

3900 TGB MANUAL

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APPENDIX C

ERROR CODES

TABLE 14: FAULT (ERROR) CODES

CODE	DESCRIPTION
FS 1	Stuck switch
FS 2	Stuck off switch
E S6	Switch 6 Error
EL 1	Elevation no motion
EL 2	Elevation open or short pot
EL 3	Elevation erratic reading
EL 4	Elevation direction fault
EL 5	Elevation friction / line frequency fault
SPD 0	Speed –Loss of feedback signal
SPD 1	Speed –Excessive delta
SPD 3	Speed –Loss of feedback signal during Calibration Mode.
SPD 4	Speed – Unable to correlate feedback signal for proper calibration. (Unable to complete calibration due to erratic feedback, system delays, or other related anomaly).



PRODUCT SUPPORT BULLETIN

Title: 4000 Series Treadmill Elevation Reference Chart

Date: October 22, 1996	Distribution to: <input type="checkbox"/> Service Providers <input type="checkbox"/> Product Support <input type="checkbox"/> Star Trac Sales <input type="checkbox"/> Product Users <input type="checkbox"/> Distributor <input type="checkbox"/> Manufacturing <input type="checkbox"/> Engineering	Written by: Jason Buelna
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Date of Last Revision N/A		Model(s) Affected 4000 series

This chart is a guide for elevation readings on the 4000 series treadmill. The values below were taken from properly functioning elevation systems. You may expect slight variation from machine to machine. This information will help trouble shoot elevation problems by providing values you should be getting with your volt meter at a particular elevation percent. The voltage readings may vary by +/- .05 volts. The ohms may vary by +/- .01 k ohms.

% Grade	Incline number in Motor Test Mode	DC Voltage across Blue and Orange wire on the Elev. motor connector	Ohm reading between the Blue and Orange (elev. motor unplugged)	DC Voltage on Pin 4 of the display electronics
0	240	4.68	9.76k	4.8
1	228	4.44	9.33 k	4.58
2	216	4.21	8.86 k	4.37
3	204	3.98	8.41 k	4.12
4	192	3.75	7.92 k	3.88
5	180	3.51	7.48 k	3.64
6	168	3.27	6.95 k	3.42
7	156	3.04	6.48 k	3.18
8	144	2.81	6.01 k	2.95
9	132	2.57	5.50 k	2.71
10	120	2.34	4.98 k	2.48
11	108	2.11	4.48 k	2.26
12	96	1.88	3.99 k	2.03
13	84	1.64	3.52 k	1.79
14	72	1.41	2.97 k	1.55
15	60	1.17	2.48 k	1.33



Preventive Maintenance

Preventive Maintenance

Performing regular preventive maintenance on your *STAR TRAC 3900* is strongly recommended. Without preventive maintenance, normal wear and tear may cause cumulative effects, such as misalignment and early replacement of parts. For this reason, we highly recommend following manufacturer's maintenance schedule.

GENERAL NOTE: The *STAR TRAC 3900* should not be in a location where the faceplate console is exposed to direct sunlight; it will fade the colors and yellow the windows.

The *STAR TRAC 3900* should not be placed in a enclosed environment where corrosive chemicals are used, such as an enclosed pool; this will shorten the life, cause mechanical failure, and void the warranty.

Avoid placing the *STAR TRAC 3900* near electronic equipment such as a TV, VCR, Stereo, computer, etc.

Preventive Maintenance Chart

MODEL 3900 SERIES

Instructions:

- Wipe down display console, handrail, shroud, and running belt once a week. Use a liquid non-abrasive cleaner and a soft cotton cloth when wiping down. Do not spray directly onto the display board.
- Inspect for wear and tear on exterior parts regularly, especially the running belt.
- Inspect the line cord plug and cord for possible damage or loose connection.
- Inspect the area under the treadmill and vacuum under the unit every week.
- Lift the motor shroud and vacuum around the motor and electronics. *** Caution: This must be done with the unit off and unplugged. ***
- Clean and lubricate the elevation motor with grease and a silicone spray for the elevation screws.
- Wax the running belt and deck on a quarterly basis to increase belt life.
- Run the treadmill through the auto-calibration procedure once a month

Preventive Maintenance Schedule:



	Daily	Weekly	Semi-monthly	Monthly	Quarterly
Display console	C		I		
Handrail	C		I		
Shroud	C				
Running belt	C/I				L
Deck	C/I				L
Power cord	I				
Elevation screws				C/I	
Under shroud				C/I	
Motor Brushes					I
Auto-Calibration				A	

Key: A= activate C= clean I= inspect L= lubricate R= replace

Materials needed:

- Diluted all-purpose cleaner.
- Dry clean cotton cloth.
- Vacuum.
- Grease & Silicone Spray
- Soft paint brush/ toothbrush.
- Wax (Unisen).



