



SERVICE MANUAL



Pro Tread AC 7600 • 7700



Service Manual: E-TR and E-TRi

INTRODUCTION

This is the Service Manual for the Star Trac AC Pro Tread 7600 & 7700. This manual is designed to be easy to use, providing detailed instructions on how to service and maintain the AC treadmills.

Star Trac highly recommends that you read the entire manual prior to performing any maintenance or repair. The information on the following pages will enable you to begin easily, quickly and safely.

This is not an Owners Manual. This service manual is intended for use by a qualified technician as a guide to diagnose and repair service issues on the referenced product.

If you have any questions or require additional assistance, contact the Star Trac Customer Service department during regular hours of operation.

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PRECAUTIONS - SAFETY



Safety First!



The 7600 and 7700 treadmills are wired for either 120 VAC nominal or 230 VAC nominal power input. They are equipped with a specific electric cord and plug to permit connection to the proper electric circuit. Make sure that the product is connected to a dedicated power line having an outlet with the same configuration as that of the plug. NO adapter should be used with this product. If the product must be reconnected for use on a different type of electric circuit, the reconnection should be made by qualified service personnel.

Your safety and the safety of those around you must come first when working on any piece of Star Trac equipment!



ELECTRICAL SAFETY

- Always make sure that the equipment you are working on is turned off and unplugged BEFORE performing any work, unless otherwise noted, or when necessary for voltage testing.
- When replacing fuses, be sure the fuses are of the correct amperage rating. DO NOT exceed the fuse amp rating. If necessary use a fuse of lower rating until the proper fuse may be obtained.
- When checking continuity at the wire connector, insert the test probe carefully to prevent the terminals from bending.
- To pull apart electrical connectors, pull on the connector itself, not the wires.



MECHANICAL SAFETY

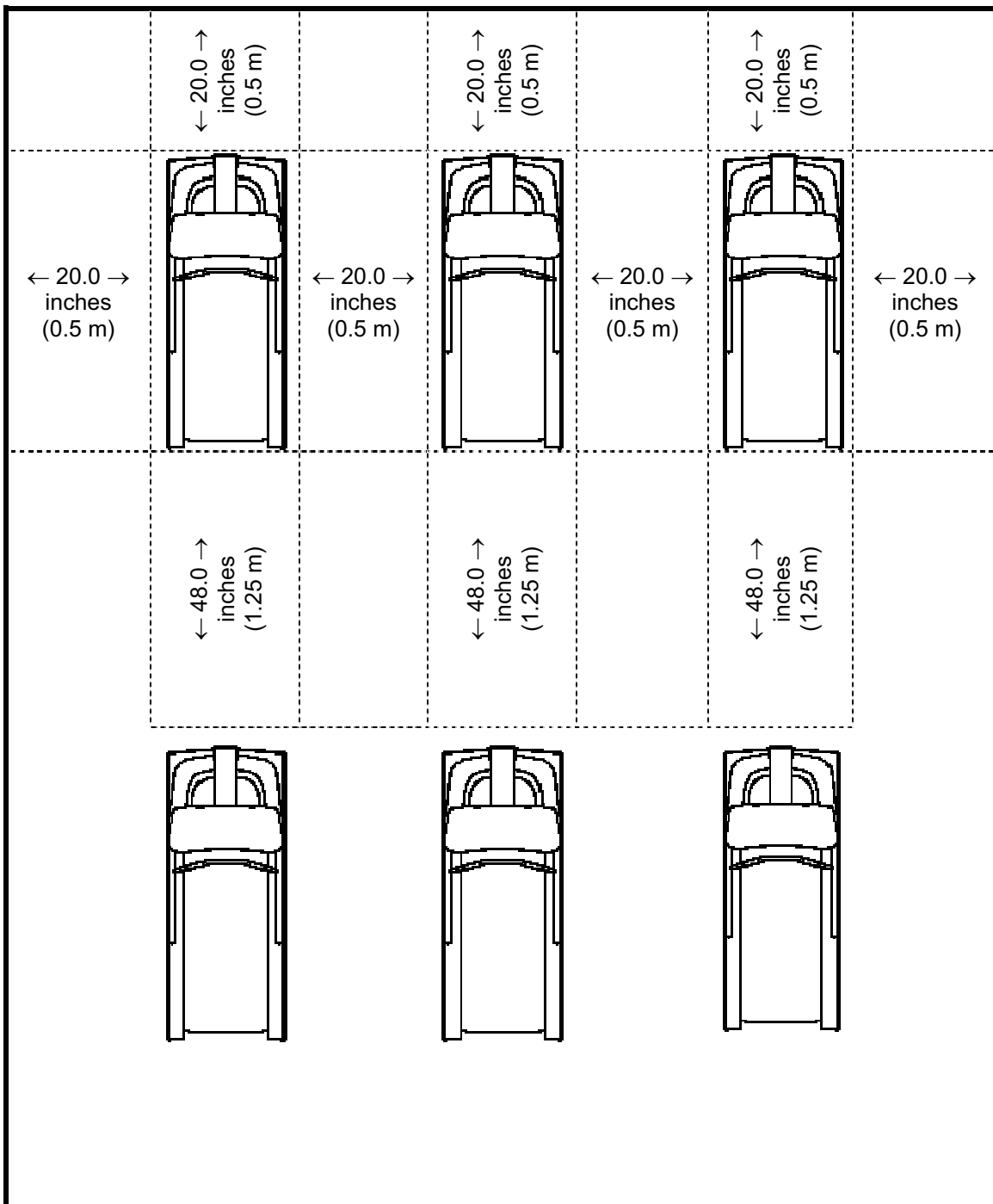
- When working on any mechanical equipment, be sure they are not moving when placing your body parts anywhere near them.
- Avoid wearing loose clothing and jewelry while performing work on any unit with moving parts, whether they are moving or not.

The 7600 and 7700 treadmills weight approximately 323 lbs (146.5 kg). Use caution when lifting, moving or servicing.

EQUIPMENT PLACING

Star Trac recommends that treadmills be spaced a minimum of 20.0 inches (0.5 m) apart to allow safe and easy ingress and egress. More importantly, there must be at least 48 inches (1.25 m) of free space behind the treadmill.

The Pro Series treadmill measures: 85.5" l by 34.0" w (217 x 86.5cm). See the following graph for proper equipment spacing requirements:



POWER (ELECTRICITY)

Objectives

If you are not qualified/comfortable working with electricity you should consult a certified electrician. This section should provide you with the information necessary to properly service your Star Trac unit by giving you:

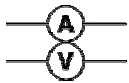
- A basic understanding of electrical safety
- A basic understanding of electrical terminology
- A basic understanding of electricity in general
- A basic understanding of electrical tools
- An overview of your Star Trac unit

Safety

See the “PRECAUTIONS – SAFETY” section of this manual.

Terminology

CURRENT – The number of electrically charged particles that flow past a given point on a circuit in a given time



AMPERE (AMP) – A measure of current

VOLT – Measures the current pressure of a circuit

- Star Trac refers to the 2 most common global voltages as:
 - 110V (or 110VAC)
 - 220V (or 220VAC)



WATT – The rate at which an electrical device consumes energy

OHM – A measurement of resistance

- Ohm's Law:

$$\text{Current: } I = V / R$$

I = current, V = voltage, R = resistance

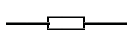
$$I = \frac{V}{R}$$

Depending on what you are trying to solve, other variations can be made:

$$\text{Voltage: } V = I \times R$$

$$\text{Resistance: } R = V / I$$

All variations of Ohm's Law are mathematically equal to one another.



RESISTANCE – Used to dissipate passing current into heat to lower a voltage. Resistance is measured in Ohm's.



POTENTIOMETER (POT) – An electronic component which has an adjustable resistance



HOT wire – Delivers power to the unit. Typically has black, brown, or red insulation

NEUTRAL wire – Once electricity has done its work, it goes back through the neutral wire to complete the circuit. Typically has white or blue insulation



GROUND wire – In addition to the neutral wire, the ground wire offers current another path should an electrical short happen. Also help to dissipate static build-up from the running belt and other components. Typically has green insulation (may be bare copper in some cases)

General Electricity

Star Trac refers to the two most common global voltages as:

- 110V (or 110VAC)
- 220V (or 220VAC)

Voltages worldwide can vary. Star Trac products are designed to be stable within most voltages:

- For 110V systems the voltage range is: 110 VAC – 125 VAC 50/60hz
- For 220V systems the voltage range is: 190 VAC – 250 VAC 50/60hz

Electrical Tools

MULTIMETER – Used to test voltages, amperages and ohm readings. They can vary on type from digital (as shown to the right) or analog. For this service manual we will refer to the digital style for diagnostics.



Wiring

The 7600 or 7700 series treadmill is intended for commercial usage. Depending on the location type and country a unit is manufactured for, it will come equipped with a special power cord and plug.

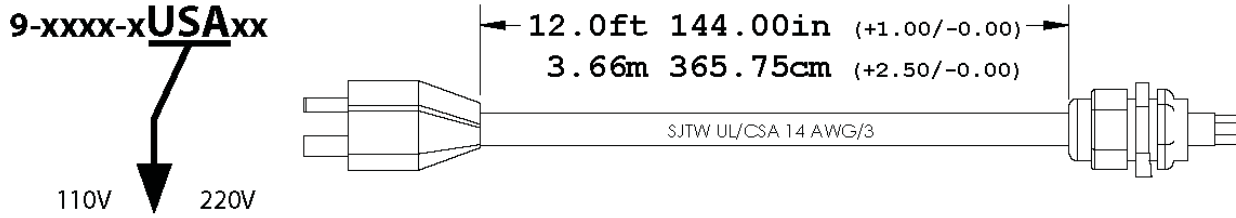
NEMA Configurations (U.S.A.)					
110V Commercial NEMA 5-20		220V Commercial NEMA 6-15		110V Home NEMA 5-15	
Plug	Receptacle	Plug	Receptacle	Plug	Receptacle
In this configuration, the HOT line is in the normal 110V position, while the NEUTRAL line has been turned 90°.		In this configuration, both the HOT and NEUTRAL 220V lines are horizontal (both opposite from the 110V config.)		This is the US standard 15 amp configuration. Both HOT and NEUTRAL lines are vertical.	
				THIS CONFIGURATION SHOULD ONLY BE USED ON TREADMILL MODELS INTENDED FOR HOME USE WITH A 15 AMP CIRCUIT BREAKER!	

Wire Configurations			
	HOT	NEUTRAL	GROUND
USA Wire	Black	White	Green
European Wire	Brown	Blue	Green/White Green/Yellow
US Plugs	Small Flat prong	Large Flat prong	Round prong
Note: Some US units may have European wiring colors.			

Star Trac treadmills require a “Dedicated” power line for proper operation and safety. Units should never share a neutral or ground line. One 20 amp (or 15 amp) breaker per panel per treadmill only.

Power Cords

Below are the power cords you will find installed onto a Star Trac treadmill. Note the configuration of the prongs for power and polarization:



USA OUL		① Power Cord 110V NEMA 5-20		
	USA OUL JPN	② Power Cord 220V NEMA 6-15		
	OCE	③ Power Cord 220V CEE 7/7		
	AUS	④ Power Cord 220V Australia		
	UKI	⑤ Power Cord 220V BS1363 fused		
USA OUL		⑥ Power Cord 110V - Right Angle Plug NEMA 5-20rt		
	USA OUL JPN	⑦ Power Cord 220V - Right Angle Plug NEMA 6-15rt		
	UKI	⑧ Power Cord 220V - Right Angle Plug CEE 7/7		
USA		⑨ Power Cord, Home Units 110V NEMA 5-15		
USA		⑩ Power Cord, Home Units 110V - Right Angle Plug NEMA 5-15rt		

DO NOT MODIFY THE POWER CORD THAT CAME WITH YOUR TREADMILL. USE THE SAME TYPE. DO NOT USE A HOME MODEL PLUG ON A COMMERCIAL TREADMILL. CONTACT STAR TRAC FOR INFO.

PREVENTIVE MAINTENANCE

Overview

Preventive maintenance (PM) is a schedule of planned maintenance actions aimed at the prevention of failures. PM is the best way to preserve and enhance equipment reliability by keeping key components clean and free of debris. PM activities may include cleaning, vacuuming, visual inspections of key components, lubrication, etc. The better your PM program is, the more dramatically you can increase the life of your product and significantly reduce equipment failures.



Value of Preventive Maintenance

Long-term benefits of proper regular preventive maintenance include:

- Decreased product downtime
- Decreased cost of repair
- Improved product reliability
- Continuous user satisfaction



Long-term effects and cost comparisons usually favor preventive maintenance over performing maintenance actions only when the system fails.

Determining When to Perform Maintenance

Some types of PM need to be performed more often than others. The frequency of PM depends a great deal on the use and environment of the unit.

Star Trac has a baseline of procedures that should be performed at pre-determined intervals (as outlined in the “Preventive Maintenance Schedule” section). It is imperative to understand that this is a baseline and PM schedules should be adapted to the environment and usage that the unit receives.

Preventive Maintenance Cautions

- While maintaining equipment you will want to avoid spraying any liquids directly onto any surface of the unit. Always spray cleaning solutions onto a clean towel first then wipe the unit.
- While vacuuming the floor area using an upright vacuum, avoid getting the power cord caught in the beater-brush of the vacuum.
- Disconnect the power cord from the wall before vacuuming under the shroud.
- Use extreme caution while vacuuming around wires and/or electrical components under the shroud.
- Do not attempt to clean the running belt with a mop
- Do not apply any cleaners, protectants or solutions onto the running belt (i.e. Armor All®, SlickStuff®, belt dressing, etc.)

Preventive Maintenance Schedule

This section provides a comprehensive list of factory recommended PM requirements, along with detailed procedures for performing each task.

	DAI LY	WEEKLY	MONTHLY	AS NEEDED
Wipe down all surfaces including: Display, handrails shroud and heart rate grips.	✓			
Clean under the running belt (soft cloth only)	✓			
Visually inspect running belt for alignment and tension	✓			
Ensure the power cord is not under the treadmill	✓			
Vacuum floor under and around treadmill		✓		
Inspect inside surface of running belt and top of deck		✓		
Correct any display or handrail squeaks and rattles		✓		
Visually inspect display panel (keypad) for wear		✓		
Vacuum inside shroud			✓	
Visually inspect the drive belt			✓	
Visually inspect the power cord for pinches or breaks			✓	
Wipe clean and lubricate elevation screws			✓	
Change belt and flip/new deck				✓
Running belt & deck rewaxing*			*	*

*Running Belt & Deck Rewaxing

The Pro Tread models 7600 and 7700 are equipped from the factory with a “Waxless” running belt and deck system. It is not necessary to regularly wax, rewax or lubricate the running belt and deck. Wax may be applied to alleviate running belt noise (see waxing instructions).

WEEKLY

January 2014						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	★	10	11	12	13	14
15	★	17	18	19	20	21
22	★	24	25	26	27	28
29	★	31				

Clean

Elevate the treadmill and vacuum the floor around and underneath.



