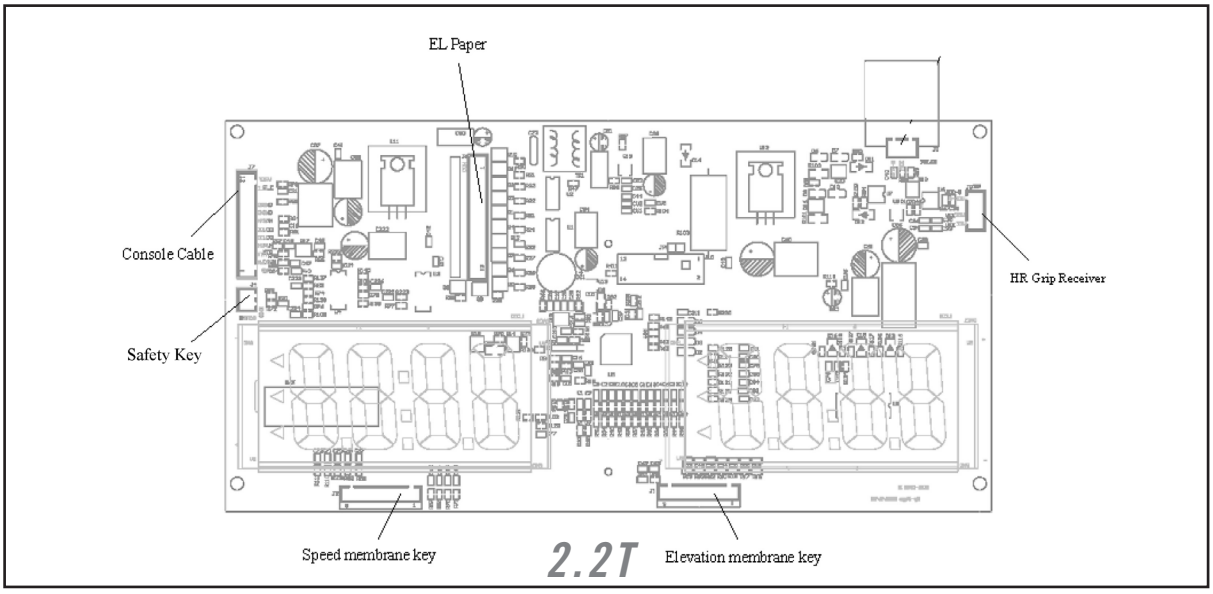


Figure 33

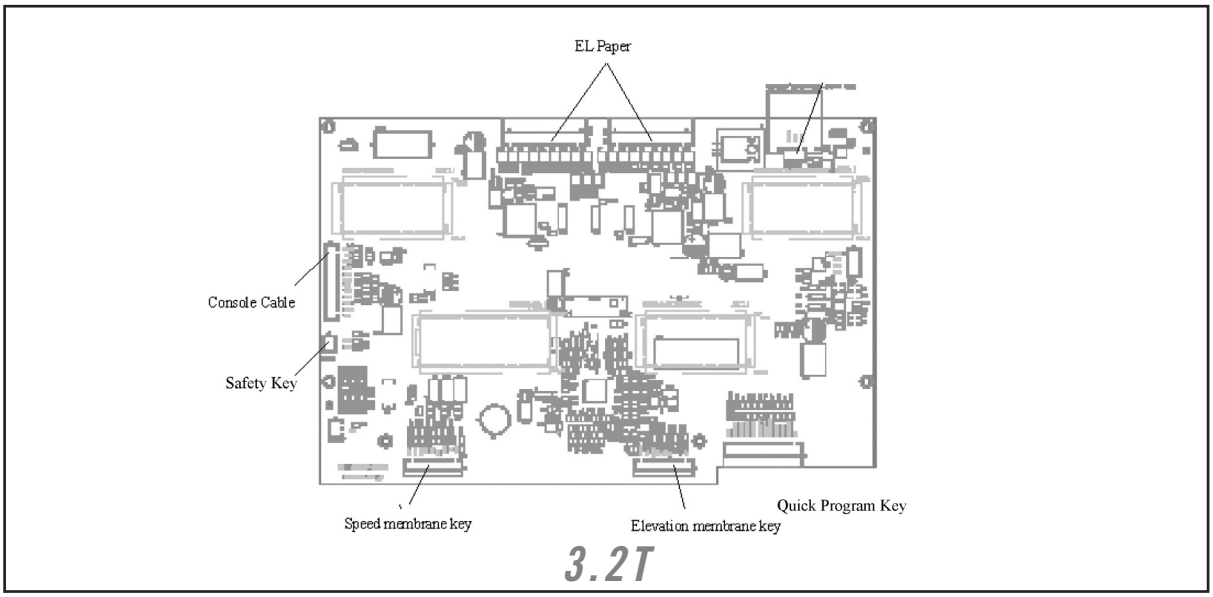
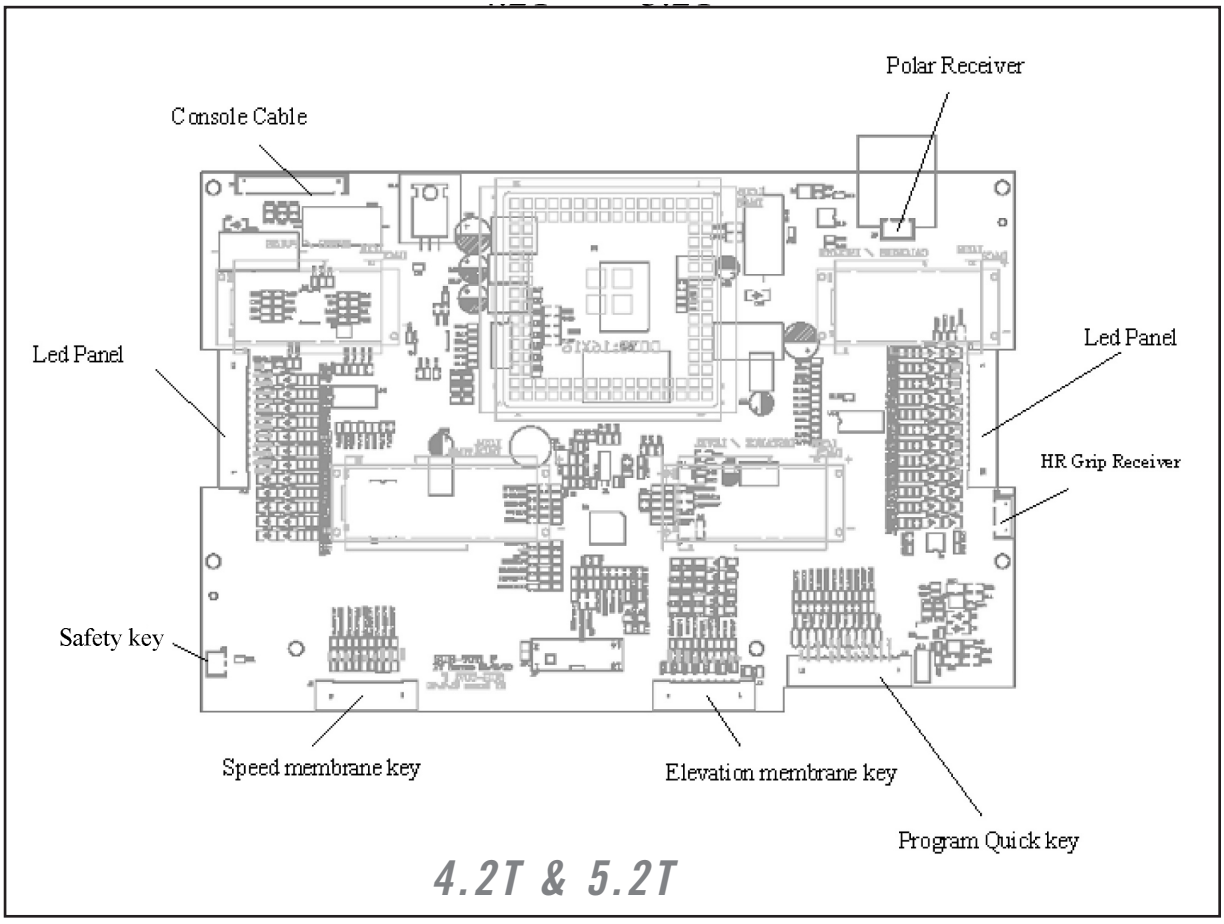


Figure 34



4.2T & 5.2T

Engineering Mode

(Models: T61, T62, T63, T64, CST 3.5, CST 4.5, DT650, DT850, WT950, PST 6, PST 8)

Entering Engineering Mode

IMPORTANT *Press and hold "Stop" to exit all engineering modes.*

Power on the treadmill and have the safety key in position on the console. Press and hold the elevation "+" and speed "-" for about 5 seconds to enter the Engineering Mode Menu. The console should beep three times and Eng0 should be displayed once in the Engineering Mode Menu.

Eng0 – Display and Button Check

1. While in the Engineering Mode Menu, press Speed "+" or "-" until Eng0 appears in the display.
2. Press "Enter" to select Eng0.
3. Press "Start" button to verify all LED's

Eng1– Hardware Test

1. While in the Engineering Mode Menu, press Speed "+" or "-" until Eng1 appears in the display.
2. Press "Enter" to select Eng1.
3. Press "Start" button to verify belt movement, sensor wire, and elevation function.

Eng2 - Auto Calibration

1. While in the Engineering Mode Menu, press Speed "+" or "-" until Eng2 appears in the display.
2. Press, "Enter" to select.
3. Press, "Start" to begin.

• The treadmill running belt will begin moving and will automatically begin the auto-calibration sequence to properly set and store the speed values.
• Upon successful calibration there will be four beeps and it will automatically exit Engineering Mode and will return you to the original screen.

Eng3 – Software Setup

IMPORTANT *Using incorrect software settings will result in erratic speeds, incorrect button function, etc.*

1. While in the Engineering Mode Menu, press Speed "+" or "-" until Eng3 appears in the display.
2. Press, "Enter" to select.
3. Press, "Enter" to change software version. Each time the select button is pressed, a number will change in the upper right hand corner (ex. 1-10). This number represents the number of programs for that software version. The settings are as follows:

1-10 = T64
1-8 = T63
1-6 = T62
1-4 = T61

IMPORTANT *You can only change software version for the T61-T64 Models.*

4. Press, "Start" to change the distance parameters between miles and kilometers. This number is shown in the upper left hand corner of the display. 0 represents miles and 1 represents kilometers.

Eng4 – Historical Information

IMPORTANT *The historical information is stored in the upper control board. If the upper board is ever replaced all current information will be lost and reset to zero.*

1. While in the Engineering Mode Menu, press Speed "+" or "-" until Eng4 appears in the display.
2. Press, "Enter" to select.
3. Press Speed "+" or "-" buttons to view accumulated time/distance. This includes time spent at each speed in hours as well as distance in miles. This number is shown in the upper right hand corner of the display.

Engineering Mode
(Models 1.2T, 2.2T, 3.2T, 4.2T, 5.2T)

Entering Engineering Mode

Press and hold "Stop" to exit all engineering modes.

Power on the treadmill and have the safety key in position on the console. Press and hold the elevation "+" and speed "-" for about 5 seconds to enter the Engineering Mode Menu. The console should beep three times and Eng0 should be displayed once in the Engineering Mode Menu

IMPORTANT *The 1.2T uses the "Select" button and not the "Enter" button to select the engineering mode on the screen.*

Eng0 – Display and Button Check

1. While in the Engineering Mode menu, press Speed "+" or "-" until Eng0 appears in the display.
2. Press "Enter" to select Eng0.
3. Press "Start" button to verify all LED's

Eng1– Hardware Test

1. While in the Engineering Mode menu, press Speed "+" or "-" until Eng1 appears in the display.
2. Press "Enter" to select Eng1 and "Start" to get the belt started.
3. Press "Start" button to verify belt movement, sensor wire, and elevation function.

Eng2 - Auto Calibration

1. While in the Engineering Mode Menu, press the Speed "+" or "-" until Eng2 appears in the display.
2. Press, "Enter" to select.
3. Press, "Start" to begin.

