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# *TREADMILL*

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## ***FIELD SERVICE MANUAL***

FVX No Control

FVX\_C Manual Control

FVX\_CP Programmable Control

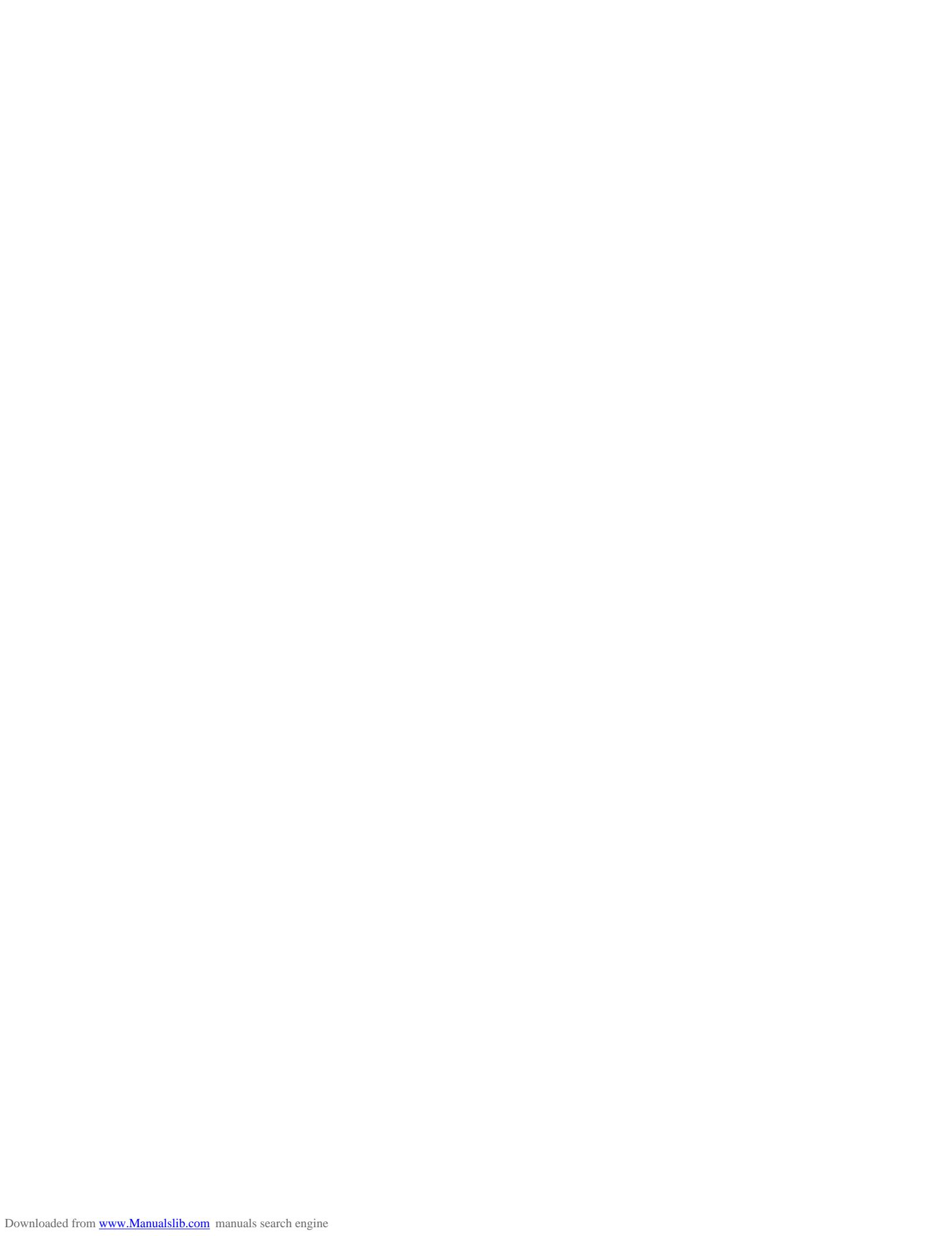
TMX No Control

TMX\_C Manual Control

TMX\_CP Programmable Control

Revision Level 5 August, 2006

**Refer equipment servicing to Full Vision, Inc. authorized service personnel only. Any unauthorized attempt to repair equipment under warranty voids that warranty.**



# ***CONTACT INFORMATION***

## **SERVICE DEPARTMENT**

Models:	FVX325, FVX325C, FVX325CP TMX435, TMX425C, TMX425CP
Service Line:	316-283-8110
Address:	Full Vision Inc. 3017 Full Vision Drive Newton, Ks 67114

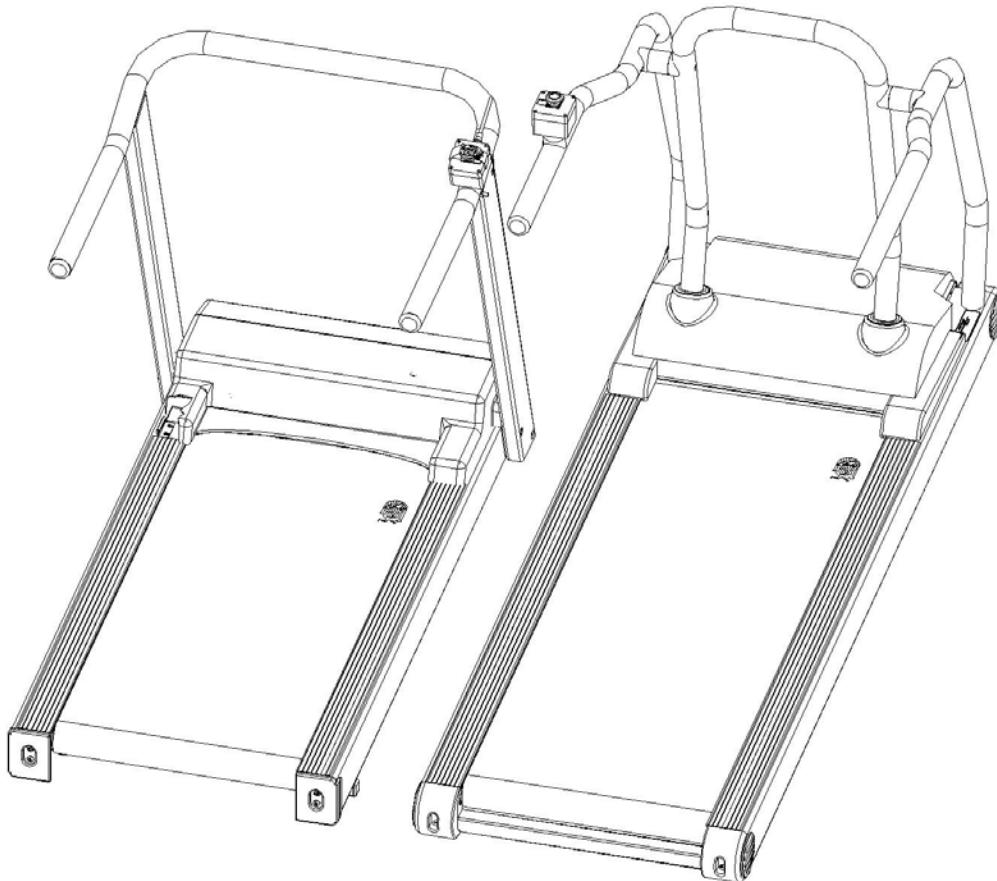
## **PARTS DEPARTMENT**

Models:	FVX325, FVX325C, FVX325CP TMX435, TMX425C, TMX425CP
Service Line:	316-283-8110
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**TMX325 Series Treadmill**  
Field Service Manual  
Part #317-07189 – 317-07191

**TMX425 Series Treadmill**  
Field Service Manual  
Part #317-07130 – 317-07135



TRACKMASTER TREADMILLS  
BY  
FULL VISION INC.  
Original Publication Date 9/5/02

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**Note:** Due to continuing product innovation, specifications in this manual are subject to change without notice.

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# Introduction

The purpose of this service manual is to supply authorized service providers and qualified technicians the information needed to maintain and repair the TRACKMASTER® medical treadmills. A minimal understanding of basic electric and electronic theories is required along with a basic understanding of hand tools and their use.

A multi meter capable of measuring AC/DC voltages up to 240 volts and the ability to perform continuity checks is required. An amp probe capable of reading up to 20 amps is recommended.

Specific hand tools required are listed at the beginning of all removal and replacement procedures. A complete list of all tools required in this manual can be found in the service technician's feedback section of this manual.

This manual includes: maintenance and trouble shooting guides, parts list, illustrations of assembly parts and some schematics.

## Notices

Three different levels of notices throughout this manual alert you to important information: Note, Caution, and Warning.

### Note

Note statements provide additional information, such as the following:

---

**Note:** For maximum safety and efficiency, the treadmill must have its own dedicated power outlet.

---

## Caution

Caution notices inform you of potential hazards that could result in equipment damage or injury, such as the following:

---

<b>CAUTION</b>	Do not use silicone sprays to wax your treadmill deck. Using silicone sprays may void the warranty. Such sprays can bring about surface changes that cause you to slip.
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## Warning

Warning notices alert readers to hazards that *will* result in serious injury or death, such as the following:

---

<b>WARNING</b>	Never open the hood of the treadmill while it is plugged into a power outlet. Line voltage will cause severe injury or death.
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## Drawings

Chapter 13, assembly drawings.

## Directional Orientation

References to left, right, front, and rear are based on the assumption that you are standing on the treadmill, facing forward.

## Responsibility of Manufacturer

Full Vision, Inc. is responsible for the effects of safety reliability, and performance only if:

- Assembly operations, extensions, readjustments, modifications or repairs are carried out by persons authorized by Full Vision, Inc.
- The electric installation of the relevant room complies with the requirements of the appropriate regulations.
- The equipment is used in accordance with the instruction for use.

### Equipment symbols

The following symbols appear on the treadmill.



This symbol means that you must pay attention to the documents delivered with this equipment. It calls notice to the things to which you must pay special attention during operation and when the equipment is operated in conjunction with other equipment.



Protective earth (ground)



Alternating current



Type B equipment is suitable for intentional external and internal application to the patient, excluding direct conductive connection to the patient heart.

### Warning and caution symbols



<b>CAUTION</b> ELECTRIC SHOCK HAZARD. DO NOT REMOVE COVER. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. DISCONNECT POWER BEFORE WORKING ON UNIT.	<b>ATTENTION</b> RISQUE DE CHOC ELECTRIQUE. NE LEVEZ PAS LE COUVERCLE POUR L'ENTRETIEN, ADRESEZ-VOUS AU PERSONNEL DE MAINTENANCE COMPETENT. DEBRANCHEZ LE COURANT AVANT DE TRAVAILLER SUR L'UNITE.
--	--

DO NOT PERFORM A HI-POT TEST  
(UNTIL POWER WIRES AND TB  
CONTROL WIRES: VIOLET, BLACK,  
RED, GRAY, AND WHITE) ARE  
REMOVED FROM INVERTER DRIVE!  
DRIVE WILL BE DAMAGED IF THESE  
INSTRUCTIONS ARE NOT FOLLOWED.  
ALSO UNPLUG SURGE PROTECTOR.

### **WARNING**

ALL MOTORIZED EQUIPMENT IS POTENTIALLY DANGEROUS IF USED  
INCORRECTLY OR WITHOUT PROPER INSTRUCTION. SERIOUS INJURY  
MAY RESULT FROM LOSS OF BALANCE OR FALLS. USERS OF THIS  
TREADMILL MUST:

- RECEIVE INSTRUCTION ON ITS USE FROM A QUALIFIED STAFF MEMBER.
- NEVER STAND ON BELT WHEN STARTING TREADMILL.
- NEVER STEP ONTO BELT MOVING FASTER THAN MINIMUM (1.5 MPH) SPEED.
- ALWAYS SLOW TREADMILL TO MINIMUM SPEED BEFORE STOPPING.
- FAMILIARIZE THEMSELVES WITH CONTROL BOX OPERATION BEFORE USING TREADMILL.

# *Service Information*

## **Service Requirements**

Refer equipment servicing to Full Vision, Inc. authorized service personnel only. Any unauthorized attempt to repair equipment under warranty voids that warranty.

It is the responsibility of the user to report the need for service to Full Vision, Inc.

Failure on the part of the responsible individual, hospital, or institution using the equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.

Regular Maintenance regardless of usage is essential to ensure that the treadmill will always be functional when required.

## **Equipment identification**

Below is a list of treadmills that are available for purchase. It is imperative when calling the service line or speaking with a technician that you identify the model and serial number of the treadmill in use.

FVX325, TMX425 – Medical Treadmill without controller. This treadmill can only be operated using testing software.

FVX325C, TMX425C – Medical Treadmill with Manual Controller. This treadmill can be operated using testing software or manually.

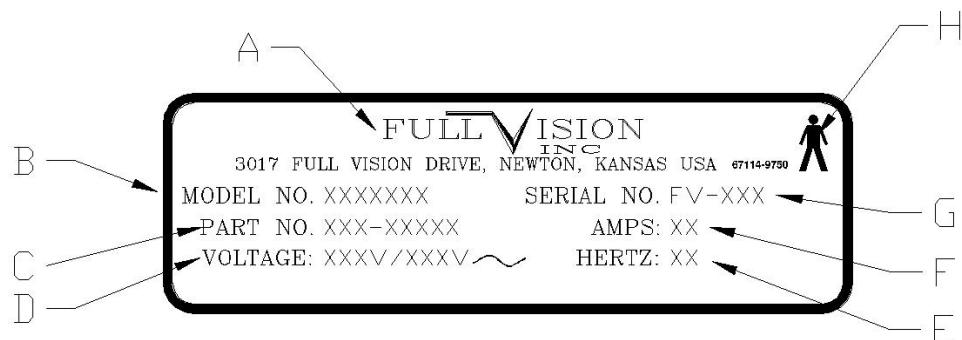
FVX325CP, TMX425CP – Medical Treadmill with Programmable Controller. This treadmill can be operating using testing software, manually, or by established programs in the controller.

## Serial Number

Every TRACKMASTER treadmill has a unique serial number for identification. The serial number appears on the serial plate on the base of each unit.

## Serial plate location and Identification

- The serial plate is located on the right side rail of the treadmill.



## Explanation of Serial Decal Information

Item	Name	Description
A	Manufacture	Full-Vision Inc.
B	Model Number	Identifies model of treadmill
C	Part Number	Manufacturers part number
D	Voltage	Specifies voltage of treadmill
E	Hertz	Specifies hertz of treadmill
F	Amps	Specifies amperage of treadmill
G	Serial Number	Manufacturers assigned serial number

# *General Description*

3

- **Intended Use**

The FVX325, TMX425 series treadmill is for use only with pre-tested and approved monitoring systems.

The emergency stop switch is intended for emergency situations where immediately stopping the treadmill is required to deliver appropriate emergency care to the patient. It is not intended for routinely stopping the treadmill.

- **Motor drive system**

The 2hp, AC motor is controlled by a 2hp AC inverter drive, which connects directly to the front roller with a drive belt. A 10lb flywheel attached to the motor's drive shaft keeps "footfall" variance to a minimum. An "adjustment plate" between the motor and the treadmill motor pan allows for belt tension adjustment using adjustment studs.

- **Elevation system**

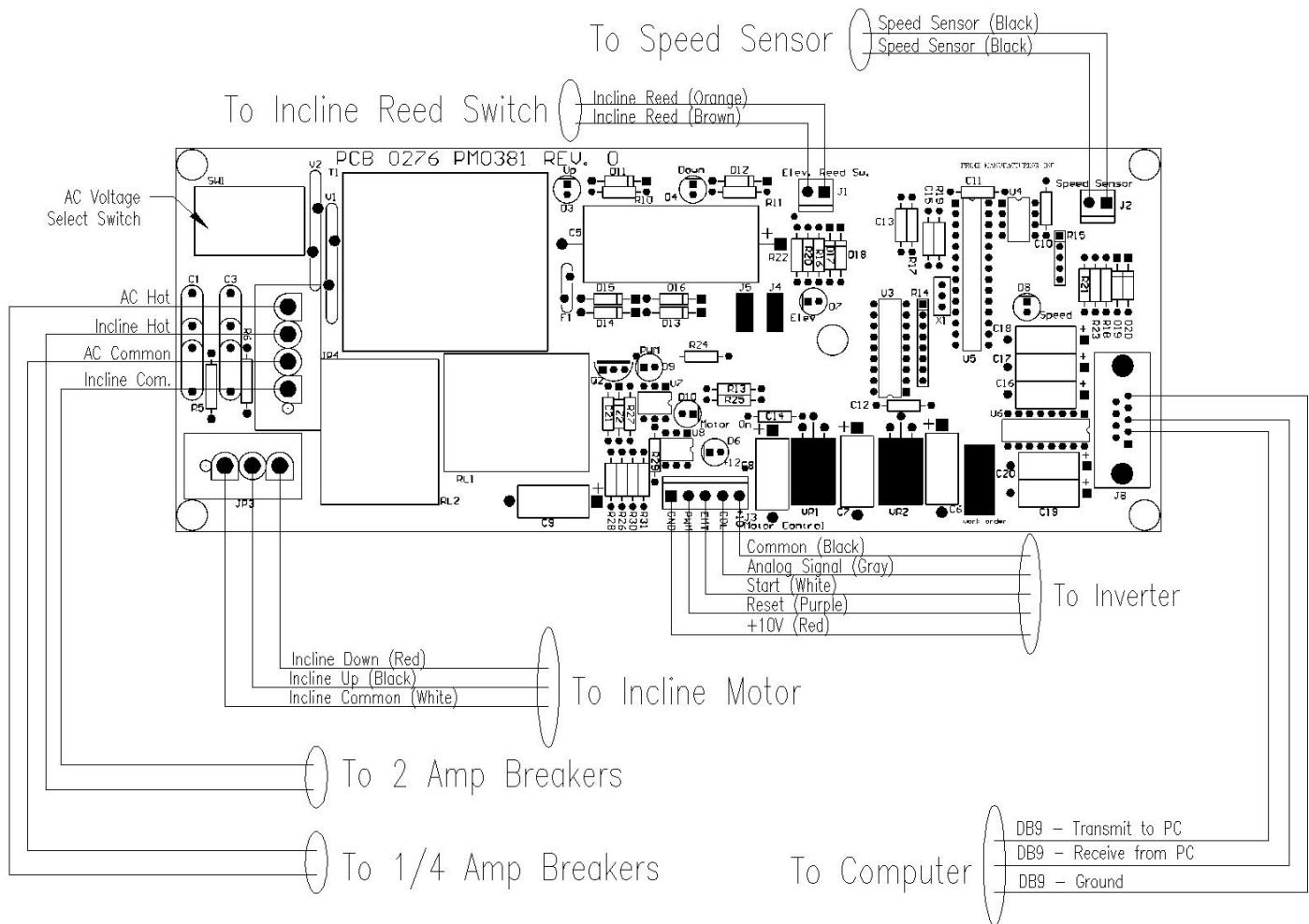
The elevation system uses a linear screw actuator to raise and lower the treadmill. The elevation actuator attaches to the motor pan and elevation assembly.

The upper and lower limit switches are an integral part of the actuator, located on top of the actuated under an access cover. This design allows easy access and adjustment of the limit switches.

- **Electronic Assembly**

The motor pan contains the power supply relay board and the inverter drive. These can be accessed by removal of the hood assembly and can be replaced individual.

## **Power Supply Relay Board Detail**

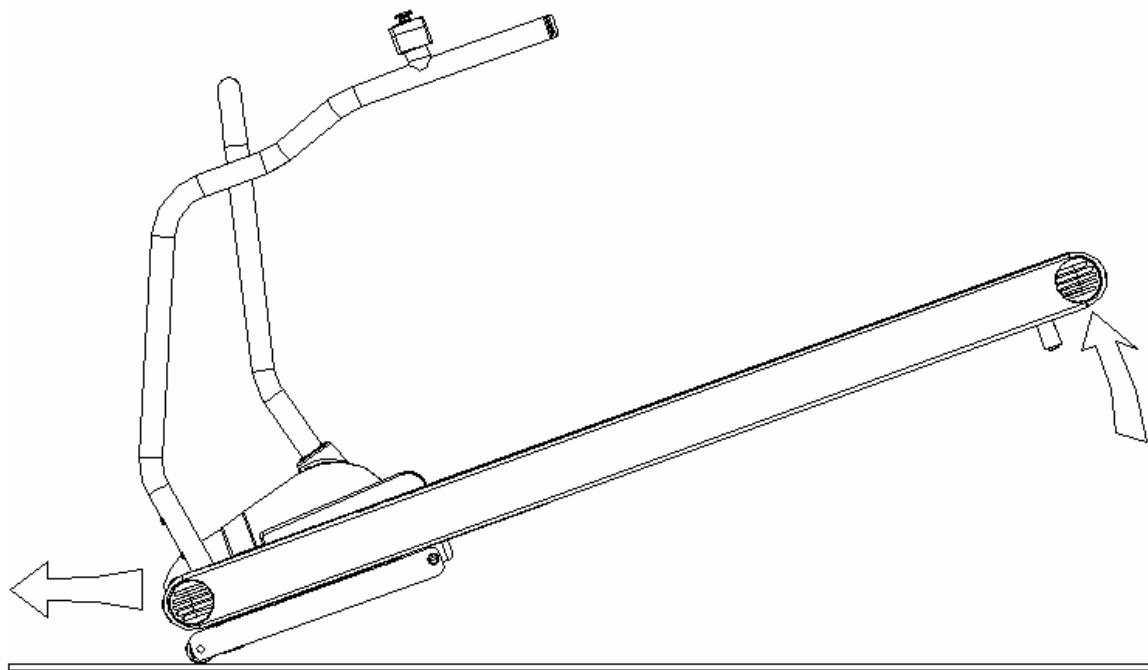


# *Preparation for use*

4

## **Safe handling guidelines**

- Lift the end of the bed assembly to a comfortable height, keeping knees bent and backs straight as you lift.
- Rotate the treadmill in the direction you want to go (the treadmill will pivot on its wheels) and push forward.
- When you have maneuvered the treadmill into its new location gently lower the end of the bed assembly to the floor.



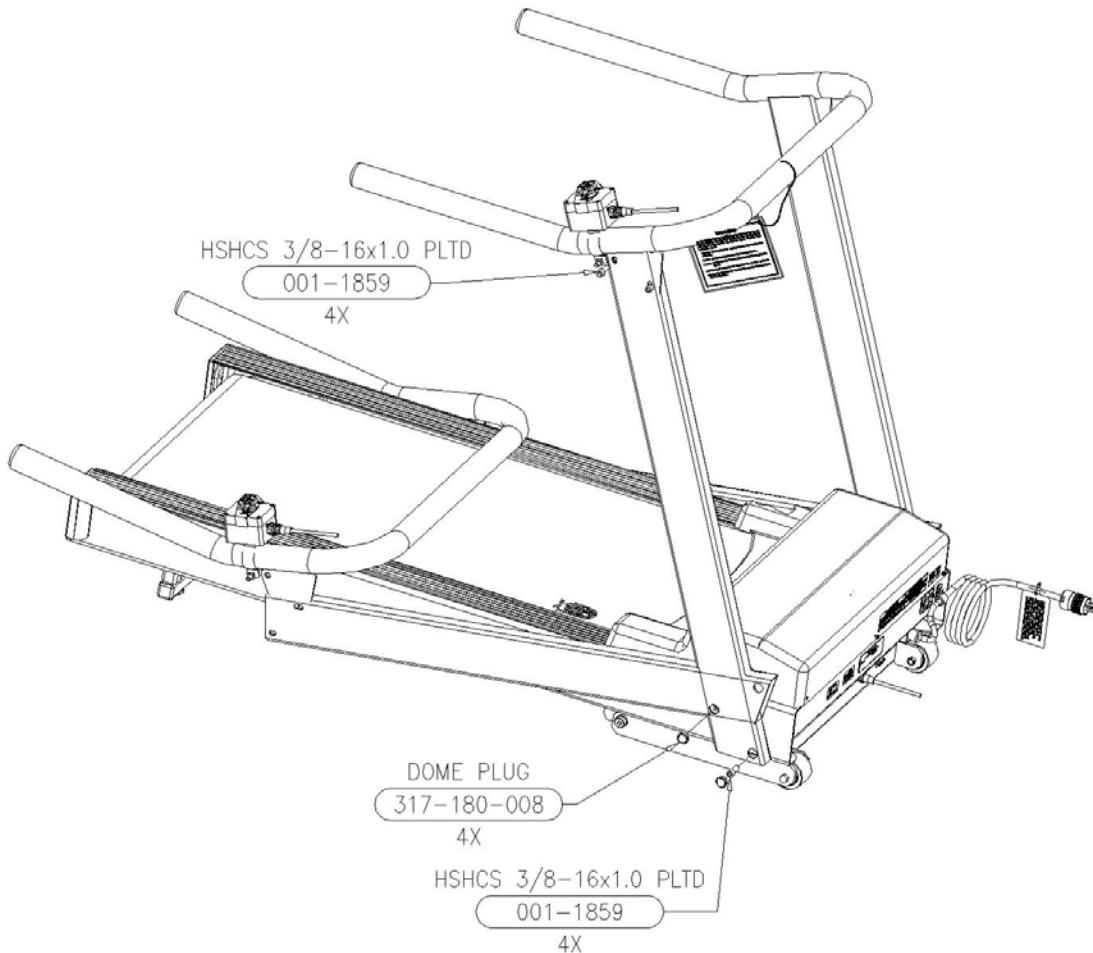
## FVX325 Series Initial Setup and Assembly

FVX325 Series treadmills are shipped with handrail folded down for shipping.

Tools required for assembly

5/16 Allen wrench

1. Rotate handrail to up right position.
2. Start 2~3/8-16 Socket head cap screw into lower legs.
3. Start 2~3/8-16 Socket head cap screw into upper handrail.
4. At this point tighten all 8~3/8-16 socket head.



### Check unit for proper operation

If unit has no power check ESB (Emergency Stop Button) to assure the button is not pressed.

To check unit for proper operation, perform Test Plug Procedure ref chapter 4-5

## TMX425 Series Initial Setup and Assembly

Treadmills may be ordered broke down or fully assembled. If you have received one broke down please follow the instructions below.

### *Tools required for assembly*

*1/4" Hex key  
3/16" Hex key  
1/4" Hex nut driver  
1/2" wrench*

1. Slide hood Grommets on to center rail (Approx. 2 ft. up), one each tube.
2. Next install U-bolts on to motor pan, place nuts on loosely, do not tighten, just to hold in place
3. Slide hood on center rail and force up past Grommets to keep it from sliding down.
4. Route wire through U-bolt if wiring present on center rail.
5. Slide center rail down through U-bolts until rail slides into rubber base mounts.  
**CAUTION! Be sure that no wires are pinched when handrail is seated in lower mounts or DAMAGE will occur!**
6. **ALL hardware should be left loose to aid easy assembly!**
7. Install the outer rails by first routing wire through hole, provided your application has a wire in the rail.
8. Slide the outer rail over the bracket and start the four button Head Bolts with washers into base of handrail.
9. Add clamp to one bolt and route power cord with RS 232 cable thru it.
10. Install tube connectors with tube spacer between inner and outer rails and secure with 5/16 x 3" socket head bolt with lock washer.
11. **After all hardware is in place tighten all bolts, U-bolts last.** Be sure center handrail is down, by firmly applying pressure to it when tightening it.
12. Plug in wiring per illustration and lower cover.
13. Secure cover with three 1/4" hex head self-tapping machine screw in front.
14. Adjust brackets assuring Velcro makes contact at rear of the cover.
15. Slide Grommets down against the cover last.
16. Add Warning Card assembly with chain, and plastic dome plugs.
17. Install End Caps and End Cap Spacer, Use a 3/16 Allen wrench to secure end caps (see illustration).

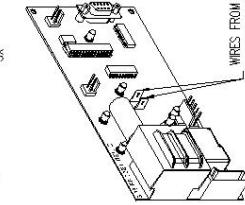
PACKING LIST/ASSEMBLY INSTRUCTIONS FOR TREADMILLS  
SHIPPED WITH HANDRAILS BROKE DOWN

PART NUMBER	PARTS BAG	PACKING LIST	DESCRIPTION
001-1740	2		HSBHCS 5/16-18 X 2" PLTD
001-1759	3		HWHCS #8-32 X .75 TYPE F
001-1398	4		HNS 5/16-18 FLANGED
001-1735	4		HSBICS 5/16-18 X 1.00 PLATED
001-1736	4		LW 25/16 INTERNAL TOOTH PLATED
001-1737	2		LW 25/16-18 X 1.00 PLATED (FULLY THREADED)
001-1738	2		LW 25/16 HI-COLLAR PLATED
317-160-017	2		GROMMET - HOOD
317-160-021	2		CONNECTOR - TUBE BLACK
317-160-039	2		PLUG - DOME BLACK
317-160-047	2		TUBE - HANDRAIL SPACER
317-160-064	1		U-BOLT - HANDRAIL
317-190-001	1		WARNING CARD ASSM
317-160-092	1		CLAMP SUPPORT
317-160-022	2		CAP END CHANNEL
317-160-050	2		SPACER END CAP
001-7278-016	1		PARTS BAG
			ADDITIONAL PARTS SHIPPED LOOSE
317-172-001	1		CENTER HANDRAIL
317-183-001	1		RIGHT HAND HANDRAIL ASSEMBLY
317-184-001	1		LEFT HAND HANDRAIL ASSEMBLY
317-185-001	1		HOOD ASSEMBLY
IN PLASTIC ZIP LOCK BAG	1		
317-187-002	1		INSTRUCTIONS - TREADMILL
317-187-003	1		TEST BUTTON

**CAUTION!**  
**DON'T PINCH WIRES  
UNDER RAIL!**

SEE ILLUSTRATION 1-1 OR 1-2  
FOR WIRING HOOKUP AT BOARD

ROUTE POWER CORD THRU CLAMP  
CLAMP-SUPPORT  
317-160-092  
LW 5/16 HI-COLLAR  
001-1738  
HSHCS 5/16 X 3.0  
001-1737  
PLUG-DOME  
317-160-059  
LW-5/16" INTERNAL TOOTH  
001-1735  
4X  
HSBICS 5/16-18 X 1  
001-1759  
4X



WIRE FROM ESB PUSH  
ON TWO SHOWN TERMINALS  
ILLUSTRATION 1-1  
MAIN CONTROL BOARD DETAIL  
FOR TMX 425

NOTE: SEE ILLUSTRATION FOR HANDRAIL  
AND HARDWARE PLACEMENT

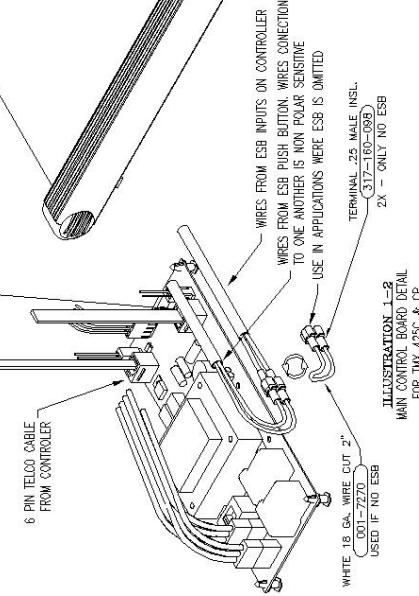


ILLUSTRATION 1-2  
MAIN CONTROL BOARD DETAIL  
FOR TMX 425C & CP

### Check unit for proper operation.

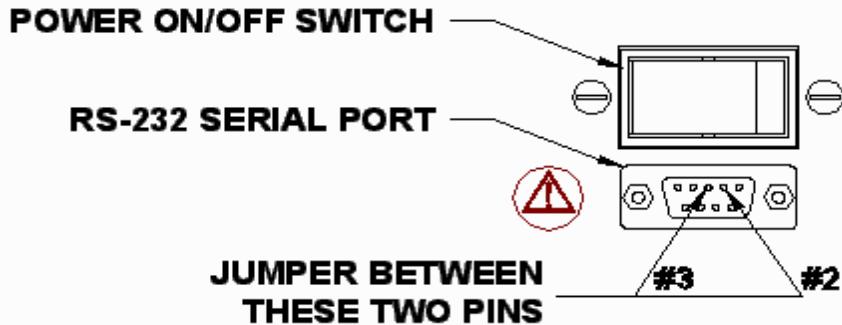
If unit has no power check ESB (Emergency Stop Button) to assure the button is not pressed and wires are connected at board.

To check unit for proper operation, perform Test Plug Procedure ref chapter 4-5

## Test Plug Procedure (RS232 Units Only)

1. Turn the power "OFF" at the treadmill.
2. Disconnect RS232 interface cable from the treadmill and plug in the test connector.
3. Hold the button down on the test connector and turn treadmill power "ON". Continue holding until treadmill begins to elevate.
4. Once this is initiated, with each push of the button the treadmill should elevate 5% grade.
5. When the treadmill reaches 20% elevation the next push of the button will start the treadmill running belt.
6. With each push of the button the treadmill will increase speed by 2.5 miles per hour.
7. Once the treadmill reaches 10 mph, each push of the button will bring the speed down 2.5 miles per hour and simultaneously lower the elevation level by 5% increments.
8. When minimum speed and elevation is reached the next press of the button will cause the treadmill running belt to stop.
9. Remove the test connector.
10. Reconnect the RS232 interface cable.

### IF TEST PLUG IS NOT AVAILABLE



Once treadmill is in place and operational, the belt tracking should be checked and adjusted if necessary.

## Procedure for Belt Tracking and Alignment

### *Tools Required*

1/4-in. Allen wrench

### Running Belt Adjustment



**CAUTION: Because this adjustment is not covered under your warranty, it is important that you review these instructions thoroughly before proceeding.**

---

The TRACKMASTER® patented MasterTrack® Belt Tracking System significantly reduces the need to adjust the belt on your TRACKMASTER® treadmill. However, when you operate your treadmill for the first time, you may need to adjust the tracking of the belt to conform to your floor. You may also need to adjust the tracking if you move the machine to another location. Your running belt should remain centered, although a slight amount of movement to the left or right is normal during use. Do not allow the running belt to travel all the way to either side.

To adjust the belt tracking, do the following:

1. Turn the treadmill's power switch to ON.

---

#### **WARNING**



**CAUTION: Do not stand on the running belt when starting the treadmill. You could fall, causing serious injury.**

---

2. Increase the speed to 3 mph.
3. Observe the left side of the running belt as it travels over the rear roller. If the belt runs to the right side of the roller, turn the right bolt one-quarter turn clockwise, and turn the left bolt one-eighth turn counterclockwise.



Note: When tightening one side of the belt, always loosen the opposite side one-half as much. This procedure provides finer control, with a smaller impact on belt tension.

---

4. Check the belt after 2 minutes, with the treadmill running at approximately 7 mph. If the belt does not correct itself, continue with slight turns until the belt is in the center of the rear roller. If the belt runs toward the left, use the left adjustment.



Note: Uneven floors accelerate belt misalignment. This situation may require larger and more frequent adjustments to prevent belt damage.



Note: When adjusting belt misalignments make sure V-Guide is not riding up on the front and rear roller.

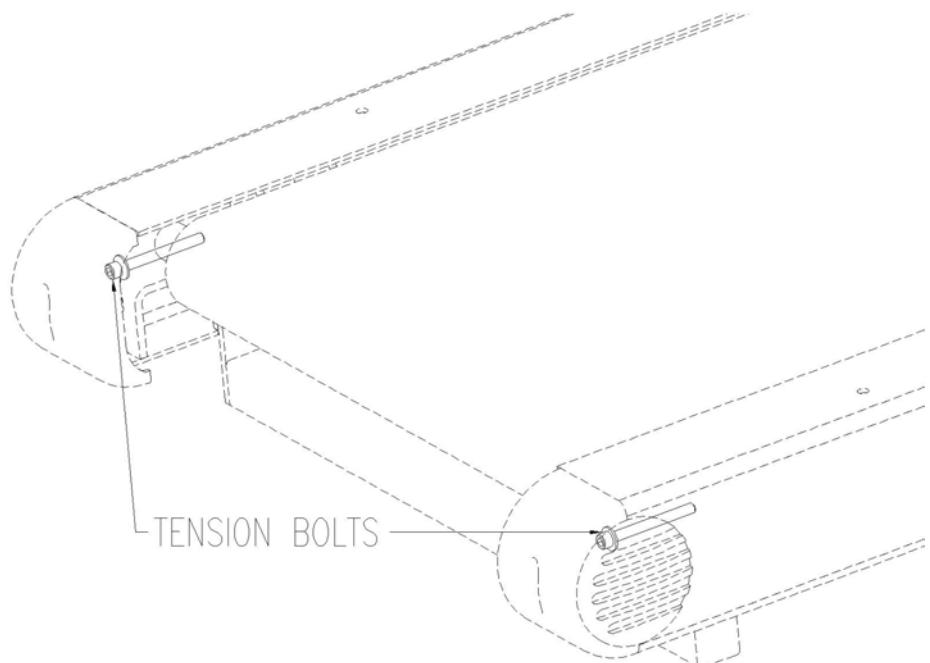
## Belt Tension Adjustment

The running belt may stretch and loosen with regular use. This looseness is noticeable when the belt tends to hesitate or stick. If the belt is loose and slipping, see illustration below.

1. Turn the treadmill's power switch to ON.
2. Start treadmill and increase to 1 mph
3. Start walking on the treadmill, grab handrail and apply pressure with your foot to create resistance on running belt.
4. If running belt start slipping on front drive roller, tighten both tension bolts  $\frac{1}{2}$  turn (Clockwise).
5. Repeat steps 2 thru 4 until running belt stop slipping.



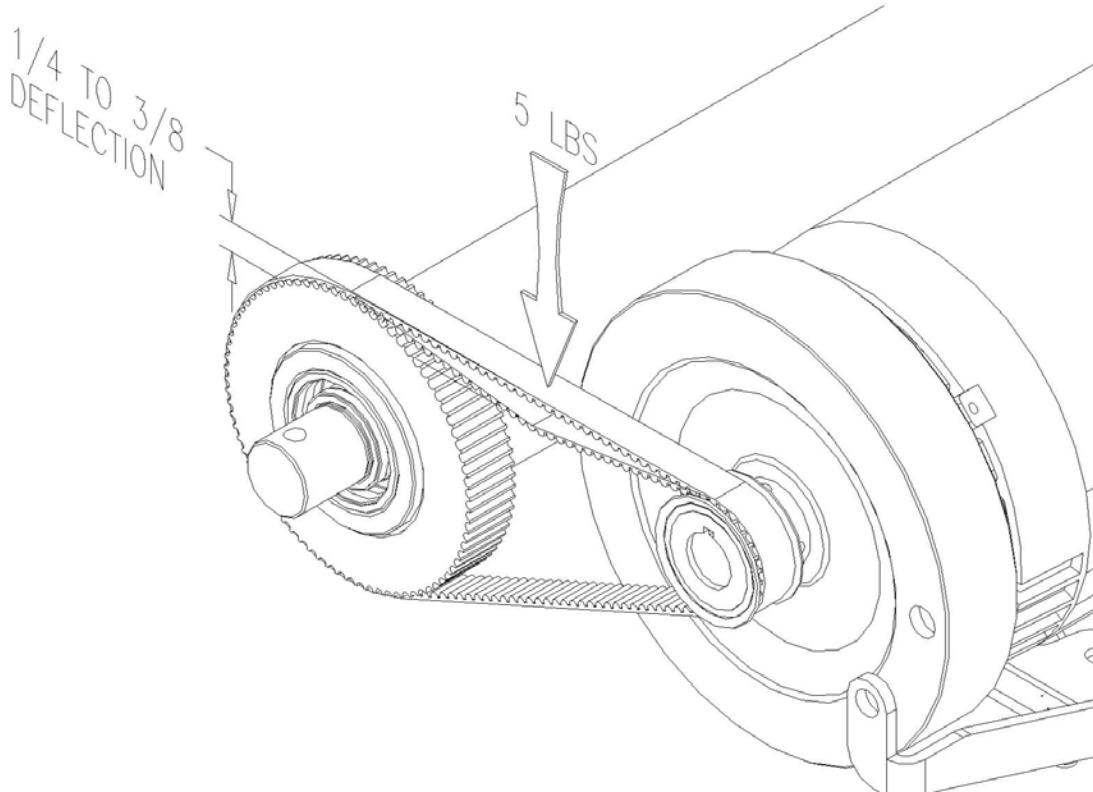
Note: When running belt is too tight the edge of belt will curl causing premature running belt failure.



## Drive Belt Tension Adjustment

The drive belt may stretch and loosen with regular use. This looseness is noticeable when you may here a flapping noise. If the drive belt is loose, see illustration below.

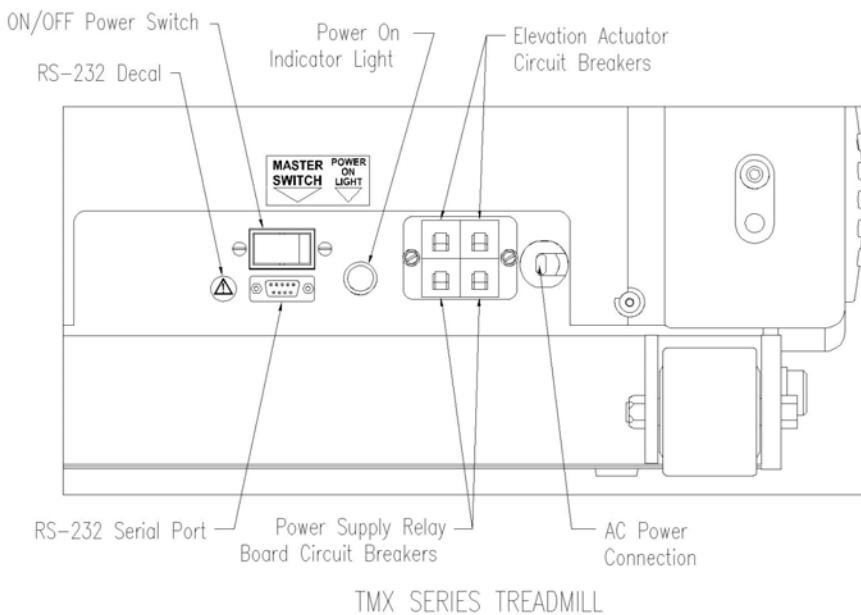
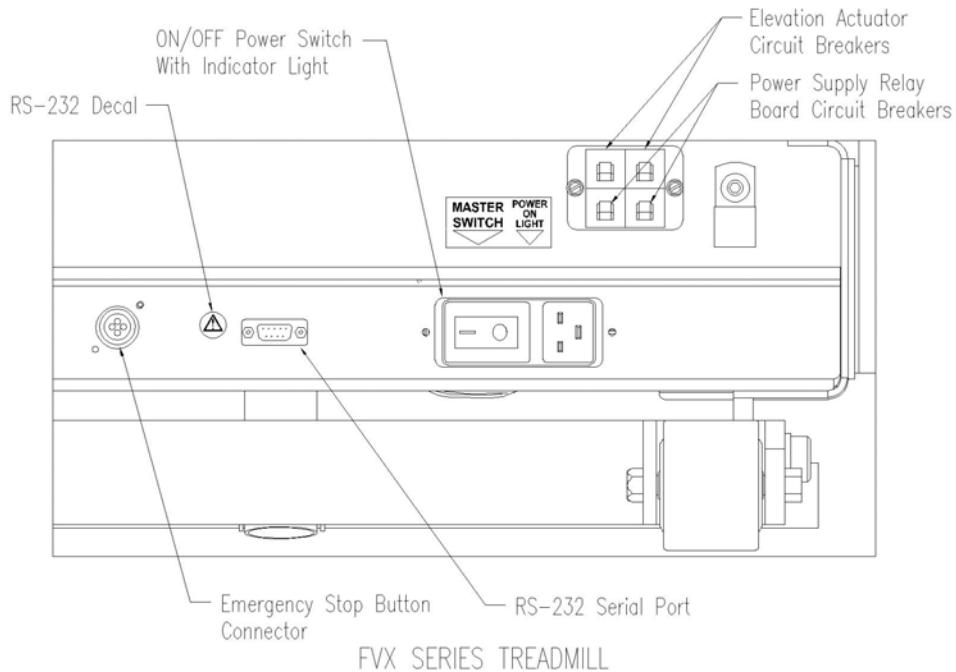
1. Turn the treadmill's power switch to OFF.
2. Press down on drive belt in between motor and front roller with approximately 5 lbs of force.
3. The drive belt should deflect approximately  $\frac{1}{4}$ " to  $\frac{3}{8}$ ".
4. If deflection is more than  $\frac{3}{8}$ "; see **Motor Pan Assembly Chapter 13 for detail drawing.**
5. Loosen 4 Motor mounting nuts on underside of treadmill.
6. Adjust Motor tension adjustment. FVX Series is located outside front; TMX Series is located inside motor pan.
7. Turn adjustment tension nut equally to assure drive belt alignment.
8. Make small adjustments until drive belt deflection approximately  $\frac{1}{4}$ " to  $\frac{3}{8}$ "



Note: When drive belt is over tensioned, the belt tension will cause motor noise. This could result in premature motor life failure.

## Connector and switch locations

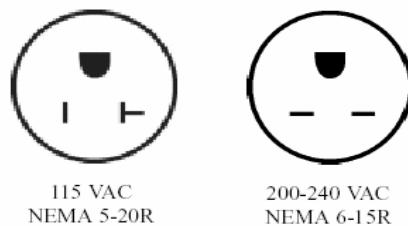
The illustration below shows the various connectors and switches located on the base of the treadmill.



## Power requirements

### Grounding Instructions

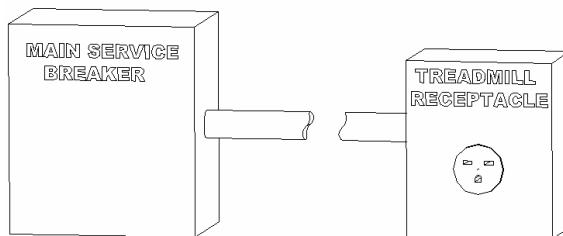
This product is equipped with a three-wire ground-type plug. The plug will fit into only a grounding-type outlet. This is a safety feature – do not disable the plug's third (grounding) pin with an adapter! Contact a qualified electrician if you are either (1) unable to insert the plug into your outlet, or (2) uncertain that the outlet is grounded and meets local codes.



### Dedicated circuit

A dedicated circuit is a power outlet reserved for the exclusive use of your treadmill. This requires a power line to be routed from the main breaker box or sub-panel to the power outlet for the treadmill. The outlet should not be shared with any other components.

**NOTE: In 110V applications, a 20 AMP High Magnetic type circuit breaker is required for use.** This is to Prevent the breaker from being thrown by a temporary high current draws when the treadmill is switched on. For Square D service box use Part number Q0120HM. For GE Service Box use Part Number THQL1120HM. Contact your distributor for further information regarding this type of breaker.



## Operating and Storage Condition Recommendations

Operating Temperature Range: 0 to +40 deg. C (+32 to +105 deg. F).

Storage Temperature Range: -20 to +70 deg. C (-4 to +158 deg. F).

Operating and Storage Relative Humidity Range: 8% - 80%, non-condensing.

Altitude: -50 to 10,000 feet.

## Installation After Long Period of Storage

---

### WARNING



Storage exceeding three years, **Contact Factory Immediately** prior to plugging in treadmill. Failure to do so will cause inverter drive to **FAIL!**

---

If input power has not been applied to the drive for a period of time exceeding three years (due to storage etc), the electrolytic DC bus capacitors within the drive can change internally, resulting in excessive leakage current. This can result in premature failure of the capacitors if the drive is operated after such a long period of inactivity or storage.

---

### WARNING



Severe damage to the inverter drive can result if it is operated after a long period of storage or inactivity without reforming the DC bus capacitors! Contact the factory for proper instruction.

---



# *Operating Instructions*

5

## **Electrical safety tests**

The Electrical safety of the installation is the responsibility of the customer, not TRACKMASTER®. In hospitals, contact your in-house biomedical technician, electrician, or technically qualified personnel. Outside of hospitals, contact your hospital affiliation for these services. Otherwise contact Full Vision Inc. and open a customer-billable service call.

- AC line voltage test to verify the outlet is properly wired.
- Ground continuity test to verify all exposed metal is properly grounded.
- Leakage tests to verify the equipment passes all applicable leakage tests.

Your in-house biomedical technician, electrician, or technically qualified personnel can find instructions on performing these tests in the maintenance section later in this manual.

## **Operating Controls**

The treadmill has two operating controls, the power switch and the emergency stop button.

- The power switch controls the AC power to the treadmill. The on position applies power. The off position removes power.
- The Emergency stop button (ESB) is a safety device for use in emergency situations to stop the treadmill. Push the ESB and the treadmill will stop, but the belt will not lock. To release the ESB, turn the button clockwise and it will return to its position.

## **Controlling the treadmill**

- Turn the power switch on (green light will come on).
- Use the controlling system to start the treadmill, adjust the treadmill speed and grade, proceed through the exercise phases, terminate the exercise session, and turn off the treadmill.

## Safe Operation of Treadmill

TRACKMASTER® treadmills meet or exceed all applicable product safety requirements for motor-operated exercise machines. TRACKMASTER® is listed by Engineering Testing Laboratories (ETL); however, all motorized equipment is potentially dangerous if used incorrectly. Before using the TRACKMASTER® treadmill, follow all precautions listed in this chapter, and read the entire Owner's Manual thoroughly. Use the TRACKMASTER® treadmill only as described.

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### WARNING



Serious injury could result from loss of balance or falls. To reduce the possibility of serious injury, carefully observe the following precautions.

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- Read the Owner's/Service Manual before operating the treadmill.
- Wear appropriate clothing and running shoes.
- Place the treadmill on a level, unobstructed surface.
- Connect the treadmill to a dedicated, properly grounded outlet that supplies the correct voltage and amperage.
- Never stand on the belt when starting the treadmill.
- Do not step onto or off the belt when it is moving.
- Always slow the treadmill to its minimum speed before stopping.
- Never allow children or pets near the machine without careful supervision.
- Keep hands, feet, and clothing away from any moving parts.
- Never drop or insert objects into any opening.
- Avoid draping towels over the safety side rails or dropping objects on the belt while the treadmill is running.
- Never place any foreign object on the treadmill.
- Verify no one is near the elevation mechanism before operating to avoid pinch points.
- Operator should be aware of speed malfunction and be ready to assist patients and stop treadmill if necessary.
- Operator should be aware of elevation malfunction and be prepared to assist patient and stop treadmill if necessary.
- Operator should always be aware of improper treadmill response to commands.
- Check treadmill before use. This includes:
  - Check power cord connection.
  - Check emergency stop button for proper operation.
  - Check interface cable to ensure it is secure.
  - Verify ECG communication is correct.
- Verify operator knows how to stop the treadmill in the event of malfunction or emergency.
- Make operator aware if treadmill is not responding properly to commands.
- Keep all cords clear of operator to avoid trip hazards.
- Operator should not wear loose fitting nylon material when exercising on treadmill to avoid generating ESD.
- Operator needs to be aware of and note any components of the treadmill that are loose.
- Do not allow moisture or oils to accumulate on treadmill, creating a slip hazard.

**WARNING**

Serious injury or death could result from electric shock. To reduce the possibility of electric shock, carefully observe the following precautions.

- Connect the treadmill only to a dedicated, properly grounded outlet. See “Grounding Instructions” on the next page.
- Always unplug the treadmill from the electrical outlet before cleaning it.
- To disconnect the treadmill, set the power switch to the OFF position, and remove the plug from the outlet. When the power is off, the green light next to the power switch is dark.
- Never operate the unit with a damaged power cord or plug.
- Never operate the unit when it is wet.
- Never operate the unit if it is not operating properly.
- Never use extension cords.
- Keep the power cord out of traffic areas and away from heated surfaces.
- Always unplug the machine before service and maintenance are performed.
- Never use the treadmill outdoors.
- Operator should be aware of any shock when touching the treadmill and act accordingly.
- Treadmill should be serviced by authorized technicians only.
- Power cord should be routed through clamp and kept clear of elevation mechanism.
- Personnel present when treadmill is in use need to be aware of the distinctive odor of hot electrical components.

**WARNING**

Serious injury or death could result from electric shock occurring during defibrillation.

Never allow patient or operators near treadmill during defibrillation.

**WARNING**

Before beginning any exercise program, check with your physician to determine your present physical condition and capabilities regarding aerobic exercise. Know your limits and requirements for warm-up, target, and maximum heart and breathing rates; duration of exercise; cool-down periods; and recovery heart rates. Stop exercising immediately if you feel faint or dizzy, or if you experience symptoms of overexertion.

**WARNING**

Serious injury or death could result from operating treadmill in the presence of explosive or flammable vapors and antiseptics.

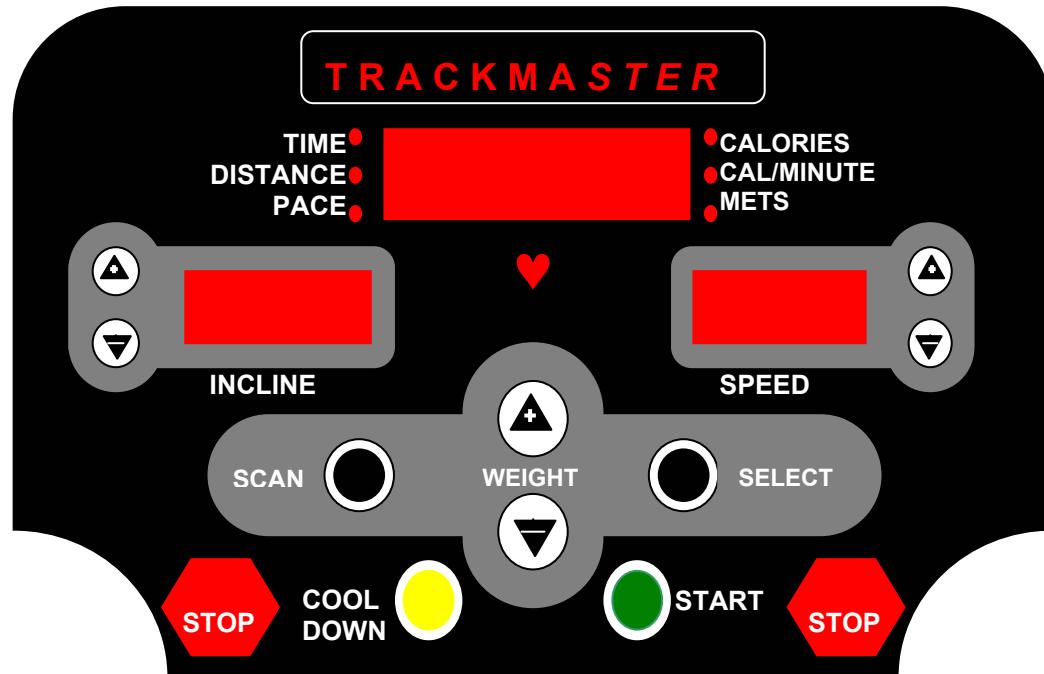
**Emergency stop button check**

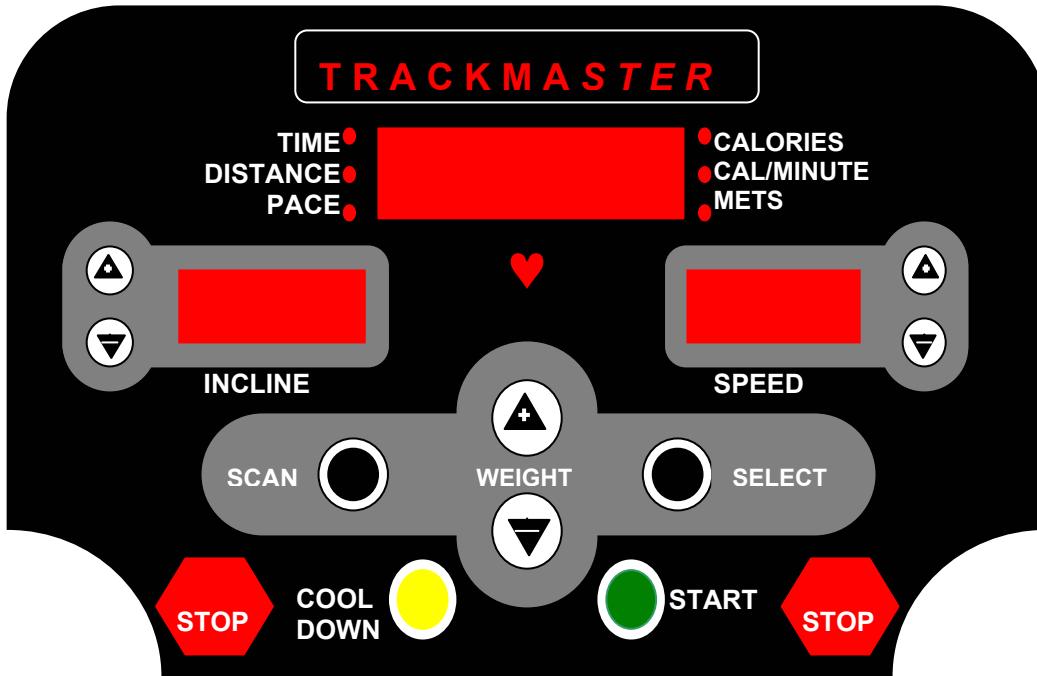
- With the belt moving at a relatively high speed, press the ESB. The treadmill will stop (not abruptly), once stopped, turn the button clockwise to release.
- Use the controlling equipment to terminate the exercise session and then turn off treadmill.

## Operation of Manual Treadmill

Treadmill speed and elevation control is selected from the control console front panel. Basic description of the switches found on the manual control console.

Switch	Result
Start	Press to immediately start run belt start speed set to 0.5-1.0 mph.
Stop	Press to immediately stop run belt and reset elevation to 0 %
Scan	Press to scan display between time/distance/pace/calories/calories per minute/METS/heart rate
Select	Press to select which function to be displayed
Incline Up	Set elevation grade in percentage, increase in increments of 0.5%
Incline Down	Decrease elevation grade in percentage, decrease in increments of 0.5%
Speed Up	Select speed, increase speed adjustable in increments of 0.1 mph
Speed Down	Select speed, decrease speed adjustable in increments of 0.1 mph
Cool Down	60 second cool down period, belt speed and elevation gradually come to a stop and reset to 0% respectively.
Weight +	Increase user weight amount prior to beginning exercise. Entering correct user weight is essential to calorie and MET count being accurate.
Weight -	Decrease user weight amount prior to beginning exercise. Entering correct user weight is essential to calorie and MET count being accurate.



**To enter Self-Test**

Turn treadmill off

Turn Treadmill on. Press and hold Incline + and -.

**Observe Time/Distance display >**

Advance to light tests by pressing SELECT.

**Observe each leg of all readouts is sequentially lit. >**

The six indicator lights on either side of the time distance window along with the heart rate display also light sequentially.

Advance to next test by pressing SELECT

The number 8 passes from left to right, from Incline to Speed to Time/Distance Display. The six indicator lights located to the right and left of the Time/Distance window along with the Heart Rate indicator light as the 8 passes from the Incline to the Speed window.

Advance to next test by pressing SELECT

All Lamps Test, all readouts and indicators lit.

Advance to next test by pressing SELECT

**Observe Time/Distance display >**

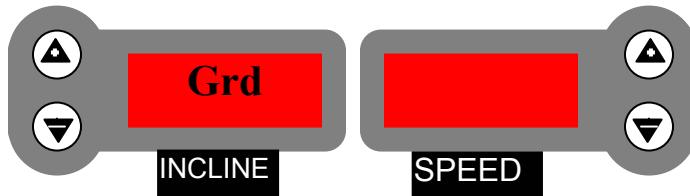
Pressing the switches in a specific order advances the count in the Time/Distance window.



5 1	START	5 5	INCLINE +	5 9	COOL DOWN
5 2	STOP	5 6	INCLINE -	5 10	WEIGHT +
5 3	SCAN	5 7	SPEED +	After WEIGHT - is pressed, Incline test is initiated	
5 4	SELECT	5 8	SPEED -	5 11	WEIGHT -

Press Incline + to increase elevation. Value in the Time/Distance window increases as elevation grade increases. > The numbers in the Time/Distance window is the output of the elevation sensor as read by the control console.

Press Incline – to decrease elevation. Value in the Time/Distance window will decrease as incline decreases

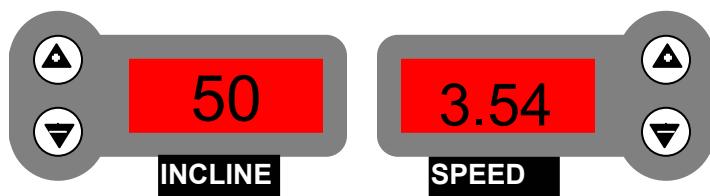


**WARNING:** Prior to advancing to the belt test, clear the running belt. Do not stand on the running belt.

Advance to next test by pressing STOP.

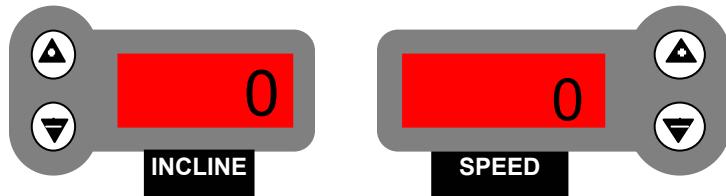
Belt is displayed in Time/Distance window. Run belt is moving. 50 is displayed in the Incline window, the value in the Speed window is the output of the Speed Sensor as read by the Control Console. > 50 is the PWM sent from the control console to the FG309 Power Supply. To increase the PWM output and increase the belt speed, press Speed +. To decrease the PWM output press Speed -.

Pressing either Incline + or Incline -, will adjust the Roller Ratio. Changing this value does not permanently change the roller ratio. The numbers the control console uses to calculate speed are affected.



Advance to next test by pressing STOP.

**Heart Rate display test, Incline window displays POLAR® heart rate, Speed window displays contact heart rate >**



Advance to next test by pressing select



**Test is a processor test, which requires no user input. Observe EE displayed in Time/Distance window and PAS displayed in Speed window to verify successful test. >**



Advance to next test by pressing select



**Watchdog is run prior to returning console to normal operating mode. >**



**Treadmill cycles through reset mode prior to coming up in Normal Operating Mode >**



## FVX\_C, TMX\_C Manual Controller

Software Download, Control Console Parameters, Speed/Elevation Calibration and Self-test

The following procedures provide instructions to fully utilize the upgrade, diagnostic and calibration capabilities of the manual controller. Procedures requiring special tools and or personnel are identified at the beginning of the procedure.

### Downloading Software At Control Console

**Tools/Personnel Required:** Laptop or Desktop PC with Windows 95 or 98, download program & software, serial data cable, small Philips screwdriver. Two persons may be required for step 2.