Inspect

- Inspect display panel (keypad) for wear
- Inspect inside of running belt and top of deck
- Inspect all mounting hardware and correct any squeaks or rattles

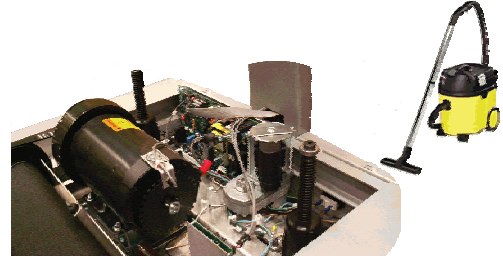


MONTHLY

January 2014						
S	M	T	W	T	F	S
1	★	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Clean

- Unplug the treadmill and remove the shroud. Use a portable vacuum with dust attachment to clean any dust, dirt or debris from inside the shroud area. Use extreme caution to not damage any components or knock and connections loose



Inspect

- Inspect the drive belt for tension and wear.
- Inspect the power cord for pinches and/or broken prongs

Lubricate

- Wipe and debris from the elevation screws then lubricate. Use a spray lithium grease or a thin coating of grease. Avoid thin lubricants (i.e. TriFlow®, WD-40®, or the like).

AS NEEDED

January 2014						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Belt Service

- In high use locations, it may be advisable to replace the running belt with a new one to prevent undetected wear. It is advisable to replace a running belt in a high use location in a preventive manner, to prevent potential wear related issues. A worn or wearing belt can cause undetectable issues.

RUNNING BELT

NOTICE

Once a deck surface has been used, it should not be used again.

You must install a new belt and new deck surface together. Most Star Trac decks are double-sided so they can be flipped to utilize both sides. Failure to install a new belt over a fresh deck surface will cause the belt to burn along the center walking area, the edges will curl, electrical components will create so much heat as to begin to fail, and will not be covered under warranty.

The Pro Tread models 7600 and 7700 are equipped from the factory with a “Waxless” running belt and deck system. It is not necessary to regularly wax, rewax or lubricate the running belt and deck on these models. Wax may be applied to alleviate running belt noise (see waxing instructions).

During a non-belt and/or deck related service, if a running belt and/or deck are removed, it may be acceptable to re-install the belt and deck as long as no visible signs of wear are present or the situation does not require replacement.

If replacing a deck due to wear, it is advisable to replace the running belt as well, because wear is commonly caused in conjunction with the running belt.

If you have questions on whether or not to replace a running belt and/or deck, contact Star Trac Customer Support.

Importance of Running Belt Maintenance

The running belt is the most important part of a treadmill. It is what a treadmill is all about. It is the core component that must be maintained to insure many years of continued function.

By performing a few maintenance steps at regular intervals, you can help to:

- Increase the life of a running belt
- Reduce unnecessary down-time
- Prevent electrical component failures

Dirt is an abrasive. When it builds up under a running belt, it can act like sandpaper, wearing off the slick coating of the deck and reducing the life of both the running belt and deck surface.

Additionally, lack of proper PM can cause a running belt to over heat and can delaminate (separate the layers of the belt) resulting in curled edges, folded edges and ripples in the center of the walking area.

Checking for proper running belt tension can help ensure that the running belt is not too loose. If a running belt is too loose, it has the potential of tracking to the side and becoming damaged.

A worn running belt will cause other components (i.e. MCB, Drive Motor, etc.) to develop enough heat that over time will cause failure to those components.

Taking care of a running belt at regular intervals can greatly reduce maintenance costs and unnecessary downtime.

Running Belt “Do Not’s”

- Do not use Armor All®, Slick Stuff®, WD-40® or the like, on the running surface of a belt
- Do not use cleaners with ammonia or alcohol on the belt
- Do not use any lubricants under the running belt
- Do not over-tension a running belt
- Do not wash a running belt then reinstall it
- Do not reuse a deck surface when installing a new running belt

Cleaning a Running Belt

The running belt should be cleaned to help prevent dirt build up and maintain a nice appearance for users.

To properly clean a running belt you will need:

TOOLS & MATERIALS

- Clean towel (1)
- Paint stick or ruler (1)
- Diluted all-purpose cleaner (409®, Simple Green®, etc.)
- Bristle brush

CLEANING PROCEDURE:

1. CLEAN BETWEEN DECK & BELT:

- A. Using the paint stick or ruler, slide a dry towel under the middle of the belt from one side of the frame to the other.
- B. Hold the edges of the towel and pull towards the tail roller then pull back towards the head roller.
- C. Rotate the running belt around and repeat to completely wipe the entire underside of the belt.

TIP: Fold the dirty towel and shake into trash.

2. CLEAN BELT SURFACE

Spray the diluted cleaning solution onto a towel then wipe the running belt surface. For heavier soiled areas, spray a tiny bit of solution onto the spot and use the bristle brush to gently agitate the spot then wipe with the towel.

3. CLEAN SIDEBED COVERS

Spray the towel with cleaning solution to give a final wipe of the sidebed covers to help ensure cleanliness.

Running Belt Tension

Proper running belt tension and tracking are important to maintain the performance and life of the belt. It is recommended to follow this tensioning and tracking procedure whenever the running belt or deck is replaced or as needed.

PARTS REQUIRED

- Masking tape and pen or pencil
- Ruler or tape measurer

TOOLS REQUIRED

- 1/4" Allen wrench

FREQUENCY

After: 1,000 Miles (1,600 Km) OR 1 Month. Whichever comes first.

- Clean deck with dry cloth and retighten belt using procedure below.

After: 6,000 Miles (10,000 Km) OR 6 Months
12,000 Miles (20,000 Km) OR 12 Months
18,000 Miles (30,000 Km) OR 18 Months
24,000 Miles (40,000 Km) OR 24 Months
30,000 Miles (50,000 Km) OR 30 Months
OR whichever comes first.

- Clean deck with dry cloth. Clean between the belt and deck using the "Cleaning A Running Belt" section. Clean the head and tail rollers using the "Roller Care & Maintenance" section. Retighten belt using the following procedure "Running Belt Retensioning Procedure".

RUNNING BELT RETENSION PROCEDURE



Fig 1

Step 1: Release tension of running belt by unscrewing the tension screws until the roller touches the finger-guard. The belt should be completely relaxed.

(Note: This applies to both left & right finger-guards.)



Fig 2

Step 2: Apply a piece of masking tape on the edge of the running belt on both sides.

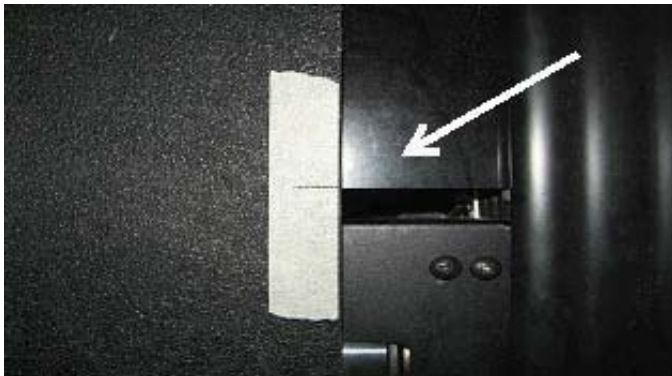


Fig 3

Step 3: Draw a line on each piece of masking tape aligned with the edge of the deck.

(Note: Be careful not to move the belt or roller while drawing the lines.)

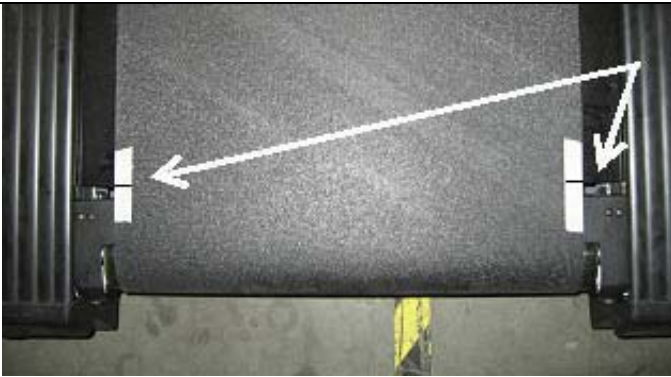


Fig 4

Step 4: Check to make sure that both lines are aligned with the edge of the deck at the same point. (See Fig 4)

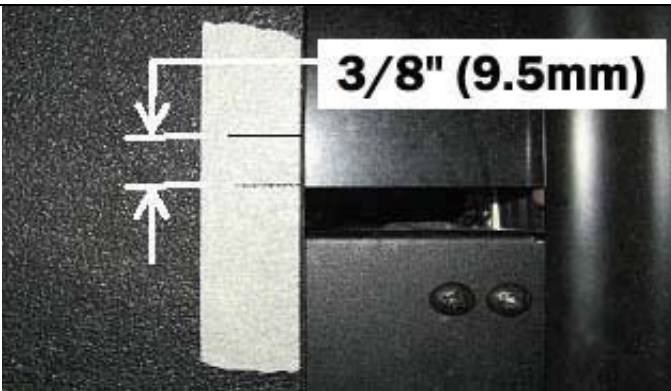


Fig 5

Step 5: Using a ruler or tape measure, draw a line on each piece of tape parallel to each first line at a distance of 3/8" (9.5mm) from each first line. (See Fig 5)

Step 6: You are now ready to begin tensioning the belt. Before beginning, make sure the line on each piece of tape closest to the tail roller is aligned with the edge of the deck on each side. (See Fig 5)

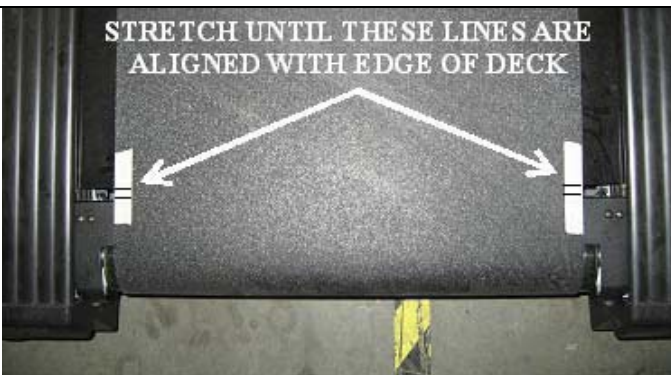


Fig 6

Step 6: Using the 1/4" Allen wrench begin tightening the tensioning screws (see Fig 1). You will tighten (or stretch) the run belt until the forward lines on the tape are aligned with the edge of the deck.

Be careful to ensure the Tail Roller does not turn while you are stretching the belt. If the Tail Roller turns while you are stretching the belt, start the procedure over. If the Tail Roller turns while stretching the belt you will not obtain proper tension.

When finished, remove the tape from the running belt.

Running Belt Alignment

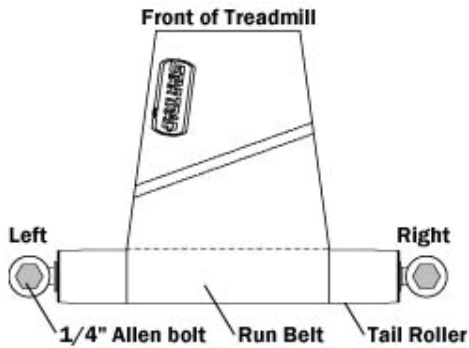


Fig 7

Step 1: Start the treadmill and set the speed to 3.0 mph (5.0 kmh). Make sure the running belt tracks to the center (see Fig 7).

If the running belt shifts or tracks to either side (left or right), follow the appropriate procedure below.

<p>To move belt back towards the center if it has tracked to the LEFT side: Turn the LEFT bolt ¼ turn clockwise Turn the RIGHT bolt ¼ turn counter-clockwise</p>	<p>To move belt back towards the center if it has tracked to the RIGHT side: Turn the LEFT bolt ¼ turn counter-clockwise Turn the RIGHT bolt ¼ turn clockwise</p>
--	---

Repeat above steps until the running belt tracks in the center.

Roller Care & Maintenance

The care and maintenance of the head and tail rollers are as important as the care and maintenance of the running belt. Dirt buildup on the rollers can cause noise, rough feelings and unwanted belt tracking.

CLEANING

Scrape any dirt and debris build up from the roller using a plastic scraper or an old credit card. Do not use anything metal or sandpaper, as you will damage the coating on the roller. Vacuum up any debris from the rollers.

ROLLER “DO NOT’S”

- Do not lubricate the roller bearings. They are a sealed type bearing and any lubricant you attempt to apply, will not penetrate the seal.
- Do not scrape a roller with metal. Use a plastic scraper or a credit card only.
- Do not use sandpaper to clean the rollers

Applying Wax to a Waxless Running Belt

While it is generally not necessary to add wax to a waxless style running belt, if the running belt is making unacceptable noises or is experiencing tracking difficulties, adding wax the underside of the belt will improve the grip between the belt and the rollers which will reduce the noise and improve the tracking response. This procedure should **ONLY** be performed by a person that is familiar with waxing of running belts and is physically able to do so.

Parts Required

- Bottle of Micronized Powdered Paraffin Wax (Part No. 140-3180)
- #2 Phillips screwdriver
- Towel - 36" x 12" (90cm x 30cm) is suggested
- Plastic drinking straw – large diameter

SAFETY FIRST!

Caution should be exercised at all times when performing the following procedure. If you do not feel comfortable with this, stop immediately and obtain the services of a qualified Service Provider.

Step 1:

- Place the towel between the deck and the running belt (Fig 1).
- Step on the sides of the towel and run the treadmill at 2 mph (3 kmh) (Fig 2).
 - **Make sure the towel does not come loose while the running belt is moving.**
- Run the treadmill for about 1 minute then stop the treadmill.
- When the treadmill stops, remove the towel (Fig 3).
- Wipe around the deck edges with the clean part of the towel.



Fig 1



Fig 2



Fig 3

Step 2:

- Using the screwdriver, remove the three screws from the left and the three screws from the right finger guards (Fig 4).
- Remove both finger guards (Fig 5).



Fig 4



Fig 5

CAUTION: The next step involves working near moving parts. **BE CAREFUL!**
Be mindful of loose clothing, long hair, loose and/or hanging jewelry, etc.

Step 3:

- Insert the straw onto the bottle of wax (Fig 6).
- Start the treadmill at 3.0 mph (5.0 kmh).
- While the treadmill is running, squirt about 5-8 times on the left side onto the underside of the running belt (Fig 7) and 5-8 times on the right side onto the underside of the running belt (Fig 8).
- Check the bottle and make sure you have used **at least half** the bottle of wax (Fig 9). It may be necessary to use a full bottle
- Run on the treadmill for about 2 minutes.



Fig 6



Fig 7



Fig 8



Fig 9



Fig 10

Step 4:

- Stop the treadmill and reinstall both finger guards with screws (Fig 11).
- Wipe off any excess wax (Fig 12).



