



WALKING SYSTEM TECHNICAL CERTIFICATION TRAINING

Field Engineering | 2010

LifeFitness
WHAT WE LIVE FOR

Course Objectives

- » Theory of operation and components
- » Belt and Deck
- » Flywheel Functions
- » Bolted Frame Structure
- » Drive Motor Removal
- » Walking Belt Installation and Tensioning
- » Common issues

Treadmills



**CLST, CST, 95Ti,
95Te, T9i, T9e**



PCST or 95T



F3



T3

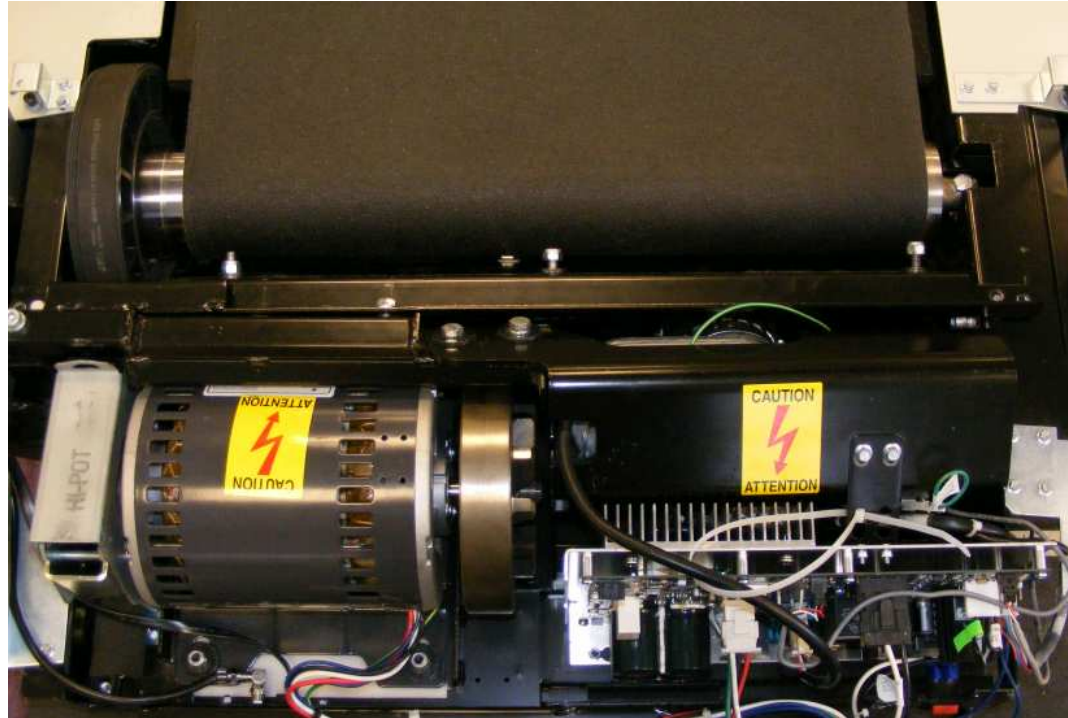


T50, T5.5



T7.0

Theory of Operation



Drive Motor compartment

- » Single stage drive system – Drive motor pulley and front roller pulley
- » Drive motor drives the front roller thru a poly –v drive belt
- » The front roller drives the rear roller thru the striding/walking belt