1. Turn treadmill main power switch to OFF position.
2. Remove (2) Philips screws securing small metal plate covering RS232 port on backside of control console. (See Figure 1-4)
3. Press the **SELECT** and the INCLINE (-) keys simultaneously; turn on the main power, release the **SELECT** and the INCLINE (-) keys when you hear a continuous tone. (This may take numerous attempts, as the software has to see both keys contacted at the same time. This is done to impede the user from inadvertently accessing the programming mode.)
4. Click on **GP32DLG** Serial Download icon on laptop or desktop computer. (**ICON**)
5. Click on **Load S FILE**.
6. Select software version provided for download.  
(software version XX)
7. Connect serial cable from computer to treadmill control console.
8. Click on **Connect**.
9. Click on **Go**.
10. Click on **Program All** (Continuous tone of control should begin to pulsate while software is downloading. When pulsating tone changes back to continuous tone, download is complete).
11. Click on **Disconnect** and remove serial cable from control box.
12. Turn OFF treadmill main power, replace small metal plate and Phillips screws and then turn main power switch ON. **VER** will appear in speed window along with the new software version number in the time window (See Figure 1-2). This step is done to verify that the new software has been successfully downloaded.

## FVX\_C, TMX\_C Manual Controller

Software Download, Control Console Parameters, Speed/Elevation Calibration and Self-test

The following procedures provide instructions to fully utilize the upgrade, diagnostic and calibration capabilities of the manual controller. Procedures requiring special tools and or personnel are identified at the beginning of the procedure.

### Downloading Software At Control Console

**At  
Control  
Console**

1. Turn treadmill main power switch to OFF position.
2. Remove (2) Philips screws securing small metal plate covering RS232 port on backside of control console. (See Figure 1-4)
3. Click on **Reprogram Flash** Serial Download icon on laptop or desktop computer. **(ICON)**
4. Click on **Target System** and click on Motorola GP32 to insert into window.
5. Click on **Load Binary File**.
6. Select software version provided for download.  
(software version XX)
7. Connect serial cable from computer to treadmill control console.
8. Press the **SELECT** and the INCLINE (-) keys simultaneously; turn on the main power, release the **SELECT** and the INCLINE (-) keys when you hear a continuous tone. (This may take numerous attempts, as the software has to see both keys contacted at the same time. This is done to impede the user from inadvertently accessing the programming mode.)
9. Click on **Program Flash** (Continuous tone of control should begin to pulsate while software is downloading. When pulsating tone changes back to continuous tone, download is complete).
10. Click on **OK** and remove serial cable from control box.
11. Turn OFF treadmill main power, replace small metal plate and Phillips screws and then turn main power switch ON. **VER** will appear in speed window along with the new software version number in the time window (See Figure 1-2). This step is done to verify that the new software has been successfully downloaded.

**Tools/Personnel Required:** Laptop or Desktop PC with Windows 95 or newer, download program & software, serial data cable, small Philips screwdriver. Two persons may be required for step 2.

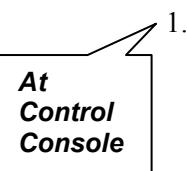
**At  
Desktop  
or Laptop  
PC**



Reprogram Flash.lnk

## Manual Control Console Programming Mode

With main power ON and displays lighted, press the **DOWN INCLINE** key and the **UP SPEED** key at the same time. When successful, the Center display will read the following options:



1. **P 1** will appear in the Center Display. Choose “bri” for MPH -or- “Si” for KM/H. Using the up or down incline key, select “bri” or “Si”, then press the SELECT key.

Center Display	Action Required	Ct	Parameter Options	Observe
P 1	Select with INCLINE arrow keys	Sts	“Bri” or “Si”	bri appears in the Speed Display

2. **P 2** will appear in the Center Display with default setting of 0.5 for MPH or 0.7 for KM/H in the Speed Display. Press SELECT key.

Center Display	Action Required	Ct	Parameter Options	Observe
Minimum Speed	Enter minimum speed needed using numeric keypad	Trt speed	0.5 mph is minimum speed for 220v units. 1.0 mph is minimum speed limit for 110v units.	0.5 appears in the Speed Display

3. **P 3** will appear in the Center Display with a default setting of 12.0 for MPH or 19.3 for KPH in the Speed Display. Press SELECT key.

Center Display	Action Required	C	Parameter Options	Observe
P 3	Enter maximum speed needed using SPEED arrow keys	T limit	12.0 mph is max speed for 220v units. 10.0 mph is max speed for 110v units.	12.0 appears in the Speed Display

4. **P 4** will appear in the Center Display with default setting of 25.00 in the Incline Display. This parameter sets the calibration grade and does not limit elevation. For fitness units use INCLINE arrow key and change to 15.00 and then press START key. For medical units leave value at 25.0 and press SELECT key.

Center Display	Action Required	Ct	Parameter Options	Observe
P 4	Enter Max Cal Grade using INCLINE arrow keys	M grade	15 for 15% elevation fitness units 25 for 25% elevation medical units	25.00 appears in the Speed Display

5. **P 5** will appear in the Center Display with default setting of 15.0 in the Incline Window. Using the numeric keypad, change to 25.00 for medical units. For fitness units use default of 15.0. Press SELECT key.

Center Display	Action required	Ct	Parameter Options	Observe
P 5	Enter Maximum Grade needed INCLINE arrow keys	M Grade	15 for 15% elevation fitness units 25 for 25% elevation medical units	15.0 appears in the Center Display

6. **P 6** will appear in the Center Display with default setting of 4 in the Speed Window. Do Not Change This Number. Press SELECT key.
7. **P 7** will appear in the Incline Display with default setting of 3175 n the Center Display. *Do not change this Number unless instructed to by the manufacturer.* Press SELECT key.
8. **P 8 will appear in the Center Display.** This setting used when the treadmill has the Contact Heart-rate feature. If the treadmill only has the Polar ® Heart-rate feature, use INCLINE arrows to change setting to **POLAR H-RATE**. Press SELECT key.

Center Display	Action Required	Changes Affect	Parameter Options	Observe
P 8	Select Serial Heart-rate or Polar Heart-rate by using INCLINE arrow keys	Select combined Polar & contact heart rate or Polar only	Select Polar ® H-rate for chest-strap only	Hr appears in the Incline Display, Pu appears in the Speed Display

9. **P 9** will appear in the Center Display. Use the up Incline key to change to **Normal SCO**. Medgraph SCO setting works only when the treadmill is used in conjunction with a Medgraphics® Stress system. Press SELECT key.

Center Display	Action Required	Changes Affect	Parameter Options	Observe
P 9	Select Medgraph SCO or Normal SCO by using incline arrow keys	Selection of Medgraph SCO allows serial communication with the Medgraphics® systems only. Selection of Normal SCO allows serial communication with other stress systems	Medgraphics SCO Normal SCO	“SCO” appears in the Incline Display

10. **P 10** will appear in the Center Display. Use Incline down key to change to ON if RS232 port is to be used. Otherwise, RS232 port should remain off. Press SELECT key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
P 10	Select 232 Comm Off or 232 Comm On by using incline arrow keys	Selecting 232 Comm Off cuts off RS232 port Selecting 232 Comm On restores RS232 port communication	232 Comm Off 232 Comm On	“232” appears in the Incline Display

11. **P11** will appear in the Center Display with default setting of 15:00 in the Speed Display. Parameter sets the number of minutes displayed in the Speed Display. If no change is needed press START key. If a change is needed, use SPEED arrow keys to make change, then press START key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
P 11	Enter Time limit desired using SPEED arrow keys.	Workout Time	Timer Range: 1:00 minute to 99:00 minutes.	“15:00” appears in the Speed Display.

12. **P 12** will appear in the Center Display. The parameter is the fixed timer that limits the treadmill workout time. Parameter activates time limit selected in step 15. Press START key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
P 12	Activate time limit control using the INCLINE arrow keys.	Activates Workout Time Limit set in step 15.	Timer Range: 1:00 minute to 99:00 minutes.	“OFF” appears in the Speed Display.

13. **P 13** will appear in the Center Display with default setting of 60 in the Speed Display. Parameter is the fixed timer that limits the treadmill workout time. Parameter is used to set the Cool Down Time Period. Press START key.

Center Display	Action required	Changes Affect	Parameter Options	Observe
P 13	Enter Cool Down time desired using the SPEED arrow keys	Sets Cool Down time period	1 second to 99 seconds	“60” appears in the Speed Display.

14. **HRS** will appear in the Incline Display. This is unit's total use time. *Parameter value cannot be changed.* Press SELECT key.

15. **DIS** will appear in the Center Display. This is the units' total mileage.

*Parameter value cannot be changed.* Press SELECT key

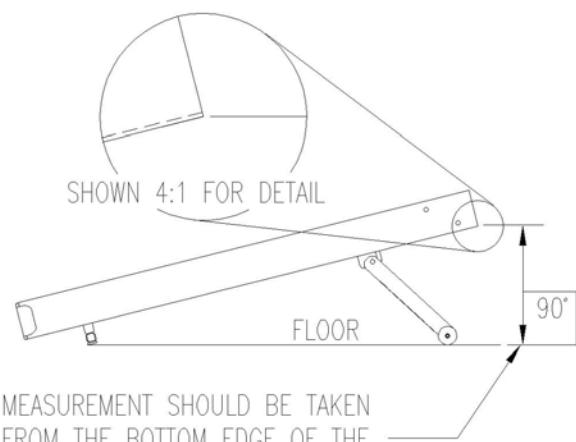
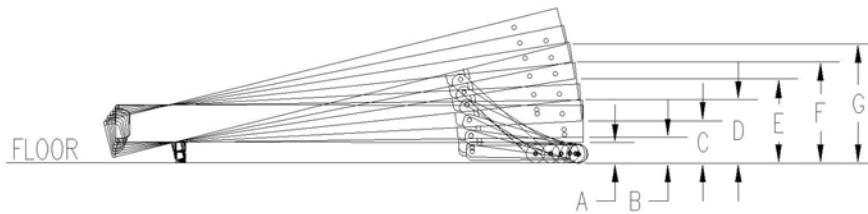
16. **CALS** will appear in the Center Display. This function is used to calibrate speed. Press the down INCLINE key, and the up SPEED key simultaneously. **CAL** will appear in the Center Display. Press START key. When the treadmill has completed this process, the Center Display will read DONE. If calibration fails, **SBAD** will appear in the Center Display. See trouble shooting procedures for SBAD. Press SELECT key.

Center Display	Action Required	Changes Affect	Parameter Options	Observe
CALS	Press up SPEED and down INCLINE keys simultaneously to enter Speed Calibration Mode	Adjusts speed accuracy at all speed ranges; low, medium, and high speeds	N/A	CAL appears in Message Center

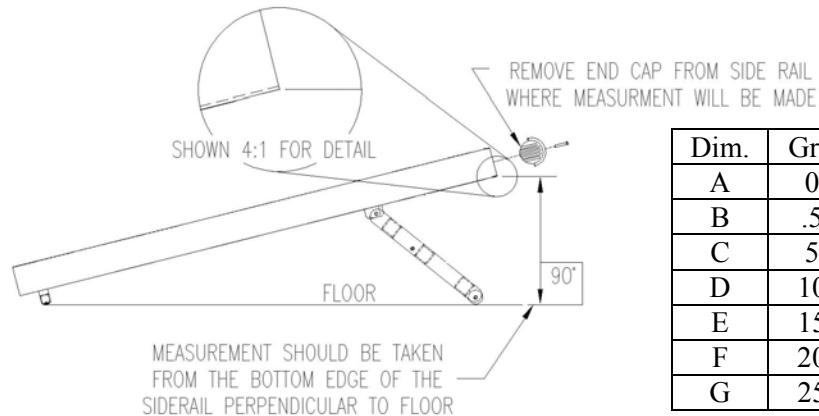
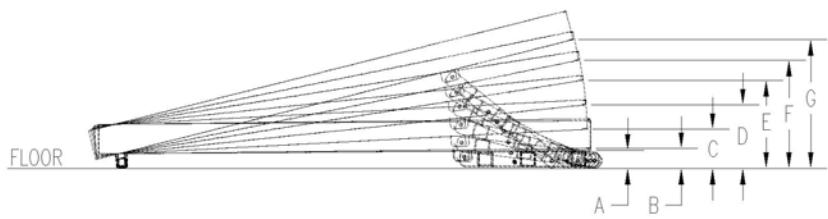
17. **CALE** will appear in the Center Display. This function is used to reset the elevation grades. Press the down INCLINE key, and the up SPEED key simultaneously for calibration. Refer to Elevation Calibration Procedure. Press SELECT key to skip and go into normal workout mode. Refer to FVX325 and TMX425 Series elevation charts.

Center Display	Action Required	Changes Affect	Parameter Options	Observe
CALE	Press and hold Enter key and Stop key simultaneously to enter Elevation Calibration Mode	Adjusts elevation % accuracy at all ranges	N/A	Controller will shortly flash reset phase (Figure 1-1) followed by software version phase (Figure 1-2) and finally idle phase (Figure 1-3).

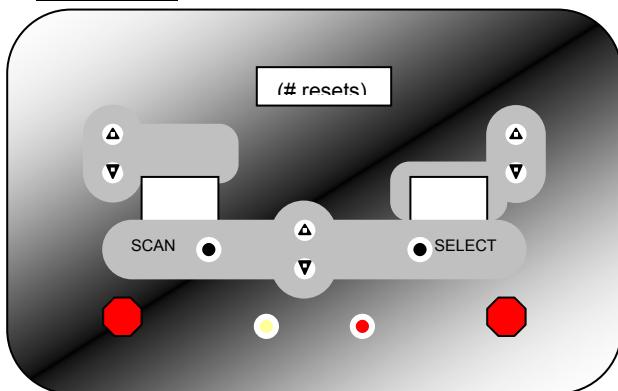
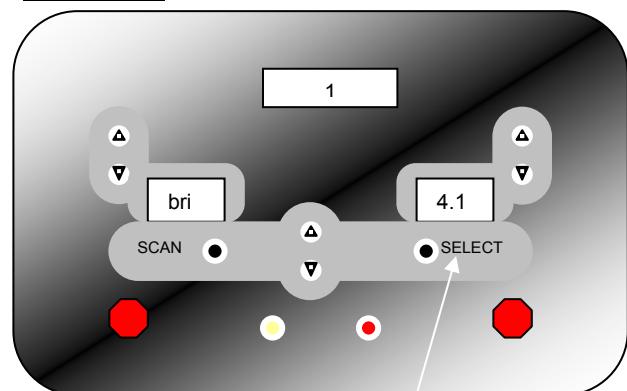
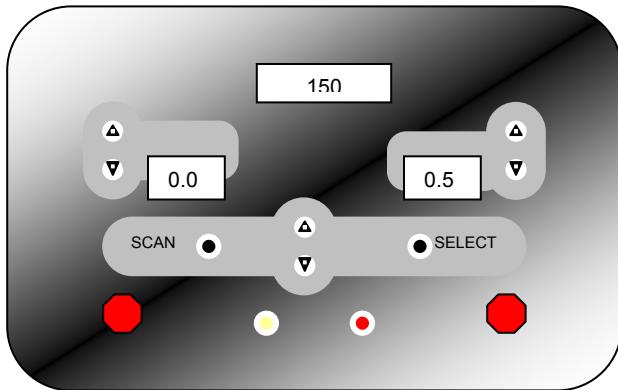
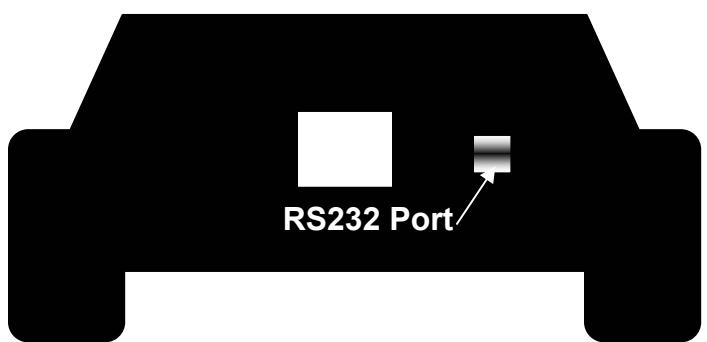
### FVX325 Series Elevation Chart



Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.32"	[84.3mm]
C	5%	5.62"	[142.8mm]
D	10%	8.42"	[223.8mm]
E	15%	11.20"	[284.5mm]
F	20%	13.48"	[342.4mm]
G	25%	15.84"	[402.4mm]

**TMX425 Series Elevation Chart**

Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.36"	[85.2mm]
C	5%	6.59"	[167.3mm]
D	10%	10.72"	[272.2mm]
E	15%	14.85"	[377.2mm]
F	20%	18.22"	[462.9mm]
G	25%	21.71"	[551.5mm]

**Figure 1-1 Reset Phase****Figure 1-2 SW Version Phase****SW Version Number****Figure 1-3 Control Console Idle Phase****Figure 1-4 Control Console Backside**

## Operation of Programmable Treadmill

Access one of ten installed programs or up to 20 individual user programs by pressing the Program Select switch.

### QUICK START

Press the START switch for a quick start of the treadmill, no user information required, a three-second count down is displayed before the treadmill belt begins to move. Speed and Incline may be adjusted by pressing the plus or minus keys in the speed or Incline windows. Elapsed time and distance are displayed in the Time and Distance windows.

### MANUAL

15 stage program, user will set time or distance requirement. Maximum elevation may be increased/decreased during exercise. Speed default is 0.5 mph (.7Kmh), speed may be adjusted at any time during exercise. Time default is 30 minutes.

1. Press START or ENTER switch.
2. Use the number keypad to enter weight.
3. Press START or ENTER switch.
4. Press 1 to enter a workout time limit or 2 to enter a distance limit.
5. Use the number keypad to enter to enter a time/distance limit.
6. Press START or ENTER switch.
7. Press START switch to begin workout.
8. A three-second countdown displayed prior to belt start.
9. Speed/Incline may be adjusted by pressing the plus or minus switches in the Speed/Incline windows.
10. Press one of the STOP switches to bring the treadmill running belt to a stop; this will also reset the elevation.
11. Press the COOL DOWN switch to begin a sixty-second cool down phase.
12. Completion of time or distance will start a sixty-second cool down phase.

## FOREST WALK

15 stage hill climbing workout, default maximum elevation setting 7.0%. Maximum elevation may be increased/decreased prior to and during workout. Speed default is 2.0 mph (3.2Kph), speed may be adjusted at any time during workout. Time default is 30 minutes.

1. Press START or ENTER switch.
2. To alter program maximum elevation, press the incline plus or minus switches. Increasing or decreasing maximum elevation will scale entire workout.
3. Press START or ENTER switch.
4. Use the number keypad to enter weight.
5. Press START or ENTER switch.
6. Press 1 and enter a workout time limit or 2 and enter a distance limit.
7. Use the number keypad to enter to enter a time/distance limit.
8. Press START or ENTER switch.
9. Press START switch to begin workout.
10. A three-second countdown displayed prior to belt start.
11. Speed/Incline may be adjusted by pressing the plus or minus keys in the Speed/Incline windows.
12. Press one of the STOP switches to bring the treadmill running belt to a stop; this will also reset the elevation.
13. Press the COOL DOWN switch to begin a sixty-second cool down phase.
14. Completion of time or distance will start a sixty-second cool down phase.

## OZARK TRAIL

15 stage, twin peak program, default maximum elevation setting 10.0%. Maximum elevation may be increased/decreased prior to and during workout. Speed default is 2.0 mph (3.2Kph), speed may be adjusted at any time during workout. Time default is 30 minutes.

1. Press START or ENTER switch.
2. To alter program maximum elevation, press the incline plus or minus switches. Increasing or decreasing maximum elevation will scale entire workout.
3. Press START or ENTER switch.
4. Use the number keypad to enter weight.
5. Press START or ENTER switch.
6. Press 1 and enter a workout time limit or 2 and enter a distance limit.
7. Use the number keypad to enter to enter a time/distance limit.
8. Press START or ENTER switch.
9. Press START switch to begin workout.
10. A three-second countdown displayed prior to belt start.
11. Speed/Incline may be adjusted by pressing the plus or minus keys in the Speed/Incline windows.

12. Press one of the STOP switches to bring the treadmill running belt to a stop; this will also reset the elevation.
13. Press the COOL DOWN switch to begin a sixty-second cool down phase.
14. Completion of time or distance will start a sixty-second cool down phase.

## THE ROCKIES

15 stage, 4- peak program. Default maximum elevation 14%. Maximum elevation may be increased/decreased prior to and during workout. Speed default is 2.0 mph (3.2Kph), speed may be adjusted at any time during workout. Time default is 30 minutes.

1. Press START or ENTER switch.
2. To alter program maximum elevation, press the incline plus or minus switches. Increasing or decreasing maximum elevation will scale entire workout.
3. Press START or ENTER switch.
4. Use the number keypad to enter weight.
5. Press START or ENTER switch.
6. Press 1 and enter a workout time limit or 2 to enter a distance limit.
7. Use the number keypad to enter to enter a time/distance limit.
8. Press START or ENTER switch.
9. Press START switch to begin workout.
10. A three-second countdown displayed prior to belt start.

Speed/Incline may be adjusted by pressing the plus or minus keys in the Speed/Incline windows.

Press one of the STOP switches to bring the treadmill running belt to a stop; this will also reset elevation.

Press the COOL DOWN switch to begin a sixty-second cool down phase.  
Completion of time or distance will start a sixty-second cool down phase.

## INTERVAL

10 stage user created program. Interval program requires user to insert elevation speed and time requirements for each stage. Maximum speed and elevation may be adjusted at any time during exercise. To correct stage information press the CLEAR switch. At the completion of workout, stage information is reset and not saved to the next user of the interval program.

1. Press START or ENTER switch.
2. Press the INCLINE plus switch to setting for segment 1.
3. Press the SPEED plus switch to setting for segment 1.
4. Use the number keypad to enter time duration of segment 1.
5. Press START or ENTER switch.
6. Set the incline, speed and time duration for segments 2-10.
7. Use the number keypad to enter weight.
8. Press START or ENTER switch.
9. Press START switch to begin workout.
10. A three-second countdown displayed prior to belt start.
11. Speed/Incline may be adjusted by pressing the plus or minus keys in the Speed/Incline windows.

12. Press either STOP switch to bring the treadmill running belt to a stop, this will also reset elevation.
13. Press the COOL DOWN switch to begin a sixty-second cool down phase.
14. Completion of time or distance will start a sixty-second cool down phase.

## FITNESS TEST

Single stage 4 minute stress program. User input determines starting speed and elevation. Test score is displayed at the end of test.

1. Press START or ENTER switch.
2. Use the number keypad to enter weight.
3. Press START or ENTER switch.
4. Use the number keypad to enter age.
5. Press START or ENTER switch.
6. Use the number keypad to enter 1 for male, 2 for female.
7. Press START switch to begin workout.
8. A three-second countdown displayed prior to belt start.
9. Speed and elevation determined by user inputs and cannot be adjusted during test.
10. At four minutes, treadmill requires heart rate input. Use the contact heart rate grips, or a POLAR chest strap.
11. Twenty seconds after hear rate inputs are requested, treadmill begins cool down, and fitness test score is displayed in the message center.

## HRC AEROBIC

Aerobic workout designed to maintain a target heart rate determined by user input. POLAR chest strap is required to use this program.

1. Press START or ENTER switch.
2. STRAP TEST checks for heart rate input from POLAR chest strap. If heart rate is not recorded, CHEST STRAP NOT DETECTED is displayed in message center.
3. Use the number keypad to enter age.
4. Press START or ENTER switch.
5. Press the SPEED + switch to select starting speed.
6. Press START or ENTER switch.
7. Use the number keypad to enter weight.
8. Press START or ENTER switch.
9. Press 1 to enter a workout time limit or 2 to enter a distance limit.
10. Use the number keypad to enter to enter a time/distance limit.
11. Press START or ENTER switch.
12. Press START switch to begin workout.
13. A three-second countdown displayed prior to belt start.
14. If actual heart rate is less than target heart rate, elevation will increase. If Actual heart rate exceeds target heart rate elevation will decrease. If elevation equals 0% and actual heat rate exceeds target heart rate the belt will slow down until target heart rate is achieved.
15. Press either STOP switch to bring the treadmill running belt to a stop, this will also reset elevation.

16. Press the COOL DOWN switch to begin a sixty-second cool down phase.
17. Completion of time or distance will start a sixty-second cool down phase.

## HRC FAT BURN

Fat burn workout designed to maintain a target heart rate determined by user input. POLAR chest strap is required to use this program.

1. Press START or ENTER switch.
2. STRAP TEST checks for heart rate input from POLAR chest strap. If heart rate is not recorded, CHEST STRAP NOT DETECTED is displayed in message center.
3. Press the SPEED + switch to select starting speed.
4. Press START or ENTER switch.
5. Use the number keypad to enter weight.
6. Press START or ENTER switch.
7. Press 1 to enter a workout time limit or 2 to enter a distance limit.
8. Use the number keypad to enter to enter a time/distance limit.
9. Press START or ENTER switch.
10. Press START switch to begin workout.
11. A three-second countdown displayed prior to belt start.
12. If actual heart rate is less than target heart rate, elevation will increase. If Actual heart rate exceeds target heart rate elevation will decrease. If elevation equals 0% and actual heat rate exceeds target heart rate the belt will slow down until target heart rate is achieved.
13. Press either STOP switch to bring the treadmill running belt to a stop. This will also reset elevation.
14. Press the COOL DOWN switch to begin a sixty-second cool down phase.
15. Completion of time or distance will start a sixty-second cool down phase.

## 5K TRAINER

5 Kilometer random hill program, maximum elevation default of 15%. Lap presentation displays progress on a 5 km circuit.

1. Press START or ENTER switch.
2. Use the number keypad to enter weight.
3. Press START or ENTER switch.
4. Select maximum elevation grade for random hills.
5. Press the SPEED + switch to select starting speed.
6. Press START or ENTER switch.
7. Press START switch to begin workout.
8. A three-second countdown displayed prior to belt start.
9. If actual heart rate is less than target heart rate, elevation will increase. If Actual heart rate exceeds target heart rate elevation will decrease. If elevation equals 0% and actual heat rate exceeds target heart rate the belt will slow down until target heart rate is achieved.
10. Press either STOP switch to bring the treadmill running belt to a stop. This will also reset elevation.

11. Press the COOL DOWN switch to begin a sixty-second cool down phase.
12. Completion of time or distance will start a sixty-second cool down phase.

## USER PROGRAMS

10 stage user created program. Each USER PROGRAM requires user to insert elevation speed and time requirements for each stage. Maximum speed and elevation may be adjusted at any time during exercise. To correct stage information, press the CLEAR switch. At the completion of workout, stage information is saved and may be recalled by entering user program number.

### Programming a user program for the first time

1. Press the PROGRAM SELECT 10 times (USER PROGRAM) will be displayed.
2. Press ENTER (SEGMENT 1) will be displayed.
3. Press the INCLINE plus switch to setting desired incline for segment 1.
4. Press the SPEED plus switch to set the desired speed setting for segment 1.
5. Use the number keypad to enter time duration of segment 1, this is rounded off to even minutes.
6. Press ENTER to advance to segment 2, repeat steps 3,4 & 5 using desired settings for segment 2.
7. You may repeat this for up to 10 segments.
8. Once you have completed your desired number of segments press the START switch (ENTER WEIGHT) will appear.
9. Use the number keypad to enter weight.
10. Press ENTER switch.
11. Press START switch to begin workout.
12. A three-second countdown displayed prior to belt start.
13. Speed/Incline may be adjusted by pressing the plus or minus keys in the Speed/Incline windows while the workout is running.
14. Press either STOP switch to bring the treadmill running belt to a stop. This will also reset elevation.
15. Press the COOL DOWN switch to begin a sixty-second cool down phase.
16. Completion of time or distance will start a sixty-second cool down phase.
17. Assuming this was the first program you have set it will be program number 1, up to 20 can be set in the treadmill.

### To make a another program after you have set the first one

1. Press the PROGRAM SELECT 10 times (USER PROGRAM) will be displayed.
2. Press ENTER (PRESS ENTER TO USE A EXISTING PROGRAM OR CLEAR FOR A NEW WORKOUT) will be displayed.
3. Press CLEAR. This will automatically pick the next program number that is available. (SEGMENT 1) will be displayed.
4. Press the INCLINE plus switch to setting desired incline for segment 1.
5. Press the SPEED plus switch to set the desired speed setting for segment 1.
6. Use the number keypad to enter time duration of segment 1, this is rounded off to even minutes.

7. Press ENTER to advance to segment 2, repeat steps 4, 5 & 6 using desired settings for segment 2.
8. You may repeat this for up to 10 segments.
9. Once you have completed your desired number of segments press the START switch (ENTER WEIGHT) will appear.
10. Use the number keypad to enter weight.
11. Press ENTER switch.
12. Press START switch to begin workout.
13. A three-second countdown displayed prior to belt start.

**To use an existing program previously set in the treadmill**

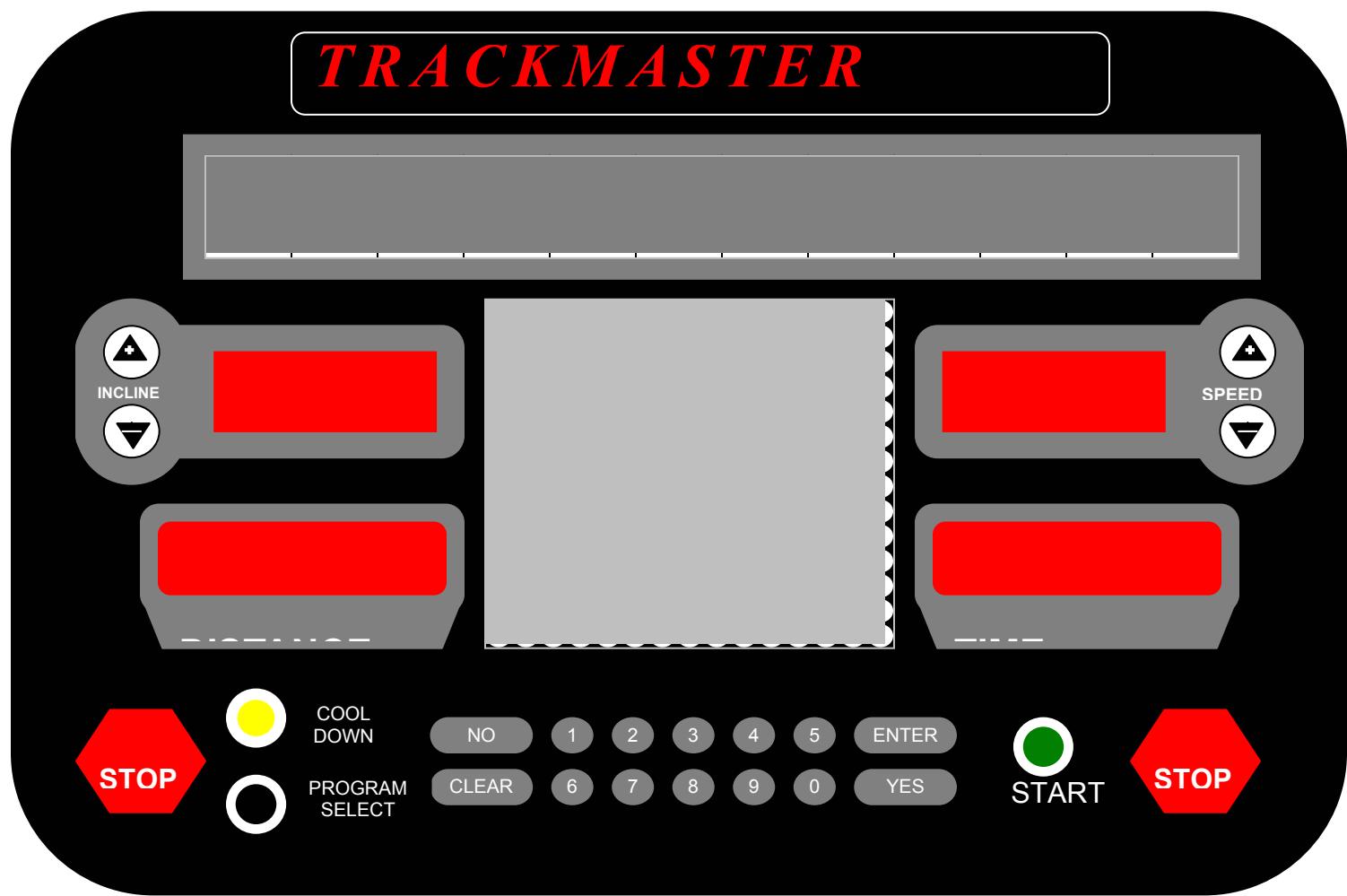
1. Press the PROGRAM SELECT 10 times (USER PROGRAM) will be displayed.
2. Press ENTER (PRESS ENTER TO USE A EXISTING PROGRAM OR CLEAR FOR A NEW WORKOUT) will be displayed.
3. Press ENTER (PRESS ENTER TO EDIT, OR START TO BEGIN, USE KEYPAD TO ENTER WORKOUT NUMBER, OR USE PROGRAM SELECT TO SCROLL) will be displayed.
4. Use the number key pad to enter the program number you want to use.
5. Press START (ENTER WEIGHT) will appear.
6. Use the number keypad to enter weight.
7. Press ENTER switch.
8. Press START switch to begin workout.

**To overwrite an existing program**

1. Press the PROGRAM SELECT 10 times (USER PROGRAM) will be displayed.
2. Press ENTER (PRESS ENTER TO USE A EXISTING PROGRAM OR CLEAR FOR A NEW WORKOUT) will be displayed.
3. Press ENTER (PRESS ENTER TO EDIT, OR START TO BEGIN, USE KEYPAD TO ENTER WORKOUT NUMBER, OR USE PROGRAM SELECT TO SCROLL) will be displayed.
4. Use the key pad to enter the program number you wish to overwrite (PRESS ENTER TO EDIT OR START TO BEGIN) will be displayed.
5. Press ENTER (SEGMENT 1) will be displayed.
6. Press the INCLINE plus switch to setting desired incline for segment 1.
7. Press the SPEED plus switch to set the desired speed setting for segment 1.
8. Use the number keypad to enter time duration of segment 1, this is rounded off to even minutes.
9. Press ENTER to advance to segment 2, repeat steps 6, 7 & 8 using desired settings for segment 2.
10. You may repeat this for up to 10 segments.
11. Once you have completed your desired number of segments press the START switch (ENTER WEIGHT) will appear.
12. Use the number keypad to enter weight.
13. Press ENTER switch.
14. Press START switch to begin workout.
15. A three-second countdown displayed prior to belt start.

## Programmable Treadmill Self Test Procedure

**TRACKMASTER**



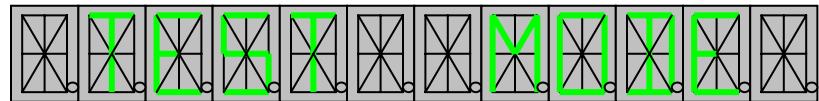
### To enter Self-Test

Turn treadmill off

Turn Treadmill on. Press and hold Incline + and – until message center reads TEST MODE.

Observe Message Center Display >

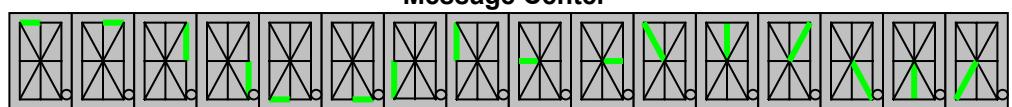
Message Center



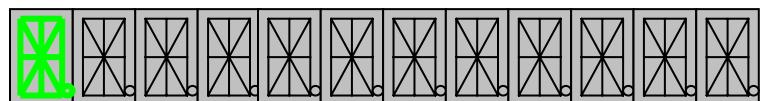
Press any switch to begin Self-Test.

Observe each leg of all readouts  
is sequentially lit. >

Message Center



Advance to next test by pressing any switch.

**Message Center**

Walking 8 test.

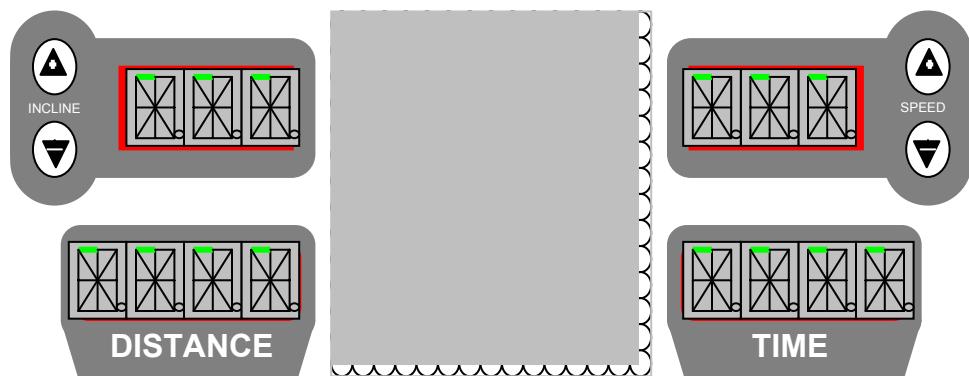
**Observe Message Center Display. >**

All the legs in one readout are lit. Lit readout moves from left to right until all 12 readouts have been lit and then returns to far left readout and lights each readout again. This will continue until test is ended by pressing any switch.

Advance to next test by pressing any switch.

**Readout Test****Observe time/Distance/Incline/Speed windows >**

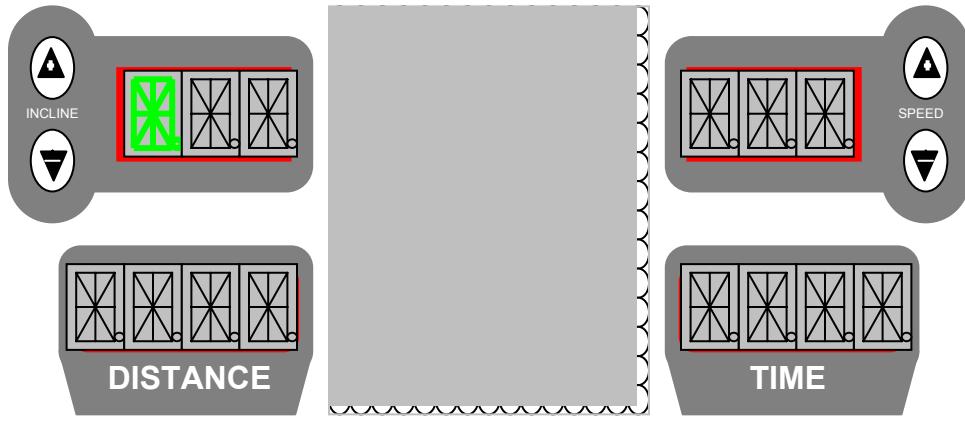
Each leg of each readout is lit sequentially.



Advance to next test by pressing any switch.

**Time/Distance/Incline/Speed Walking 8 Test****Observe Time/Distance/Incline/Speed >**

All lights of one individual readout are lit. Readout moves sequentially left to right from Incline to Speed to Distance to Time window. Test will continue to loop until test is ended by pressing any switch.



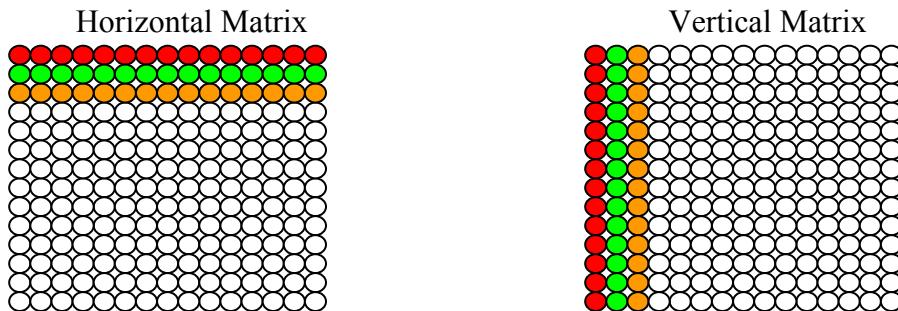
Advance to next test by pressing any switch.

## 14x15 Tri Color Dot Matrix Test

**Observe Tri Color Dot Matrix >**

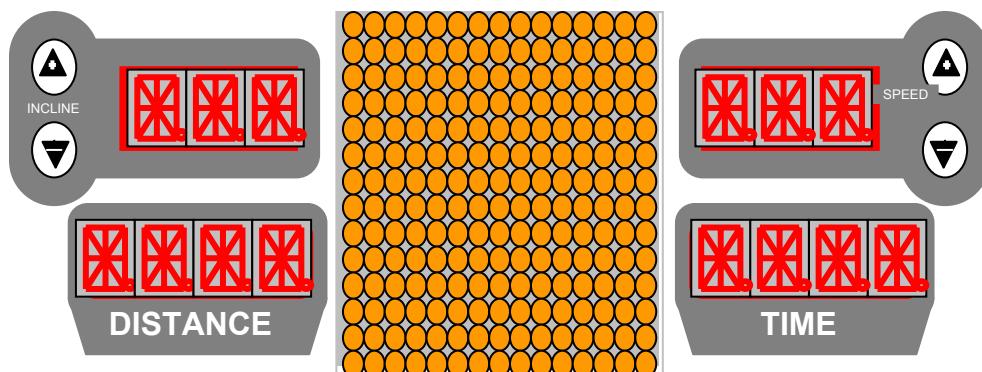
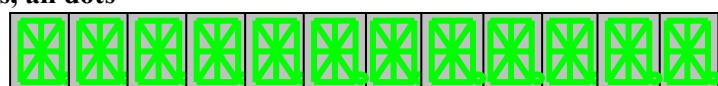
**Horizontal test** – Each horizontal line is sequentially tested in Red, Green, and Orange. Test will continue until ended by pressing any switch.

**Vertical test** – Each vertical line is sequentially tested in Red, Green, and Orange. Test will continue until ended by pressing any switch.



Advance to next test by pressing any switch.

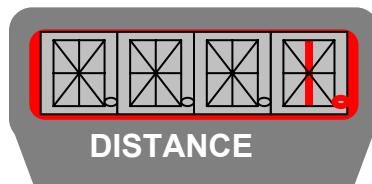
## All Lamps Test.

**Observe all LED's, all readouts, all dots of Dot Matrix lit. >**

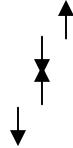
Advance to next test by pressing any switch.

**Observe KEYPAD TEST is displayed****in Message Center. >**

Keys must be pressed in correspondence with the assigned number displayed in the Distance window.

**KEYPAD**

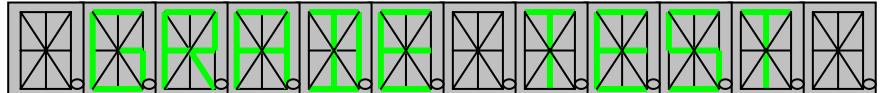
1	<b>START</b>	5	<b>INCLINE</b>	10	<b>COOL DOWN</b>	15	4	20	9
2	STOP	6	INCLINE	11	0	16	5	21	NO
3	ENTER	7	SPEED	12	1	17	6	22	YES
4	PROGRAM	8	SPEED	13	2	18	7		
	SELECT	9	CLEAR	14	3	19	8		



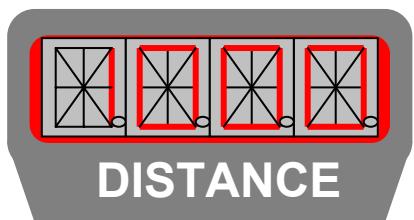
Advance to next test by pressing YES.

**Warning: Pressing the STOP switch will skip Grade Test and start the Belt Motor Test.**

**Observe Message Center Display and Distance window. >**



Pressing the INCLINE UP switch elevates the treadmill. As the treadmill elevates the value in the DISTANCE window increases. The value in the DISTANCE window is the output of the elevation sensor as read by the control console. Pressing the INCLINE DOWN switch will lower the treadmill and the value in the DISTANCE window should decrease.



**DISTANCE**

**WARNING: Prior to starting the Belt Motor Test, remove all items from the running belt and stand clear of the running belt during test.**

Advance to next test by pressing STOP.

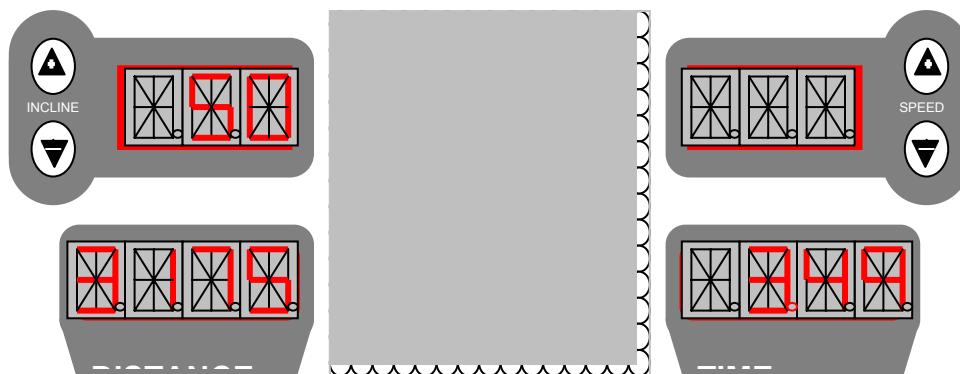
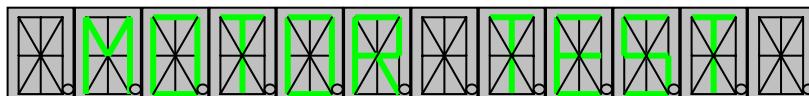
Motor Test

**Observe Message Center, Incline, Speed, Time, and Distance windows. >**

50 is the PWM sent from the control console to the FG309 P/S board to set speed. 3175 is the roller ratio. Value is factory set. Value in the Time window is the output of the speed sensor as read by the control console. Value is displayed in MPH.

Press SPEED UP arrow to increase PWM. An increase in PWM will cause an increase in the belt speed.

Pressing INCLINE UP / INCLINE DOWN will increase or decrease the roller ratio.

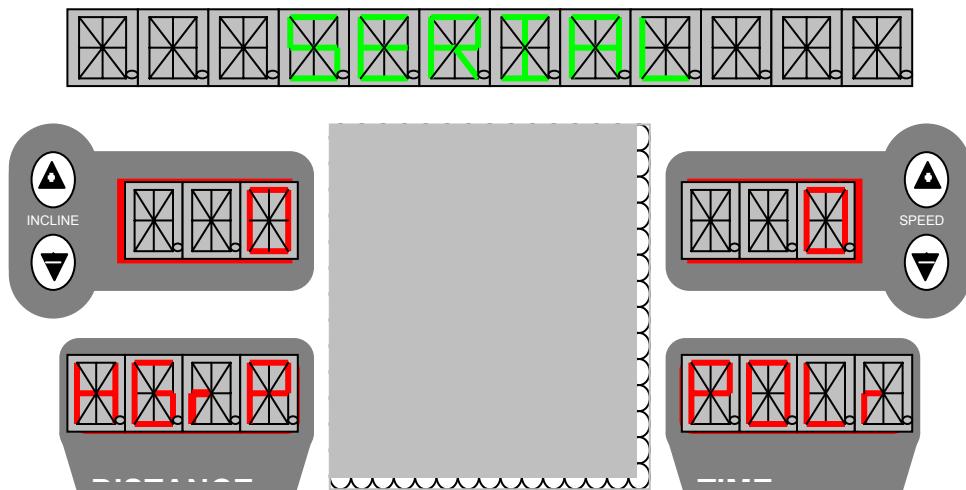


Press STOP to end Belt Motor Test and advance to the next test.

## Heart Rate Test

### Observe all display windows. >

**Serial** – Indicates the choice of serial input vice pulse as selected in the programming parameters. The distance window displays HR using the Contact Grips. The Time window displays HR using a POLAR® Chest Strap or heart rate generator. The heart symbol displayed in the dot matrix will flash as a heart rate signal is received.



Press ENTER to exit Programmable Control Console Self-Test.

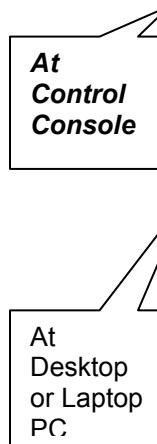
## FVX\_CP, TMX\_CP Programmable Controller

The following procedures provide instructions to fully utilize the upgrade, diagnostic and calibration capabilities of the programmable controller. Procedures requiring special tools and or personnel are identified at the beginning of the procedure.

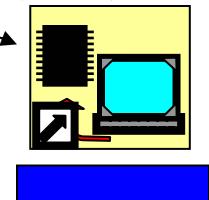
### Downloading Software

#### At Control Console

**Tools/Personnel Required:** Laptop or Desktop PC with Windows 95 or newer, download program & software, serial data cable, small Philips screwdriver. Two persons may be required for step 2.



1. Turn treadmill main power switch to OFF position.
2. Remove (2) Philips screws securing small metal plate covering RS232 port on backside of control console. (See Figure 1-4)
3. Press the **COOL DOWN** and the number **5** keys simultaneously; turn on the main power, release the **COOL DOWN** and the number **5** keys when you hear a continuous tone. (This may take numerous attempts, as the software has to see both keys contacted at the same time. This is done to impede the user from inadvertently accessing the programming mode.)
4. Click on **GP32DLG Serial Download icon** on laptop or desktop computer. (**ICON**)
5. Click on **Load S FILE**.
6. Select software version provided for download. (software version XX)
7. Connect serial cable from computer to treadmill control console.
8. Click on **Connect**.
9. Click on **Go**.
10. Click on **Program All** (Continuous tone of control should begin to pulsate while software is downloading. When pulsating tone changes back to continuous tone, download is complete).
11. Click on **Disconnect** and remove serial cable from control box.
12. Turn OFF treadmill main power, replace small metal plate and Phillips screws and then turn main power switch ON. **VER** will appear in speed window along with the new software version number in the time window (See Figure 1-2). This step is done to verify that the new software has been successfully downloaded.



## FVX\_CP, TMX\_CP – Programmable Controller

### Software Download, Control Console Parameters, Speed/Elevation Calibration and Self-test

#### Control Console Programming Mode

With main power ON and displays lighted, press the **STOP** key and the **ENTER** key at the same time. When successful, the message center will scroll the following options:

- At Control Console**
1. **Choose 1 for MPH -or- 2 for KM/H.** Using the numeric keypad press 1 or Then press ENTER key.

Controller Display	Action Required	Changes Affect		Observe
Choose 1 for mph or 2 for km/h	Press 1 for mph or Press 2 for km/h	Speed Units		Time limit appears in Message Center after selection is made.

2. **Time Limit** will appear in the Message Center with a default setting of 15:00 in the TIME window. Parameter sets the number of minutes displayed in the Time Limit message. (Activating Time Limit control is performed in step 10). If no change is needed press ENTER key, if a change is needed, use the numeric keypad to make change and press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Time Limit	Enter time limit desired using numeric keypad	Workout time	Timer range: 1:00 minute to 99:00 minutes	Minimum Speed appears in Message Center

3. **Minimum Speed** will appear in the Message Center with a default setting of 0.5 for MPH or 0.7 for KM/H in the speed window. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Minimum Speed	Enter minimum speed needed using numeric keypad	Treadmill start speed	1.0 mph is minimum speed limit for 110v units.	Maximum Speed appears in Message Center after selection is made

4. **Maximum Speed** will appear in the Message Center with a default setting of 12.0 for MPH or 19.3 for KPH in the Speed window. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Maximum Speed	Enter maximum speed needed using numeric keypad.	Treadmill maximum speed limit	10.0 mph is max speed for 110v units.	Maximum Cal Grade appears in Message Center

5. **Maximum Calibration Grade** will appear in the Message Center with a default setting of 25.00 in the Incline Window. This parameter sets the calibration grade and does not limit elevation. For fitness units use numeric keypad and change to 15.00 and then press ENTER key. For medical units leave value at 25.0 and press ENTER key.

Controller Display	Action required	Changes Affect	Parameter Options	Observe
Maximum Calibration Grade	Enter Max Cal Grade using numeric keypad	Maximum calibration grade	15 for 15% elevation fitness units 25 for 25% elevation medical units	Select Maximum Grade then press Enter appears in Message Center

6. **Select Maximum Grade Then Press Enter** will appear in the Message Center with a default setting of 15.0 in the Incline window. Using the numeric keypad, change to 25.00 for medical units. For fitness units use default of 15.0. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Select Maximum Grade then Press Enter	Enter Maximum Grade needed using numeric keypad	Maximum Elevation Grade	25 for 25% elevation medical units	Maximum Correction Factor appears in Message Center

7. **Maximum Correction Factor** will appear in the Message Center with a default setting of 4 in the Speed window. Do Not Change This Number. Press ENTER key.  
 8. **Speed Ratio** will appear in the Message Center with a default setting of 3175. *Do not change this Number unless instructed to by the manufacturer.* Press ENTER key.  
 9. **Cool Time** will appear in Message Center with a default setting of 60 in the Distance window. Parameter is used to set the Cool down time period/Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
COOL TIME	Enter Cool-down time desired using numeric keypad	Sets Cool-down time period	Timer range: 0.01 seconds to 0.99 seconds	No Limit appears in Message Center

10. **No Limit** will appear in the Message Center. This parameter is the fixed timer that limits treadmill workout time. Parameter activates time limit entered in step 2. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
No Limit	Activate Time Limit control by using incline arrow keys	Activates workout time limit set in step 2	Timer range: 1:00 minute to 99:00 minutes	Serial H-rate appears in Message Center

11. **Serial H-rate** will appear in the Message Center. This setting used when the treadmill has the Contact Heart-rate feature. If the treadmill only has the Polar ® Heart-rate feature, use incline arrows to change setting to **POLAR H-RATE**. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Serial H-rate	Select Serial Heart-rate or Polar Heart-rate by using incline arrow keys	Select combined Polar & contact heart rate or Polar only	Select Serial H-rate for use of Polar ® chest strap & contact heart-rate grips. Select Polar ® H-rate for chest-strap only	Medgraph SCO appears in Message Center

12. **Medgraph SCO** will appear in the Message Center. Use the up Incline key to change to **Normal SCO**. Medgraph SCO setting works only when the treadmill is used in conjunction with a Medgraphics® Stress system. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Medgraph SCO	Select Medgraph SCO or Normal SCO by using incline arrow keys	Selection of Medgraph SCO allows serial communication with the Medgraphics® systems only. Selection of Normal SCO allows serial communication with other stress systems	Medgraphics SCO Normal SCO	232 Comm Off appears in Message Center

13. **232 Comm Off** will appear in the Message Center. Use Incline down key to change to ON if RS232 port is to be used. Otherwise, RS232 port should remain off. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
232 Comm Off	Select 232 Comm Off or 232 Comm On by using incline arrow keys	Selecting 232 Comm Off cuts off RS232 port  Selecting 232 Comm On restores RS232 port communication	232 Comm Off 232 Comm On	HRS--- 0.00 appears in Message Center

14. **HRS--0.00** will appear in the Message Center. This is units' total use time.

*Parameter value cannot be changed.*

15. **DIS--0.000** will appear in the Message Center. This is the units' total mileage.

*Parameter value cannot be changed.*

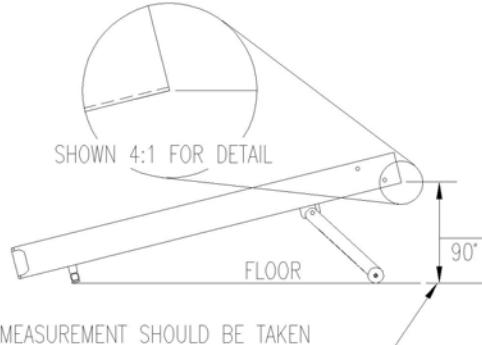
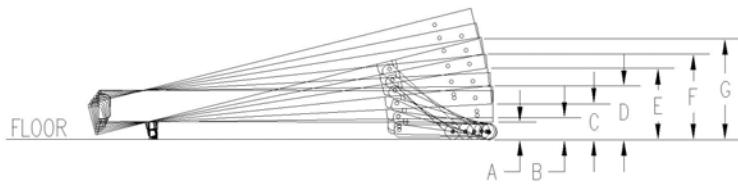
- 16.** Press Stop + Enter for SPD CAL will appear in the Message Center. This function is used to calibrate speed. Press and hold ENTER key and the STOP key simultaneously. **Automatic Calibration Clear Belt then press Start** will appear in the Message Center. Press START key. When the treadmill has completed this process, the Message Center will read **Calibration Complete Press A key**. If calibration fails, **Calibration Failed** will appear in the Message Center. See trouble shooting procedures for Speed Calibration Failed. Press ENTER key.

Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Press Stop + Enter for SPD CAL	Press and hold Enter key and Stop key simultaneously to enter Speed Calibration Mode	Adjusts speed accuracy at all speed ranges; low, medium, and high speeds	N/A	Press Stop + Enter for GRD CAL appears in Message Center

- 17.** Press Stop + Enter for GRD CAL will appear in the Message Center. This function is used to reset the elevation grades. Press STOP +ENTER key for calibration. Refer to Elevation Calibration Procedure. Press ENTER key to skip and go into normal workout mode. Refer to FVX325, TMX425 Series Elevation Charts.

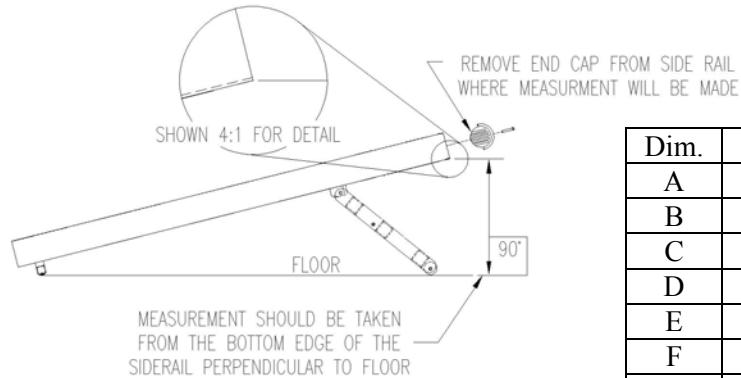
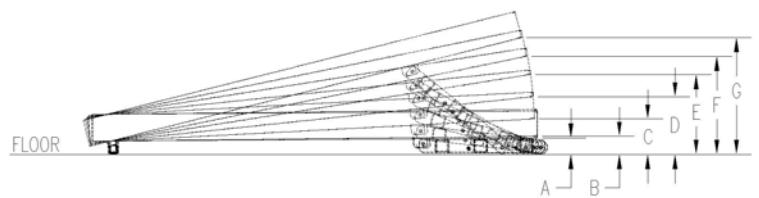
Controller Display	Action Required	Changes Affect	Parameter Options	Observe
Press Stop + Enter for GRD CAL	Press and hold Enter key and Stop key simultaneously to enter Elevation Calibration Mode	Adjusts elevation % accuracy at all ranges	N/A	Controller will shortly flash reset phase (Figure 1-1) followed by software version phase (Figure 1-2) and finally idle phase (Figure 1-3).

### FVX325 Series Elevation Chart

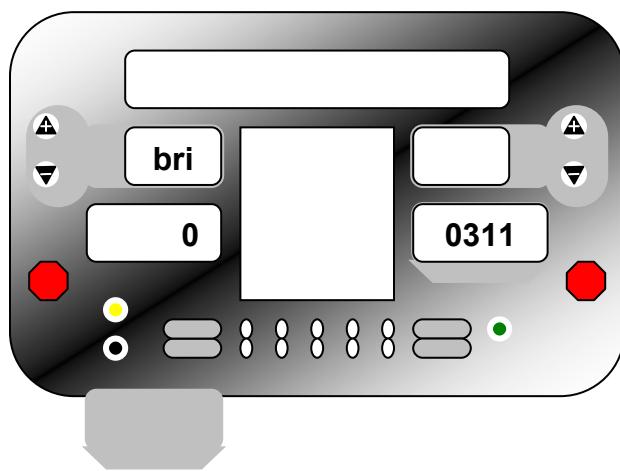
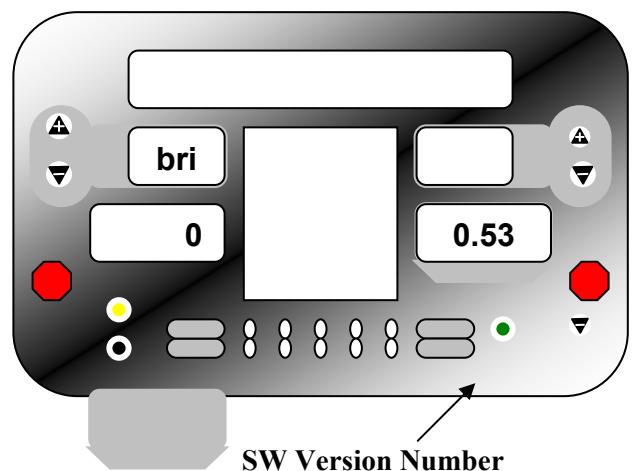
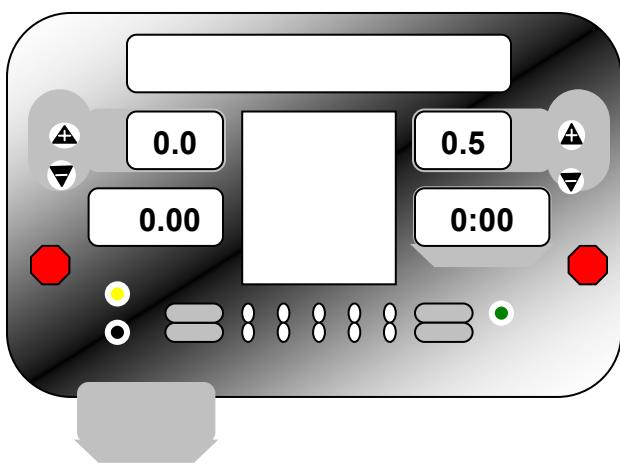
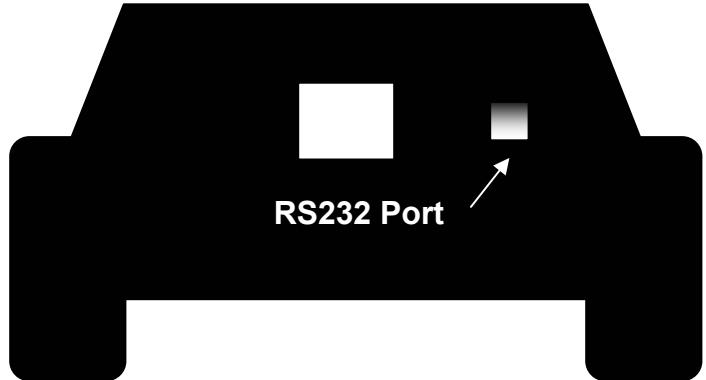


MEASUREMENT SHOULD BE TAKEN FROM THE BOTTOM EDGE OF THE SIDERAIL PERPENDICULAR TO FLOOR

Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.32"	[84.3mm]
C	5%	5.62"	[142.8mm]
D	10%	8.42"	[223.8mm]
E	15%	11.20"	[284.5mm]
F	20%	13.48"	[342.4mm]
G	25%	15.84"	[402.4mm]

**TMX425 Series Elevation Chart**

Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.36"	[85.2mm]
C	5%	6.59"	[167.3mm]
D	10%	10.72"	[272.2mm]
E	15%	14.85"	[377.2mm]
F	20%	18.22"	[462.9mm]
G	25%	21.71"	[551.5mm]

**Figure 1-1 Reset Phase****Figure 1-2 SW Version Phase****Figure 1-3 Control Console Idle Phase****Figure 1-4 Control Console Backside**

# Preventative Maintenance

- Inspection and Cleaning
- Belt tracking adjustments
- Calibration
- Inspection report
- Required tools and supplies
  - ✓ Standard hand tools
  - ✓ DVOM
  - ✓ Sotcher leakage tester or equivalent
  - ✓ Anti septic cleaner
  - ✓ Dust remover (compressed air)
  - ✓ Calibration software and a PC

## Inspection and cleaning

### Visual Inspection

Regularly inspect the AC power cord and all other cables for fraying or other damage. Perform safety tests on any repaired line cords.