Fig 11

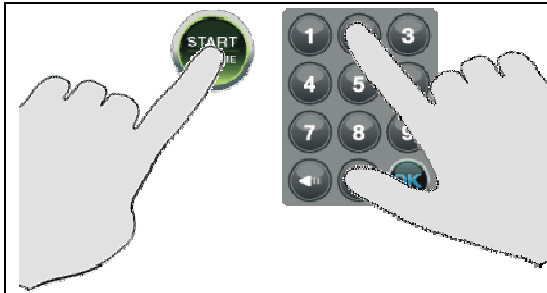


Fig 12

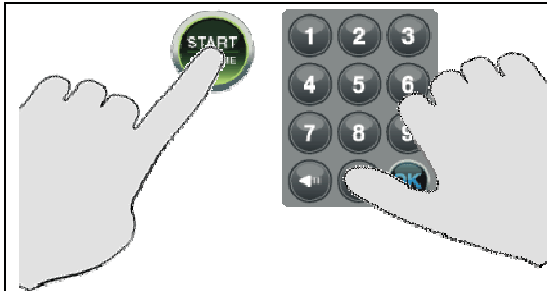
MAINTENANCE MODE


The Maintenance Mode allows you to query and modify the settings of the Star Trac product.

Engaging Maintenance Mode



Press and hold the  +  +  keys.



While holding all three keys release the  key only.



A beep will sound and the display will read "MAINTENANCE MODE" momentarily in the information window.



Once in the Maintenance Mode release all of the keys.










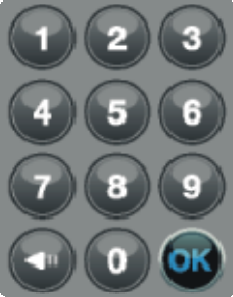



The display will read "UNITS: ENGLISH" (or "UNITS: METRIC") depending on your settings.

You will now be in the Maintenance Settings mode for you unit. As a safety precaution, the unit will only stay in the Maintenance Mode for approximately 45 seconds after the last key stroke entry. As long as you are adjusting settings or scrolling through parameters, the unit will stay in mode.

Maintenance Mode Keys

The following keys are used to search through and modify the Maintenance Settings:

  	INCLINE keys: Display the next and previous parameters.
  	SPEED keys: Adjust the value of the displayed parameter up and down respectively. Some parameters can utilize the number pad.
	ALPINE PASS : Sets parameter back to its default factory setting. Note: For parameter "LAST DECK" this key will set the parameter to the current "MILEAGE" value to clear the "REWAX BELT" message.
	OK key: Updates (saves) the value of the display setting in the memory.
	START key: Used to initially enter the Maintenance Mode and updates changed parameter values.
	NUMBER PAD : Used to directly enter numeric values.
	STOP key: Used to exit the Maintenance Mode.

WARNING

Do not operate the unit for a workout while in the Maintenance Mode or Motor Test Modes.

DISPLAY PARAMETERS

Parameter Defaults

The following parameters can be accessed by entering the Maintenance Mode. When installing a new display electronic board, it will come with factory default settings. Depending on the model and voltage of unit you are installing the board into, you may need to adjust your settings by referencing the following chart.

Parameter	110V Setting	220V Setting	Default	Parameter Ranges
UNITS			ENGLISH	ENGLISH, METRIC
MINIMUM SPEED	0.5 (0.8kph)	0.5 (0.8kph)	0.5 (0.8kph)	0.5 - 5.0 (0.8 - 8.0kph)
MAXIMUM SPEED	10.0 (16.0kph)	12.0 (20.0kph)	12.5 (kph)	5.0 - 12.5 (8.0 - 20.0kph)
ELEVATION			ON	OFF, ON
TIME			99	20 - 99
OPER HOURS			0	0 - 65535
DISTANCE			0	0 - 65535
WEIGHT			155	0 - 350
SERIAL NO			0	0 - 65535
LANGUAGE			ENGLISH	ENGLISH, DUTCH, FRENCH, GERMAN, PORTUGUESE, SPANISH, SWEDISH, ITALIAN, KATAKANA
ENTRY			UNITS	UNITS, TENTHS
HEART RATE			BOTH	CONTACT, POLAR, BOTH
METS			OFF	OFF, ON
WATTS			OFF	OFF, ON
PAUSE			45	20 - 120
SCALE			ON	OFF, ON
INFRARED COM			ON	OFF, ON
CSAFE			ON	OFF, ON
FAN			ON	OFF, ON
AUTO STOP			OFF	OFF, ON
ENTERTAINMENT			OFF	OFF, ON
ACCELERATION TIME			35	25 - 60
DECELERATION TIME			30	20 - 60
LOCK OUT			OFF	OFF, ON
LOCK OUT ID			12345	0 - 65535
RAIL STOP			ON	OFF, ON
STOP SWITCH			E-STOP	E-STOP, LANYARD
10 REV	376	376	376	0 - 740
CNT/REV	31	31	31	0 - 125
MINIMUM PWM	(VARIES)	(VARIES)	34	0 - 110
1/2 MAXIMUM	(VARIES)	(VARIES)	200	0 - 340
MAXIMUM PWM	(VARIES)	(VARIES)	400	0 - 495
PERSON DETECT 1	17	17	17	0 - 150
PERSON DETECT 2	30	30	30	0 - 150
PERSON DETECT 3	40	40	40	0 - 150
DATE			1.98	0.00 - 9.99

Parameter		110V Setting	220V Setting	Default	Parameter Ranges
ERROR CAPTURES	NO RAIL STOP			0	0 - 65535
	KEY DOWN			0	0 - 65535
	SPEED CHG			0	0 - 65535
	ELEV STALL			0	0 - 65535
	ELEV RANGE			0	0 - 65535
	ELEV LOST			0	0 - 65535
	CHECK MOTOR SYS			0	0 - 65535
	CHECK SPEED SYS			0	0 - 65535
	FUSE BITS ERROR			0	0 - 65535
ELEVATION ZERO	240	240	240	0 - 242	
ELEVATION MAX	70	70	70	0 - 170	
LAST DECK			0	0 - 65535	
LAST BELT			0	0 - 65535	
LAST MOTOR			0	0 - 65535	
CS AUTO STATUS			ON	OFF, ON	
MODEL			PRO AC	PRO S, PRO, PRO ELITE, PRO AC, PRO ELITE AC	
HR CALC. TIME			30	0 - 99	
PROGRAM CAPTURES	MANUAL			0	0 - 65535
	FOREST WALK			0	0 - 65535
	TRAIL			0	0 - 65535
	ALPINE PASS			0	0 - 65535
	RANDOM			0	0 - 65535
	5K LOOP			0	0 - 65535
	10K LOOP			0	0 - 65535
	CUSTOM PALM			0	0 - 65535
	DYNAMIC HR			0	0 - 65535
	CONSTANT HR			0	0 - 65535
	QUICKSTART			0	0 - 65535
	FITNESS TEST			0	0 - 65535
	FIRE FIGHTER			0	0 - 65535
	US ARMY TEST			0	0 - 65535
	USMC TEST			0	0 - 65535
USAF TEST			0	0 - 65535	
NAVY TEST			0	0 - 65535	

Note: Some parameters shown above may or may not display in your unit.

Parameter Setting Definitions

The following are the definitions of each parameter from the Maintenance Mode.

- UNITS:** Sets the conversion for speed, distance and weight between US and Metric measurements. (Conversions: Km = Miles x 1.6 • Lb = Kg x 2.2)
- MINIMUM SPEED:** Sets the minimum start up speed for the unit.
- MAXIMUM SPEED:** Sets the maximum speed available for the unit.
- ELEVATION:** Turns the elevation (incline) system on or off.
- TIME:** Sets the maximum workout time for the unit. Can be used in a high-use facility or location that wishes to limit usage times of a unit.
- OPER HOURS:** The accumulation of hours the unit has been used¹
- DISTANCE:** The accumulation of miles the unit has been used^{1,2}
- WEIGHT:** Sets the default weight, usually 155 lbs (70 kg) that the unit will use to calculate calories to be used if a user does not enter their weight during workout setups.
- SERIAL NO:** The last few numbers of the unit serial number. *May or may not be used¹
- LANGUAGE:** Sets the language that the display will show.
- ENTRY:** Sets how the numbers will be entered during key strokes:
(UNITS = 1.0 increments, TENTHS = 0.1 increments)
- HEART RATE:** Sets the type of Heart Rate to use: (POLAR only, CONTACT only or BOTH).
- METS:** Used for workout feedback. *Consult an Owners Manual or a certified trainer for definition.
- WATTS:** Used for workout feedback. *Consult an Owners Manual or a certified trainer for definition.
- PAUSE:** Sets the amount of time in seconds that a unit will pause when the side stop switch or the stop key is pressed during a workout.
- SCALE:** Turns the scale feature on or off.
- INFRARED COM:** Turns the infrared communication system on or off.
- CSAFE:** Turns the CSafe power outlets on or off.
- FAN:** Turns the fan system on or off.
- AUTO STOP:** *Not used at this time. Be sure this parameter is set to OFF.
- ENTERTAINMENT:** Turns the entertainment system on or off.
- ACCELERATION TIME:** Sets the amount of time the unit will take (in seconds) to go from 0.0 mph to achieve the maximum speed as set in the MAXIMUM SPEED parameter.
- DECELERATION TIME:** Sets the amount of time the unit will take (in seconds) to go from the maximum speed as set in the MAXIMUM SPEED parameter down to 0.0 mph.
- LOCK OUT:** Used to disable use of the unit unless the LOCK OUT ID has been entered.
- LOCK OUT ID:** A number combination used to lock out the display from use.

Footnotes: 1 When replacing a display electronic board, it is a good idea to write down this number and set it into the new electronic board to help keep accurate records of parameters with the unit.

2 When resetting the Rewax Belt message (LAST DECK parameter), this is the number that will automatically be copied into the LAST DECK parameter to set the current mileage.

- RAIL STOP:** Used to turn the side stop switch port on or off on International units.
 *Note: This parameter should always be ON unless the mechanical stop switch is installed.
- STOP SWITCH:** Sets the type of International stop switch is in use: U.S.A. or International
- 10_REV:** Sets the speed and distance calculation value. This is the distance (in inches) that the running belt travels for every 10 revolutions of the drive motor¹
- CNT/REV:** Sets the number of timing notches (or target ticks) that the RPM sensor passes in each revolution of the RPM target¹
- MINIMUM PWM:** Sets the PWM value the unit needs to calculate the MINIMUM SPEED³
- 1/2 MAXIMUM:** Sets the PWM value the unit needs to calculate half of the MAXIMUM SPEED³
- MAXIMUM PWM:** Sets the PWM value the unit needs to calculate the MAXIMUM SPEED³
- PERSON DETECT 1:** An internal calculation setting. Leave at default setting.
- PERSON DETECT 2:** An internal calculation setting. Leave at default setting.
- PERSON DETECT 3:** An internal calculation setting. Leave at default setting.
- DATE:** The date of manufacture of the unit. *May or may not be used¹

The following parameters are used to keep track of Error Codes that may have been displayed during use. These should be reset (defaulted) back to 0 (zero) during each maintenance session.

To Reset: While on the parameter, press the "ALPINE PASS" key to reset value to 0, then press the "OK" key or the "START" key to save the change.

- NO RAIL STOP:** Side stop switch (in left handrail) disconnected or broken. Rare occasions may be caused by faulty display electronic board.
- KEY DOWN:** One or more keys on the display panel may be sticky or stuck. Rare occasions may be caused by faulty display electronic board.
- SPEED CHG:** Defined as a change in the speed feedback of 2.0 mph or more in more than 2 seconds.
- ELEV STALL:** The elevation system did not detect any elevation movement, or the system moved too slow.
- ELEV RANGE:** The elevation system detected it went too high or too low than what the parameters are set to.
- ELEV LOST:** The elevation system has lost communication with the elevation sensor inside the elevation motor.
- CHECK MOTOR SYS:** See the TROUBLESHOOTING - CHECK MOTOR SYSTEM section of this manual.
- CHECK SPEED SYS:** See the TROUBLESHOOTING - CHECK SPEED SYSTEM section of this manual.
- FUSE BITS ERROR:** Fault during software upload.

Footnotes: **1** When replacing a display electronic board, it is a good idea to write down this number and set it into the new electronic board to help keep accurate records of parameters with the unit.
3 When replacing a display electronic board, it is not necessary to change this value. It will automatically Change during the Auto-Calibration procedure.

- ELEVATION ZERO:** Sets the value for 0% (zero percent) for the elevation motor sensor.
- ELEVATION MAX:** Sets the value for 15% (maximum incline) for the elevation motor sensor.
- LAST DECK:** This parameter is used for models with a waxable style running belt. If you have a waxless style treadmill and REWAX BELT appears on your display, go to the MODEL parameter and make sure your unit is set for the correct model.
- LAST BELT:** A parameter available for you to enter the mileage (DISTANCE) at which the running belt was replaced. This aids in your record keeping.
- LAST MOTOR:** A parameter available for you to enter the mileage (DISTANCE) at which the drive motor was replaced. This aids in your record keeping.
- CS AUTO STATUS:** An internal calculation setting. Leave at default setting.
- MODEL:** Sets the model that the display electronic board will be used on. Note that some features may not work (fans, scales, entertainment, etc.) if this setting is incorrect.
- HR CALC. TIME:** Sets the amount of time the Heart Rate system will seek to acquire a heart rate reading before it resets and begins seeking again if not detected.

The following parameters are used to keep track of which programs users are selecting. These parameters do not affect the functionality of the unit, but can be used to log the types of programs users prefer to use.

MANUAL FOREST WALK TRAIL ALPINE PASS RANDOM 5K LOOP 10K LOOP CUSTOM PALM DYNAMIC HR CONSTANT HR QUICKSTART FITNESS TEST FIRE FIGHTER US ARMY TEST USMC TEST USAF TEST NAVY TEST	Check with a Star Trac sales representative for definitions
--	---

MAINTENANCE MODE – TEST MODES

Within the Maintenance Mode parameters are a few Test Modes that can be used to test various functions of the unit. While in the Maintenance Mode, set the following parameter and use the functions as listed to utilize each parameter.

DISPLAY TEST

The Display Test can be used to test each individual key for function and response, and can also be used to verify led function and display.

⇒ Press 'Start' key	Display will enter DISPLAY TEST and await your next command
⇒ Press 'Start' key	Display will cycle thru a self test and display all led's in a sequenced pattern
⇒ Press 'Stop' key twice to return to the MAINTENANCE MODE	
⇒ Press 'Start' key	Display will enter DISPLAY TEST and await your next command
⇒ Press '1' key	MC1 Vx.x CKSM xxxx will display
⇒ Press 'Speed Plus' key	MC2 Vx.x CKSM xxxx will display
⇒ Press 'Speed Minus' key	MC1 Vx.x CKSM xxxx will display
⇒ Press 'Stop' key twice to return to the MAINTENANCE MODE	— Loop
⇒ Press 'Start' key	Display will enter DISPLAY TEST and await your next command
⇒ Press '2' key	Display will read KEYBOARD TEST
⇒ Press 'Stop' key to verify function then press again to return to the MAINTENANCE MODE	⇒ Press any key except 'Stop' to verify function.

Note: You can also access the Display Test right away when entering the Maintenance Mode: When the display reads UNITS: ENGLISH (or UNITS: METRIC), press the '5' key then follow the procedures above.

MOTOR TEST

This parameter is used by Star Trac at the factory.

*For MOTOR TEST MODE, see the MOTOR TEST MODE section of this manual.

BELT/DECK TEST

This parameter is used by Star Trac at the factory.