Weekly Materials needed:

1. All-purpose cleaner diluted with water.
(ex: 409, Simple Green, or hand soap)
2. Dry clean cloth.

Instructions:

1. Wipe down display console, handrail, shroud, and running belt once a week. Using a liquid non-abrasive cleaner and a soft cotton cloth when wiping down. Never spray directly onto the display panel or under the running belt.
2. Inspect the line cord plug and cord for possible damage or fraying. The power cord is not under the treadmill. If the power cord is placed under the treadmill, it may become pinched or bind up in the elevation system.
3. To ensure the longevity of the running belt, clean under the belt with a soft, dry cloth. To clean, slide the cloth between the running belt and deck from one side of the frame to the other. You may need a ruler or rod to slide the towel under the running belt. Then, holding the edges of the cloth, pull the cloth from head roller down to the tail roller.
4. Inspect the running belt for alignment and tension.

Monthly Materials needed:

1. Vacuum cleaner.

1. Vacuum the floor under the treadmill.
2. Inspect the deck and the belt surface for unusual wear. Visually inspect the deck for worn areas of the fiber board. Inspect the belt for a worn, glazed appearance on its underside.
3. Check that the handrails are secure. If not, tighten the assembly screws.

****CAUTION****

To reduce the risk of electrical shock, always unplug the unit from the electrical outlet immediately before cleaning.

Do not clean the running belt by activating the treadmill or placing your feet or any weight on the belt.

Do not tighten the belt daily. The belt should be adjusted as necessary. For additional information on correcting a belt that has mis-tracked or beginning to slip, please contact **STAR TRAC**

Quarterly

Time Required:

5 minutes

Tools Required:

- 1 Wax Powder Bag (Unisen)
- Teaspoon 1 Clean Towel
- Paint Stick or Yard Stick
- Diluted All-purpose Cleaner (409)
- Bristle Brush

Note: Apply wax powder while belt and deck are still warm (from 5 to 15 minutes of use) for optimum benefit. The following steps are done with the treadmill off.



PROCEDURE

STEP 1: Cleaning the deck and belt:

- Using the stick or ruler, slide a towel under the middle of the running belt from one side of the frame to the other.
- Hold the edges of the towel, pull from head-roller down to the tailroller, then pull the belt down to wipe the remaining of the belt. **TIP:** Careful when removing the towel, it will be dirty. Fold the dirty towel and shake into trash.

STEP 2: Re-waxing the deck and belt:

- Lift the left side (facing the display) of the belt, about 12 inches down from the motor shroud (see above figure). Hold the belt up such that the width of the belt is elevated from the deck.
- Gently place one level teaspoon of wax powder on the deck about two inches from the edge, and blow the wax steadily under the belt, so that the wax powder is spread evenly across the deck (see above figure). Gently place a second level teaspoon of wax 18 inches down the belt.
- Repeat the above step to the right side of the belt and deck.

STEP 3: Walking the wax in:

- Start the treadmill at 1 mph and walk on all sections of the belt and deck for 1 minute to ensure the wax has been evenly distributed and worked-in properly.

STEP 4: Clean-up:

- Remove any excess wax with diluted cleaner (409) and towel, or bristle brush. **TIP:** Blow away extra wax first from around the siderails and deck before wiping.

STEP 5: Turning the Wax LED off:

- **Remove the display and locate the DIP switch terminal. Toggle switch 7 to it's opposite position. Replace display and turn the treadmill back on.**



****CAUTION****

To reduce the risk of electrical shock, always unplug the unit from the electrical outlet immediately before cleaning.

Should any of the belts need to be replaced, please contact
STAR TRAC

Depending upon the usage, re-waxing the running belt and deck will increase the life of the belt.

Semi-Annually

Materials needed:

1. Silicone lubricant

Instructions:

1. Remove the motor shroud and suspend with a bungie cord to the top of the display neck. Elevate the treadmill to 15% to expose the elevation screws. Clean the elevation screws with a dry clean cloth and then spray an even coat of silicone.
2. Inspect the drive belt and running belt for fraying or damage.
3. Check the running belt and the drive belt for tension.

3900 TEST MODES

Motor Test Mode

- hold down the DISPLAY/SCROLL key while turning the power switch "on." You will then see **test** then the display will scroll the version software, the time(the time LED will also be displayed), the distance(the distance LED will also be displayed), and then it will scroll back to **test**.
- Depress the speed + or - keys to increase/decrease speed. When you stop at any certain speed the measured speed will constantly fluctuate by .1 or so and will toggle between itself and the commanded speed. In regular mode it will not toggle like this.
- When depressing the elevation ↑ and ↓ keys the displayed value will be what is commanded and it will then toggle every 5 seconds or so back to the elevation value the treadmill is actually at until it reaches the commanded elevation.

Display Test Mode

- this can be accessed when you have already entered the Motor Test Mode by depressing the DISPLAY/SCROLL key again at any time in the Motor Test Mode. All the LED's will light up until you have depressed another key. To test the keys responses simply depress each key and see that it responds with it's proper function.