Inspect the following for excessive wear or damage:

- Walking Belt
- Drive Belt
- Handrail and Hardware

Test the stop switch assembly monthly.

### Exterior cleaning

1. Turn the treadmill system off.
2. Wipe the treadmill to remove soil, moisture, and perspiration.
3. Clean the hood and handrails with a soft cloth, dampened with a solution of warm water and mild detergent.
4. Remove stubborn stains and scuff marks with a nonabrasive, industrial strength cleaner, such as Formula 409®. Spray all cleaners onto a terrycloth-type rag; avoid spraying cleaners directly onto the treadmill.

## Interior cleaning

### *Tools Required*

*¼ inch hex nut driver or flat blade screwdriver  
Vacuum with hose and attachments*

1. Turn the treadmill main power switch to the off position.
2. Unplug the Treadmill from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Slide the hood grommets up the center handrail approximately 2' only on TMX Series on FVX Series set hood to side..
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
7. Clean Interior of motor pan by gently vacuuming (with hose attachment) any foreign objects or debris.
8. Replace the hood and its bolts and slide the hood grommets back into place.



### **CAUTION: AVOID USING LIQUID CLEANERS**

---

## Belt Cleaning and Inspection

1. Turn treadmill main power switch ON.
2. Start treadmill at .5 mph
- 3 With a damp small towel wipe excessive dirt from running belt
4. When belt is clean stop treadmill.
5. Inspect belt for tear or nick to running belt. If DAMAGED replace belt.
6. Perform Belt tracking and Belt tension, see Section 4 for procedure

## Calibration

1. Calibration procedures should be performed when one or more of the following exist.
  - a. Replacement of Power Supply Relay Board
  - b. Replacement of Elevation Actuator
  - c. Replacement of Motor
  - d. Replacement of Inverter Drive
  - e. Improper Belt Speed or Elevation values have been detected

## Belt Speed Calibration Procedure

### *Tools Required*

*Calibration Program (Trackmaster Precision Incline Smart Power Supply)  
Stop watch or watch with a second hand  
Chalk or some other temporary marking device  
Computer or laptop  
Serial Communication Cable*

1. Plug in treadmill to power supply
2. Turn on Treadmill
3. Connect notebook or laptop to treadmill RS232 port.
4. Open Trackmaster Precision Incline Smart Power Supply.
5. Press Connect.
6. Verify communications
7. Verify roller ratio - current value is set to 100, use the up down arrow to change to 101.
8. Verify the Speed Units are set for your application, if change is required press Toggle Units, either m.p.h. or km/h are displayed.
9. Change Max PWM correct factor to 4.
10. Stand clear of running belt and clear the belt.
11. Press calibrate Belt.
12. Observe: Running belt starts and increases to approximately 12 m.p.h.
13. Belt Status - On - CDSE (running belt is moving).
14. Current PWM determines running belt speed at 1000 / 500 / 1 PWM.
15. Actual - Speed from the speed sensor rounded to nearest 1/10. (1000 PWM = 12.1 m.p.h. / 1-14 PWM = .473 m.p.h.).
16. Acc. Speed - Speed from the speed sensor to the nearest 1/100.
17. Treadmill running belt calibration values are set. Belt Status - Off.
18. At this point running belt calibration is complete.
19. Start speed to 1 MPH or 2 KPH.
20. Measure belt with MPH gage or using belt speed verification procedure, verify within spec. +/- 2%.
21. Repeat process for 2, 3, 5, 7, & 12 MPH or 4, 6, 8, 12 and 19 KPH.
22. If not within tolerance, recheck roller ratio, inverter settings, & recalibrate belt.
23. Repeat steps 20 thru 23 until within tolerance.
24. Stop belt.

## FVX325 SERIES VERIFYING BELT SPEED CALIBRATION IN THE FIELD

### *Tools Required*

*Stop watch or watch with a second hand  
Chalk or some other temporary marking device*

1. Verify a point on the run belt that can be seen plainly with each full revolution, this could be the seam or a chalk line you make on the belt.
2. Start the treadmill and adjust the speed to 1 mph/1.6kph.
3. Start the stopwatch when the mark on the belt passes an established point on the treadmills side rail.
4. Count the number of passes the mark makes in a 52 second period.
5. The count should be 9 passes plus or minus 18", this is within the advertised 2% accuracy.
6. Next set speed to 5mph/8.0kph, once again count the passes the belt makes this time in a 15 second period, you should get 13 passes plus or minus 26", this is within the advertised 2% accuracy.
7. Last set the speed to 10 mph/16.1kph, this time use a 9 second time period.
8. The mark on the belt should pass the point 16 times plus or minus 32", this is within the advertised 2% accuracy.
9. This should verify the treadmill is within required tolerance of speed.

## TMX SERIES VERIFYING BELT SPEED CALIBRATION IN THE FIELD

### *Tools Required*

*Stop watch or watch with a second hand  
Chalk or some other temporary marking device*

1. Verify a point on the run belt that can be seen plainly with each full revolution, this could be the seam or a chalk line you make on the belt.
2. Start the treadmill and adjust the speed to 1 mph/1.6kph.
3. Start the stopwatch when the mark on the belt passes an established point on the treadmills side rail.
4. Count the number of passes the mark makes in a 60 second period.
5. The count should be 8 passes plus about 7", although 8 passes is within the advertised 2% accuracy.
6. Next set speed to 5mph/8.0kph, once again count the passes the belt makes this time in a 15 second period, you should get 10 passes + about 7", but 10 passes is satisfactory.
7. Last set the speed to 10 mph/16.1kph, this time use a 9 second time period.
8. The mark on the belt should pass the point 12 times plus 8", 12 passes being within the required specification.
9. This should verify the treadmill is within required tolerance of speed.

## FVX325, TMX425 Series Elevation Calibration Procedure

### *Tools Required*

*Calibration Program (Trackmaster Precision Incline Smart Power Supply Version 1.6)*

*Tape Measure*

*1/4" Allen Wrench*

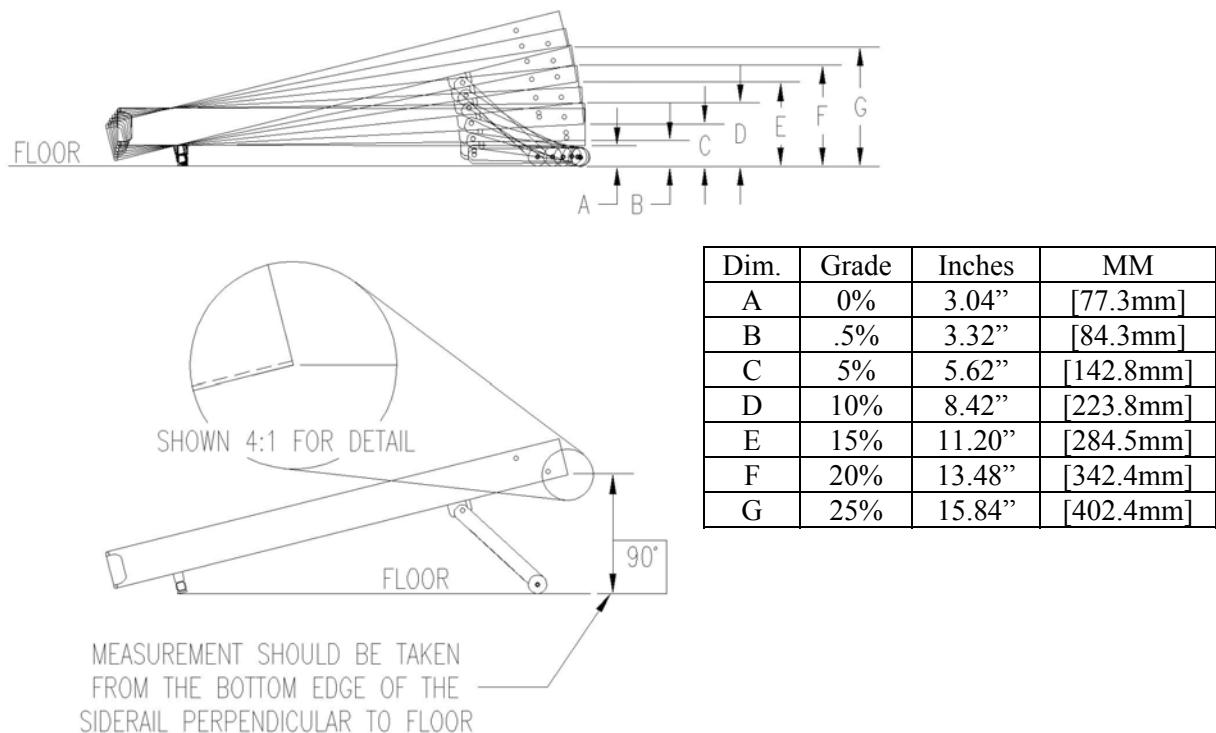
*Computer or laptop*

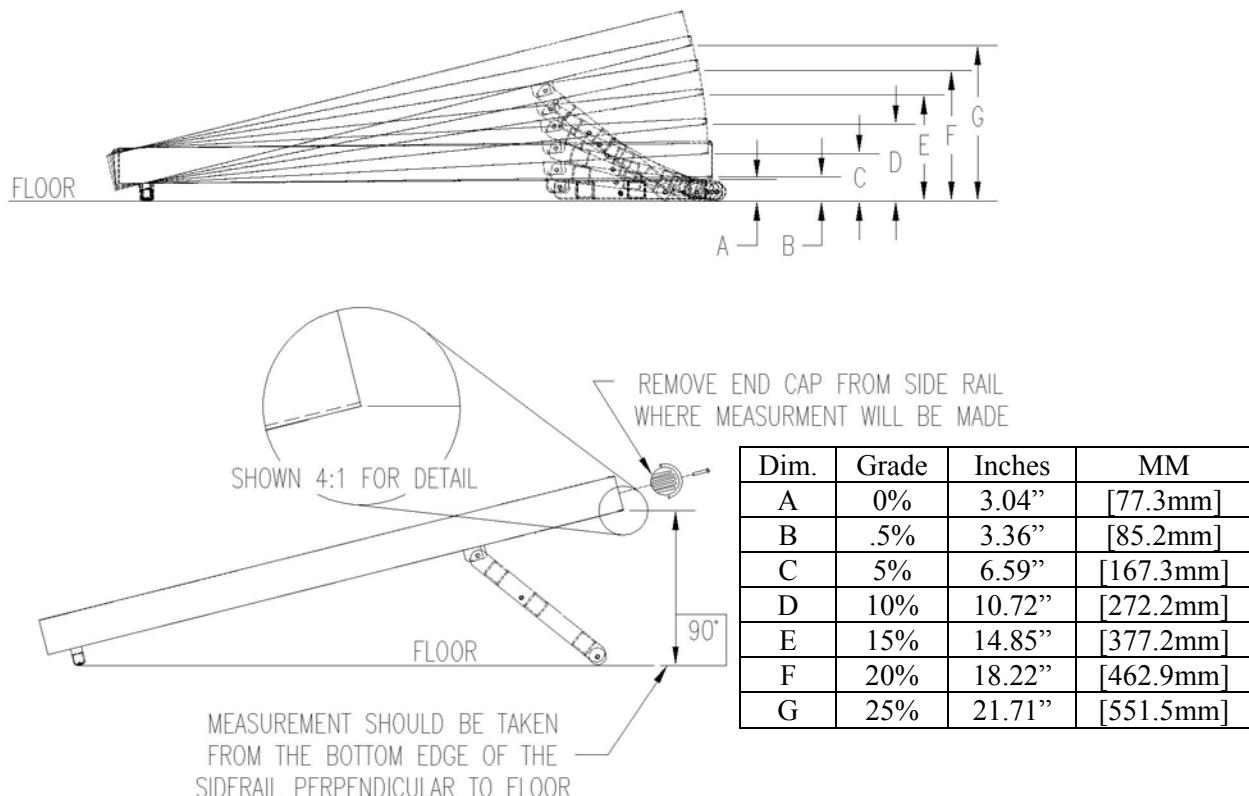
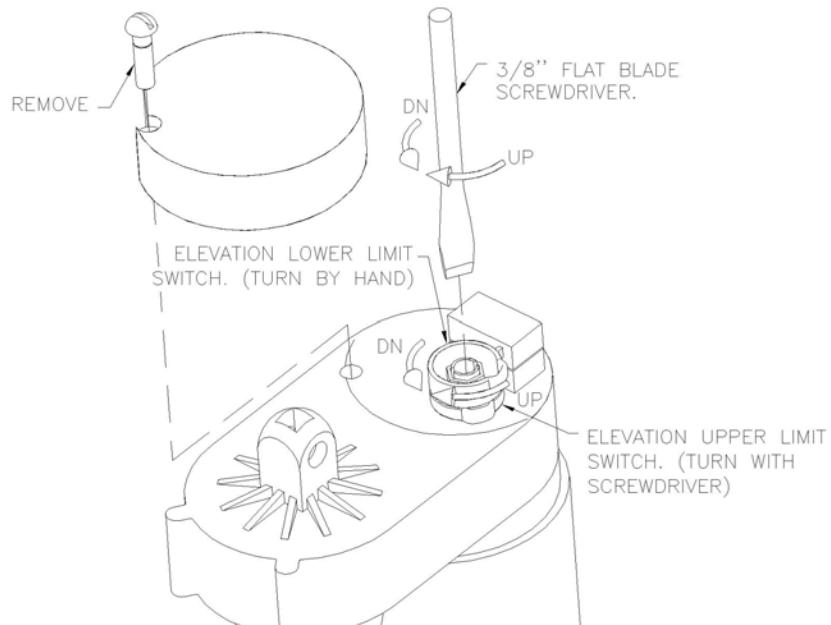
*Serial Communication Cable*

1. Plug in treadmill to power supply
2. Turn on Treadmill
3. Connect notebook or laptop to treadmill RS232 port.
4. Open Trackmaster Precision Incline Smart Power Supply.
5. Press Connect.
6. Verify communications
7. Verify roller ratio - current value is set to 100, use the up down arrow to change to 101.
8. Determine actuator motor ratio – **Fine thread** Ratio,153:1, **Course thread** Ratio, 115:1, after ratio is determined click on the box indicating **Course** or **Fine**.
9. Adjust incline to .5% grade.
10. Remove front rail bolt and end cap on TMX425 Series.
11. Using the tape measure verify the angle within spec. +/- 2% (Refer to FVX325, TMX425 Series Elevation Charts)
12. If incorrect make adjustments to compensate in .5% grade box.
13. Lower incline & raise back up to .5 & recheck.
14. Repeat procedure for 5%, 10%, 15% and 20%
15. Prior to setting grade compensation for 25%, test for proper operation of upper limit switch.
16. To perform this test use the 25% compensate grade box.
17. Raise the value continuously until the treadmill stops elevating.
18. Check tape measure reading for a maximum angle of 25 %( 14.1°).

19. If the angle reading is higher than 25%(14.1°). Take the following steps to correct: (Refer to illustration FVX325, TMX425 Series elevation actuator Adjustment.)
- Remove actuator top cover.
  - Using a large (.375" wide) flat blade screw driver, rotate the lower switch cam counterclockwise the proper amount to assure the treadmill will not elevate past 25%.
  - Lower the value and raise it again to verify the treadmill dose not travel past that point.
  - Return the box value to allow the treadmill to stop at 25% to complete the grade calibration.
  - If the cam was turned to adjust the lower switch, the upper cam will need to be reset to zero to allow the treadmill to park in the correct position.
  - This is achieved by turning the upper cam (by hand) clockwise back the approximate amount the lower cam was turned.
  - Check tape measure reading and adjust upper cam to compensate for any error.
  - Repeat steps 1 thru 9 until the correct values are achieved.
19. Return to 0 incline.
20. Hit disconnect button.
21. Replace end cap and bolt on TMX425 Series.

### FVX325 Series Elevation Chart



**TMX425 Series Elevation Chart****FVX325, TMX425 Series Elevation Actuator Adjustment**

## FVX325C, TMX425C Series Elevation Calibration Procedure

### *Tools Required*

*Tape Measure*

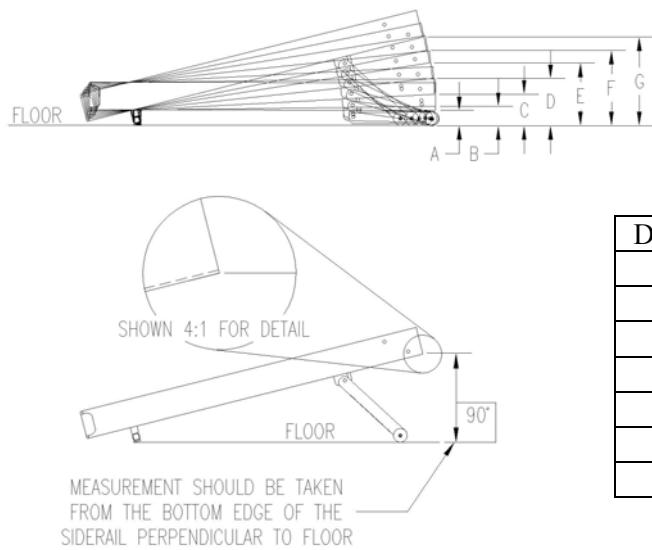
*1/4" Allen Wrench*

1. Remove front rail end bolt and end cap on TMX425 Series.
2. With power "ON", press and hold the Speed + and Elevation - keys. After a few seconds "P 1" should appear in the center window. (Sometimes you must release and hold these keys again in order to get into this function.)  
(Use the Elevation Arrow Keys to make Changes in P categories.)
3. "P 1" in Center window - "bri" in Speed window. ( bri = Mph, Si = Kph) Use UP or DOWN Incline key to toggle between, then press the Select key.
4. "P 2" in Center window - "0.5" in the Speed window. ( Minimum speed)  
Use UP or DOWN Speed key to adjust settings, and then press the Select key.
5. "P 3" in Center window - "12.0" in the Speed window. ( Maximum speed)  
Use UP or DOWN Speed key to adjust settings, and then press the Select key.
6. "P 4" in Center Window - "25" in the Incline window. (Incline Cal.) Use UP or DOWN Elevation key to adjust setting, and then press the Select key.
7. "P 5" in the Center window - "25" in the Incline window. (Incline Max.) Use the UP or Down Elevation key to adjust setting, and then press the Select key.
8. "P 6" in the Center window - "4" in the Speed window. ( Do not adjust)  
Use UP or DOWN Speed key to return to "4", then press the Select key.
9. "P7" in the Incline window - "3175" in the Center window. (Do not Adjust) Use UP or DOWN Speed key to return to "3175", then press the Select key.
10. "P8" in the Center window, "Hr" in Incline, and "Ser" in the Speed window (Hr = Heart rate, Ser = Serial input, PU = Pulse input) Use the UP or DOWN Incline key to toggle between 9.
11. "P9" ECG Equipment Type Operation (nor for all but Medgraphics = GrA)
12. "P10" RS232 Port Select On (Turn to Off when port is not being used)
13. "P11" Time Amount Select (Default = 15, Can not set lower than 15 minutes)
14. "P12" Timer Mode On or Off (Default = Off) (When On, P11 set time is up will go to Cool Down mode.)
15. "P12" Cool down time (Default 60 sec)
16. Hours Distance
  - Press the Select key and "HrS" will appear in the Incline window (HrS = Total hours displayed in center window and minutes in Speed window.)
  - Press the Select key and "dIS" will appear in the Center window. (dIS =Total Distance - Miles in the Incline window, Tenth in the Speed window)
17. Cal S - Press the Select key and "CALS" appears in the Center window
  - Pressing the Speed + and the Incline - keys will change Center display to "CAL" and then pressing the start key will run unit through speed calibration.
  - Start speed to 1 Mph or 2 Kph
  - Measure belt with MPH gage, verify within spec. +/- 2%.
  - Repeat process for 2,3, 5, 7, & 12 MPH or 4, 6, 8, 12 and 19 KPH.
  - If not within tolerance, recheck roller ratio, inverter settings, & recalibrate belt.
  - Repeat steps 16.2 thru 16.4 until within tolerance.
  - Stop Belt

18. Cal E - Press the Select key after "CALS" and "CALE" appears in the center window.

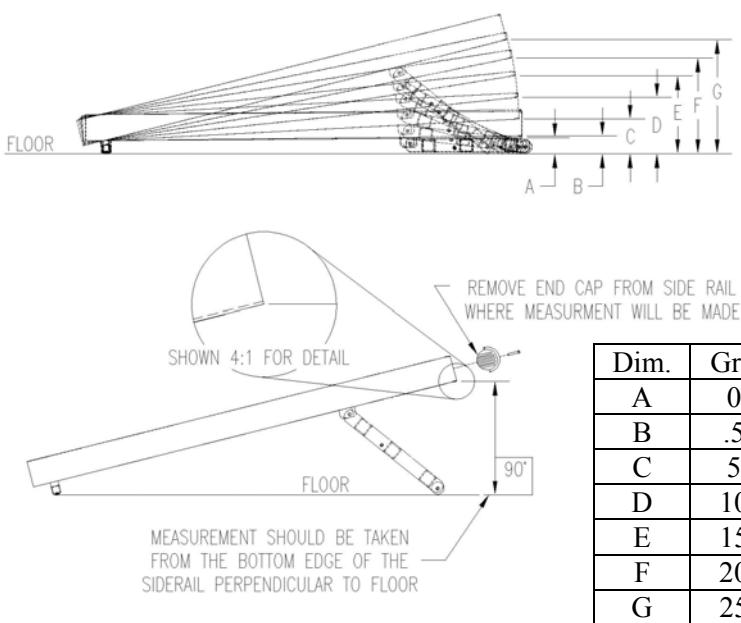
- Pressing the Speed + and the Incline - keys will change the Center window display to "GrAd," then pressing the Start key will allow Incline (Grade) setup.
- Using tape measure, raise the treadmill to the correct angle shown (Refer to illustration below)
- Press start to go to next % grade
- Repeat process for all grades
- Pressing Select after "CALS" and "CALE" appear will take you out of Setup Check and back to normal operation.
- Replace end cap and bolt on TMX425 Series.

### FVX325 Series Elevation Chart



Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.32"	[84.3mm]
C	5%	5.62"	[142.8mm]
D	10%	8.42"	[223.8mm]
E	15%	11.20"	[284.5mm]
F	20%	13.48"	[342.4mm]
G	25%	15.84"	[402.4mm]

### TMX425 Series Elevation Chart



Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.36"	[85.2mm]
C	5%	6.59"	[167.3mm]
D	10%	10.72"	[272.2mm]
E	15%	14.85"	[377.2mm]
F	20%	18.22"	[462.9mm]
G	25%	21.71"	[551.5mm]

## FVX325CP, TMX425CP Elevation Calibration Procedure

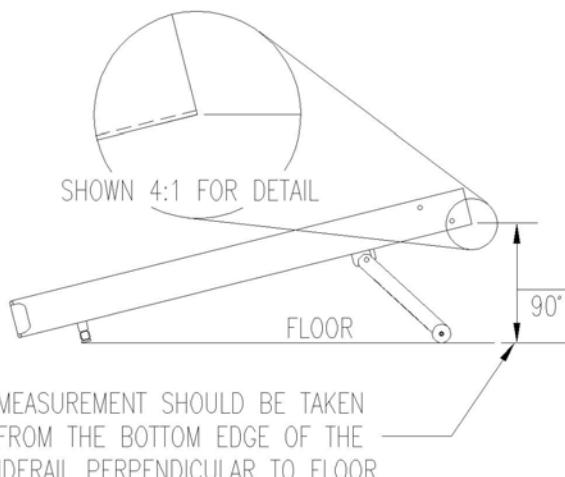
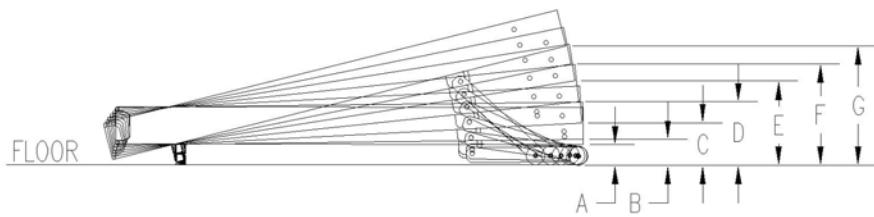
### *Tools Required*

*Tape Measure*

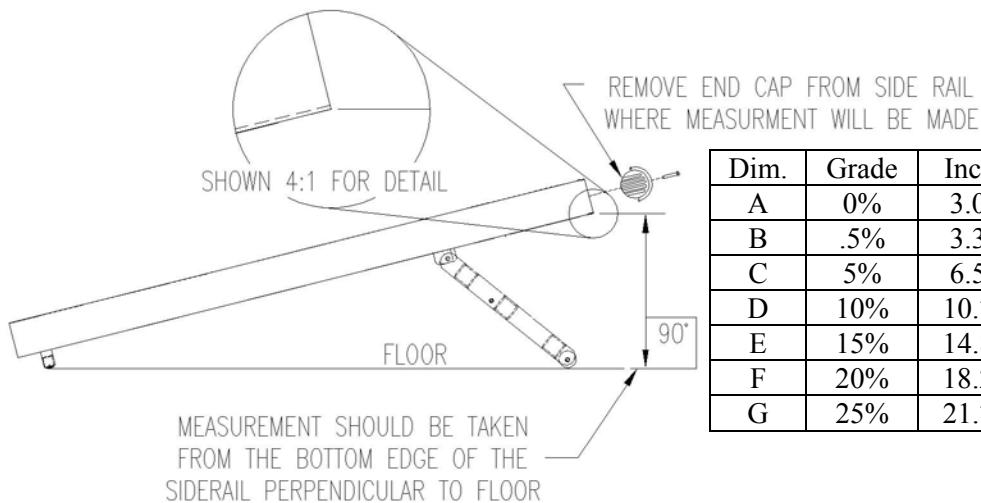
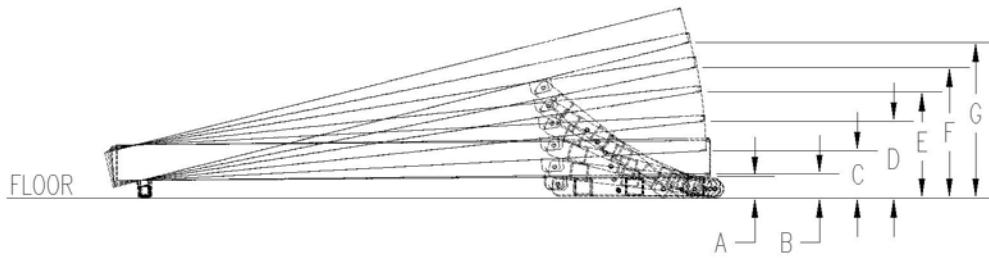
*1/4" Allen Wrench*

Prior to performing the elevation calibration procedure, enter the programming mode and enter the elevation calibration grade and elevation limits. To perform elevation calibration, place the console in elevation calibration mode. A drawing and table are available to assist in determining percentage of elevation.

1. Remove front rail end cap and bolt on TMX425 Series.
2. Enter Elevation Calibration mode. Observe message center window displays Press Stop & Enter for GRD CAL.
3. Press the Stop and Enter keys simultaneously. Message center window display has CAL GRADE.
4. Press the Start button. Speed window displays decline.
5. Once treadmill has reached minimum elevation, the display will change. The incline window will display the first elevation set point (0.5) and the distance window will display the elevation count from the elevation sensor (1000).
6. Use an incline meter, protractor or other measuring device to determine the degree of elevation or use the procedure provided to measure the distance from the floor to the bottom of the side rail.
7. Press the up incline button until a height of 0.5 % elevation is reached.
8. Press the start button, the incline window will display the second elevation set point (5.0)
9. Press the up incline button until a height of 5.0% elevation is reached.
10. Press the start button, the incline window will display the third elevation set point (10.0)
11. Press the up incline button until a height of 10.0% elevation is reached.
12. Press the start button, the incline window will display the fourth elevation set point (15.0)
13. Press the up incline button until a height of 15.0% elevation is reached.
14. Press the start button, the incline window will display the fifth elevation set point (20.0)
15. Press the up incline button until a height of 20.0% elevation is reached.
16. Press the start button, the incline window will display the sixth and final elevation set point (25.0)
17. Press the up incline button until a height of 25.0% elevation is reached.
18. Press the start button, the treadmill will reset and return to the normal operating mode.
19. Replace end cap and bolt on TMX425 Series.

**FVX325 Series Elevation Chart**

Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.32"	[84.3mm]
C	5%	5.62"	[142.8mm]
D	10%	8.42"	[223.8mm]
E	15%	11.20"	[284.5mm]
F	20%	13.48"	[342.4mm]
G	25%	15.84"	[402.4mm]

**TMX425 Series Elevation Chart**

Dim.	Grade	Inches	MM
A	0%	3.04"	[77.3mm]
B	.5%	3.36"	[85.2mm]
C	5%	6.59"	[167.3mm]
D	10%	10.72"	[272.2mm]
E	15%	14.85"	[377.2mm]
F	20%	18.22"	[462.9mm]
G	25%	21.71"	[551.5mm]

## Elevation Screw Lubrication

This procedure requires the following tools:

- Trackmaster grease (Part # 317-160-165)
- Clean, lint-free cloth
- Small paint brush

Clean and lubricate the treadmill elevation screw once every year. In high-use environments, clean and lubricate it once every 6 months.

1. Raise the treadmill to its maximum elevation.
2. Turn the main power switch to the OFF position, and unplug the treadmill from its outlet.
3. Using a lint-free cloth, remove the old lubricant and accumulated dust from the elevation screw.
4. Use a small brush to reapply a thin coat of grease to the threads of the elevation screw. Do not use too much grease—the excess could squeeze onto the floor and create a slip-and-fall hazard.
5. Return the unit to service.

# Troubleshooting

## Trouble Shooting Guide

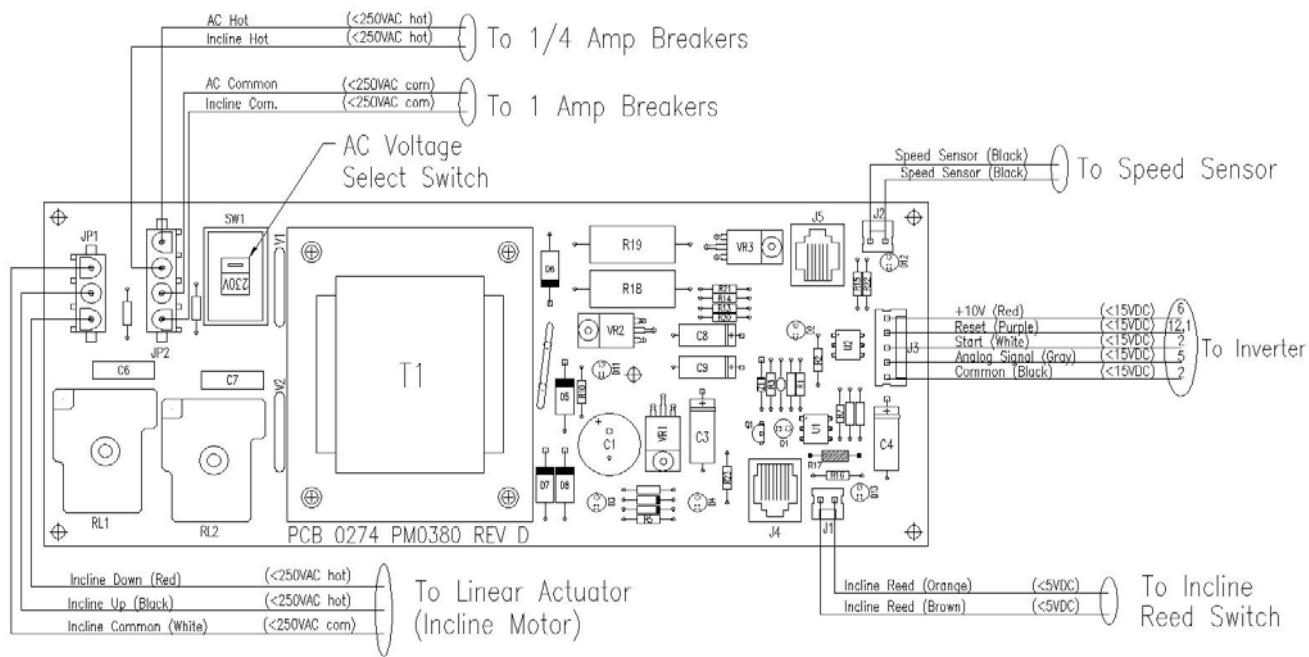
Symptom	Possible Cause	Corrective Action
Green Power light not lit	Power switch off Power cord unplugged Service breaker tripped Incorrect outlet wiring Cord is damaged Terminals at light not seated Spade terminals not fully seated at main switch	Turn power switch to on (-) position Plug in power cord Reset Breaker Have outlet checked by qualified personnel Replace cord Push terminals on to light spades Push cables back on terminals
Treadmill light is on but the treadmill will not run from the EKG system	Emergency stop button is pressed Stress system cable is not connected Stress system cable is damaged Emergency stop button wires are not connected Stress system has lost communication with treadmill Stress system is not configured properly for treadmill Power supply relay board is not powering up	Turn ESB to release Plug stress system into treadmill Replace communication cable Verify spade terminals are connected to board Turn off stress system & treadmill, then power on both units Qualified personnel should verify systems configuration Check wiring connections at breakers & board for loose connections
Treadmill light is on but the treadmill will not run from the test plug	Test button "test" is being improperly preformed Emergency stop button is pressed Emergency stop button wires are not connected Power supply relay board is not powering up RS232 harness in not transferring data	Hold button in while powering up and for a few seconds following Turn ESB to release Verify spade terminals are connected to board Check wiring connections at breakers & board for loose connections Verify by testing direct to CB RS232 port Replace harness if bad
Belt is making excessive noise	Treadmill is not on level floor Belt tracking is improperly adjusted Treadmills belt is contacting a foreign object	Move treadmill to level stable area Follow procedure in manual for adjusting belt tracking Remove any objects that are in contact with the belt
Belt slips or hesitates with foot step	Belt is improperly tensioned Running deck is excessively worn Belt is wet	Follow procedure in manual for adjusting belt tension Re-wax, flip or replace worn running deck Dry belt and remove the source of the moisture
Main Breaker throws when powering up treadmill	Treadmill is not on a dedicated circuit Improper circuit breaker is installed Outlet is wired incorrectly Power cord is damaged & shorted Inverter is defective Treadmill has an electrical short	Follow power requirements portion of manual 115v treadmills require a High Magnetic type breaker Qualified personnel should check outlet Replace power cord Replace inverter Qualified personnel should check treadmill wiring
1amp/2amp circuit breakers on treadmill trip	Improperly adjusted limit switches Defective actuator Improperly wired treadmill Treadmill has an electrical short	Adjust actuator limit switches Replace actuator Qualified personnel should check wiring at circuit breakers Qualified personnel should check wiring for short to ground
¼ amp circuit breakers on treadmill trip	Improperly wired treadmill Defective power supply relay board Treadmill has an electrical short	Qualified personnel should check wiring at circuit breakers Replace power supply relay board Qualified personnel should check wiring for short to ground
Controller display is partially illuminated or not at all	Emergency stop button is pressed Emergency stop button wires are not connected Communication cables from controller are damaged Communication cables from controller are not connected	Turn ESB to release Verify spade terminals are connected to each other or to ESB Replace cables Verify cables are both plugged into board and controller properly
Treadmill elevates but belt will not run	Stress system cable is damaged Stress system is not configured properly for treadmill Wiring to inverter has a faulty connection Inverter is defective Power supply relay board is defective Stress system is defective	Replace communication cable Qualified personnel should verify systems configuration Repair or replace wiring that feeds inverter power Replace inverter Replace relay board Qualified personnel should verify systems operation
Treadmills belt runs but will not elevate	Stress system cable is damaged Stress system is not configured properly for treadmill 1 amp/2 amp circuit breakers are tripped Actuator is defective Power supply relay board is defective Wiring to actuator has a faulty connection Stress system is defective	Replace communication cable Qualified personnel should verify systems configuration Reset the breakers Replace actuator Replace relay board Repair wiring that feeds actuator Qualified personnel should verify systems operation

## Power Supply and Driver Circuit Board (FG309)

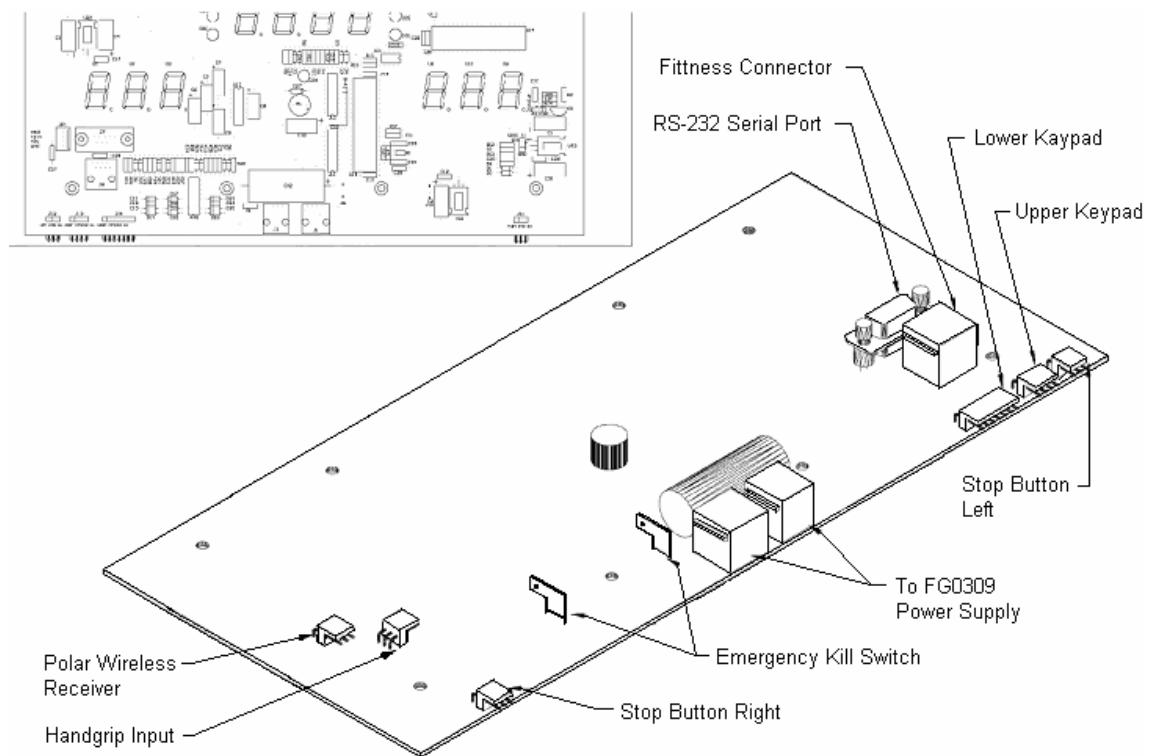
FG309 PCB responds to commands from the Control console to start the belt motor, elevate treadmill up and down, and increase treadmill running belt speed. It also routes speed and elevation sensor information to control console. Trouble shooting the treadmill begins with understanding the direction signals travel and the voltage levels required to activate a circuit.

Use the FG309 Schematic to assist in troubleshooting the following circuits.

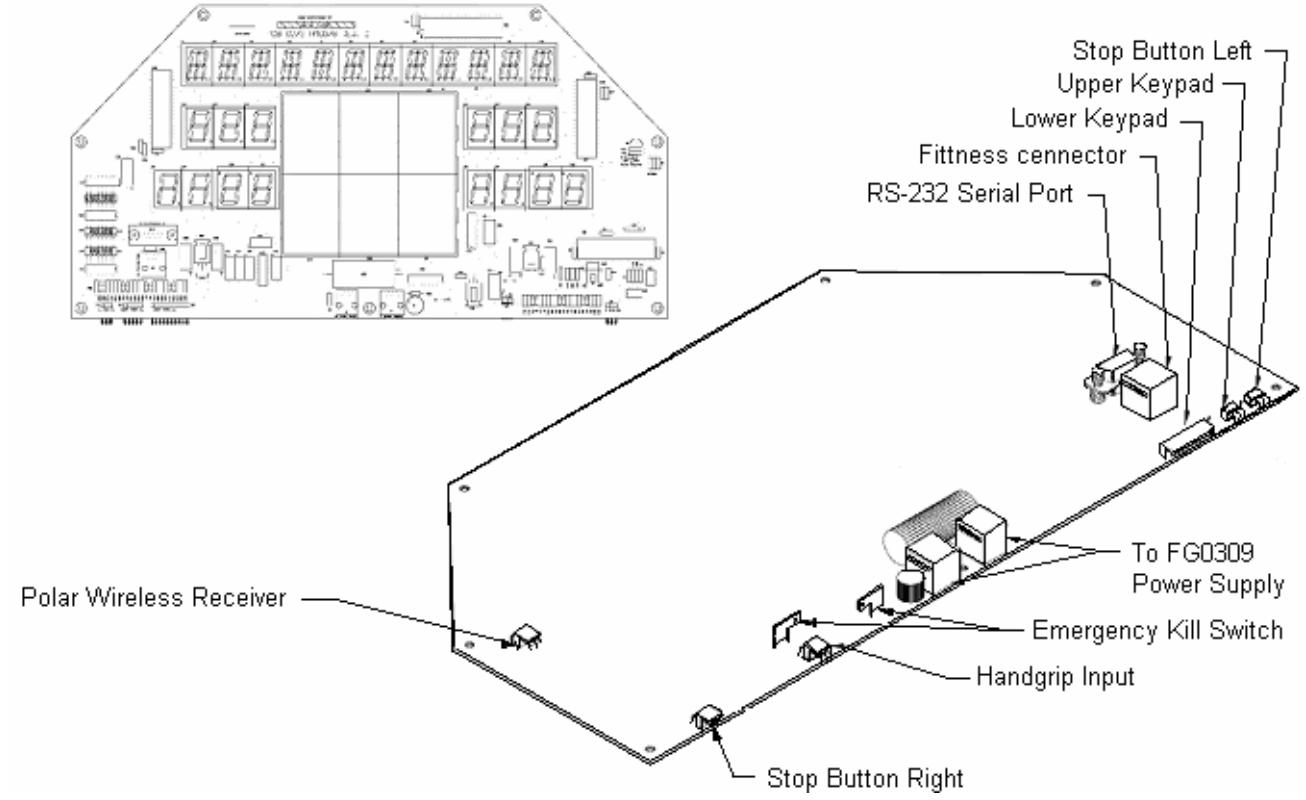
## Power Supply Board (FG309)



## Drive Circuit Board Manual Control (FG309)



## Drive Circuit Board Programmable Control (FG309)



## Power Supply

The power supply circuit forms the +12 volts (unregulated) from input power (120/230VAC). The +12 volts is then used to form VLED, VCC and +5 volt signal used in the control console, sensor circuits and the motor drive circuits.

All voltage checks are done with treadmill power turned on, and all connections or components in place.

### **+12 volts (unregulated)**

Input voltage (120/230VAC) is fed through two  $\frac{1}{4}$  amp fuse breakers to SW1 on the power supply.

A/C scale

**120/240VAC** present at JP2 Pin 2 to JP2 Pin 4 (Voltage from  $\frac{1}{4}$  FB's)

D/C scale

**16.8 volts** present at cathode D5 to DC Ground (DC ground is available at J3 Pin 5 (black))

The Input to the three voltage regulators on the Power Supply is the same unregulated 12 volts seen at the output of diode D5. Voltage regulator input is Pin 1, DC Ground is Pin 2 and Output is +5v at Pin 3.

## Output from control console to FG309

### **FG309 Belt Start**

Motor On (motoron) received from control console at J4 pin 6. Voltage levels provided for idle and active states.

Idle (D2 Start Indicator Lamp not lit)

**D/C scale**

**0 volts** U2 Pin 1 (input from control console) to DC Ground

**14.00 volts** U2 Pin 5 (output to inverter) to DC Ground

**14.00 volts** J3 Pin 2 (violet) to J3 Pin 3 (white)

Motor On (D2 Start Indicator Lamp lit)

**D/C scale**

**14.00 volts** U2 Pin 1 (input from control console) to DC Ground

**D/C scale**

**14.00 volts** U2 Pin 5 (output to inverter) to DC Ground

**D/C scale**

**0.0 volts** J3 Pin 2 (violet) to J3 Pin 3 (white) output to inverter

### FG309 Change Belt Speed

Speed Out (spout) received from control console at J5 pin 5. A set voltage level for testing is not available for this signal. The range of this signal at output of FG309 is in the range of 0.0 vdc to 7.5 vdc. Voltage range is provided for minimum and maximum speed.

Minimum Speed (D1 PWM indicator lamp dim)

D/C scale

**24.82 volts** U1 Pin 2 (input from control console) to DC Ground

D/C scale

**0.0 volts** U1 Pin 4 (output to inverter) to DC Ground

D/C scale

**0.0 volts** J3 Pin 4 (gray) to J3 Pin 5 (black) output to inverter

Maximum Speed (D1 PWM indicator lamp bright)

D/C scale

**13.43 volts** U1 Pin 2 (input from control console) to DC Ground

D/C scale

**7.58 volts** U1 Pin 4 (output to inverter) to DC Ground

D/C scale

**7.58 volts** J3 Pin 4 (gray) to J3 Pin 5 (black) output to inverter

### FG309 Elevate Up

Elevate Up (elevup) received from control console at J4 Pin 8. Voltage levels provided for idle and active states.

Idle (D3 Up Indicator Lamp not lit)

D/C scale

**0.0 volts** Cathode (stripe side) Diode D10 (input from control console) to DC ground (opposite side of D10)

A/C scale

**0.0 volts** JP1 Pin 2 (black) to JP1 Pin 1 (white) A/C output to linear actuator

Elevate Up (D3 Up Indicator Lamp lit)

D/C scale

**14.37 volts** Cathode (stripe side) Diode D10 (input from control console) to DC ground (opposite side of D10)

A/C scale

**120/240 volts** JP1 Pin 2 (black) to JP1 Pin 1 (white) A/C output to linear actuator

### FG309 Elevate Down

Elevate Down (elevdn) received from control console at J4 Pin 7. Voltage levels provided for idle and active states.

Idle (D4 Down Indicator Lamp not lit)

D/C scale

**0.0 volts** Cathode (stripe side) D9 (input from control console) to DC ground (opposite side of D9)

A/C scale

**0.0 volts** JP1 Pin 3 (red) to JP1 Pin 1 (white) A/C output to linear actuator

Elevate Down (D4 Down Indicator Lamp lit)

D/C scale

**14.37 volts** Cathode (stripe side) D9 (input from control console) to DC ground (opposite side of D9)

A/C scale

**120/240 volts** JP1 Pin 3 (red) to JP1 Pin 1 (white) A/C output to linear actuator

### **Input from FG309 to control console**

#### **Elevation Sensor**

Elevation sensor (elevin) received from Elevation Reed Switch J1 Pin 1. Verify sensor will change states.

Elevation Sensor Off (D13 unlit)

D/C scale

**0.0 volts** J1 Pin 1 (orange) to J1 Pin 2 (brown), Input from elevation sensor

Elevation Sensor On (D13 lit)

D/C scale

**5.05 volts** J1 Pin 1 (orange) to J1 Pin 2 (brown), Input from elevation sensor

#### **Speed Sensor**

Speed Sensor (spin) received from Hall Effect Speed Sensor J2 Pin 1. Verify sensor will change states.

Speed Sensor Off (D12 unlit)

D/C scale

**0.0 volts** J1 Pin 1 (black) to J1 Pin 2 (black), Input from speed sensor

Speed Sensor On (D12 unlit)

D/C scale

**5.05 volts** J1 Pin 1 (black) to J1 Pin 2 (black), Input from speed sensor

# *Removal and Replacement of Components*

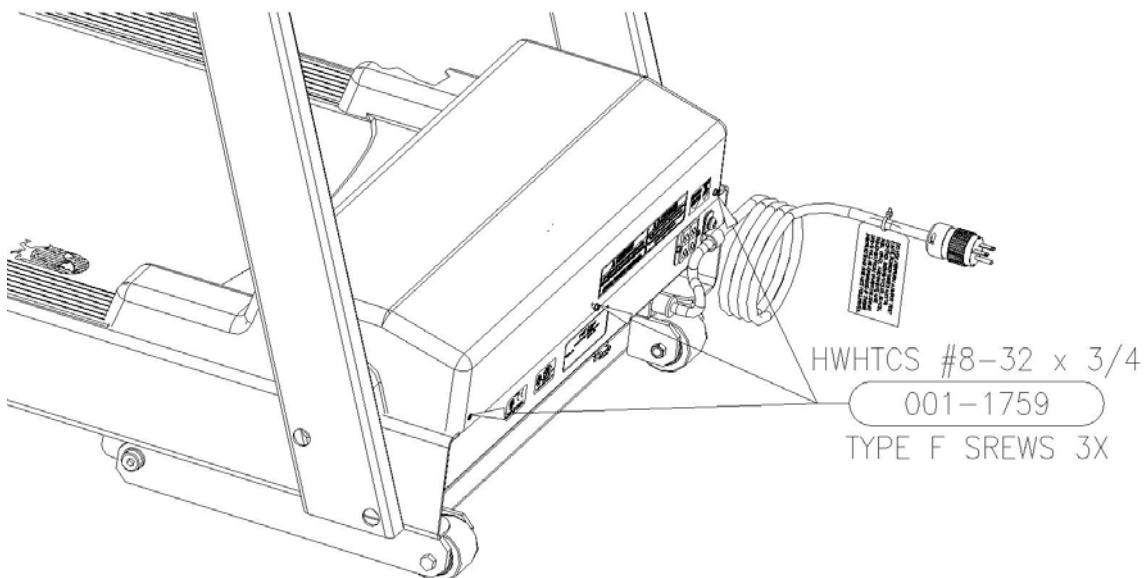
8

## Hood Removal Procedure FVX Series

### *Tools Required*

1/4" Hex Socket or Flat Blade Screw Driver

1. Turn the treadmill main power switch to the off position.
2. Unplug the Treadmill from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Remove the three hood securing bolts on the front end of treadmill.
5. Remove hood and set aside.
6. Reverse procedure to reinstall hood.

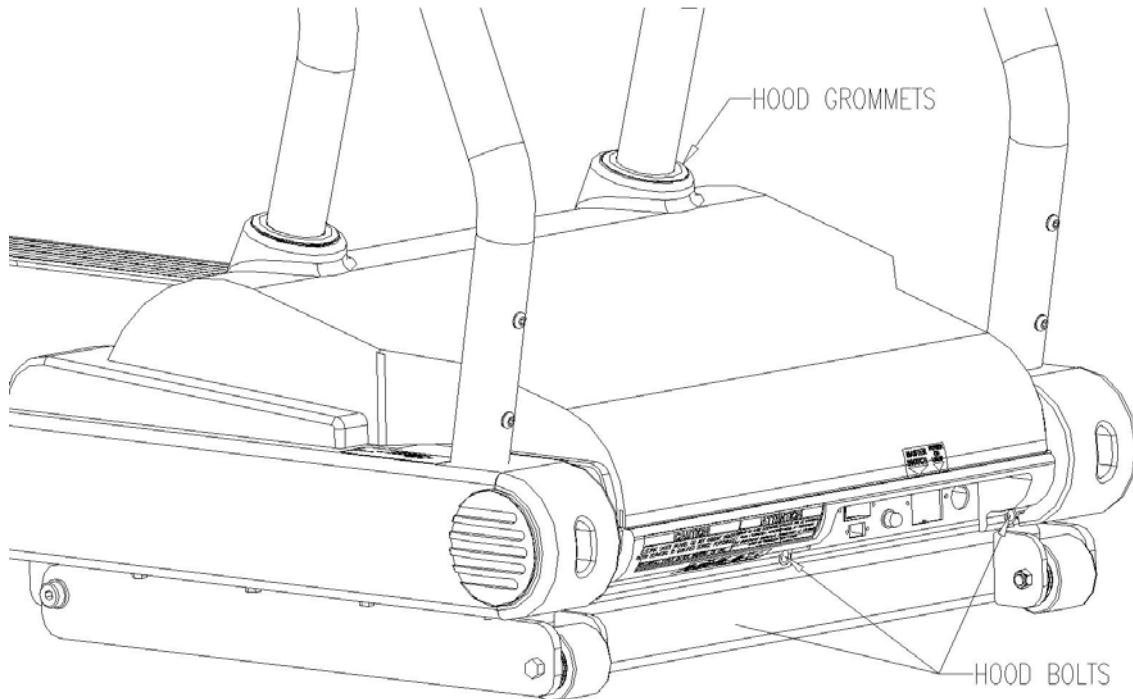


## Hood Removal Procedure TMX Series

### *Tools Required*

*1/4" Hex Socket or Flat Blade Screw Driver*

1. Turn the treadmill main power switch to the off position.
2. Unplug the Treadmill from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Slide the hood grommets up the center handrail approximately 2'.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
7. Reverse procedure to reinstall hood.



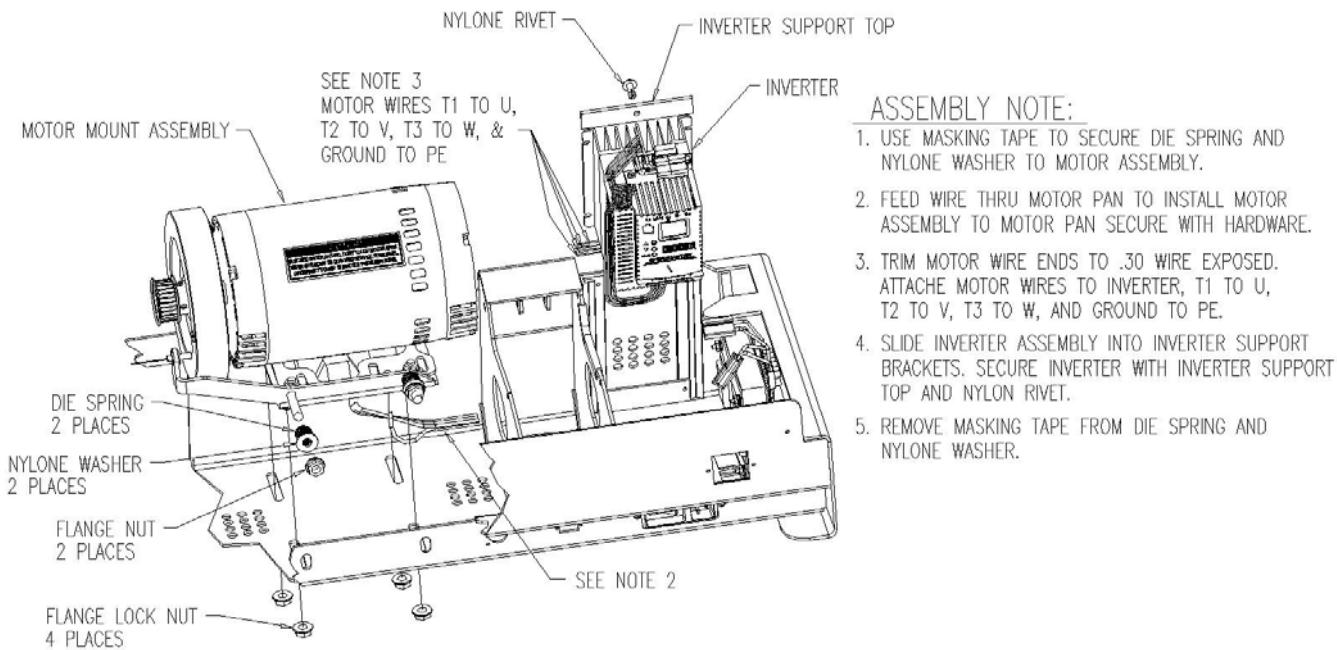
## Drive Motor Replacement FVX Series

### *Tools required*

*3/16" Hex wrench or Hex socket  
3/32" Hex wrench or Hex socket  
1/8" Hex wrench or Hex socket  
7/16" wrench or socket  
9/16" Open-end wrench  
1/4" Hex nut driver or flat blade screw driver  
3/32" flat blade electronics screwdriver  
#2 Phillips screwdriver  
Approximate time to complete 1.75 hrs*

1. Elevate the treadmill to approximate 15% grade.
2. Turn the treadmill main power switch to the off position.
3. Unplug the Treadmill from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Remove the three hood securing bolts on the front end of treadmill.
6. Remove hood and set aside.
7. Remove nylon rivet and inverter support top to lift inverter out of inverter support brackets.
8. Remove the three yellow motor and ground wires at the inverter using the small flat blade electrical screwdriver. Note the T-1, T-2, & T-3 and ground designation on the wires and there location they hook at the inverter.
9. Unplug Speed sensor from the power supply relay board.
10. Remove 4 Motor mounting nuts on underside of treadmill.
11. Remove 2 Motor tension adjustment nuts outside motor pan of treadmill allowing motor to move closer towards the front roller.
12. Slide the belt off the sprocket; see **Motor Mount Assembly Chapter 13**.
13. Lift the motor assembly out of the treadmill.
14. With the motor on the bench, remove the ground wire using the Phillips screwdriver.
15. Remove the four socket head button head bolts and flange nuts that retain the motor to the motor plate.
16. Lift the motor off the plate making sure not to loose the four isolation spacers and the four shoulder insulators.
17. Remove drive sprocket from motor shaft by loosening the two 3/32 set screws on its hub then sliding it off.
18. Slide the flywheel off the motor shaft.
19. Slide the flywheel on the new motors shaft all the way to the shoulder; make sure key is in place.
20. Tighten the setscrews on the hub, first the one on the key then the other one.
21. Slide the drive sprocket on the motor until it comes against the flywheels hub; now tighten the two setscrews to secure it.

22. With the insulators and Spacers still in place on the motor plate, set the new motor on the plate and reinstall the four bolts with nuts. Make sure the spacers and insulators all stay in place or the treadmill can become a shock hazard when in operation.
23. Adjust the sensor to magnet gap to approximately 1/16".
24. Set the motor assembly back down into the treadmills motor pan slots and reroute the motor wires thru motor pan (See Illustration for proper part locations).
25. Slide the belt back on to the sprocket.
26. Reinstall the four nuts on the underside of the motor pan but leave loose until the belt is properly tensioned and tracked according to the drive belt tension and adjustment section in this manual.
27. Attach motor wires the inverter using the small flat blade electrical screwdriver. Note; T-1, T-2, T-3, & Ground designation on the wires and the designation where they hook at the inverter (See illustration proper wire location).
28. Plug the speed sensor back in to the power supply relay board.
29. After belt has been properly tensioned and tracked tighten down the adjustment nuts and the retaining nuts on the bottom side of the treadmill, see **Chapter 4 for Drive Belt Adjustment Procedure.**
30. Replace the hood and its bolts.
31. After installation run the treadmill checking for excess vibration and noise from the motor area.



## Drive Motor Replacement TMX Series

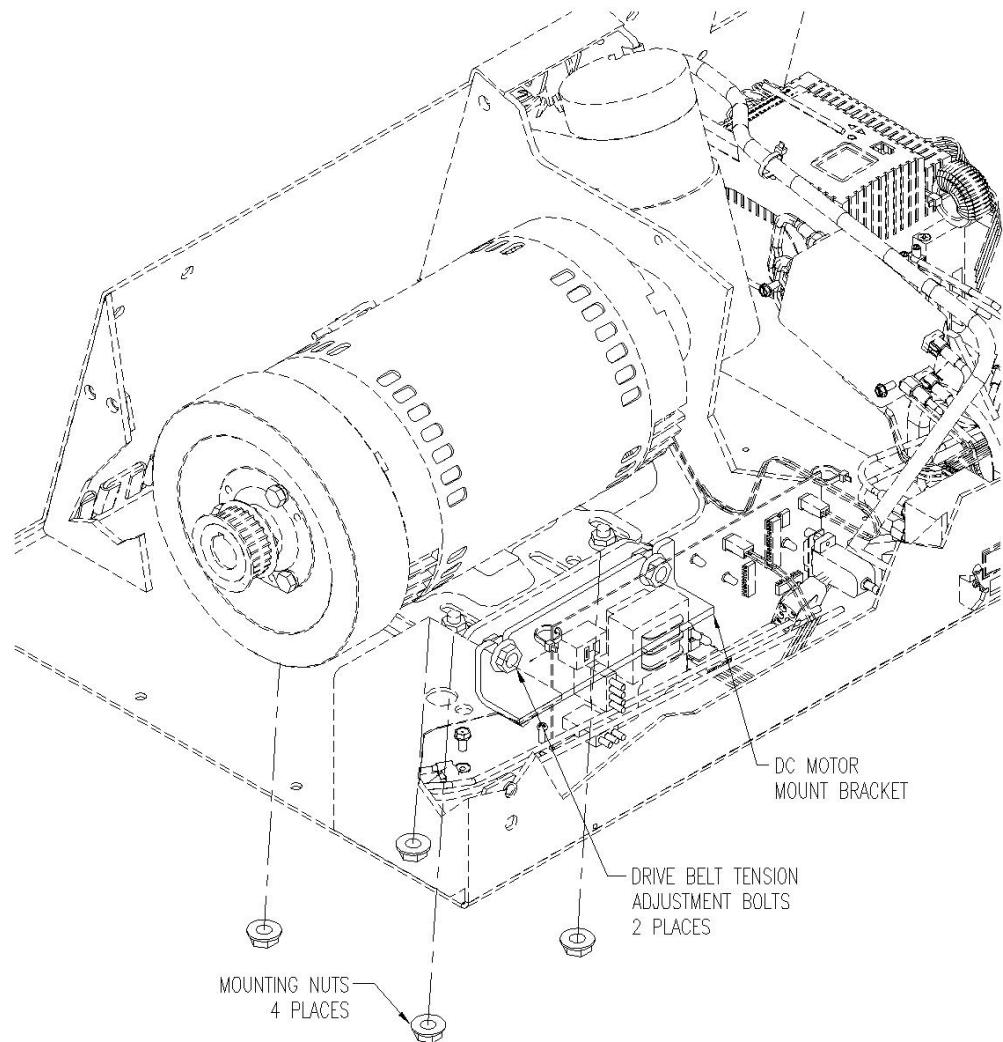
### *Tools required*

*3/16" Hex wrench or Hex socket  
3/32" Hex wrench or Hex socket  
1/8" Hex wrench or Hex socket  
7/16" wrench or socket  
9/16" Open-end wrench  
1/2" Open-end wrench  
1/4" Hex nut driver or flat blade screw driver  
3/32" flat blade electronics screwdriver  
#2 Phillips screwdriver  
Dial indicator (models with magnet in shaft collar on motor)  
Approximate time to complete 1.75 hrs*

1. Elevate the treadmill to approximate 15% grade.
2. Turn the treadmill main power switch to the off position.
3. Unplug the Treadmill from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Slide the hood grommets up the center handrail approximately 2'.
6. Remove the three hood securing bolts on the lower front end of treadmill.
7. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
8. Remove the ground wire at the inverter using the Phillips screwdriver.
9. Remove the three yellow motor wires at the inverter using the small flat blade electrical screwdriver. Note the T-1, T-2, & T-3 designation on the wires and there location they hook at the inverter.
10. Unplug Speed sensor from the power supply relay board.
11. Remove 4 Motor mounting nuts on underside of treadmill.
12. Loosen 4 Motor tension adjustment nuts inside motor pan of treadmill allowing motor to move closer towards the front roller.
13. Slide the belt off the sprocket; see **Motor Mount Assembly Chapter 13**.
14. Lift the motor assembly out of the treadmill.
15. With the motor on the bench, remove the ground wire using the Phillips screwdriver.
16. Remove the four socket head button head bolts and flange nuts that retain the motor to the motor plate.