• The treadmill running belt will begin moving and will automatically begin the auto-calibration sequence to properly set and store the speed values.
• Upon successful calibration there will be four beeps and it will automatically exit Engineering Mode and will return you to the original screen.

Eng3 – Manual Calibration

IMPORTANT *Use to manually calibrate the running belt speed if auto calibration is unsuccessful.*

1. While in the Engineering Mode Menu, press the Speed "+" or "-" button until Eng3 appears in the display.
2. Press, "Enter" to select.
3. Press Speed "+" or "-" until the display shows P1
4. Press, "START" to begin.
5. Press Speed "+" or "-" until the speed is approximately 0.5 mph.
6. Press and hold "Start" for 3 – 5 seconds until the console beeps 3 times.
7. Press and hold "Stop" for 3 – 5 seconds until the console beeps 2 times.
8. Press Speed "+" until the display shows P2.
9. Repeat steps 4-7 with the speed being adjusted to 2.4 mph.
10. Press Speed "+" until the display shows P3.
11. Repeat steps 4-7 with the speed being adjusted to 6.0 mph.
12. Press Speed "+" until the display shows P4.
13. Repeat steps 4-7 with the speed being adjusted to 8.4 mph.
14. Press Speed "+" until the display shows P5.
15. Repeat steps 4-7 with the speed being adjusted to 12.0 mph.
16. Press and hold "Stop" for 3 – 5 seconds to return to the Engineering Menu.

Eng4 – Roller Diameter Check

IMPORTANT *It is important to verify proper roller values as improper values can create inaccurate speeds.*

1. While in the Engineering Mode Menu, press the Speed "+" or "-" button until Eng4 appears in the display.

2. Press, "Enter" to select.

3. Press Speed "+" or "-" until proper value is reached. (Please refer to the following chart for value)

4. Press and hold "Start" for 3 – 5 seconds until the console beeps 3 times. The value has now been properly saved.

Roller Values:
Elite 1.2T = 1481
Elite 2.2T = 1481
Elite 3.2T = 1481
Elite 4.2T = 1952
Elite 5.2T = 1972

Eng5 – Software Change (4.2T and 5.2T Only)

1. While in the Engineering Mode Menu, press the Speed "+" or "-" button until Eng5 appears in the display.

2. Press, "Enter" to select.

3. Press "Enter" to toggle between 4.2T and 5.2T software versions.

4. Press and hold "Start" for 3 – 5 seconds until the console beeps 3 times. The value has now been properly saved.

Eng6 – Change from Miles to KM (2.2T, 4.2T, 5.2T Models Only)

IMPORTANT *To Change the 1.2T from miles to KM remove B jumper on back of upper control board.*

1. While in the Engineering Mode Menu, press the Speed "+" or "-" button until Eng6 appears in the display.

2. Press, "Enter" to select

3. Press "Enter" to toggle between Miles and KM software versions (0 = Miles, 1 = KM)
Press and hold "Start" for 3 – 5 seconds until the console beeps 3 times. The value has now been properly saved.

Safety Key/Reed Switch Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
*Console only displays dashes in the display window – **Slot style key.***	*Safety key or reed switch is positioned incorrectly or safety key has failed.*	*-Verify that the safety key is in position and that it is secure. -Manually adjust the position of the reed switch trigger and/or the plastic tab on the console shell. (**Reference Upper Board/ Reed Switch Replacement in Spare Parts Replacement section.)***	*-Replace safety key. -If plastic tab is broken replace console shell.*
	Failed reed switch.	*-Short the switch connector on the upper board by using a flat blade screwdriver or by placing a jumper switch on the connector. -Engage reed switch manually to ensure its function*	*If the upper board still displays dashes then replace upper board. Otherwise replace reed switch. (**Reference Upper Board/ Reed Switch Replacement in Spare Parts Replacement section.)***
*Console only displays dashes in the display window – **Magnet style key.***	*Safety key is positioned incorrectly or has failed.*	*-Remove safety key and reapply. -Test magnet.*	*Replace safety key.*
	Failed reed switch.	*Short the switch connector on the upper board by using a flat blade screwdriver or by placing a jumper switch on the connector.*	*If the upper board still displays dashes then replace upper board. Otherwise replace reed switch. (**Reference Upper Board/ Reed Switch Replacement in Spare Parts Replacement section.)***

Console/Upper Board Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
No display on the console and power switch on machine is dark.	*Circuit breaker in home has tripped.*	*Check for dedicated circuit (20 amp is ideal) and check wall outlet voltage (120 VAC)*	*Reset breaker.*
No display on the console and power switch on machine is lit.	*Breaker on machine has tripped or has failed.*	*Reset breaker.*	*Replace breaker if necessary.*
	Failed power switch.	*Make sure power switch is turned on.*	*Replace power switch if necessary.*
	Failed power cord.	*Take voltage check of power cord.*	*Replace power cord.*
	Improper wiring or AC wires have failed.	*-Check all wiring coming in from the power switch to the motor control board and to the upper board. (**Reference Wiring Diagrams and Schematics section.**) -Verify LED's on motor control board (**Reference Voltage Checks and LED Diagnosis section.**) If LED's are not lit on motor control board perform voltage check on AC wires. (**Reference Voltage Checks and LED Diagnosis section.**)*	*Connect wires correctly or replace as needed.*
	Failed Console cable.	*If LED's on motor control board are present, Check console cable voltages at B7, B8 (**Reference Voltage Checks and LED Diagnosis section.**)*	*Replace console cable. (**Reference Console Cable Replacement in Spare Parts Replacement section.**)*
	Failed Upper board	*Check voltage and continuity of console cable. (**Reference Voltage Checks and LED Diagnosis section.**)*	*Replace upper board. (**Reference Upper Board/Reed Switch Replacement in Spare Parts Replacement section.**)*

Console/Upper Board Troubleshooting Continued

Symptom	Possible Cause	Test Procedure	Repair
Running belt stops, console resets during workout.	*Safety key or reed switch is positioned incorrectly/ Safety key is damaged.*	*-Verify that the safety key is in position and that it is secure. -Manually adjust the position of the reed switch trigger and/or the plastic tab on the console shell. (**Slot style safety key only**)*	*- Replace safety key. - If plastic tab is broken replace console shell. (**Slot style safety key only**)*
	Inadequate power.	*-Check for dedicated circuit (20 amp is ideal) and check wall outlet voltage (120 VAC) -Make sure machine is not on extension cord or surge protector.*	*If the AC voltage is missing or incorrect, check the AC service or consult an electrician.*
	Damaged or improper wiring.	*-Verify there are no pinches or cuts in the power cord, power wires motor wires, or console cable. -Verify the connections of above wires and cords*	*Replace parts as needed.*
	Inadequate lubrication on deck and running belt.	*Place hand underneath running belt and feel for adequate silicone application.*	*Apply silicone. (**Reference Maintenance section.**)*

Membrane Key Pad/Overlay Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
All or some of the keys on the console will not work	*Ribbon cables connecting the membrane keypad to upper board are not seated properly or are disconnected.*	*Verify the ribbon cables are connected securely into the upper board.*	*Remove and reseat cables.*
	Membrane keypad defective.	*Keys are pressed, some of the buttons may function but there are no corresponding beeps.*	*Replace membrane keypad. (**Reference Membrane Keypad/EL Paper/Overlay Replacement in Spare Parts Replacement section.**)*
	Upper board defective.	*Keys are pressed and there are corresponding beeps, but console does not respond. (Sometime the key will not beep until it is released)*	*Replace upper board. (**Reference Upper Board/Reed Switch Replacement in Spare Parts Replacement section.**)*
Unit starts as soon as safety key is in place or console will reset itself after a few seconds of use.	*Overlay defective or sticking.*	*-Remove overlay and press keypad for proper function. -Peel up overlay and repositioning it.*	*Replace overlay. (**Reference Membrane Keypad/EL Paper/Overlay Replacement in Spare Parts Replacement section.**)*
	Overlay defective or sticking or membrane keypad defective	*-Massage buttons on keypad to make sure that none are stuck. -Remove overlay and press keypad for proper function. -Peel up overlay and repositioning it.*	*Replace overlay and membrane keypad. (**Reference Membrane Keypad/EL Paper/Overlay Replacement in Spare Parts Replacement section.**)*

Heart Rate Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
*Heart rate erratic or no heart rate function. (**Hand Grips**)*	*User error.*	*(**Reference Proper Heart Rate Usage section.**)*	
	Failed heart rate grips.	*(**Reference Proper Heart Rate Usage section.**)*	*If there is absolutely no heart response, replace heart rate grips.*
	Failed heart rate receiver.	*(**Reference Proper Heart Rate Usage section.**)*	*If proper heart rate instructions are followed and heart rate continues to be erratic, replace heart rate receiver.*
	Failed upper board.		*Replace upper board. . (**Reference Upper Board/Reed Switch Replacement in Spare Parts Replacement section.**)*
*Heart rate erratic or no heart rate function. (**Telemetric chest strap**)*	*User error.*	*(**Reference Proper Heart Rate Usage section.**)*	
	Electromagnetic interference.	*Check immediate area for causes of interference (**Florescent lighting, electric dog fences, large electric motors, etc.**)*	*Remove interference from vicinity of the unit.*
	Failed telemetric chest strap or polar receiver.	*(**Reference Proper Heart Rate Usage section.**)*	*Replace chest strap and/or upper board. (**Reference Upper Board/Reed Switch Replacement in Spare Parts Replacement section.**)*

Static Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Static shocks when touching machine	*Machine on carpet.*		*Place a rubber mat under machine to reduce static carried from carpet.*
	Nylon clothing.		*Wear cotton clothing to reduce static on the body or spray static guard on clothing prior to using machine.*
	Dry air in home.		*Use humidifier to increase humidity in air.*
	Inadequate lubrication on deck and running belt.	*Place hand underneath running belt and feel for adequate silicone application.*	*Apply silicone lubrication (**Reference Treadmill Deck Procedures/lube in Maintenance section.**)*
	Improper grounding of heart rate receiver.	*Inspect heart rate receiver to insure that grounding wire is attached.*	*Reattach grounding wire.*
	Defective grounding fibers in running belt.	*Feel underside of running belt. It should have a smooth cottony feel to it.*	*If it is rough or worn in texture, replace running belt and lubricate.*

No Motor Movement Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
No motor movement - Upon pressing start, console responds normally, keys respond normally, and elevation works but no belt movement.	*Inadequate power.*	*-Check for dedicated circuit (20 amp is ideal) and check wall outlet voltage (120 VAC) -Make sure machine is not on extension cord or surge protector.*	*If the AC voltage is missing or incorrect, check the AC service or consult an electrician.*
	Damaged or improper wiring.	*-Verify there are no pinches or cuts in the power cord, power wires motor wires, or console cable. -Verify the connections of above wires and cords.*	*Replace parts as needed.*
	Failed motor control board (MCB).	*Verify power to MCB (**Reference Voltage Checks and LED Diagnosis section.**)*	*Replace MCB. (**Reference Motor Control Board Replacement in Spare Parts Replacement section.**)*
	Failed drive motor.	*Measure voltage output from motor. (**Reference Voltage Checks and LED Diagnosis section.**)*	*Replace drive motor. (**Reference Optical Disk/Digital Sensor/Drive Motor Replacement in Spare Parts Replacement section.**)*
	Failed optic sensor.		*Replace optic sensor. (**Reference Optical Disk/Digital Sensor/Drive Motor Replacement in Spare Parts Replacement section.**)*