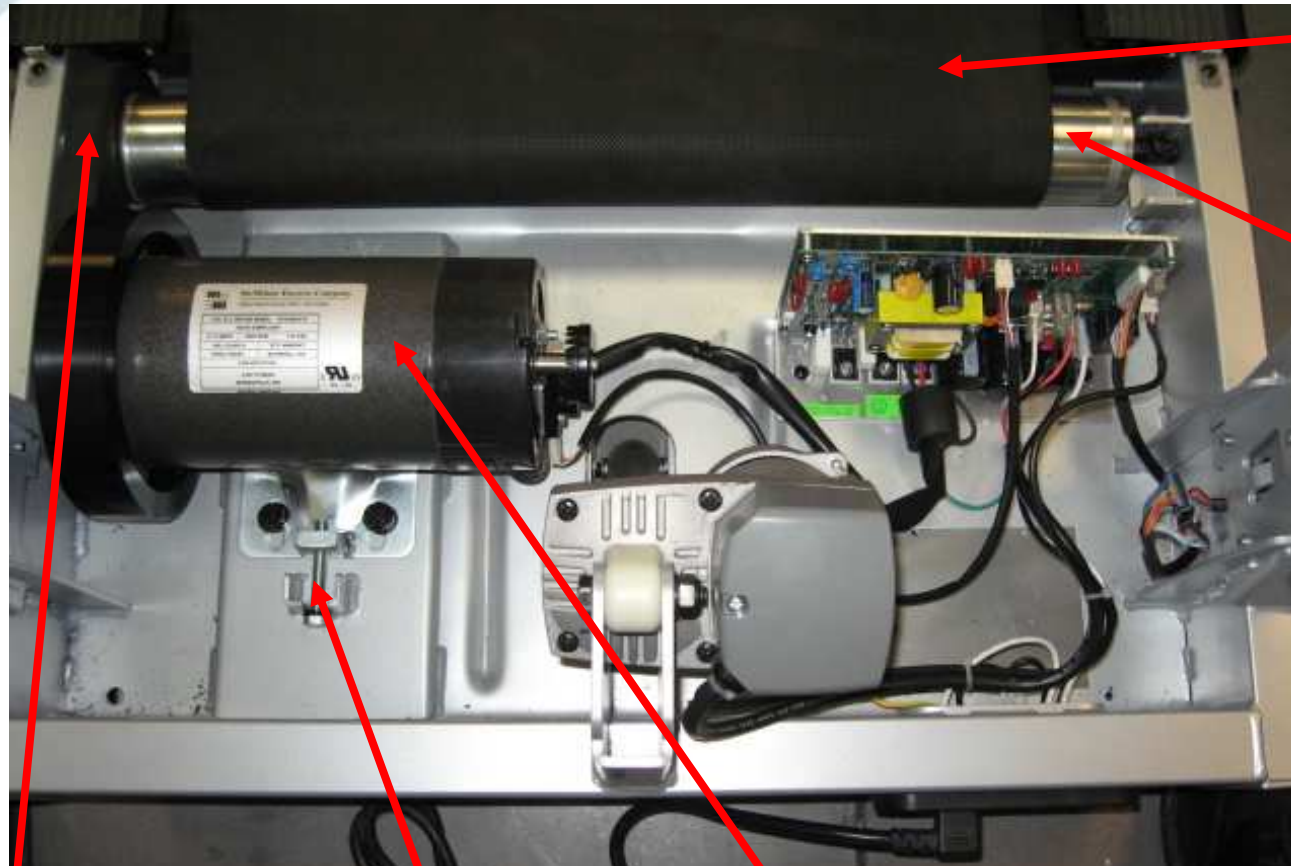
Components and Drive Ratio

- » J type Poly-v non-stretchy drive belts are used for commercial and consumer treadmills
- » Spring loaded idler assembly is used to maintain tension in the commercial and high end consumer units
- » No idler assembly used in consumer treadmills.
 - ♦ Drive belt tension is set with a draw-screw and a sliding motor bracket
- » **Drive ratios:**
 - ♦ T3 drive ratio = 0.358:1
 - ♦ F3 drive ratio = 0.437:1
 - ♦ T5.0 & T5.5 drive ratio = 0.467:1
 - ♦ T7.0 drive ratio = 0.373:1
 - ♦ 95T, CLST, PSCT, CST and T9 drive ratio = 0.249:1
- » Drive motor pulley and front roller pulley diameters and number of ribs can vary depending on final drive ratio at the motor pulley and design parameters

Belt and Deck

- » Quality of the Striding/Walking Belt and Deck is critical to the successful operation of any treadmill
- » The Deck is made up of a special particle board and protective laminate which allows for flexibility and long life.
- » To assist in deck wear prevention, the deck has wax applied to it and lubricant in the striding belt material to help minimize friction/wear of the two components.
- » 95T and CLST treadmills use the same striding belts.
- » The deck for the 95T has extra cut-outs for clearance. Dimensionally and by physical composition the decks are the same. 95T deck can be used on CLST but not vice versa.
- » Older commercial models (manufactured before 2004) have non-lubricated striding belt and deck and use with a wax pump for providing lubrication.
- » Update to waxed deck with pre-lubricated belt is available but requires updates of the electronics.
- » **Consumer models: T3 and F3 have a non-lubricated striding belt and deck and need silicone lubricant to be applied on the deck at the time of new belt installation.**