CALIBRATE SCALE

<p>⇒ Press 'Start' key</p>	<p>Display will enter CALIBRATE SCALE mode and scroll the following:</p> <p style="text-align: center;"> 1 = INPUT SPAN WEIGHT 2 = CAL SPAN WEIGHT 3 = CAL ZERO WEIGHT 4 = VERIFY WEIGHT PRESS STOP TO EXIT </p> <p style="text-align: right;">— Loop</p> <p>⇒ Pressing 'Stop' will return to MAINTENANCE MODE</p>
<p>⇒ Press '1' key</p>	<p>Unit will read REF WEIGHT = 155 Enter your exact weight *It is advisable to weigh yourself for accuracy just before performing this step. After entering your weight press either the 'Start' or 'OK' keys.</p> <p>Display will read : STEP ON WEIGHT PADS PRESS OK TO BEGIN] — Loop</p> <p>⇒ Pressing 'OK' will read CALIBRATING X (X = your entered weight) If no weight entered, unit will read:</p> <p style="text-align: center;"> CAN NOT CALIBRATE NO WEIGHT ACQUIRED PRESS OK TO RETRY PRESS STOP TO EXIT </p> <p style="text-align: right;">— Loop</p> <p>⇒ Pressing 'OK' will return to previous step ⇒ Pressing 'Stop' will return to MAINTENANCE MODE</p>
<p>⇒ Press '2' key</p>	<p>Display will read: PLACE CAL WEIGHT ON WEIGHT PADS PRESS OK TO BEGIN] — Loop</p> <p>⇒ After pressing 'OK' unit will read CALIBRATING X (X = calibrated weight) If no weight entered, unit will read:</p> <p style="text-align: center;"> CAN NOT CALIBRATE NO WEIGHT ACQUIRED PRESS OK TO RETRY PRESS STOP TO EXIT </p> <p style="text-align: right;">— Loop</p> <p>⇒ Pressing 'OK' will return to previous step ⇒ Pressing 'Stop' will return to MAINTENANCE MODE</p>
<p>⇒ Press '3' key</p>	<p>Display will read: REMOVE WEIGHTS PRESS OK TO BEGIN]</p> <p>⇒ After pressing 'OK' unit will read CALIBRATING X (X = weight zero) If no load cells detected, unit will read:</p> <p style="text-align: center;"> CAN NOT CALIBRATE NO WEIGHT ACQUIRED PRESS OK TO RETRY PRESS STOP TO EXIT </p> <p style="text-align: right;">— Loop</p> <p>⇒ Pressing 'OK' will return to previous step ⇒ Pressing 'Stop' will return to MAINTENANCE MODE</p>
<p>⇒ Press '4' key</p>	<p>Display will read: WEIGHT= 0 and display the weight as detected</p> <p>⇒ Press 'Stop' key once to return to the CALIBRATE SCALE mode ⇒ Press 'Stop' key a second time to return to the MAINTENANCE MODE</p>

CSAFE TEST

This parameter is used by Star Trac at the factory.

HEART RATE TEST

The Heart Rate Test mode can be used to simultaneously test the function and response for both the contact and Polar heart rate systems.

⇒ Press 'Start' key	Display will read POLAR 0 CONTACT 0
⇒ Grab the HR grips (If applicable) Polar strap	CONTACT X should detect your heart rate then display the reading *If you have a Polar transmitter or a polar signal simulator then signal will be detected and processed by the Polar system and display the value as POLAR X
⇒ Press 'Stop' key twice to return to the	MAINTENANCE MODE

INFRARED TEST

This parameter is used by Star Trac at the factory.

LAST ERROR LIST

The Last Error List is a list bank of the last five issues the unit has captured into its memory for diagnosis of an issue. To access the Last Error list banks, follow the procedure below. For more information including DFR, see the DFR section in this manual.

⇒ Press 'Start' key	Display will enter DISPLAY TEST and await your next command
⇒ Press 'Start' key	Display will cycle thru a self test and display all led's in a sequenced pattern
⇒ Press 'Stop' key twice to return to the	MAINTENANCE MODE
⇒ Press 'Start' key	Display will enter DISPLAY TEST and await your next command
⇒ Press '1' key	MC1 Vx.x CKSM xxxx will display
⇒ Press 'Speed Plus' key	MC2 Vx.x CKSM xxxx will display
⇒ Press 'Speed Minus' key	MC1 Vx.x CKSM xxxx will display
⇒ Press 'Stop' key twice to return to the	MAINTENANCE MODE — Loop
⇒ Press 'Start' key	Display will enter DISPLAY TEST and await your next command
⇒ Press '2' key	Display will read KEYBOARD TEST
	⇒ Press any key except 'Stop' to verify function.
⇒ Press 'Stop' key to verify function then press again to return to the	MAINTENANCE MODE

When opening the banks, #1 is the first code that was captured, #2 the second, #3 the third and so on. If more than 5 codes have been captured, bank #5 will always be the latest code captured and the previous number will be replaced accordingly.

For a list of definitions for the Last Error List, see the LAST ERROR LIST DEFINITIONS section in this manual.

MAINTENANCE MODE – AUTO CALIBRATION

Electrical voltages vary between locations. The treadmill can run through an auto-calibration process to allow the electronics to balance out with the speed control.

To run an auto-calibration procedure, do the following:

Auto-Calibration

DO NOT LEAVE THE TREADMILL UNATTENDED WHILE RUNNING THE AUTO-CALIBRATION PROCEDURE AS IT WILL RUN THE BELT TO THE MAXIMUM SPEED SETTING.

1. Enter the Maintenance Mode (see “Engaging Maintenance Mode”). The display will read:



2. Enter the Motor test mode by pressing the '8' key once. The display will read:



3. Start the auto-calibration process by pressing the 'Forest' key once and immediately stepping off of the treadmill.

The center number (3) as shown above, will begin to increase, running belt will move and the center number will on the right hand side of the display (0.0) will move .

The treadmill running belt will begin to move in the following manner:

- Running belt will move, center number will increase and the numbers on the right hand side of the display '0.0' will move

LAST ERROR LIST DEFINITIONS

DEFINITIONS

LAST CODE	The last code (Check Speed Sys, Key Down, Elev Stall, etc.)
LST CHK	Check Sum at time of incident. Check Sum is part of the software language.
LAST MTR CURR	Motor Current sensed at time of incident.
LAST STAT	
LAST OPHR	Total unit OPER HOURS (Operating Hours) at time of incident.
LAST ODOM	Total unit DISTANCE (mileage) at time of incident.
LAST PRGM	Program that was running at time of incident.
LAST DFR	See DFR INFO below.
LAST TIME	Time in seconds during the program incident occurred.
LAST MSPD	The Measured Speed at time of incident.
LAST PWM	The PWM at time of incident.
LAST SSPD	The Set Speed at time of incident.
LAST EPOT	The Elevation System Potentiometer reading at time of incident.
LAST ELEV	The set Elevation at time of incident.

LAST ERROR LIST BANKS

Bank 1	Bank 2	Bank 3	Bank 4	Bank 5
LAST CODE 0	LAST CODE 0	LAST CODE 0	LAST CODE 0	LAST CODE 0
LST CHK 0000000	LST CHK 0000000	LST CHK 0000000	LST CHK 0000000	LST CHK 0000000
LAST MTR CURR 0	LAST MTR CURR 0	LAST MTR CURR 0	LAST MTR CURR 0	LAST MTR CURR 0
LAST STAT 0000	LAST STAT 0000	LAST STAT 0000	LAST STAT 0000	LAST STAT 0000
LAST OPHR 0	LAST OPHR 0	LAST OPHR 0	LAST OPHR 0	LAST OPHR 0
LAST ODOM 0	LAST ODOM 0	LAST ODOM 0	LAST ODOM 0	LAST ODOM 0
LAST PRGM 0	LAST PRGM 0	LAST PRGM 0	LAST PRGM 0	LAST PRGM 0
LAST DFR 0000000	LAST DFR 0000000	LAST DFR 0000000	LAST DFR 0000000	LAST DFR 0000000
LAST TIME 0	LAST TIME 0	LAST TIME 0	LAST TIME 0	LAST TIME 0
LAST MSPD 0.0	LAST MSPD 0.0	LAST MSPD 0.0	LAST MSPD 0.0	LAST MSPD 0.0
LAST PWM 0	LAST PWM 0	LAST PWM 0	LAST PWM 0	LAST PWM 0
LAST SSPD 0.0	LAST SSPD 0.0	LAST SSPD 0.0	LAST SSPD 0.0	LAST SSPD 0.0
LAST EPOT 0	LAST EPOT 0	LAST EPOT 0	LAST EPOT 0	LAST EPOT 0
LAST ELEV 0.0	LAST ELEV 0.0	LAST ELEV 0.0	LAST ELEV 0.0	LAST ELEV 0.0

Note: Some newer software version display electronic boards may read **FUSE B** in the **LAST CODE** field as a default. It can be ignored since it displays when the software was installed at the factory.

DFR INFORMATION

DFR's (Drive Fault Records)

The AC MCB (Motor Control Board) monitors the drive system and reports any anomalies by triggering what is called a DFR (Drive Fault Record) code.

Same Codes, Different Meanings

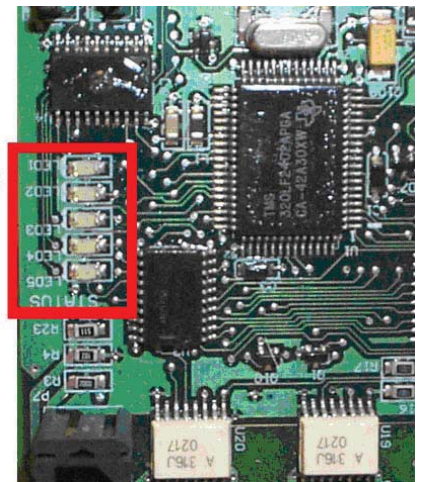
The AC System has the same codes as the DC system but the meanings may not necessarily be the same, specifically "CHECK SPEED SYSTEM" and "CHECK MOTOR SYSTEM". You must now take in to account that the MCB may have issued a DFR code which has shut the treadmill down and display one of the "CHECK" codes. In most cases you will find that a DFR code has been flagged and caused the unit to shut down.

How Do You Know What or If a DFR Code Has Been Captured?

There are two ways to check to see if a DFR code has been captured:

1. Check the LAST ERROR LIST in the Maintenance Mode
 - Engage the Maintenance Mode and access the LAST ERROR LIST (see "LAST ERROR LIST" in the "MAINTENANCE MODES – TEST MODES" section)
 - Scroll the parameters until you come to the LAST DFR
 - There will be an 8 digit number that is the DFR code
Example: LAST DFR(X) 00004000 (over temp on motor or drive).
 - Ignore the first set of zero's before the number. This example will be considered a 4000 code
 - If the Last DFR list reads LAST DFR(X)00000000, a DFR has not been recorded by the MCB and reported to the display. Follow the appropriate troubleshooting steps for the code displayed (i.e. ELEVATION STALL, etc.)
2. Count the blinks from the Status led's on the MCB
 - When the MCB records a DFR, the three Status led's (Led 1, Led 2 and Led 3) will blink together simultaneously
 - The Status led's will blink the number of times that indicate the particular DFR code
 - There will be a short pause in the blinking to show counting separation (Count the blinks between the pauses)
Example: Count 15 blinks, pause, 15 blinks again would indicate a 4000 DFR code, which is an "over temp on motor or drive"

**STATUS
led's
1 - 5**



*See DFR Code Chart in the "Troubleshooting" section, for blink reference chart.

SOFTWARE - DISPLAY

The display on the AC Pro Tread contains the software to operate the treadmill. This software may be updated via the “uploaders” or by replacing the display electronics which contains an updated version of the software.

Uploaders

Uploaders are two small grey boxes that contain the primary (MC1) and secondary (MC2) software for the display. In order to use these uploaders you must install software onto a computer which allows you to upload the treadmill software into each box. Those boxes can be used to update the software in the E-TR and E-TRi treadmill displays.

Software updates occur to add new features or enhancements to the system. When these updates are available, the treadmill software files will be posted on the Star Trac Support web site (<http://support.startrac.com/Software>) and can be downloaded onto the PC and uploaded into the uploader boxes.



Uploader kit contains all parts shown above.
Part number: 800-3899

Uploading Software into the Uploaders

The following procedure explains how to upload software into the grey uploader boxes. The software may be downloaded from the Star Trac Support Website (<http://support.startrac.com/Software>). Click on the Service Provider tab at the top then click on the Latest Product Software link.

The Pro Tread Series display uses a flash memory system to store the software that runs the treadmill. To update the software requires the use of two “uploader” boxes and a PC. (*Note: The PC is to upload the software into the uploaders only.*)

This section will explain:

- Assembling the uploader boxes and connecting the RS232 cable to the PC.
- Installing the FISP software onto your PC (FISP software is used to put the Pro Tread software into the uploader boxes).
- Installing Pro Tread software into the uploaders for two micro controller types (Mega 103 and Mega 128)
 - Primary and Secondary box

Time Required

- 10-15 minutes

Parts Required

- (2) Uploader kits

Note: There are two styles of uploaders. The newest style (USB) is:
Star Trac part number: 610-0281 which contains one each of the following parts:



- ✓ (1) Grey uploader box
- ✓ (1) Data cable
- ✓ (1) USB cable
- ✗ The USB style uploaders do not require a battery pack.

**You will need 2 each of 610-0281 kits in order to have Primary and Secondary software available during uploads.

Tools Required

- Phillips head screw driver
- PC computer with Windows 95 or higher

Software Required (on your PC)

- Winzip (or equivalent)

You will need Winzip (or equivalent) installed on your PC. If you do not have a zip file extractor program, you can get a free version from www.winzip.com.

Obtaining the FISP and Latest Software

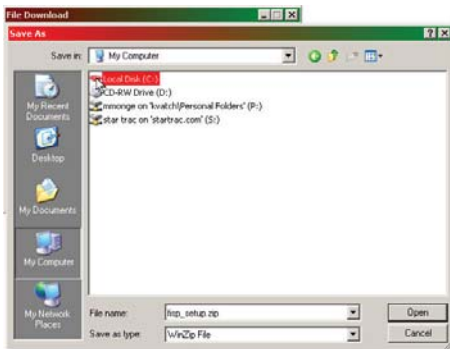
1. Open your web browser and go to the Support Website (*1). Click on the 'Service Providers' tab (*2). Click on 'Latest Product Software' (*3). Click on the 'FISP Loader Program' link (*4).



2. When you choose FISP Loader Program, the following window will appear. Click 'Save'.



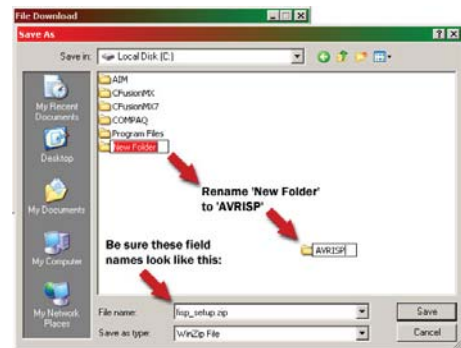
3. The following window will appear. Do not click 'Open' yet.



4. Move your mouse pointer into the white space but do not hover over a folder. Right click in the white space (*1). Hover your mouse over 'New' (*2) to open the window to the right. Click 'Folder' (*3) to create a New Folder.