17. Lift the motor off the plate making sure not to loose the four isolation spacers and the four shoulder insulators.
18. Remove drive sprocket from motor shaft by loosening the two 3/32 set screws on its hub then sliding it off.
19. Models with the shaft collar on opposite end of the flywheel proceed, If your model has the magnet in the flywheel skip to step number 30
20. Remove the three 7/16" bolts on the flywheels hub then thread them back in the threaded holes of the flywheel.
21. Once bottomed start to turn the bolts in 1/4 turn at a time, continue this around and around until the flywheel comes off the hub. Remove the bolts from the flywheel.
22. Loosen the two setscrews on the hub and slide it off the motor shaft.
23. Slide the hub on the other motor shaft all the way to the shoulder and tighten the setscrews, make sure the key is in place.
24. Put the flywheel back on the hub making sure to align the non-threaded holes in the flywheel with the threaded holes in the bushing.
25. Install the three bolts in these holes first finger tight only.
26. Tighten the bolts sequential 1/4 turn each until tight.
27. **IMPORTANT!** Once bolts are tight use a dial indicator on the flywheels face. Check for a maximum of .004" TIR, correct for error by tightening bolts at high spots. Note; Excessive vibration when treadmill is running indicates flywheel was not properly dialed in.
28. Remove the shaft collar on the other end by loosening the bolt on the collar.
29. Install the collar on the other motor and secure it by tightening the bolt. Once complete skip to step #34
30. For models with Magnet in the flywheel proceed here. Loosen flywheels set screws on the backside hub of the flywheel.
31. Slide the flywheel off the motor shaft.
32. Slide the flywheel on the new motors shaft all the way to the shoulder; make sure key is in place.
33. Tighten the setscrews on the hub, first the one on the key then the other one.
34. Slide the drive sprocket on the motor until it comes against the flywheels hub; now tighten the two setscrews to secure it.
35. With the insulators and Spacers still in place on the motor plate, set the new motor on the plate and reinstall the four bolts with nuts. Make sure the spacers and insulators all stay in place or the treadmill can become a shock hazard when in operation.
36. Loosen the setscrew retaining the speed sensor and adjust the sensor to magnet gap to approximately 1/16".
37. Set the motor assembly back down into the treadmills motor pan slots.

38. Slide the belt back on to the sprocket.
39. Reinstall the four nuts on the underside of the motor pan but leave loose until the belt is properly tensioned and tracked according to the drive belt tension and adjustment section in this manual.
40. Reroute the three yellow motor wires and attach them to the inverter using the small flat blade electrical screwdriver. Note; T-1, T-2, & T-3 designation on the wires and the designation where they hook at the inverter.
41. Plug the speed sensor back in to the power supply relay board.
42. After belt has been properly tensioned and tracked tighten down the adjustment nuts and the retaining nuts on the bottom side of the treadmill, see **Chapter 4 for Drive Belt Adjustment Procedure**.
43. Replace the hood and its bolts and slide the hood grommets back in to place.
44. After installation run the treadmill checking for excess vibration and noise from the motor area.



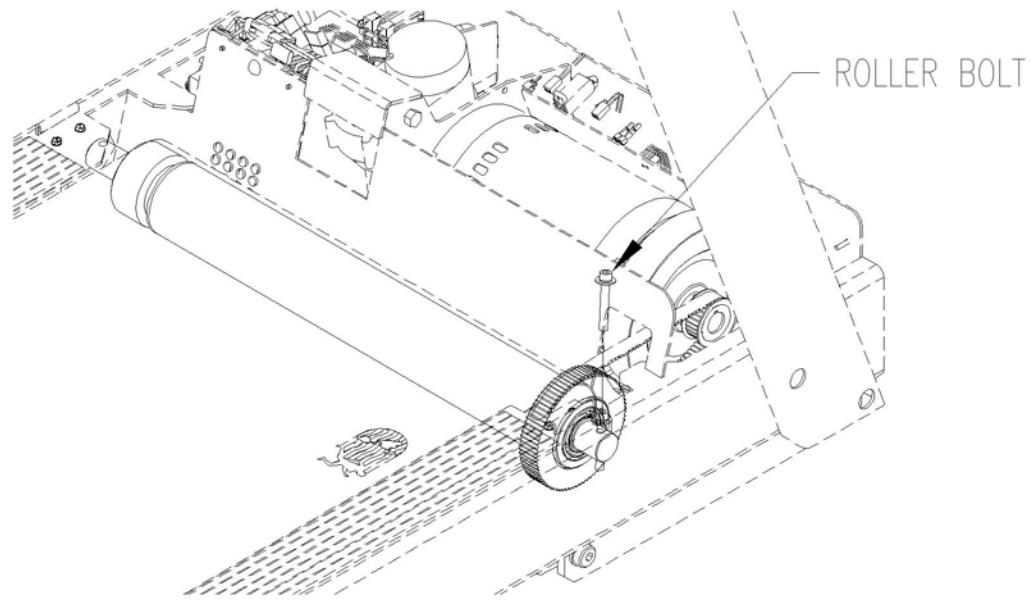
## Front Roller Replacement FVX / TMX Series

### *Tools Required*

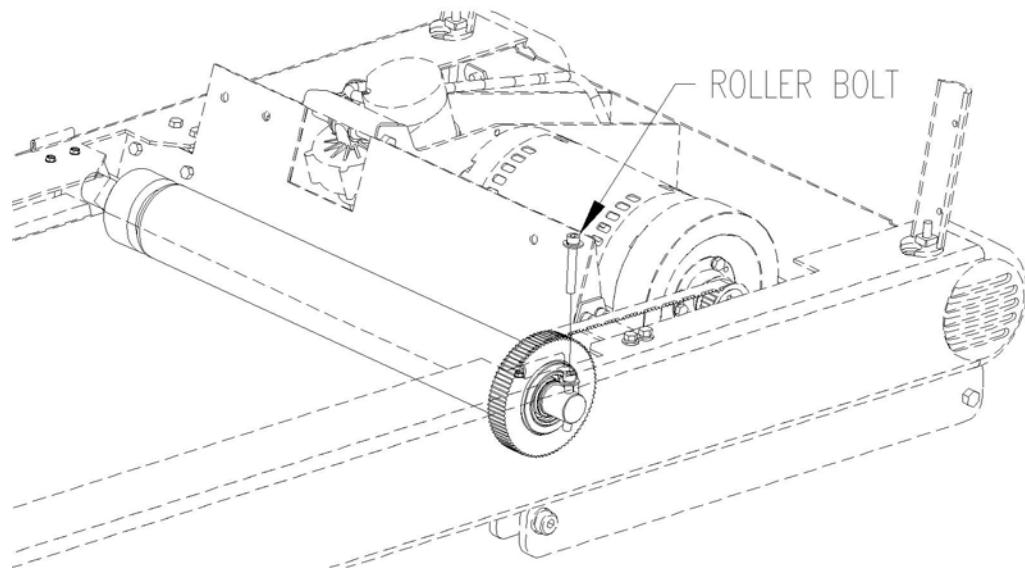
*1/4 inch Allen wrench or socket  
3/16 inch Allen wrench or socket  
Approximate Time to Complete – 45 Minutes*

1. Turn treadmill main power switch to the off position.
2. Unplug treadmill plug from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Slide the hood grommets on TMX Series up the center handrail approximately 2'.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Slide hood on TMX Series up treadmill center rail and force past the grommets, allow hood to hang from grommets. On FVX Series set hood to side.
7. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
8. Remove the end caps and place to the side.
9. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
10. Push rear roller forward as far as it will go.
11. Use a 1/4 inch Allen wrench or socket to remove bolt securing the front roller to the treadmill frame.
12. Push the front roller from the right side of the treadmill to the left side and lift roller up and slip timing belt off the front roller. Lift the front roller up and out of the treadmill. Use caution to avoid pinching the timing belt.
13. Slide the front roller between the running belt, place the timing belt over the sprocket of the front roller between the running belt, and place the timing belt over the sprocket of the front roller. Replace the front roller. Verify the guide for the belt deck and rollers is to the left during installation. Verify the timing belt goes around the front roller sprocket and that it is not pinched. Replace the securing bolt and tighten.
14. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
15. Replace the left and right end caps and replace securing screws.
16. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**

### FVX Series



### TMX Series



## Rear Roller Replacement

### *Tools Required*

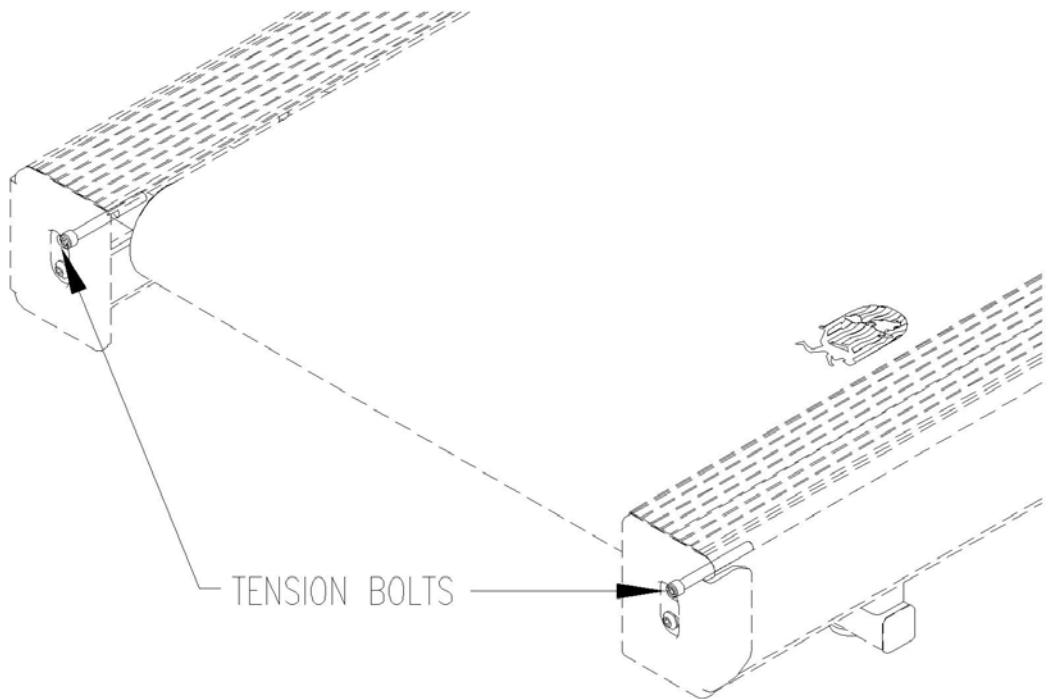
*1/4 inch Allen wrench or socket*

*3/16 inch Allen wrench or socket*

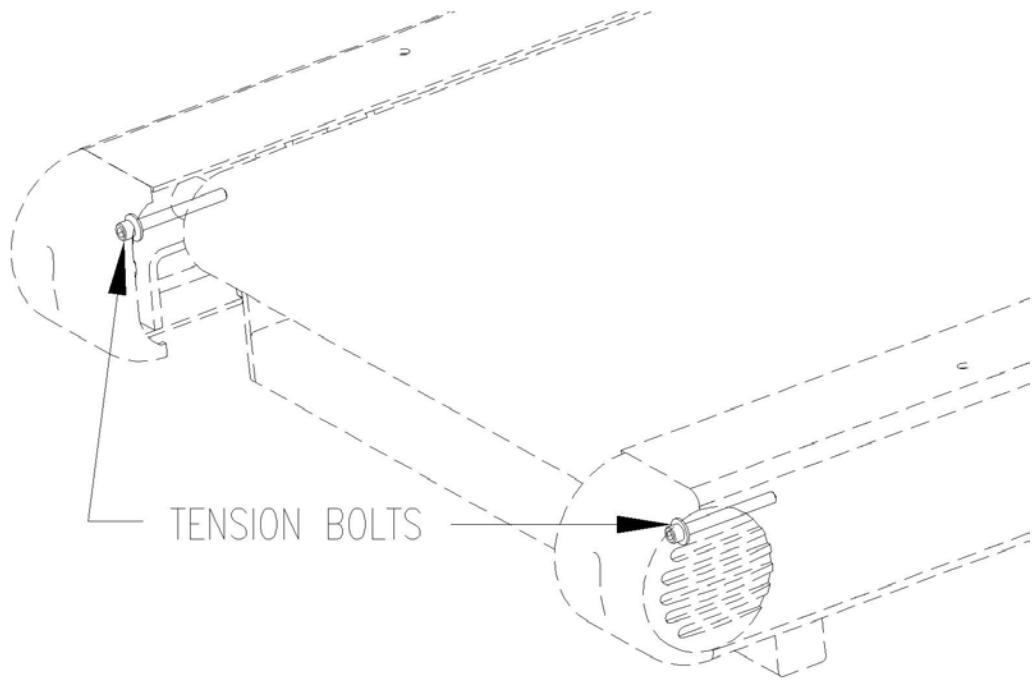
*Approximate Time to Complete – 45 Minutes*

1. Turn treadmill main power switch to the off position.
2. Unplug treadmill plug from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Slide the hood grommets on TMX Series up the center handrail approximately 2'.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Slide hood on TMX Series up treadmill center rail and force past the grommets, allow hood to hang from grommets. On FVX Series set hood to side.
7. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
8. Remove the end caps and place to the side.
9. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
10. Push rear roller forward as far as it will go.
11. Use a 1/4 inch Allen wrench or socket to remove bolt securing the front roller to the treadmill frame.
12. Push the front roller from the right side of the treadmill to the left side and lift roller up and slip timing belt off the front roller. Lift the front roller up and out of the treadmill. Use caution to avoid pinching the timing belt.
13. Slide the front roller between the running belt, place the timing belt over the sprocket of the front roller between the running belt, and place the timing belt over the sprocket of the front roller. Replace the front roller. Verify the guide for the belt deck and rollers is to the left during installation. Verify the timing belt goes around the front roller sprocket and that it is not pinched. Replace the securing bolt and tighten.
14. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
15. Replace the left and right end caps and replace securing screws.
16. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**

### FVX Series



### TMX Series



## Running Belt Replacement FVX Series

### *Tools Required*

*1/4 inch Allen wrench or socket*

*3/16 inch Allen wrench or socket*

*1/2 Inch Wrench or socket with extension*

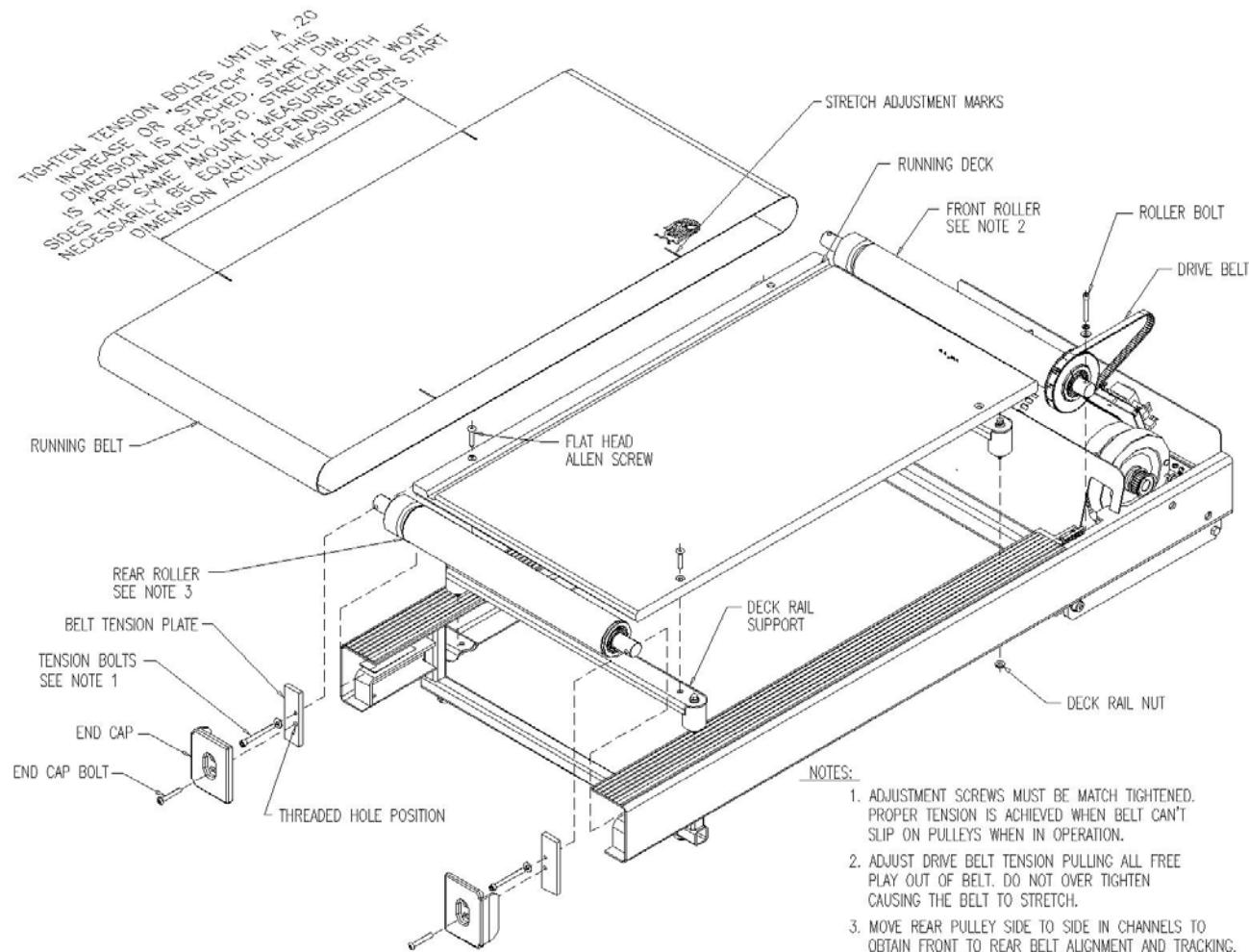
*Jack stand or block capable of supporting the weight of the rear of the treadmill*

*Approximate Time to Complete – 60 Minutes*

1. Elevate treadmill to 12%.
2. Turn treadmill main power switch to the off position.
3. Unplug treadmill plug from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Set hood to the side of treadmill.
7. Lift rear of the treadmill and place jack stands or block to support the rear of the treadmill.
8. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
9. Remove the end caps and place to the side.
10. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
11. Push rear roller forward as far as it will go.
12. Lift the edge of the running belt up, use 3/16 Allen wrench or socket and remove the four flat head Allen screws which secure the running deck cross braces. There are four screws total, two on the left side and two on the right side.
13. Push the deck to one side of the treadmill and from the other side lift the edge of the deck up and out over the rail, place deck to the side
14. Use a 1/4 inch Allen wrench or socket to remove bolt securing the front roller to the treadmill frame.
15. Push the front roller from the right side of the treadmill to the left side and lift roller up and slip timing belt off the front roller. Lift the front roller up and out of the treadmill. Use caution to avoid pinching the belt.
16. Slide the rear roller out of the rear of the treadmill side rails and remove from the treadmill.
17. Use  $\frac{1}{2}$  inch wrench or socket with extension to remove the four bolts securing the deck cross braces to the treadmill side channels. Remove the cross braces from the treadmill. Use caution to avoid damage to the antistatic tinsel run between the two front bolts. Set the cross braces and the tinsel off to the side. Verify all pieces of the deck cushions are accounted for and set off to the side.
18. Remove old running belt and replace with new running belt. Verify the guide for the belt deck and rollers is to the left during installation.
19. Replace the two deck braces and deck cushions, start the deck braces securing bolts but do not tighten them. Replace the antistatic tinsel using the two from deck brace bolts.

20. Replace the rear roller; push the rear roller as far forward as possible. Do not replace or start the tensioning bolts at this time. Verify the guide for the belt deck and rollers is to the left during installation.
21. Slide the front roller between the running belt, place the timing belt over the sprocket of the front roller between the running belt, and place the timing belt over the sprocket of the front roller. Replace the front roller. Verify the guide for the belt deck and rollers is to the left during installation. Verify the timing belt goes around the front roller sprocket and that it is not pinched. Replace the securing bolt and tighten.
22. Lift up the edge of the running belt and slide the deck onto the deck braces.
23. Tighten the cross brace securing bolts, use caution to avoid over tightening the bolts.
24. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
25. Replace the left and right end caps and replace securing screws.
26. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**
27. Reinstall hood by reversing procedure.

## FVX Series



## Running Belt Replacement TMX Series

### Tools Required

1/4 inch Allen wrench or socket

3/16 inch Allen wrench or socket

1/2 Inch Wrench or socket with extension

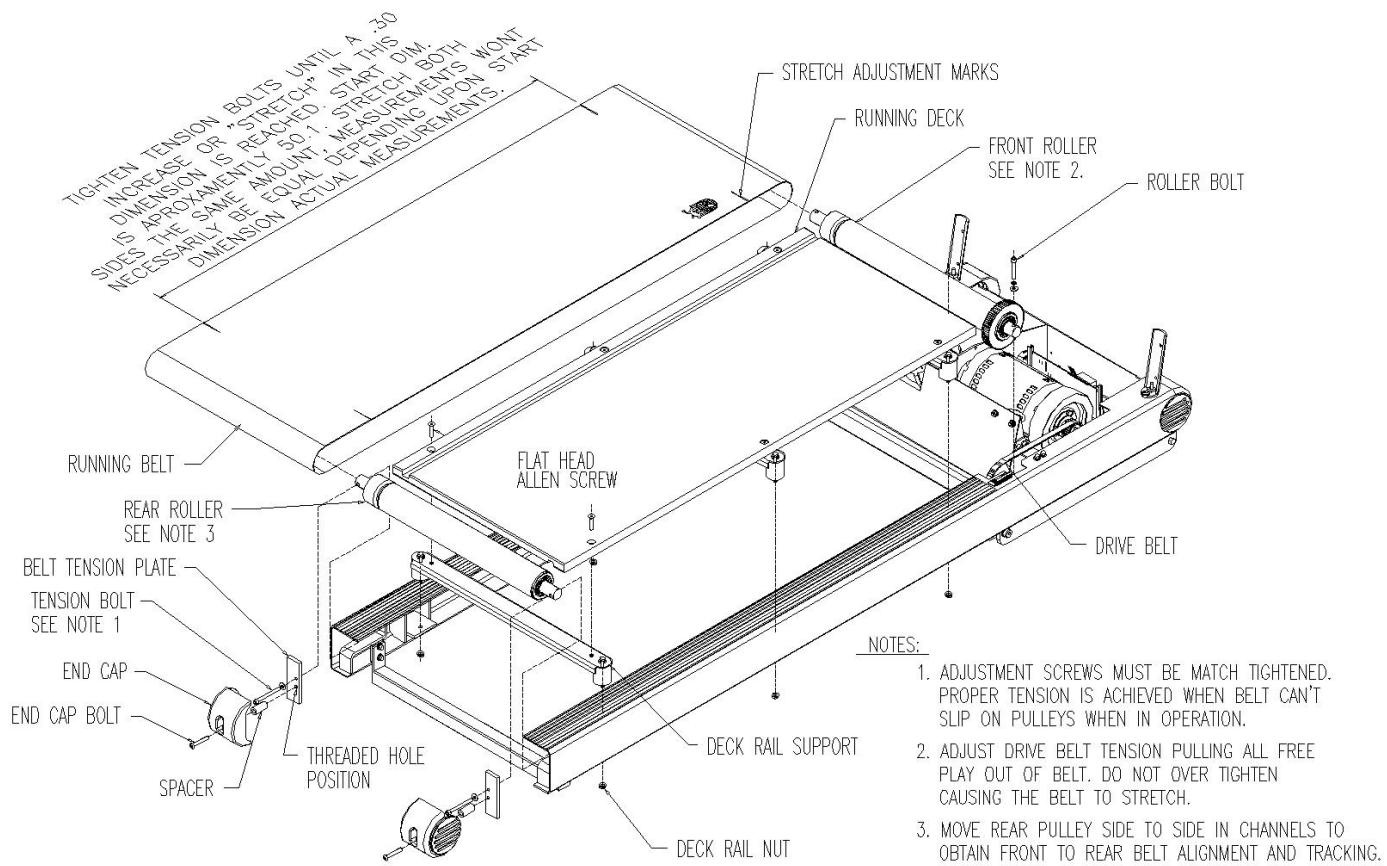
Jack stand or block capable of supporting the weight of the rear of the treadmill

Approximate Time to Complete – 60 Minutes

1. Elevate treadmill to 12%.
2. Turn treadmill main power switch to the off position.
3. Unplug treadmill plug from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Slide the hood grommets up the center handrail approximately 2'.
6. Remove the three hood securing bolts on the lower front end of treadmill.
7. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
8. Lift rear of the treadmill and place jack stands or block to support the rear of the treadmill.
9. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
10. Remove the end caps and place to the side.
11. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
12. Push rear roller forward as far as it will go.
13. Lift the edge of the running belt up, use 3/16 Allen wrench or socket and remove the six flat head Allen screws which secure the running deck cross braces. There are six screws total, three on the left side and three on the right side.
14. Push the deck to one side of the treadmill and from the other side lift the edge of the deck up and out over the rail, place deck to the side
15. Use a 1/4 inch Allen wrench or socket to remove bolt securing the front roller to the treadmill frame.
16. Push the front roller from the right side of the treadmill to the left side and lift roller up and slip timing belt off the front roller. Lift the front roller up and out of the treadmill. Use caution to avoid pinching the belt.
17. Slide the rear roller out of the rear of the treadmill side rails and remover from the treadmill.
18. Use ½ inch wrench or socket with extension to remove the six bolts securing the deck cross braces to the treadmill side channels. Remove the cross braces from the treadmill. Use caution to avoid damage to the antistatic tinsel run between the two front bolts. Set the cross braces and the tinsel off to the side. Verify all pieces of the deck cushions are accounted for and set off to the side.
19. Remove old running belt and replace with new running belt. Verify the guide for the belt deck and rollers is to the left during installation.
20. Replace the three deck braces and deck cushions, start the deck braces securing bolts but do not tighten them. Replace the antistatic tinsel using the two from deck brace bolts.

21. Replace the rear roller, push the rear roller as far forward as possible. Do not replace or start the tensioning bolts at this time. Verify the guide for the belt deck and rollers is to the left during installation.
22. Slide the front roller between the running belt, place the timing belt over the sprocket of the front roller between the running belt, and place the timing belt over the sprocket of the front roller. Replace the front roller. Verify the guide for the belt deck and rollers is to the left during installation. Verify the timing belt goes around the front roller sprocket and that it is not pinched. Replace the securing bolt and tighten.
23. Lift up the edge of the running belt and slide the deck onto the deck braces.
24. Tighten the cross brace securing bolts, use caution to avoid over tightening the bolts.
25. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
26. Replace the left and right end caps and replace securing screws.
27. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**
28. Reinstall hood by reversing procedure.

## TMX Series



## Running Deck Replacement FVX Series

### Tools Required

*1/4 inch Allen wrench or socket  
3/16 inch Allen wrench or socket  
1/2 Inch Wrench or socket with extension  
Jack stand or block capable of supporting the weight of the rear of the treadmill  
Approximate Time to Complete – 30 Minutes*

1. Elevate treadmill to 12%.
2. Turn treadmill main power switch to the off position.
3. Unplug treadmill plug from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Set hood to the side of treadmill.
7. Lift rear of the treadmill and place jack stands or block to support the rear of the treadmill.
8. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
9. See **Running Belt Replacement FVX Series** assembly drawing.
10. Remove the end caps and place to the side.
11. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
12. Push rear roller forward as far as it will go.
13. Lift the edge of the running belt up, use 3/16 Allen wrench or socket and remove the four flat head Allen screws which secure the running deck cross braces. There are four screws total, two on the left side and two on the right side.
14. Push the deck to one side of the treadmill and from the other side lift the edge of the deck up and out over the side rail.
15. The deck is now ready for maintenance, replacement or to be flipped.
16. Lift up the edge of the running belt and slide the deck onto the deck braces. Replace the screws securing the deck to the deck braces and tighten. Verify the guide for the deck is to the left during installation.
17. Tighten the cross brace securing bolts, use caution to avoid over tightening the bolts.
18. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
19. Replace the left and right end caps and replace securing screws.
20. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**
21. Reinstall hood by reversing procedure.

## Running Deck Replacement TMX Series

### Tools Required

*1/4 inch Allen wrench or socket  
3/16 inch Allen wrench or socket  
1/2 Inch Wrench or socket with extension  
Jack stand or block capable of supporting the weight of the rear of the treadmill  
Approximate Time to Complete – 30 Minutes*

1. Elevate treadmill to 12%.
2. Turn treadmill main power switch to the off position.
3. Unplug treadmill plug from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Slide the hood grommets up the center handrail approximately 2'.
6. Remove the three hood securing bolts on the lower front end of treadmill.
7. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
8. Lift rear of the treadmill and place jack stands or block to support the rear of the treadmill.
9. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
10. See **Running Belt Replacement TMX Series** assembly drawing.
11. Remove the end caps and place to the side.
12. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
13. Push rear roller forward as far as it will go.
14. Lift the edge of the running belt up, use 3/16 Allen wrench or socket and remove the six flat head Allen screws which secure the running deck cross braces. There are six screws total, three on the left side and three on the right side.
15. Push the deck to one side of the treadmill and from the other side lift the edge of the deck up and out over the side rail.
16. The deck is now ready for maintenance, replacement or to be flipped.
17. Lift up the edge of the running belt and slide the deck onto the deck braces. Replace the screws securing the deck to the deck braces and tighten. Verify the guide for the deck is to the left during installation.
18. Tighten the cross brace securing bolts, use caution to avoid over tightening the bolts.
19. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
20. Replace the left and right end caps and replace securing screws.
21. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**
22. Reinstall hood by reversing procedure.

## Deck Cushion Replacement FVX Series

### *Tools Required*

*1/4 inch Allen wrench or socket*

*3/16 inch Allen wrench or socket*

*1/2 Inch Wrench or socket with extension*

*Jack stand or block capable of supporting the weight of the rear of the treadmill*

*Approximate Time to Complete – 60 Minutes*

1. Elevate treadmill to 12%.
2. Turn treadmill main power switch to the off position.
3. Unplug treadmill plug from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Set hood to the side treadmill.
7. Lift rear of the treadmill and place jack stands or block to support the rear of the treadmill.
8. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
9. Remove the end caps and place to the side.
10. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
11. Push rear roller forward as far as it will go.
12. Lift the edge of the running belt up, use 3/16 Allen wrench or socket and remove the two flat head Allen screws which secure the running deck cross brace with the damaged deck cushions.
13. Use a 1/2 inch wrench or socket with extension to remove the two bolts securing the deck cross brace to the treadmill side channels. Remove the cross braces from the treadmill. Use caution to avoid damaged to the antistatic tinsel run between the two front bolts if the front cross brace is being removed.
14. Use a 1/2 inch socket to remove the rubber deck cushion(s) from the brace.
15. Replace the damaged deck cushion and use 1/2 inch socket to remove the bolt securing the rubber deck cushion(s) from the brace.
16. Verify the placement of the deck cushion(s) by referring to the **Running Belt Replacement FVX Series** assembly drawing.
17. Replace the deck brace and deck cushions, start the deck brace securing bolts but do not tighten them. Replace the antistatic tinsel using the two front deck brace bolts if removed. (Fitness Only)
18. Lift up the edge of the running belt and slide the deck onto the deck braces. Replace the screws securing the deck to the deck braces and tighten. Verify the guide for the deck is to the left during installation.
19. Tighten the cross brace securing bolts, use caution to avoid over tightening the bolts.
20. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
21. Replace the left and right end caps and replace securing screws.
22. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**
23. Reinstall hood by reversing procedure.

## Deck Cushion Replacement TMX Series

### Tools Required

*1/4 inch Allen wrench or socket  
3/16 inch Allen wrench or socket  
1/2 Inch Wrench or socket with extension  
Jack stand or block capable of supporting the weight of the rear of the treadmill  
Approximate Time to Complete – 60 Minutes*

1. Elevate treadmill to 12%.
2. Turn treadmill main power switch to the off position.
3. Unplug treadmill plug from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Slide the hood grommets up the center handrail approximately 2'.
6. Remove the three hood securing bolts on the lower front end of treadmill.
7. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
8. Lift rear of the treadmill and place jack stands or block to support the rear of the treadmill.
9. Use the 3/16 Allen wrench or socket to remove the button head Allen bolt securing the left and right end caps from the rear of the treadmill.
10. Remove the end caps and place to the side.
11. Use a 1/4 inch Allen wrench or socket to completely remove left and right tension bolts from rear roller. When removing the tension bolts maintain equal tension on the bolts to avoid stripping the threads on the tension bolt or roller.
12. Push rear roller forward as far as it will go.
13. Lift the edge of the running belt up, use 3/16 Allen wrench or socket and remove the two flat head Allen screws which secure the running deck cross brace with the damaged deck cushions.
14. Use a 1/2 inch wrench or socket with extension to remove the two bolts securing the deck cross brace to the treadmill side channels. Remove the cross braces from the treadmill. Use caution to avoid damaged to the antistatic tinsel run between the two front bolts if the front cross brace is being removed.
15. Use a 1/2 inch socket to remove the rubber deck cushion(s) from the brace.
16. Replace the damaged deck cushion and use 1/2 inch socket to remove the bolt securing the rubber deck cushion(s) from the brace.
17. Verify the placement of the deck cushion(s) by referring to the **Running Belt Replacement FVX Series** assembly drawing.
18. Replace the deck brace and deck cushions, start the deck brace securing bolts but do not tighten them. Replace the antistatic tinsel using the two front deck brace bolts if removed. (Fitness Only)
19. Lift up the edge of the running belt and slide the deck onto the deck braces. Replace the screws securing the deck to the deck braces and tighten. Verify the guide for the deck is to the left during installation.
20. Tighten the cross brace securing bolts, use caution to avoid over tightening the bolts.
21. Align the bolt holes on the rear roller with the access hole of the end caps. Start the tensioning bolts on the rear roller but do not tighten.
22. Replace the left and right end caps and replace securing screws.
23. Adjust the tension of the running belt; see **Chapter 4 for Running Belt Tension Procedure.**
24. Reinstall hood by reversing procedure.

## Motor Drive Belt Replacement FVX Series

### *Tools required*

*1/4" Hex wrench or Hex socket*

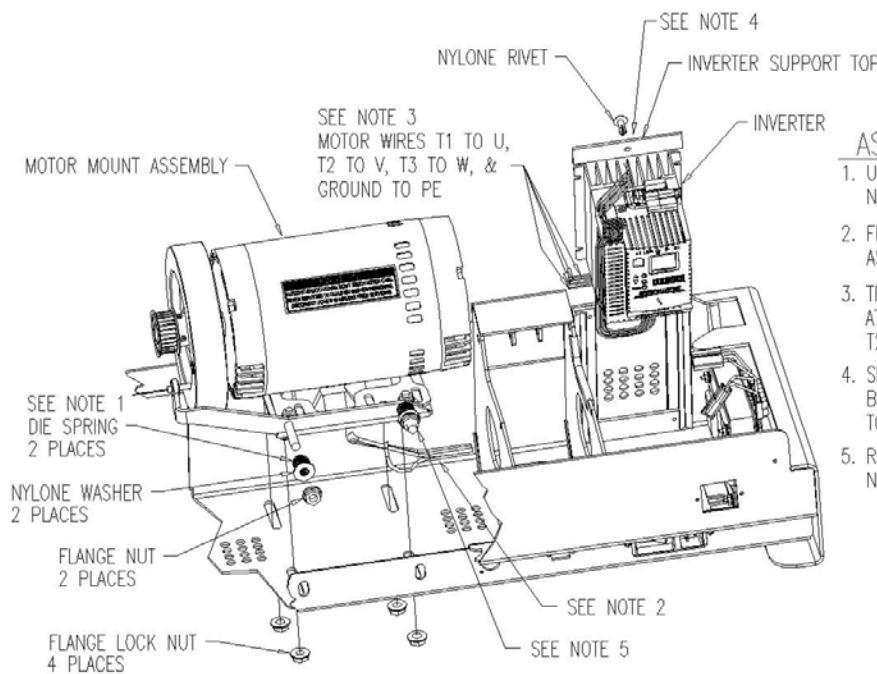
*7/16" wrench or socket*

*9/16" Open-end wrench*

*1/4" Hex nut driver or flat blade screw driver*

*Approximate time to complete 1.5 hrs*

1. Elevate the treadmill to approximate 15% grade.
2. Turn the treadmill main power switch to the off position.
3. Unplug the Treadmill from the wall receptacle.
4. Remove the three hood securing bolts on the lower front end of treadmill.
5. Set hood to the side of treadmill.
6. Loosen 4 Motor mounting nuts on underside of treadmill.
7. Loosen 2 Motor tension adjustment nuts inside motor pan of treadmill allowing motor to move closer towards the front roller.
8. Loosen rear belt tension bolts allowing the rear roller to move forward towards the front roller.
9. Remove hex socket head cap screw retaining front roller on right hand side.
10. Now lift right hand end of roller up enough to remove the drive belt.
11. Reverse procedure to install new drive belt.
12. After installation follow drive belt/run belt; see **Chapter 4 for Running Belt Tension Procedure and Drive Belt Tension Procedure.**

**FVX Series****ASSEMBLY NOTE:**

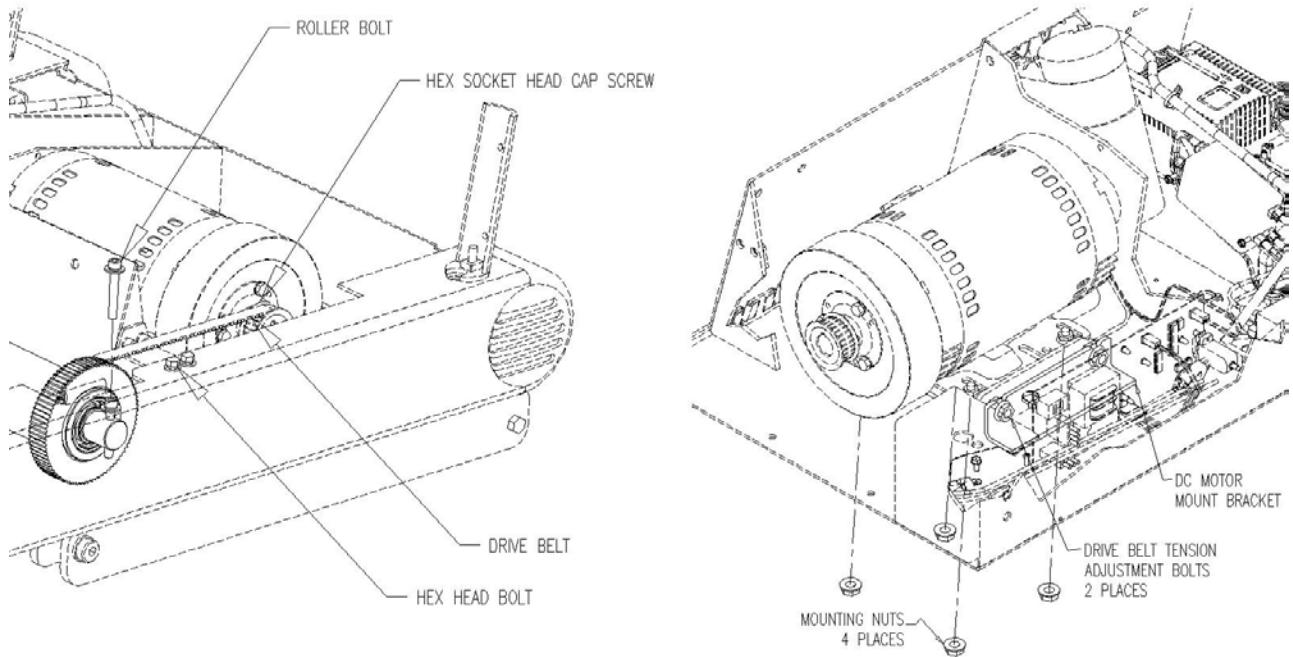
1. USE MASKING TAPE TO SECURE DIE SPRING AND NYLON WASHER TO MOTOR ASSEMBLY.
2. FEED WIRE THRU MOTOR PAN TO INSTALL MOTOR ASSEMBLY TO MOTOR PAN SECURE WITH HARDWARE.
3. TRIM MOTOR WIRE ENDS TO .30 WIRE EXPOSED. ATTACHE MOTOR WIRES TO INVERTER, T1 TO U, T2 TO V, T3 TO W, AND GROUND TO PE.
4. SLIDE INVERTER ASSEMBLY INTO INVERTER SUPPORT BRACKETS. SECURE INVERTER WITH INVERTER SUPPORT TOP AND NYLON RIVET.
5. REMOVE MASKING TAPE FROM DIE SPRING AND NYLON WASHER.

## Motor Drive Belt Replacement TMX Series

### *Tools required*

*1/4" Hex wrench or Hex socket  
7/16" wrench or socket  
9/16" Open-end wrench  
1/4" Hex nut driver or flat blade screw driver  
Approximate time to complete 1.5 hrs*

1. Elevate the treadmill to approximate 15% grade.
2. Turn the treadmill main power switch to the off position.
3. Unplug the Treadmill from the wall receptacle.
4. Slide the hood grommets up the center handrail approximately 2'.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
7. Remove two hex socket head cap screws retaining Right hand side rail bracket.
8. Remove Two Hex head bolts retaining Right hand side rail bracket and remove bracket.
9. Loosen 4 Motor mounting nuts on underside of treadmill.
10. Loosen 4 Motor tension adjustment nuts inside motor pan of treadmill allowing motor to move closer towards the front roller.
11. Loosen rear belt tension bolts allowing the rear roller to move forward towards the front roller.
12. Remove hex socket head cap screw retaining front roller on right hand side.
13. Now lift right hand end of roller up enough to remove the drive belt.
14. Reverse procedure to install new drive belt.
15. After installation follow drive belt/run belt; see **Chapter 4 for Running Belt Tension Procedure and Drive Belt Tension Procedure.**

**TMX Series**

## Elevation Actuator Replacement / Adjustment

### Tools Required

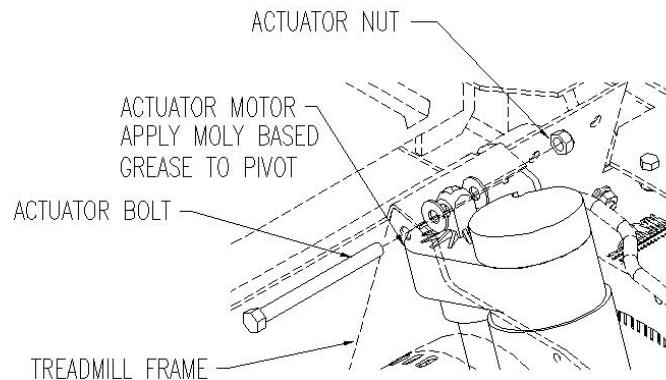
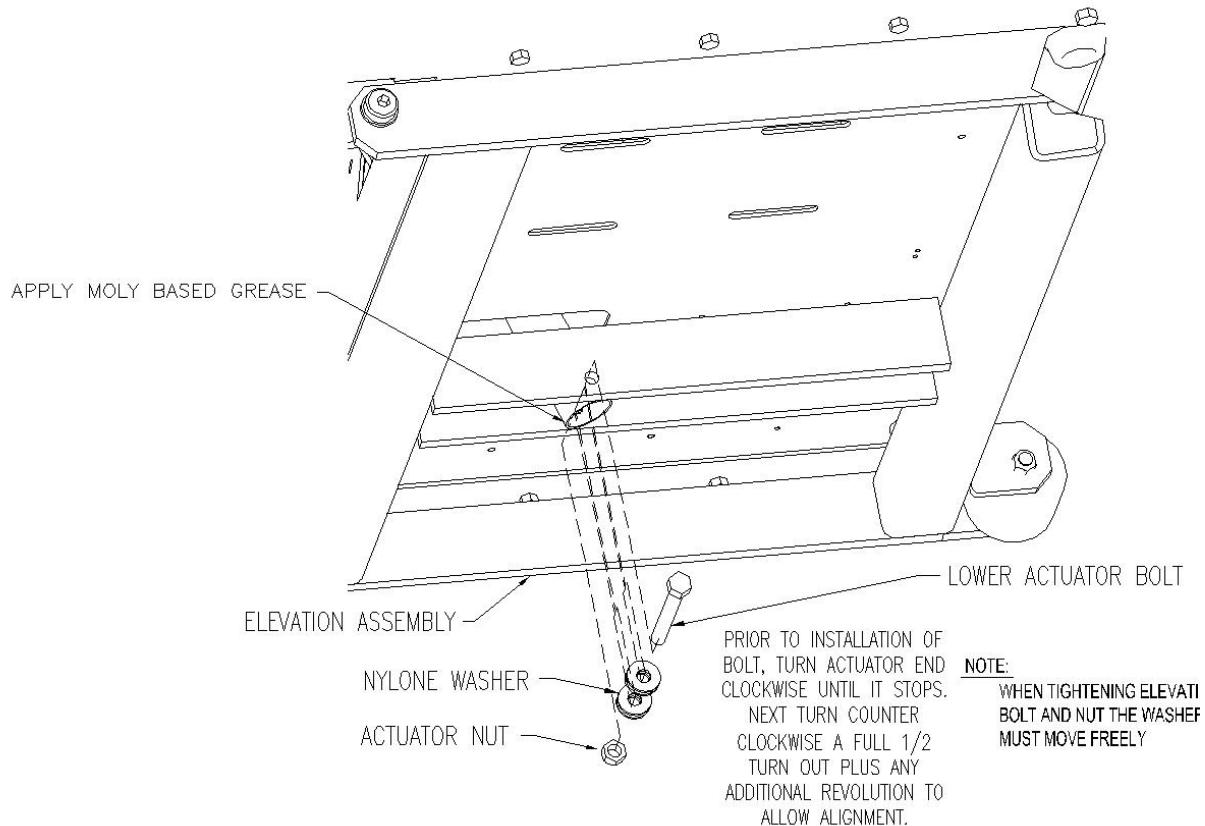
*2 - 9/16" wrenches or sockets  
 3/8" wide Flat blade screwdriver  
 Shipping blanket, carpet, or cardboard  
 1/4" Hex nut driver or flat blade screw driver  
 Tape measure  
 Moly based grease  
 Approximate time to complete 1.5 hrs*

1. Turn the treadmill main power switch to the off position.
2. Unplug the Treadmill from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Move the treadmill to an area large enough to lay it on its side.
5. Slide the hood grommets up on the TMX Series center handrail approximately 2".
6. Remove the three hood securing bolts on the lower front end of treadmill.
7. Slide hood up on TMX Series treadmill center rail and force past the grommets, allow hood to hang from grommets. On the FVX Series treadmill set hood to the side of treadmill.
8. Unplug the treadmills actuator harness this is a six-conductor connector attached to the actuator.
9. Clip the Zip tie that holds the wire to the motor pan gusset.
10. Remove the top bolt and nut from the actuator; watch out for nylon washers on each side of the actuator.
11. With blanket in suitable spot place a foot on the treadmills side channel and grasp the hand rail, pull the treadmill towards you and allow it to gently come to rest on its side.
12. Remove the bottom bolt and nut from the actuator; watch out for nylon washers on each side of the actuator tube.
13. Prior to installing the new actuator, turn it to view it from the bottom (tube end). Lightly turn the tube clockwise until it bottoms the threads or stops, do not force it to turn the motor! Now turn it counter clockwise a half turn (180°) and continue turning it until the bolt hole in the tube is aligned with the holes as it is installed.
14. Reverse procedure to install the actuator back into the treadmill. Be sure to use quality moly based grease on both the bolts retaining it.

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Note: Over tightening the lower bolt will lead to a popping or creaking noise, as the treadmill is elevating.

15. After installation, follow the calibration of grade using the grade recalibration instruction for your model treadmill, then check for proper operation.

**FVX, TMX Series**ACTUATOR INSIDE MOTOR PAN DETAILACTUATOR UNDER MOTOR PAN DETAIL

## Power Supply Relay Board Replacement FVX Series

### *Tools required*

*Wire cutters or utility knife*

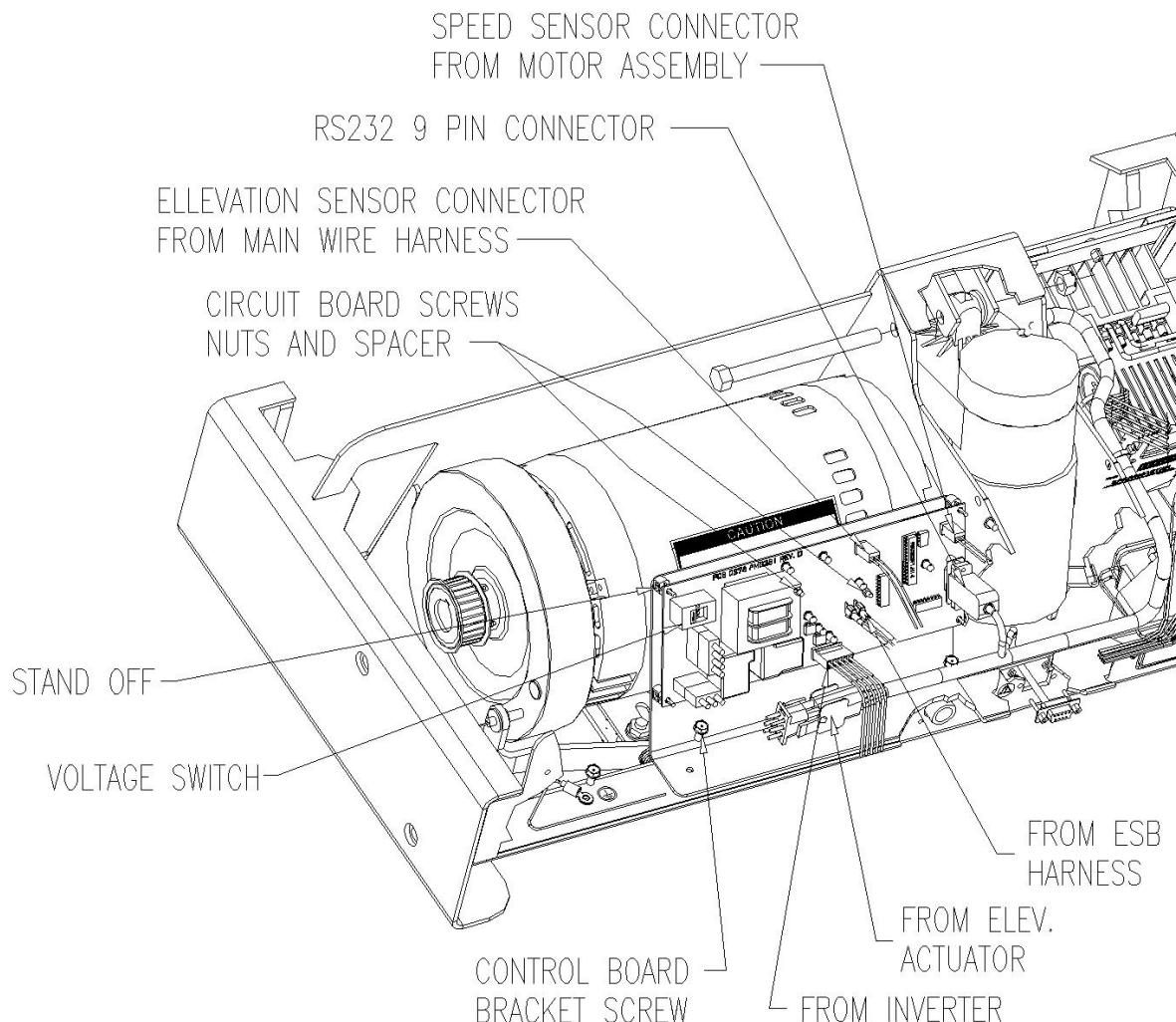
*Grounding wrist strap*

*1/4" Hex nut driver or flat blade screw driver*

*3/32" flat blade electronics screwdriver*

*Approximate time to complete 1.25 hrs*

1. Turn the treadmill main power switch to the off position.
2. Unplug the Treadmill from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Remove the three hood securing bolts on the lower front end of treadmill.
5. Set hood to side of treadmill.
6. Put on wrist strap and ground it to the power cord ground screw.
7. Unplug the inverter signal harness from the power supply relay board, this is a 5-conductor plug with rd, gry, blk, wh, & prpl wires on it.
8. Unplug the 4-conductor and 3-conductor plugs from the power supply relay board.
9. Unplug the two single conductor spades from the power supply relay board.
10. Unplug the two 2-conductor plugs from the power supply relay board.
11. Remove the RS232 harness by unscrewing the two flat head screws retaining it to the board.
12. Remove two control board bracket screws
13. Remove screws that hold circuit board to control board bracket. Remember where stand off and spacer transfer to new Power supply board.
14. IMPORTANT! Once removed, Note the position of the voltage switch.
15. Set switch on new board the same. IF WRONG DAMAGE WILL OCCUR!
16. Reverse procedure to install the power supply relay board back into the treadmill.
17. After installation, follow recalibrate the treadmill using the recalibration instruction for your model treadmill, then check for proper operation.

**FVX Series**

## Power Supply Relay Board Replacement TMX Series

### *Tools required*

*Wire cutters or utility knife*

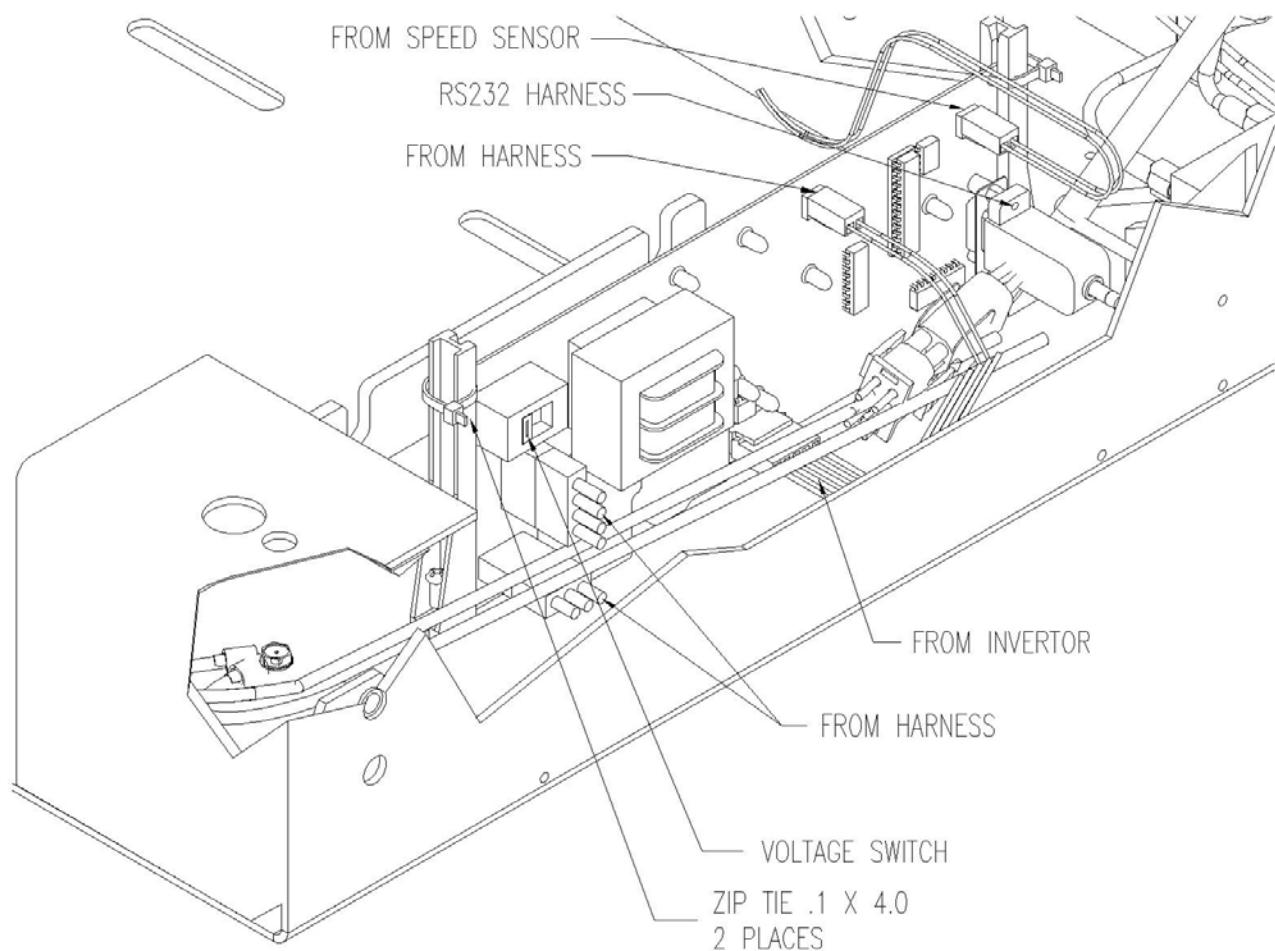
*Grounding wrist strap*

*1/4" Hex nut driver or flat blade screw driver*

*3/32" flat blade electronics screwdriver*

*Approximate time to complete 1.25 hrs*

1. Turn the treadmill main power switch to the off position.
2. Unplug the Treadmill from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Slide the hood grommets up the center handrail approximately 2'.
5. Remove the three hood securing bolts on the lower front end of treadmill.
6. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
7. Put on wrist strap and ground it to the power cord ground screw.
8. Unplug the inverter signal harness from the power supply relay board, this is a 5-conductor plug with rd, gry, blk, wh, & prpl wires on it.
9. Unplug the 4-conductor and 3-conductor plugs from the power supply relay board.
10. Unplug the two single conductor spades from the power supply relay board.
11. Unplug the two 2-conductor plugs from the power supply relay board.
12. Cut the two small Zip ties at the boards upper corners.
13. Slide the board up and out of the mounts.
14. Remove the RS232 harness by unscrewing the two flat head screws retaining it to the board.
15. IMPORTANT! Once removed, Note the position of the voltage switch.
16. Set switch on new board the same. IF WRONG DAMAGE WILL OCCUR!
17. Reverse procedure to install the power supply relay board back into the treadmill.
18. Note: you will need two new zip ties to re secure the board.
19. After installation, follow recalibrate the treadmill using the recalibration instruction for your model treadmill, then check for proper operation.

**TMX Series**

## Circuit Breaker Replacement

### *Tools required*

*1/4" Hex nut driver or flat blade screwdriver*

*3/32" flat blade electronics screwdriver*

*Approximate time to complete .25 hrs*

1. Elevate the treadmill to approximate 15% grade.
2. Turn the treadmill main power switch to the off position.
3. Unplug the Treadmill from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Remove the two screws retaining the circuit breaker mounting plate.
6. Gently pull the plate out allowing wires to feed through the hole.
7. Unplug the two wires off the circuit breaker to replace, when replacing more than one; perform the replacement one at a time to keep the wires on the correct value of circuit breaker.
8. Using the small electrical flat blade screwdriver push the holding clips on the sides of the breaker in to allow it to slide out of the plate. These are located on the backside of the plate made as part of the breakers housing.
9. Install the new circuit breaker by sliding it in the hole until it snaps into place.
10. Reattach the wires by sliding them on the terminals.
11. Once all desired breakers have been replaced reinstall the plate with the two screws.
12. After installation check the unit for proper operation.

## Inverter Drive Replacement FVX Series

### *Tools required*

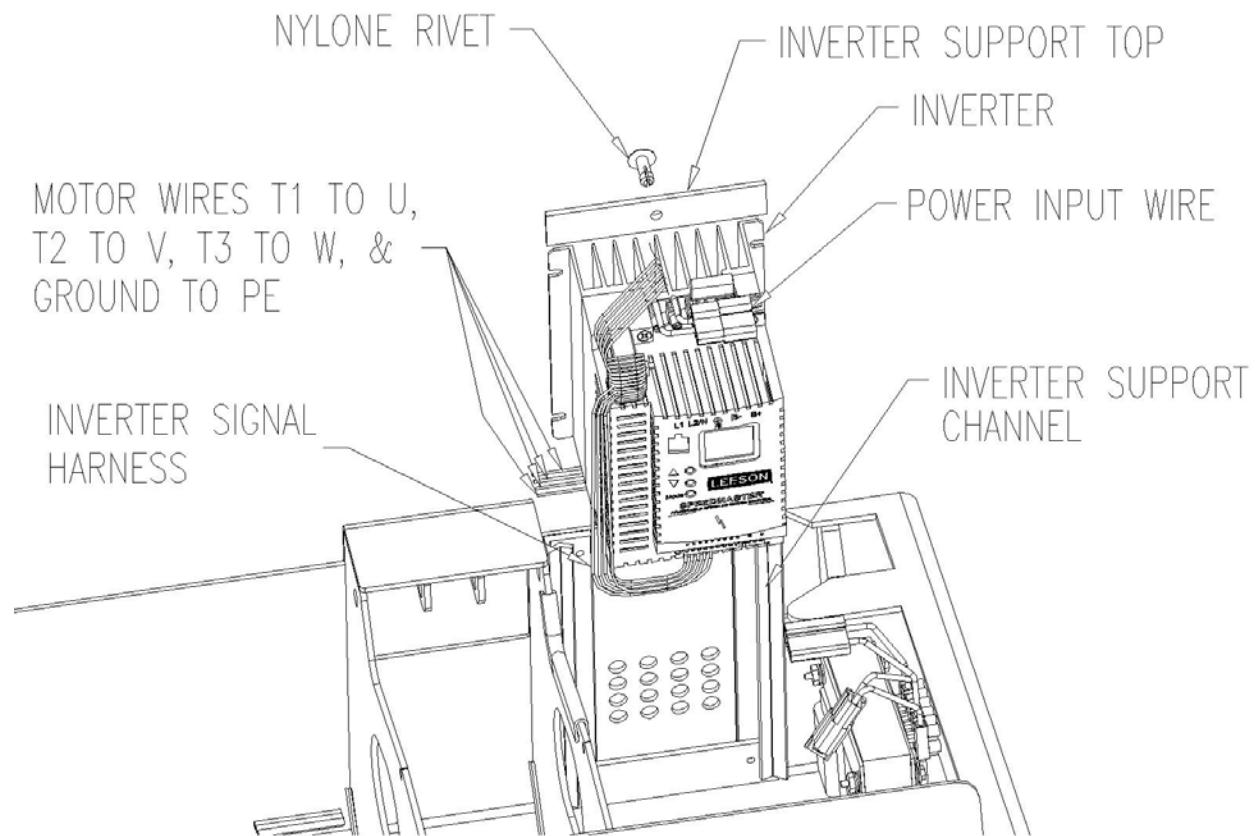
*1/4" Hex nut driver or flat blade screw driver*

*3/32" flat blade electronics screwdriver*

*#2 Phillips screwdriver*

*Approximate time to complete 1.5 hrs*

1. Turn the treadmill main power switch to the off position.
2. Unplug the Treadmill from the wall receptacle.
3. Allow treadmill to discharge for 3 minutes.
4. Remove the three hood securing bolts on the lower front end of treadmill.
5. Set hood to the side of treadmill.
6. Unplug the inverter signal harness from the power supply relay board; this is a 5-conductor plug with red, gray, black, white, & purple wires on it.
7. Unplug the brown & black power input wires on the inverter.
8. With a screw driver remove nylone rivet and slide inverter support top out of inverter support channel.
9. Now slide the Inverter out.
10. Remove the three yellow motor wires and ground wire using the small flat blade electrical screwdriver. Note the T-1, T-2, & T-3 designation on the wires and there location they hook at the inverter.
11. With the new and old inverter on a bench side-by-side swap the harnesses over; pay very close attention to wire color and location.
12. Reverse procedure to install the inverter back into the treadmill.
13. After installation, follow with recalibrating the treadmill using the recalibration instructions for your model treadmill, then check for proper operation.