Erratic Speed Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Erratic speeds - Upon pressing start, belt speed increases rapidly and then comes to a complete stop quickly.	*Failed optic sensor.*		*Replace optic sensor. (**Reference Optical Disk/Digital Sensor/Drive Motor Replacement on in Spare Parts Replacement section.**)*
Erratic speeds - Upon pressing start, belt speed increases rapidly and does not stop.	*Failed motor control board (MCB).*		*Replace MCB. (**Reference Motor Control Board Replacement in Spare Parts Replacement section.**)*
Erratic speeds - Running belt speed is not stable.	*Machine not calibrated properly.*	*Run auto calibration. (**Reference Engineering Mode section.**)*	*If unit fails to auto calibrate, refer to auto calibration troubleshooting on page.*
	-Running belt is too loose or too tight. *-Drive belt is too loose or too tight.*	*-The running belt should not slip at all when customer is using the machine* *-The drive belt should have approximately 3/8 of inch deflection.*	*-Tighten running belt (**Reference Tensioning and Aligning the Running Belt in Maintenance seciton.**)* *-Tighten drive belt (**Reference Tensioning the Drive Belt in Maintenance section.**)*
	Inadequate power.	*-Check for dedicated circuit (20 amp is ideal) and check wall outlet voltage (120 VAC).* *-Make sure machine is not on extension cord or surge protector.*	*If the AC voltage is missing or incorrect, check the AC service or consult an electrician.*
	Failed or improper wiring.	*-Verify there are no pinches or cuts in the power cord, power wires motor wires, or console cable.* *-Verify the connections of above wires and cords.*	*Replace parts as needed.*
	Inadequate lubrication on deck and running belt.	*Place hand underneath running belt and feel for adequate silicone application.*	*Apply silicone. (**Reference Silicon Oil Application in Maintenance section.**)*
	Failed motor control board (MCB).		*Replace MCB. . (**Reference Motor Control Board Replacement in Spare Parts Replacement section.**)*

Auto Calibration Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Failed Auto Calibration – Belt runs for a few seconds and then stops and E1 message on console.	*Failed RPM sensor.*	*Put machine into Eng1 and check for slight fluctuation of speed in speed window of display. (**Speed should not fluctuate more than a few hundredths.**)*	*Replace RPM sensor.*
	RPM sensor misaligned.	*Adjust sensor bracket to correct position.*	*(**Reference Roller Replacement in Spare Parts Replacement section for correct sensor position**)*
	Failed console cable.	*Check voltage and continuity of console cable. (**Reference Voltage Checks and LED Diagnosis section.**)*	*Replace console cable. (**Reference Console Cable Replacement in Spare Parts Replacement section.**)*
	Magnet missing in front roller pulley.		*Replace magnet.*
Failed Auto Calibration – Belt never runs and E1 message on console.			*See troubleshooting section for no motor movement on page 38.*
Failed Auto Calibration – Board never sets speeds. Belt will continue to run and not stop.	*RPM sensor not aligned properly or has failed.*	*- Verify positioning of sensor wire. (Wire coming from RPM sensor points toward the front of the unit, sensor is as close as possible to the magnet in the pulley without touching, and the sensor bracket 90-degree angle, not bent in any way.)* *- Put machine into Eng1 and check for slight fluctuation of speed in speed window of display. **(Speed should not fluctuate more than a few hundredths.)***	*Replace RPM sensor.*
	Failed motor control board (MCB).	*If other tests mentioned above are normal then replace MCB.*	*Replace MCB. (**Reference Motor Control Board Replacement in Spare Parts Replacement section.**)*

Circuit Breaker Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Machine will trip home circuit breaker.	*Inadequate power.*	*-Check for dedicated circuit (20 amp is ideal) and check wall outlet voltage. (120 VAC)* *-Make sure machine is not on extension cord or surge protector.*	*If the AC voltage is missing or incorrect, check the AC service or consult an electrician*
	Inadequate lubrication on deck and running belt.	*Place hand underneath running belt and feel for adequate silicone application.*	*Apply Silicon lubrication. (**Reference Silicon Oil Application in Maintenance section.**)*
	Failed running belt.	*Feel underside of running belt. It should have a smooth cottony feel to it.*	*Replace running belt. (**Reference Running Belt/Deck Replacement in Spare Parts Replacement section.**)*
	Failed drive motor.	*Perform AMP draw test on motor. (**Refer to 5 Step Diagnostic section.**)*	*Replace drive motor. (**Reference Optical Disk/Digital Sensor/Drive Motor Replacement in Spare Parts Replacement section.**)*
	Failed motor control board (MCB).		*Replace MCB (Reference Motor Control Board replacemment 53.)*
Machine breaker will trip.	*Failed circuit breaker*		*Replace circuit breaker.*

Elevation Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Elevation motor will incline and decline without command.	*Failed elevation motor.*	*-Verify there are no pinches or cuts on the elevation wires. -Verify the connections of above wires.*	*Replace elevation motor. (**Reference Elevation Motor Replacement in Spare Parts Replacement section.**)*
Elevation motor starts running as soon as the power is turned on. Constant down.	*Failed motor control board (MCB).*	*Turn power on.Do not press start. Wait 30-60 seconds and see if motor is hot.Use caution. Motor can get very hot.*	*Replace MCB. . (**Reference Motor Control Board Replacement in Spare Parts Replacement section.**)*
Elevation motor does not Reach minimum or maximum settings	*Elevation motor is not calibrated correctly or failed incline motor.*	*Verify elevation motor shaft position. (**Reference elevation motor replacement in Spare Parts Replacement section.**)*	*Replace elevation motor. (**Reference Elevation Motor Replacement in Spare Parts Replacement section.**)*
No elevation function.	*Failed console cable.*	*Check voltage and continuity of console cable. (**Reference Voltage Checks and LED Diagnosis section.**)*	*Replace console cable. (**Reference Console Mast Cable Replacement in Spare Parts Replacement section.**)*
	Failed elevation motor.	*Press start and check to see if the down LED is constantly lit on MCB. Enter engineering mode (Eng1) and press start. Repeatedly increase the incline. (**Reference Voltage Checks and LED Diagnosis section.**)*	*If the up LED flashes but the elevation does not increase, replace elevation motor and console cable. (**Reference Elevation Motor page 56 and Console Mast Cable Replacement in Spare Parts Replacement section.**)*
	Failed upper board.	*Press start and check to see if the down LED is constantly lit on MCB. Enter engineering mode (Eng1) and press start. Repeatedly increase the incline. (**Reference Voltage Checks and LED Diagnosis section.**)*	*If the up LED flashes and the elevation increases, replace upper board. (**Reference Upper board/Reed switch Replacement in Spare Parts Replacement section.**)*
Elevation is stuck at the highest position as soon as power is applied	*Failed lower board*	*If the incline went into the highest position as soon as power was applied without start being pressed.*	*Replace lower board.*

Noise Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Thumping sound when running belt is engaged.	*New treadmill.*	*Let the treadmill run for about 30 minutes without load to break new treadmill running belt in.*	
	Failed roller.		*Replace front or rear roller as needed. (**Reference Roller Replacement in Spare Parts Replacement section.)***
Rubbing or grinding sound from underneath motor cover.	*Misaligned drive belt.*	*- Remove motor cover and verify alignment of drive belt.* *- Inspect for debris on drive motor pulley, front roller pulley, or on drive belt.*	*Align drive belt and/or replace drive belt. (**Reference Tensioning the Drive Belt in Maintenance section.**)*
	Failed drive motor bearings.		*Replace drive motor. (**Reference Optical Disk/Digital Sensor/Drive Motor Replacement in Spare Parts Replacement section.)***
	Motor brushes are not seated properly.	*Inspect motor brushes and commutator for abnormal wear.*	*Replace motor brushes and/or stone commutator. (**Reference Motor Brush Replacement page 50 and Stoning the Commutator in Spare Parts Replacement section.)***

Spare Parts Replacement

To Remove the motor cover on the PST6, PST8, and 2.2-5.2 models, the machine must be elevated to at least level 6 or both side covers need to be removed to gain access to all 4 motor cover screws.

Roller Replacement

Tools Required:

•Philips Screwdriver
•4mm, 6mm, 8mm Allen Wrenches
•13mm, 14mm Socket and combination wrenches

Procedure:
Front Roller

1) Remove the motor cover and rear roller end caps.

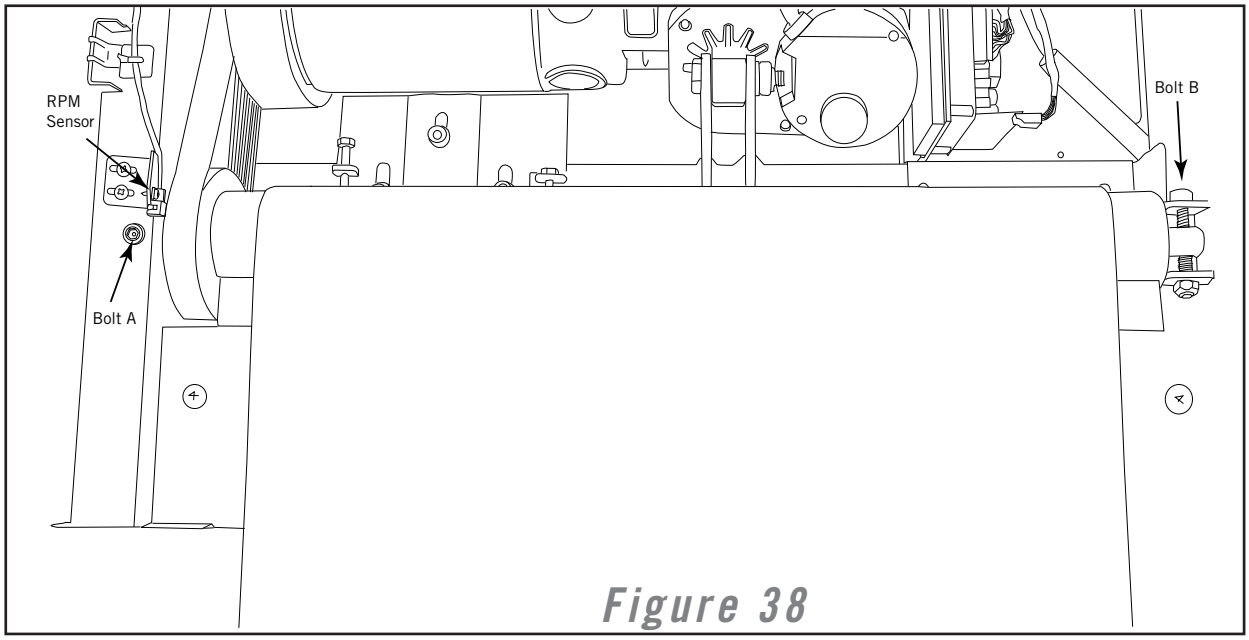


Figure 38

2) Remove tension bolts and remove the rear roller.

IMPORTANT *It is a good idea to note the position of the rear roller before removing. For best results, place two removable marks on the left and right side of the deck and the running belt. When reinstalling, match up the marks for proper tension.*

3) Remove the speed sensor bracket.

4) Remove the front roller bolt A on drive belt side. (Figure 38)

5) On the opposite side of front roller remove front roller bolt B. (Figure 38)

6) Press against the drive belt and guide it towards the left until it is released from the front and remove front roller.

7) Reinstall the front roller. (Put Drive Belt on roller before reattaching bolts)

8) Reattach drive belt to front roller and motor pulleys.

9) Reattach rear roller.