Consumer Treadmill Components – Visual Representation



Walking Belt

Front Roller

Drive Belt

Tension Bracket
Assembly

Drive Motor

Commercial and High End Consumer Treadmill Components – Visual Representation

Walking
Belt

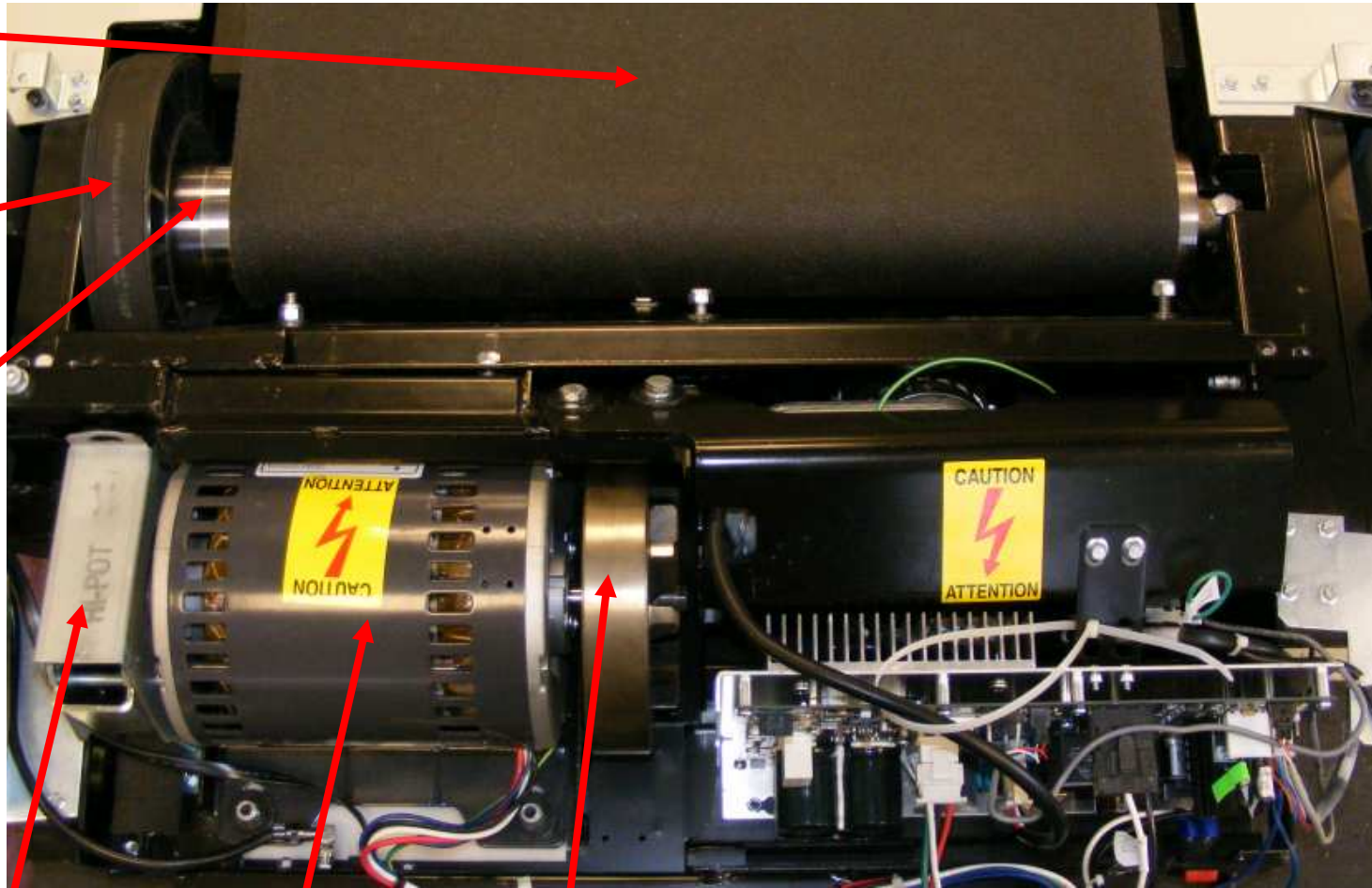
Drive
Belt

Front
Roller

Idler
Assembly

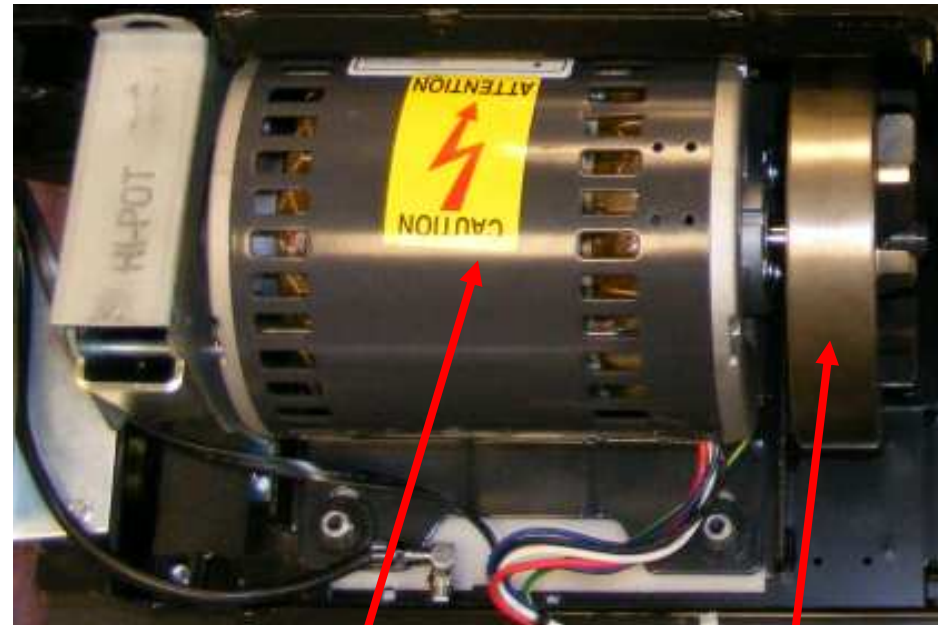
Drive Motor

Flywheel



Flywheel Functions

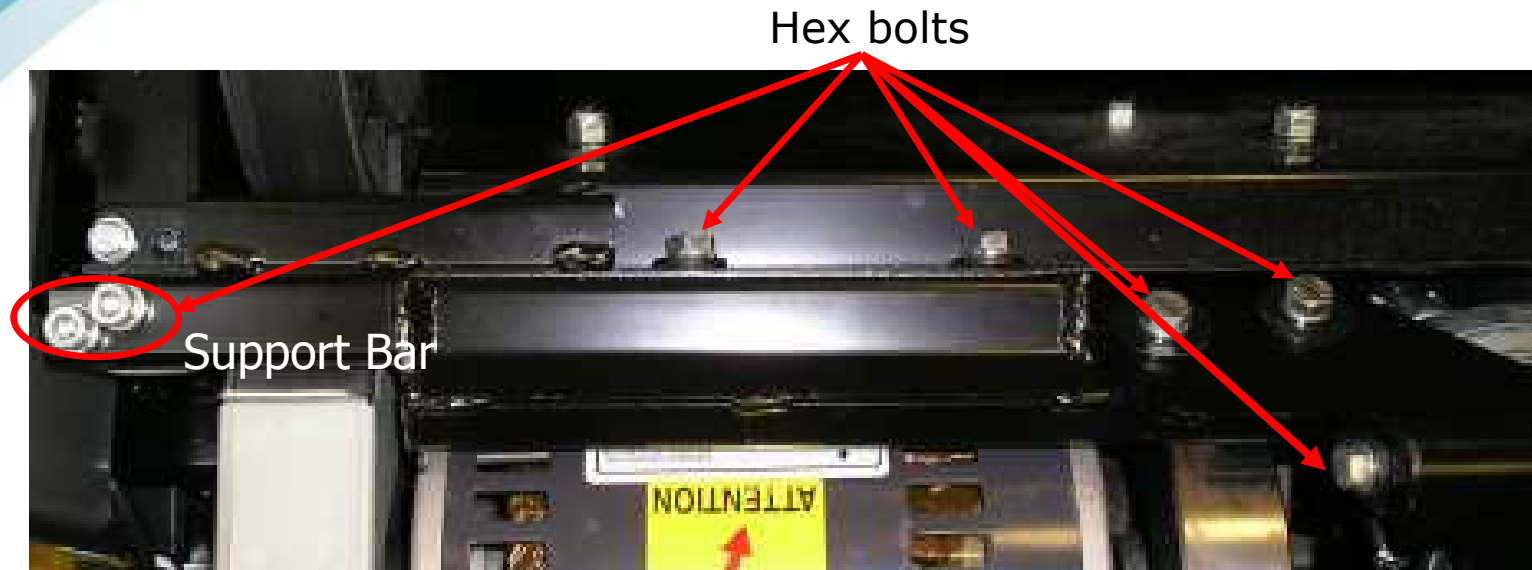
- » Fins on the fly wheel help with cooling different electrical components by circulating air under the front motor cover.
- » Maintains inertia in the system and ensures smooth walking and/or running speeds.



