LANDICE
Crafting the World's Finest Treadmills

111 Canfield Avenue • Randolph, New Jersey 07869 • 1-800-LANDICE • FAX 973-927-0630

70 SERIES SERVICE MANUAL 2007
HOME & COMMERCIAL

FOR TECHNICAL ASSISTANCE CALL
1-800-LANDICE

Part number 72078

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SERVICE REIMBURSEMENT POLICY:

This is offered to all Landice dealers as well as all authorized Landice service providers. Landice covers our treadmills with a 1-year labor reimbursement policy. That means we will pay to fix our treadmill as long as it's within one year from the date the treadmill was purchased.

OUR POLICY:

Landice will reimburse the selling dealer according to our labor rate schedule. If you are a service provider for Landice and do not sell our product, you have the option of billing us direct or you can bill the dealer that you're providing service for. Generally, if our capped rate does not cover your labor charge you would bill the selling dealer. The current rate is $30.00 per hour and is capped at a maximum of one hour labor and one hour travel per treadmill failure. Diagnostic and return trips are not covered. Note that treadbelt tracking, treadbelt / drive belt tensioning, blown fuses, and set-up procedures are not covered by this warranty.

Set-Up Includes: Assembly, adjusting treadbelt and drive belt (if needed), walking the treadbelt and deck wax in, and performing any additional adjustments that may have been upset during shipping. The dealer must call for a Service Authorization (SA) number **prior** to performing any service to verify the treadmill is under labor warranty. It is advisable to call Landice from the treadmill location to successfully diagnose the problem. This will insure that the correct part will be shipped out the first time. Labor claim forms must be submitted within three months from the date service was performed. Labor claim forms must be completely filled out and have the Landice Service Authorization number at the top. Generally service claims are paid out upon the return of defective parts and/or crediting of the warranty invoice. If parts are outstanding for a period of more than 90 days previously submitted service claims will be returned unpaid.

FLOOR MODELS AND DEALER STOCK

If the dealer sells a treadmill to a customer within one year of its purchase from Landice, the warranty period will be extended to start from the date of sale to the customer. If a home treadmill is over 1 year old when sold to a customer, the treadmill will carry a 5 year parts warranty and there will be **NO labor** warranty. If a commercial unit is over 1 year old when sold to a customer, the treadmill will carry the remainder of the parts warranty from the date of shipment with **NO labor** warranty.

PARTS POLICY

Landice Treadmills reserves the right to request the return of any part regardless of age. A prepaid Return Tag will be provided at Landice's discretion. All warranty parts requested to be returned will be billed to the dealer at dealer cost. Landice will credit this invoice upon receipt of defective parts. It is the dealer's responsibility to return the defective parts to Landice with a copy of the invoice or packing slip. If the defective parts are not returned within 30 days, payment of invoice is expected in full.

WARRANTY PART ORDERING:

When ordering parts under warranty please have the following information available. Warranty orders cannot be processed without this information:

1) Customer's name, address and phone number
2) Treadmill serial number
3) Detailed description of failure

PURCHASE PART ORDERING:

Serial numbers are recommended to help ensure the correct part is shipped. Purchased parts are covered by a 90 day replacement part warranty from the date the order shipped.

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SERVICE CLAIM FORM SA#

DEALER INFORMATION:		
Service Dealer / Dealer Name:		
Address		
City	State	Zip
Phone( ) -		
Contact		

CUSTOMER INFORMATION		
Name		
Address		
City	State	Zip
Phone( ) -	Contact	

TREADMILL INFORMATION	
Model Type:	Date of Service
Frame Serial #	Date of Purchase
DCP Serial # (if applicable)	
Out of box problem Yes No	

CUSTOMER COMPLAINT

SERVICES PERFORMED/PARTS REPLACED		
TRAVEL / LABOR: Travel Time:	Labor Time:	TOTAL TIME: _____

VALIDATION SIGNATURES		
Service Rep. Signature	Customer Signature	Date

CLAIMS CAN BE MAILED, EMAILED, FAXED OR SENT IN WITH THE RETURNED DEFECTIVE PART. DO NOT SUBMIT SERVICE CLAIMS WITHOUT SERVICE AUTHORIZATION NUMBERS.

PRORATION INFORMATION

The pro-rate scale applies to wear items only on commercial treadmills. Pro-rated items include:

- Drive belt
- Motor brushes
- Deck
- Walking belt.