Auto-Calibration Mode

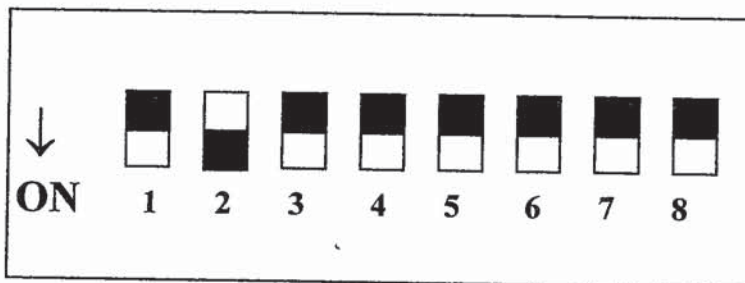
- can be attained in Motor Test Mode by depressing the START key.
- the display will then read **CAL** and the auto-calibration process then starts. It will remain at it's minimum speed for approximately 20 seconds and then will climb to half of the maximum speed and then will climb all the way to it's maximum speed where it will remain for about 5-10 seconds.
the MPH will never be displayed in this mode
- once calibration is complete the display will return to reading **test**.

Error Mode

- There are only 4 error messages; each one coincides with a continuous beep.
- **FS1**- displayed when any key is stuck upon turning the power switch "on" (when the SCROLL key is stuck for more than 3 seconds in Motor Test Mode it will also error out to FS1.)
- **SPD0** - displayed when the RPM sensor is not receiving a signal or when rpm sensor is not giving any signals.
- **SPD1** - displayed when there is a sudden speed change of more than 2mph.
- **EL1** - displayed when there is no change in feedback from the elevation.

Dip Switch Configurations

example: The below configured switches define a treadmill that is set for English, it is a 10mph unit with elevation and has no time limit. Switches 7 may differ from treadmill to treadmill as 7 is a toggle switch that deactivates the re-wax LED (light is in the lower right hand corner of the display) and 5, 6 & 8 are currently not in use.



Switch#	Off	On
1	English	Metric
2		Max Speed 10mph/16kph
3	Elevation enabled	Elevation disabled
4	Unlimited time	20 minute time limit
5	--spare--	--spare--
6	--spare--	--spare--
7	Change position of switch to turn wax LED off	
8	--spare--	--spare--



3900 TROUBLESHOOTING ERROR CODES

FS1 Error

Cycle the power off and wait 2-3 seconds and then cycle the power back on. If the FS1 Error still exists replace the display panel.

SPD0 Error

WILL BELT MOVE? - Enter motor test mode and press the + key to begin. The belt will always move at .5 mph, no lower. If belt is not moving at .5 continue pressing + key until you see belt movement.

YES - Check the gap between the rpm sensor and the rpm disk. You should have a gap of 2-3 business cards all the way around the flywheel. If all the way around the flywheel your gap is over 3 business cards, loosen the flywheel and tap it over until the gap is 2-3 business cards. If there is still any points around the flywheel where the gap is larger, press on the rpm disk from the outside of the flywheel and bend it inward to decrease the gap. Then retest in motor test mode at 10mph. The mph signal should now be at 10mph.(the signal is very sensitive and will constantly be toggling within .1 to.2 mph)

IS THE RPM SENSOR RECEIVING A SIGNAL? - Enter the motor test mode and push the + key to get the belt moving and verify that the rpm sensor is receiving a signal.

NO SIGNAL - If it does not pick up a signal, check your connection of the rpm sensor by disconnecting and reconnecting and try pushing belt with your foot again. If you are still not seeing a mph p/u then replace the rpm sensor.

SIGNAL - Push the + key until you reach 10mph listed on the display. The numbers will toggle back and forth between the commanded mph and what the rpm sensor is actually picking up. If the commanded mph and the actual mph coincide, auto-calibrate the treadmill. If the unit will not auto-calibrate continue on by checking the gap of the rpm sensor as discussed under WILL BELT MOVE? - YES.

WILL BELT MOVE? con't

NO - IS PWM LIGHT BLINKING?

YES - Keep the speed commanded at 10mph, if you cannot push start the motor with your foot, replace the motor control board. If you can push start the motor replace your motor brushes.

NO - If the PWM light is not blinking inspect your display cable for any visible damage. If it is not damaged, check the display cable connection by disconnecting and reconnecting the display cable. If you just had a loose connection of the display cable and you now can get the PWM light flashing, auto-calibrate the treadmill. If you are still not seeing the PWM light blinking replace the display cable.

SPD1 Error

COMPLETE AUTO-CALIBRATION. IF YOU STILL SEE ERROR CONTINUE WITH TROUBLESHOOTING IN MOTOR TEST MODE.

IS THE RPM SENSOR RECEIVING A SIGNAL? - Enter the motor test mode and push the + key until the belt starts to move to verify that the rpm sensor is receiving a signal.

NO SIGNAL - If it does not pick up a signal, check your connection of the rpm sensor by disconnecting and reconnecting and try pushing belt with your foot again. If you are still not seeing a mph p/u then replace the rpm sensor.