*10) Start the treadmill, and run it to ensure proper belt tension and side-to-side belt tracking. If there is a problem with the belt tension or tracking, adjust the rear roller position. (**Reference Tensioning and Aligning the Running Belt in Maintenance section.**)*

Running Belt/Deck Replacement

Tools Required:

- *Philips Screwdriver*
- *4mm, 5mm, 6mm, 8mm Allen Wrenches*
- *13mm Socket and Combination Wrench*

Procedure:

Figure 35

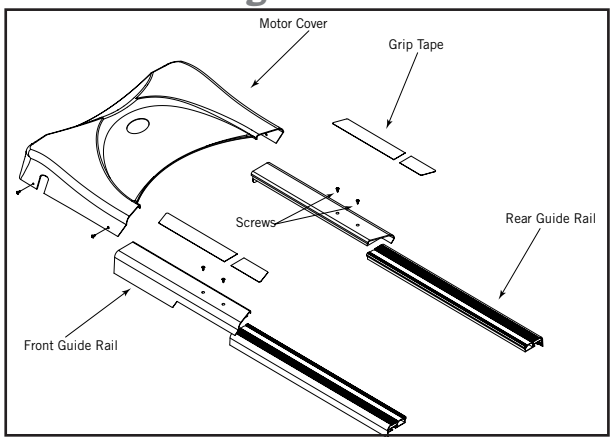
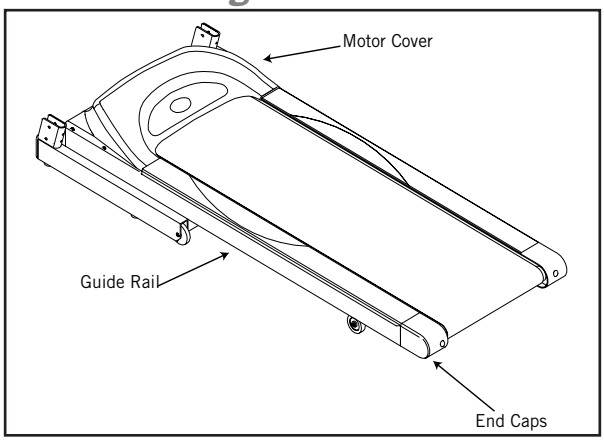


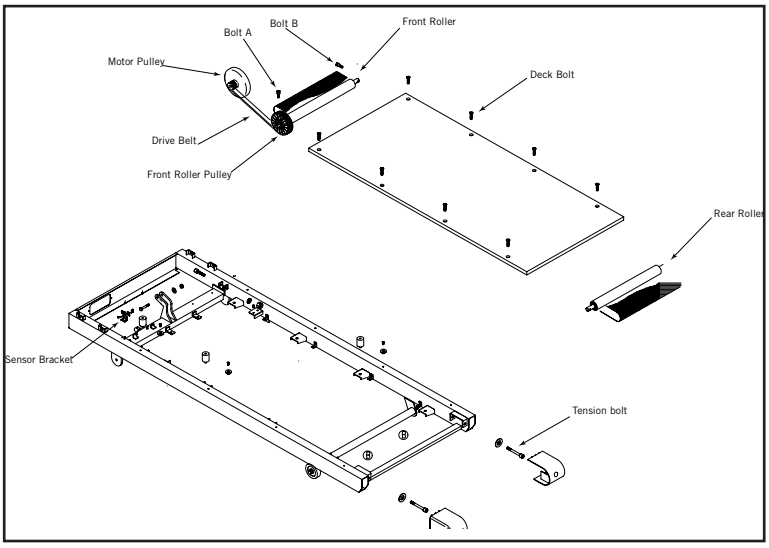
Figure 36



1) Remove the motor cover, rear roller end caps, and guide rails. (Figures 35 & 36)

2) ***For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950 Only*** *- Peel off grip tape stickers on front guide rail to expose the two screws underneath. Remove screws and remove front guide rail.*

Figure 37



3) Remove tension bolts and remove the rear roller. (Figure 37)

4) Remove the speed sensor bracket.

5) Loosen or remove the front roller bolt A on drive belt side.

6) On the opposite side of the front roller remove front roller bolt B.

7) Press against the drive belt and guide it towards the left until it is released from the front roller and remove front roller.

8) Remove deck bolts.

IMPORTANT *If you are only replacing the belt then it is not necessary to remove all the deck bolts. Only remove the left hand or right hand bolts and slide the running belt*

9) Replace running belt and or deck.

10) Tighten the deck bolts.

11) Place Drive Belt around the front roller.

12) Reinstall the front roller.

13)Reattach drive belt to front roller and motor pulleys.

14) Reattach the rear roller but do not tighten completely.

15) Add silicon oil lubrication to deck.

16) Tighten rear roller to proper position.

*17) Start the treadmill, and run it to ensure proper belt tension and side-to-side belt tracking. If there is a problem with the belt tension or tracking, adjust the rear roller position. (**Reference Tensioning and Aligning the Running Belt in Maintenance section.)***

Optical Disk/Digital Sensor/Drive Motor Replacement

Tools Required:
- *13 mm Socket*
- *Philips Screwdriver*
- *Right Angle Philips Screwdriver*
- *6mm Allen Wrench*

IMPORTANT ***For Optical Disk Replacement Only-****If you have a right angle Philips screw diver then you should be able to remove the optical disk after removing the motor cover.*

Procedure:

1) Remove the motor cover.

2) ***For Models PST 6 & 8/ 1.2T-5.2T Only*** *- Remove the screws attaching bottom motor cover to main frame*

3) Put the deck into storage position.

4) Remove the screws from the bottom motor cover. (Figure 39 & 40)

Figure 39

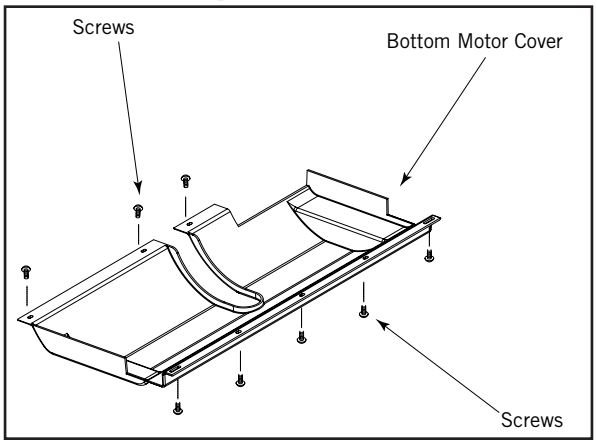
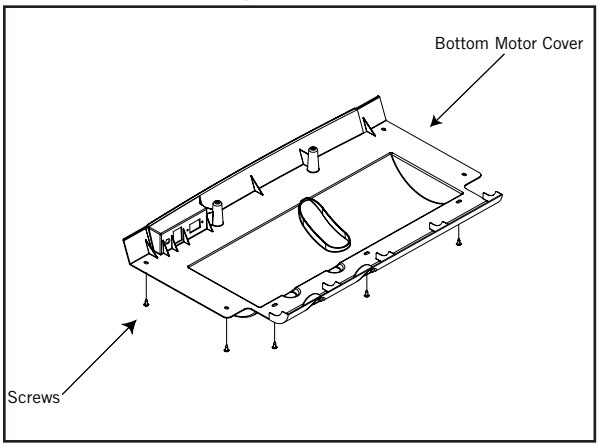


Figure 40



5) ***For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950 Only*** *- Bring the deck back down into the horizontal position.*

6) ***For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950 Only*** *- Plug in and turn on the machine.*

7) ***For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950 Only*** *- Raise the deck to the highest elevation and turn off power to the unit.*

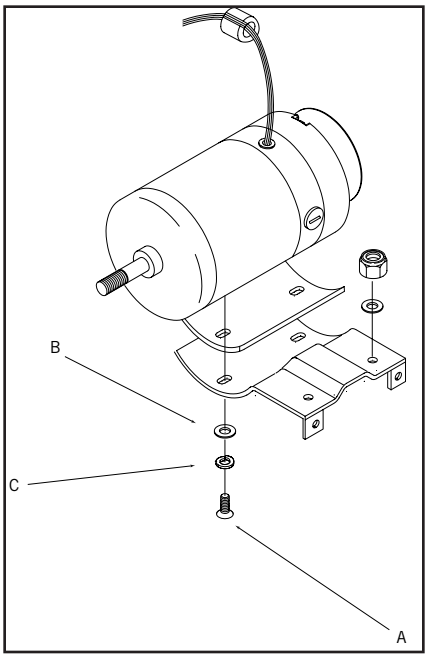
8) ***For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950 Only*** *- Remove the remaining screws from the front of the bottom motor cover.*

9) Unplug the power cord from the wall outlet.

10) Unplug motor and optic sensor wires from the motor control board. Also remove the green ground wire that is attached to the bracket next to the motor control board.

11) Remove the bolts (A) and holding the motor to the motor bracket. (Figure 41)

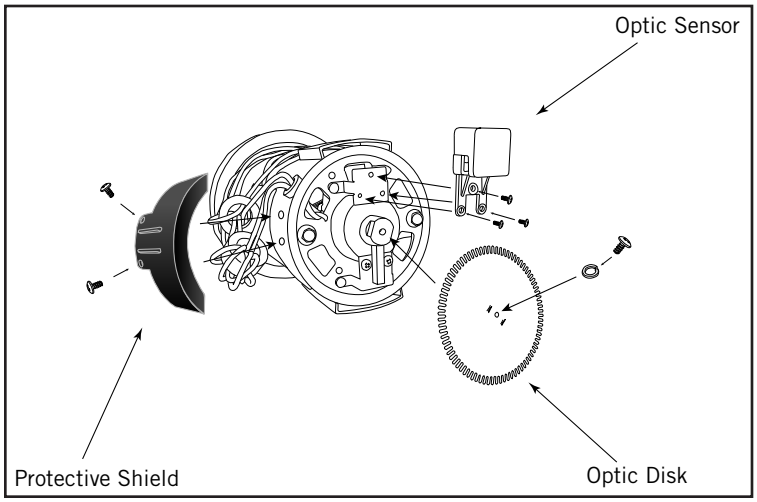
Figure 41



12) Remove protective shield, optic disk, and optic sensor from the drive motor. (Figure 42)

If new Motor has these pieces already preassembled then skip to step 14.

Figure 42



13) Install optic sensor, optic disk, and the protective shield to the new motor.

14) Reinsert the bolts (A) and washers (B & C) holding the motor to the motor bracket but do not tighten. (Figure 41)

15) Place the drive belt on the drive motor.

16) Position motor so that the motor pulley is aligned with the front roller pulley.

17) Tighten down bolts (A).

Motor Brush Replacement

***Tools Required**:*

• Flat Blade Screwdriver

Procedure:

1) Turn off the power to the treadmill and unplug the power cord from the wall outlet.

2) Remove Brush Covers. (Figures 43 & 44)

Figure 43

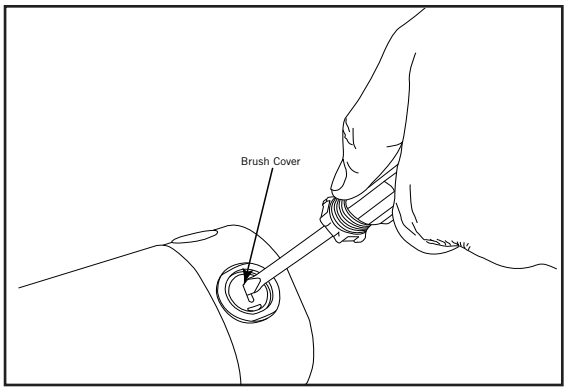
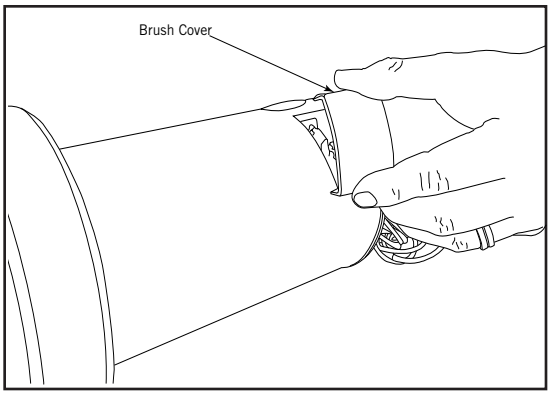


Figure 44



*3) **For Models T61-T62/CST3.5/DT650 & 850/WT950/1.2T-2.2T Only** - Remove clip and spring holding motor brush remove motor brush. (Figures 45 & 46)*