LTD models sold after August 1, 2002 and **Club** models sold after January 1, 2003 are pro-rated under the 5 year scale. Wear items will get covered under full warranty for the first 6 months of ownership if they fail due to wear.
Discounts will be off of Dealer cost and the Dealer is expected to pass the same discount off of retail price on to the end user
Wear items are pro-rated as follows:

Up to 6 months	No Charge
6-12 months	80% Discount
Year 2	60% Discount
Year 3	50% Discount
Year 4	40% Discount
Year 5	30% Discount

RECOMMENDED TOOLS FOR SERVICING LANDICE TREADMILL

Deep socket set 3/8 drive with ratchet and extension: Must have 3/8, 7/16, 1 /2, 5/16, 9/16 sockets.

Combination wrench set: Must have 3/8, 7/16, 1 /2, 5/16, 9/16

#1, 2, and 3 Philips head screwdriver (or electric screwdriver)

#1, 2, and 3 flat head screwdriver (or electric screwdriver)

Socket head cap screw wrench set/ multi Allen Wrench

Rubber mallet

Diagonal cutter/ dykes

Wire stripper

Wire crimper

Digital voltmeter

Note: Analog voltmeters are not recommended.

Utility knife

Pulse simulator tester

AC Amp Meter

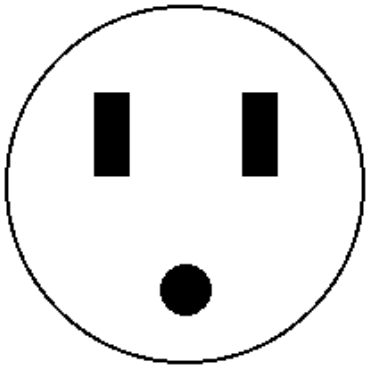
220 VAC CLUB TREADMILL

220V CLUB ELECTRICAL REQUIREMENTS:
220VAC , 60 Hz , 15 AMP - DEDICATED CIRCUIT & GROUND

PLUG - NEMA 6-15P (PLUG)
RECEPTACLE - NEMA 6-15R (RECEPTACLE)

ABOVE IS DIAGRAM OF PLUG CONFIGURATION.

110 VAC HOME, LTD, & CLUB TREADMILL



HOME, LTD, & 110V CLUB ELECTRICAL REQUIREMENTS:
110 VAC, 60 Hz, 15 AMP - DEDICATED CIRCUIT & GROUND

PLUG - NEMA 5-15P (PLUG)
RECEPTACLE - NEMA 5-15R (RECEPTACLE)

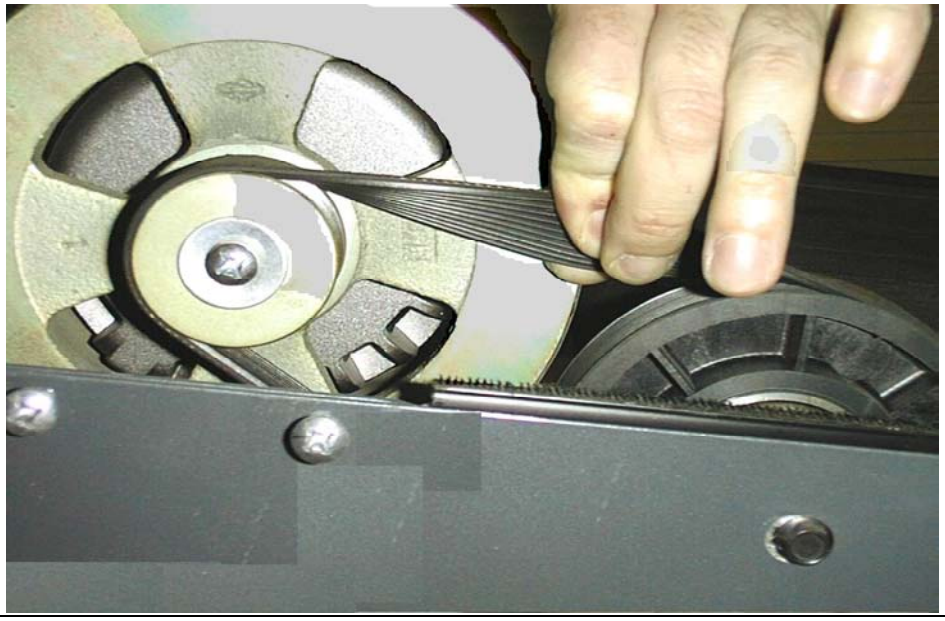
ABOVE IS DIAGRAM OF PLUG CONFIGURATION

FOR 220V & 110V MACHINES USING 3 PHASE VOLTAGE: Each treadmill must have its own circuit breaker and be run on the same phase same power leg). If 220v power is required then all treadmills must run on the same two phases (power legs) and on their own circuit breakers.