SIGNAL - check the gap between the rpm sensor and the rpm disk. You should have a gap of 2-3 business cards all the way around the flywheel. If all the way around the flywheel your gap is over 3 business cards, loosen the flywheel and tap it over until the gap is 2-3 business cards. If there is still any points around the flywheel where the gap is larger, press on the rpm disk from the outside of the flywheel and bend it inward to decrease the gap. Complete auto-calibration.

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NO - If the PWM light is not blinking inspect your display cable for any visible damage. If it is not damaged, check the display cable connection by disconnecting and reconnecting the display cable. If you are still not seeing the PWM light blinking replace the display cable.

ELI Error

WILL TREADMILL ELEVATE UP AND DOWN IN MOTOR TEST MODE?

YES - Command the elevation to elevate to 15%. Compare the commanded elevation with the measured elevation(they will toggle every few seconds.) If they are not matching, replace the elevation motor. If they are equal in comparison, check for loose connections by disconnecting and reconnecting and then run the treadmill in regular mode to verify.

NO - ARE THE \uparrow and \downarrow LED LIGHTS CORRESPONDING WITH DEPRESSING THE \uparrow and \downarrow BUTTONS ON THE DISPLAY PANEL?

YES - Check the elevation motor output voltage on the motor control board by checking for AC voltage of the white and black wires of the elevation motor while depressing the \uparrow or \downarrow keys.

VOLTAGE IS OVER 110V - replace the elevation motor.

VOLTAGE IS BETWEEN 80V-100V - check the tap settings on the autotransformer.

VOLTAGE IS 0V - replace the motor control board.

NO - If only the \downarrow light is lit on the motor control board, it is not receiving a signal from the elevation motor, try disconnecting and reconnecting the elevation motor and if it the \downarrow light is still the only light on, replace the elevation motor. If both the \uparrow and \downarrow lights are not on, the motor control board is not receiving a signal from the display, replace the display cable.



3500/3900 TROUBLESHOOTING ERROR CODES

FS1 Error

Cycle the power off and wait 2-3 seconds and then cycle the power back on. If the FS1 Error still exists replace the display panel.

SPD0 Error

WILL BELT MOVE? - Enter motor test mode and press the + key to begin. The belt will always move at .5 mph, no lower. If belt is not moving at .5 continue pressing + key until you see belt movement.

YES - Check the gap between the rpm sensor and the rpm disk. You should have a gap of 2-3 business cards all the way around the flywheel. If all the way around the flywheel your gap is over 3 business cards, loosen the flywheel and tap it over until the gap is 2-3 business cards. If there is still any points around the flywheel where the gap is larger, press on the rpm disk from the outside of the flywheel and bend it inward to decrease the gap. Then retest in motor test mode at 10mph. The mph signal should now be at 10mph.(the signal is very sensitive and will constantly be toggling within .1 to.2 mph)

IS THE RPM SENSOR RECEIVING A SIGNAL? - Enter the motor test mode and push the + key to get the belt moving and verify that the rpm sensor is receiving a signal.

NO SIGNAL - If it does not pick up a signal, check your connection of the rpm sensor by disconnecting and reconnecting and try pushing belt with your foot again. If you are still not seeing a mph p/u then replace the rpm sensor.

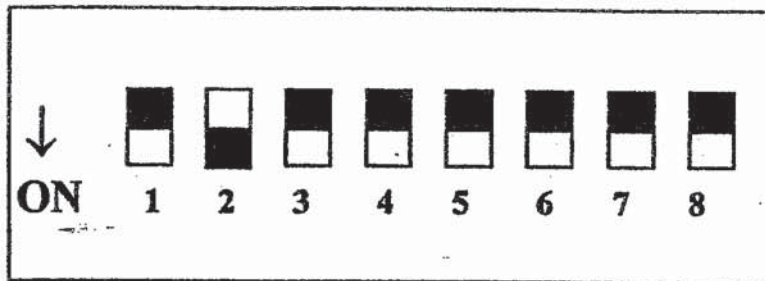
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- EL1 - displayed when there is no change in feedback from the elevation.

Dip Switch Configurations

example: The below configured switches define a treadmill that is set for English, it is a 10mph unit with elevation and has no time limit. Switches 7 and 8 may differ from treadmill to treadmill as 7 is a toggle switch that deactivates the re-wax LED and 5, 6 & 8 are currently not in use.



Switch#	Off	On
1	English	Metric
2		Max Speed 10mph/16kph
3	Elevation enabled	Elevation disabled
4	Unlimited time	20 minute time limit
5	--spare--	--spare--
6	--spare--	--spare--
7	Change position of switch to turn wax LED off	
8	--spare--	--spare--

Time, Distance, Speed

WILL BELT MOVE? con't

NO - IS PWM LIGHT BLINKING?

YES - Keep the speed commanded at 10mph, if you cannot push start the motor with your foot, replace the motor control board. If you can push start the motor replace your motor brushes.

NO - If the PWM light is not blinking inspect your display cable for any visible damage. If it is not damaged, check the display cable connection by disconnecting and reconnecting the display cable. If you just had a loose connection of the display cable and you now can get the PWM light flashing, auto-calibrate the treadmill. If you are still not seeing the PWM light blinking replace the display cable.