Drive motor

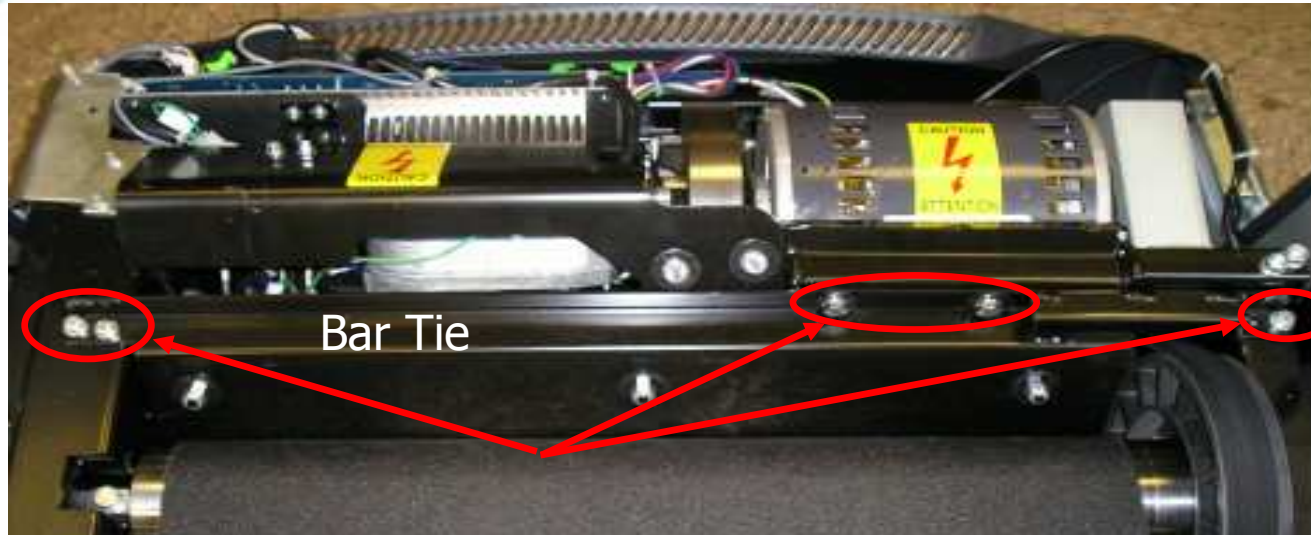
Flywheel

Elevation 95T, versions 1 & 2 (Bolted Frame)



- » **Support Bar** is to be removed for Drive Motor replacement
- » Remove 5 Hex and 2 Allen bolts

Elevation 95T, versions 1 & 2 (Bolted Frame)



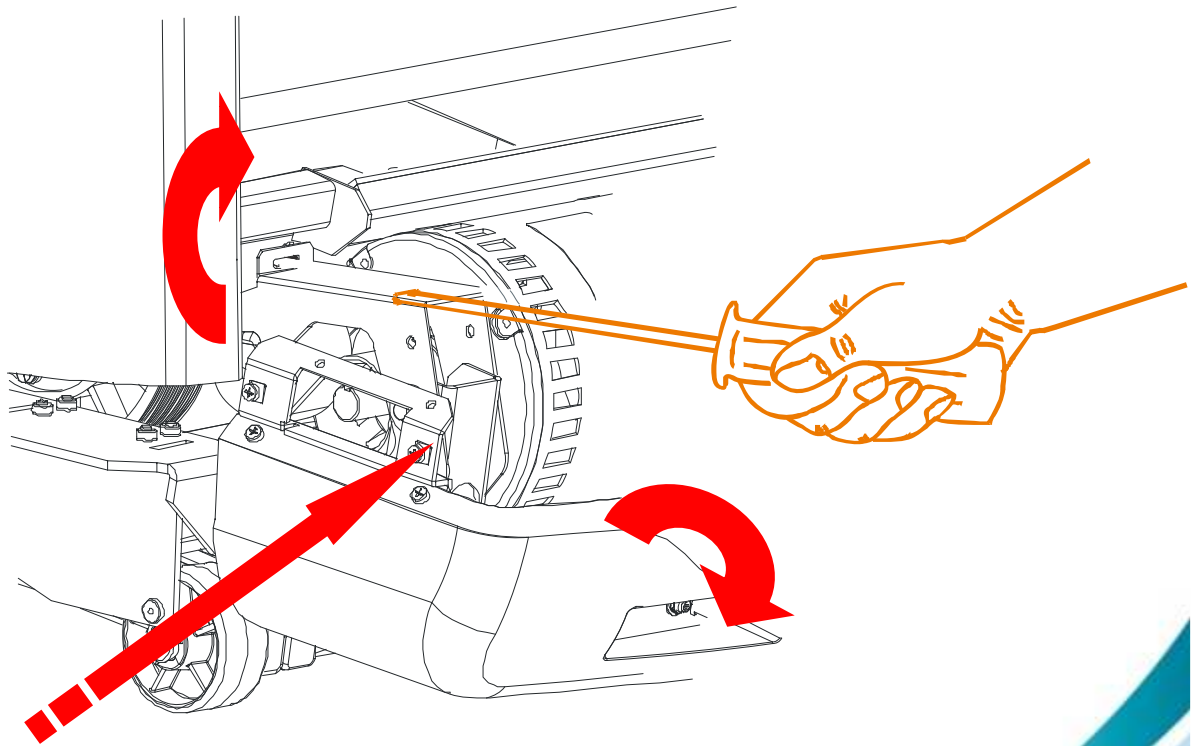
- » **Bar Tie** is to be removed for Lift Actuator replacement
- » Remove 5 bolts, and 3 nuts

DO NOT REMOVE BOTH SUPPORT BAR and BAR TIE AT THE SAME TIME!!