TRACKING AND TENSIONING

Proper tensioning of the Treadbelt and Drive Belt are necessary to insure smooth operation and long life for your treadmill. As these components may stretch as part of their normal break in period it is one of the few things we ask our customers to do in maintenance of their treadmills. The following illustrates how to tension the Treadbelt and Drive Belt.

Check Drive Belt tension



Drive Belts are pretension before the treadmill leaves the factory. Adjustments are ONLY necessary when Drive Belt is slipping during use. If the belt needs to be adjusted use a 7/16" socket and turn the bolt underneath the motor pan attached to the hook screw.

To test for tightness:

1. **Remove motor cover.**
2. **With mill running at 2mph walk on treadbelt.**
3. **If Drive Belt is moving front roller with no slippage then drive belt is correctly tensioned.**
   Tighten belt only until it stops slipping to insure maximum drive motor and roller life.

As a starting point check the tension on the Drive Belt by placing the Drive Belt between your thumb and forefinger and twisting. The proper twist is 45°.

CAUTION: NEVER OVER TENSION THE DRIVE BELT. TIGHTEN ONLY TILL SLIPPING STOPS. OVER TIGHTENING MAY CAUSE SERIOUS DAMAGE TO THE DRIVE MOTOR AND WILL VOID THE MOTOR'S WARRANTY.

TREADBELT TENSIONING

Treadbelts are tensioned at the factory and normally need no adjustment. To determine if the treadbelt needs to be adjusted perform the following test:

1. **Remove motor cover.**
2. **Set treadmill speed to 2mph.**
3. **Walk on treadbelt and see if drive roller is turning but belt is not moving. If belt is not moving then tension treadbelt ONLY until belt ceases to slip.**

The same adjustment bolts used for tracking TENSION the Treadbelt. To tighten Treadbelt, turn both adjustment bolts (clockwise) exactly the same amount. Failure to turn them equally will affect belt tracking. You are moving the Take-Up Roller closer or further away from the deck to tension the Treadbelt.

DO NOT OVER TIGHTEN TREADBELT! If you can't reach the palm of your hand under the center of the Treadbelt, if the edges of the belt are curled up, or if you hear the belt "groaning" THE TREADBELT IS TOO TIGHT.

TREADBELT TRACKING

The Treadbelt is TRACKED by means of two adjustment bolts (9/16" wrench) located at rear of treadmill. By tightening the side the belt is closest to and loosening the opposite side by the same amount, you change the alignment of the rear roller without changing overall tension. Adjustments should be made with treadmill running, and should be made in 1/4-turn increments. Allow at least 30 seconds for treadbelt to stabilize between each adjustment. Perform the adjustments at slower speeds (2-3 mph) until you are comfortable making adjustments. Faster speeds will cause the adjustments to take effect quicker (5-6 mph).

Example: Treadbelt tracks to the right:

- **a. Turn treadmill on, and bring speed up to 2.0 mph.**
- **b. Using a 9/16" wrench, tighten the right-hand adjustment bolt 1/4" turn.**
- **c. Loosen the left-hand adjustment bolt 1/4" turn.**
- **d. Let Treadbelt stabilize (rotate for 30 seconds) and readjust if necessary.**

***If normal tracking procedures are not working satisfactorily, proceed with the following steps:**

MAKE SURE TREADMILL IS LEVEL!

Make sure the treadmill is completely level. Place a carpenter's level across rear frame rails running parallel with rear roller. VERY IMPORTANT: Must have a minimum of 150 pounds on the treadmill's side steps for the reading to be accurate. If not level, try to move treadmill to more level flooring. If that is not an option use leveling shims. You can either put something under the rear feet or install shims between the rear foot and the frame. Simply loosen the two Philips head screws and slide shim in place. Tighten screw and re-check that the treadmill is level.