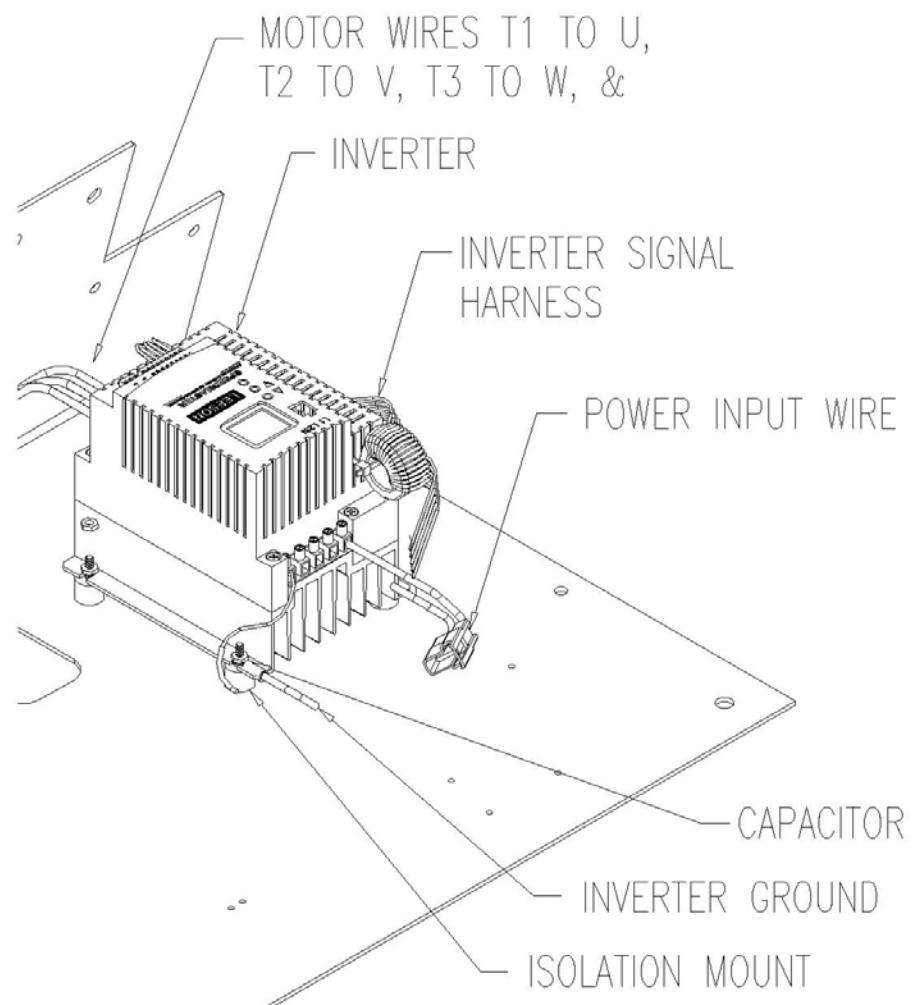
**FVX Series**

## Inverter Drive Replacement TMX Series

### *Tools required*

*5/16" hex socket with 6" extension  
1/4" Hex nut driver or flat blade screw driver  
3/32" flat blade electronics screwdriver  
#2 Phillips screwdriver  
Approximate time to complete 1.5 hrs*

1. Elevate the treadmill to approximate 15% grade.
2. Turn the treadmill main power switch to the off position.
3. Unplug the Treadmill from the wall receptacle.
4. Allow treadmill to discharge for 3 minutes.
5. Slide the hood grommets up the center handrail approximately 2'.
6. Remove the three hood securing bolts on the lower front end of treadmill.
7. Slide hood up treadmill center rail and force past the grommets, allow hood to hang from grommets.
8. Unplug the inverter signal harness from the power supply relay board; this is a 5-conductor plug with red, gray, black, white, & purple wires on it.
9. Unplug the brown & black power input wires on the inverter.
10. Remove the ground wire using the Phillips screwdriver.
11. Remove the three yellow motor wires using the small flat blade electrical screwdriver. Note the T-1, T-2, & T-3 designation on the wires and there location they hook at the inverter.
12. Holding the nuts at the base of the inverter on the topside with the socket, remove the 4 bolts from the underside of the treadmill that are securing the inverter.
13. Now lift the Inverter out.
14. With the new and old inverter on a bench side-by-side swap the harnesses over; pay very close attention to wire color and location.
15. Transfer the Isolation mounts to the new Inverter.
16. Reverse procedure to install the inverter back into the treadmill.
17. After installation, follow with recalibrating the treadmill using the recalibration instructions for your model treadmill, then check for proper operation.

**TMX Series**

# *Product Requirement*

## *FVX, TMX Smart Power Supply*

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### INTRODUCTION

The FVX, TMX Series treadmill control is to provide a means of controlling belt speed and elevation for the FVX, TMX Series treadmill through the use of an RS-232 serial port and established serial port protocol. A means of accepting an emergency stop input should be incorporated. The treadmill control board should be electrically isolated from both the elevation motor and inverter controlling the belt motor.

### SCOPE

This requirements document only applies to the electronic control for the FVX, TMX Series.

The mechanical treadmill, elevation motor assembly, belt motor and inverter for motor control are supplied by others. In addition, all connections to the smart power supply (SPS) PCB are supplied by others.

### OPERATIONAL OVERVIEW

When power is applied to the unit, the SPS takes a moment to read the contents of the non-volatile memory and verify the calibration contents read with a checksum. If the contents are valid, the unit enters operational mode with a set speed and set elevation of zero. Otherwise, the constants are set to non-operational values and the unit is put into a non-calibrated state where operation is suspended.

In operational mode, the unit continuously controls the belt speed output, the belt enable output, and the outputs to raise or lower the elevation based on the current setpoints for speed and elevation. Through the use of an RS-232 serial port, the unit accepts commands to modify the belt state, the belt speed, and the deck elevation. The current state of the control may also be queried through the use of this serial port. As commands are received to change the setpoint speed or setpoint grade, they are checked for format and range then pending approval, the new setpoints are adopted and adjustments are made to the state of the outputs.

Speed control is done in a closed loop that monitors the belt speed using a magnetic reed switch located on the motor side of the belt pulley. A speed calibration is required to provide a target speed output for a given setpoint, but after the initial target is reached, the speed input is constantly monitored to make adjustments to the speed output and to detect over speed or under speed fault conditions. In the case of a fault condition, the belt is stopped and operation is suspended.

Elevation position control is done using relays to turn on the elevation motor in the up or down direction depending on the current setpoint. A microswitch input is used to determine the position of the elevation motor by counting revolutions of the elevation motor's internal gearing. An elevation calibration is required to provide an accurate number of counts from zero to full elevation. No closed loop control is done for positioning elevation.

Power may be removed from the unit by opening the normally closed switch connected to the emergency stop input, or by removing AC power from the system. In both cases, the outputs will be put into a non-energized state that will correspond to the belt being shut off and the elevation motor being disengaged.

## SOFTWARE REQUIREMENTS

### SPEED CONTROL

There are two outputs and one input required for speed control. The belt enable output must be fully energized to put the belt into a run mode. The speed control output is a 25hz 1024 count pulse width modulated output which is filtered to produce an analog voltage referenced to a fixed voltage supplied by the inverter. The belt speed is measured by sampling the state of a magnetic reed switch input attached to the motor shaft.

Based on calibration, the speed is controlled by outputting an analog speed reference to the inverter and enabling the belt run output. The speed input is averaged over a two second period to provide measured speed accuracy of 0.01mph or less. If an over speed or under speed condition is measured, the belt will shut off automatically. An over speed condition is defined as 1mph over the current target speed. An under speed condition is defined as 1mph below the current target speed. If the measured speed is within range, it is used to make minor adjustments to the speed output if it is determined that the actual speed and measured speed differ by more than 0.08 mph. These small adjustments (1:1024) are only allowed to be at 4 second intervals to provide for the settle time of the motor inverter output and heavily averaged speed input after making the previous adjustment.

### ELEVATION CONTROL

The elevation position is constantly monitored by counting and recording changes in the state of the elevation microswitch sensor. Each debounced state is counted as positive if the elevation motor is engaged in the up direction and negative if it is engaged in the down direction. Using this count and the calibration numbers, the elevation position is controlled by turning on the motor in the desired direction and counting until the target number of counts has been reached. At that time, the elevation motors are disengaged until another setpoint position is requested.

### COMMUNICATION

#### Hardware

- DB9 Connector 9 pin PC/AT Style

Pin	Description
2	Transmit Data
3	Receive Data
5	Signal Ground

- RS232 (+/- 10V)

- 4800 Baud

- No Parity

- 8 Data Bits

- 1 Stop Bit

- Full Duplex

## COMMAND PROTOCOL

The Trackmaster Serial Communications Protocol consists of two types of commands, which are INPUT COMMANDS and STATUS REQUESTS. When a command is sent to the serial port, it is decoded and executed. The corresponding acknowledgement is then transmitted via the serial port. The controller transmits acknowledgments and data only in response to a command.

### A - INPUT COMMANDS

#### ASCII CODES

HEX	DECIMAL
-----	---------

- |        |   |
|--------|---|
| A0 160 | - Start Belt - Communication Disconnect Stop Enabled (Note 1)     |
| A1 161 | - Start Belt - Communication Disconnect Stop Disabled (Note 2)    |
| A2 162 | - Stop Belt   |
| A3 163 | - Set speed to the next 4 bytes of ASCII data (Note 3)            |
| A4 164 | - Set Elevation to the next 4 bytes of ASCII data (Note 4)        |
| A5 165 | - Set Time to the next 4 bytes of ASCII data (Note 5)             |
| A6 166 | - Set Protocol to the next 2 bytes of ASCII data (Note 5)         |
| A7 167 | - Set Stage to the next 2 bytes of ASCII data (Note 5)            |
| A8 168 | - Reset Distance, Total Time, and Energy to 0 (Note 5)            |
| A9 169 | - Set Weight to the next 4 bytes of ASCII data (Note 5)           |
| AA 170 | - Auto Stop - Sets speed and elevation to minimum and stops belt. |
| AB 171 | - Auto Cool Down - Sets speed and elevation to minimum.           |
| AC 172 | - Toggle Transmit Acknowledge Data Flag (Note 6)                  |

### B - INPUT COMMAND ACKNOWLEDGEMENT

#### ASCII CODES

HEX	DECIMAL
-----	---------

- |        |  |
|--------|--|
| B0 176 | - Ack. Start Belt - Communication Disconnect Stop Enabled  |
| B1 177 | - Ack. Start Belt - Communication Disconnect Stop Disabled |
| B2 178 | - Ack. Stop Belt   |
| B3 179 | - Ack. Set Speed   |
| B4 180 | - Ack. Set Elevation                                       |
| B5 181 | - Ack. Set Lap or Stage Time (Note 7)                      |
| B6 182 | - Ack. Set Protocol (Note 7)                               |
| B7 183 | - Ack. Set Stage (Note 7)                                  |
| B8 184 | - Ack. Reset Distance, Total Time, and Energy (Note 7)     |
| B9 185 | - Ack. Set Weight (Note 7)                                 |
| BA 186 | - Ack. Auto Stop   |
| BB 187 | - Ack. Auto Cool Down                                      |
| BC 188 | - Ack. Toggle Transmit Acknowledge Command Data Flag       |
| BE 190 | - Input Command Data Out of Range                          |
| BF 191 | - Illegal command or command not recognized                |

**C - STATUS REQUEST**

ASCII CODES	
HEX	DECIMAL
C0 192	- Xmit Belt Status
C1 193	- Xmit Current Actual Speed
C2 194	- Xmit Current Actual Elevation
C3 195	- Xmit Current Set Speed
C4 196	- Xmit Current Set Elevation
C5 197	- Xmit Current Time (Note 8)
C6 198	- Xmit Total Time (Note 8)
C7 199	- Xmit Current Distance (Note 8)
C8 200	- Xmit Current Protocol (Note 8)
C9 201	- Xmit Current Stage (Note 8)
CA 202	- Xmit Current Weight (Note 8)
CB 203	- Xmit Current Calories (Note 8)
CC 204	- Xmit Current Total VO2 (Note 8)
CD 205	- Xmit Current Mets (Note 8)

**D - STATUS RESPONSE**

ASCII CODES	
HEX	DECIMAL
D0 208	<ul style="list-style-type: none"> <li>- Ack. Belt Status followed by 1 byte of data           <ul style="list-style-type: none"> <li>31h = Belt Stopped</li> <li>32h = Belt Started Comm. Disconnect Stop Enabled</li> <li>33h = Belt Started Comm. Disconnect Stop Disabled</li> </ul> </li> </ul>
D1 209	- Current Belt Speed follows as 4 bytes of ASCII data (Note 3)
D2 210	- Current Elevation follows as 4 bytes of ASCII data (Note 4)
D3 211	- Current Set Belt Speed follows as 4 bytes of ASCII data (Note 3)
D4 212	- Current Set Elevation follows as 4 bytes of ASCII data (Note 4)
D5 213	- Current Lap Time follows as 4 bytes of ASCII data (Note 9)
D6 214	- Current Total Time follows as 4 bytes of ASCII data (Note 9)
D7 215	- Current Distance follows as 4 bytes of ASCII data (Note 9)
D8 216	- Current Protocol follows as 2 bytes of ASCII data (Note 9)
D9 217	- Current Stage follows as 2 bytes of ascii data (Note 9)
DA 218	- Current Weight follows as 4 bytes of ASCII data (Note 9)
DB 219	- Current Calories follow as 4 bytes of ASCII data (Note 9)
DC 220	- Current Total VO2 follows as 4 bytes of ASCII data (Note 9)
DD 221	- Current Mets follow as 4 bytes of ASCII data (Note 9)

## COMMUNICATION NOTES

Note 1 - The Communication Disconnect Stop Enable mode is a safety feature that stops the belt when a command is not received from the host within 0.5 seconds.

Note 2 - The Communication Disconnect Stop Disable mode allows the belt to run without sustained communication at 0.5 second intervals.

Note 3 - All speed formats are 4 digit ASCII characters in tenths of distance per hour. For instance, to set the speed to 4.0 mph the set speed command would be followed by 0040.

Note 4 - All elevation formats are 4 digit ASCII characters in tenths of percent inclination. The last digit must be ASCII 0 or 5. For instance, to set the elevation to 5%, the set elevation command would be followed by 0050. An attempt to send a value that is not in a half percent increment (e.g. 4.3%) will result in a data out of range reply.

Note 5 - These Input commands sent by the host are accepted by the treadmill, but not implemented functionally. For instance, a command to set the weight to 150 pounds will be accepted but will not be used. Further queries of the weight will return 0.

Note 6 - The toggle transmit acknowledge data flag is initially cleared. When set by sending the toggle transmit acknowledge command, the output response will always be followed by the input string received from the host. Sending this command when the flag is set will result in it being cleared again.

Note 7 - These Input Command Responses are not functional and will always consist of zero valued data.

Note 8 - These Status commands sent by the host are accepted by the treadmill, but not implemented functionally. For instance, a command to query the current calories will be accepted, but a value of zero will always be returned.

Note 9 - These Status Command Responses are not functional and will always consist of zero valued data.

Note 10 - To emergency stop switch will remove power from the treadmill control board to guarantee a stop condition. When this occurs and the emergency stop button is subsequently released, the control will be in the same state as when the unit is powered up using the main power switch. Therefore, it is necessary in either powerup state to guard against inadvertent restarts if the host doesn't recognize the situation and is continuously sending out belt start commands. The method used to guard against this situation is to reject any start command received within 3 seconds of powering up and finding the zero elevation position. If a start command is ejected, all further start commands will also be rejected until the unit is reset or a stop command is received or communication ceases for 20 seconds.

## SELF TEST MODE

On powerup, the SPS sends out a special test character ‘T’ and checks to see if it is returned. This is a check for a shorting jumper across the transmit and receive lines of the RS-232 serial port. If the lines are determined to be shorted, the SPS enters the self test mode.

During the self test mode, 14 stages of speed and elevation setpoints are used to exercise the inputs and outputs. Upon completion of each new setpoint, another character is sent out and the process is repeated to advance to the next stage. In this way, the shorting jumper can be removed at any point to stop the staging process. The following table shows the sequence of self test stages :

Stage	Incline	Speed (mph)
1	5%	0.0
2	10%	0.0
3	15%	0.0
4	20%	0.0
5	20%	1.0
6	20%	2.5
7	20%	5.0
8	20%	7.5
9	20%	10.0
10	15%	7.5
11	10%	5.0
12	5%	2.5
13	0%	1.0
14	0%	0.0

## CALIBRATION

Both a speed and an elevation calibration method are provided in the SPS software. The elevation calibration automatically puts the deck in the zero elevation position and zeros the counter. The deck is then automatically raised to the limit position and the count is taken to be 25% elevation. During speed calibration, the speed reference output is adjusted to find speed references for 5 target speed settings. Both of these calibration procedures are accessed through the serial port using special software provided to the manufacturer by PMI.

## HARDWARE REQUIREMENTS

The SPS electronics hardware consists of one electronic control board.

## ELECTRICAL INPUTS

- A) Instrument Power: On 230VAC or 120VAC supplied through two 1/4 Amp breakers in parallel for control board power. On 230VAC supplied through two 2 Amp breakers, or 120VAC supplied thru two 1amp breakers, in parallel for elevation motor power.
- B ) Elevation Sensor Input : A two wire interface for detecting the presence of a closed microswitch on the elevation motor.
- C) Speed Sensor Input : A two wire interface for detecting the state of a magnetic reed switch on the motor shaft.
- D) Inverter Fixed Reference Voltage : A 10 Volt reference is provided by the inverter drive.
- E) Serial Port Input : An RS-232 level input provided by the host controller.
- F) Voltage Selection Switch : The onboard input voltage selection switch allows the unit to be used at 115VAC or 230VAC.
- G) Emergency Stop Switch : A normally closed switch input used to switch power to the SPS control must be rated at 24 Volts and 2 Amps continuous duty.

## ELECTRICAL OUTPUTS

- A) Elevation Motor : AC Common is permanently provided to the elevation motor. In addition, the 120/230VAC hot input for motor elevation power is switched through a 10 Amp relay to either the up or down input to the elevation motor.
- B) Inverter Drive Enable Output : An optically isolated output is provided to switch on the start input circuit for the inverter belt drive. This output is an emitter - collector pair that is to provide no more than 2mA.
- C) Speed Output : An isolated analog voltage reference for speed is provided to the inverter. The signal is proportional to the inverter's fixed voltage reference and includes a 47K impedance. The maximum current for this output is 1.8mA and the maximum voltage is 15VDC.
- D) Serial Port Output : An RS-232 level (not to exceed +/- 10VDC) is provided to the host controller.

## ELECTRICAL CONNECTIONS

- A) Input Power Header : An Amp - 641968-1 four pin MATE & LOCK header is provided for instrument power.
- B) Elevation Output Header : An Amp - 641968-1 three pin MATE & LOCK header is provided for output power to the elevation motor.
- C) Elevation / Speed Input Headers : Two Amp - 640445-2 two pin headers are provided for the inputs from the speed and elevation sensors.
- D) Inverter Drive Interface : An Amp - 640445-5 five pin header is provided for interfacing to the inverter drive.
- E) RS-232 Interface : A DB9 Connector 9 pin PC/AT Style is provided for interfacing with the host controller.
- F) Emergency Stop Switch : Two 0.187" quick connect blade terminals are provided for an emergency stop switch input.

## PHYSICAL REQUIREMENTS AND RESTRICTIONS

- A) The printed circuit board should be a rigid 1/16" thick, FR4, SMOBC circuit board with 2 ounce copper.
- B) Galvanic isolation between the ac power circuits and the low voltage electronic circuits should be guaranteed.
- C) Outer Dimensions : 4" T x 9" W x 2.5" D (max).
- D) Mounting position : The board shall be capable of being mounted with the PCB either parallel or perpendicular to the bottom pan of the treadmill.
- E) Environment : 0 - 70 deg. C ambient temperature.
- F) High level vibrations from adjacent equipment may be present.
- G) After installation into the treadmill, expect the board to experience moderate shock impulses during shipment.

# *Production Qualification Description*

## *FG302 Smart Power Supply*

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The following is a description of the procedures that are followed to qualify every FG0302 production unit. In addition to these procedures, our quality department does a visual inspection on a sample lot of every work order shipment of not less than 5%. In addition, our primary customer, Full Vision, performs a 24 hour burn-in on every unit as assembled in the finished product.

### **Test Fixture**

The test fixture for FG0302 includes an independent microcontroller that communicates with a PC running the test software and recording data. During the test, the PC also communicates directly with the device under test (dut).

### **Test Fixture Connections**

The test fixture includes an input for measuring the dc voltage output of the dut with an 8 bit a2d converter. This input is attached to the kill switch connection on the dut (ref. J4, J5 on FG0302).

A single relay is included on the test fixture to switch AC Hot to the dut JP4 pins 3 and 4. The test fixture provides AC Common to pins 1 and 2 of JP4 on the dut.

Two separate inputs are provided for measuring the presence of AC Hot on the dut connector JP3 pins 2 or 3 as referenced to AC Common provided from the dut at JP3 p1.

A test fixture output is provided to excite the elevation input of the dut at connector J1.

A test fixture output is provided to excite the speed sensor input at connector J2.

The test fixture provides an output to the dut's J2 pin 2 for the purpose of testing the dut's output on J2 pin 3, which is connected to a test fixture input. This is for testing the belt enable optocoupler.

A +12VDC supply is connected to J2 pin 1 on the dut to provide the supply voltage for testing the speed control output.

An 8 bit a2d converter input is connected to the pwm speed reference output from the dut at J2 pin 4 with respect to J2 pin 5.

The DB9 connector J8 on the DUT is connected to a serial port on the PC directing the test.

## **PC Directed Test Steps:**

After the connections have been made between the test fixture and the PC, between the dut and the test fixture, and between the dut and the PC, the PC software can be run by test personnel.

### **Board Power Test**

The PC requests that the voltage selection switch be moved to the 110V position. It then commands the test fixture to apply 110VAC to the test set. After a warm-up time of not less than 10 seconds, the DC voltage of the dut is measured, recorded and verified.

### **Test Grade**

The PC directs the test fixture to exercise the elevation input providing a fixed number of counts to the dut. The dut is then queried by the PC to verify that the number of counts input was measured correctly by the dut.

A command to change the elevation position is sent to the dut and the elevation relay inputs are tested for the presence of 110V in the up and down directions. The inputs from the relays are tested for mutual exclusion to check for circuit shorts.

### **Test Belt**

The PC applies an output to J2 pin 2 of the dut and after directing a command to the dut to start the belt, measures the input from the belt enable optocoupler.

While the belt is running virtually, the test fixture supplies an input to the speed sensor circuit on the dut and the PC verifies the measured speed by querying the dut directly.

Three different speed setpoints are tested and after each new setting is applied, the speed reference pwm is measured, recorded and verified.

### **Test EEPROM**

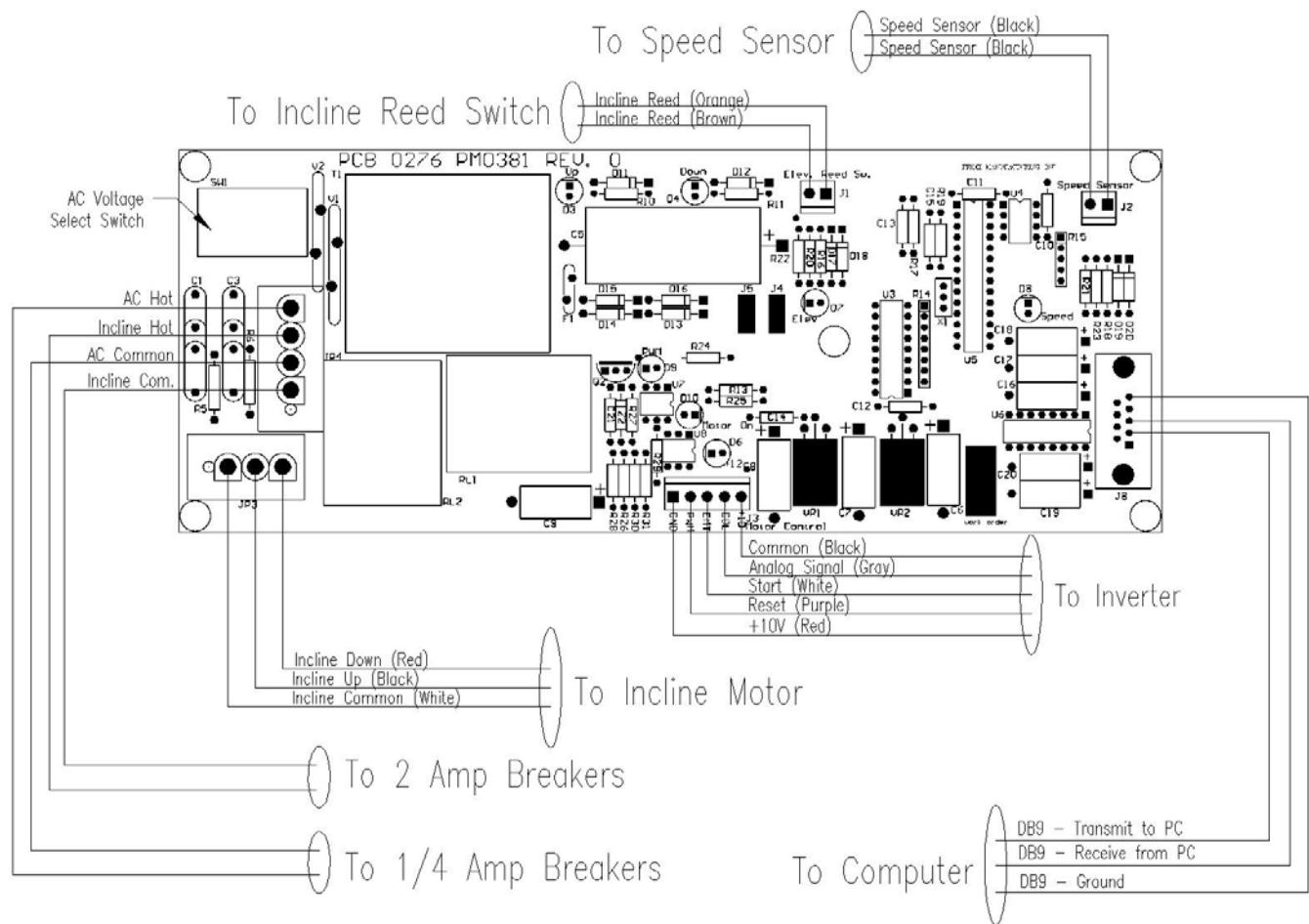
The PC directs a command to the dut do a Read/Write test on the eeprom and verifies the contents of the eeprom between successive powerups to verify power down data retention.

### **Test Voltage Selection Switch**

The person directing the test is asked to move the voltage selection switch to the 230VAC position, and the DC output voltage measured by the test fixture is again recorded and verified.

### **Communication Test**

Communication is inherently verified in that most test steps require communication with the device under test to exercise the outputs and read the inputs.

**Power Supply Board (FG302)**



# ***Leeson Inverter***

**11**

## **Leeson Speedmaster Self-Test**

1. Press the Mode button. Observe inverter readout displays 00.
2. Press the up arrow and change readout value to 135.
3. Press the Mode button, observe readout value should change to P01
4. Press the up arrow and change the readout value to P05.
5. Press the Mode Button, observe the readout value displayed is 03
6. Press the down arrow and change the readout value to 01.
7. Press the Mode Button twice. The readout should display P05.
8. At the inverter terminal block, jumper pins 1 and 11 (white and violet wires). The treadmill belt starts, pressing the up button will increase the speed of the running belt, pressing the down arrow will decrease the speed of the running belt.
9. To stop the belt, remove the jumper between pins 1 and 11 (white and violet wires)

## **Return treadmill to normal operating mode.**

10. Press the Mode button. Observe inverter readout displays 00.
11. Press the up arrow and change readout value to 135.
12. Press the Mode button, observe readout value should change to P01
13. Press the up arrow and change the readout value to P05.
14. Press the Mode Button, observe the readout value displayed is 01
15. Press the down arrow and change the readout value to 03
16. Press the Mode Button twice. The readout should display P05.

## Leeson Inverter Inspection Sheet

Please complete and fax to 316-283-3350

Treadmill S/N		Leeson S/N	
---------------	--	------------	--

### 1. Measure Input Power

#### a. A/C

Measure the Inverter A/C Input voltage under three conditions.	
240 VAC measure from L1 to L2	
120 VAC measure from L1 to N	
Treadmill on, motor off	
Motor running at minimum speed, no load	
Motor running at minimum speed, with load	

Table 1

#### b. D/C

Measure the D/C voltage under two conditions.	
Measure between Pins 1(Violet) and 2(black)	
Treadmill on, motor off	
Motor on at minimum speed	

Table 2

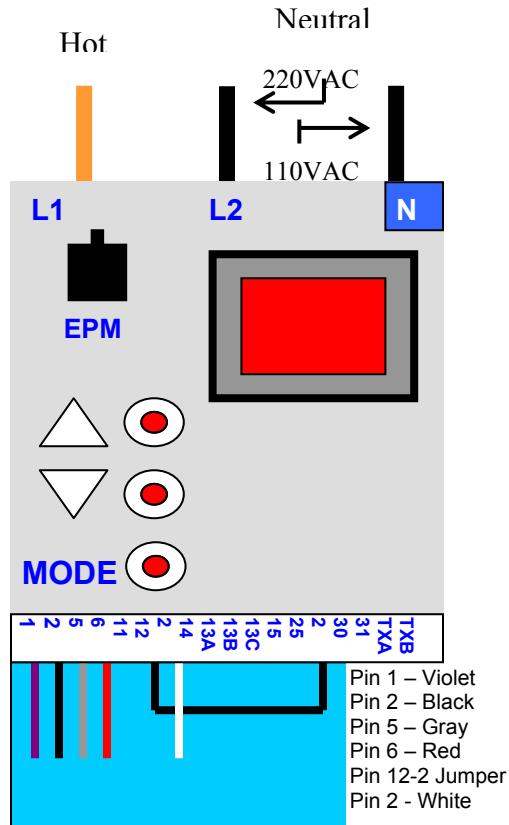
### 2. Inspect Fault History

Press the inverter Mode button 3 times; the inverter readout displays existing fault codes. Example 1LF indicates the first fault code is LF, press the up arrow to observe additional fault codes up to 8 maximum. Note all existing fault codes. If there are no existing fault codes the readout displays .-.	
1.	5.
2.	6.
3.	7.
4.	8.

Table 3

Approx. Weight  
of test load.

Lbs or Kg



**Inverter Parameters/Software Version 301**  
**Pass code 225(initial), after setting 135**

Values that are different from factory specifications are in ***bold Italic***.

NO	PARAMETER NAME	RANGE OF ADJUSTMENT	FACTORY DEFAULT (NOTE1)
01	LINE VOLTAGE	HIGH (01), LOW (02)	HIGH (01)
<b>02</b>	<b>CARRIER FREQUENCY</b>	<b><i>4kHz (01), 6 kHz (02), 8 kHz (03), 10 kHz (04)</i></b>	<b><i>12 kHz (05)</i></b>
03	START METHOD	NORMAL (01), START ON POWER UP (02), START WITH DC BRAKE (03), AUTO RESTART WITH DC BRAKE (04), FLYING RESTART 1 (05), FLYING RESTART 2 (06), FLYING RESTART 3 (07)	NORMAL (01)
04	STOP METHOD	COAST (01), COAST WITH DC BRAKE (02), RAMP WITH DC BRAKE (04)	COAST (01)
<b>05</b>	<b>STANDARD SPEED SOURCE</b>	<b><i>KEYPAD (01), PRESET #1 (02), 0-10 VDC (03), 4-20 mA (04)</i></b>	<b><i>0-10 (03)</i></b>
06 13	TB-14 OUTPUT TB-15 OUTPUT	NONE (01), RUN (02), FAULT (03), INVERSE FAULT (04), FAULT LOCKOUT (05). AT SET SPEED (06), ABOVE PRESET #3 (07). CURRENT LIMIT (08), AUTO SPEED (09). REVERSE (10)	NONE (01) NONE (01)
08	TB-30 OUTPUT	NONE (01), 0-10 VDC FREQ (02). 2-10 VDC FREQ (03), 0-10 VDC LOAD (04). 2-10 VDC LOAD (05)	NONE (01)
09	TB-31 OUTPUT	NONE (01), 0-10 VDC LOAD (02), 2-10 VDC LOAD (03), DYNAMIC BRAKING (04)	NONE (01)
<b>10</b>	<b>TB-13A FUNCTION SELECT</b>	<b><i>NONE (01), 0-10 VDC (02), 4-20 mA (03). PRESET SPEED #1 (04), RUN REVERSE (05), START REVERSE (06), EXTERNAL FAULT (07), REMOTE KEYPAD (08), DB FAULT (09), AUXILIARY STOP (10), ACCEL/DECEL #2 (11)</i></b>	<b><i>0-10 (02)</i></b>
11	TB-13B FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03), PRESET SPEED #2 (04), DECREASE FREQ (05), JOG FORWARD (06), JOG REVERSE (07), AUXILIARY STOP (08)	NONE (01)
12	TB-13C FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03). PRESET SPEED #3 (04), INCREASE FREQ (05), EXTERNAL FAULT (06), REMOTE KEYPAD (07). DB FAULT (08), ACCEL/DECEL #2 (09)	NONE (01)
13	TB-15 OUTPUT	(SEE PARAMETER 6 - TB- 14 OUTPUT)	NONE (01)

14	CONTROL	TERMINAL STRIP ONLY (01) . REMOTE KEYPAD ONLY (02). TERMINAL STRIP OR REMOTE KEYPAD (03)	TERMINAL STRIP ONLY (01)
15	SERIAL LINK	DISABLE (01), 9600, 8, N, 2 WITH TIMER (02) 9600, 8, N, 2 WITHOUT TIMER (03) 9600, 8, E, 1 WITH TIMER (04) 9600, 8, E, 1 WITHOUT TIMER (05) 9600, 8, 0, 1 WITH TIMER (06) 9600, 8, 0, 1 WITHOUT TIMER (07)	9600, 8, N, 2 WITH TIMER (02)
16	UNITS EDITING	TENTHS OF UNITS (01), WHOLE UNITS (02)	WHOLE UNITS (02)
17	ROTATION	FORWARD ONLY (01), FORWARD AND REVERSE (02)	FORWARD ONLY (01)
<b>19</b>	<b>ACCELERATION TIME</b>	<b>0.1 -3600.0 SEC</b>	<b>8.0 SEC</b>
<b>20</b>	<b>DECELERATION TIME</b>	<b>0.1 - 3600.0 SEC</b>	<b>10.0 SEC</b>
21	DC BRAKE TIME	0.0 - 3600.0 SEC	0.0 SEC
22	DC BRAKE VOLTAGE	0.0 - 30.0 %	0.0 %
<b>23</b>	<b>MINIMUM FREQUENCY</b>	<b>0.0 - MAXIMUM FREQUENCY</b>	<b>3.0 Hz</b>
<b>24</b>	<b>MAXIMUM FREQUENCY</b>	<b>MINIMUM FREQ. - 240.0 Hz (NOTE 2)</b>	<b>190.0 Hz (Reference)</b>
25	CURRENT LIMIT	30 - 180 % (NOTE 3)	180%
26	MOTOR OVERLOAD	30 - 100%	100%
27	BASE FREQUENCY	25.0 - 500.0 Hz ( NOTE 4)	60.0 Hz (NOTE 5)
<b>28</b>	<b>FIXED BOOST</b>	<b>0.0 - 30.0 %</b>	<b>4.0%</b>
29	ACCEL BOOST	0.0 - 20.0 %	0.0 %
30	SLIP COMPLETION	0.0 - 5.0 %	0.0%
31-37	PRESET SPEEDS	0.0 MAXIMUM FREQUENCY	0.0 Hz
38	SKIP BANDWIDTH	0.0 - 10 Hz	0.0 Hz
39	SPEED SCALING	0.0 - 6500.0	0.0
<b>40</b>	<b>FREQUENCY SCALING</b>	<b>3.0 - 2000.0 Hz</b>	<b>190.0 Hz (Reference)</b>
41	LOAD SCALING	10 - 200%	200%
42	ACCEL/DECCEL #2	0.1 - 3600.0 SEC	20.0 SEC
43	SERIAL ADDRESS	1- 247	1
<b>44</b>	<b>PASSWORD</b>	<b>000 - 999</b>	<b>135</b>
47	CLEAR HISTORY	MAINTAIN (01), CLEAR (02)	MAINTAIN (01)

48	PROGRAM SELECTION	USER SETTINGS (01), OEM SETTINGS (02), RESET OEM (03), RESET 60 (04). RESET 50 (05), TRANSLATE (06)	USER SETTINGS (01)
50	FAULT HISTORY	( VIEW ONLY)	(N/A)
51	SOFTWARE CODE	( VIEW ONLY)	( N/A)
52	DC BUS VOLTAGE	( VIEW ONLY)	( N/A)
53	MOTOR VOLTAGE	( VIEW ONLY)	( N/A)
54	LOAD	( VIEW ONLY)	( N/A)
55	0 -10 VDC INPUT	( VIEW ONLY)	( N/A)
56	4 - 20 mA INPUT	( VIEW ONLY)	( N/A)
57	TB STRIP STATUS	( VIEW ONLY)	(N/A)
58	KEYPAD STATUS	( VIEW ONLY)	(N/A)
59	TB 30 OUTPUT	(VIEW ONLY )	(N/A)
60	TB 31 OUTPUT	(VIEW ONLY)	(N/A)

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NOTE 1: Factory defaults are shown for 60 Hz base frequency. See Parameter 48 for 50 Hz base frequency.

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NOTE 2: Maximum setting is 999.9 Hz on drives with High Output Frequency option. Consult factory

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NOTE 3: If LINE VOLTAGE is set to LOW. Maximum setting is 150%.

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NOTE 4: Maximum setting is 1300.0 Hz (factory default is 999.9) on drives with High Output Frequency option.

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NOTE 5: After the burn in, change # 27 to 50 Hz on the treadmills with European plugs.

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- Press Mode button, inverter readout displays 0.0
- Press Up arrow until inverter readout displays 135
- Press the Mode button, inverter readout displays P01
- Press the Mode button to observe or change the value of P01 or press the Up arrow to advance to P02. (Use the Up/Down arrows to change parameter values, press the Mode button to return to the parameter number)
- Once inspection or modification to values is complete, press the Mode button until the inverter readout displays dashes, example (---)

**The value at P01 is set to 01. Input power is assumed to be at 120 or 240 VAC level. If Voltage level is actually below 120 or 240 VAC, change the value at P01 from 1 to 2.**

**Inverter Parameters/Software Version 402**  
**Pass code 225(initial), after setting 135**

Values that are different from factory specifications are in **bold Italic**.

NO.	PARAMETER NAME	RANGE OF ADJUSTMENT	FACTORY DEFAULT
01	LINE VOLTAGE	HIGH (01), LOW (02)	HIGH (01)
<b>02</b>	<b>CARRIER FREQUENCY</b>	<b>4kHz (01), 6 kHz (02), 8 kHz (03), 10 kHz (04)</b>	<b>10 kHz (04)</b>
03	START METHOD	NORMAL (01), START ON POWER UP (02), START WITH DC BRAKE (03), AUTO RESTART WITH DC BRAKE (04), FLYING RESTART 1 (05), FLYING RESTART 2 (06), FLYING RESTART 3 (07)	NORMAL (01)
04	STOP METHOD	COAST (01), COAST WITH DC BRAKE (02), RAMP (03), RAMP WITH DC BRAKE (04)	COAST (01)
<b>05</b>	<b>STANDARD SPEED SOURCE</b>	<b>KEYPAD (01), PRESET #1 (02), 0-10 VDC (03), 4-20 mA (04)</b>	<b>0-10 (03)</b>
06	RELAY OUTPUT	NONE (01), RUN (02), FAULT (03), INVERSE FAULT (04), FAULT LOCKOUT (05). AT SET SPEED (06), ABOVE PRESET #3 (07). CURRENT LIMIT (08), AUTO SPEED (09). REVERSE (10)	NONE (01)
10	TB-13A FUNCTION SELECT	<i>NONE (01), 0-10 VDC (02), 4-20 mA (03).</i> <i>PRESET SPEED #1 (04), RUN REVERSE (05),</i> <i>START REVERSE (06), EXTERNAL FAULT (07),</i> <i>REMOTE KEYPAD (08), DB FAULT (09),</i> <i>AUXILIARY STOP (10), ACCEL/DECEL #2 (11)</i>	<i>NONE (01)</i>
11	TB-13B FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03), PRESET SPEED #2 (04), DECREASE FREQ (05), START FORWARD (06), JOG FORWARD (07), JOG REVERSE (08), EXTERNAL FAULT (09), INVERSE EXT FAULT (10) AUXILIARY STOP (11), ACCEL/DECEL #2 (12), REMOTE KEYPAD (13)	NONE (01)
12	TB-13E FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03). PRESET SPEED #3 (04), INCREASE FREQ (05), START FORWARD (06), EXTERNAL FAULT (07), INVERSE EXT FAULT (08), AUXILIARY STOP (09), ACCEL/DECEL #2 (10)  RUN (11), FAULT (12), INVERSE FAULT (13), LOCKOUT (14), AT SET SPEED (15), ABOVE PRESET#3 (16), CURRENT LIMIT (17), AUTO SPEED (18), REVERSE (19), DYNAMIC BRAKING (20)	NONE (01)
	TB-13E OUTPUT SELECTIONS	REMOTE KEYPAD (21)	
	OTHER SELECTIONS		
14	CONTROL	TERMINAL STRIP ONLY (01), REMOTE KEYPAD ONLY (02).	TERMINAL STRIP ONLY (01)
16	UNITS EDITING	TENTHS OF UNITS (01), WHOLE UNITS (02)	WHOLE UNITS (02)

17	ROTATION	FORWARD ONLY (01), FORWARD AND REVERSE (02)	FORWARD ONLY (01)
19	<b>ACCELERATION TIME</b>	<b>0.1 - 3600.0 SEC</b>	<b>8.0 SEC</b>
20	<b>DECELERATION TIME</b>	<b>0.1 - 3600.0 SEC</b>	<b>10.0 SEC</b>
21	DC BRAKE TIME	0.0 - 3600.0 SEC	0.0 SEC
22	DC BRAKE VOLTAGE	0.0 - 30.0 %	0.0 %
23	<b>MINIMUM FREQUENCY</b>	<b>0.0 - MAXIMUM FREQUENCY</b>	<b>0.0 Hz</b>
24	<b>MAXIMUM FREQUENCY</b>	<b>MINIMUM FREQ. - 240.0 Hz</b>	<b>190.0 Hz</b>
25	CURRENT LIMIT	30 - 180 %	180%
26	MOTOR OVERLOAD	30 - 100%	100%
27	BASE FREQUENCY	25.0 - 500.0 Hz	60.0 Hz
28	<b>FIXED BOOST</b>	<b>0.0 - 30.0 %</b>	<b>4.0%</b>
29	ACCEL BOOST	0.0 - 20.0 %	0.0 %
30	SLIP COMPLETION	0.0 - 5.0 %	0.0%
31-37	PRESET SPEEDS	0.0 MAXIMUM FREQUENCY	0.0 Hz
38	SKIP BANDWIDTH	0.0 - 10 Hz	0.0 Hz
39	SPEED SCALING	0.0 - 6500.0	0.0
42	ACCEL/DECCEL #2	0.1 - 3600.0 SEC	20.0 SEC
44	<b>PASSWORD</b>	<b>000 - 999</b>	<b>135</b>
45	<b>SPD AT MIN SIGNAL</b>	<b>MINIMUM FREQUENCY – 999 Hz</b>	<b>3.6 Hz</b>
46	<b>SPD AT MAX SIGNAL</b>	<b>MINIMUM FREQUENCY – 999 Hz</b>	<b>190 Hz</b>
47	CLEAR HISTORY	MAINTAIN (01), CLEAR (02)	MAINTAIN (01)
48	PROGRAM SELECTION	USER SETTINGS (01), OEM SETTINGS (02) , RESET OEM (03), RESET 60 (04). RESET 50 (05), TRANSLATE (06)	USER SETTINGS (01)
50	FAULT HISTORY	(VIEW ONLY)	(N/A)
51	SOFTWARE CODE	(VIEW ONLY)	(N/A)
52	DC BUS VOLTAGE	(VIEW ONLY)	(N/A)
53	MOTOR VOLTAGE	(VIEW ONLY)	(N/A)
54	LOAD	(VIEW ONLY)	(N/A)
55	0 -10 VDC INPUT	(VIEW ONLY)	(N/A)
56	4 - 20 mA INPUT	(VIEW ONLY)	(N/A)
57	TB STRIP STATUS	(VIEW ONLY)	(N/A)
58	KEYPAD STATUS	(VIEW ONLY)	(N/A)

**Inverter Parameters/Software Version 403**  
**Pass code 225(initial), after setting 135**

Values that are different from factory specifications are in **bold Italic**.

NO.	PARAMETER NAME	RANGE OF ADJUSTMENT	FACTORY DEFAULT
01	LINE VOLTAGE	HIGH (01), LOW (02)	HIGH (01)
<b>02</b>	<b>CARRIER FREQUENCY</b>	<b>4kHz (01), 6 kHz (02), 8 kHz (08), 10 kHz (04)</b>	<b>6 kHz (05)</b>
03	START METHOD	NORMAL (01), START ON POWER UP (02), START WITH DC BRAKE (03), AUTO RESTART WITH DC BRAKE (04), FLYING RESTART 1 (05), FLYING RESTART 2 (06), FLYING RESTART 3 (07)	NORMAL (01)
04	STOP METHOD	COAST (01), COAST WITH DC BRAKE (02), RAMP (03), RAMP WITH DC BRAKE (04)	COAST (01)
<b>05</b>	<b>STANDARD SPEED SOURCE</b>	<b>KEYPAD (01), PRESET #1 (02), 0-10 VDC (03), 4-20 mA (04)</b>	<b>KEYPAD (03)</b>
06	RELAY OUTPUT	NONE (01), RUN (02), FAULT (03), INVERSE FAULT (04), FAULT LOCKOUT (05). AT SET SPEED (06), ABOVE PRESET #3 (07). CURRENT LIMIT (08), AUTO SPEED (09). REVERSE (10)	NONE (01)
10	TB-13A FUNCTION SELECT	<i>NONE (01), 0-10 VDC (02), 4-20 mA (03).</i> <i>PRESET SPEED #1 (04), RUN REVERSE (05),</i> <i>START REVERSE (06), EXTERNAL FAULT (07),</i> <i>REMOTE KEYPAD (08), DB FAULT (09),</i> <i>AUXILIARY STOP (10), ACCEL/DECEL #2 (11)</i>	NONE (01)
11	TB-13B FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03), PRESET SPEED #2 (04), DECREASE FREQ (05), START FORWARD (06), JOG FORWARD (07), JOG REVERSE (08), EXTERNAL FAULT (09), INVERSE EXT FAULT (10) AUXILIARY STOP (11), ACCEL/DECEL #2 (12), REMOTE KEYPAD (13)	NONE (01)
12	TB-13E FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03). PRESET SPEED #3 (04), INCREASE FREQ (05), START FORWARD (06), EXTERNAL FAULT (07), INVERSE EXT FAULT (08), AUXILIARY STOP (09), ACCEL/DECEL #2 (10)	NONE (01)
	TB-13E OUTPUT SELECTIONS	RUN (11), FAULT (12), INVERSE FAULT (13), LOCKOUT (14), AT SET SPEED (15), ABOVE PRESET#3 (16), CURRENT LIMIT (17), AUTO SPEED (18), REVERSE (19), DYNAMIC BRAKING (20)  REMOTE KEYPAD (21)	
	OTHER SELECTIONS		
14	CONTROL	TERMINAL STRIP ONLY (01), REMOTE KEYPAD ONLY (02).	TERMINAL STRIP ONLY (01)

16	UNITS EDITING	TENTHS OF UNITS (01), WHOLE UNITS (02)	WHOLE UNITS (02)
17	ROTATION	FORWARD ONLY (01), FORWARD AND REVERSE (02)	FORWARD ONLY (01)
19	<b>ACCELERATION TIME</b>	<b>0.1 - 3600.0 SEC</b>	<b>8.0 SEC</b>
20	<b>DECELERATION TIME</b>	<b>0.1 - 3600.0 SEC</b>	<b>10.0 SEC</b>
21	DC BRAKE TIME	0.0 - 3600.0 SEC	0.0 SEC
22	DC BRAKE VOLTAGE	0.0 - 30.0 %	0.0 %
23	<b>MINIMUM FREQUENCY</b>	<b>0.0 - MAXIMUM FREQUENCY</b>	<b>3.0 Hz</b>
24	<b>MAXIMUM FREQUENCY</b>	<b>MINIMUM FREQ. - 240.0 Hz</b>	<b>135.0 Hz</b>
25	CURRENT LIMIT	30 - 180 %	180%
26	MOTOR OVERLOAD	30 - 100%	100%
27	BASE FREQUENCY	25.0 - 500.0 Hz	60.0 Hz
28	<b>FIXED BOOST</b>	<b>0.0 - 30.0 %</b>	<b>4.0%</b>
29	ACCEL BOOST	0.0 - 20.0 %	0.0 %
30	SLIP COMPLETION	0.0 - 5.0 %	0.0%
31-37	PRESET SPEEDS	0.0 MAXIMUM FREQUENCY	0.0 Hz
38	SKIP BANDWIDTH	0.0 - 10 Hz	0.0 Hz
39	SPEED SCALING	0.0 - 6500.0	0.0
42	ACCEL/DECCEL #2	0.1 - 3600.0 SEC	20.0 SEC
44	<b>PASSWORD</b>	<b>000 - 999</b>	<b>135</b>
45	<b>SPD AT MIN SIGNAL</b>	<b>MINIMUM FREQUENCY – 999 Hz</b>	<b>4.9</b>
46	<b>SPD AT MAX SIGNAL</b>	<b>MINIMUM FREQUENCY – 999 Hz</b>	<b>135</b>
47	CLEAR HISTORY	MAINTAIN (01), CLEAR (02)	MAINTAIN (01)
48	PROGRAM SELECTION	USER SETTINGS (01), OEM SETTINGS (02) , RESET OEM (03), RESET 60 (04). RESET 50 (05), TRANSLATE (06)	USER SETTINGS (01)
50	FAULT HISTORY	(VIEW ONLY)	(N/A)
51	SOFTWARE CODE	(VIEW ONLY)	(N/A)
52	DC BUS VOLTAGE	(VIEW ONLY)	(N/A)
53	MOTOR VOLTAGE	(VIEW ONLY)	(N/A)
54	LOAD	(VIEW ONLY)	(N/A)
55	0 -10 VDC INPUT	(VIEW ONLY)	(N/A)
56	4 - 20 mA INPUT	(VIEW ONLY)	(N/A)
57	TB STRIP STATUS	(VIEW ONLY)	(N/A)
58	KEYPAD STATUS	(VIEW ONLY)	(N/A)

**Inverter Parameters/Software Version 403 & Later**  
**Using Version 1.9 Software Supply Relay Board**  
**Pass code 225(initial), after setting 135**

Values that are different from factory specifications are in **bold Italic**.

NO.	PARAMETER NAME	RANGE OF ADJUSTMENT	FACTORY DEFAULT
01	LINE VOLTAGE	HIGH (01), LOW (02)	HIGH (01)
<b>02</b>	<b>CARRIER FREQUENCY</b>	<b>4kHz (01), 6 kHz (02), 8 kHz (08), 10 kHz (04)</b>	<b>6 kHz (05)</b>
03	START METHOD	NORMAL (01), START ON POWER UP (02), START WITH DC BRAKE (03), AUTO RESTART WITH DC BRAKE (04), FLYING RESTART 1 (05), FLYING RESTART 2 (06), FLYING RESTART 3 (07)	NORMAL (01)
04	STOP METHOD	COAST (01), COAST WITH DC BRAKE (02), RAMP (03), RAMP WITH DC BRAKE (04)	Ramp (03)
<b>05</b>	<b>STANDARD SPEED SOURCE</b>	<b>KEYPAD (01), PRESET #1 (02), 0-10 VDC (03), 4-20 mA (04)</b>	<b>KEYPAD (03)</b>
06	RELAY OUTPUT	NONE (01), RUN (02), FAULT (03), INVERSE FAULT (04), FAULT LOCKOUT (05). AT SET SPEED (06), ABOVE PRESET #3 (07). CURRENT LIMIT (08), AUTO SPEED (09). REVERSE (10)	NONE (01)
10	TB-13A FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03). PRESET SPEED #1 (04), RUN REVERSE (05), START REVERSE (06), EXTERNAL FAULT (07), REMOTE KEYPAD (08), DB FAULT (09), AUXILIARY STOP (10), ACCEL/DECEL #2 (11)	NONE (01)
11	TB-13B FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03), PRESET SPEED #2 (04), DECREASE FREQ (05), START FORWARD (06), JOG FORWARD (07), JOG REVERSE (08), EXTERNAL FAULT (09), INVERSE EXT FAULT (10) AUXILIARY STOP (11), ACCEL/DECEL #2 (12), REMOTE KEYPAD (13)	NONE (01)
12	TB-13E FUNCTION SELECT	NONE (01), 0-10 VDC (02), 4-20 mA (03). PRESET SPEED #3 (04), INCREASE FREQ (05), START FORWARD (06), EXTERNAL FAULT (07), INVERSE EXT FAULT (08), AUXILIARY STOP (09), ACCEL/DECEL #2 (10)	NONE (01)
	TB-13E OUTPUT SELECTIONS	RUN (11), FAULT (12), INVERSE FAULT (13), LOCKOUT (14), AT SET SPEED (15), ABOVE PRESET#3 (16), CURRENT LIMIT (17), AUTO SPEED (18), REVERSE (19), DYNAMIC BRAKING (20)	
	OTHER SELECTIONS	REMOTE KEYPAD (21)	
14	CONTROL	TERMINAL STRIP ONLY (01), REMOTE KEYPAD ONLY (02).	TERMINAL STRIP ONLY (01)
16	UNITS EDITING	TENTHS OF UNITS (01), WHOLE UNITS (02)	WHOLE UNITS (02)

17	ROTATION	FORWARD ONLY (01), FORWARD AND REVERSE (02)	FORWARD ONLY (01)
19	<b>ACCELERATION TIME</b>	<b>0.1 - 3600.0 SEC</b>	<b>8.0 SEC</b>
20	<b>DECELERATION TIME</b>	<b>0.1 - 3600.0 SEC</b>	<b>3.0 SEC</b>
21	DC BRAKE TIME	0.0 - 3600.0 SEC	0.0 SEC
22	DC BRAKE VOLTAGE	0.0 - 30.0 %	0.0 %
23	<b>MINIMUM FREQUENCY</b>	<b>0.0 - MAXIMUM FREQUENCY</b>	<b>3.0 Hz</b>
24	<b>MAXIMUM FREQUENCY</b>	<b>MINIMUM FREQ. - 240.0 Hz</b>	<b>140.0 Hz</b>
25	CURRENT LIMIT	30 - 180 %	180%
26	MOTOR OVERLOAD	30 - 100%	100%
27	BASE FREQUENCY	25.0 - 500.0 Hz	60.0 Hz
28	<b>FIXED BOOST</b>	<b>0.0 - 30.0 %</b>	<b>4.0%</b>
29	ACCEL BOOST	0.0 - 20.0 %	0.0 %
30	SLIP COMPLETION	0.0 - 5.0 %	0.0%
31-37	PRESET SPEEDS	0.0 MAXIMUM FREQUENCY	0.0 Hz
38	SKIP BANDWIDTH	0.0 - 10 Hz	0.0 Hz
39	SPEED SCALING	0.0 - 6500.0	0.0
42	ACCEL/DECCEL #2	0.1 - 3600.0 SEC	20.0 SEC
44	<b>PASSWORD</b>	<b>000 - 999</b>	<b>135</b>
45	<b>SPD AT MIN SIGNAL</b>	<b>MINIMUM FREQUENCY – 999 Hz</b>	<b>4.0</b>
46	<b>SPD AT MAX SIGNAL</b>	<b>MINIMUM FREQUENCY – 999 Hz</b>	<b>140</b>
47	CLEAR HISTORY	MAINTAIN (01), CLEAR (02)	MAINTAIN (01)
48	PROGRAM SELECTION	USER SETTINGS (01), OEM SETTINGS (02), RESET OEM (03), RESET 60 (04). RESET 50 (05), TRANSLATE (06)	USER SETTINGS (01)
50	FAULT HISTORY	(VIEW ONLY)	(N/A)
51	SOFTWARE CODE	(VIEW ONLY)	(N/A)
52	DC BUS VOLTAGE	(VIEW ONLY)	(N/A)
53	MOTOR VOLTAGE	(VIEW ONLY)	(N/A)
54	LOAD	(VIEW ONLY)	(N/A)
55	0 -10 VDC INPUT	(VIEW ONLY)	(N/A)
56	4 - 20 mA INPUT	(VIEW ONLY)	(N/A)
57	TB STRIP STATUS	(VIEW ONLY)	(N/A)
58	KEYPAD STATUS	(VIEW ONLY)	(N/A)



# *Established Component Replacement Times*

**12**

FVX/TMX Series Inverter replacement including recalibration of belt speed	1.5 hrs
FVX/TMX Series Actuator replacement including grade calibration	1.5 hrs
FVX/TMX Series Rear Roller replacement including belt tracking adjustments	1 hrs
FVX/TMX Series Front Roller replacement including belt tracking adjustments	.75 hrs
FVX/TMX Series Running Deck replacement including belt tracking adjustments	1 hrs
FVX/TMX Isolators replacement includes all isolators and belt tracking adjustments	2.25 hrs
FVX/TMX Series Circuit board replacement includes recalibration of speed/grade on 325's and 425's	1.25 hrs
FVX/TMX Series Circuit board replacement includes recalibration of speed/grade on 325C/CP and 425C/CP	1 hrs
FVX Series Handrail replacement left or right leg	.5 hrs
FVX Series Handrail replacement upper	.5 hrs
TMX Series Handrail replacement outer left or right no ESB	.5 hrs
TMX Series Handrail replacement outer left or right with ESB	.75 hrs
TMX Series Handrail replacement center with or without ESB	1.5 hrs
TMX Series Handrail replacement center 425C/CP	1.75 hrs
FVX Series handrail take off and reinstall for moving	.75 hrs
Handrails take off and reinstall for moving, any models except 30/30 and FVX Series	2 hrs
TMX Series Handrail lower outer mount replacement W/bolt	1 hr
FVX/TMX Series Drive belt replacement includes tracking adjustments	1.5 hrs
FVX/TMX Series Motor replacement includes tracking adjustments & hardware transfer	1.75 hrs
TMX Series ESB replacement any rail	.75 hrs
TMX Series ESB add, Includes rail removal drilling and install	2.5 hrs
FVX/TMX Series Circuit breakers check and replacement	.5 hrs
FVX/TMX Series Main power switch check and replacement	.5 hrs
FVX/TMX Series Run belt tracking and tension adjustments	.25 hrs
FVX/TMX Series Power cord replacement	.5 hrs
FVX/TMX Series CE filter replacement	.5 hrs
FVX Series Frame replacement	7.25 hrs
TMX Series Motor pan weldment replacement	7.25 hrs
TMX Series Side channel replacement left or right	3.25 hrs
TMX Series Rear foot with bolts sheared off	.5 hrs
FVX Series Hood replacement	15 min
TMX Series Hood replacement	1.75 hrs
FVX/TMX Series Main wire harness replacement	1.25 hrs

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FVX/TMX Series Speed sensor replacement	.5 hrs
FVX/TMX Series Control panel replacement includes recalibration	1.75 hrs
FVX/TMX Series End cap replacement	5 min
FVX/TMX Series Rubber stripping on side channels	.5 hrs
FVX/TMX Series Wheels replacement, both	10 min
FVX/TMX Series RS232 harness replacement	.75 hrs
FVX/TMX Series Reprogram invertor settings if required add time to operation	10 min
FVX/TMX Series Recalibrate belt speed, includes time to download program	.5 hrs
FVX/TMX Series Recalibrate belt speed on FVX C/CP or TMX C/CP	.25 hrs
FVX/TMX Series Recalibrate Elevation, includes time to download program	.75 hrs
FVX/TMX Series Recalibrate Elevation on FVX C/CP or TMX C/CP	.5 hrs
FVX/TMX Series Running Belt Replacement	1.5 hrs

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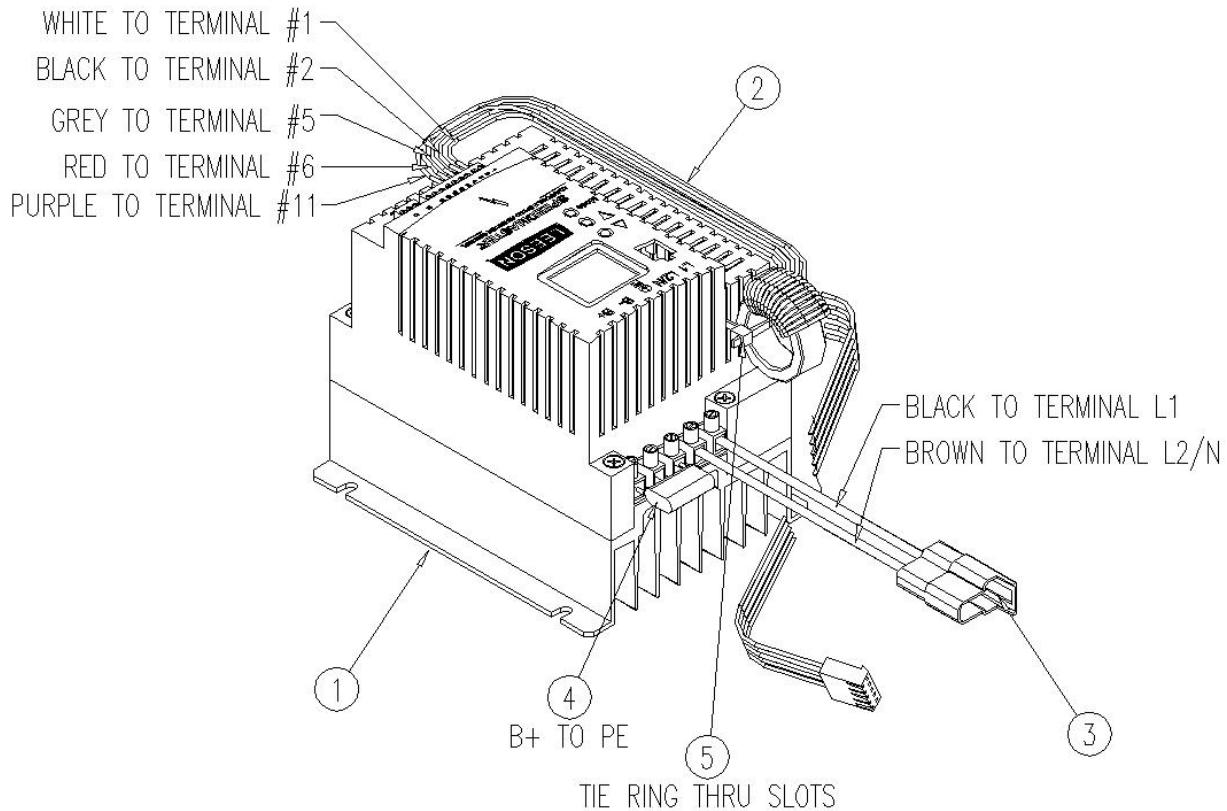
Note: Unless otherwise noted, all times are assumed to be a treadmill fully assembled! In the event that components serviced share like disassembly procedures both times will not apply. Example (with replacement of wire harness, speed sensor could also be replaced for no additional time). All other services not listed, including combinations of above listed services will be appointed a reasonable time by the manufacturer only! If in doubt call the manufacturer before performing services.