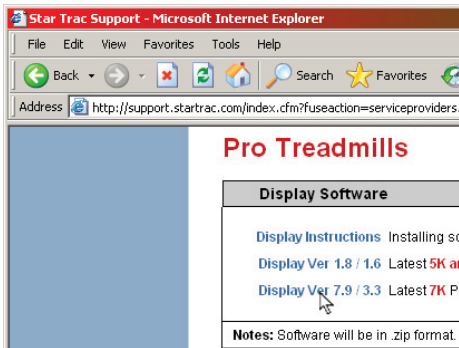
5. Rename the 'New Folder' to 'AVRISP'. Make sure the 'File Name' and 'Save as type' are as shown below:



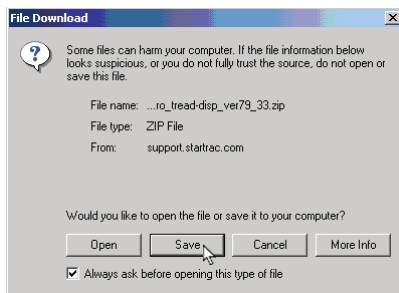
6. You should now have the following window open. Click 'Save'.



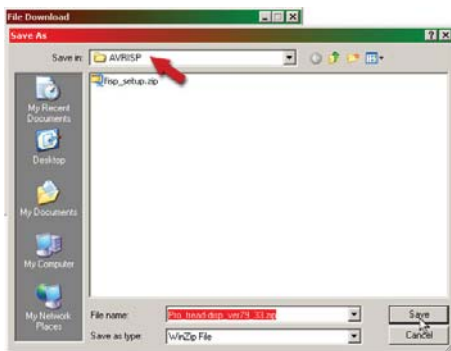
7. Open your web browser in the Latest Product Software section. Click on the latest Display Version of software for the 7000 (7k) treadmills.



8. When you choose Display Ver X.X / X.X, the following window will appear. Click 'Save'.



9. The following window will appear. Make sure you are in the 'AVRISP' folder. Click 'Save'.



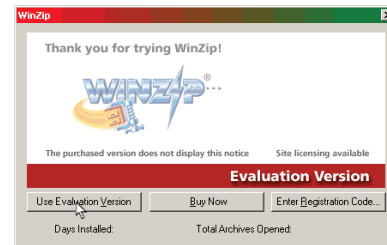
<End of procedure>

Extracting (Unzipping) the Zip Files

1. Open the 'AVRISP' folder. Right click on 'fisp_setup.zip' then left click on 'Open with Winzip'.



2. If using the free trial of Winzip and you have the screen as below, click on 'Use Evaluation Version'.



3. Once extracted, a new window will appear as shown below. Click and hold on the 'fisp_setup.zip' icon then drag it to the white space in the 'AVRISP' folder.

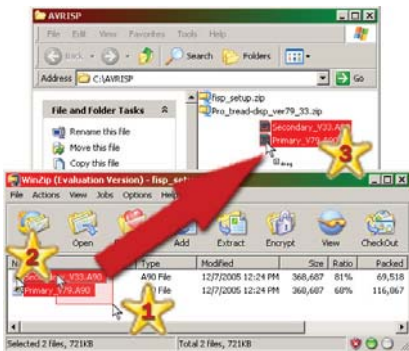


4. Close the 'Winzip' window only. Leave the 'AVRISP' window open.

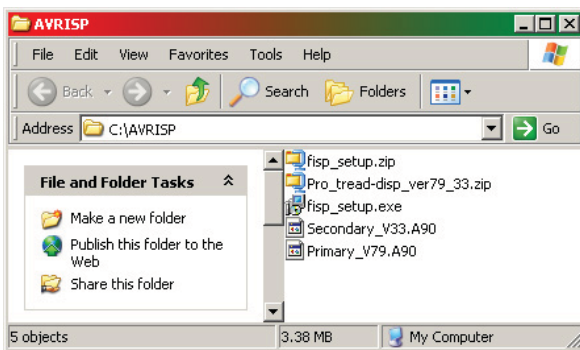
5. In the 'AVRISP' folder, right click on 'Pro_tread-disp_verXX_XX.zip' then left click on 'Open with Winzip'.



6. Once extracted, a new window will appear as shown below with 2 files in it. Click and hold in the white space next to the lower file (*1) and drag the selection box across both files to select them both (*2). Once both files are selected, click and hold one of them and drag them to the white space in the 'AVRISP' folder (*3).



7. The 'AVRISP' folder should look like this:



Connecting the USB Cable to the PC

1. On the back of your PC (or on the front on newer PC's), locate the USB port. Plug the USB cable in to the USB port on the PC.

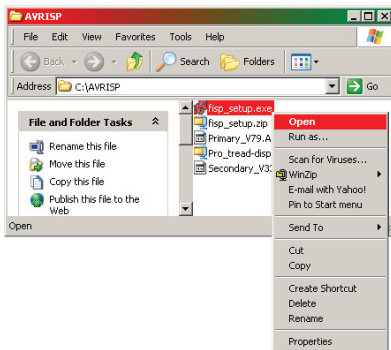


2. Plug the smaller end of the USB cable in to the uploader. The led should glow Orange when connected to a PC.



Installing the FISP Program on the PC

1. In the 'AVRISP' folder, open the executable file for the FISP program called 'fisp_setup.exe'.



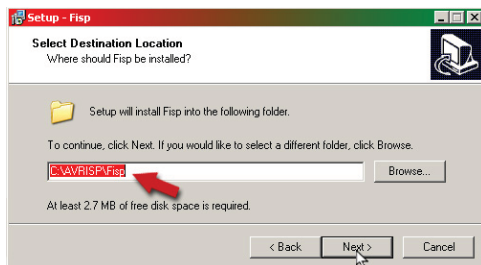
If a 'Security Warning' window appears, click 'Run'.



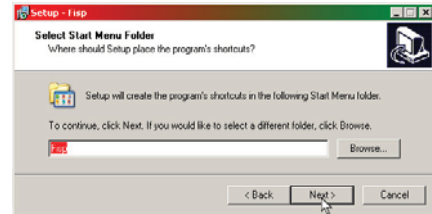
2. Click 'Next' to run the setup wizard.



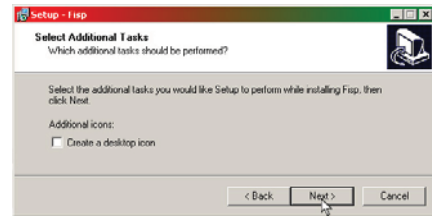
3. Make sure you are going to install into the 'AVRISP' folder then click 'Next'.



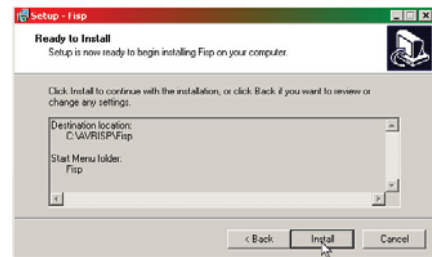
4. Create the Start Menu folder as 'Fisp'.



5. This is your choice for a desktop icon.



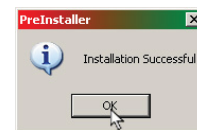
6. Click 'Install' to install Fisp on your PC.



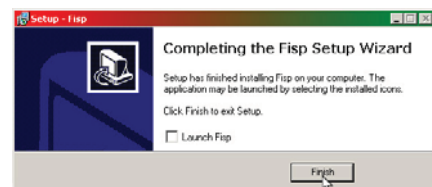
7. Click 'Install' to install USB driver.



8. Once installed, you should get the following window. Click 'OK'.



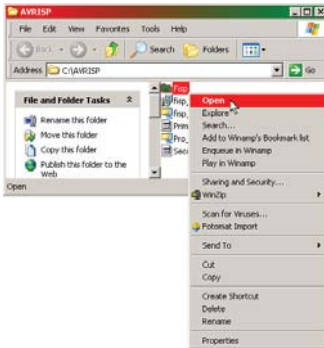
9. Click 'Finish' to complete the wizard.



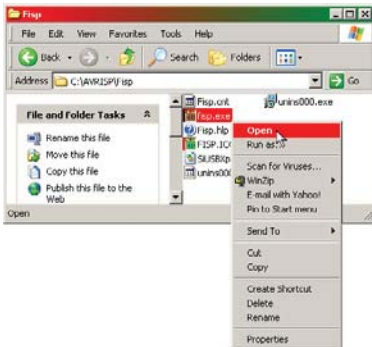
Uploading the Software into the Uploader

1. Be sure the upload is plugged in to the USB cable and the USB cable is plugged in to the PC and the Orange led is lit on the uploader.

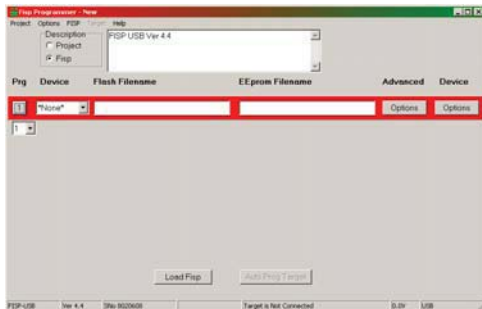
2. Open the 'AVRISP' folder. Open the 'Fisp' folder.



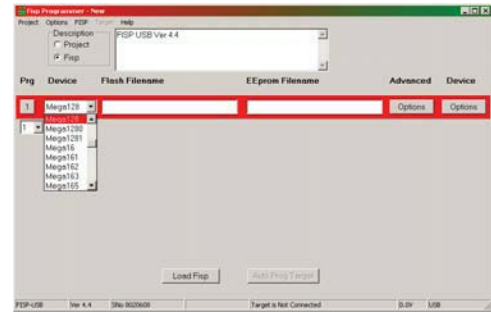
3. Open the 'fisp.exe' program.



4. The Fisp program will automatically detect your uploader and will display the FISP USB Ver X.X as shown below.



5. Under the 'Device' drop down menu, choose the 'Mega128'.



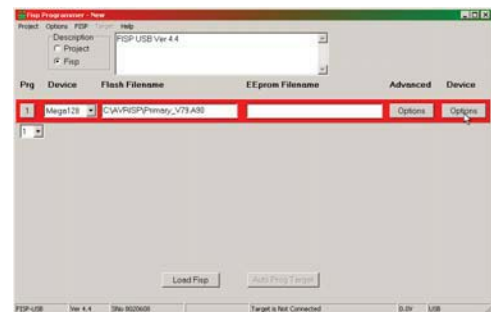
PROJECT CHANGE POINT

You will need to upload one program at a time. 'Primary' or 'Secondary'. Follow the next steps to upload the Primary program into the Primary uploader. When prompted at Step 12, return to this point to upload the Secondary program into the Secondary uploader.

6. Click once in the white space under 'Flash Filename' (*1). When the 'Open Intel Hex File' window opens, click on 'Primary_VXX.a90' (*2) then click 'Open' (*3).

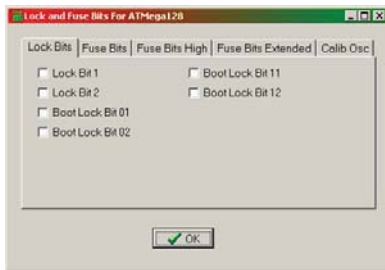


7. Click on the 'Device' – 'Options' button.

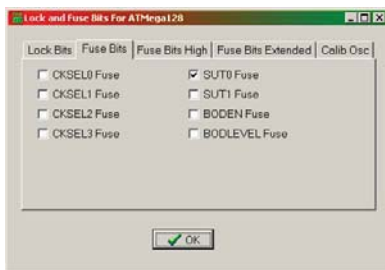


8. The 'Device' – 'Options' window will appear with several tabs.

LOCK BITS - Uncheck all:



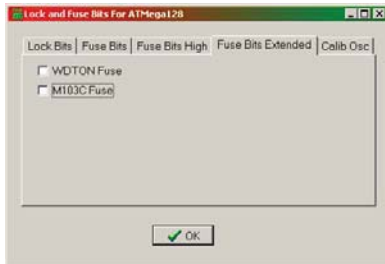
FUSE BITS – Check “SUT0 Fuse” only



FUSE BITS HIGH – Check “CKOPT Fuse” and “JTAG Fuse” only.

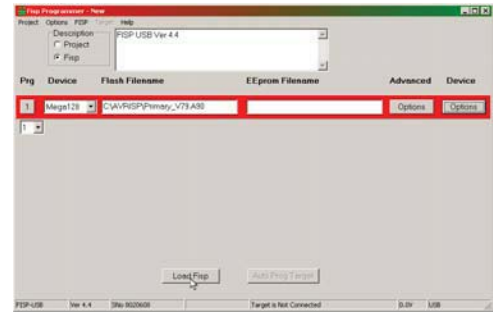


FUSE BITS EXTENDED – Uncheck all.

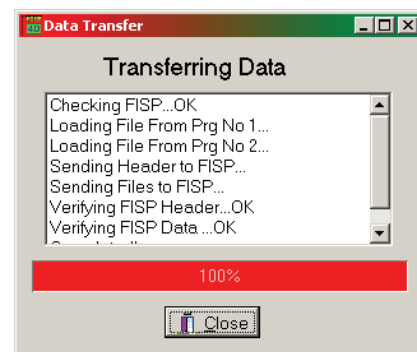


9. Once all check boxes are set as above, click 'OK' to finish and close window.

10. Click on 'Load Fisp' to send software to the uploader.



11. You will see a 'Transferring Data' status window. Click 'Close' when prompted.



12. This will complete the programming of the Primary uploader. Return to the Project Change Point to complete the Secondary uploader.

RETURN TO PROJECT CHANGE POINT

13. Use a sticker or tape and mark each uploader as “Primary” or “Secondary”. It is also a good idea to put the version of software and which model it is for. You can update them when updating software versions for future uses.



SOFTWARE - MCB

Uploading Software into the AC MCB with MCB Uploader

The following procedure explains how to upload software into the MCB (Motor Control Board) of the AC Pro Treadmill. The software may be downloaded from the Star Trac Support Website <http://support.startrac.com>. Click on the Service Provider tab at the top then click on the Latest Product Software link.

Time Required

- 10 minutes

Parts Required

- Uploader kit part number 800-4043. Kit includes:
 - ✓ Black uploader box
 - ✓ RS232 cable
 - ✓ Power cable

Tools Required

- Phillips head screw driver

CAUTION: DO NOT TOUCH THE MOTOR CASE WITH THE POWER ON. THE CASE OF THE MOTOR IS LIVE IN THE CIRCUIT AND CAN RESULT IN ELECTRICAL SHOCK

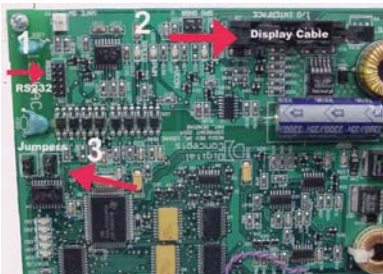


Fig 1

Set Up Procedure for Programming mode

1. Turn the treadmill off at the on/off switch.
2. Remove the motor shroud.
3. Locate the RS232 connector on the MCB it is labeled J1 RS232 at the top left corner of the MCB (see Fig 1 - Arrow 1)
4. Locate the display cable connector at the top of the MCB. Unplug the display cable (see Fig 1 - Arrow 2)
5. Locate the Jumpers JP1 and JP2 they are just below the RS232 connector on the MCB (see Fig 1 - Arrow 3)

CAUTION: Be very careful when unplugging the jumpers. It is very easy to drop them. If you do drop them, find them immediately as the treadmill can not run or be programmed without them.