- » 95T Version 3 has welded lower frame structure and has been in production since April 2010

Locking the Idler Arm for Elevation 95T

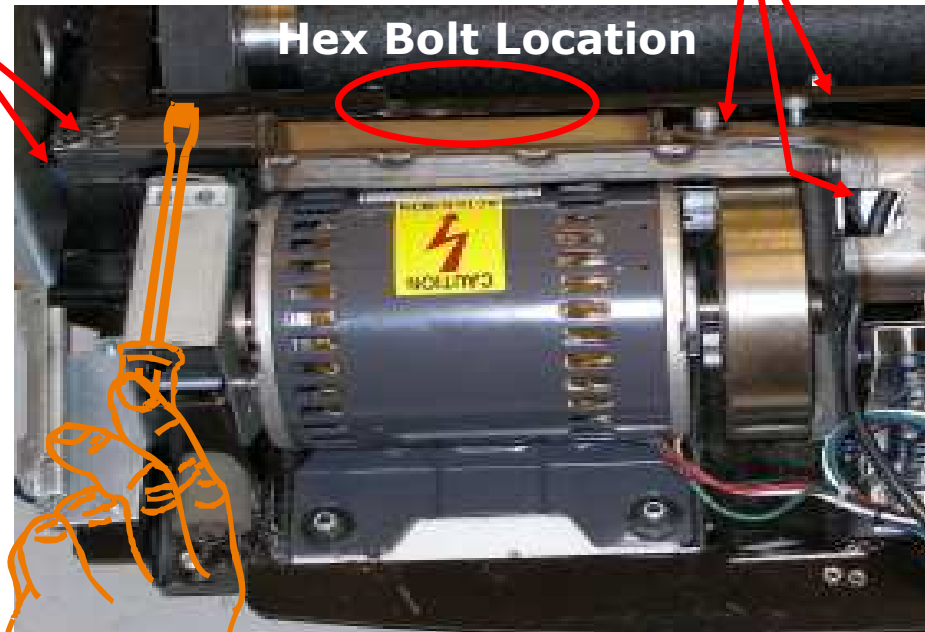
- » Using a Flat blade screwdriver, insert the blade into the slot in the Idler Bracket and relieve tension on Drive Belt.
- » At the same time insert an Allen wrench (4.5mm) to lock the Idler Bracket.



Allen Key

Elevation Treadmill Drive Motor Removal

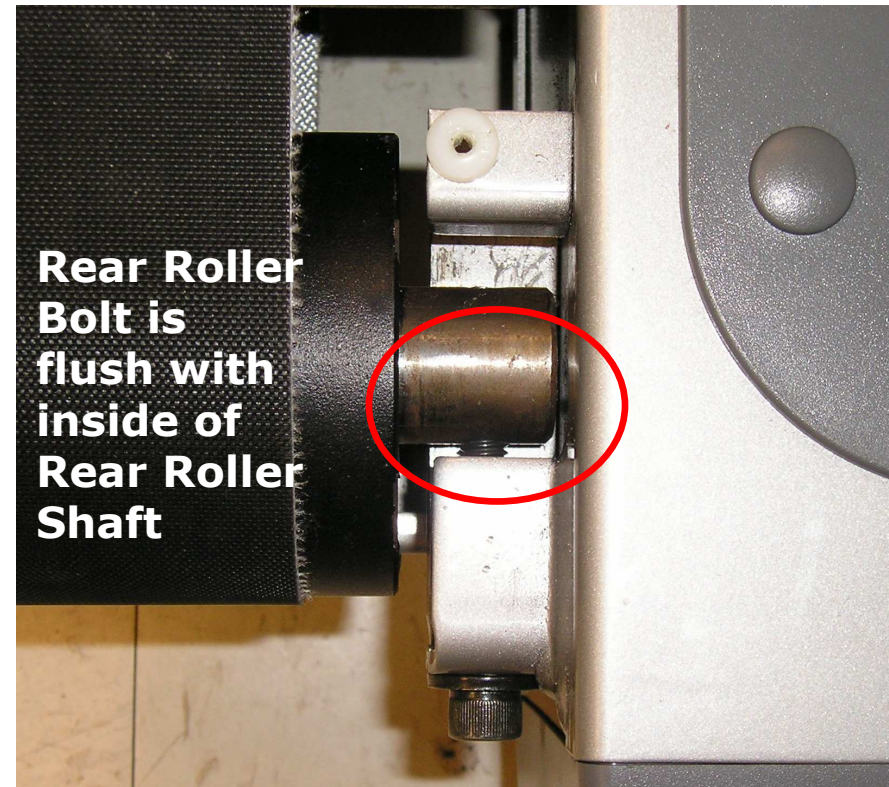
- » Remove 7 bolts and washers (2 Hex head bolts not visible) securing the Support Bracket
- » Using a Flat blade screwdriver, insert the blade into the slot in the Idler Bracket and relieve tension on Drive Belt. At the same time insert an Allen wrench (4.5mm) to lock the Idler Bracket.