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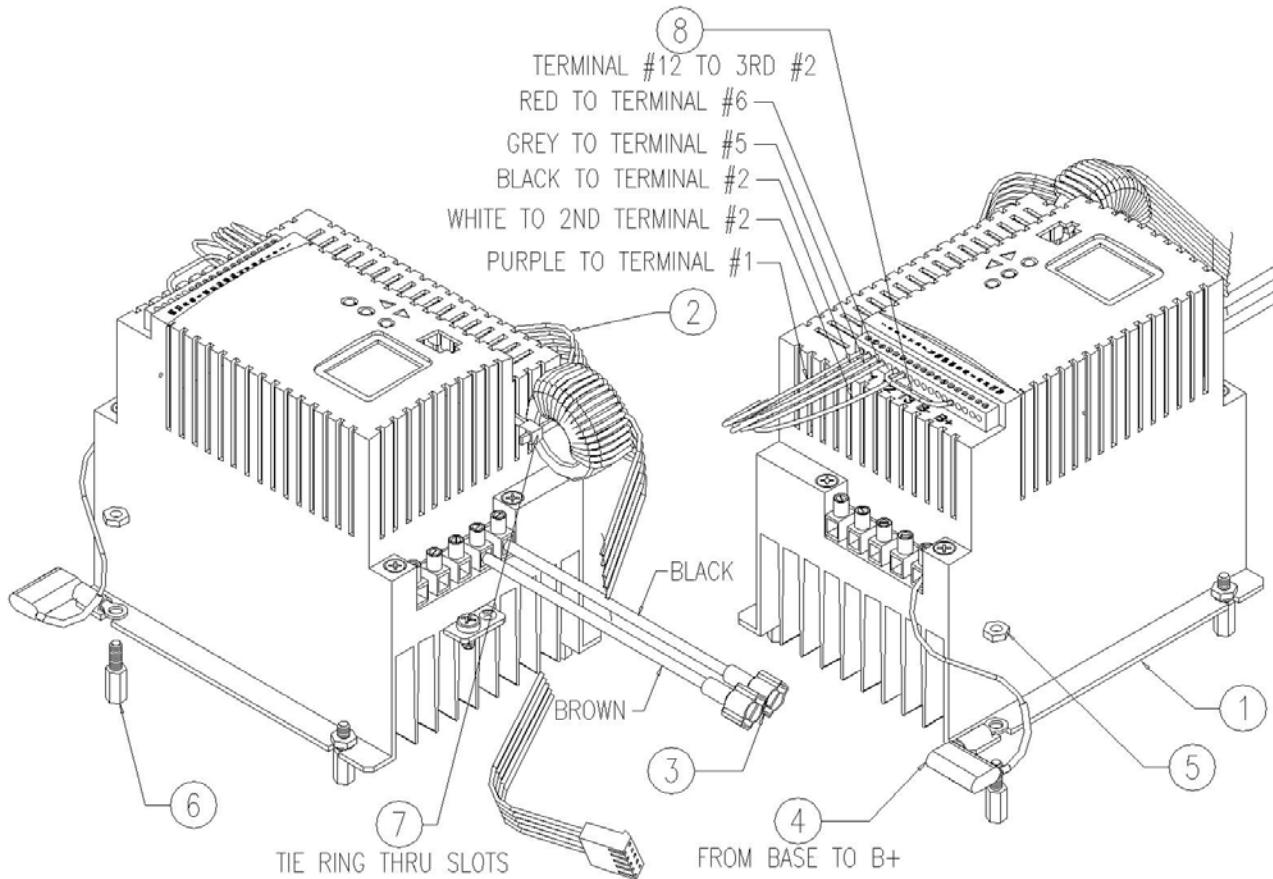
# *Parts List with Part Numbers*

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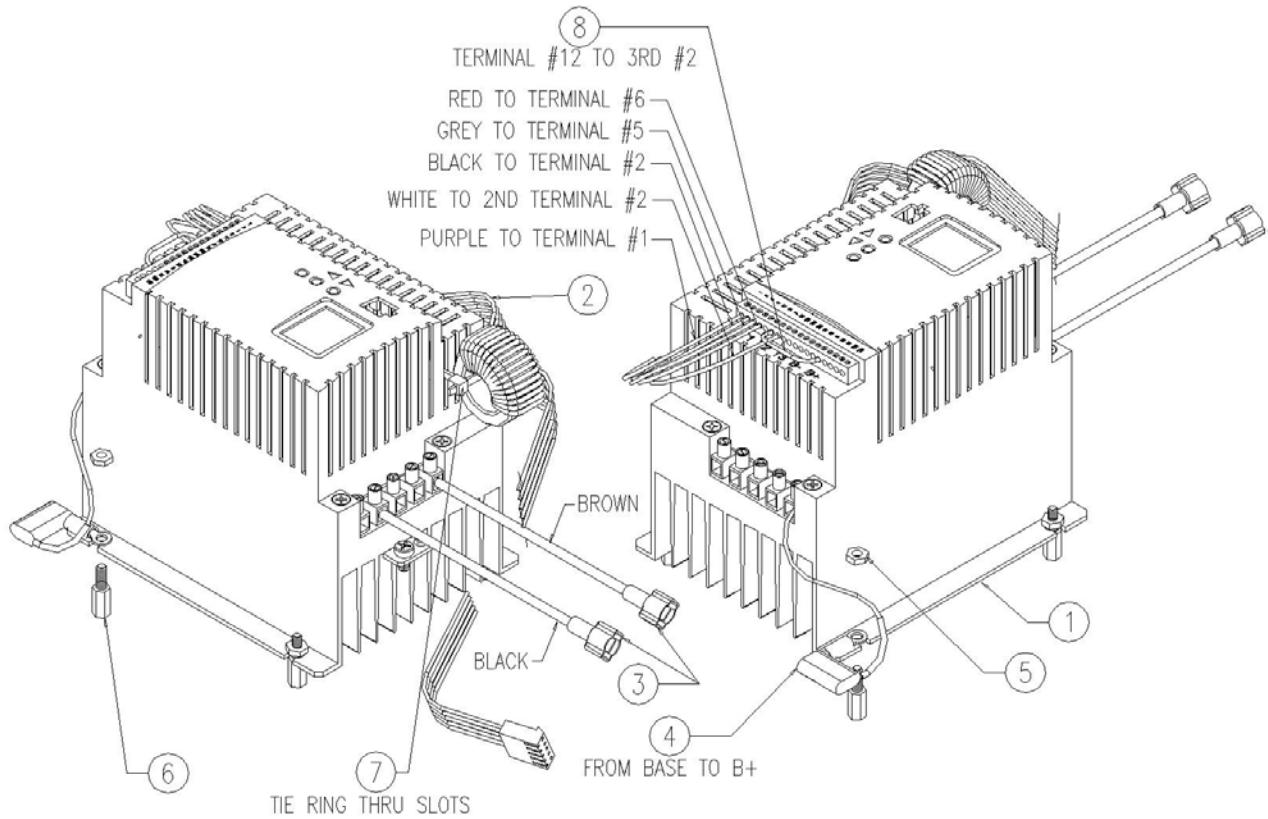
FVX Series Inverter Assembly 220V Software Version 402/403/404



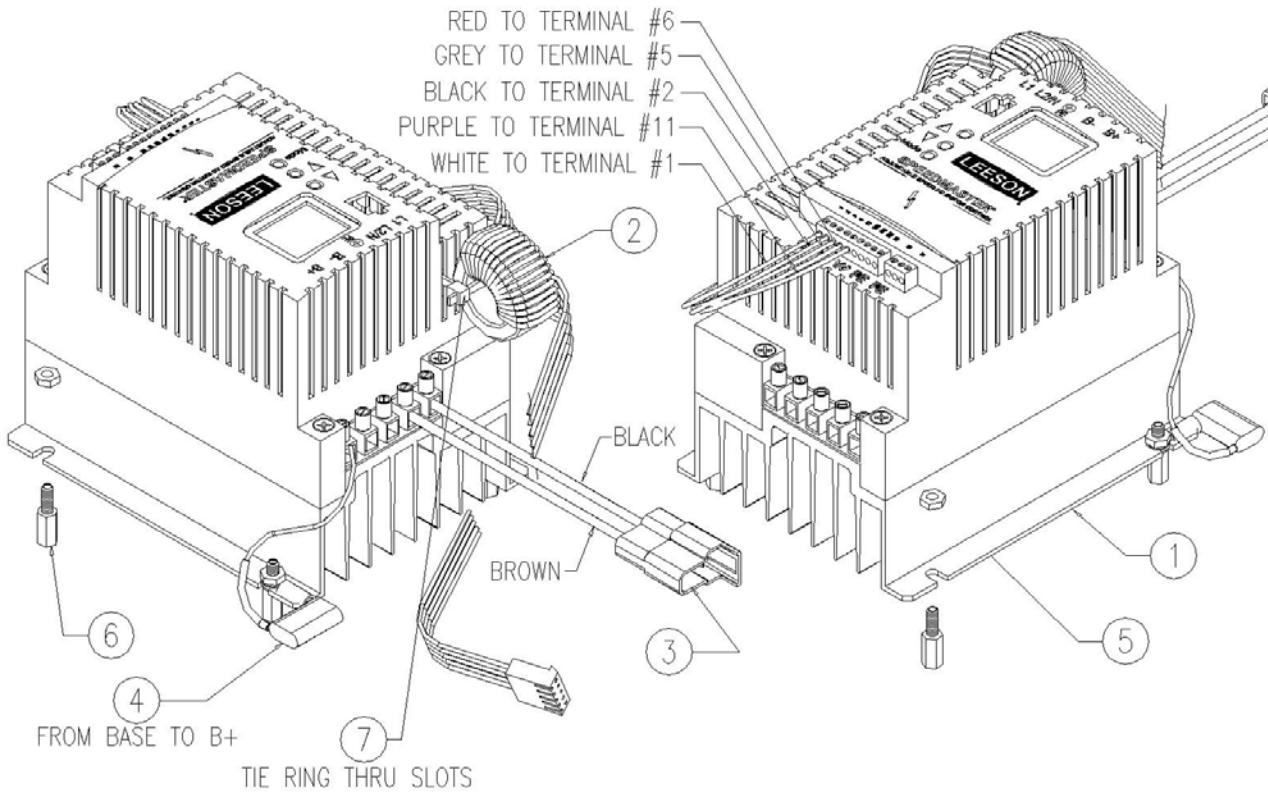
Item	Description	Part Number	Qty
1	Inverter – Lesson	317-160-104	1
2	Inverter Signal Harness	317-160-036	1
3	Power Input Harness	317-160-069	1
4	Capacitor	317-160-118	1
5	Tie Wrap – 4"	317-160-075	1

**TMX Series Inverter Assembly 220V Software Version 301**

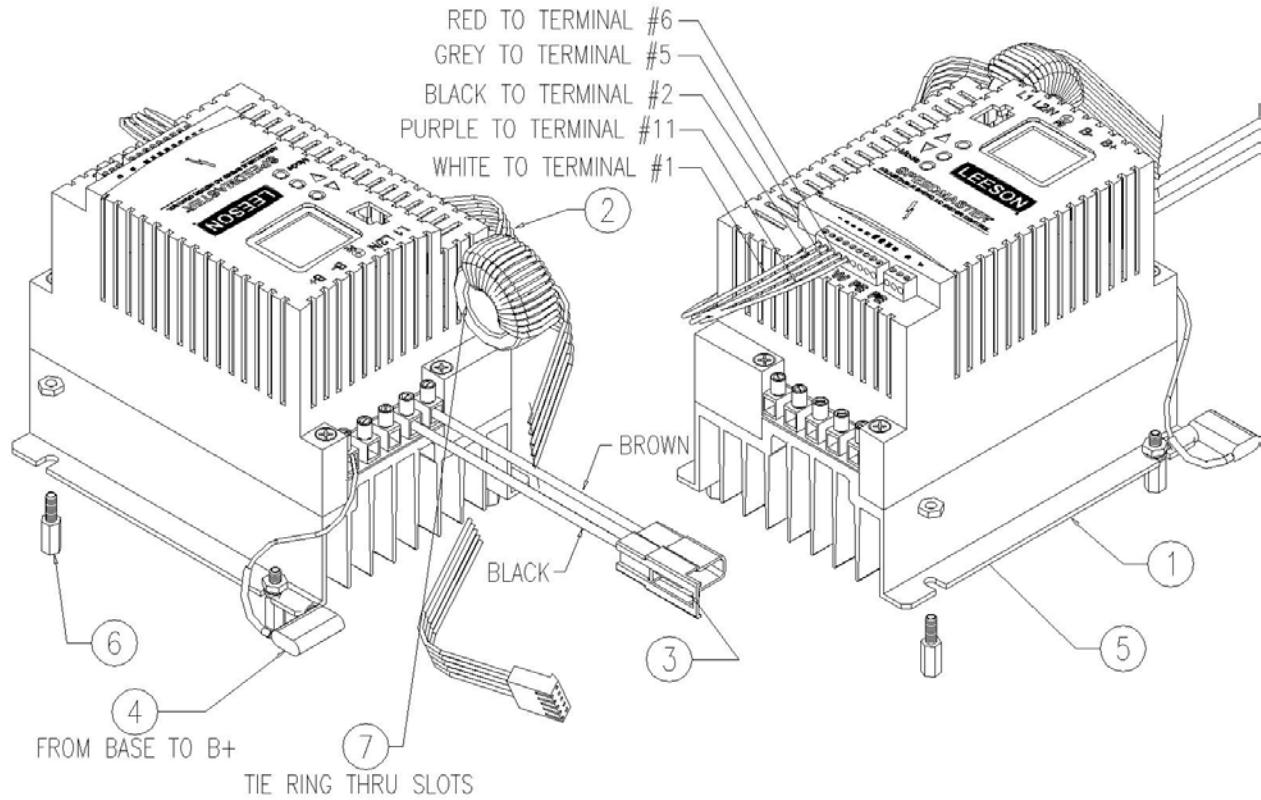
Item	Description	Part Number	Qty
1	Inverter – Leeson	317-160-008	1
2	Inverter Signal Harness	317-160-036	1
3	Power Input Harness	317-160-069	1
4	Capacitor	317-160-035	1
5	HN - #8 – 32 Nylon	001-1763	4
6	Isolation Mount	317-160-040	4
7	Tie Wrap – 4"	317-160-075	1
8	White 18 GA. Wire Cut 2"	001-7270	1

**TMX Series Inverter Assembly 115V Software Version 301**

Item	Description	Part Number	Qty
1	Inverter – Leeson	317-160-008	1
2	Inverter Signal Harness	317-160-036	1
3	Power Input Harness	317-160-069	1
4	Capacitor	317-160-035	1
5	HN - #8 – 32 Nylon	001-1763	4
6	Isolation Mount	317-160-040	4
7	Tie Wrap – 4"	317-160-075	1
8	White 18 GA. Wire Cut 2"	001-7270	1

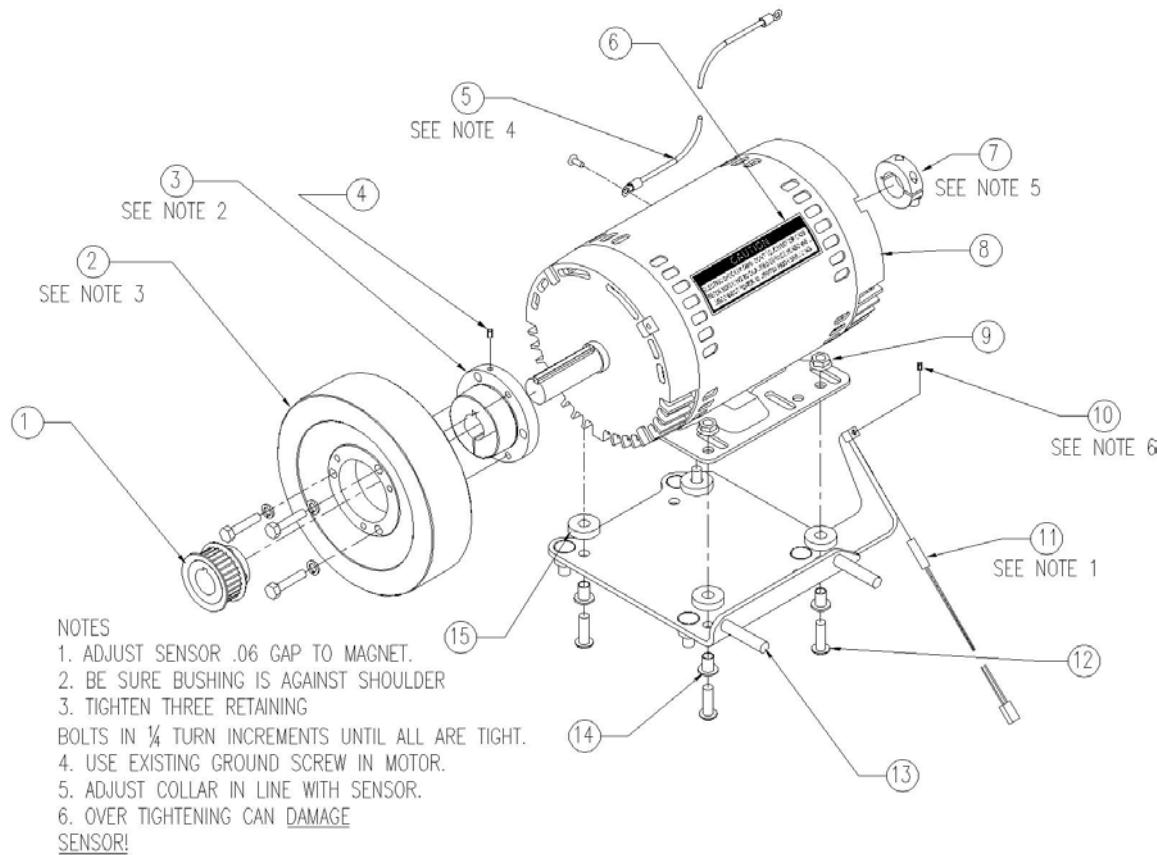
**TMX Series Inverter Assembly 220V Software Version 402/403/404**

Item	Description	Part Number	Qty
1	Inverter – Leeson	317-160-104	1
2	Inverter Signal Harness	317-160-036	1
3	Power Input Harness	317-160-069	1
4	Capacitor	317-160-035	1
5	HN - #8 – 32 Nylon	001-1763	4
6	Isolation Mount	317-160-040	4
7	Tie Wrap – 4"	317-160-075	1

**FVX Series Inverter Assembly 110V Software Version 402/403/404**

Item	Description	Part Number	Qty
1	Inverter – Leeson	317-160-105	1
2	Inverter Signal Harness	317-160-036	1
3	Power Input Harness	317-160-069	1
4	Capacitor	317-160-035	1
5	HN - #8 – 32 Nylon	001-1763	4
6	Isolation Mount	317-160-040	4
7	Tie Wrap – 4"	317-160-075	1

## Motor Mount Assembly

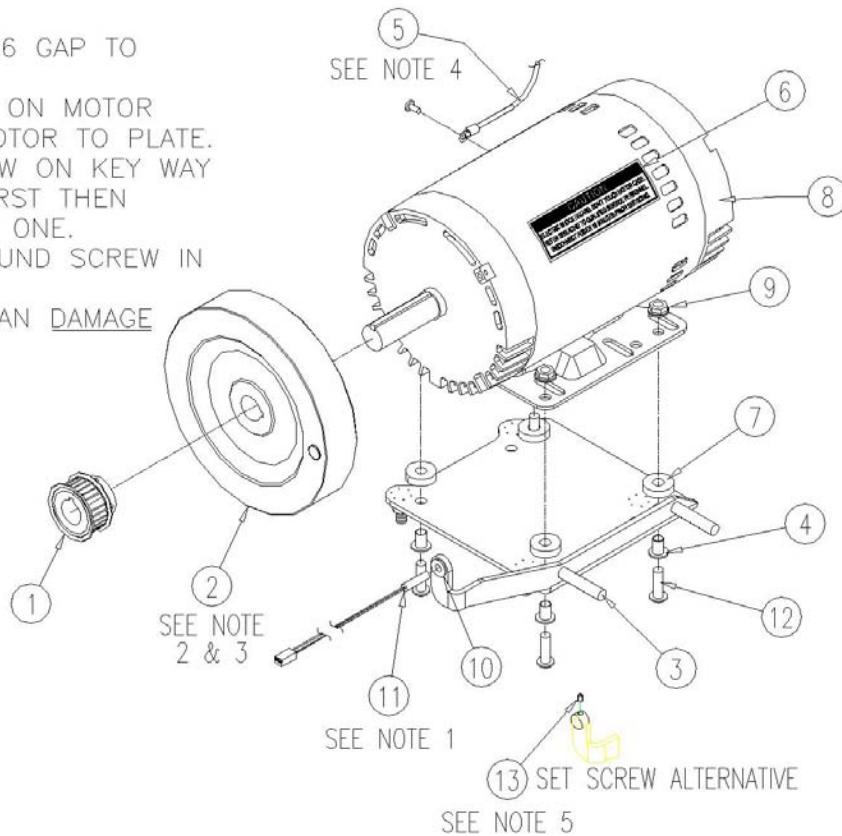


Item	Description	Part Number	Qty
1	SPROCKET DRIVE MOTOR	317-160-009	1
2	FLYWHEEL DRIVE MOTOR	317-160-072	1
3	BUSHING FLYWHEEL	317-160-032	1
4	SSS 1/4-20 SUPPLIED WITH 317-160-032		1
5	MOTOR GROUND WIRE	317-160-072	1
6	DECAL CAUTION ELECTRIC	317-160-103	1
7	COLLAR ASSEMBLY	317-178-001	1
8	MOTOR LEESON	317-160-007	1
9	HNS 5/18-18 FLANGE	001-1398	4
10	SSS #10-32 X .125	317-175-007	1
11	MAGNET SPEED SENSOR	317-160-034	1
12	HSBHCS 5/16-18 X 1 PLTD	001-1735	4
13	MOTOR BASE WELDMENT	317-175-001	1
14	BUSHING W/SHOULDER	317-160-052	4
15	WASHER DERLIN	317-160-051	4

## Alternative Motor Mount Assembly FVX Series and TMX Series

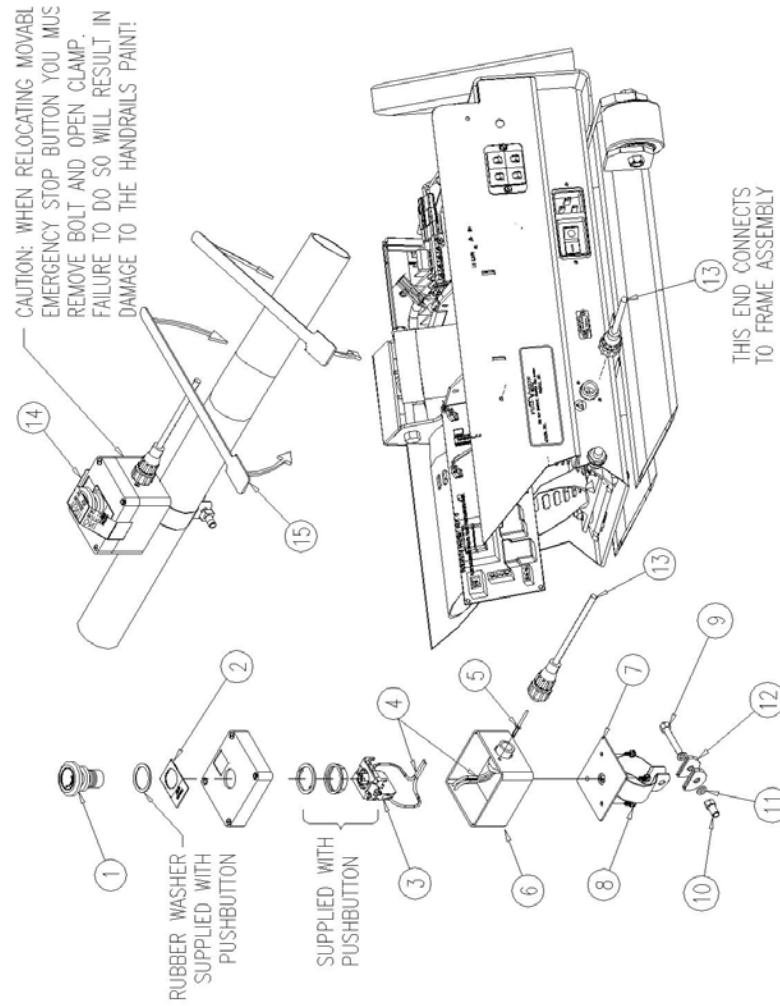
## NOTES

1. ADJUST SENSOR .06 GAP TO MAGNET.
2. INSTALL FLYWHEEL ON MOTOR PRIOR TO BOLTING MOTOR TO PLATE.
3. TIGHTEN SET SCREW ON KEY WAY OF FLYWHEEL HUB FIRST THEN TIGHTEN THE SECOND ONE.
4. USE EXISTING GROUND SCREW IN MOTOR.
5. OVER TIGHENING CAN DAMAGE SENSOR!

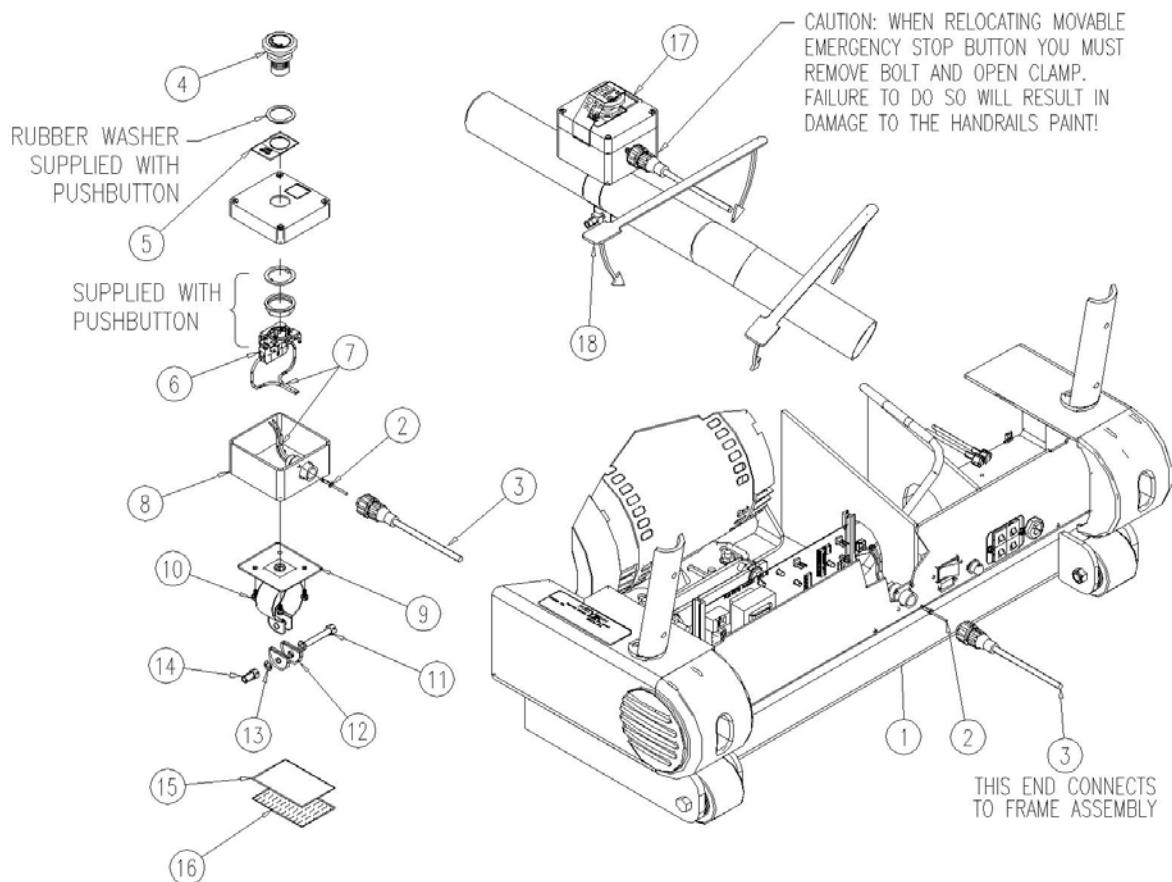


Item	Description	Part Number	Qty
1	SPROCKET DRIVE MOTOR	317-160-009	1
2	FLYWHEEL WITH MAGNET	317-160-101	1
3	MOTOR BASE WELDMENT	317-378-001	1
4	BUSHING W/ SHOULDER	317-160-052	4
5	MOTOR GROUND WIRE	317-160-108	1
6	DECAL CAUTION ELECTRIC	317-160-103	1
7	WASHER DELRIN	317-160-051	4
8	MOTOR LEESON	317-160-007 317-160-138	1
9	HNS 5/18-18 FLANGE	001-1398	4
10	GROMMET	317-160-146	1
11	MAGNET SPEED SENSOR	317-160-034	1
12	HSBHCS 5/16-18 X 1 PLTD	001-1735	4
13	SSS #10-32 x .125	317-175-007	1

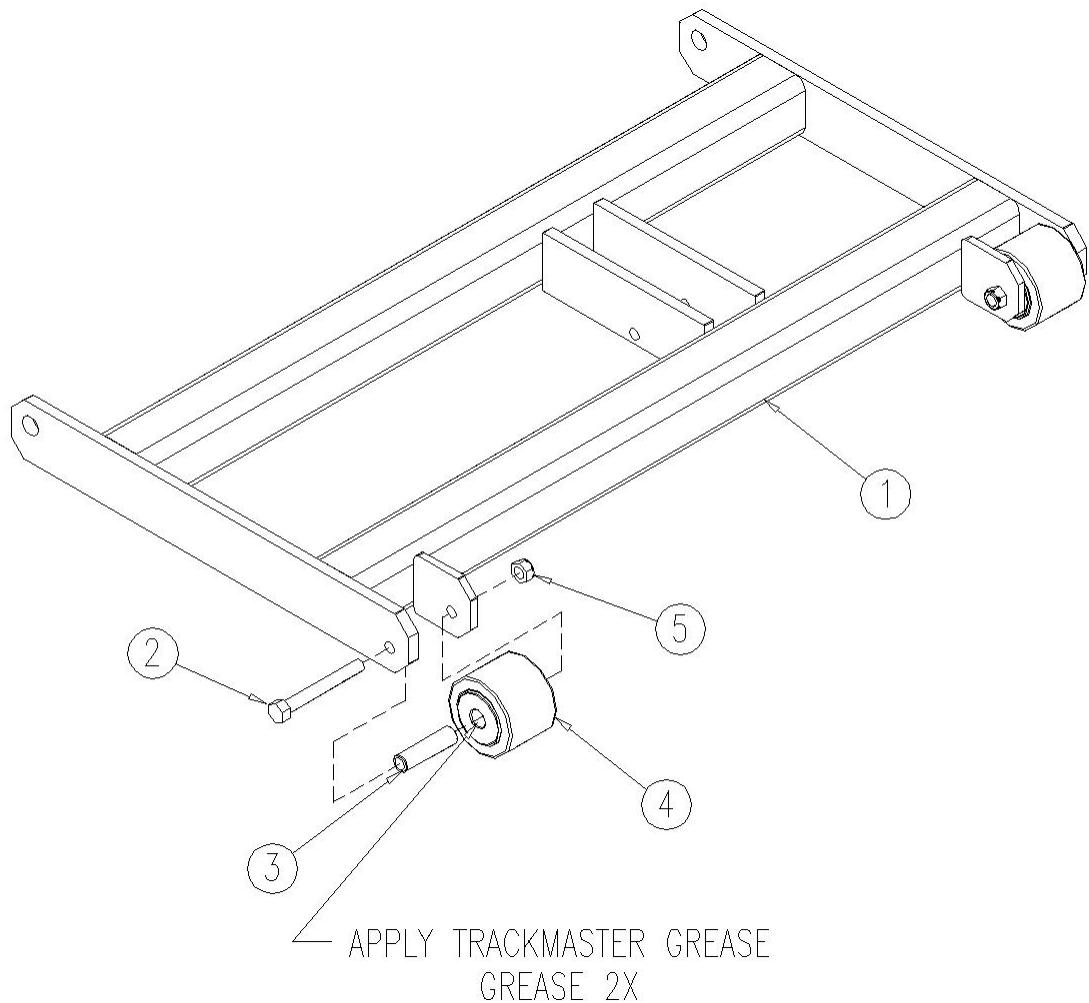
## FVX Series Movable ESB Assembly



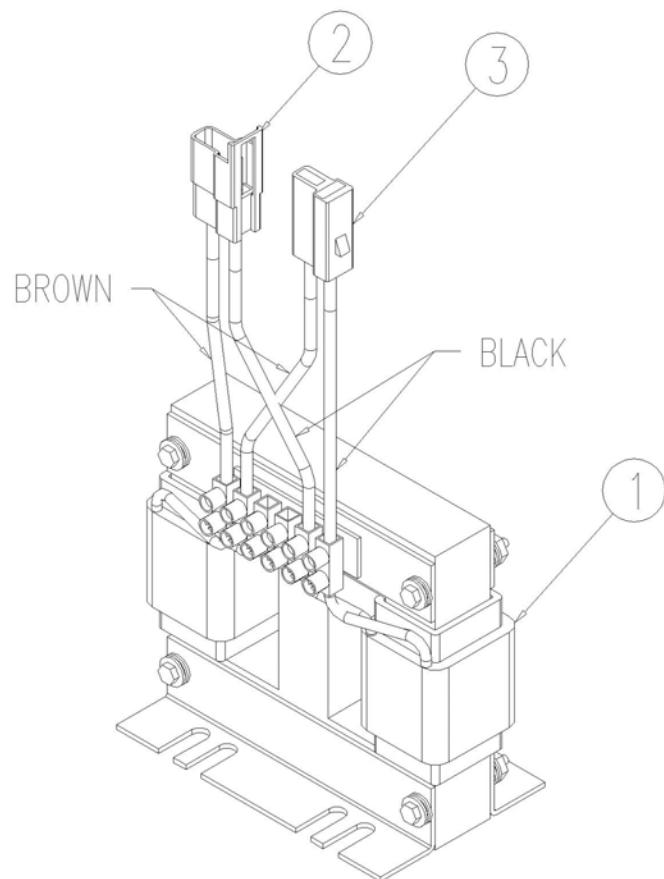
Item	Description	Part Number	Qty
1	PUSHBUTTON	317-180-004	1
2	LABEL PLATE	317-180-006	1
3	SWITCH EMERGENCY STOP	317-180-005	1
4	HARNESS ESB SIDE	317-399-006	1
5	RIVET POP .125 DIA X .430 SS	001-239-007	2
6	ESB BOX DRILLED	317-399-004	1
7	MOUNT ESB	317-400-001	1
8	HWHTS #8-32 X 3/8 LG	001-1284	4
9	BOLT WITH NUT	317-399-003	1
10	ACORN NUT 1/4-20	317-160-151	1
11	FW 1/4" DIA	001-1439	2
12	CAP VINYL WITH HOLE	317-635-001	2
13	HARNESS COIL CORD	317-399-008	1
14	DECAL ESB WARNING	317-160-110	1
15	VELCRO TIE	317-399-002	2

**TMX Series Movable ESB Assembly**

Item	Description	Part Number	Qty
1	HARNESS TREADMILL SIDE	317-399-007	1
2	RIVET POP .125 DIA X .430 SS	001-239-007	4
3	HARNESS COIL CORD	317-399-008	1
4	PUSHBUTTON	317-180-004	1
5	LABEL PLATE	317-180-006	1
6	SWITCH EMERGENCY STOP	317-180-005	1
7	HARNESS ESB SIDE	317-399-006	1
8	ESB BOX DRILLED	317-399-004	1
9	MOUNT ESB	317-400-001	1
10	HWHTS #8-32 X 3/8" LG	001-1284	4
11	BOLT 1/4-20 X 1.5 LG	317-399-003	1
12	CAP VINYL WITH HOLE	317-635-001	2
13	FW 1/4 DIA	001-1439	2
14	ACORN NUT 1/4 - 20	317-160-151	1
15	VELCRO HOOK 2 X 3	317-399-009	1
16	VELCRO LOOP 2 X 3	317-399-010	1
17	DECAL ESB WARNING	317-160-110	1
18	VELCRO TIE	317-399-002	2

**FVX/TMX Series Elevation Assembly**

Item	Description	Part Number	Qty
1	FVX ELEVATION WELDMENT TMX ELEVATION WELDMENT	317-617-001 317-373-001	1
2	HHCS 3/8-16 X 3.25 LG GR5	001-1519	2
3	SPANNER WHEEL	317-160-054	2
4	WHEEL LANDING GEAR	317-160-005	2
5	NLN 3/8-16 NUT	001-1430	2

**FVX/TMX Line Reactor Assembly**

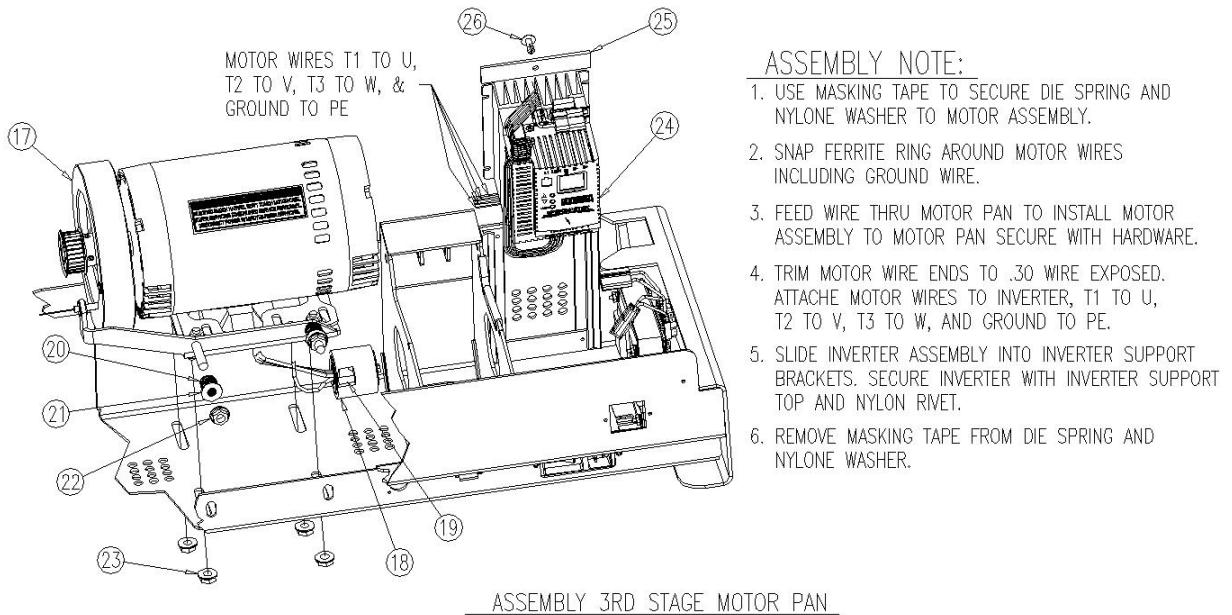
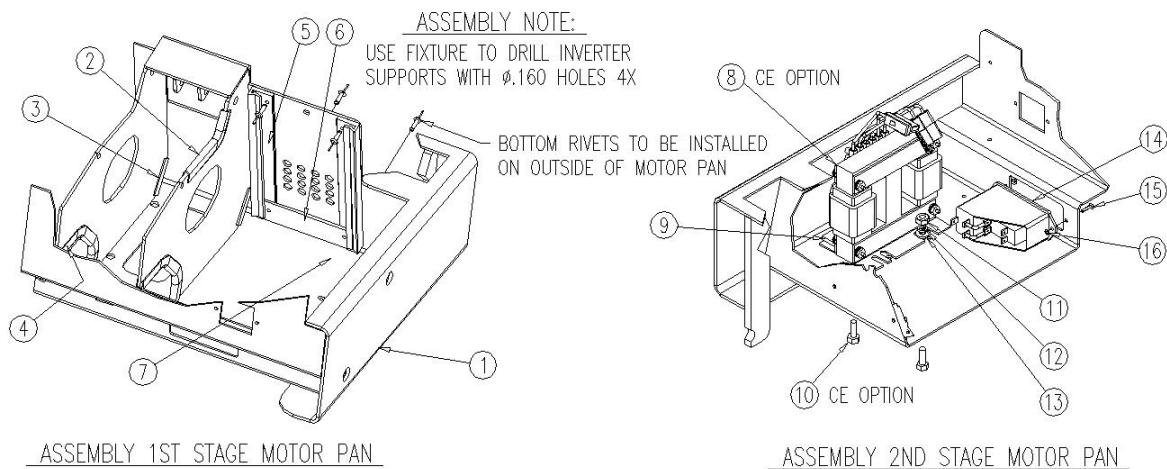
Item	Description	Part Number	Qty
1	LINE REACTOR 2 COIL MTE	317-160-126	1
2	HARNESS INVERTOR POWER	317-160-069	1
3	HARNESS HARMONICS OUTPUT	317-160-114	1

**FVX325 Series 220V Motor Pan Assembly**

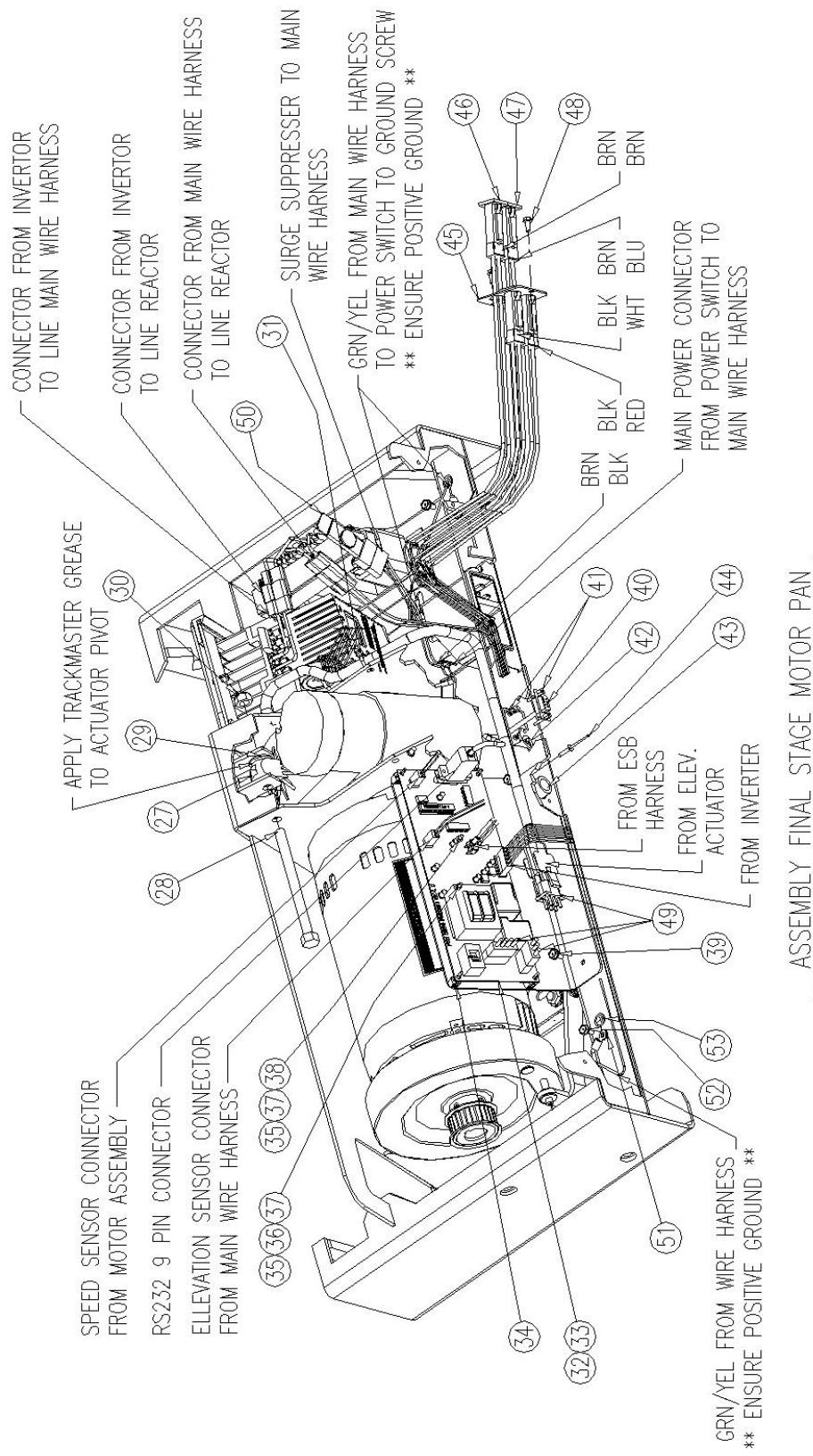
<b>Item</b>	<b>Description</b>	<b>Part Number</b>	<b>Qty</b>
1	FRAME	317-610-001	1
2	TRIM MINI BLACK	001-102-044	4.6"
3	TRIM MINI BLACK	001-102-044	1.6"
4	TRIM MINI BLACK	001-102-044	5.6"
5	INVERTER SUPPORT	317-614-001	2
6	INVERTER SUPPORT BOTTOM	317-615-001	1
7	POP RIVET 5/32 X .50 GRIP	001-239-008	4
8	LINE REACTOR ASSEMBLY CE	317-397-001	1
9	STRAP THREADED CE	317-396-005	1
10	HHCS 1/4-20 X 3/4" LG	001-1186	2
11	HN 1/4-20 GR5	001-1386	1
12	LW 1/4 DIA	001-1450	1
13	FW 1/4 DIA	001-1439	1
14	POWER ENTRY MODULE	317-160-139	1
15	RHMS #6-32 X .50 LG	001-1851	2
16	HNS #6-32 NUT	001-1852	2
17	MOTOR ASSEMBLY	317-622-001	1
18	RING FERRITE	317-160-125	1
19	FOAM INSULATION	317-396-002	1
20	DIE SPRING	317-160-140	2
21	NYLONE WASHER	317-160-086	2
22	HNS 3/8-16 FLANGE NUT	001-1399	2
23	HN STOVER LOCK 3/8-16 FLANGE NUT	001-1820	4
24	INVERTER ASSEMBLY 230VAC	317-621-001	1
25	INVERTER SUPPORT TOP	317-616-001	1
26	NYLONE RIVET	001-1853	1
27	LINEAR ACTUATOR 220V	317-160-029	1
28	HHCS 3/8-16 X 5.0 GR5	001-1743	1
29	WASHER NYLONE	317-160-086	3
30	NLN 3/8-16	001-1430	1
31	TIE CABLE .10 X 4.00 LG	317-160-075	1
32	BRACKET CIRCUIT BOARD	317-612-001	1
33	BOARD – PCB0276	317-160-014	1
34	STANDOFF .50	001-1855	4
35	STANDOFF SPACER .50	001-1854	2
36	RHMS #6-32 2.0 LG	001-1856	1
37	K-LOCK NUT #6-32	001-1858	2
38	RHMS #6-32 1.0 LG	001-1857	1
39	HHWHTS 10-32 X 3/8" LG	001-1755	2
40	HARNESS 9-PIN	317-160-065	1
41	SCREW – HEX JACK	317-160-066	2
42	DECAL – RS232	317-160-081	1
43	ESB HARNESS	317-399-007	1
44	POP – RIVETS .125 X .430 SS	001-239-007	2
45	PLATE BREAKER MOUNT	317-160-073	1
46	BREAKER 1AMP	317-160-030	2

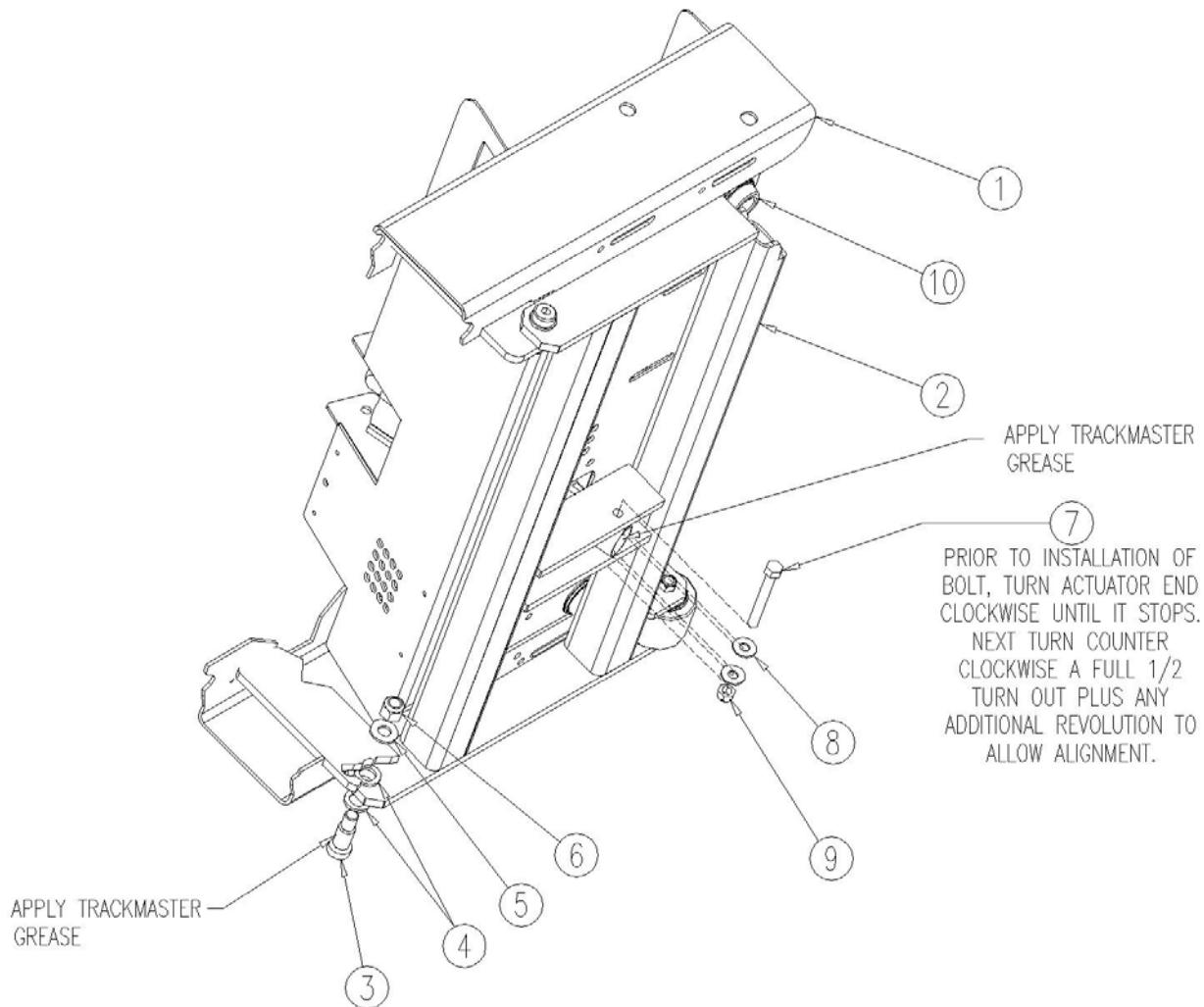
**FVX325 Series 220V Motor Pan Assembly**

Item	Description	Part Number	Qty
47	BREAKER 1/4AMP	317-160-024	2
48	HHWHTS #8-32 X .375	001-1744	2
49	MAIN WIRE HARNESS	317-160-113	1
50	SURGE PROTECTOR	317-160-129	1
51	LW #10 EXT TOOTH	001-1751	2
52	HH SCREW #10-32 3/8 GRD	317-160-076	2
53	DECAL GROUND	317-160-079	2



## **FVX325 Series 220V Motor Pan Assembly**



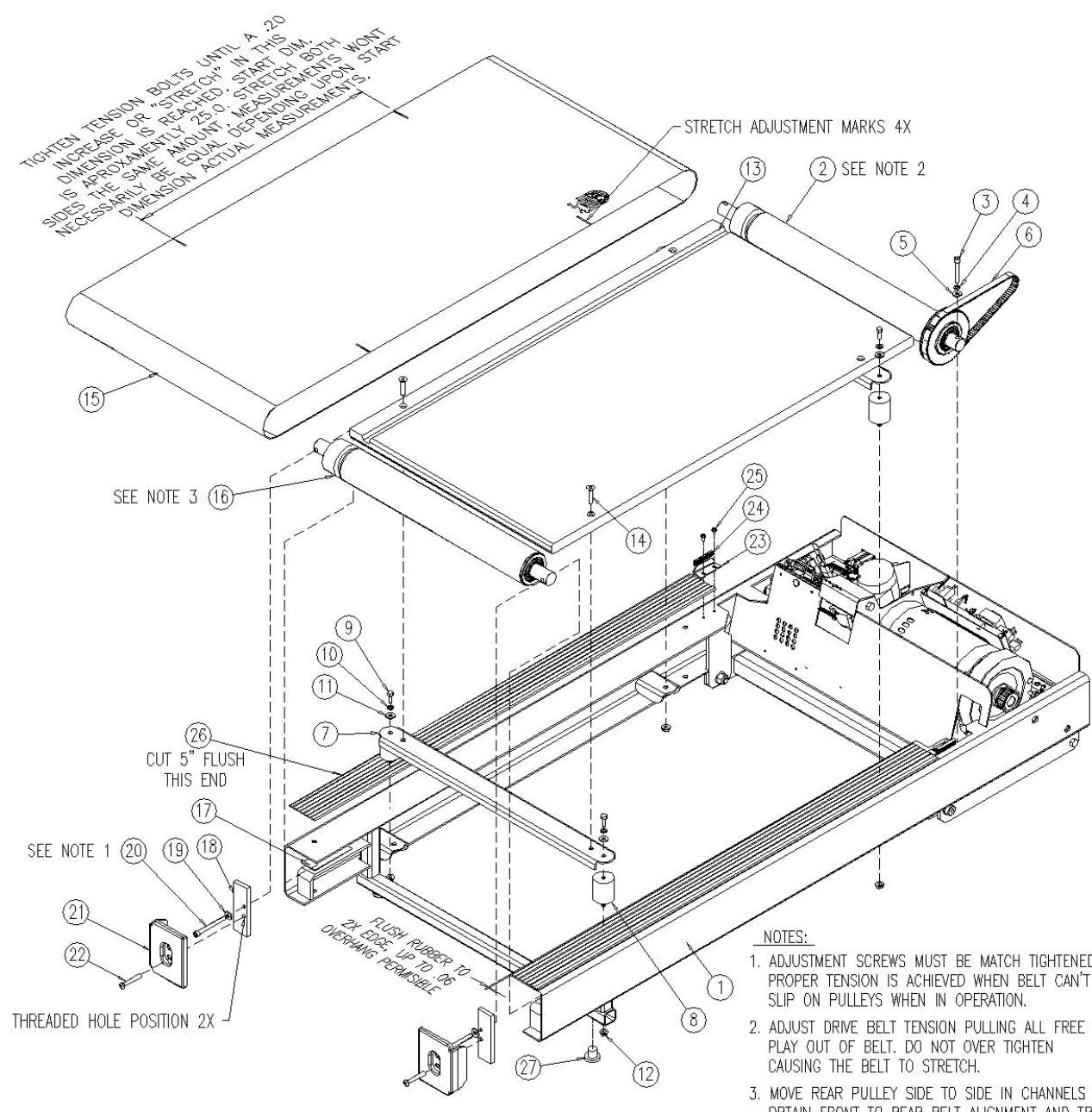
**FVX325 Series Elevation Assembly**

Item	Description	Part Number	Qty
1	FRAME 220V MOTOR PAN ASSEMBLY	317-600-001-1	1
2	ELEVATION ASSEMBLY	317-626-001	1
3	HSHSS 5/8 DIA X 1" LG	001-1730	2
4	ELEVATION DERLIN SPACER	317-160-060	4
5	FW 1/2" DIA	001-1443	4
6	NLN 1/2-13	001-1676	2
7	HHCS 3/8-16 X 3" GR5	001-1699	1
8	WASHER NYLONE	317-160-086	4
9	NLN 3/8-16	001-1430	1
10	BUMPER 1.8 DIA BLACK	317-160-106	2

**FVX325 Series Frame Assembly**

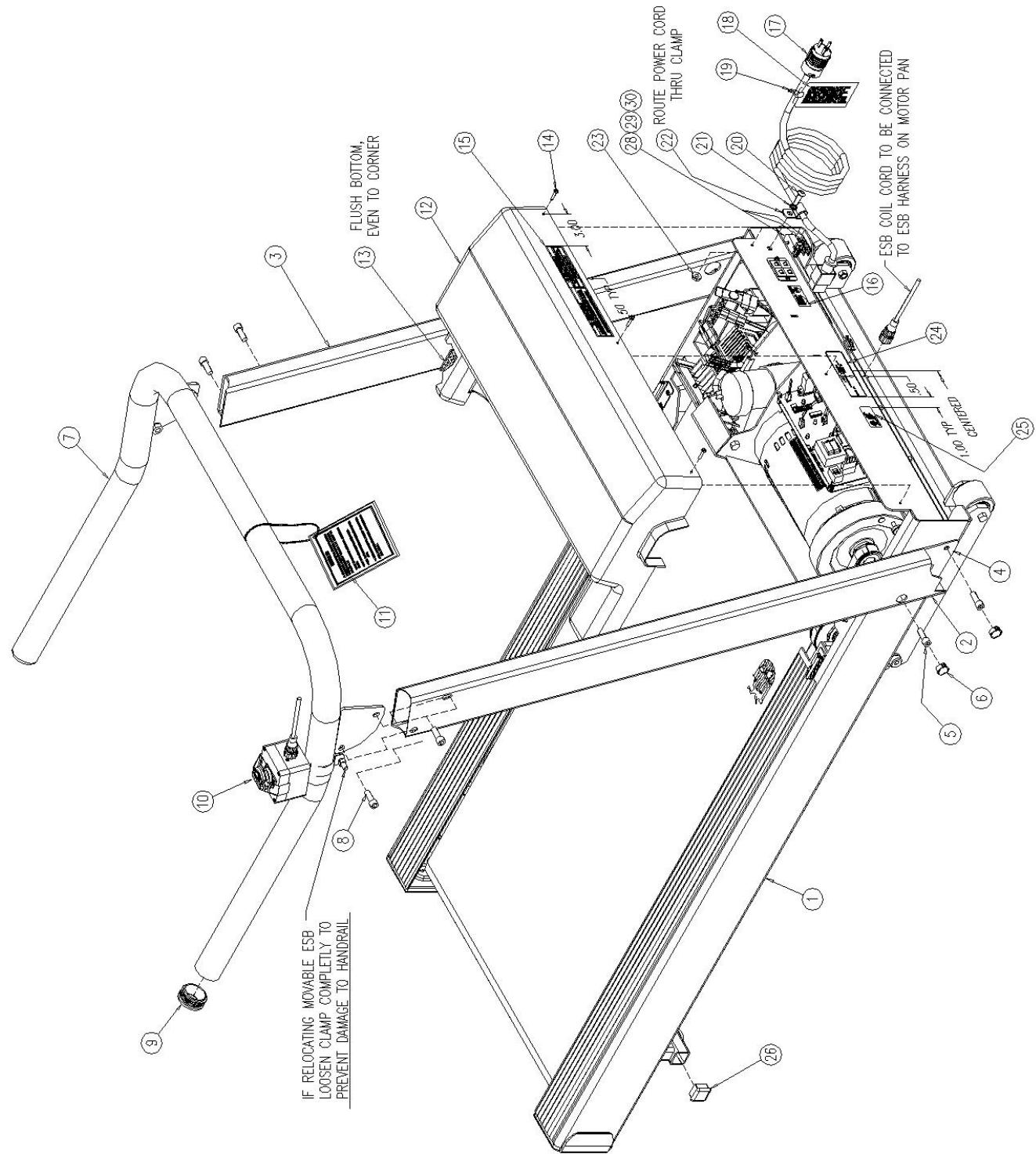
Item	Description	Part Number	Qty
1	FRAME 220V MOTOR PAN ASSEMBLY	317-600-001-1	1
2	ROLLER FRONT	317-160-156	1
3	HSHCS 5/16-18 X 2" PLTD	001-1748	1
4	LW 5/16 DIA	001-1451	1
5	FW 5/16 DIA	001-1440	1
6	DRIVE BELT	317-160-142	1
7	DECK SUPPORT CHANNEL WELDMENT	317-379-001	2
8	DECK ISOLATOR 1.75" DIA	317-345-003	4
9	HHCS 5/16-18 X .75 LG	001-1167	4
10	LW 5/16 DIA	001-1451	4
11	FW 5/16 DIA	001-1440	4
12	HNS 5/16-18 FLANGE	001-1398	4
13	DECK RUNNING BOARD	317-160-137	1
14	HSFCHCS 5/16-18 X 1.50 PLT	001-1739	4
15	BELT RUNNING WITH GUIDE	317-160-136	1
16	ROLLER REAR	317-160-154	1
17	ANTI SLIP SAFTLY WALK 1-1/2" X 4" LG	317-164-001	2
18	PLATE BELT TENSION	317-160-044	2
19	FW 5/16 DIA	001-1440	2
20	HSHCS 5/16-18 X 3" LG PLTD	001-1737	2
21	CAP END CHANNEL	317-160-134	2
22	HSBHCS 5/16-18 X 1" LF PLTD	001-1735	2
23	BRACKET MOTOR COVER	317-160-048	2
24	HOOK 5/8 SCOTHCMATE 2" LG	317-160-056	2
25	HHWHTS #10-32 X .38	001-1755	4
26	EXTRUSION ANTI-SKIP RUBBER 45.5" LG	317-160-055	2
27	STEM BUMPER	317-160-141	2