DRIVE ROLLER ALIGNMENT:

The Drive Roller is preset at the factory. However, if the Treadbelt is centered at the Rear Roller but is off center in the front, an adjustment will need to be made. This problem often appears as the belt is running diagonally (closer to one side at the top but farther away at the bottom). The Drive Roller is secured to the frame with two hex head bolts. (3/8 wrench) The holes in the frame are elongated; this allows for forward and aft adjustment of the drive roller.

Example:
Treadbelt is tracking to the right hand side. Adjust right hand side of drive roller by moving it towards the front (motor side) of treadmill. The Treadbelt will move towards the center.

Recommended Maintenance

Home Models- Vacuum around and underneath the treadmill on a monthly basis. Vacuum or wipe down the deck area between the treadbelt and frame. Wipe down display using mild solution of Non-Phosphate cleaner on damp soft cotton cloth and handrails after every use. No other maintenance is required.

Commercial Models-

Once a week

1. **Wipe down display. Use mild solution of Non-Phosphate cleaner on damp soft cotton cloth. Once a week or as needed.**
2. **Wipe down handrails and traction strips with soft cotton cloth and mild soap and water. Cloth should be damp not wet. Once a week or as needed.**
3. **Vacuum or wipe down the Deck area between treadbelt and frame. Once a week.**

Once a Month

1. **Take off Motor cover and vacuum.**
2. **Slide clean towel under Treadbelt and wipe deck and under the belt. Rotate belt 180 degrees and repeat.**
3. **Apply Slipcoat, the only lubricant recommended by Landice, under the Treadbelt if it feels dry (non oily).**
4. **Check Drive Belt Tension**
5. **Check Treadbelt Tension and Tracking**

Every Six Months

1. **Check Motor Brushes for wear. Clean commutator if needed.**

Cleaning Treadbelt Walking Surface- Treadbelts should be vacuumed to remove loose dirt. If vacuuming doesn't remove dirt, we recommend the use of a medium stiff nylon bristle brush to remove dirt trapped in treadbelt surface. A damp (not wet!) sponge can be used to finish the cleaning process.

Commercial Treadmill Maintenance Checklist

- Check treadbelt tension and tracking
- Wipe underneath treadbelt
- Check drive belt tension
- Check motor brushes
- Use cleaning stone to clean commutator
- Vacuum under motor hood
- Vacuum around and under treadmill
- Lubricate deck with slipcoat if needed
- Wipe down display with soft cotton & mild soap and water.

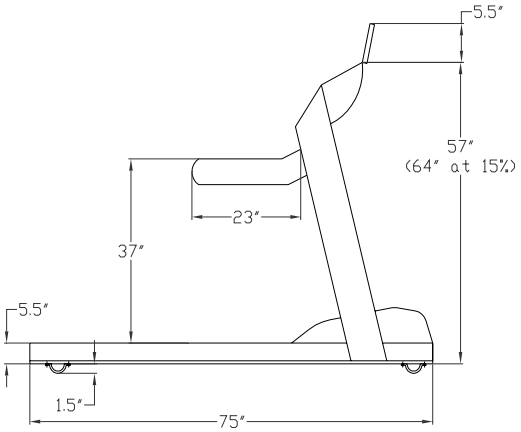
Treadmill Dimensions (boxed)

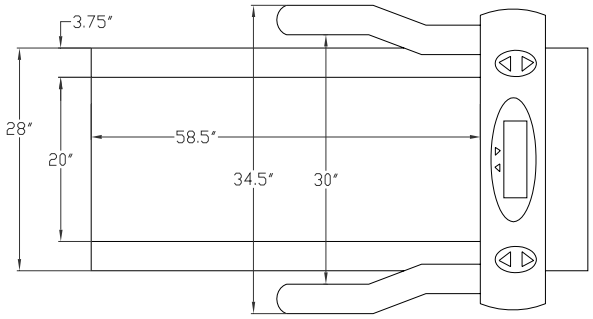
L x W x H (as loaded in trailer)

L770	**36” x**	**19” x**	**82”**	**Weight 350 lbs**
L870	**36” x**	**90” x**	**31”**	**Weight 435 lbs**
L970	**36” x**	**90” x**	**31”**	**Weight 460 lbs**

L770	**no box or pallet**	**Weight 290 lbs**
L870	**no box or pallet**	**Weight 330 lbs**
L970	**no box or pallet**	**Weight 335 lbs**