SPDI Error

COMPLETE AUTO-CALIBRATION. IF YOU STILL SEE ERROR CONTINUE WITH TROUBLESHOOTING IN MOTOR TEST MODE.

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EL1 Error

WILL TREADMILL ELEVATE UP AND DOWN IN MOTOR TEST MODE?

YES - Command the elevation to elevate to 15%. Compare the commanded elevation with the measured elevation(they will toggle every few seconds.) If they are not matching, replace the elevation motor. If they are equal in comparison, check for loose connections by disconnecting and reconnecting and then run the treadmill in regular mode to verify.

NO - ARE THE \uparrow and \downarrow LED LIGHTS CORRESPONDING WITH DEPRESSING THE \uparrow and \downarrow BUTTONS ON THE DISPLAY PANEL?

YES - Check the elevation motor output voltage on the motor control board by checking for AC voltage of the white and black wires of the elevation motor while depressing the \uparrow or \downarrow keys.

VOLTAGE IS OVER 110V - replace the elevation motor.

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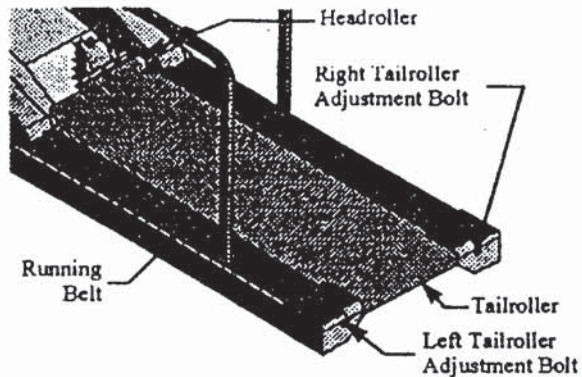
VOLTAGE IS 0V - replace the motor control board.

NO - If only the \downarrow light is lit on the motor control board, it is not receiving a signal from the elevation motor, try disconnecting and reconnecting the elevation motor and if it the \downarrow light is still the only light on, replace the elevation motor. If both the \uparrow and \downarrow lights are not on, the motor control board is not receiving a signal from the display, replace the display cable.

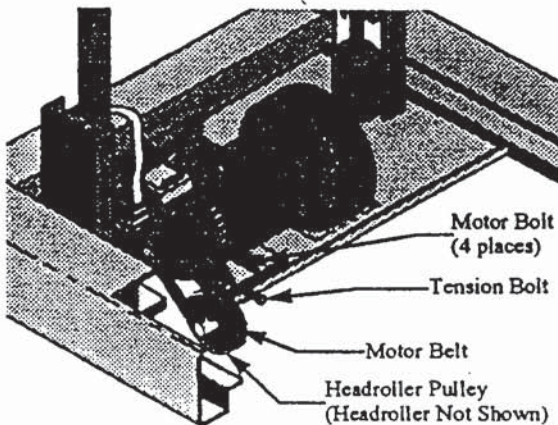
3900 ADJUSTMENTS

The running belt and its headroller, drive belt, tailroller, and running deck are designed to be self-centering, slip-free, and smooth-operating without need for frequent and critical adjustments. Running belt sideward movement, slipping, or grinding after extended use, or thumping during initial use, may be corrected by the following procedures:

Sideward Movement: Run the running belt slowly at 2 to 3 mph (3 to 5 km/hr). If the belt has moved to the right of center, turn the right tailroller adjustment bolt clockwise one-quarter turn with the 1/4" hex key; then turn the left tailroller adjustment bolt counterclockwise one quarter turn. Run the belt faster for at least 30 seconds to check its tracking. Repeat this adjustment until the belt is centered. If the belt moves to the left of center, reverse the above process.



Slipping--Running Belt: Lift the motor shroud and run the running belt slowly at 1 to 2 mph (2 to 3 km/hr). Watching the headroller, walk on the belt and try to slow it down by gently applying pressure with your feet while holding the handrails. If only the running belt, and not the headroller, slows down, tighten the running belt by turning both the right and left tailroller adjustment bolts clockwise one-quarter turn. Repeat this adjustment until the running belt no longer slips, ensuring that you turn the bolts an equal number of turns. If the headroller and the running belt both slow down, tighten the drive belt by the following procedure:



Slipping--Drive Belt: Elevate the treadmill to 5% to provide clearance underneath. Move the ON/OFF switch to OFF, unplug the treadmill, and lift the motor shroud, holding it raised with the bungee cord that you used during assembly, if that is convenient. With a 1/2" socket wrench, loosen the four motor bolts. Turn the tension bolt in the middle of the motor bracket 1/4 turn clockwise with the same wrench, stretching the drive belt. Tighten the motor bolts, replace the shroud, plug the treadmill in, turn it on, push **START**, and test for slipping as before. Repeat this step if necessary.