## FVX325 Series Frame Assembly



**FVX325 Series Final Assembly**

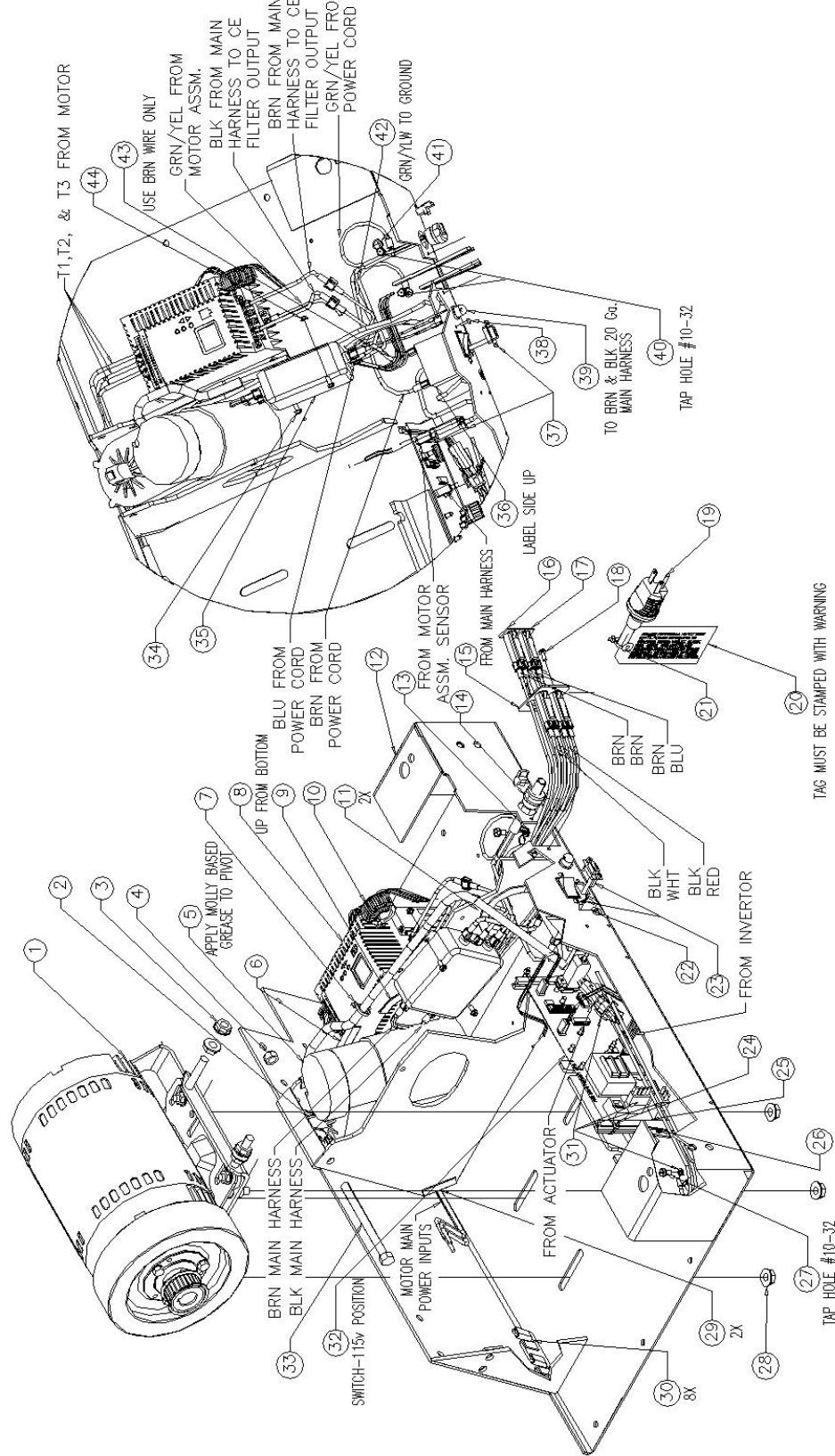
Item	Description	Part Number	Qty
1	FRAME ASSEMBLY	317-600-001-2	1
2	HANDRAIL LEG RIGHT	317-627-001	1
3	HANDRAIL LEG LEFT	317-628-001	1
4	SPACER UHMW	317-611-001	2
5	HSHCS 3/8-16 X 1.0 LG PLT	001-1859	4
6	DOME PLUG	317-180-008	4
7	HANDRAIL NO CONTROL	317-613-001	1
8	HSHCS 3/8-16 X 1.0 LG PLT	001-1859	4
9	RED END CAP	317-160-028	2
10	MOVEABLE ESB ASSEMBLY	317-624-001	1
11	WARNING CARD ASSEMBLY	317-190-001	1
12	HOOD	317-160-135	1
13	VELCRO BACKING 3/4" X 2" LG.	317-160-057	2
14	HWHTCS #8-32 X .75LG TYPE F	001-1759	3
15	DECAL CAUTION	317-160-018	1
16	DECAL POWER SWITCH	317-160-019	1
17	POWER CORD ASSEMBLY 220V	317-623-001	1
18	TAG CORD	317-160-077	1
19	TIE CABLE .10 X 4.0" LG	317-160-075	1
20	HSBHCS 5/16-18 X 1.0" LG	001-1735	1
21	LW 5/16" DIA INTERNAL TOOTH	001-1736	1
22	CLAMP SUPPORT	317-160-092	1
23	HNS 5/16-18 FLANGE NUT	001-1398	1
24	DECAL SERIAL NUMBER	317-160-085	1
25	DECAL ETL 2004	317-160-130	1
26	PLUG SQUARE	317-396-004	2
27	TEST PLUG	317-187-003	1
28	HOOK BACKING	317-160-056	1"
29	VELCRO BACKING	317-160-057	1"

**FVX325 Series Final Assembly**

**TMX425 Series 115V Motor Pan Assembly**

<b>Item</b>	<b>Description</b>	<b>Part Number</b>	<b>Qty</b>
1	MOTOR ASSEMBLY	317-179-001	1
2	WASHER NYLON	317-160-086	2
3	HNS 3/8-16 FLANGE	001-1399	8
4	NLN 3/8-16	001-1430	1
5	LINEAR ACTUATOR 115v	317-160-090	1
6	TRIM MINI BLACK	001-102-044	6"
7	TIE CABLE .10 X 4.00	317-160-075	1
8	NOT PICTURED HHWHTS #8-32 X 3/8	001-1744	4
9	TRIM MINI BLACK	001-102-044	3"
10	INVERTOR ASSEMBLY 110v	317-376-001	1
11	TRIM MINI BLACK	001-102-044	7.1"
12	MOTOR PAN WELDMENT	317-170-001	1
13	LW #10 EXTERNAL TOOTH	001-1751	1
14	GRIP POWER CORD	317-160-012	1
15	PLATE BREAKER MOUNT	317-160-073	1
16	BREAKER 2 amp	317-160-089	2
17	BREAKER ¼ amp	317-160-024	2
18	HHWHTS #8-32 X 3/8	001-1744	2
19	POWER CORD 115v	317-160-091	1
20	TAG CORD	317-160-077	1
21	TIE CABLE .10 X 4.00	317-160-075	1
22	DECAL RS232	317-160-081	1
23	SCREW HEX JACK 3/16 X ½	317-160-066	2
24	TIE CABLE .10 X 4.00	317-160-075	2
25	MOUNT CIRCUIT BOARD	317-160-041	2
26	PHPHTS #8-32 X ½	001-1765	2
27	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
28	HN STOVER LOCK 3/8-16 FLANGE	001-1820	4
29	TRIM MINI BLACK	001-102-044	1.6"
30	TRIM MINI BLACK	001-102-044	1"
31	MAIN WIRE HARNESS	317-160-042	1
32	BOARD PCB0276	317-160-014	1
33	HHCS 3/8-16 X 4.5 GR5	001-1743	1
34	HHMS #8-32 X ½	001-1764	2
35	FILTER CE 115v	317-160-087	1
36	SWITCH 115v	317-160-088	1
37	HARNESS 9 PIN BUS SUPPORT	317-160-065	1
38	RHMS #6-32 X 3/8	001-1745	2
39	LIGHT POWER ON	317-160-010	1
40	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
41	DECAL GROUND	317-160-079	1
42	HARNESS CE FILTER GROUND	317-160-070	1
43	HARNESS CE FILTER INPUT	317-160-071	1
44	HNS #8-32 FLANGE	001-1636	2

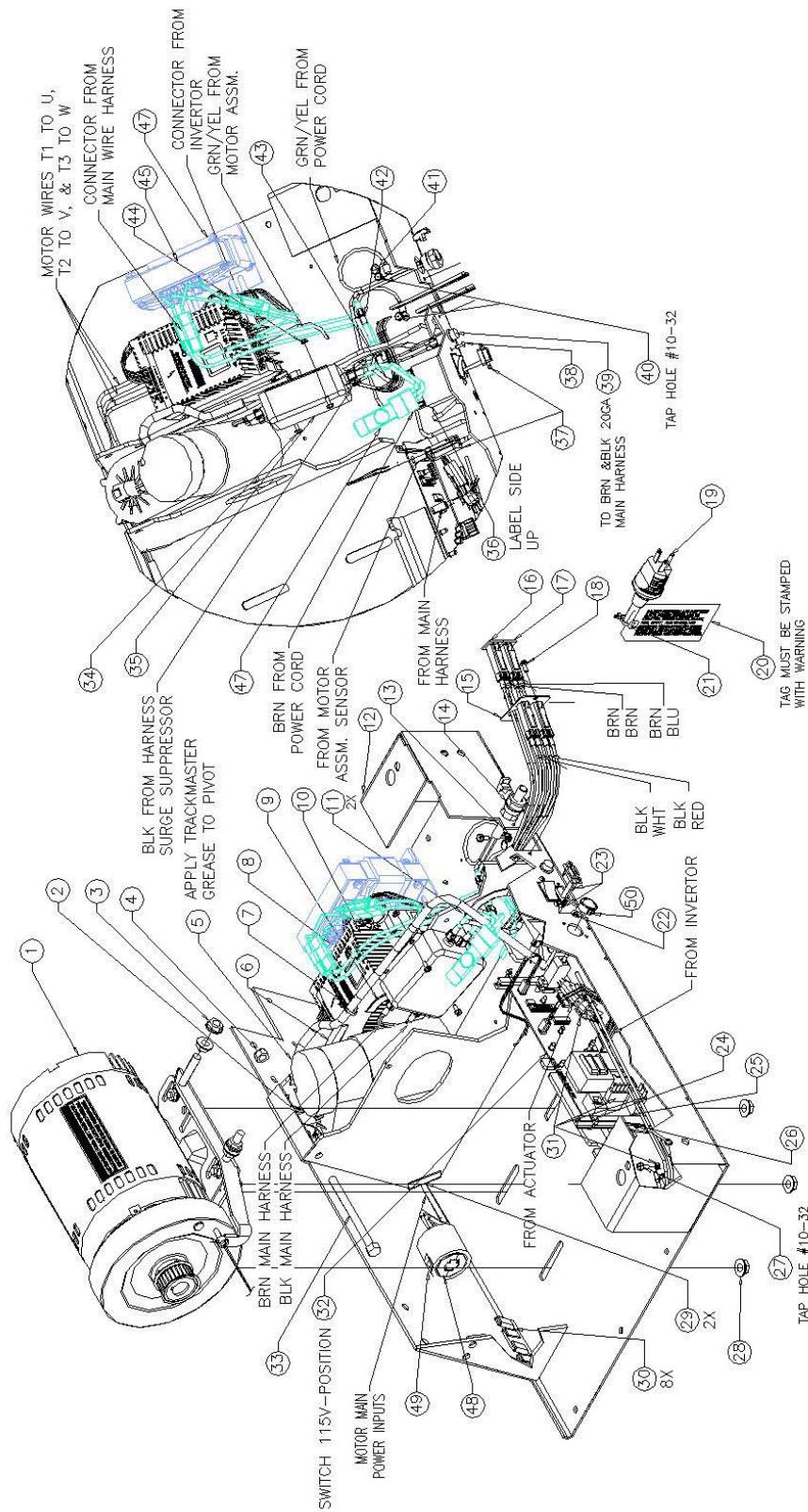
## TMX425 Series 115V Motor Pan Assembly



**TMX425 Series 115V Motor Pan Assembly w/ CE Components**

Item	Description	Part Number	Qty
1	MOTOR ASSEMBLY	317-179-001	1
2	WASHER NYLON	317-160-086	2
3	HNS 3/8-16 FLANGE	001-1399	8
4	NLN 3/8-16	001-1430	1
5	LINEAR ACTUATOR 115v	317-160-090	1
6	TRIM MINI BLACK	001-102-044	6"
7	TIE CABLE .10 X 4.00	317-160-075	1
8	NOT PICTURED HHWHTS #8-32 X 3/8	001-1744	4
9	TRIM MINI BLACK	001-102-044	3"
10	INVERTOR ASSEMBLY 110v	317-376-001	1
11	TRIM MINI BLACK	001-102-044	7.1"
12	MOTOR PAN WELDMENT	317-170-001	1
13	LW #10 EXTERNAL TOOTH	001-1751	1
14	GRIP POWER CORD	317-160-012	1
15	PLATE BREAKER MOUNT	317-160-073	1
16	BREAKER 2 amp	317-160-089	2
17	BREAKER 1/4 amp	317-160-024	2
18	HHWHTS #8-32 X 3/8	001-1744	2
19	POWER CORD 115v	317-160-091	1
20	TAG CORD	317-160-077	1
21	TIE CABLE .10 X 4.00	317-160-075	1
22	DECAL RS232	317-160-081	1
23	SCREW HEX JACK 3/16 X 1/2	317-160-066	2
24	TIE CABLE .10 X 4.00	317-160-075	2
25	MOUNT CIRCUIT BOARD	317-160-041	2
26	PHPHTS #8-32 X 1/2	001-1765	2
27	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
28	HN STOVER LOCK 3/8-16 FLANGE	001-1820	4
29	TRIM MINI BLACK	001-102-044	1.6"
30	TRIM MINI BLACK	001-102-044	1"
31	MAIN WIRE HARNESS	317-160-042	1
32	BOARD PCB0276	317-160-014	1
33	HHCS 3/8-16 X 5.0 GR5	001-1743	1
34	HHMS #8-32 X 1/2	001-1764	2
35	FILTER CE 115v	317-160-087	1
36	SWITCH 115v	317-160-088	1
37	HARNESS 9 PIN BUS SUPPORT	317-160-065	1
38	RHMS #6-32 X 3/8	001-1745	2
39	LIGHT POWER ON	317-160-010	1
40	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
41	DECAL GROUND	317-160-079	1
42	HARNESS M/M	317-396-006	1
43	HARNESS SURGE SUPPRESSOR	317-160-128	1
44	HNS #8-32 FLANGE	001-1636	2
45	LINE REACTOR ASSEMBLY	317-397-001	1
46	STRAP THREADED	317-396-005	1
47	SURGE SUPPRESSOR	317-160-129	1
48	RING FERRITE	317-160-125	1
49	FOAM INSULATION	317-396-002	1
50	DOME PLUG	317-180-008	1

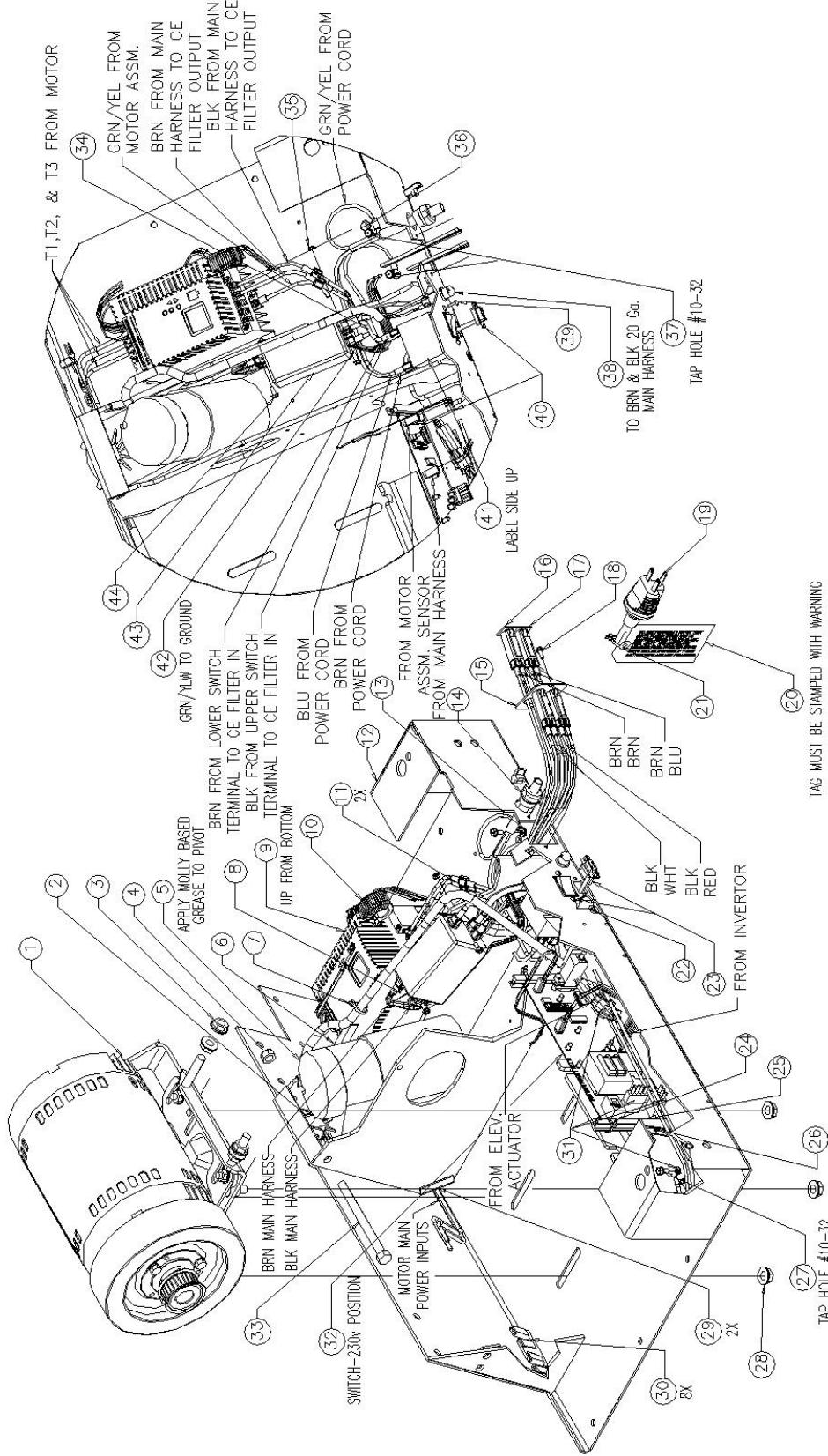
## TMX425 Series 115V Motor Pan Assembly w/CE Components



**TMX425 Series 220V Motor Pan Assembly**

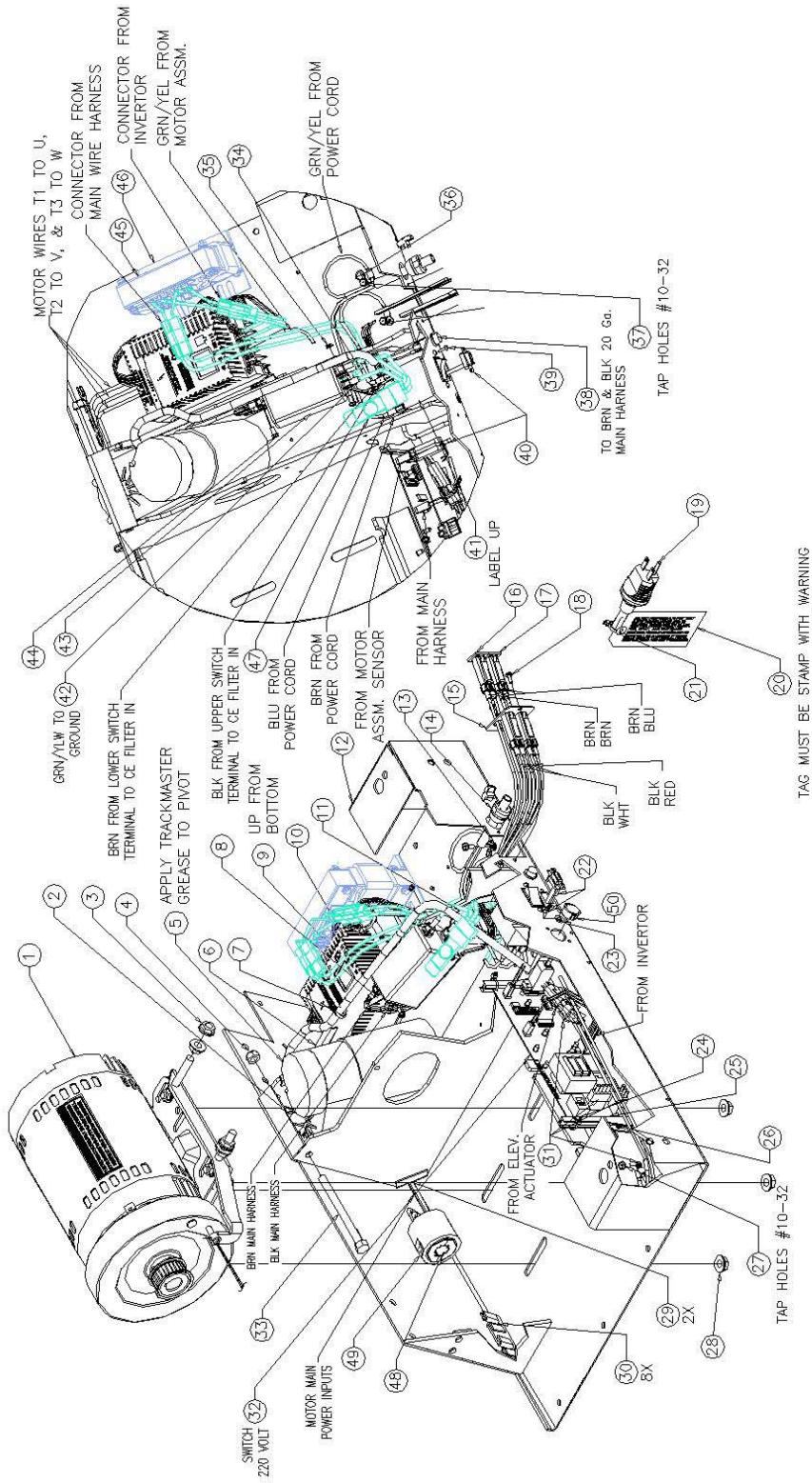
Item	Description	Part Number	Qty
1	MOTOR ASSEMBLY	317-179-001	1
2	WASHER NYLON	317-160-086	2
3	HNS 3/8-16 FLANGE	001-1399	8
4	NLN 3/8-16	001-1430	1
5	LINEAR ACTUATOR 220v	317-160-029	1
6	TRIM MINI BLACK	001-102-044	6"
7	TIE CABLE .10 X 4.00	317-160-075	1
8	TRIM MINI BLACK	001-102-044	3"
9	NOT PICTURED HHWHTS #8-32 X 3/8	001-1744	4
10	INVERTOR ASSEMBLY 220v	317-377-001	1
11	TRIM MINI BLACK	001-102-044	7.1"
12	MOTOR PAN WELDMENT	317-170-001	1
13	LW #10 EXTERNAL TOOTH	001-1751	1
14	GRIP POWER CORD	317-160-012	1
15	PLATE BREAKER MOUNT	317-160-073	1
16	BREAKER 1 amp	317-160-030	2
17	BREAKER 1/4 amp	317-160-024	2
18	HHWHTS #8-32 X 3/8	001-1744	2
19	POWER CORD 220v	317-160-013	1
20	TAG CORD	317-160-077	1
21	TIE CABLE .10 X 4.00	317-160-075	1
22	DECAL RS232	317-160-081	1
23	SCREW HEX JACK 3/16 X 1/2	317-160-066	2
24	TIE CABLE .10 X 4.00	317-160-075	2
25	MOUNT CIRCUIT BOARD	317-160-041	2
26	PHPHTS #8-32 X 1/2	001-1765	2
27	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
28	HN STOVER LOCK 3/8-16 FLANGE	001-1820	4
29	TRIM MINI BLACK	001-102-044	1.6"
30	TRIM MINI BLACK	001-102-044	1"
31	MAIN WIRE HARNESS	317-160-042	1
32	BOARD PCB0276	317-160-014	1
33	HHCS 3/8-16 X 4.5 GR5	001-1743	1
34	HARNESS CE FILTER INPUT	317-160-071	1
35	HNS #8-32 FLANGE	001-1636	2
36	DECAL GROUND	317-160-079	1
37	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
38	LIGHT POWER ON	317-160-010	1
39	RHMS #6-32 X 3/8	001-1745	2
40	HARNESS 9 PIN BUS SUPPORT	317-160-065	1
41	SWITCH 220v	317-160-088	1
42	HARNESS CE FILTER GROUND	317-160-070	1
43	FILTER CE 220v	317-160-023	1
44	HHMS #8-32 X 1/2	001-1764	2

## TMX425 Series 220V Motor Pan Assembly

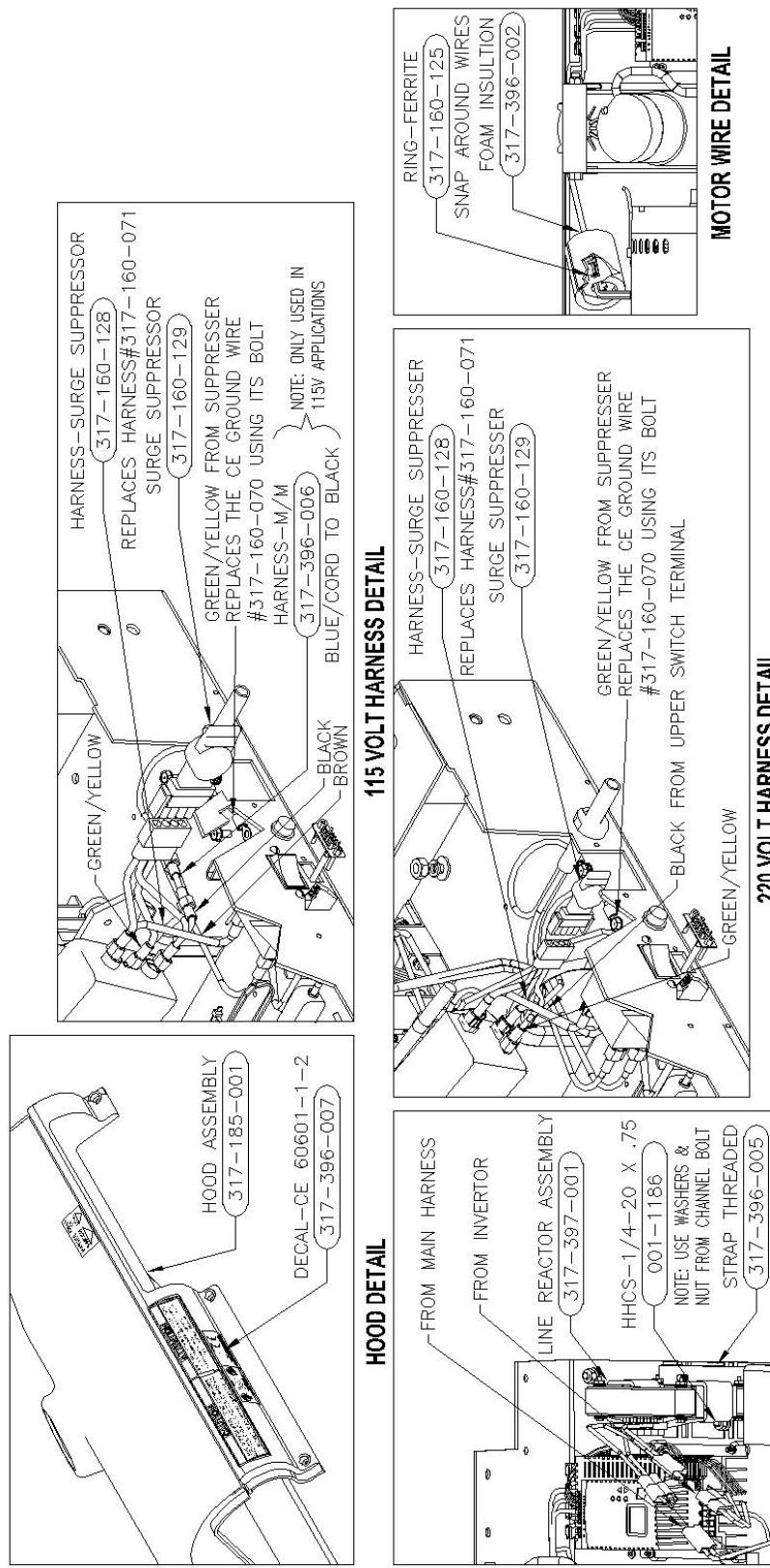


**TMX425 Series 220V Motor Pan Assembly w/CE Components**

Item	Description	Part Number	Qty
1	MOTOR ASSEMBLY	317-179-001	1
2	WASHER NYLON	317-160-086	2
3	HNS 3/8-16 FLANGE	001-1399	8
4	NLN 3/8-16	001-1430	1
5	LINEAR ACTUATOR 220v	317-160-029	1
6	TRIM MINI BLACK	001-102-044	6"
7	TIE CABLE .10 X 4.00	317-160-075	1
8	TRIM MINI BLACK	001-102-044	3"
9	NOT PICTURED HHWHTS #8-32 X 3/8	001-1744	4
10	INVERTOR ASSEMBLY 220v	317-377-001	1
11	TRIM MINI BLACK	001-102-044	7.1"
12	MOTOR PAN WELDMENT	317-170-001	1
13	LW #10 EXTERNAL TOOTH	001-1751	1
14	GRIP POWER CORD	317-160-012	1
15	PLATE BREAKER MOUNT	317-160-073	1
16	BREAKER 1 amp	317-160-030	2
17	BREAKER 1/4 amp	317-160-024	2
18	HHWHTS #8-32 X 3/8	001-1744	2
19	POWER CORD 220v	317-160-013	1
20	TAG CORD	317-160-077	1
21	TIE CABLE .10 X 4.00	317-160-075	1
22	DECAL RS232	317-160-081	1
23	SCREW HEX JACK 3/16 X 1/2	317-160-066	2
24	TIE CABLE .10 X 4.00	317-160-075	2
25	MOUNT CIRCUIT BOARD	317-160-041	2
26	PHPHTS #8-32 X 1/2	001-1765	2
27	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
28	HN STOVER LOCK 3/8-16 FLANGE	001-1820	4
29	TRIM MINI BLACK	001-102-044	1.6"
30	TRIM MINI BLACK	001-102-044	1"
31	MAIN WIRE HARNESS	317-160-042	1
32	BOARD PCB0276	317-160-014	1
33	HHCS 3/8-16 X 5.0 GR5	001-1743	1
34	HARNESS CE FILTER INPUT	317-160-071	1
35	HNS #8-32 FLANGE	001-1636	2
36	DECAL GROUND	317-160-079	1
37	HH SCREW #10-32 X 3/8 GRN	317-160-076	1
38	LIGHT POWER ON	317-160-010	1
39	RHMS #6-32 X 3/8	001-1745	2
40	HARNESS 9 PIN BUS SUPPORT	317-160-065	1
41	SWITCH 220v	317-160-088	1
42	HARNESS CE FILTER GROUND	317-160-070	1
43	FILTER CE 220v	317-160-023	1
44	HHMS #8-32 X 1/2	001-1764	2
45	LINE REACTOR ASSEMBLY	317-397-001	1
46	STRAP THREADED	317-396-005	1
47	SURGE SUPPRESSER	317-160-129	1
48	RING FERRITE	317-160-125	1
49	FOAM INSULATION	317-396-002	1
50	DOME PLUG	317-180-008	1

**TMX425 Series 220V Motor Pan Assembly w/CE Components**

## TMX Series w/ CE Option #317-01784

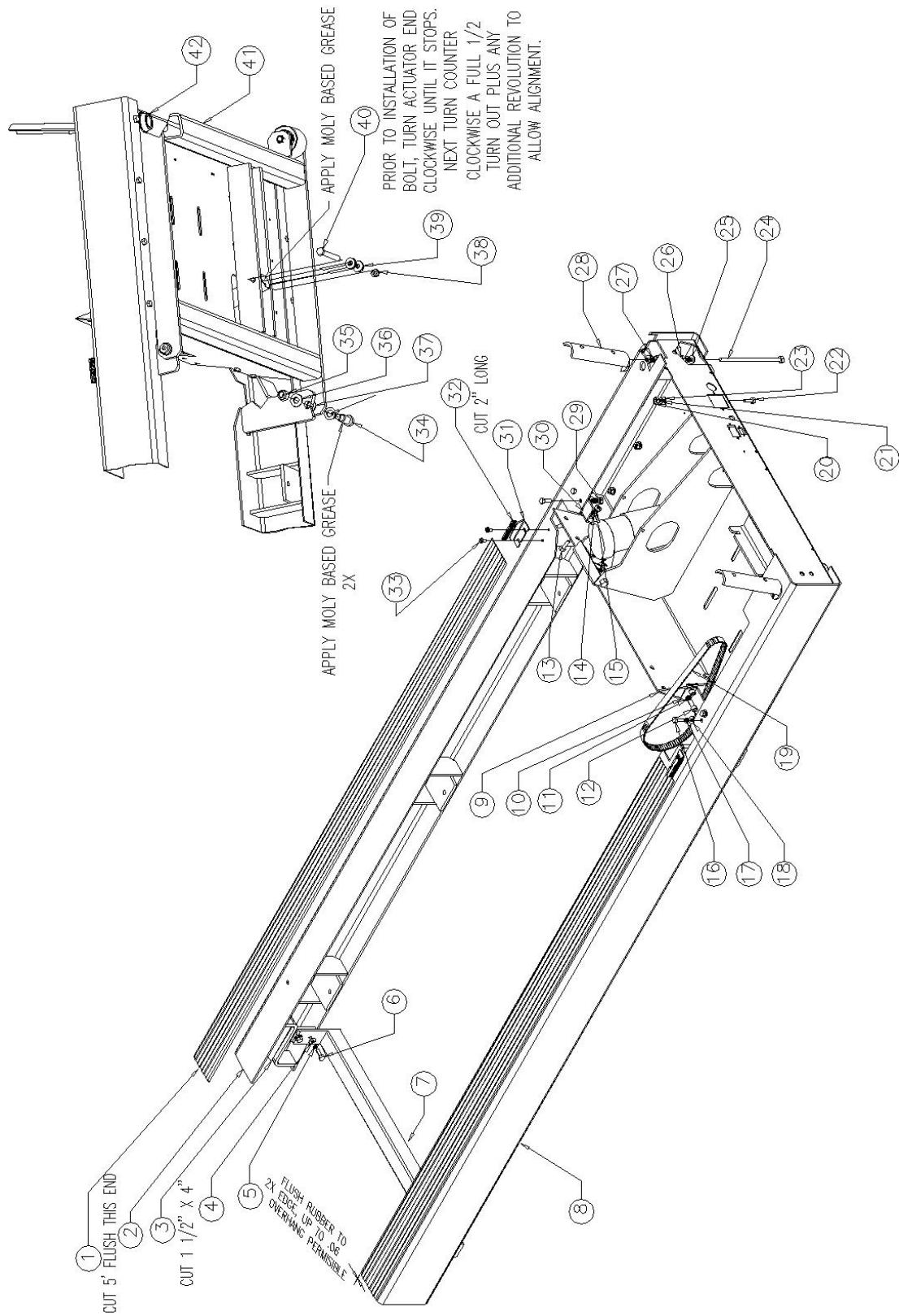


TREADMILL EQUIPPED WITH CE OPTION #317-01784

**TMX425 Series Frame Assembly**

<b>Item</b>	<b>Description</b>	<b>Part Number</b>	<b>Qty</b>
1	EXTRUSION ANTI-SKID RUBBER	317-160-055	2
2	RAIL WELDMET LEFT HAND	317-164-001	1
3	ANTI SLIP SAFTY WALK	317-160-084	2
4	FW Ø1/4"	001-1439	4
5	LW Ø1/4"	001-1450	4
6	HHCS 1/4-20 X 3/4" GR5	001-1186	4
7	FOOT ASSEMBLY REAR	317-186-001	1
8	RAIL WELDMET RIGHT HAND	317-163-001	1
9	MOTOR PAN ASSEMBLY 220v FULL ASSEMBLY	317-200-1-1	1
10	BRACKET WELDMET	317-177-001	1
11	LW Ø5/16"	001-1451	2
12	HSHCS 5/16-18 X 3/4"	001-1675	2
13	HHCS 1/4-20 X 3/4" GR5	001-1186	4
14	FW Ø1/4"	001-1439	4
15	LW Ø1/4"	001-1450	4
16	HHCS 1/4-20 X 3/4" GR5	001-1186	2
17	LW Ø1/4"	001-1450	2
18	FW Ø1/4"	001-1439	2
19	BELT DRIVE	317-160-026	1
20	HN 1/4-20 GR5	001-1386	6
21	LW Ø1/4"	001-1450	6
22	HHCS 1/4-20 X 3/4" GR5	001-1186	6
23	FW Ø1/4"	001-1439	6
24	HHCS 5/16-18 X 6" GR2	001-1742	2
25	FW Ø5/16"	001-1440	4
26	HN 5/16-18 GR5	001-1387	4
27	LW Ø5/16"	001-1451	4
28	HANDRAIL MOUNT WELDMET	317-160-006	2
29	HN 1/4-20 GR5	001-1386	4
30	BRACKET LEFT HAND	317-160-046	1
31	BRACKET MOTOR COVER	317-160-048	2
32	HOOK 5/8" SCOTCHMATE BACKING	317-160-056	2
33	HHWHTS #10-32 X .38	001-1755	4
34	HSHSS Ø5/8" X 1" LONG	001-1730	2
35	NLN 1/2-13	001-1676	2
36	FW Ø1/2"	001-1443	2
37	ELEVATION DELRIN SPACER	317-160-060	4
38	NLN 3/8-16	001-1430	1
39	WASHER NYLON	317-160-086	4
40	HHCS 3/8-16 X 3" GR5	001-1699	1
41	ELEVATION ASSEMBLY	317-372-001	1
42	BUMPER 1.8 Dia. Black	317-160-106	2

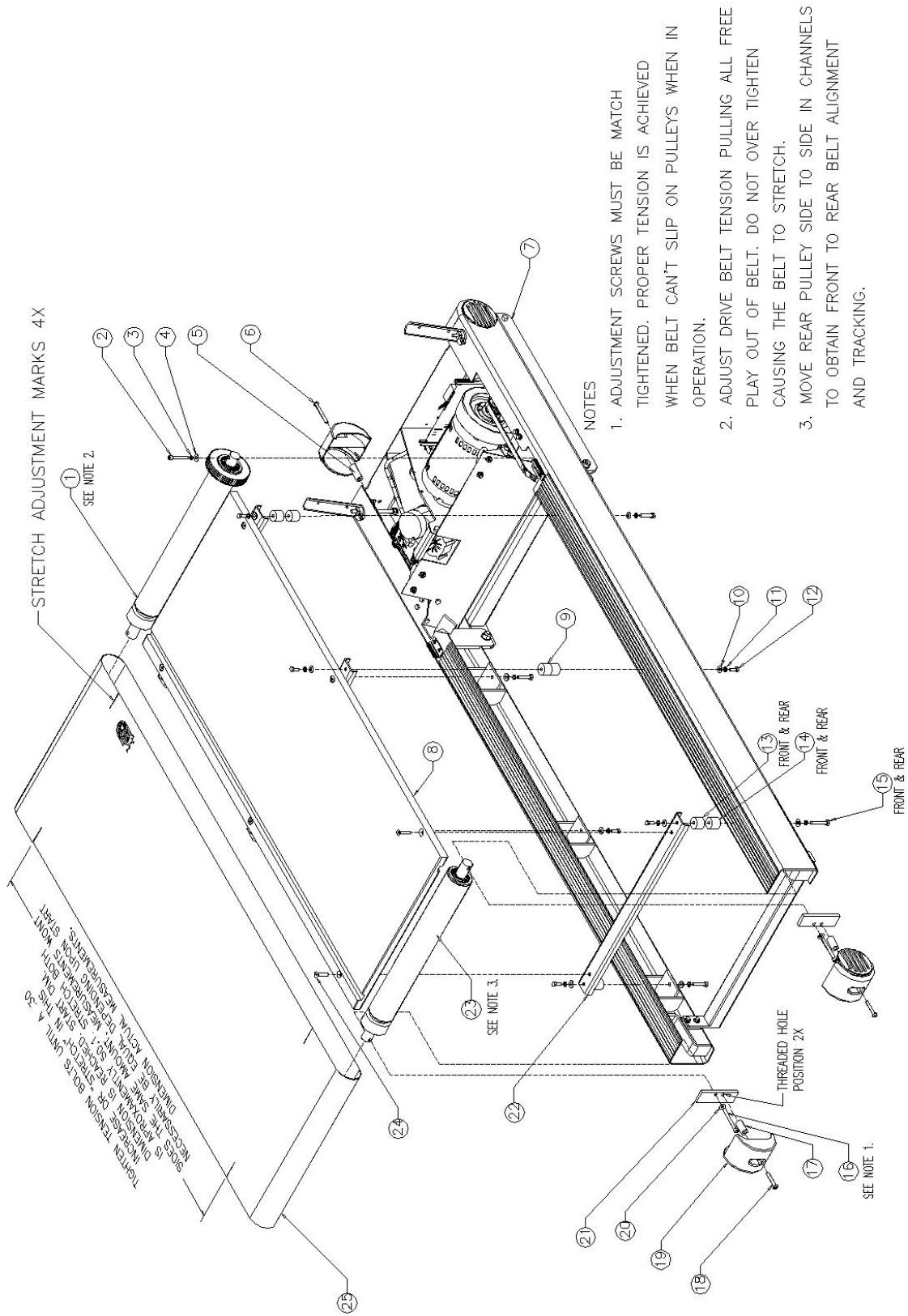
## TMX425 Series Frame Assembly



**TMX425 Series Running Deck Assembly**

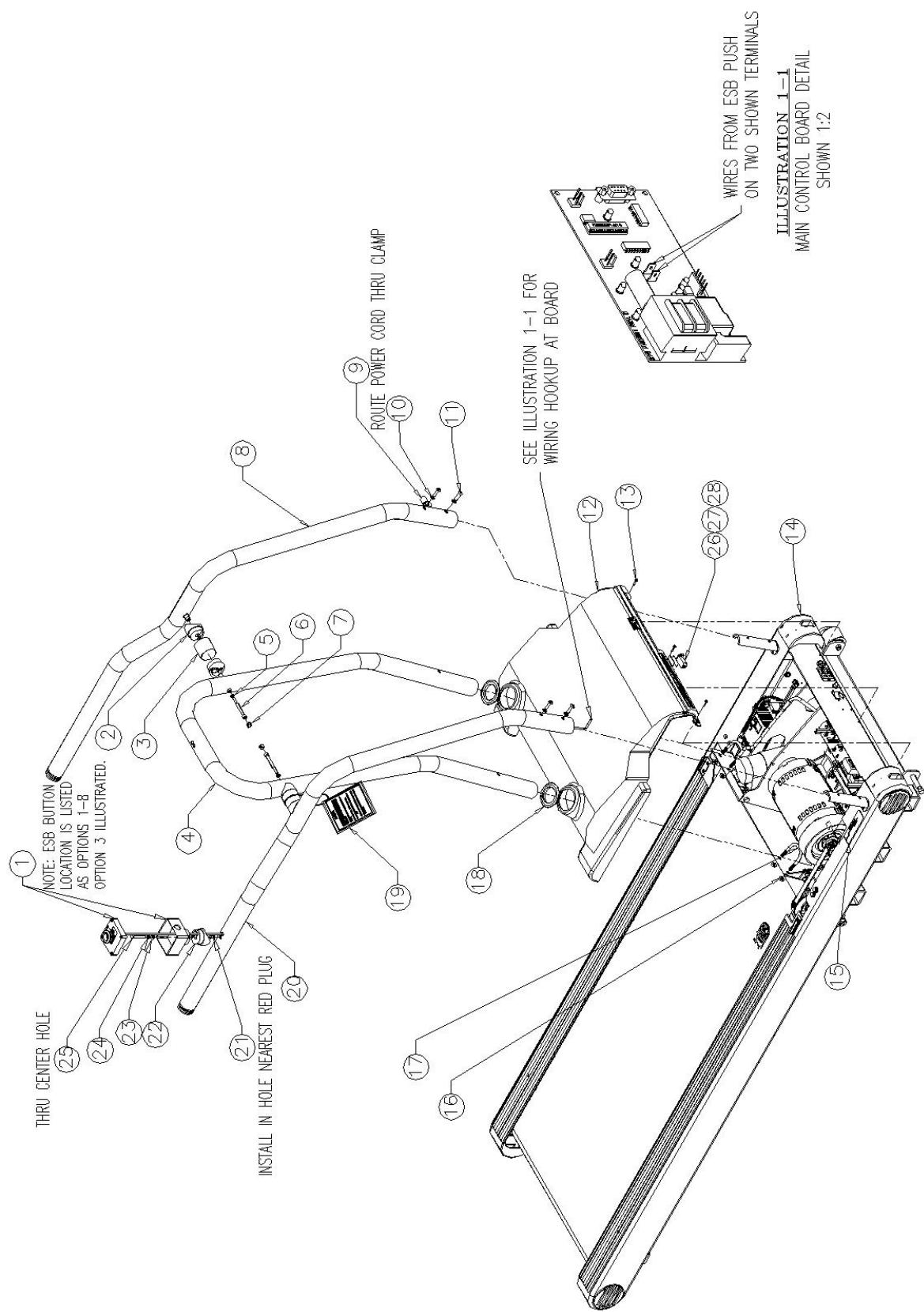
Item	Description	Part Number	Qty
1	ROLLER FRONT	317-160-003	1
2	HSHCS 5/16-18 X 2" PLTD	001-1748	1
3	LW 5/16" DIA.	001-1451	1
4	FW 5/16" DIA.	001-1440	1
5	SPACER FRONT END CAP	317-160-049	2
6	HSBHCS 5/16-18 X 2.75" PLT	001-1741	2
7	FRAME ASSEMBLY 220V FULLY ASSEMBLED	317-200-1-2	1
8	DECK RUNNING BOARD	317-160-025	1
9	1.75 DECK ISOLATOR WITH STUD	317-345-003	6
10	FW 5/16" DIA.	001-1440	6
11	LW 5/16" DIA.	001-1451	6
12	HHCS 5/16-18 X .75"	001-1167	6
13	HNS 5/16 – 18 FLANGE	001-1398	6
14	HSFCHCS 5/16-18 X 1.5 PLTD	001-1739	6
15	RUNNING BELT WITH GUIDE	317-160-002	1
16	HSHCS 5/16-18 X 3" PLTS	001-1737	2
17	SPACER REAR END CAP	317-160-050	2
18	HSBHCS 5/16-18 X 2" PLTD	001-1740	2
19	CAP END CHANNEL	317-160-022	4
20	FW 5/16" DIA.	001-1440	2
21	PLATE BELT TENSION	317-160-044	2
22	CHANNEL WELDMENT DECK SPT	317-379-001	3
23	ROLLER REAR	317-160-004	1

## **TMX425 Series Running Deck Assembly**



**TMX425 Series Final Assembly**

Item	Description	Part Number	Qty
1	ESB ASSEMBLY	317-180-001	1
2	TUBE CONECTOR	317-160-021	4
3	TUBE SPACER	317-160-047	2
4	CENTER HANDRAIL	317-172-001	1
5	LW 5/16" DIA. HI-COLLAR	001-1738	2
6	HSHCS 5/16-18 X 3"	001-1737	2
7	PLUG DOME	317-160-039	2
8	LEFT HAND HANDRAIL WELDMENT	317-174-001	1
9	CLAMP SUPPORT	317-160-092	1
10	LW 5/16" DIA. INTERNAL TOOTH	001-1736	4
11	HSBHCS 5/16-18 X 1"	001-1735	4
12	HOOD ASSEMBLY	317-185-001	1
13	HWHTCS #8-32 X .75", TYPE F	001-1759	3
14	RUNNING DECK ASS'Y 220v FULLY ASSEMBLED	317-200-1-3	1
15	DECAL SERIAL NUMBER	317-160-085	1
16	HNS 5/16-18 FLANGE	001-1398	4
17	U-BOLT	317-160-064	2
18	GROMMET HOOD	317-160-017	2
19	WARNING CARD ASSEMBLY	317-190-001	1
20	RIGHT HAND HANDRAIL WELDMENT	317-173-001	1
21	FASTNER 1/420 RIV-NUT	001-1686	1
22	CONNECTOR TUBE MODIFIED	317-184-002	1
23	FW 1/4"	001-1439	1
24	LW 1/4"	001-1450	1
25	HHCS 1/4-20 X 2" GR5	001-1493	1
26	TEST PLUG	317-187-003	1
27	HOOK BACKING	317-160-056	1"
28	VELCRO BACKING	317-160-057	1"

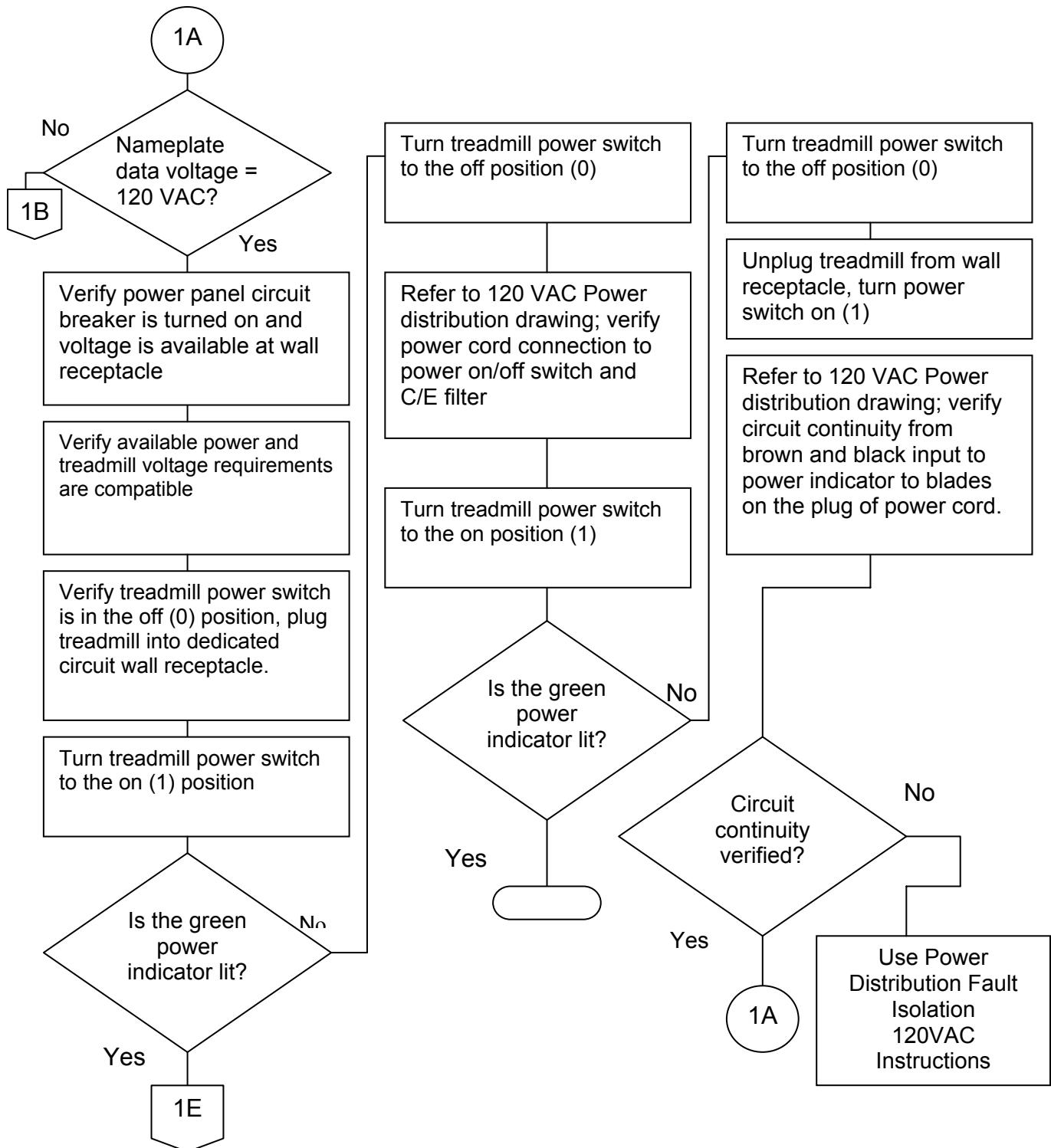
**TMX425 Series Final Assembly**

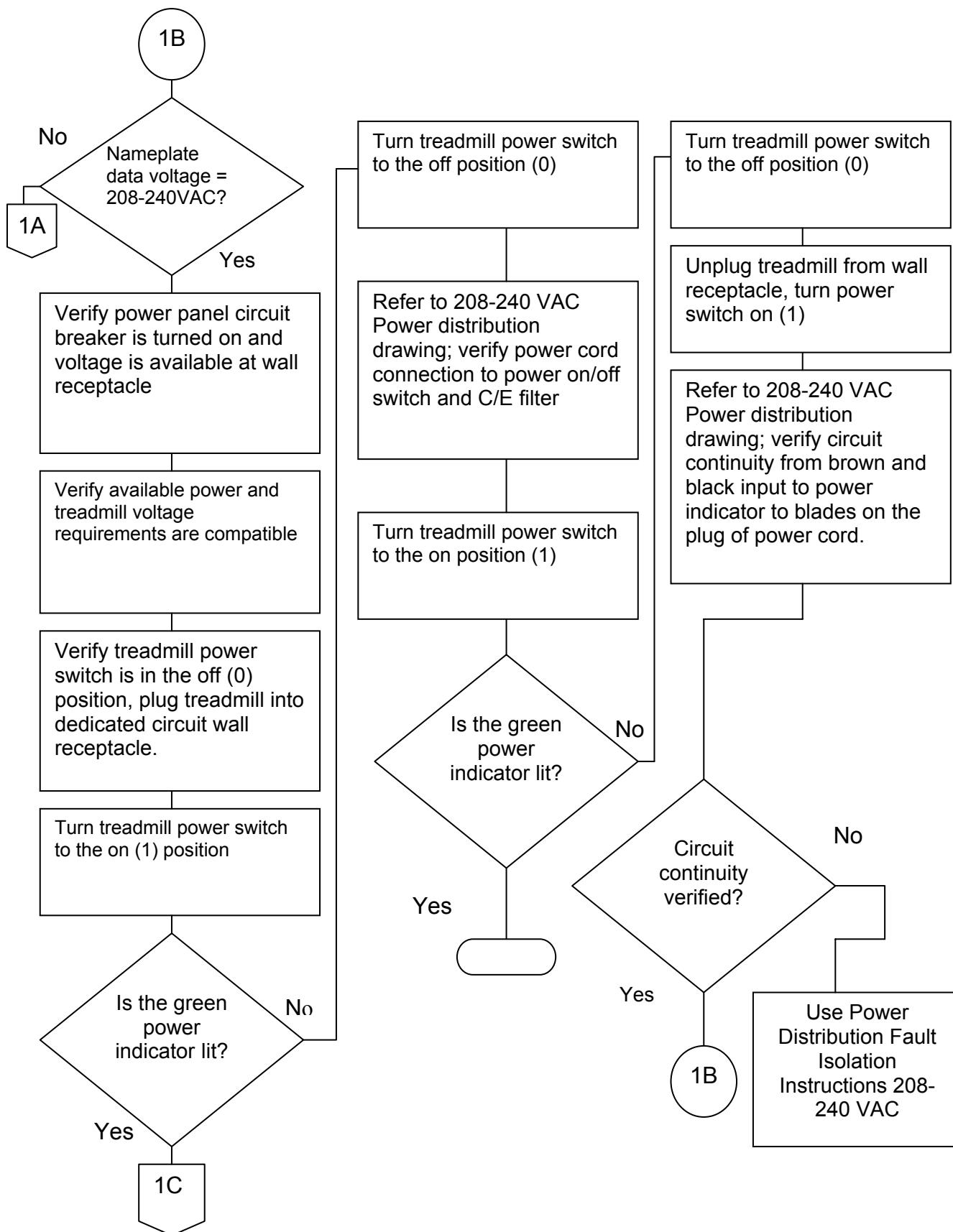
# *Flowcharts & Instructions*

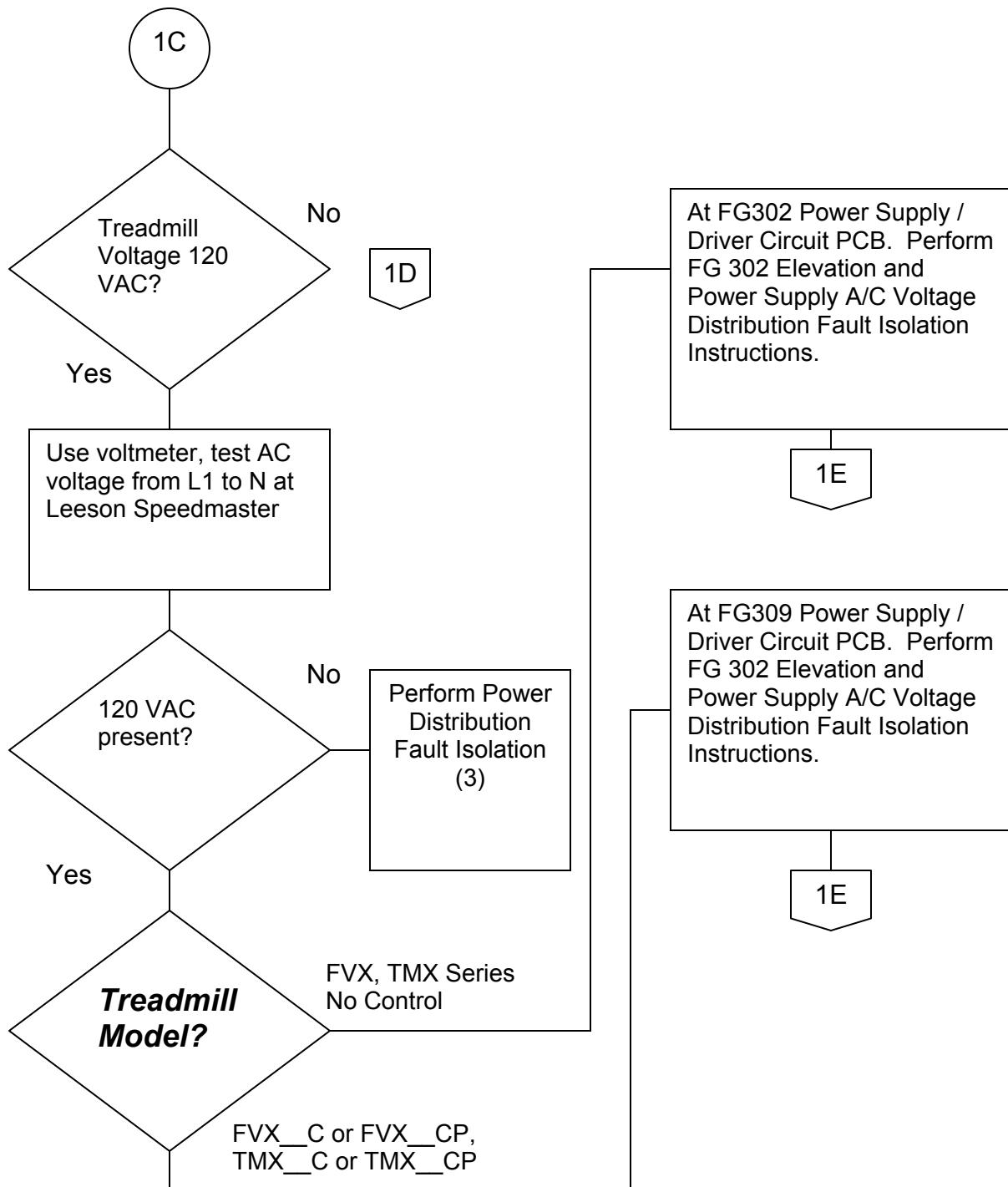
## *For Trouble Shooting*

14

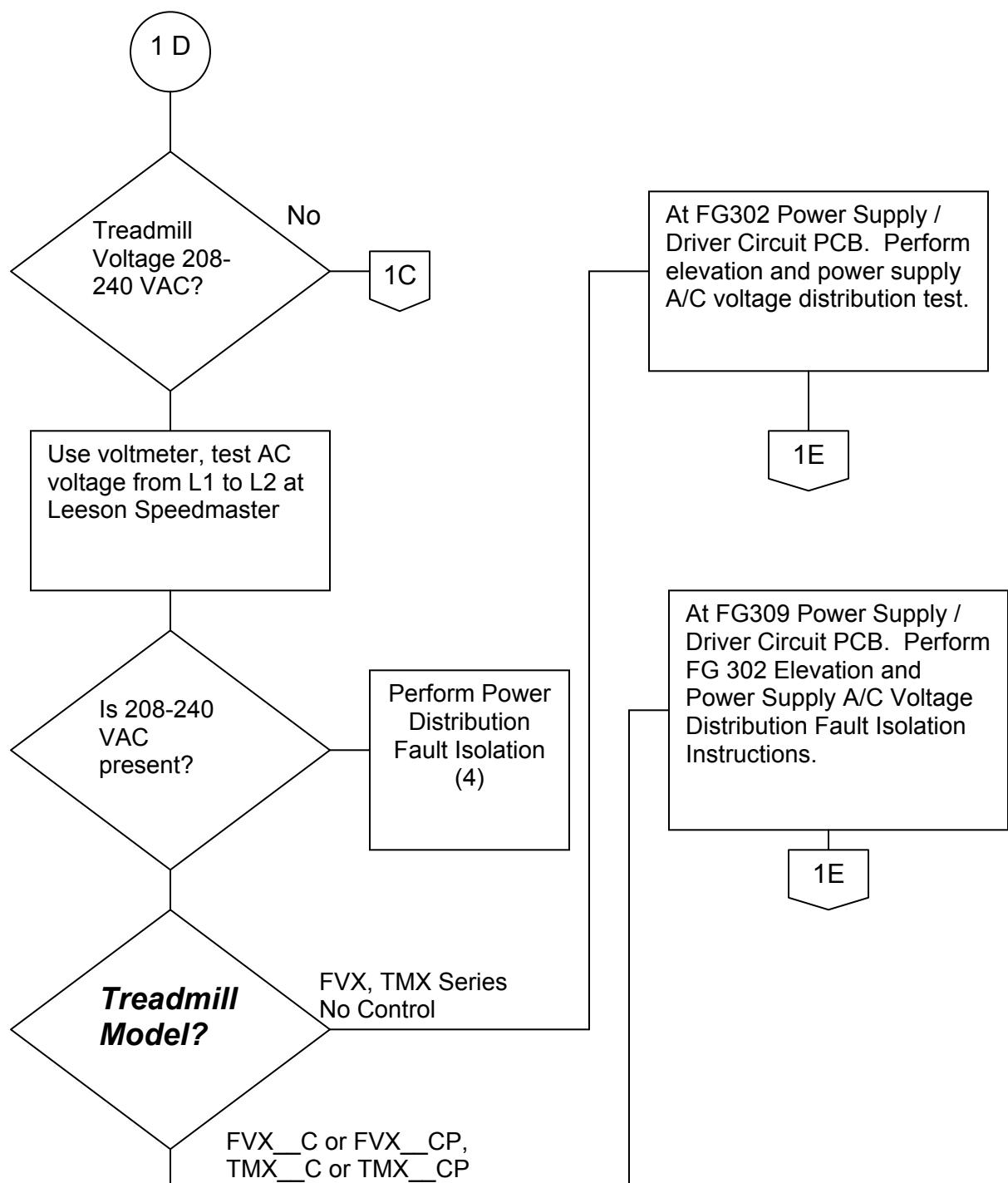
Power Distribution 120 VAC Flowchart 1A

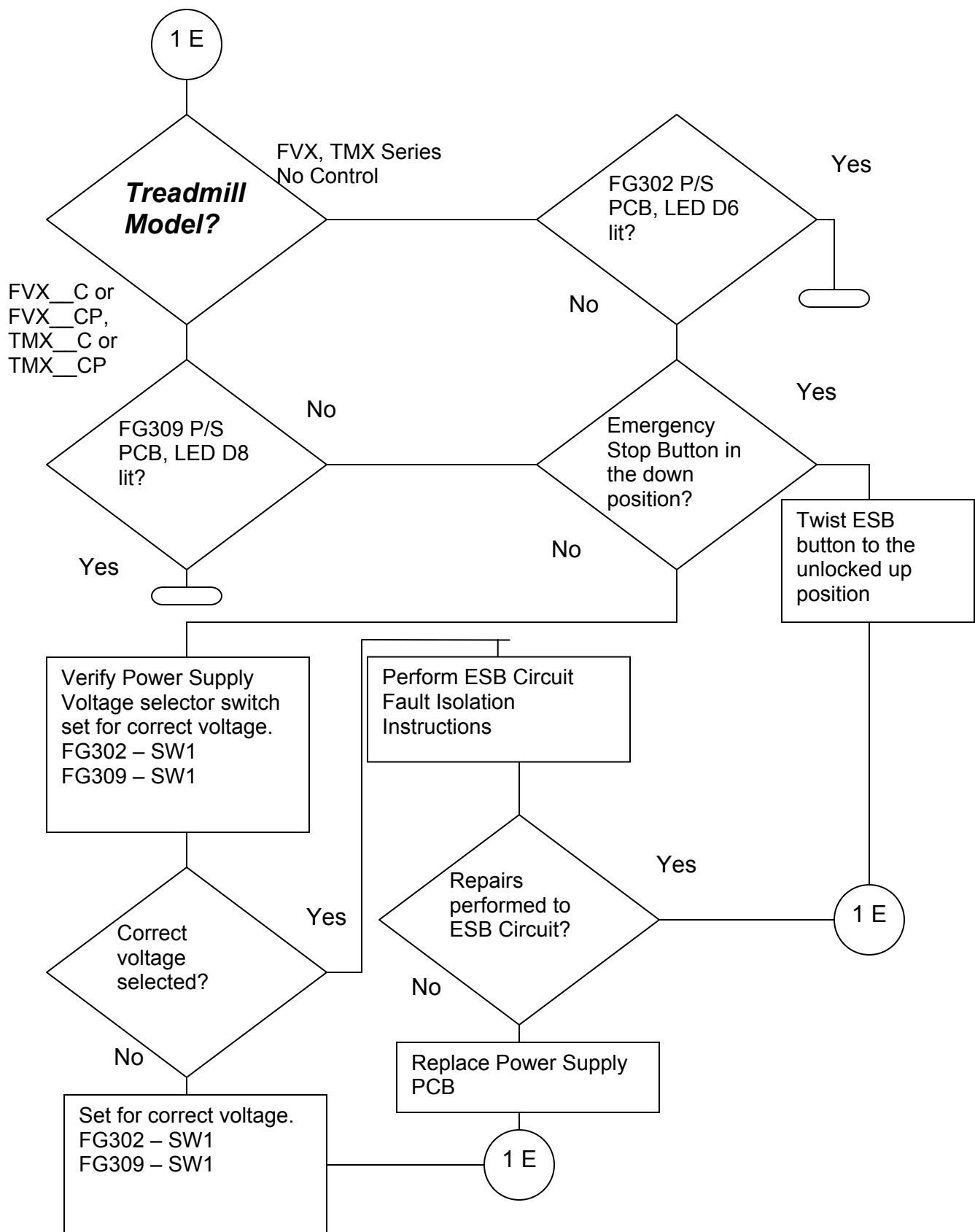


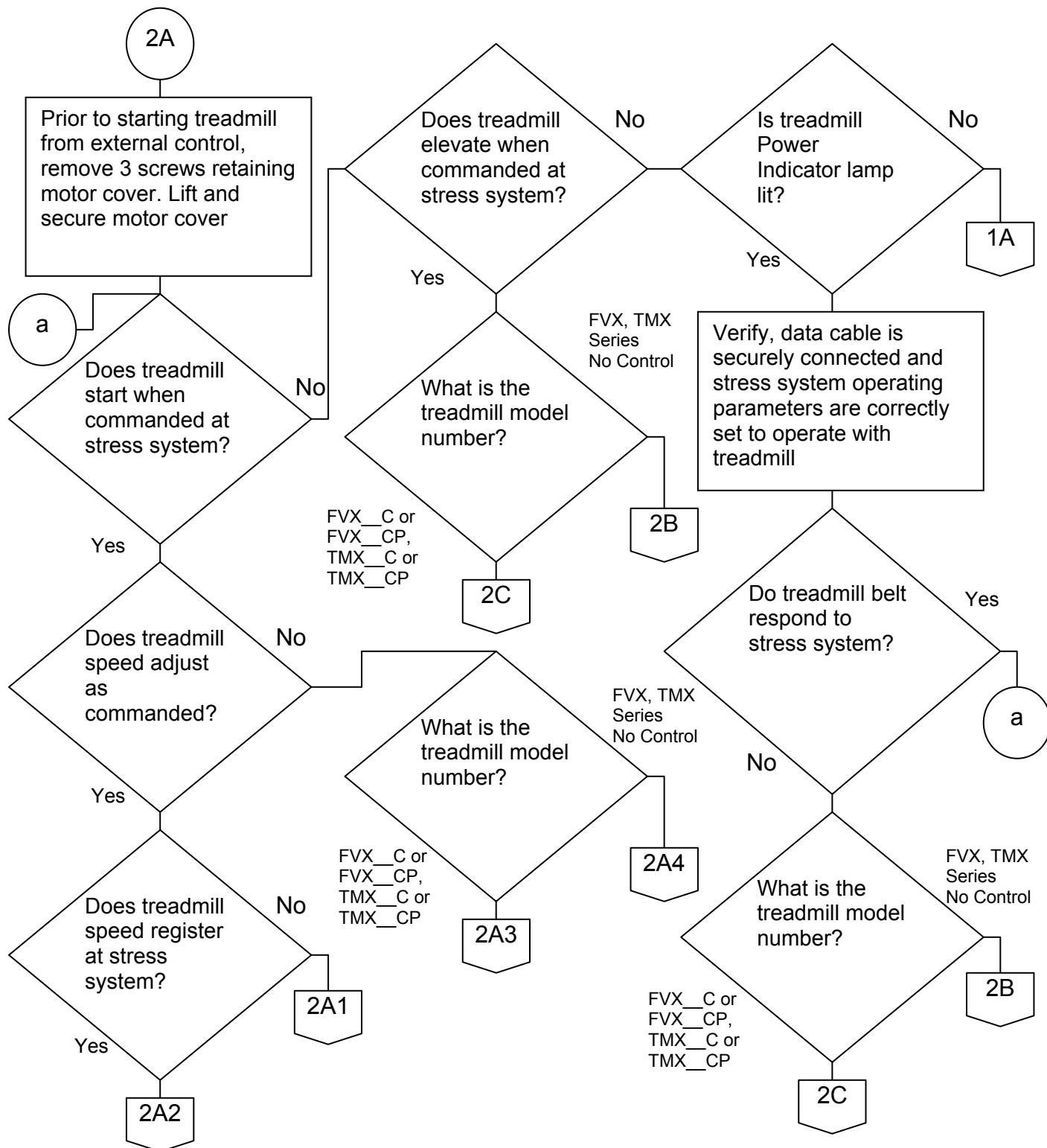
**Power Distribution 208-240 VAC Flowchart 1B**