Figure 45

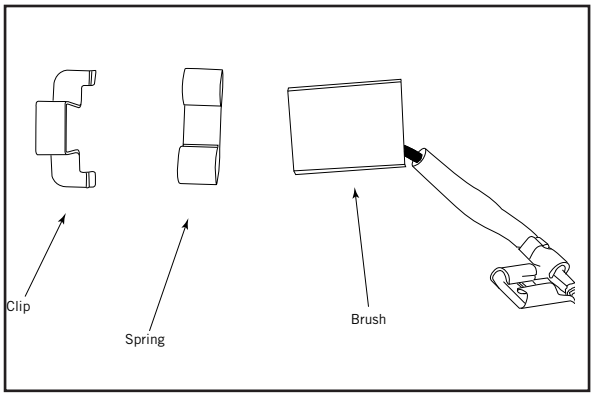
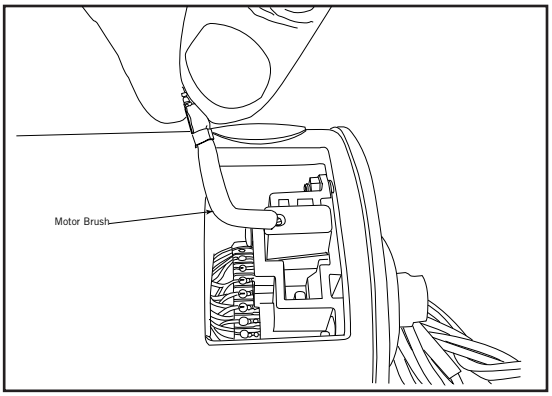
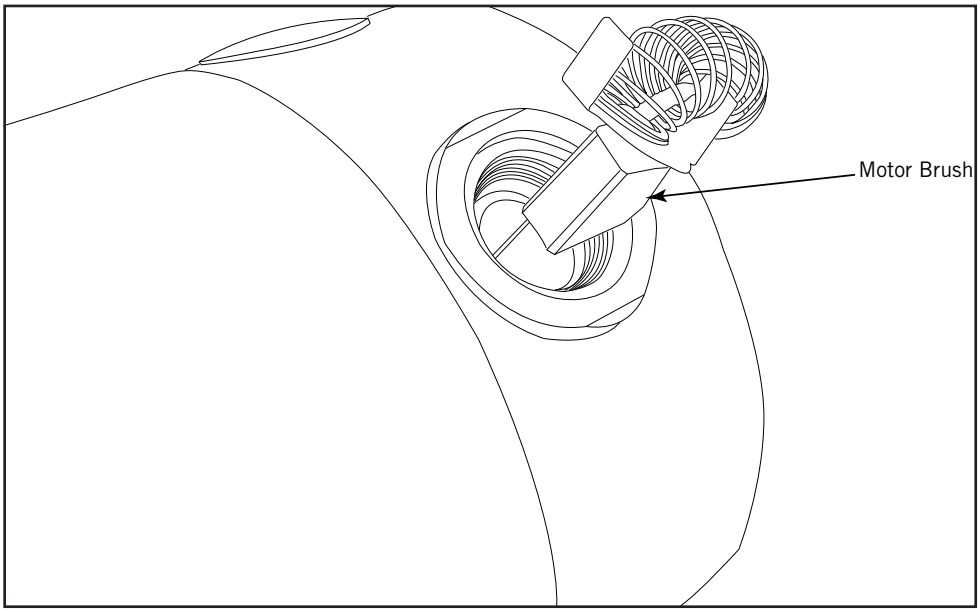


Figure 46



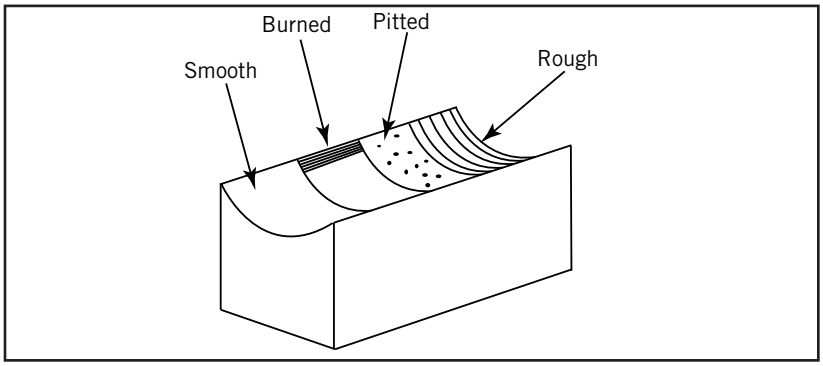
*4) **For Models T63-T64/CST4.5/3.2T-5.2T Only** – Remove brushes. (Figure 47)*

Figure 47



5) Check the surface of the motor brush. (Figures 48)

Figure 48



IMPORTANT *If the surface of carbon brush is pitted, rough, or has burn marks replace the motor brush.*

6) Stone the surface of the motor commutator and blow out particles inside motor with an air compressor.

7) Install the motor brush and the motor brush cover.

8) Insert old/new motor brush making sure that the brush slides in and out easily.

9) Plug-in the treadmill, and let the treadmill run for about 1 hour at 5 mph to allow the proper seating of the brush.

Motor Control Board Replacement

***Tools Required**:*

• Philips Screwdriver

***Procedure**:*

1) Turn off the power to the treadmill and unplug the power cord from the wall outlet.

2) Remove the motor cover.

3) Verify that LED MTR is not lit on the motor control board.

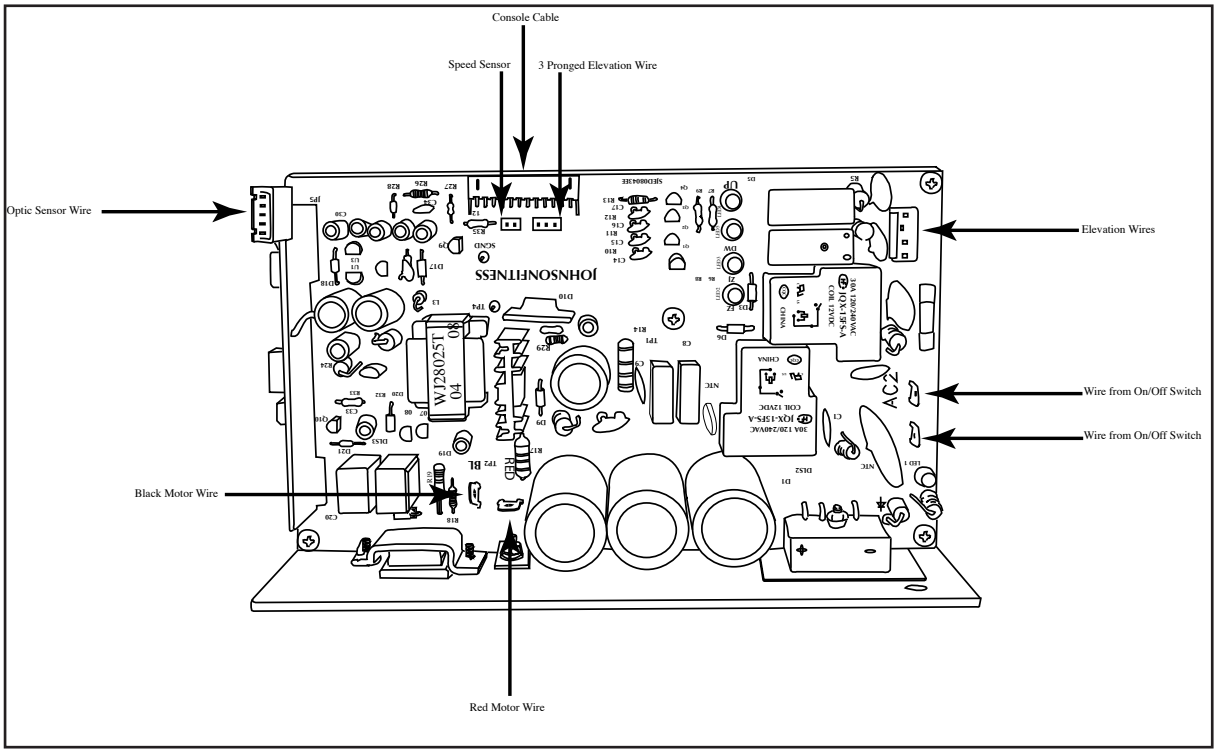
IMPORTANT *If this LED is lit, please wait approximately 1 minute until the light is out. This is an indication that the stored power has left the board.*

4) Unplug motor, optic sensor, elevation, speed sensor, and AC wires from the motor control board.

5) Remove the motor control board, and replace it with a new one.

6) Reconnect all the wires to the motor control board. (Figure 50)

Figure 50



Upper Board Console Cable Replacement

Tools required:

•Philips Screwdriver
•Wire Cutters
•Zip Ties

Procedure:

1)Turn off the power to the treadmill and unplug the power cord from the wall outlet.
2)Remove screws connecting faceplate to console shell (Figures 51, 52, 53)
3)Disconnect console cable from upper board.

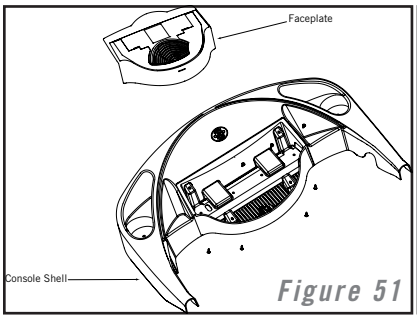


Figure 51

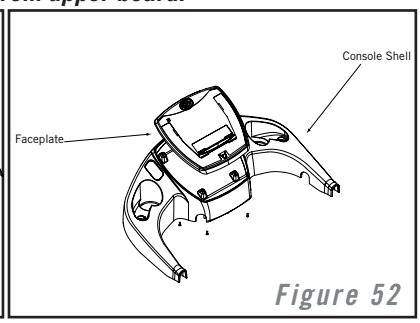


Figure 52

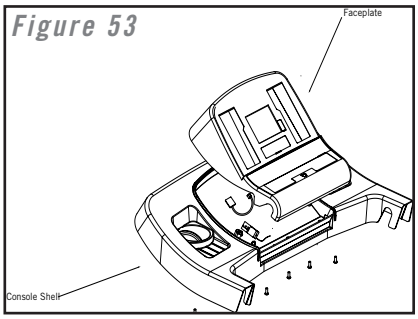


Figure 53

4)Remove screws holding console shell to handle bar frame. (Figures 54, 55, 56))

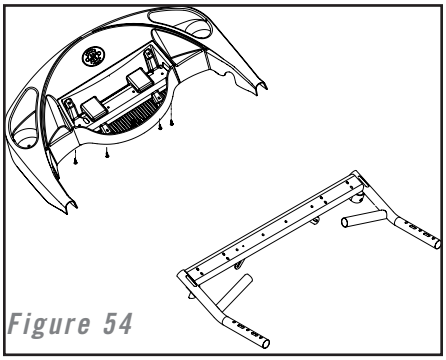


Figure 54

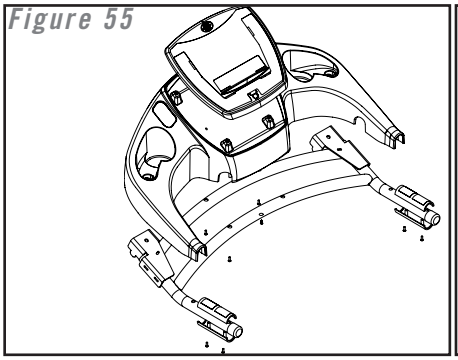


Figure 55

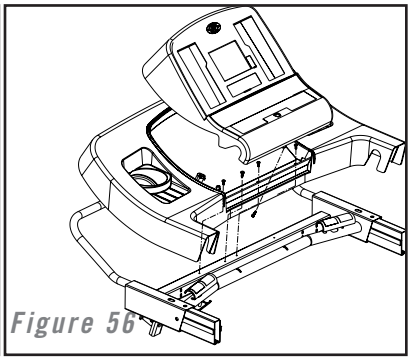


Figure 56

5)Disconnect console cable in the upper left hand corner of the console and secure cable so that it does not fall down console mast.
6)Cut zip ties that hold console cable the handle bar frame. (Figure 57)
7)Install new console cable (Figure 58) and secure it to the handle bar frame.