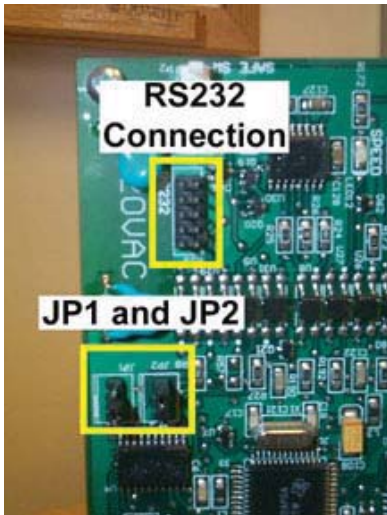
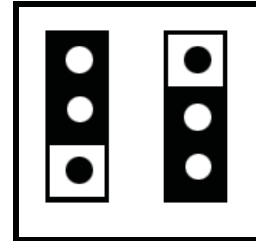


Fig 3

6. Unplug JP1 and move it up one pin so it is now connected to the top two pins and the bottom pin is exposed (see Fig 3).
7. Unplug JP2 and move it down one pin so it is now connected to the bottom two pins and the top pin is exposed (see Fig 3).



Jumpers in PROGRAM mode



Fig 4

8. Plug the uploader cables to the uploader box:
 - Plug the power cable into the uploader inserting the small pin connector into the small hole.
 - Plug the RS232 cable (flat ribbon cable) into the uploader taking note of the index key in the connector and the plug.

9. Plug the RS232 cable to the RS232 pins on the mcb with the RED wire facing down (see Fig 4).



Fig 5

10. Plug the power cord to the display cable plug on the mcb (see Fig 5).



Fig 6

Uploading to the MCB

1. Turn the treadmill on at the on/off switch.
2. Turn the treadmill power on. After 2 to 3 seconds the RED led on the uploader should light steady (see Fig 6)
3. Press the RED button once. The Led's should blink on and off then one led will remain lit.

If the RED led is on, the upload did not work.

- Check all connections and verify the jumper settings then repeat the procedure.

If the GREEN led is on, the upload was successful, proceed to the next step.

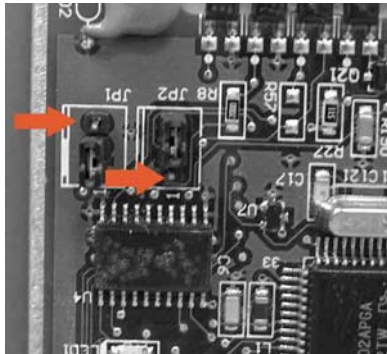


Fig 7

Setting Back To Run Mode

1. Turn the power off at the on/off switch.
2. Move the jumpers back to their original run position (see Fig 8).
3. Unplug the RS232 cable from the mcb.
4. Unplug the uploader power cable from the mcb and plug the display cable of the treadmill in.
5. Unplug JP1 and move it down one pin so it is connected to the bottom two pins and the top pin is exposed.
6. Unplug JP2 and move it up one pin so it is now connected to the top two pins and the bottom pin is exposed.

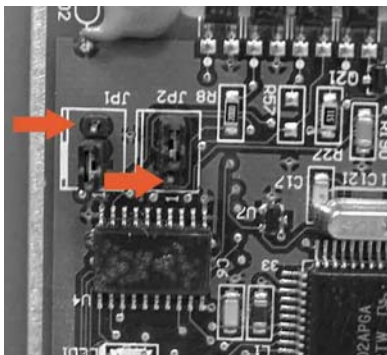
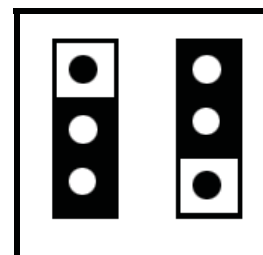


Fig 8

Jumpers in RUN mode



7. Turn the power on at the on/off switch.
8. The LED's near the jumpers J1 and J2 should be blinking.

If they are lit solid:

- Turn the power off and verify that the jumpers in the RUN mode positions.

(NOTE: Do not move the jumpers with the power on.)

If they are blinking, proceed to the next step.

9. Install the motor shroud.
10. Test the treadmill for proper function.

PART REPLACEMENT PROCEDURES

Table Of Part Replacement Procedures

- Running Belt Tensioning Procedure
- Display Panel (Keypad)/Electronics Replacement

Running Belt Tensioning Procedure

Applies to models: 4500, 4000, 3900, 4200, 5500, 5600, 6500, 6600, 7500, 7600 and 7700

Proper running belt tension and tracking are important to maintain the performance and life of the belt. Star Trac recommends following this tensioning and tracking procedure whenever the running belt or deck are replaced or as needed.

Time Required

- 10 minutes

Parts Required

- Masking tape
- Ruler or tape measurer
- Pen or pencil

Tools Required

- 1/4" Allen wrench

Frequency	Recommended Preventative Maintenance
After 1,000 Miles (1,600 Km) OR 1 Month Whichever comes first.	Clean Deck with dry cloth and Retighten Belt using procedure below.
After: 6,000 Miles (10,000 Km) OR 6 Months 12,000 Miles (20,000 Km) OR 12 Months 18,000 Miles (30,000 Km) OR 18 Months 24,000 Miles (40,000 Km) OR 24 Months 30,000 Miles (50,000 Km) OR 30 Months Whichever comes first.	Clean Deck with dry cloth. Clean between belt and deck with towel while treadmill is running. If rollers have dirt build-up, scrape off with credit card, plastic putty knife or similar non-scratching instrument (Do not use metal against rollers). Retighten Belt using procedure below.



Fig 1

Step 1

Release tension of running belt by unscrewing the tension screws until the roller touches the finger-guard. The belt should be completely relaxed. *(Note: This applies to both left & right finger-guards.)*



Fig 2

Step 2

Apply a piece of masking tape on the edge of the running belt on both sides.

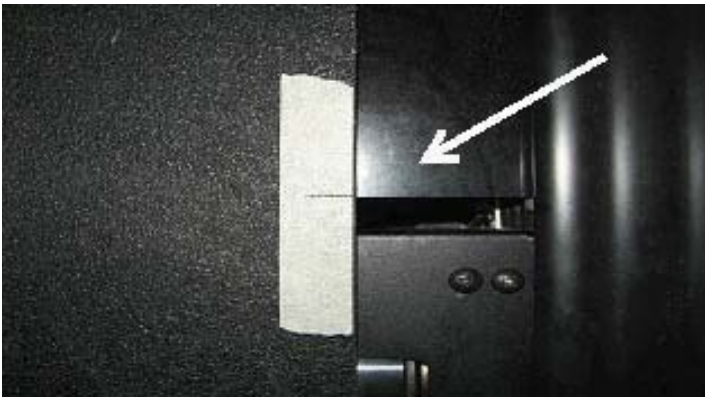


Fig 3

Step 3

Draw a line on each piece of masking tape aligned with the edge of the deck. *(Note: Be careful not to move the belt or roller while drawing the lines.)*



Fig 4

Check to make sure that both lines are aligned with the edge of the deck at the same point. (See Fig 4)

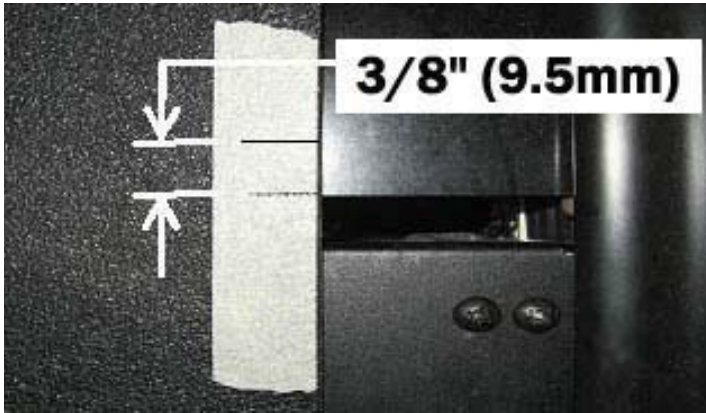


Fig 5

Step 4

Using a ruler or tape measure, draw a line on each piece of tape parallel to each first line at a distance of 3/8" (9.5mm) from each first line. (See Fig 5)

Step 5

You are now ready to begin tensioning the belt. Before beginning, make sure the line on each piece of tape closest to the tail roller is aligned with the edge of the deck on each side. (See Fig 5)

Step 6

Using the 1/4" Allen wrench begin tightening the tensioning screws (see Fig 1). You will tighten (or stretch) the run belt until the forward lines on the tape are aligned with the edge of the deck.

Be careful to ensure the Tail Roller does not turn while you are stretching the belt. If the Tail Roller turns while you are stretching the belt, start the procedure over. If the Tail Roller turns while stretching the belt you will not obtain proper tension.

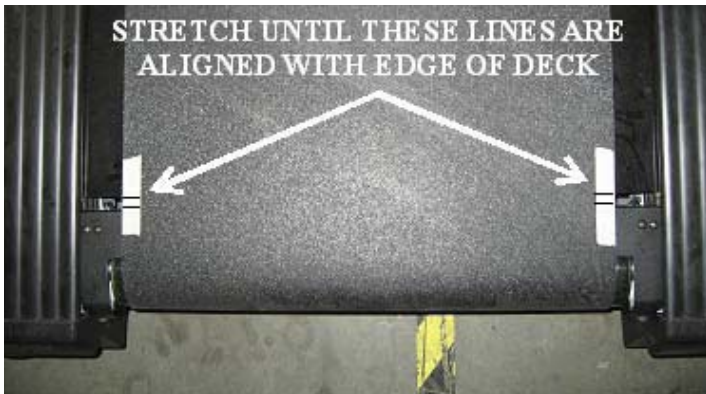


Fig 6

When finished, remove the tape from the running belt.

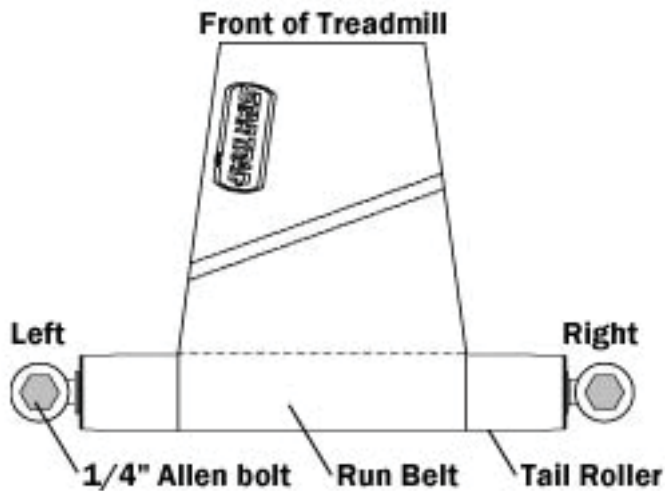


Fig 7

Step 1

Start the treadmill and set the speed to 3.0 mph (5.0 kph). Make sure the running belt tracks to the center (see Fig 7).

If the running belt shifts or tracks to either side (left or right), follow the appropriate procedure below.

<p>If the belt tracks to the LEFT side:</p> <p>Turn the LEFT bolt $\frac{1}{4}$ turn clockwise Turn the RIGHT bolt $\frac{1}{4}$ turn counter-clockwise</p>	<p>If the belt tracks to the RIGHT side:</p> <p>Turn the LEFT bolt $\frac{1}{4}$ turn counter-clockwise Turn the RIGHT bolt $\frac{1}{4}$ turn clockwise</p>

Repeat above steps until the running belt tracks in the center

Note that the above drawings are not to scale and have been exaggerated to better show an offset tracking.

If you have any questions or concerns STOP and contact Star Trac immediately!
 800-503-1221 Toll Free • 714-669-1660 Tel

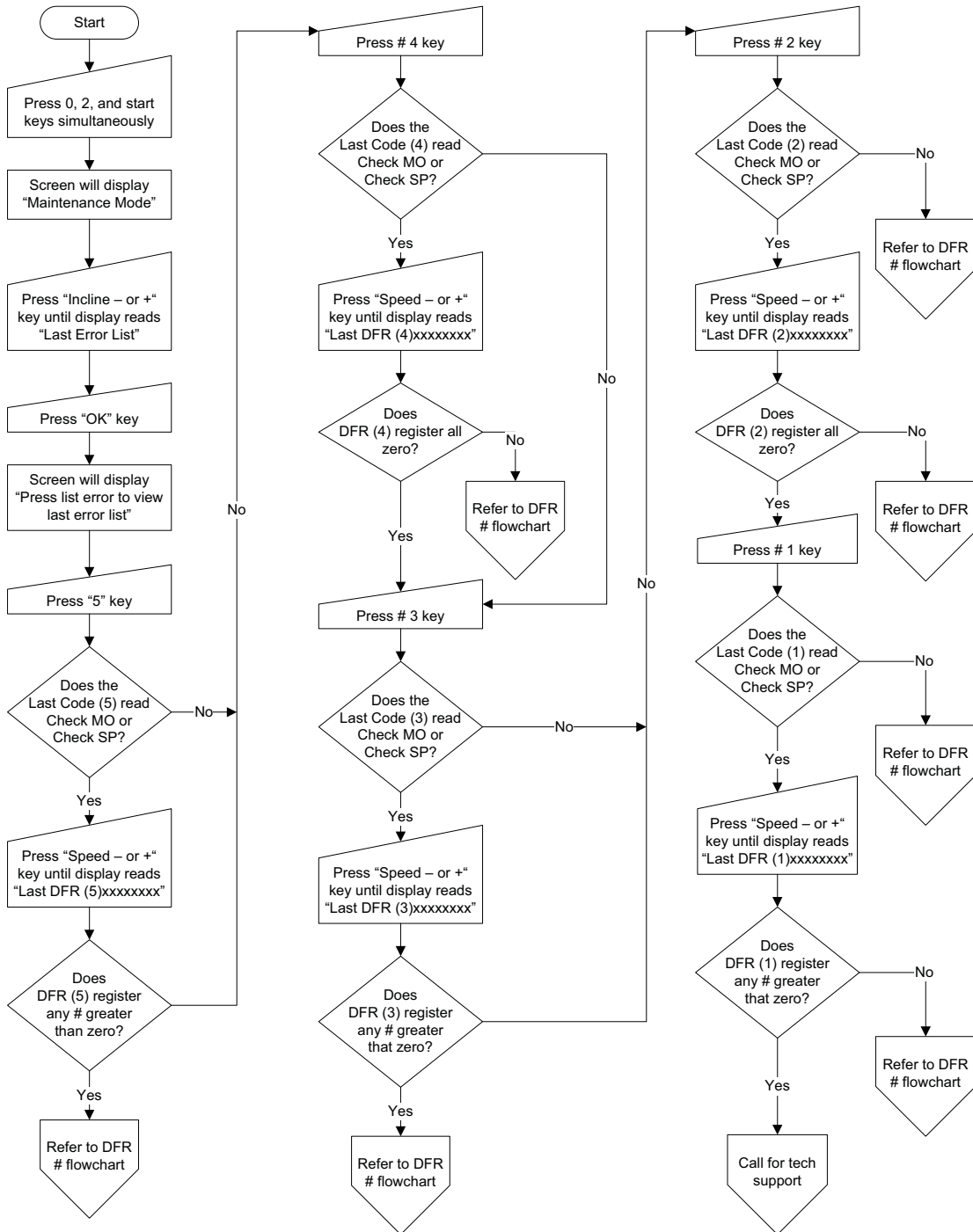
TROUBLESHOOTING

Table Of Troubleshooting Documents

- Check Speed System and Check Motor System
- Troubleshoot DFR Codes:
 - Code: 1000000, 100000, 10000
 - Code: 4000
 - Code: 1000
 - Code: 800 & 400
 - Code: 200
 - Code: 40, 20 & 10
 - Remaining Codes
- Slipping Running Belt

“Check Speed System” and “Check Motor System”

Flowchart for Display Codes: “CHECK SPEED SYSTEM” & “CHECK MOTOR SYSTEM”



DFR Code 1000000, 100000 and 10000

DFR CODE FLOWCHART: DEFINITIONS / MCB LED Blinks DFR Flowchart For #: 1000000, 100000, and 10000

Solution:

B1
Replace Bleeder Resistor

B2
Isolate drive motor from ground.