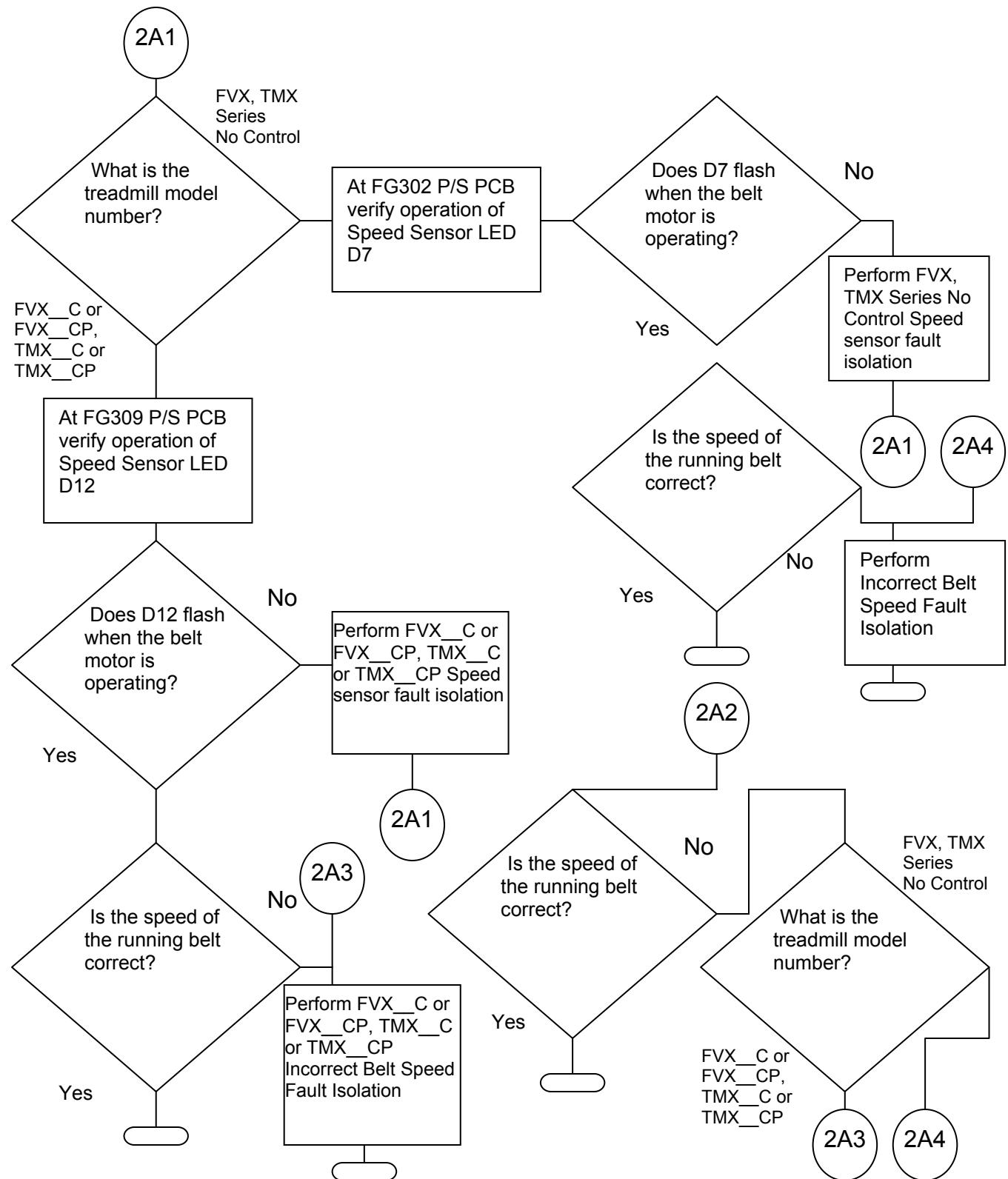
**Power Distribution Flowchart 1C**

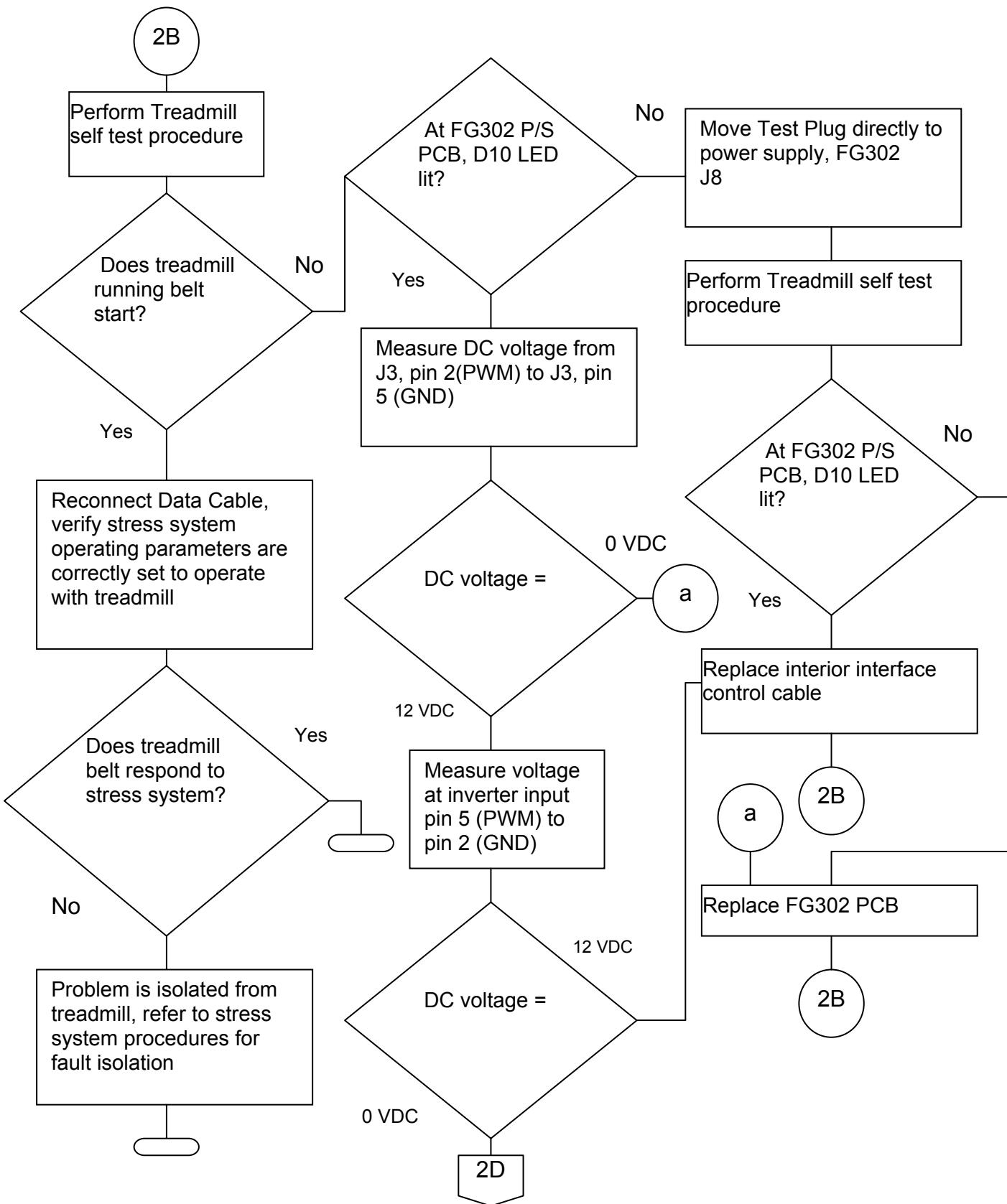
## Power Distribution Flowchart 1D

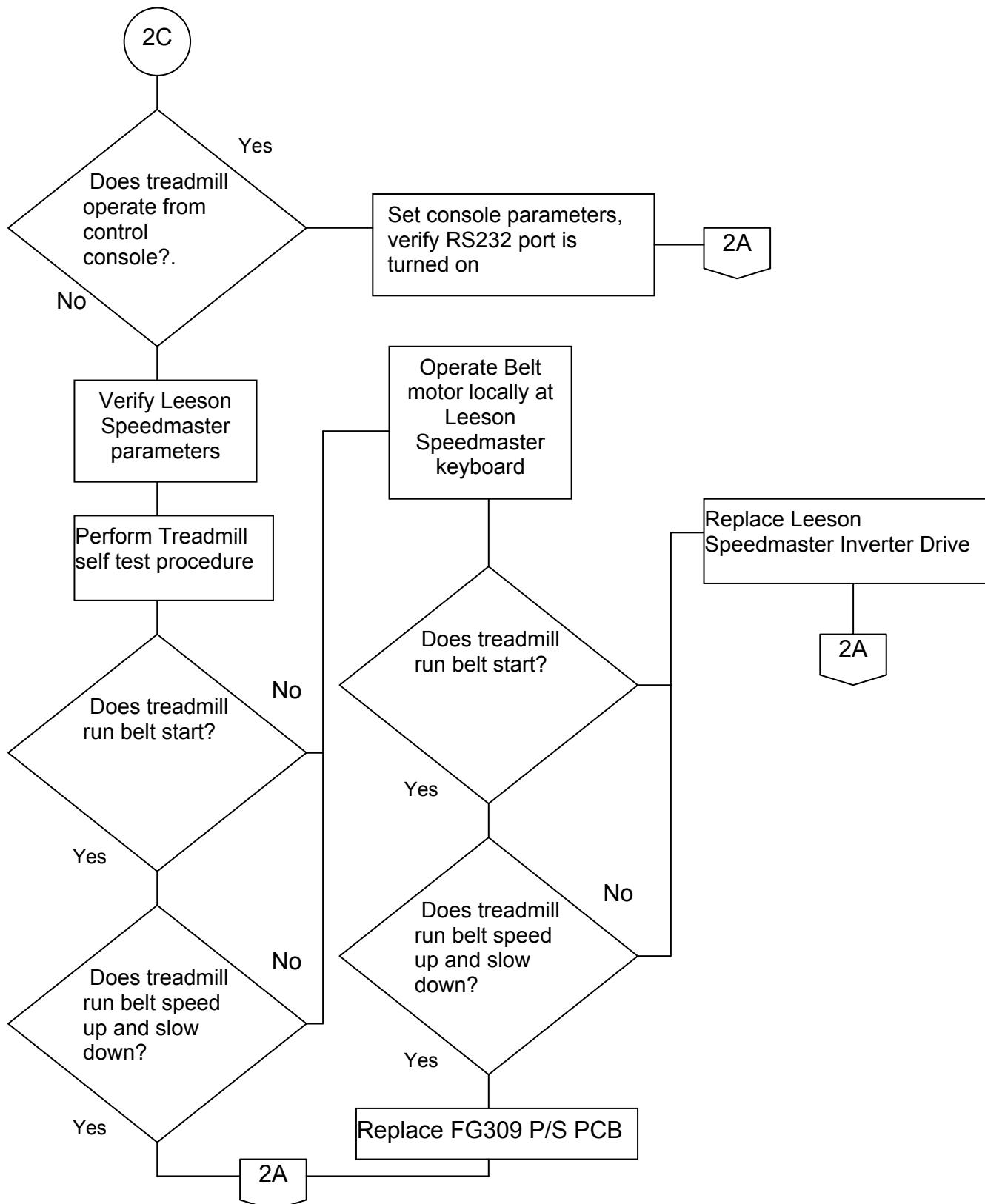


**Power Distribution Flowchart 1E**

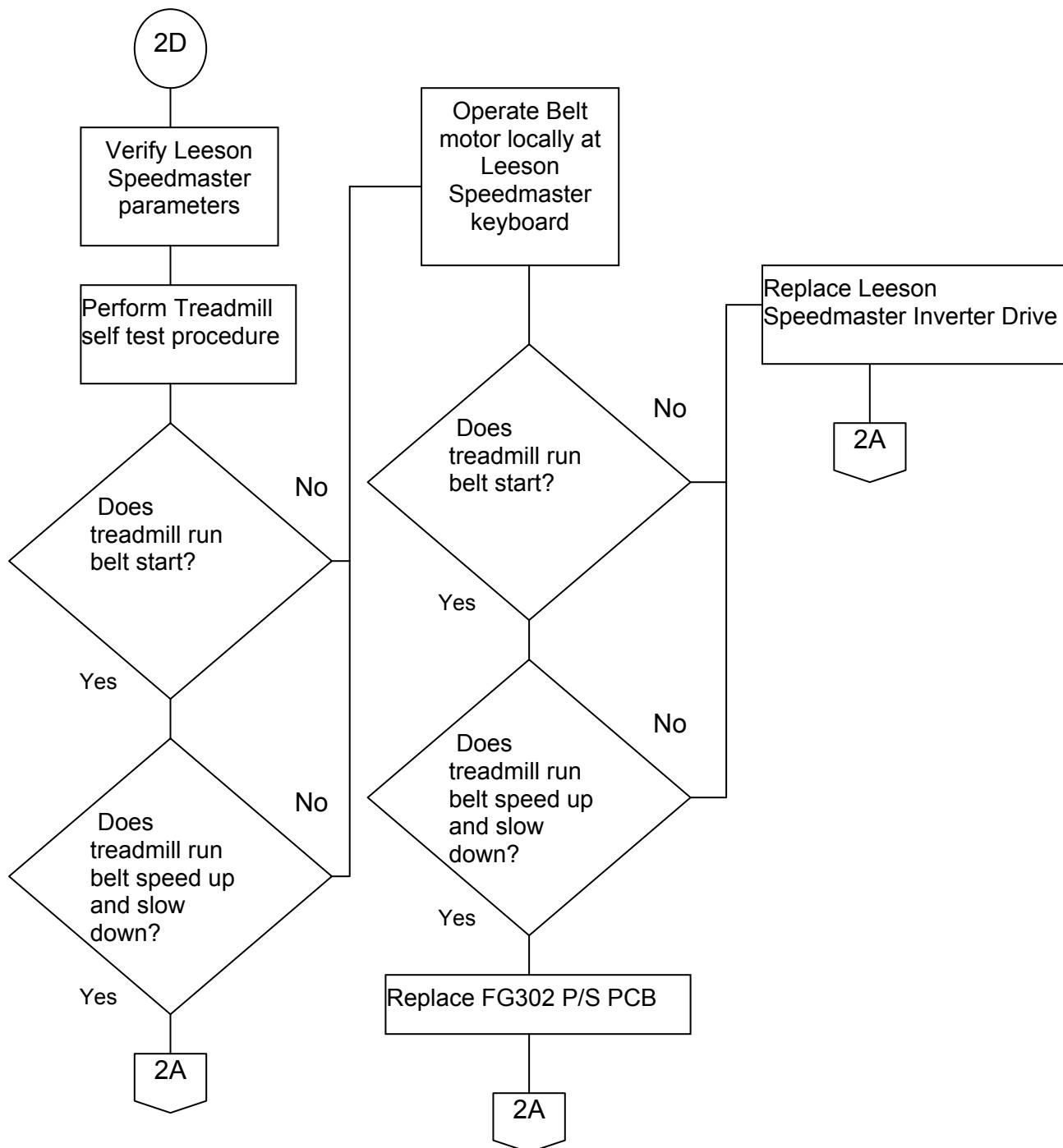
**Belt Start Command Flowchart 2A**

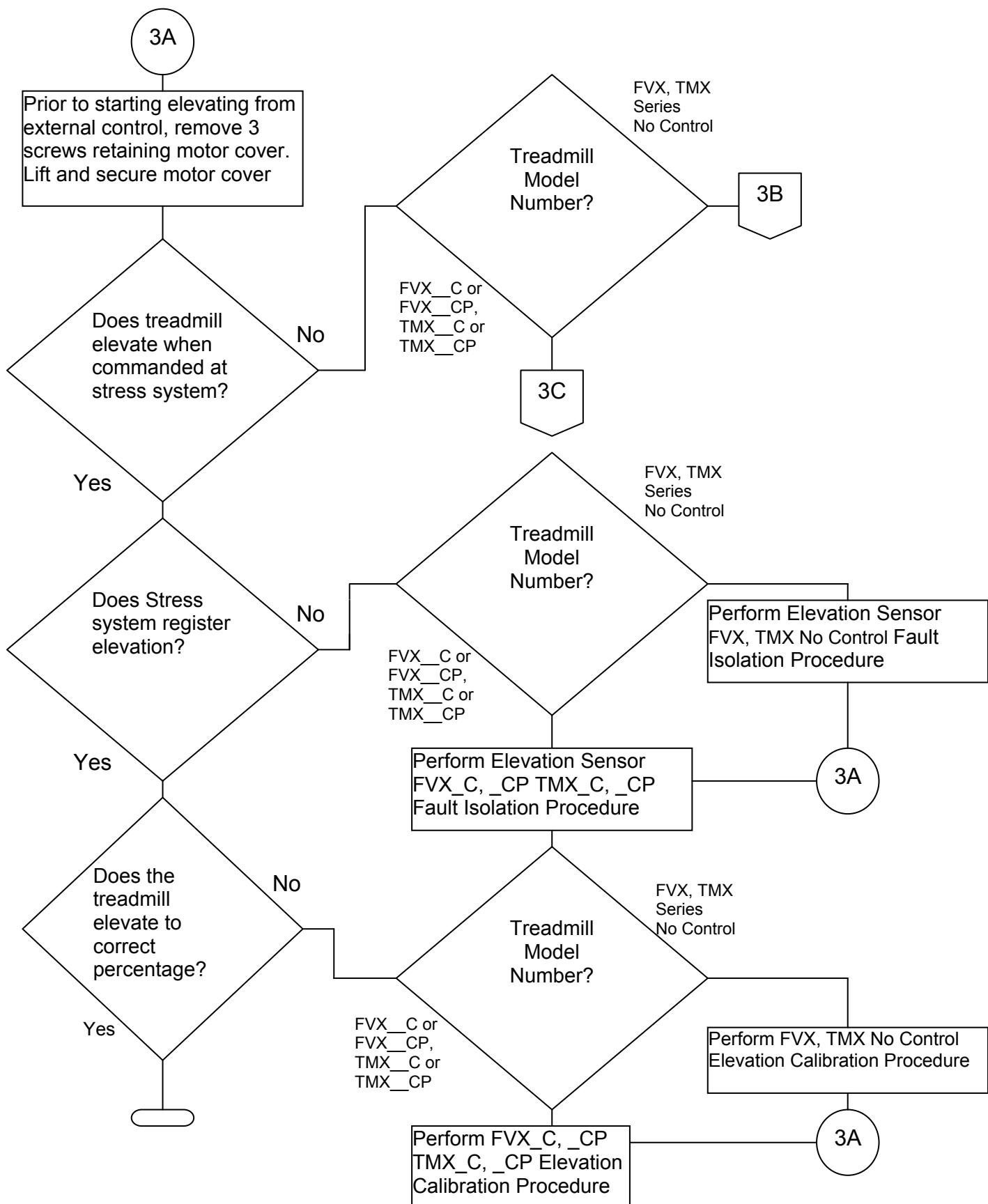
**Speed Sensor Fault Isolation FVX, TMX Series 2A1**

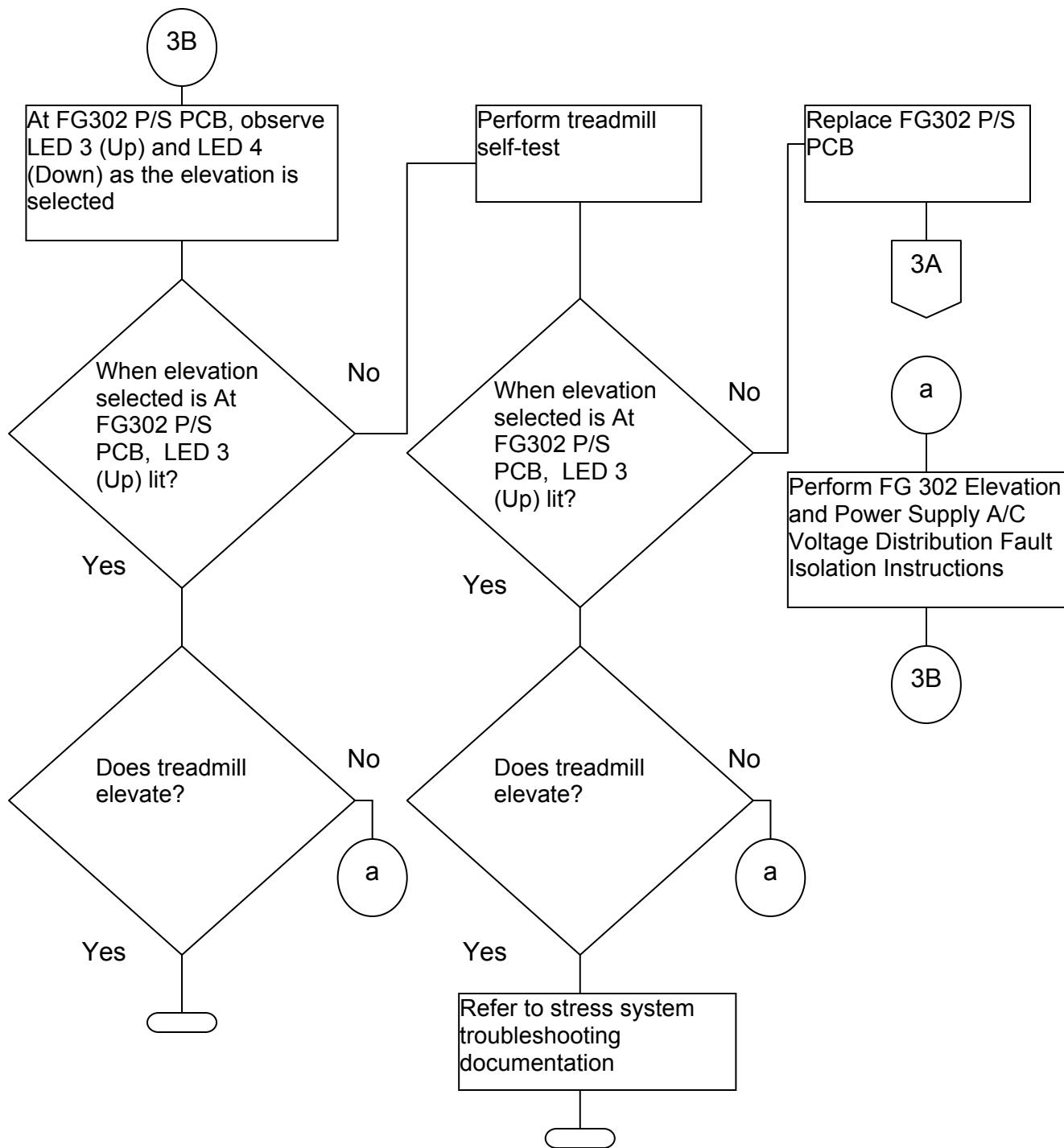
**FVX, TMX No Control Series Belt Motor Start Operation – Self Test 2B**

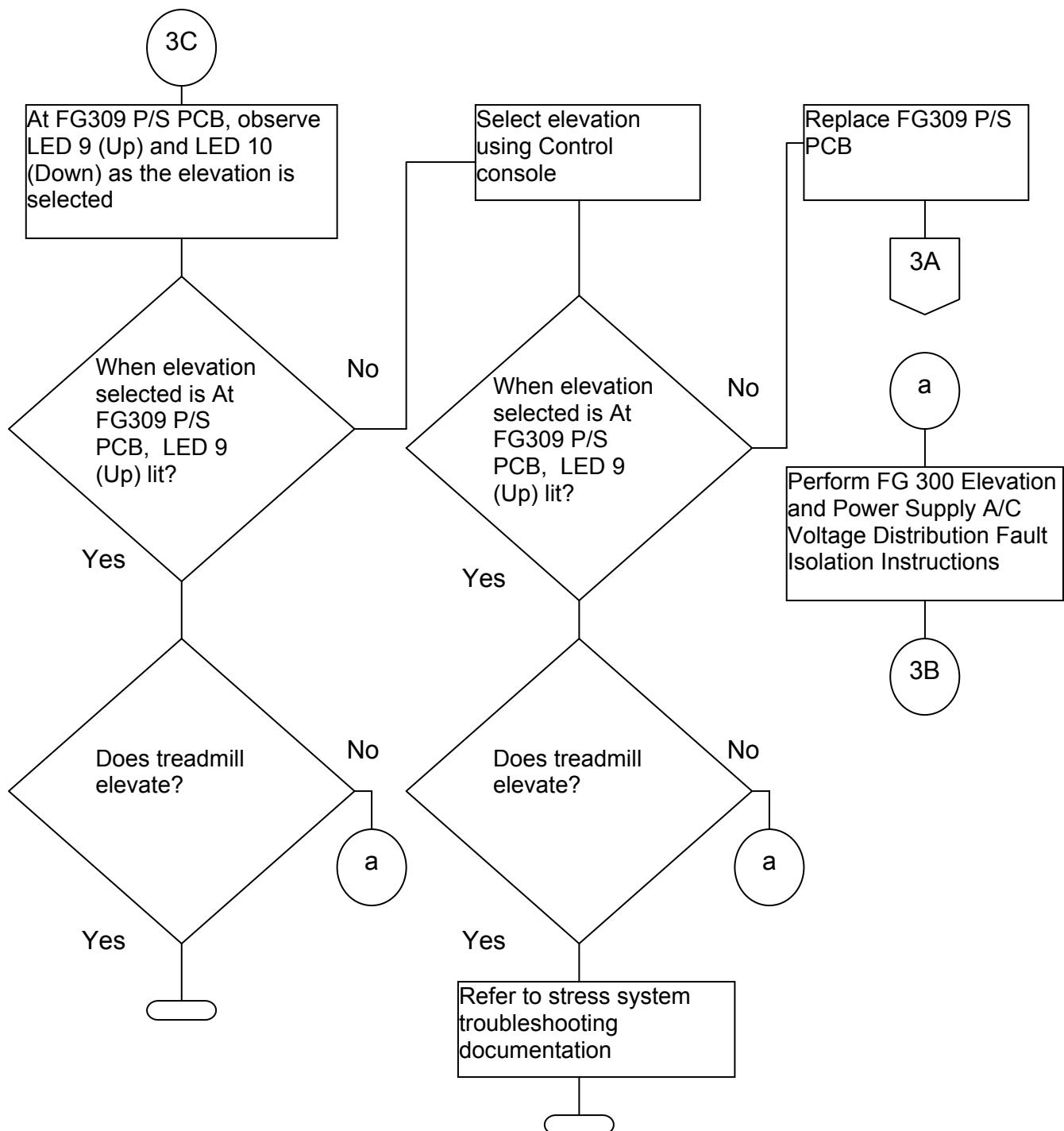
**FVX, TMX Control Series Belt Motor Start Operation – Self-Test 2C**

## Leeson Speedmaster – Parameter Inspection and Self-Test 2D



**Treadmill Elevation Flowchart 3A**

**Treadmill No Elevation FVX, TMX No Control Series Elevation Flowchart 3B**

**Treadmill No Elevation FVX, TMX Control Series Elevation Flowchart 3C**

**Power Distribution Fault Isolation (1) 120VAC Instructions**

1. Use ohmmeter, measure continuity from connectors of power indicator to output of C/E filter. Repair break in wire or proceed to next step.
2. Measure continuity through C/E filter, replace C/E filter if defective or proceed to next step
3. Measure continuity from input of C/E filter to the output of treadmill 20amp Circuit Breaker On/Off switch. Replace 20amp Circuit Breaker On/Off switch if defective or proceed to next step
4. Measure continuity of power cord from input of power cord, C/E filter to the blades at molded plug of power cord. Replace power cord if defective.

**Power Distribution Fault Isolation (2) 208-240VAC Instruction**

1. Use ohmmeter, measure continuity from connectors of power indicator to output of C/E filter. Repair break in wire or proceed to next step.
2. Measure continuity through C/E filter, replace C/E filter if defective or proceed to next step
3. Measure continuity from input of C/E filter to the output of treadmill 15amp Circuit Breaker On/Off switch. Replace 15amp Circuit Breaker On/Off switch if defective or proceed to next step
4. Measure continuity of power cord from input of power cord, C/E filter to the blades at molded plug of power cord. Replace power cord if defective.

**Power Distribution Fault Isolator (3) 120VAC Instructions**

1. Turn treadmill power switch off (0)
2. Use ohmmeter, measure continuity from Leeson Speedmaster Power Input L1 and N to output of C/E filter. Identify and repair break in wire.

**Power Distribution Fault Isolator (4) 208-240VAC Instructions**

1. Turn treadmill power switch off (0)
2. Use ohmmeter, measure continuity from Leeson Speedmaster Power Input L1 and L2 to output of C/E filter. Identify and repair break in wire.

## FG 309 Elevation and Power Supply A/C Voltage Distribution Fault Isolation Instructions

1. Turn treadmill power switch off (0)
2. Use ohmmeter, measure continuity from output of C/E filter to A/C and Elevation voltage input of power supply JP2. Use the 120 / 208-240 VAC table as required to troubleshoot and repair fault. Identify and repair break in wire.

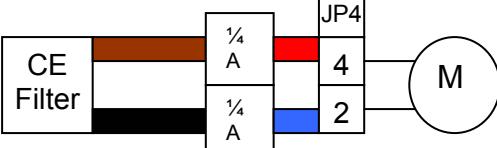
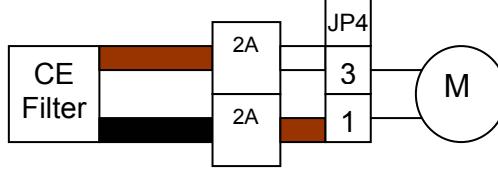
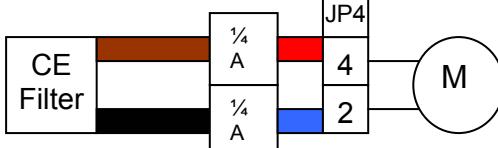
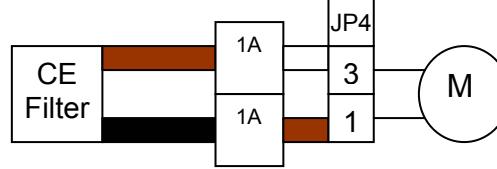
120VAC	208-240VAC
<p>CE Filter</p> <p>JP2</p> <p>1/4 A</p> <p>1/4 A</p> <p>4</p> <p>2</p> <p>M</p>	<p>CE Filter</p> <p>JP2</p> <p>1/4 A</p> <p>1/4 A</p> <p>4</p> <p>2</p> <p>M</p>
<ol style="list-style-type: none"> <li>1. Measure A/C Voltage from JP2 pin 4 to pin 2. Keep J2 connector in place while taking measurement. If 120 VAC is not present proceed to next step</li> <li>2. Turn treadmill power (0) position. Unplug power cord from wall receptacle.</li> <li>3. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP2, pins 4 and 2. If continuity is broken, repair wire or replace fuse-breaker as required.</li> </ol> <p>CE Filter</p> <p>JP2</p> <p>2A</p> <p>2A</p> <p>3</p> <p>1</p> <p>M</p>	<ol style="list-style-type: none"> <li>1. Measure A/C Voltage from JP2 pin 4 to pin 2. Keep J2 connector in place while taking measurement. If 208-240 VAC is not present proceed to next step</li> <li>2. Turn treadmill power (0) position. Unplug power cord from wall receptacle.</li> <li>3. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP2, pins 3 and 1. If continuity is broken, repair wire or replace fuse-breaker as required.</li> </ol> <p>CE Filter</p> <p>JP2</p> <p>1A</p> <p>1A</p> <p>3</p> <p>1</p> <p>M</p>

4. Measure A/C Voltage from JP2 pin 3 to pin 1. Keep J2 connector in place while taking measurement. If 120 VAC is not present proceed to next step
5. Turn treadmill power (0) position. Unplug power cord from wall receptacle.
6. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP2, pins 3 and 1. If continuity is broken, repair wire or replace fuse-breaker as required.

4. Measure A/C Voltage from JP2 pin 3 to pin 1. Keep J2 connector in place while taking measurement. If 208-240 VAC is not present proceed to next step
5. Turn treadmill power (0) position. Unplug power cord from wall receptacle.
6. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP2, pins 3 and 1. If continuity is broken, repair wire or replace fuse-breaker as required.

## FG 302 Elevation and Power Supply A/C Voltage Distribution Fault Isolation Instructions

1. Turn treadmill power switch off (0)
2. Use ohmmeter, measure continuity from output of C/E filter to A/C and Elevation voltage input of power supply JP4. Use the 120 / 208-240 VAC table as required to troubleshoot and repair fault. Identify and repair break in wire.

120VAC	208-240VAC
 <p>1. Measure A/C Voltage from JP4 pin 4 to pin 2. Keep J4 connector in place while taking measurement. If 120 VAC is not present proceed to next step</p> <p>2. Turn treadmill power (0) position. Unplug power cord from wall receptacle.</p> <p>3. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP4, pins 4 and 2. If continuity is broken, repair wire or replace fuse-breaker as required.</p>  <p>4. Measure A/C Voltage from JP4 pin 3 to pin 1. Keep J4 connector in place while taking measurement. If 120 VAC is not present proceed to next step</p> <p>5. Turn treadmill power (0) position. Unplug power cord from wall receptacle.</p> <p>6. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP4, pins 3 and 1. If continuity is broken, repair wire or replace fuse-breaker as required.</p>	 <p>1. Measure A/C Voltage from JP4 pin 4 to pin 2. Keep J4 connector in place while taking measurement. If 208-240 VAC is not present proceed to next step</p> <p>2. Turn treadmill power (0) position. Unplug power cord from wall receptacle.</p> <p>3. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP4, pins 3 and 1. If continuity is broken, repair wire or replace fuse-breaker as required.</p>  <p>4. Measure A/C Voltage from JP4 pin 3 to pin 1. Keep J4 connector in place while taking measurement. If 208-240 VAC is not present proceed to next step</p> <p>5. Turn treadmill power (0) position. Unplug power cord from wall receptacle.</p> <p>6. Unplug output of C/E filter, use ohm meter to test continuity of cabling from C/E filter to JP4, pins 3 and 1. If continuity is broken, repair wire or replace fuse-breaker as required.</p>

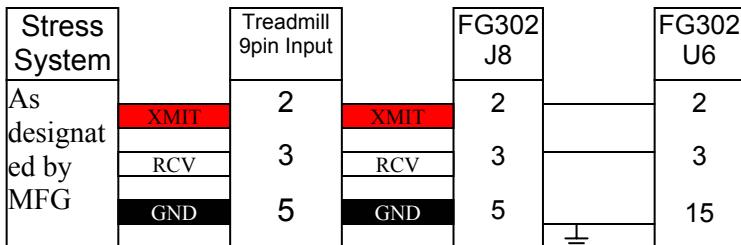
## ESB Circuit Fault Isolation Instructions

FVX, TMX No Control	FVX, TMX Manual Control
<p>FG302 P/S</p> <p>Emergency Stop</p> <p>J4</p> <p>J5</p> <p>ESB SW – N/C</p> <ol style="list-style-type: none"> <li>1. Use Ohm Meter to test continuity from FG302 J4 to J5 with the switch in the up position.</li> <li>2. Isolate and repair any breaks found in circuit</li> </ol>	<p>FG 310 Controller PCB</p> <p>Emergency Stop</p> <p>J9</p> <p>J10</p> <p>ESB SW – N/C</p> <ol style="list-style-type: none"> <li>1. Use Ohm Meter to test continuity from FG310 J9 to J10 with the switch in the up position.</li> <li>2. Isolate and repair any breaks found in circuit</li> </ol>
	<p>FVX, TMX Programmable Control</p> <p>FG 311 Controller PCB</p> <p>Emergency</p> <p>J2</p> <p>J3</p> <p>ESB SW – N/C</p> <ol style="list-style-type: none"> <li>1. Use Ohm Meter to test continuity from FG311 J2 to J3 with the switch in the up position.</li> <li>2. Isolate and repair any breaks found in circuit</li> </ol>

## Speed Sensor Fault Isolation – FVX, TMX No Control

1. Verify sensor is connected at FG302, J2; connect if necessary.
2. Verify speed sensor distance is no greater than 1/8" from magnet; adjust as necessary
3. Stop run belt, measure DC voltage at FG302, J2, pin 1 to pin 2. Move belt motor flywheel slowly by hand and verify voltage drop of 5 VDC as magnet passes sensor. If voltage is not observed, replace speed sensor.

## Interior interface Cable Fault isolation – FVX, TMX No Control



1. Turn treadmill power switch to the off position (0)
2. Unplug treadmill power cord from wall receptacle
3. Use Ohm Meter to verify continuity from FG302 U6 to Treadmill 9 pin input; repair and or replace cable as necessary.

## Perform Incorrect Belt Speed Fault Isolation

1. Determine if the speed unit required by stress system, mph or Km/h
2. Use belt rpm table to determine if the running belt speed is correct.
3. Verify correct settings at Leeson Speedmaster, use Leeson Speedmaster
4. Perform speed calibration to change speed units or calibrate belt circuit as required.
5. If treadmill will not calibrate or change speed, measure DC voltage input to Leeson Speedmaster pin 5 (PWM) to pin 2 (DC GND). Voltage should vary from 0 VDC at minimum speed to approximately 7.4 VDC at maximum speed.
6. If voltage does not vary, measure the voltage at FG 302 motor control output J3 pin 2 (PWM) and 5 (DC GND). Voltage should vary from 0 VDC at minimum speed to approximately 7.4 VDC at maximum speed. Repair and or replace inverter cable as necessary.
7. if voltage is not present at FG302, J3, replace FG 302 PCB

## Speed Sensor Fault Isolation – FVX\_C or FVX\_CP, TMX\_C or TMX\_CP

1. Verify sensor is connected at FG309, J2; connect if necessary.
2. Verify speed sensor distance is no greater than 1/8" from magnet; adjust as necessary
3. Stop run belt, measure DC voltage at FG309, J2, pin 1 to pin 2. Move belt motor flywheel slowly by hand and verify voltage drop of 5 VDC as magnet passes sensor. If voltage is not observed, replace speed sensor.

**Speed V-Guide 10.92' (3.33m)**

		<b>RPM'S</b>			
<b>Speed</b>		Belt Length	<b>Speed</b>		Belt Length
MPH	Km/H	10.92	Km/H	MPH	3.33m
0.5	0.8	4.0	0.8	0.5	4.0
1.0	1.61	8.1	1.0	0.62	5.0
1.5	2.41	12.1	2.0	1.24	9.7
2.0	3.22	16.1	3.0	1.86	15.0
2.5	4.02	20.1	4.0	2.49	20.0
3.0	4.83	24.2	5.0	3.11	25.0
3.5	5.63	28.2	6.0	3.73	29.8
4.0	6.44	32.2	7.0	4.35	35.1
4.5	7.24	36.2	8.0	4.97	40.1
5.0	8.05	40.2	9.0	5.59	45.0
5.5	8.85	44.3	10.0	6.21	50.0
6.0	9.66	48.4	11.0	6.84	55.1
6.5	10.46	52.4	12.0	7.46	60.1
7.0	11.27	56.4	13.0	8.08	65.1
7.5	12.07	60.4	14.0	8.70	70.0
8.0	12.87	64.5	15.0	9.32	75.1
8.5	13.68	68.5	16.0	9.94	80.1
9.0	14.48	72.5	17.0	10.56	85.1
9.5	15.29	76.6	18.0	11.18	90.1
10.0	16.09	80.6	19.0	11.81	95.1
10.5	16.90	84.6			
11.0	17.70	88.6			
11.5	18.51	92.7			
12.0	19.31	96.7			

**Speed V-Guide 8.45' (2.56m)**

		<b>RPM'S</b>			
<b>Speed</b>		Belt Length	<b>Speed</b>		Belt Length
MPH	Km/H	8.45	Km/H	MPH	2.56m
0.5	0.8	5.2	0.8	0.5	5.2
1.0	1.61	10.4	1.0	0.62	6.5
1.5	2.41	15.6	2.0	1.24	12.9
2.0	3.22	20.8	3.0	1.86	19.4
2.5	4.02	26.0	4.0	2.49	25.9
3.0	4.83	31.2	5.0	3.11	32.4
3.5	5.63	36.4	6.0	3.73	38.8
4.0	6.44	41.6	7.0	4.35	45.3
4.5	7.24	46.8	8.0	4.97	51.8
5.0	8.05	52.1	9.0	5.59	58.2
5.5	8.85	57.3	10.0	6.21	64.7
6.0	9.66	62.5	11.0	6.84	71.2
6.5	10.46	67.7	12.0	7.46	77.6
7.0	11.27	72.9	13.0	8.08	84.1
7.5	12.07	78.1	14.0	8.70	90.6
8.0	12.87	83.3	15.0	9.32	97.1
8.5	13.68	88.5	16.0	9.94	103.5
9.0	14.48	93.7	17.0	10.56	110.0
9.5	15.29	98.9	18.0	11.18	116.5
10.0	16.09	104.1	19.0	11.81	123.0
10.5	16.90	109.3			
11.0	17.70	114.6			
11.5	18.51	119.8			
12.0	19.31	125.0			

## **Perform FVX\_C, TMX\_C, Incorrect Belt Speed Fault Isolation**

1. Determine if the speed unit required by stress system, mph or Km/h
2. Use belt rpm table to determine if the running belt speed is correct.
3. Verify correct settings at Leeson Speedmaster, use Leeson Speedmaster  
Use FVX\_C, TMX\_C, - TMX22 software download procedures to perform  
steps 4 and 5
4. Verify console parameters are correctly set to required settings
5. Perform speed calibration to change speed units or calibrate belt circuit as required.
6. Perform console self test to verify is speed sensor is picked up by control console
7. If treadmill will not calibrate or change speed, measure DC voltage input to Leeson  
Speedmaster pin 5 (PWM) to pin 2 (DC GND). Voltage should vary from 0 VDC at  
minimum speed to approximately 7.4 VDC at maximum speed.
8. If voltage does not vary, measure the voltage at FG 309 motor control output J3 pin 2  
(PWM) and 5 (DC GND). Voltage should vary from 0 VDC at minimum speed to  
approximately 7.4 VDC at maximum speed. Repair and or replace inverter cable as  
necessary.
9. if voltage is not present at FG309, J3. replace FG 302 PCB

## **Perform FVX\_CP, TMX\_CP, Incorrect Belt Speed Fault Isolation**

1. Determine if the speed unit required by stress system, mph or Km/h
2. Use belt rpm table to determine if the running belt speed is correct.
3. Verify correct settings at Leeson Speedmaster, use Leeson Speedmaster  
Use FVX\_CP, TMX\_CP, - TMX55 software download procedures to perform  
steps 4 and 5
4. Verify console parameters are correctly set to required settings
5. Perform speed calibration to change speed units or calibrate belt circuit as required.  
Use FVX\_CP, TMX\_CP, - TMX55 Self test procedure for step 6
6. Perform console self test to verify is speed sensor is picked up by control console
7. If treadmill will not calibrate or change speed, measure DC voltage input to Leeson  
Speedmaster pin 5 (PWM) to pin 2 (DC GND). Voltage should vary from 0 VDC at  
minimum speed to approximately 7.4 VDC at maximum speed.
8. If voltage does not vary, measure the voltage at FG 309 motor control output J3 pin 2  
(PWM) and 5 (DC GND). Voltage should vary from 0 VDC at minimum speed to  
approximately 7.4 VDC at maximum speed. Repair and or replace inverter cable as  
necessary.
9. if voltage is not present at FG309, J3, replace FG 309 PCB

**Test Plug Procedure (FVX, TMX No Control Units Only)**

1. Turn the power "OFF" at the treadmill.
2. Disconnect ECG Cable from the treadmill and plug in the test connector.
3. Hold the button down on the test connector and turn treadmill power "ON".
4. After power is applied, release the button, rapidly press and release the button at least three more times. The treadmill should elevate to approximately 5% grade. (note : the timing of the depressions is critical, after treadmill is powered on do not wait more than 1 second to begin to rapidly press and release the button)
5. Once this is initiated, with each push of the button the treadmill should elevate 5% grade.
6. When the treadmill reaches 20% elevation the next push of the button will start the treadmill running belt.
7. With each push of the button the treadmill will increase speed by 1 mile per hour.
8. Once the treadmill reaches 9.5 mph each push of the button will bring the speed down 1mph.
9. When minimum speed is reached the next press of the button will cause the treadmill running belt to stop. The next press of the button will bring the elevation down 5% in grade.
10. When the treadmill reaches 0%, turn treadmill power off and remove the test connector.
11. Connect the interface cable from the ECG.

**Elevation Sensor FVX, TMX No Control Fault Isolation Procedure**

1. Verify sensor is connected at FG302, J1; connect if necessary.
2. Measure DC voltage at FG302, J1, pin 1 to pin 2. As elevation increases a voltage drop of 5 VDC is observed. If voltage is not observed, repair break in elevation wiring and or replace elevation sensor.

**Elevation Sensor FVX\_C, FVX\_CP, TMX\_C, & TMX\_CP Fault Isolation Procedure**

1. Verify sensor is connected at FG309, J1; connect if necessary.
2. Measure DC voltage at FG309, J1, pin 1 to pin 2. As elevation increases a voltage drop of 5 VDC is observed. If voltage is not observed, repair break in elevation wiring and or replace elevation sensor.



# *Treadmill Report/Service Log*

**15**

## **Series TMX425 Treadmill Maintenance Inspection Report**

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**Complete and FAX to 316-283-3350**

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Customer \_\_\_\_\_ Date \_\_\_\_\_

Technician \_\_\_\_\_ Phone \_\_\_\_\_

Serial # \_\_\_\_\_

### **Configuration**

TMX425       Emergency Stop Button        
 TMX425C        
 TMX425CP     

### **Tools**

- |                        |                   |
|------------------------|-------------------|
| 1. Multi-meter         | 3. Service Manual |
| 2. Standard Hand Tools |                   |

### **Visual Inspection**

- |   |   |   |
|---|---|---|
| 1. <input type="checkbox"/> Running Belt    | 3. <input type="checkbox"/> Connectors    | 5. <input type="checkbox"/> Handrail Hardware |
| 2. <input type="checkbox"/> Interface Cable | 4. <input type="checkbox"/> AC Power Cord | 6. <input type="checkbox"/> Drive Belt        |

### **Cleaning**

- |                                       |                                  |  |
|---------------------------------------|----------------------------------|--|
| 1. <input type="checkbox"/> Handrails | 2. <input type="checkbox"/> Hood | 3. <input type="checkbox"/> Running Belt |
|---------------------------------------|----------------------------------|--|

### Calibration

1. Speed Calibration (1 mph = 8 revolutions in 60 seconds +/- 2 seconds)
2. Grade Calibration (Verify using Calibration chart.)

### Electrical Safety Tests

1.  Wall Receptacle Test
2.  Ground Continuity (Impedance of protected connection) Test ( $\leq .1\Omega$  or  $\leq .2\Omega$  w/power cord)

## Checkout Procedure

Perform appropriate checkout procedures before leaving treadmill.

1.  Increase and decrease speed from minimum to maximum using controlling unit to verify operation.
2.  Raise and lower elevation from 0% to 25% using controlling unit to verify operation.
3.  Depress emergency stop switch while unit is running at 3 m.p.h. to verify operation.
4.  Monitor running belt tracking at 3 m.p.h. Adjust, if necessary, using procedure in service manual.
5.  Verify speed calibration 1 m.p.h. = 8 revolutions in 60 seconds
6.  Verify elevation calibration. Adjust, if necessary, using procedure in service Manual.
7.  Monitor drive belt for slipping, squeaking and misalignment. Adjust, if necessary, using procedure in service manual.

## Comments

**Briefly describe all repairs/adjustments made and list all parts replaced:**

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Additional comments:

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## Series FVX 325 Treadmill Maintenance Inspection Report

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**Complete and FAX to 316-283-3350**

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Customer \_\_\_\_\_ Date \_\_\_\_\_

Technician \_\_\_\_\_ Phone \_\_\_\_\_

Serial # \_\_\_\_\_

### **Configuration**

FVX325       Emergency Stop Button        
FVX325C        
FVX325CP     

### **Tools**

- |                        |                   |
|------------------------|-------------------|
| 1. Multi-meter         | 3. Service Manual |
| 2. Standard Hand Tools |                   |

### **Visual Inspection**

- |   |   |   |
|---|---|---|
| 1. <input type="checkbox"/> Running Belt    | 3. <input type="checkbox"/> Connectors    | 5. <input type="checkbox"/> Handrail Hardware |
| 2. <input type="checkbox"/> Interface Cable | 4. <input type="checkbox"/> AC Power Cord | 6. <input type="checkbox"/> Drive Belt        |

### **Cleaning**

- |                                       |                                  |  |
|---------------------------------------|----------------------------------|--|
| 1. <input type="checkbox"/> Handrails | 2. <input type="checkbox"/> Hood | 3. <input type="checkbox"/> Running Belt |
|---------------------------------------|----------------------------------|--|

### Calibration

1. Speed Calibration (1 mph = 10.4 revolutions in 60 seconds +/- 2 seconds)
2. Grade Calibration (Verify using Calibration chart.)

### Electrical Safety Tests

1.  Wall Receptacle Test
2.  Ground Continuity (Impedance of protected connection) Test ( $\leq .1\Omega$  or  $\leq .2\Omega$  w/power cord)

## Checkout Procedure

Perform appropriate checkout procedures before leaving treadmill.

1.  Increase and decrease speed from minimum to maximum using controlling unit to verify operation.
2.  Raise and lower elevation from 0% to 25% using controlling unit to verify operation.
3.  Depress emergency stop switch while unit is running at 3 m.p.h. to verify operation.
4.  Monitor running belt tracking at 3 m.p.h. Adjust, if necessary, using procedure in service manual.
5.  Verify speed calibration 1 m.p.h. = 10.4 revolutions in 60 seconds
6.  Verify elevation calibration. Adjust, if necessary, using procedure in service Manual.
7.  Monitor drive belt for slipping, squeaking and misalignment. Adjust, if necessary, using procedure in service manual.

## Comments

**Briefly describe all repairs/adjustments made and list all parts replaced:**

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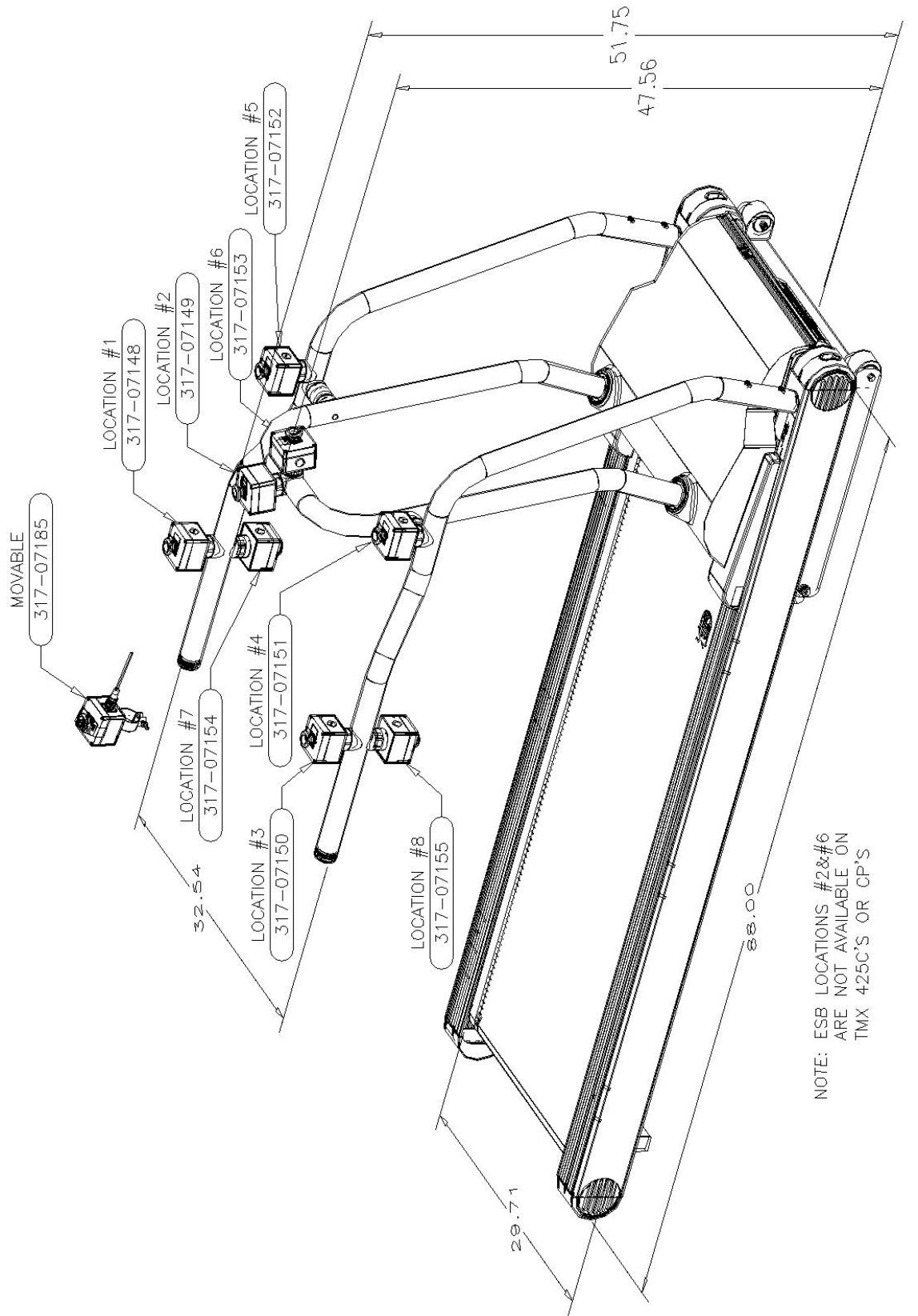
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Additional comments:

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**TMX Series Emergency Stop Button (ESB) Location Drawing**

## FVX325 Series Treadmill Field Service Manual

### Log Sheet

Please complete and return by fax to Full Vision Service Dept. at 316-283-3350

**Company:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**Fax:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Revision Sent:** \_\_\_\_\_

**Date Sent:** \_\_\_\_\_

**Address for  
Updates:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature of  
Recipient:** \_\_\_\_\_

**Electronic Version**

**Printed Version**

For Full Vision Use Only

Revision	Sent	E	P	Revision	Sent	E	P	Revision	Sent	E	P

## **TMX425 Series Treadmill Field Service Manual**

### **Log Sheet**

Please complete and return by fax to Full Vision Service Dept. at 316-283-3350

**Company:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**Fax:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Revision Sent:** \_\_\_\_\_

**Date Sent:** \_\_\_\_\_

**Address for  
Updates:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Signature of  
Recipient:** \_\_\_\_\_

**Electronic Version**

**Printed Version**

For Full Vision Use Only

Revision	Sent	E	P	Revision	Sent	E	P	Revision	Sent	E	P