Thumping: Turn the treadmill off. Turn the right and left tailroller adjustment bolts counterclockwise with the 1/4" hex key until the running belt is loose. Note the number of times each bolt turned. Remove excess accumulated running deck wax from the tailroller with a credit card, a putty knife, or other flexible plastic implement. Tighten the running belt by turning the adjustment bolts clockwise as many turns as they were loosened. Turn the treadmill on and check for sideward movement and slipping of the running belt, further turning the adjustment bolts as above if necessary.

Grinding: Turn the treadmill off. Turn the right and left tailroller adjustment bolts counterclockwise with the 1/4" hex key until the running belt is loose. Note the number of times each bolt turned. Check the under surface of the running belt and the top of the running deck. If the belt looks glazed and melted, replace it. If the deck shows underlying fibers, flip it (or replace it if it has been already flipped). Obtain instructions for replacing the belt and flipping or replacing the deck from Star Trac's Service Hotline at (800) 535-4634.

Magnetic(Cherry) Rpm Sensor Replacement

Notes:

!!CAUTION!!!
Always turn the power switch to the Off position. Unplug the treadmill power cord from the power outlet.

Tools:

- Bungee Cord
- Standard Screwdriver
- Six inch adjustable wrench
- Tie wraps

Procedure: Removing the RPM Sensor.

- Verify the Star Trac treadmill is unplugged from the power outlet.
- Raise motor shroud by removing screws and suspending shroud from the handrails using bungee cord.
- Unplug RPM sensor connector (J-3) from the motor control board. J-3 Is located on the left edge of the MCBA when viewed with the printed words and letters facing you.
- Rotate flywheel until access port is directly across from RPM sensor bracket screws. Using standard screwdriver remove two screws securing bracket to the motor housing.
- Remove old RPM sensor and cable.

Installing the new Cherry Sensor.

- Install new cherry RPM sensor adjustment bracket onto motor housing.
 - Rotate flywheel until access port is directly across from bracket mounting holes on motor housing.
 - Install bracket on motor housing using standard screwdriver and screws that come with the new part.
- Install new RPM sensor into bracket assembly.



Magnetic(Cherry) Rpm Sensor Replacement con't

- Remove one of the 9/16 inch nuts from end of RPM sensor.
 - Back off the other 9/16 inch nut until 5 threads show between the cable end of the sensor and the nut.
 - Slide RPM sensor into bracket assembly, reinstall the 9/16 inch nut removed previously and position it between .040 and .020 inches away from flywheel (*between 2-4 business cards*) (sensor is notched and will only fit into bracket one way)
 - When correct position is obtained tighten both 9/16 inch nuts using adjustable wrench until snug on RPM sensor bracket.
- Carefully run cable of new RPM sensor, insuring that it is out of the way of the flywheel, back to the MCBA and reconnect it to J-3. Use tie wraps if needed to secure cable.
- Plug treadmill in, power up and run calibration procedure as outlined in manual/TGB.

Note: If treadmill does not calibrate, check gap of the RPM sensor and reposition according to the steps above.

Installation Complete

Notes:

!!CAUTION!!!

Always turn the power switch to the Off position. Unplug the treadmill power cord from the power outlet.

Note: Be careful not to lose the keyway lodged in the motor shaft keyway groove.

Note: Be careful not to touch the RPM sensor and/or optical disc.

Tools:

- T-handle hex key
- Rubber mallet
- Socket
- Bungee cord

Procedure:

Lifting the motor shroud.

- Verify the Star Trac treadmill is unplugged from the power outlet.
- Raise the motor shroud.
- Use the Phillips screwdriver to remove the screw in the center of the back of the shroud.
- Gently lift the motor shroud up the display handrail.
- Using the Bungee cord from the Star Trac tool kit, hold the motor shroud at the top of the display handrail.

Removing the flywheel.

- With the 1/8" T-handle hex key, loosen the set screws on the flywheel.
- If there is ample space to remove the flywheel (approximately 6-8 inches from the end of the motor shaft), carefully remove the flywheel by tapping with a rubber mallet, do so by holding one side of the flywheel with one hand and tap at the edge of the flywheel lightly and then turn the flywheel 1/4 turn and repeat until the flywheel is completely removed. This will alleviate any damage to the motor shaft.
- If there is not enough room to remove the flywheel easily without damaging surrounding parts, then remove the four motor mount screws holding the motor to the frame and remove the motor. Then carefully remove the flywheel by tapping with a rubber mallet, do so by holding one side of the flywheel with one hand and tap at the edge of the flywheel lightly and then turn the flywheel 1/4 turn and repeat until the flywheel is completely removed. This will prevent any damage to the motor shaft.

Flywheel Replacement con't

Note:

With an optical RPM disc verify the flywheel is on the motor shaft and resting against the RPM disc.

With the metal RPM plate, verify the key is flush with the outside collar of the flywheel (you may need to tap it into the motor shaft keyway groove completely, it is okay if it will not become completely flush with the flywheel collar.)

Installing the new flywheel.