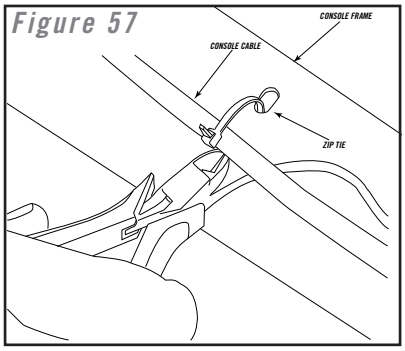


Figure 57

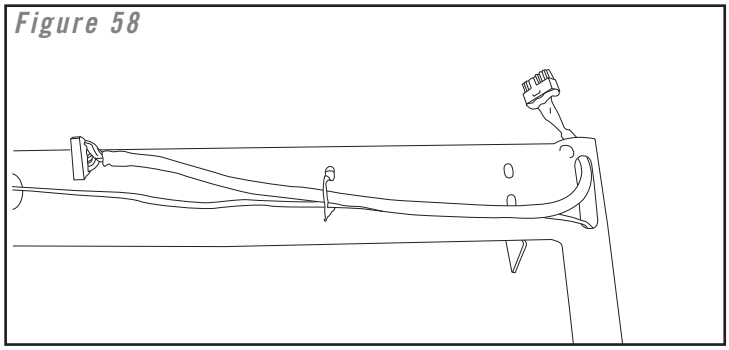


Figure 58

Console Mast Cable Replacement

Tools Required:

- *Philips Screwdriver*
- *5mm Allen Wrench*
- *Needle-nose Pliers*

Procedure:

1) Turn off the power to the treadmill and unplug the power cord from the wall outlet.

2) ***For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950/1.2T Only*** *- Remove the motor cover.*

3) ***For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950/1.2T Only*** *- Disconnect the console cable from the lower control board.*

4) ***For Models PST 6 & 8/ 2.2T-5.2T Only*** *– Lift up right side console mast boot or remove right side cover. (Figures 59, 60)*

Figure 59

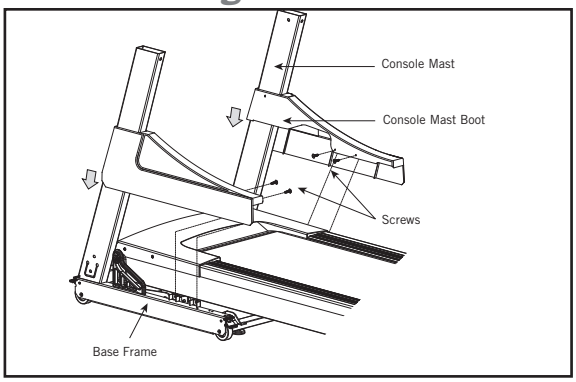
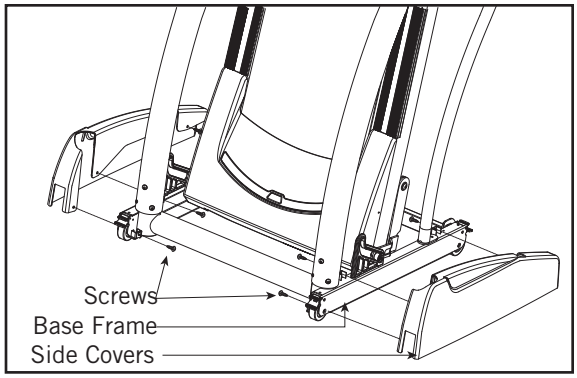


Figure 60



5) ***For Models PST 6 & 8/ 2.2T-5.2T Only*** *– Remove screws holding console mast to base frame. (Figure 61, 62)*

6) ***For Models PST 6 & 8/ 2.2T-5.2T Only*** *- Disconnect console cable on base of the machine near the console mast. (Figure 61, 62)*

Figure 61

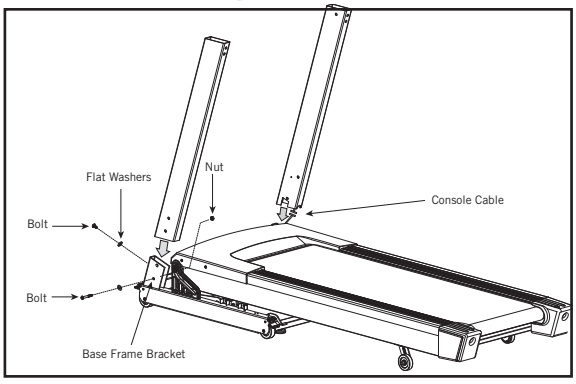
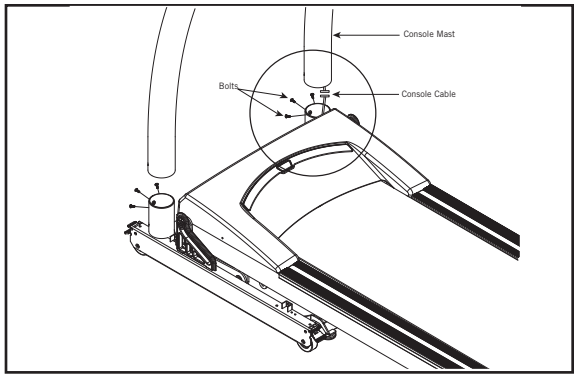


Figure 62



Console Mast Cable Replacement

7) Remove bolts holding console assembly onto console masts. (Figures 63, 64, 65)

8) Disconnect console cable in the upper left hand corner of the console and secure cable so that it does not fall down console mast. (Figures 63, 64, 65)

Figure 63

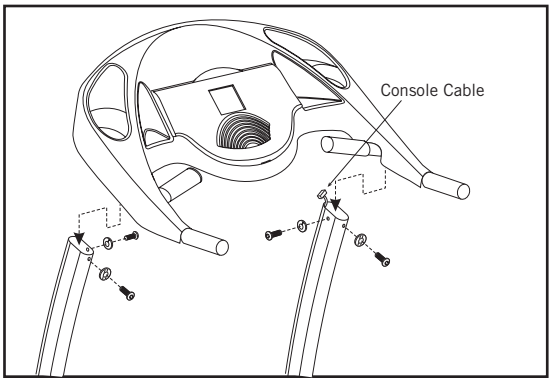


Figure 64

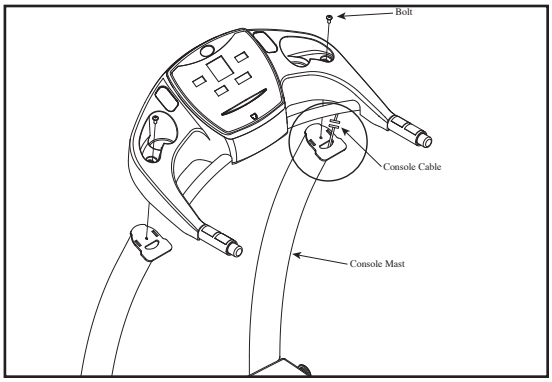
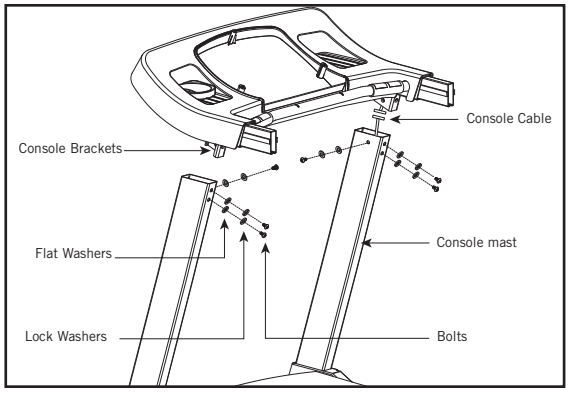


Figure 65

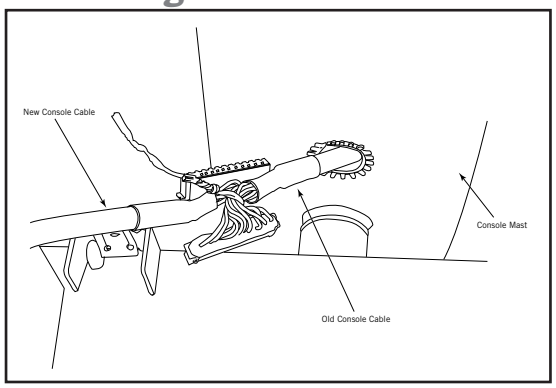


9) Attach the new console cable to the existing cable at the bottom of the console mast and fish the new cable up through the console mast. (Figure 66)

10) Once the new console cable is installed through the console mast, connect the plugs to the motor control board and upper boards.

11) Attach the motor cover, ensuring that the console cable is not being pinched.

Figure 66



Elevation Motor Replacement

Tools Required:

- *Philips Screwdriver*
- *17mm Socket and Combination Wrenches (Qty 2)*

Procedure:

1) Turn off the power to the treadmill and unplug the power cord from the wall outlet.

2) Remove the motor cover.

3) Disconnect the elevation motor wires from the motor control board and ground wires from motor control board bracket. (Figure 67)

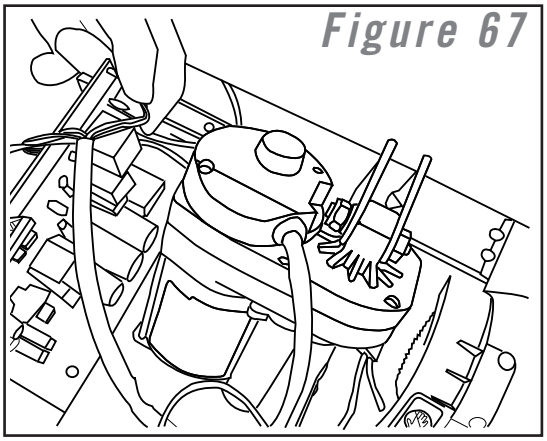


Figure 67

4) Lock treadmill into folding position.

5) Remove the bottom bolt attaching the incline motor shaft to the main frame. (Figure 68)

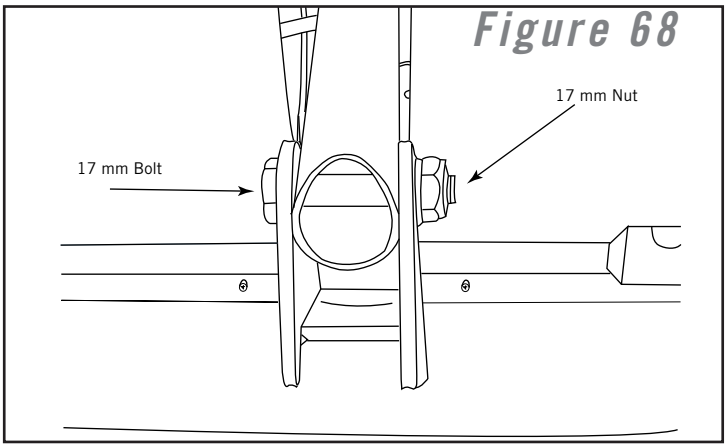
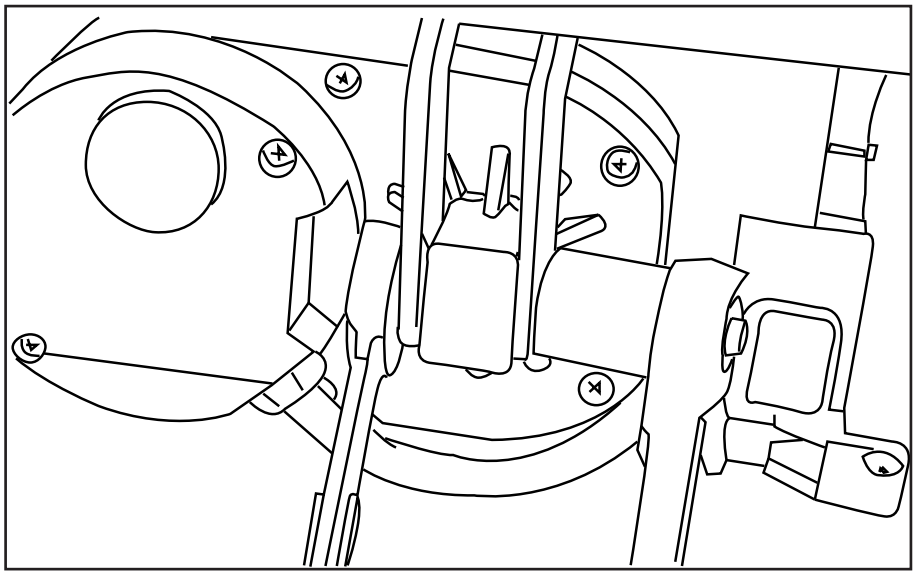


Figure 68

Elevation Motor Replacement

6) Fold the treadmill down to the running position and remove the top bolt from the elevation motor, and remove the motor from the machine. (Figure 69)

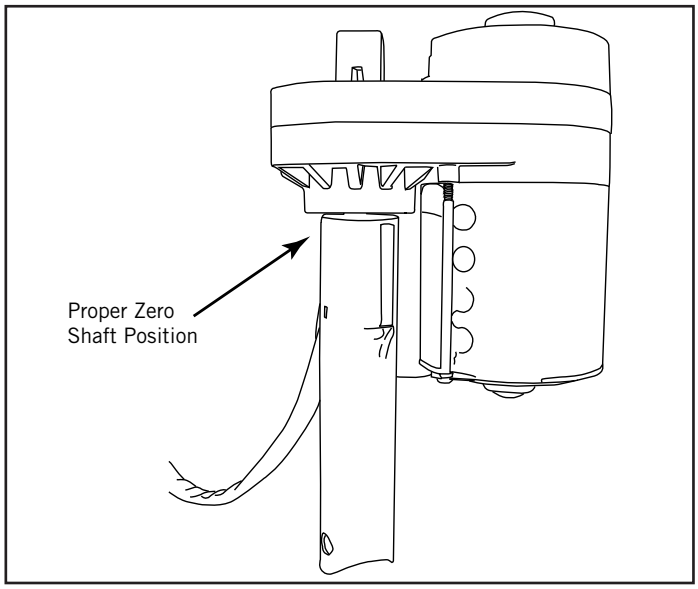
Figure 69



7) Reinstall the top bolt to the elevation motor.