Note: Go completely through

New Belt and Deck Installation

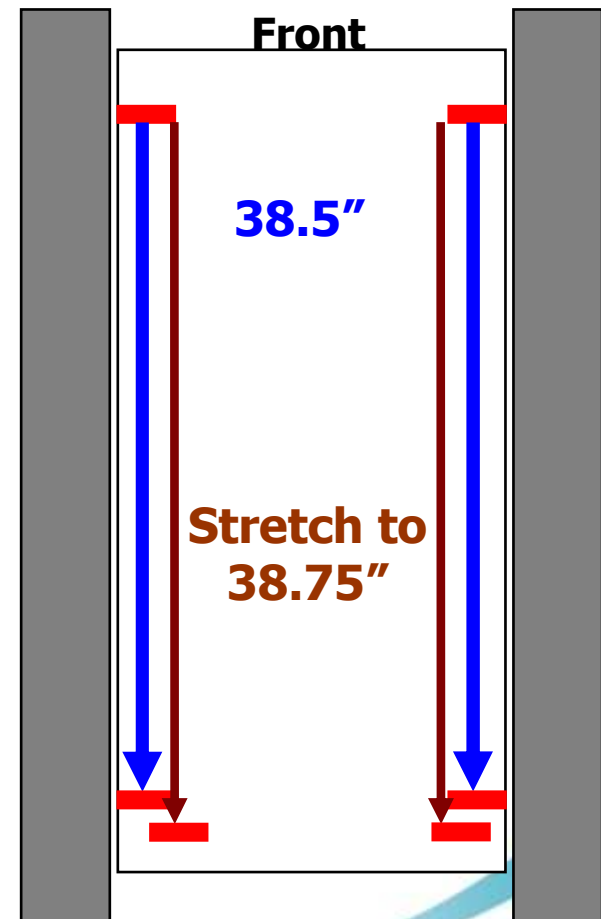
- » Secure the Rear Roller by installing the roller bolts by hand until you feel the bolt come through the roller shaft and is flush.



Classic 95T shown

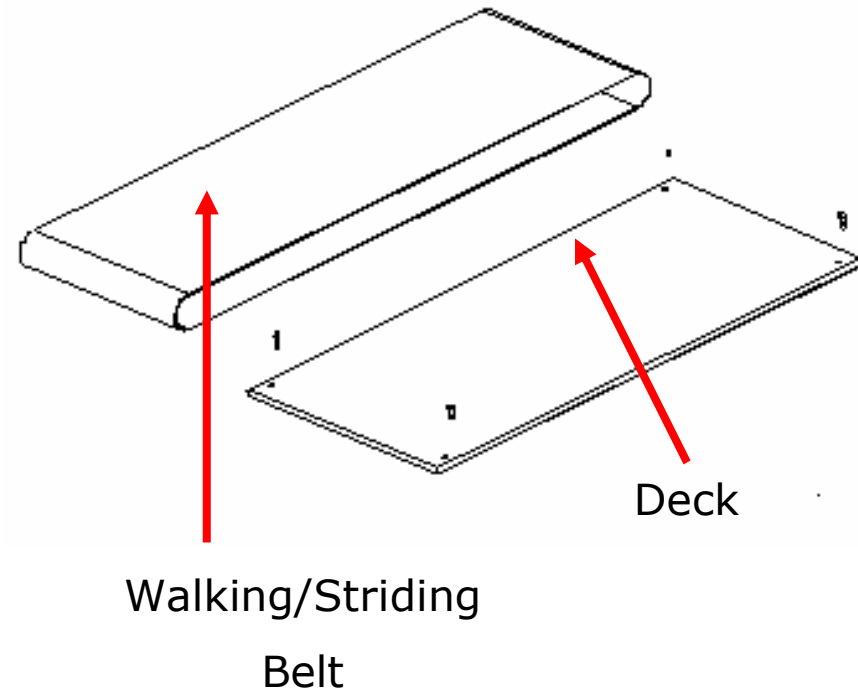
Striding Belt Tensioning

- » Position the belt seam on the underside of the treadmill – not visible.
- » Place two (2) pieces of tape on the left and right side of the Belt near the Front Roller.
- » On each side, place another piece of tape EXACTLY 38.5" from the first piece of tape.
- » Counting wrench rotations, stretch the Belt so that the marks are now at 38.75" on both sides
 - ♦ Belt stretch percentage:
 - > Elevation: New – 0.60% | Used – 0.55%
 - > Classic: New – 0.65% | Used – 0.55%
- » Test tension by doing the "Stomp Test":
 - ♦ Run unit at about 2.5 mph then stomp your feet to check if the striding belt slips or you stall the drive motor
- » Walk all over belt for 20-30 minutes to insure proper distribution of wax from belt to deck



Deck Use

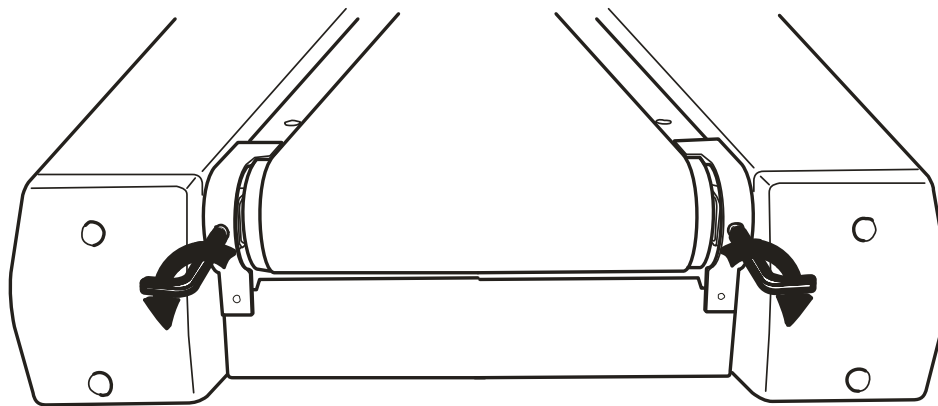
- » Wax on the deck comes pre-applied in all treadmill units
- » When installing a new walking belt flip the deck over and reuse
- » When installing a second new walking belt, then you must replace the deck!