- Place the motor shaft key in the motor shaft keyway groove.
- Align the flywheel keyway groove with the motor shaft keyway groove.
- Carefully tap the flywheel on the motor shaft with the rubber mallet by again holding one side of the flywheel with one hand and tapping at the edge of the flywheel. Then turn the flywheel 1/4 turn and repeat until the flywheel is positioned properly.
- With the 1/8" T-handle hex key, tighten the set screws on the flywheel.
- If you had to remove the motor to replace the flywheel, then replace the motor and tighten down the motor mount screws.

Replacing the motor shroud.

- Replace the motor shroud by removing the Bungee cord and lowering the motor shroud until it touches the frame. Press the sides of the motor shroud to assure the Velcro has securely fastened the shroud. Using the Phillips screwdriver, tighten the screw in the center of the motor shroud.
- Plug the treadmill into the power outlet.
- Turn the power switch to the ON position.

Installation Complete

Notes:

!!CAUTION!!!

Always turn the power switch to the Off position. Unplug the treadmill power cord from the power outlet.

Note: Be careful in handling the electronics panels as they are connected to each other by wires soldered to each board

Tools:

- 5/64" Hex Wrench
- 1/4" Socket Wrench

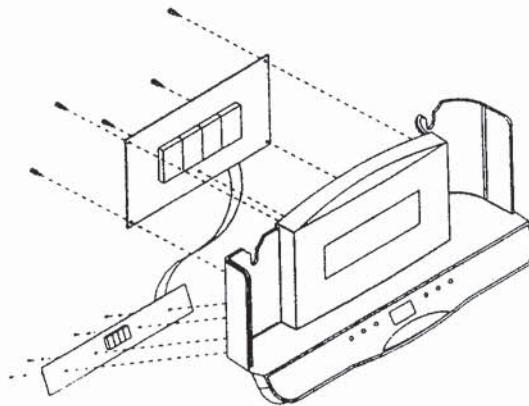
Procedure:

Removing the display assembly.

- Verify the Star Trac treadmill is unplugged from the power outlet.
- Using a 5/64" Hex wrench, remove the four small hex screws from the back of the display console. There are four screws larger than these also on the back of the display but they are holding the display backing plate onto the display rail.
- Gently dislodge the display assembly from the console or backplate.
- Disconnect the display cable from the display electronics.
- Place the display assembly in a safe place where you have space to work on it.

Removing the display electronics from the panel.

- Using a 1/4" socket or wrench, remove the five hex nuts that hold the display electronics to the display panel.
- Gently separate the electronics from the panel. It is only necessary to remove the large electronics panel.



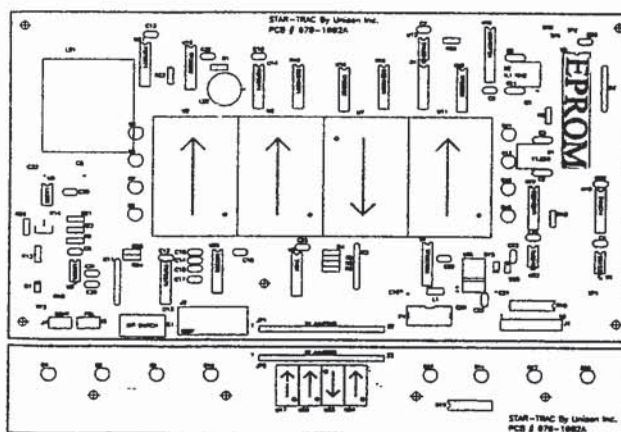
EPROM Replacement con't

Removing the EPROM.

- Using a small screwdriver, gently pry off the old EPROM from the display electronic.

Installing the new EPROM.

- Gently press the new EPROM into the display electronics.



Note: Make sure the pins are not bent. Also make sure that the notch on the EPROM is pointing to the top (as shown in the diagram on this page.)

Reconnecting the display assembly.

- Position the display electronics on the display panel.
- Using a 1/4" socket or wrench, replace the five hex nuts to fasten the display electronics to the display panel.
- Connect the display cable to the back of the display electronics.
- Using a 5/64" Hex wrench, replace the four hex screws on the back of the display console.
- Plug the treadmill into the power outlet.
- Turn the treadmill power switch to the On position.

Installation Complete



3900 TEST MODES

Motor Test Mode

- hold down the DISPLAY/SCROLL key while turning the power switch "on." You will then see **test** then the display will scroll the version software, the time(the time LED will also be displayed), the distance(the distance LED will also be displayed), and then it will scroll back to **test**.
- Depress the speed + or - keys to increase/decrease speed. When you stop at any certain speed the measured speed will constantly fluctuate by .1 or so and will toggle between itself and the commanded speed. In regular mode it will not toggle like this.
- When depressing the elevation ↑ and ↓ keys the displayed value will be what is commanded and it will then toggle every 5 seconds or so back to the elevation value the treadmill is actually at until it reaches the commanded elevation.

Display Test Mode

- this can be accessed when you have already entered the Motor Test Mode by depressing the DISPLAY/SCROLL key again at any time in the Motor Test Mode. All the LED's will light up until you have depressed another key. To test the keys responses simply depress each key and see that it responds with it's proper function.