IMPORTANT *When installing the new incline motor; make sure the elevation shaft is flush with the motor casing (See diagram below). If the position of the shaft is too close to the bottom motor housing, the shaft may have become jammed. To correct this, remove the bottom bolt from the elevation motor, press the Start button, let the shaft spin out and then spin the shaft manually so there is almost one thread visible. (Figure 70)*

Figure 70



8) Reinstall the bottom bolt to the incline shaft.

Upper Board/Reed Switch Replacement

Tools required:

• Philips Screwdriver

Procedure:

1) Turn off the power to the treadmill and unplug the power cord from the wall outlet.

2) Remove screws connecting faceplate to console shell.

If not replacing reed switch skip to step 5.

*3) **For Models T61 -T64/CST 3.5 & 4.5/DT650 & 850/WT950 Only** – Unplug and remove reed switch from small plastic knobs. (Figures 71 & 72)*

Figure 71

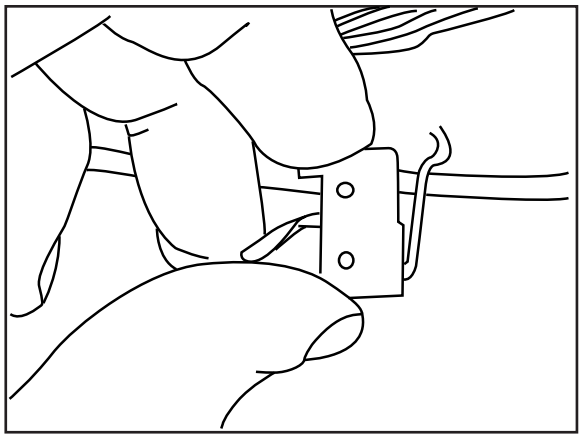
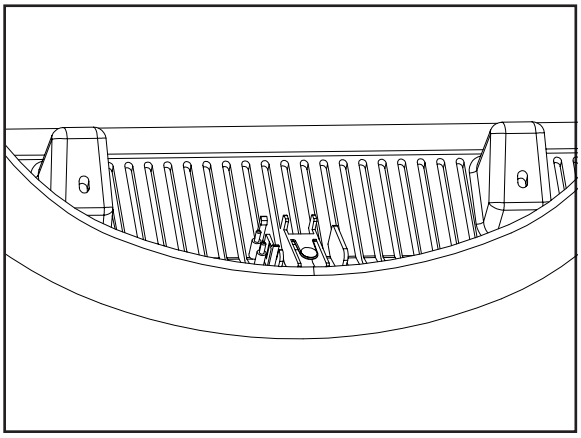


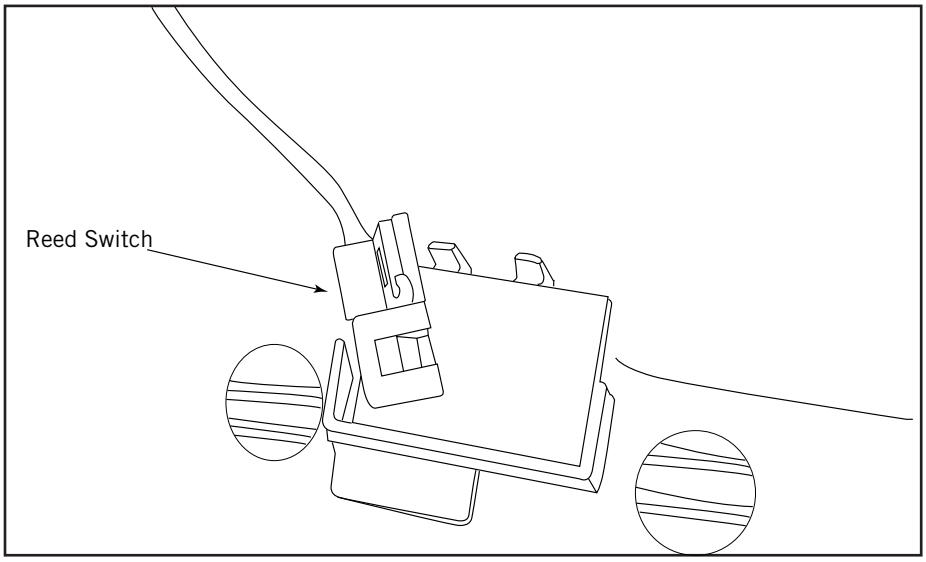
Figure 72



*4) **For Models PST 6 & 8/ 1.2T-5.2T Only** – Unplug reed switch and remove switch from fixing plate. (Figure 73)*

You will need an adhesive when reinstalling new switch.

Figure 73



Upper Board/Reed Switch Replacement

5) Unplug all the cables to the upper board.

6) Remove screws holding upper board to faceplate and replace old upper board with new one. (Figures 74, 75, 76)

Figure 74

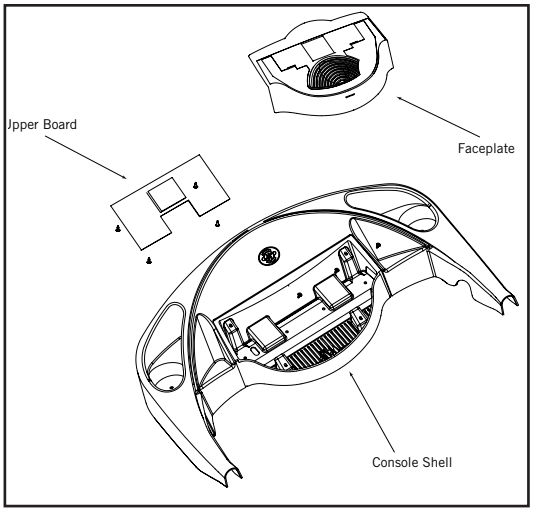


Figure 75

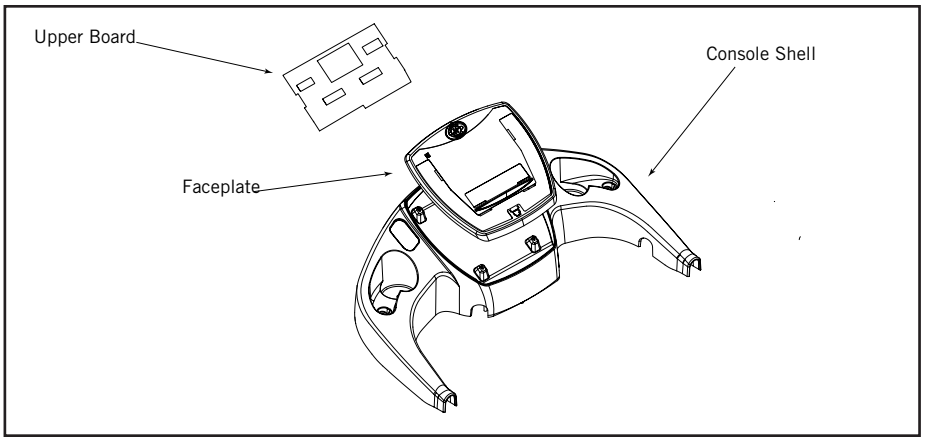
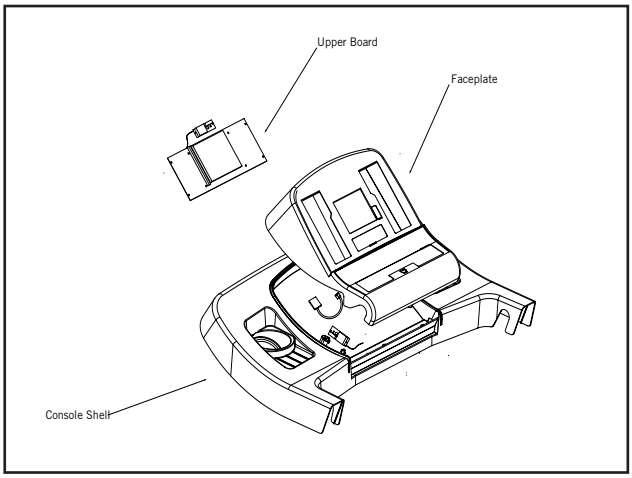


Figure 76



Membrane Keypad/EL Paper/Overlay Replacement

Tools Required:

- *Philips Screwdriver*
- *Flat-Blade Screwdriver*

Procedure:

Figure 77

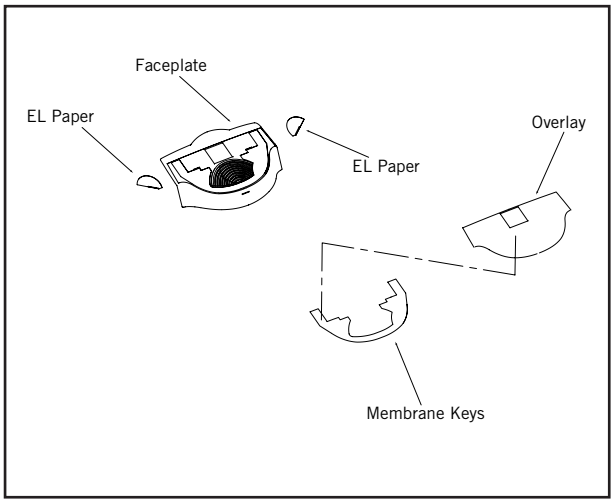


Figure 78

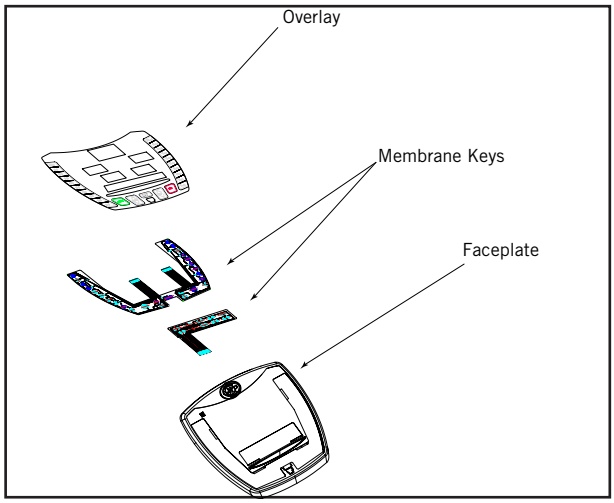
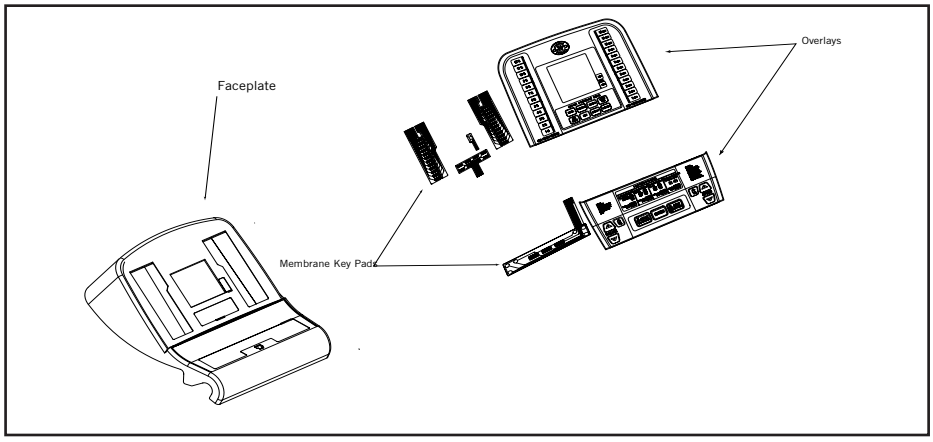


Figure 79



1) Turn off the power to the treadmill and unplug the power cord from the wall outlet.