Note: Check motor bracket gaskets and sensor bracket gaskets. Make sure they are not causing the drive motor to have continuity with ground.

B3
Replace Brake Resistor

B4
Replace MCB

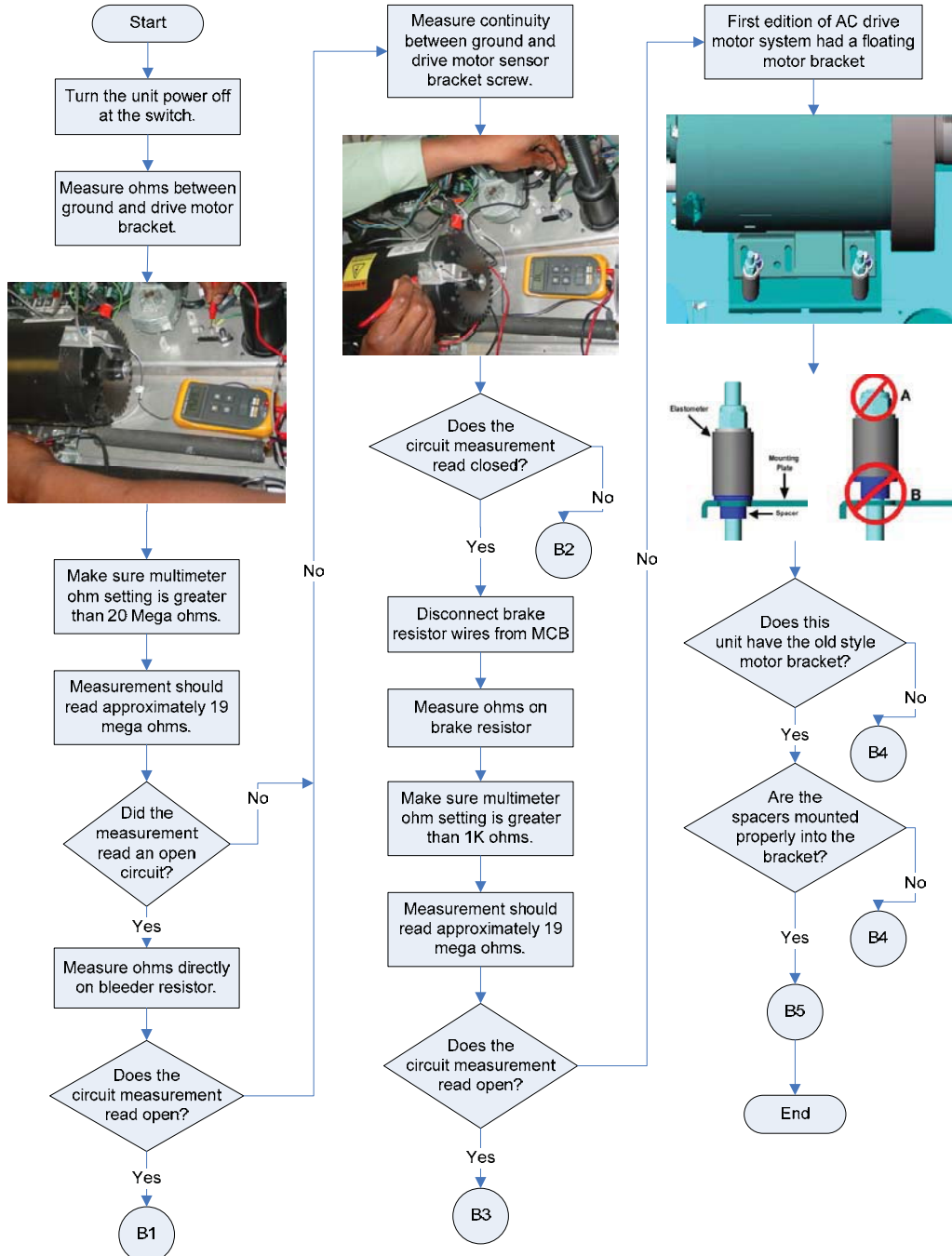
B5
Isolate bracket bolts for the motor bracket.

Note: Reattach spacers through the motor bracket and retighten nuts.

DFR Code = 1000000
DC Link Bus Over Voltage / 25 Blinks
Possible Causes:
(1) Faulty MCB.
(2) Bad or missing bleeder resistor.
(3) Drive motor not isolated.

DFR Code = 100000
Output Peak Over Current / 21 Blink
Possible Causes:
(1) Bad or missing bleeder resistor.
(2) Bad brake resistor.
(3) Drive motor not isolated.

DFR Code = 10000
Brake Gate Drive Fault / 17 Blink
Possible Causes:
(1) Faulty MCB.
(2) Bad or missing bleeder resistor.
(3) Drive motor not isolated.



DFR Code 4000

DFR CODE FLOWCHART: DEFINITIONS / MCB LED Blinks DFR Flowchart For #: 4000

Solution:

C1

If the unit came up with Check Speed or Check Motor System refer back to the correct DFR number listed in A1.

C2

Replace Drive Motor

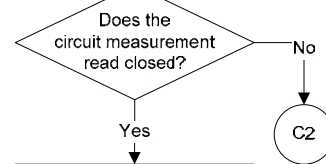
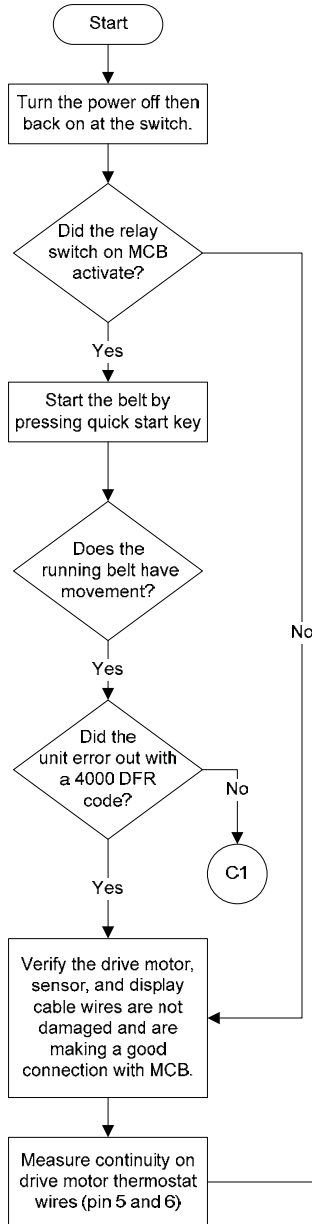
Note: Verify the probes of the multimeter are making a good connection with the thermostat wires labeled 5 and 6 on connector.

Only take reference to the drive motor connector, not the drive motor wires they may not coincide with each other.

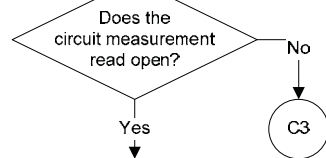
C3

Replace MCB

DFR Code = 4000
Over Temp on Motor or Drive / 15 Blinks
Possible Causes:
(1) Open thermostat wires on drive motor.
(2) Drive motor over heating.
(3) Faulty MCB.



Plug one probe into any thermostat wire (5 or 6) and the other probe into any of the phase wires (1, 2 or 3)



End

DFR Code 1000

DFR CODE FLOWCHART: DEFINITIONS / MCB LED Blinks DFR Flowchart For #: 1000

Solution:

D1

Replace Speed Sensor

D2

Connect sensor wire and retest

Note: Make sure there are no objects or moveable parts that may cause damage to the wire.

D3

Clean between speed sensor and disk to make sure there is nothing obstructing the signal. Also make sure the gap is approximately 1/16" difference.

D4

Go back to Last Error List and look for other DFR codes different than 1000

Note: Unit may have another DFR from sensor failure, causing unit to not run in test mode.

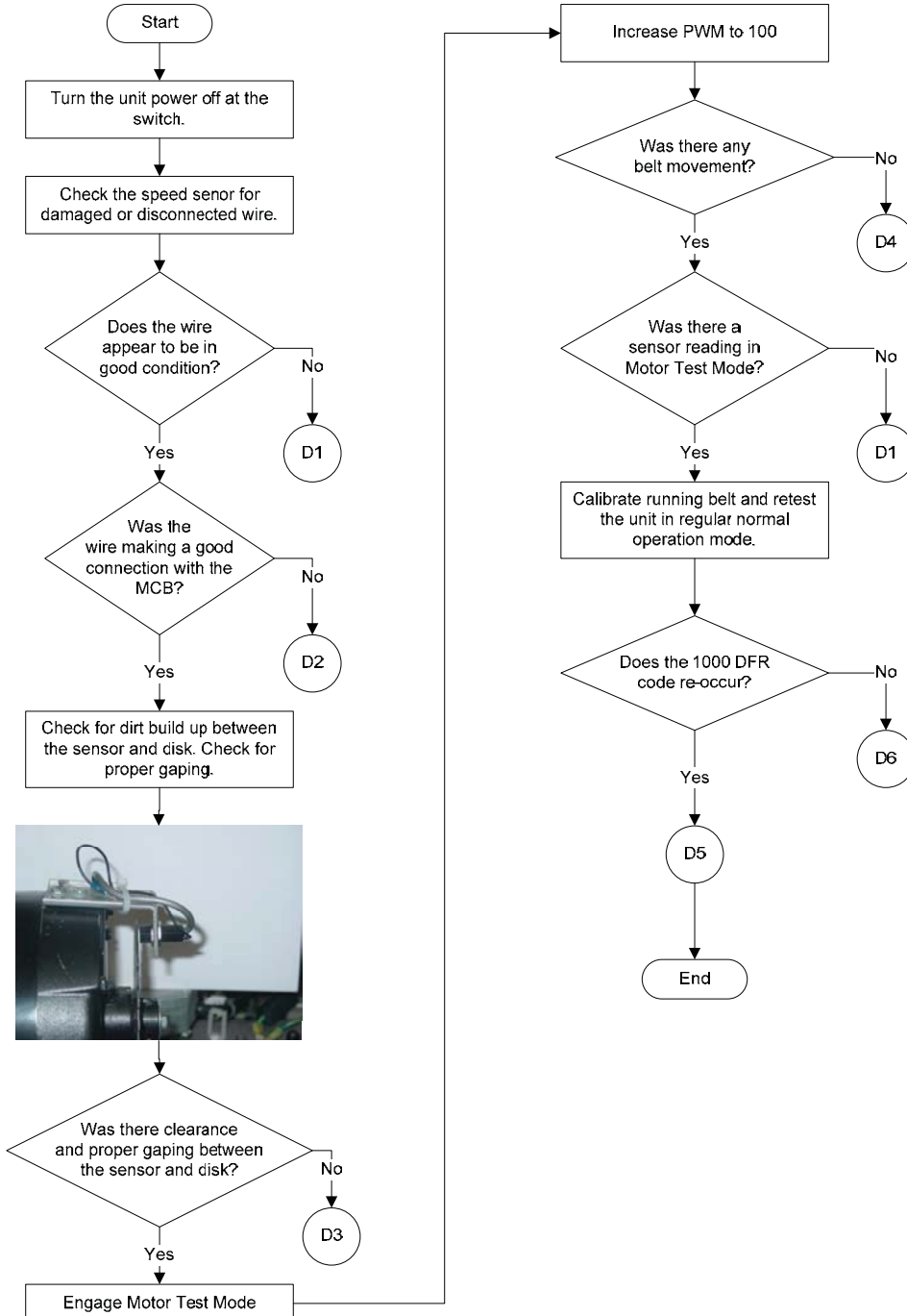
D5

Replace Speed Sensor. If unit still fails replace MCB.

D6

Unit is operable and can be used again.

DFR Code = 1000
Faulty Speed Sensor / 13 Blinks
Possible Causes:
(1) Sensor disconnected.
(2) Faulty speed sensor.
(3) Faulty MCB.



DFR Code 800 & 400

DFR CODE FLOWCHART: DEFINITIONS / MCB LED Blinks DFR Flowchart For #: 800 & 400

Solution:

E1

Clean the under the running belt and re-test

Note: If the problem continues replace the running belt.

E2

Replace MCB

Note: Make sure there are no objects or moveable parts that may cause damage to the wire.

Solution:

F1

Replace MCB

Note: If AC LED is on and you get this error, replace the MCB.

F2

Reconnect display cable and re-test

Note: If AC LED is not on check the I/O interface cable and connection. A speed command with the relay off can cause this error.