Common Issues

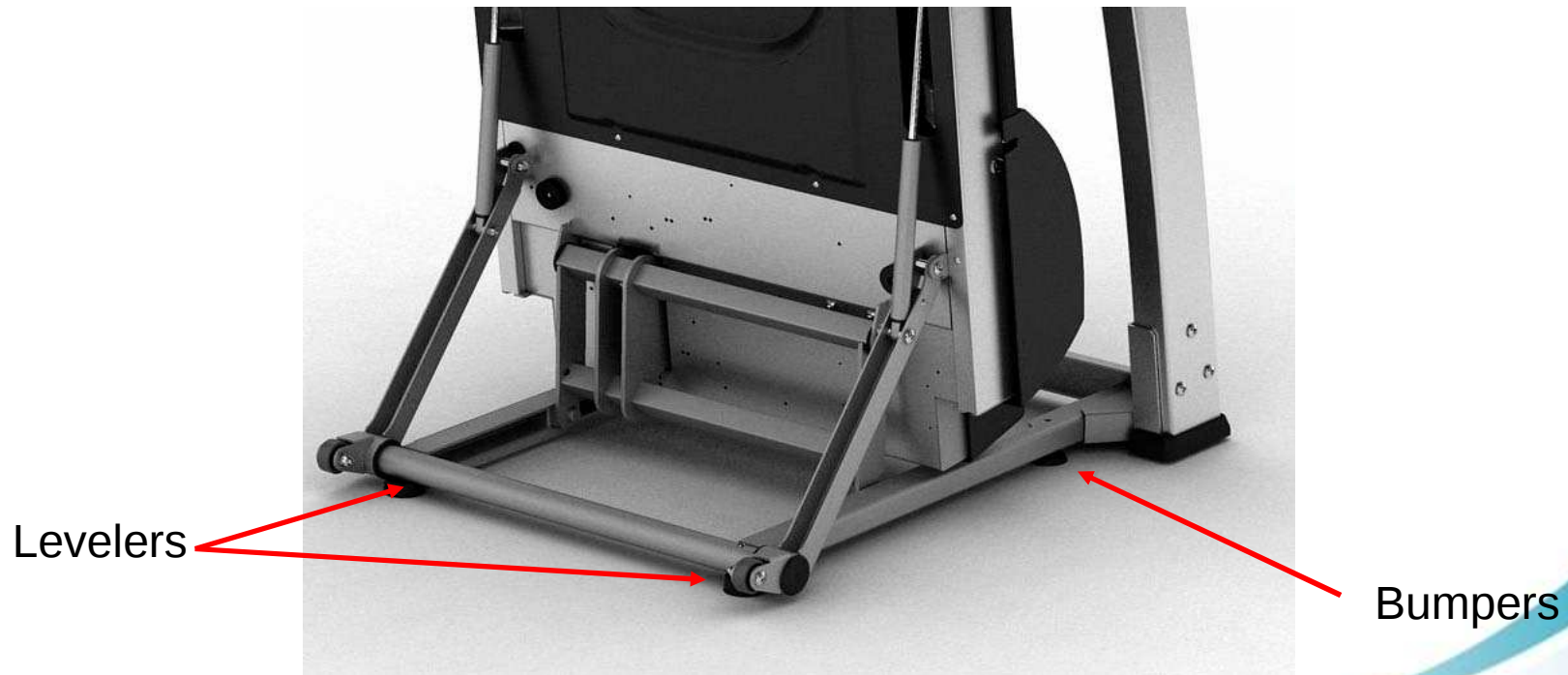
Striding Belt Does Not Track Properly

- » Issue:
 - ◆ Striding belt does not track properly
- » Probable cause:
 - ◆ Rear roller is not properly adjusted
- » Solution:
 - ◆ Striding Belt has moved to the right:
 - > Turn the Right Tensioning Bolt 1/4 turn clockwise and the Left Tensioning Bolt 1/4 turn counter-clockwise
 - ◆ Striding Belt has moved to the left:
 - > Turn the Left Tensioning Bolt 1/4 turn clockwise and the Right Tensioning Bolt 1/4 turn counter-clockwise



Noise on F3 Folding Treadmill

- » Issue:
 - ♦ Noise during operation
- » Probable cause:
 - ♦ Unleveled machine
- » Solution:
 - ♦ Level the base frame of the machine



Squeaking Drive Belt (1)



- » Issue:
 - ♦ Chirping or squeaking noise heard at the drive system of commercial and high end consumer treadmills
- » Probable cause:
 - ♦ Misalignment between the drive motor pulley, the idler roller, and the front roller pulley.
- » Solution:
 - ♦ Move the drive motor pulley to align with the idler and front roller pulley. No need to replace parts!

Squeaking Drive Belt (2)