2) Remove screws from the back console faceplate.

3) Disconnect the membrane keypad ribbon and/or EL paper ribbon cables from the upper board.
*(**Reference Upper Board Configurations in Wiring Diagrams and Schematics section.)***

Membrane Keypad/EL Paper/Overlay Replacement

4) Remove the overlay and keypad from faceplate. (Figures 80, 81, 82)

Figure 80

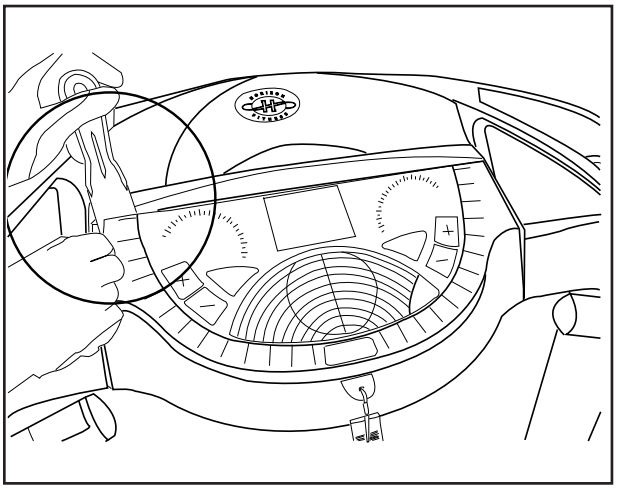


Figure 81

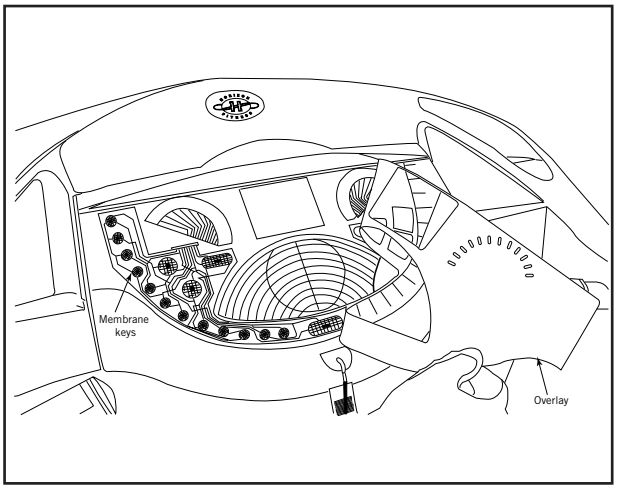
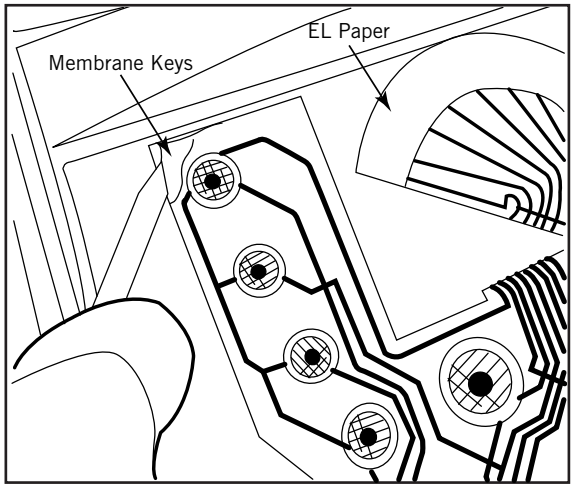


Figure 82



Make sure all the adhesive is removed from the plastic console faceplate.

5) Replace the keypad and connect ribbon cables to back of upper board.

6) Install new overlay.

Air Shock Replacement

Tools Required:

- *12mm Socket and Combination Wrench*
- *13mm Socket and Combination Wrench*
- *17mm Socket and Combination Wrench*

Procedure:

1) Fold treadmill to locking position.

2) Remove nut that secures the top screw of the air shock to the frame and remove top portion of shock. (Figures 83, 84)

Figure 83

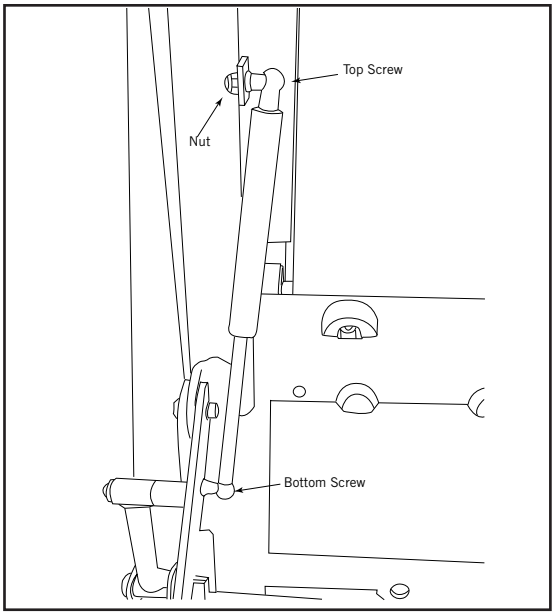
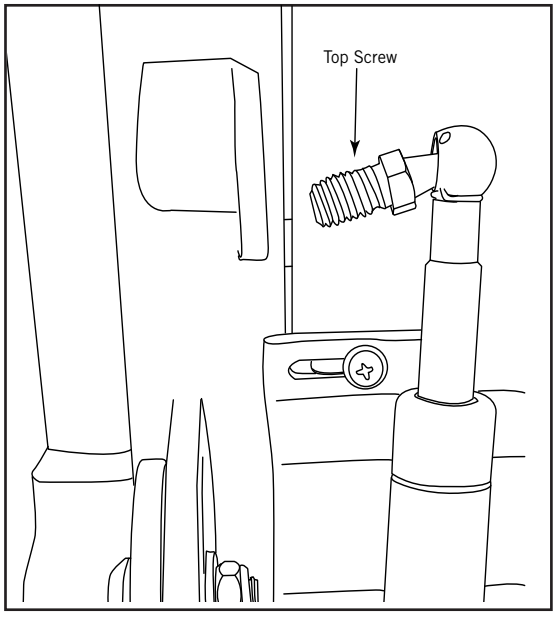


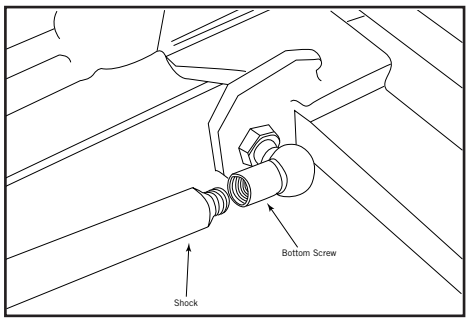
Figure 84



3) Leave bottom screw and nut secure and unthread shock from bottom screw.

4) Remove bottom screw from the new shock (Figure 85)

Figure 85



5) Thread the new shock into the bottom screw that is already attached to the fold frame.

6) Reattach top screw and tighten nut.

Notes

CUSTOMER TECH SUPPORT

If you have any questions or comments, you may contact one of our trained customer technicians via phone, email or our website.

Customer Tech Support Hotline: ***1-800-244-4192***
Email: ***comments@horizonfitness.com***
Website: ***www.horizonfitness.com***

Customer Tech Support hours: Monday - Friday, 8 am - 5 pm CST (excluding holidays)

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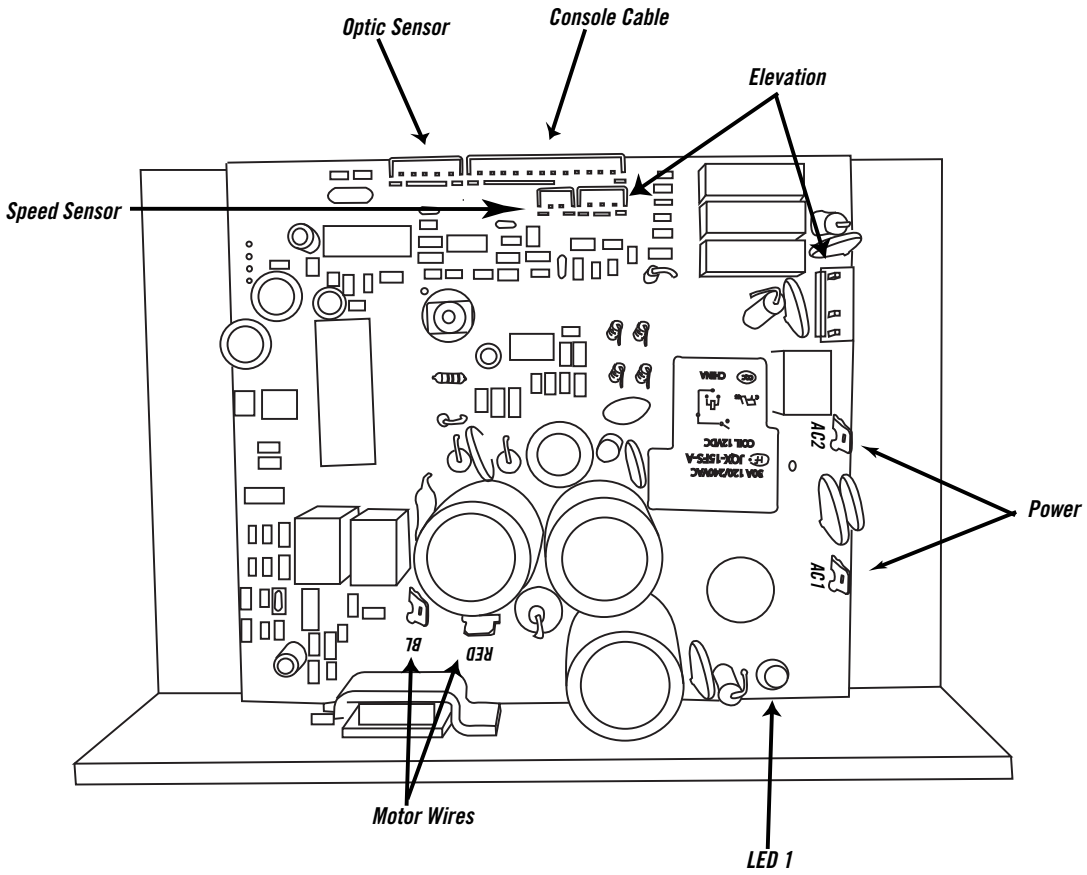
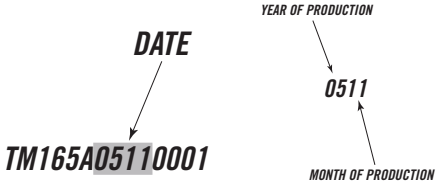
NEW MOTOR CONTROL BOARD



A mid-production change involving the motor control board has occurred effective (11/01/05):

IMPORTANT *Units with 2.75 HP Drive Motors will not be affected by this production change. (PST8 and 5.2T)*

Please check the serial number (Pictured Below) to verify the production change.



This change will affect the service guide in the following ways:

· The old motor control board has five diagnostic LED's and the new has only one LED, which is the equivalent to LED 1. Therefore a complete LED diagnostic cannot be completed.

· A wiring diagram was not included for the new style motor control board (supplied with this supplement).

· Instructions for the motor control board replacement were not included in this service guide (supplied with this supplement).

All other information in the service guide should be valid for both the new and old motor control boards.