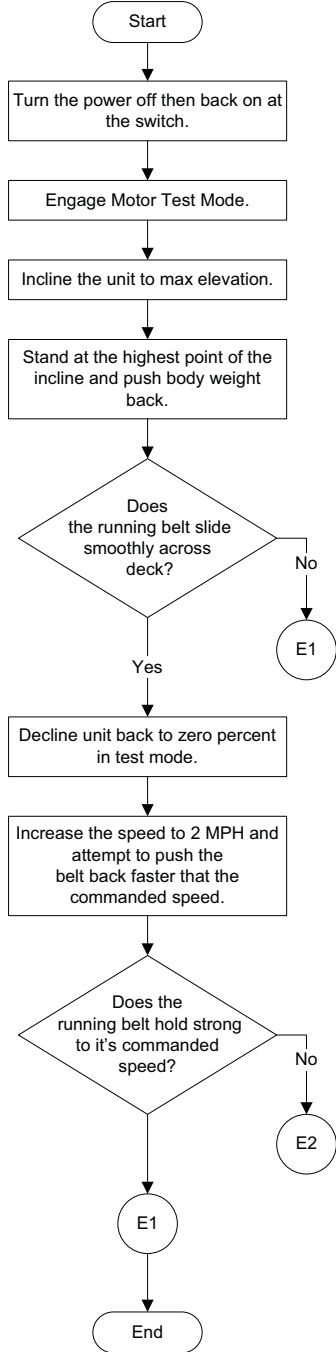
F3

Replace I/O Interface cable (Display Cable)

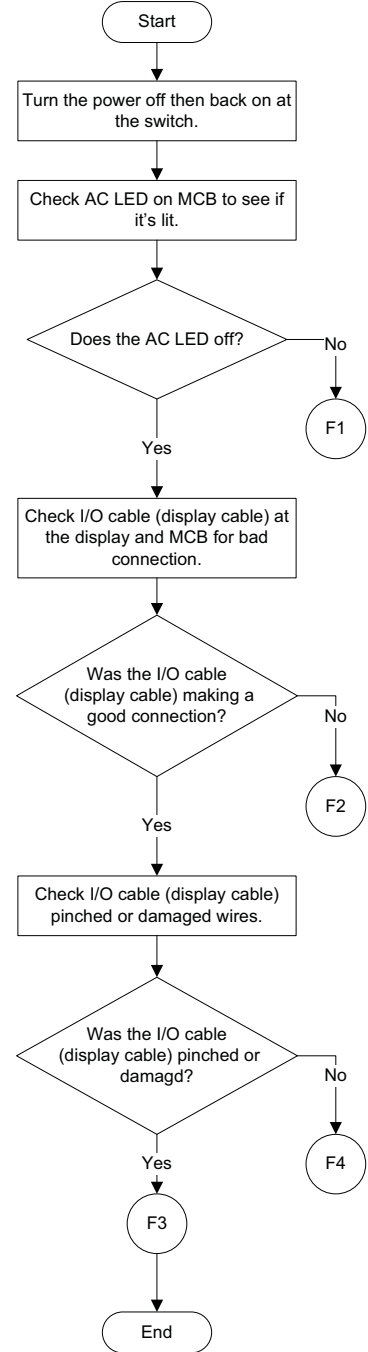
F4

Replace I/O Interface cable (Display Cable) and if the error still occurs replace the MCB

DFR Code = 800
Phase Over Current / 12 Blinks
Possible Causes:
(1) Worn running belt.
(2) Dirty running belt
(3) Faulty MCB.



DFR Code = 400
Illegal Speed Command / 11 Blinks
Possible Causes:
(1) Pinched or damaged display cable.
(2) Bad wire connection to drive system
(3) Faulty MCB.



DFR Code 200

DFR CODE FLOWCHART: DEFINITIONS / MCB LED Blinks DFR Flowchart For #: 200

Solution:

G1

Consult with electrician to fix AC input rail voltage.

Note: The AC rail voltage with a load should never drop greater than a 5 volt deferential comparing it with no load. There are many equations to measure for low rail voltage.

Example: If you take a person that weighs 200 Lbs at the speed of 5 MPH and the voltage drops greater than a 5 volt deferential, the wall voltage is not adequate and can cause intermittent 200 DFR codes.

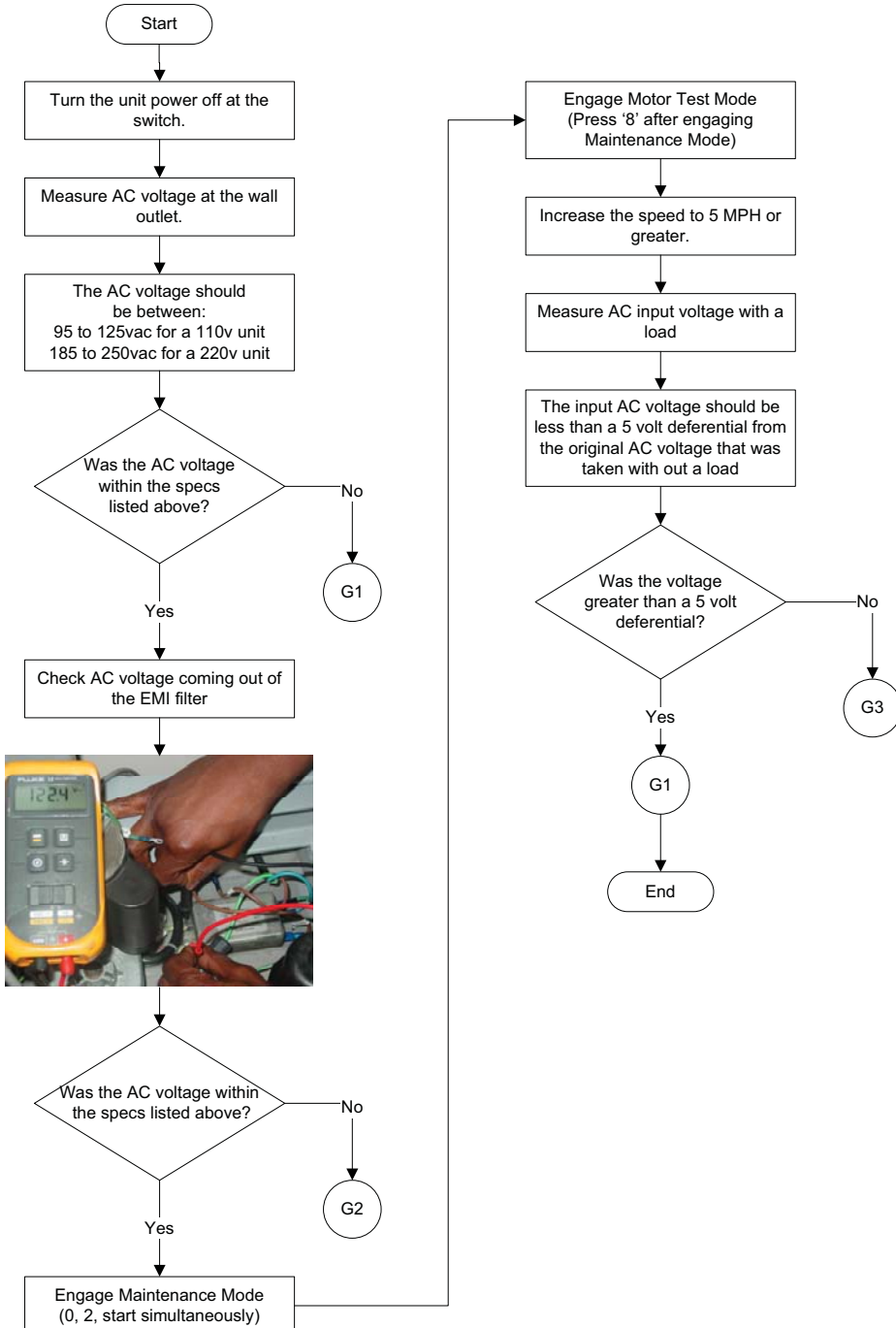
G2

Replace EMI Filter

G3

Replace MCB

DFR Code = 200
DC Link Bus Under Voltage / 10 Blinks
Possible Causes:
(1) Low AC voltage from wall.
(2) Low AC voltage from EMI filter.
(3) Faulty MCB.



DFR Code 40, 20 & 10

DFR CODE FLOWCHART: DEFINITIONS / MCB LED Blinks DFR Flowchart For #: 40, 20 & 10

Solution:

H1

Replace MCB

H2

Replace I/O cable

H3

Reinsert the phase wires into the harness connector.

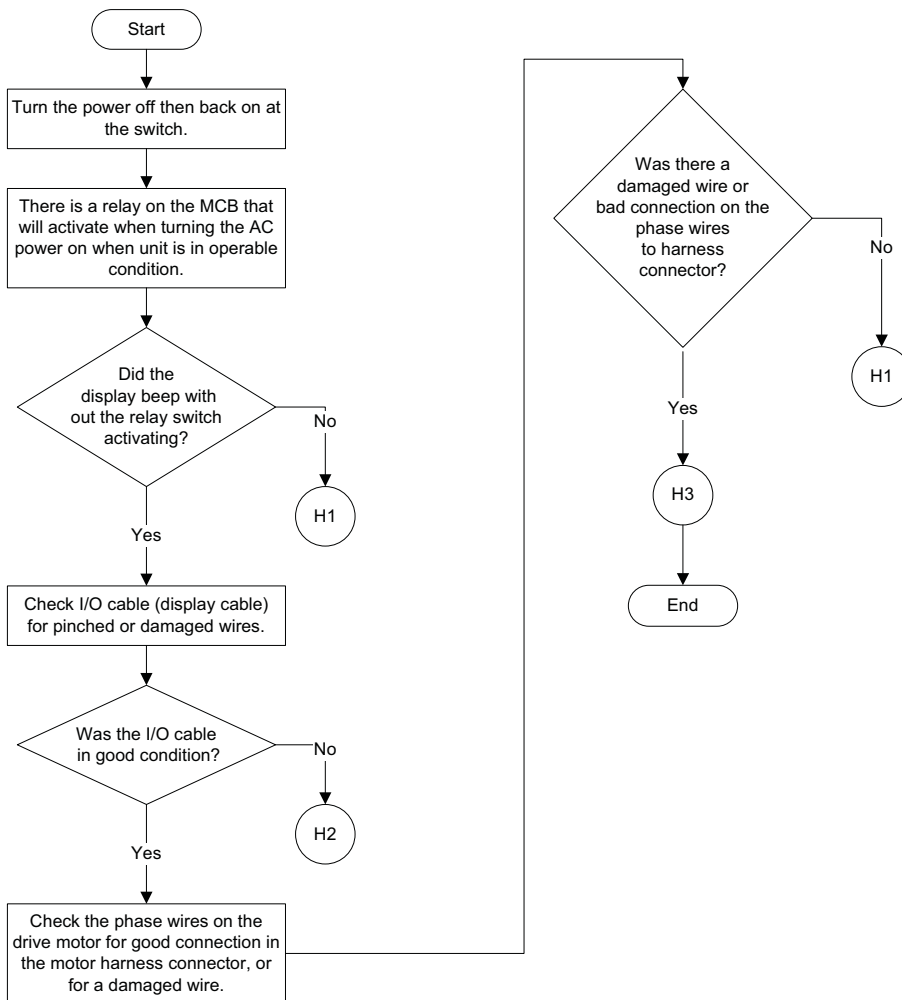
Note: If the wire continues to make a bad connection replace drive motor.

DFR Code = 40
Phase A Circuit Open / 7 Blinks

DFR Code = 20
Phase B Circuit Open / 6 Blinks

DFR Code = 10
Phase C Circuit Open / 5 Blinks

Possible Causes:
(1) Bad wire connection on drive motor.
(2) Open phase wire in drive motor.
(3) Faulty MCB.



DFR Remaining Codes

DFR CODE FLOWCHART: DEFINITIONS / MCB LED Blinks DFR Flowchart For #: 2000, 100, 80, 4, 2, 1, 80000, 40000 & 20000

Solution:

J1

Replace MCB

J2

Verify the drive motor, sensor, and display cable wires are not damaged and making a good connection with MCB, and re-test.

Note: If all drive system wires are making a good connection replace MCB.

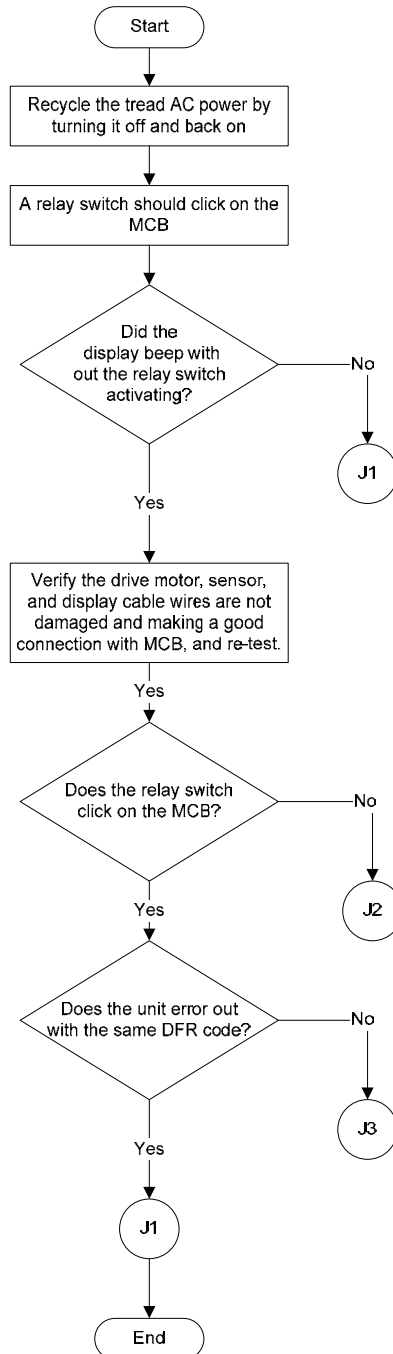
J3

If different DFR error come up refer back to the DFR flowchart of the error that is coming up.

DFR Code = 2000 Heat Sink Over Temp / 14 Blinks
DFR Code = 100 Critical DC Link Bus Over Voltage (MAX_VDC2) / 9 Blinks
DFR Code = 80 DC Link Bus Over Voltage (MAX_VDC1) / 8 Blinks
DFR Code = 8 Phase A Current Sensor / 4 Blinks
DFR Code = 4 Phase A Current Sensor / 3 Blinks
DFR Code = 2 1.65 Vdc Ref. Status / 2 Blinks
DFR Code = 1 2.5 Vdc Ref. Status / 1 Blink
DFR Code = 80000 Phase C High (Gate Drive Fault) / 24 Blinks
DFR Code = 40000 Phase B High (Gate Drive Fault) / 23 Blinks
DFR Code = 20000 Phase A High (Gate Drive Fault) / 22 Blinks
DFR Code = 80000 Phase C Low (Gate Drive Fault) / 20 Blinks
DFR Code = 40000 Phase B Low (Gate Drive Fault) / 19 Blinks
DFR Code = 20000 Phase A Low (Gate Drive Fault) / 18 Blinks

Possible Causes:

(1) Faulty MCB.



Slipping Running Belt

Slipping is the term that many people use when a running belt stops moving for a split second, but the motor, possibly the head roller, keeps moving.

Possible causes for a slipping running belt:

- Loose drive belt
- Worn running belt
- Loose running belt

To identify the cause of a slipping running belt, follow these troubleshooting steps:

1. Lift the motor shroud.
2. With the motor shroud lifted, start walking on the treadmill. Watch the head roller.
 - If running belt slips and the head roller stops moving. This indicates the drive belt is loose. Tighten the drive belt.
 - The running belt slips but the head roller keeps moving. There are two possible causes.
 1. The running belt is worn. Check the condition of the running belt. Feel the underside of the belt. If the belt feels glazed/ glossy in the center, it is worn and should be replaced. The underside of the running belt should have a rough canvas feel to it.
 2. The running belt is loose. Turn each tail roller screw $\frac{1}{4}$ turn clockwise. Check to see if the running belt continues to slip. If the running belt continues to slip, tighten the tail roller screws another $\frac{1}{4}$ turn clockwise. Keep following this procedure until the running belt stops slipping. Note: If the running belt continues to slip after the tail roller screws have been tightened one full turn clockwise, call Star Trac Customer Support for more assistance.

Many people assume only a loose running belt causes slipping, and will attempt to correct the problem by adjusting the tail roller screws. This may cause damaged to the running belt by over tensioning.

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SERVICE MANUAL