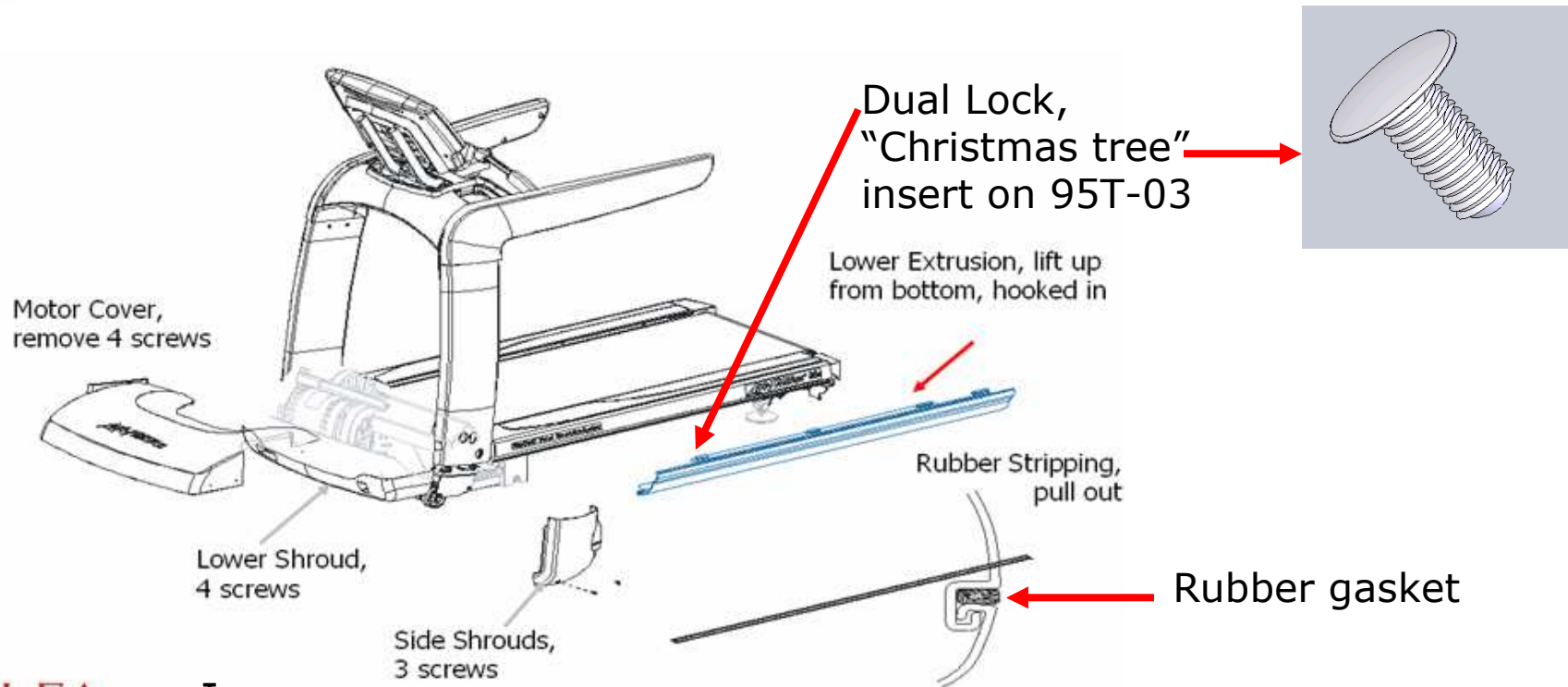
Push on this or the other side

» Alignment Procedure:

- ♦ Push one of the sides of the idler bracket assembly in either direction to start.
- ♦ In whichever direction pushing on the idler assembly eliminates the noise, is the direction to move the motor drive pulley to.
- ♦ Note the distance that you push on the bracket.
- ♦ Loosen the drive motor pulley and adjust position based on direction and the distance that you pushed the idler bracket.

Few General 95T Issues

Plastic Rails Fall Down and Rubber Stripping out on Elevation Treadmills



» Issue:

- ♦ Rubber gasket (stripping) pulls out

» Solution:

- ♦ Use a flat head screw driver to reinsert the gasket in between upper and lower rails

Elevation Treadmill's Upper Frame Plastic Fit

» Issue:

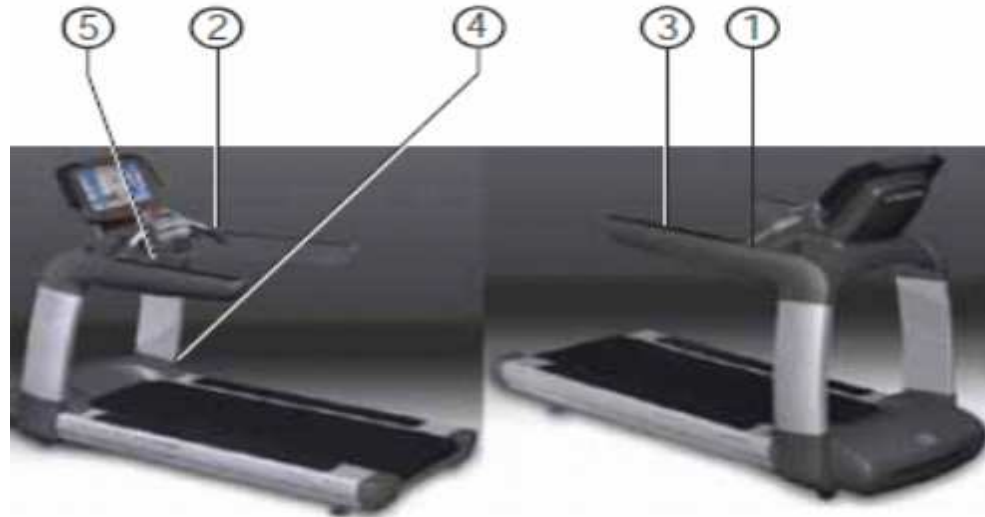
- ◆ Plastic gaps / mismatches at the following locations
 - > 1. Handrail-overmold-to-handrail-outer-shroud
 - > 2. Handrail overmold-to-top-bridge-weldment-cover
 - > 3. Outer shroud-to-overmold
 - > 4. Bottom-side-shroud-to-top-motor-cover
 - > 5. Outer-arm-shroud-to-bottom-shroud

» Probable cause:

- ◆ Improper installation.

» Solution:

- ◆ Loosen and reassemble covers



- ◆ If problem persists order new covers

» Reference:

- ◆ Service Bulletin: TR08032801R

- » **NOTE:** When using a powered screw driver – set to low torque!

Summary

- » What treadmill models require silicone lubricant to be applied on the deck when the belt has been replaced?
- » How can the proper tension on a newly installed striding belt be confirmed?
- » How many belts can be used with a single deck on 95T and CLST treadmills?
- » What do we do if Striding Belt has moved to the right?
- » What is the solution for a squeaking drive belt?

Questions





THANK YOU!

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