Auto-Calibration Mode

- can be attained in Motor Test Mode by depressing the START key.
- the display will then read **CAL** and the auto-calibration process then starts. It will remain at it's minimum speed for approximately 20 seconds and then will climb to half of the maximum speed and then will climb all the way to it's maximum speed where it will remain for about 5-10 seconds. ***the MPH will never be displayed in this mode***
- once calibration is complete the display will return to reading **test**.

3900 TEST MODES

Motor Test Mode

- hold down the DISPLAY/SCROLL key while turning the power switch "on." You will then see **test** then the display will scroll the version software, the time (the time LED will also be displayed), the distance (the distance LED will also be displayed), and then it will scroll back to **test**.
***the readout actually looks like this "EEST"
- When you have entered the motor test mode the running belt will not be moving but once you have activated the drive motor it does not return to a stop at any point. The lowest speed it reaches in motor test mode is .5 mph or .8 km/h.
- Depress the speed + or - keys to increase/decrease speed. The readout of the speed will constantly toggle every few seconds between what you have commanded the treadmill to do and what the RPM sensor is actually reading.
- Depress the ↑ and ↓ keys to elevate the treadmill and bring it back to level. The readout of the elevation will constantly read every few seconds between what you have commanded the treadmill to do and what the elevation motor actually is at.

Display Test Mode

- this can be accessed at any time after entering Motor Test Mode by depressing the DISPLAY/SCROLL key again. All the LED's will light up.
- If you depress any of the following keys: START, ELEVATION ↑ or ↓, SPEED + or -, or STOP, the LED lights will turn off and go into whatever function you have pressed.
- If you depress any of the DISPLAY SCROLL keys: TIME, DISTANCE, CALORIES, TRACK, INCLINE or SPEED (including the DISPLAY SCROLL key) there will be an audible sound (a beep) but there will be no visual change on the display.

Auto-Calibration Mode

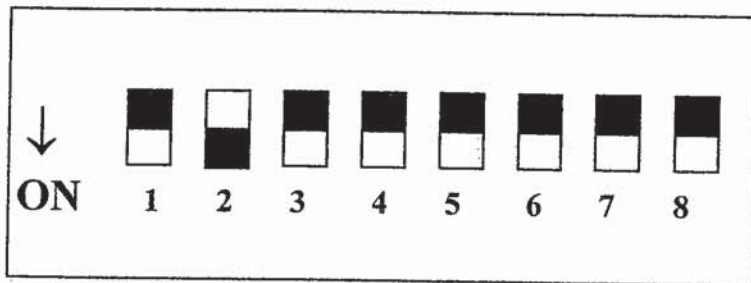
- this can be attained in Motor Test Mode by depressing the START key.
- the display will then read **CAL** and the auto-calibration process then starts. It will remain at its minimum speed for approximately 20 seconds and then will climb to half of the maximum speed and then will climb all the way to its maximum speed where it will remain for about 5-10 seconds.
the MPH will never be displayed in this mode - only CAL will read on the display
- using software version 1.075 the end of the speed calibration will be followed by a 5% elevation grade check. The treadmill will elevate to 5% and then back down to 0%. If you see the code displayed **ES_6**, simply toggle the dip switch #6 to the opposite position that it is in. Then proceed with the calibration once more.
- once calibration is complete the display will return to reading **test**.

Display Codes

- There are 8 display messages; each one coincides a series of beeps (some older units may only 4 display codes and also have a continuous beep that will not stop until the treadmill is turned off.)
- **FS1**- displayed when any key is stuck upon turning the power switch "on" (when the SCROLL key is stuck for more than 3 seconds in Motor Test Mode it will also error out to FS1.)
- **FS2** - displayed when dip switch #8 is in the "on" position.
- **E_S6** - displayed when dip switch #6 (shown below) is in the wrong position.
- **SPD0** - displayed when the RPM sensor is not receiving a signal or when rpm sensor is not giving any signals.
- **SPD1** - displayed when there is a sudden speed change of more than 2mph.
- **EL1** - displayed when there is no change in feedback from the elevation.
- **EL2** - displayed when there is no value coming from the elevation motor potentiometer.
- **EL3** - displayed when there is an erratic reading coming from the elevation motor potentiometer.
- *EL4 - Displayed when Elev. Reached MAX & wants to Elevate more*

Dip Switch Configurations

example: The below configured switches define a 3900 treadmill that is set for English, it is a 10mph unit with elevation and has no time limit. Switches 7 may differ from treadmill to treadmill as 7 is a toggle switch that deactivates the re-wax LED (light is in the lower right hand corner of the display) and 5 & 8 are currently not in use but are always in the OFF position.



Switch#	Off	On
1	English	Metric
2		Max Speed 10mph/16kph
3	Elevation enabled	Elevation disabled
4	Unlimited time	20 minute time limit
5	*spare* This switch is always in the OFF position when manufactured.	
6	3900	3500
7	Change position of switch to turn wax LED off on ser#'s below G01412	
8	*spare* This switch is always in the OFF position when manufactured.	