770 SERIES FACTS:





<u>Treadbelt Dimension</u>
Width: 20 inches
Length 58 inches
Circumference: 122 inches

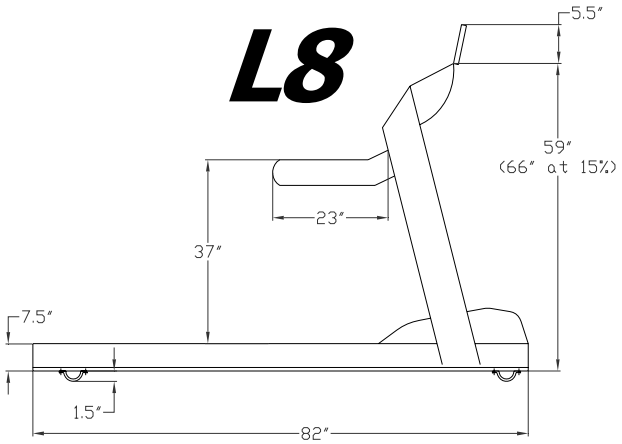
<u>Deck Dimension</u>
1 inch thick wood Phenolic layer – Reversible
Width: 52.2 inches
Length: 24 1/2 inches

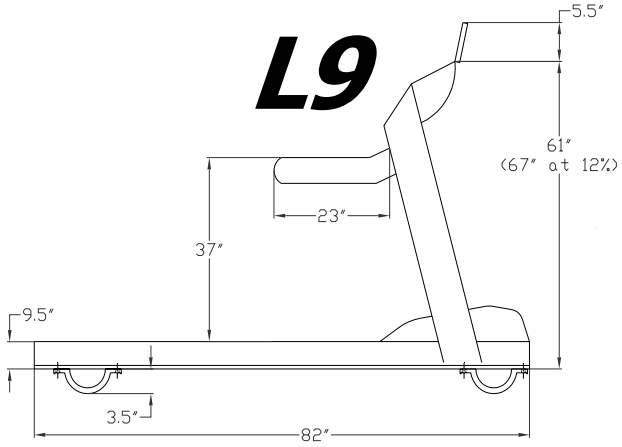
L760: Production Date for *Frames:* July 17, 2003
Starting serial number for *Frames:* L7-31084
Production Date complete L760 series: October 2, 2003
Starting serial number for complete L760 series: L7-32002
***NOTE: Some L750 series treadmills were manufactured after the date and serial number unit January 1, 2004.**

L770: Production Date: November 11, 2006
Starting serial number: L7-64947
***NOTE: Some L760 series treadmills were manufactured after the date and serial number.**

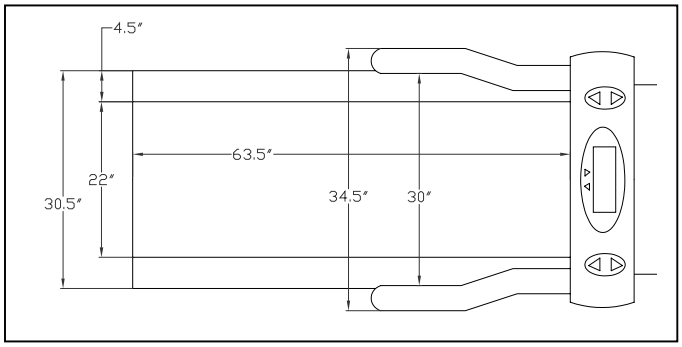
The L760's and L770's series decks are interchangeable
The L760's and L770's series walking belts are interchangeable.

870/970 SERIES FACTS: (All components are the same for the L8 and L9, except for the L9's larger feet)





Treadbelt Dimension:
Length: 63 inches
Width: 21.5 inches
Total Circumference: 136 inches



Deck Dimension:
1 inch thick wood
Phenolic layer – Reversible
Length: 56 inches
Width: 25 inches

L8622: Production Date: September 24, 2004
Starting serial number for the treadmill: L8-10380

L9622: Production Date: September 24, 2004
Starting serial number for the treadmill L9-03329

L870: Production Date: November 10, 2006
Starting Serial number for the treadmill: L8-14596

L970: Production Date November 3, 2006
Starting Serial number for the treadmill L9-5020

***NOTE: Some L8622 series treadmills were manufactured after the date and serial number.**
The L8622's and L870's series decks are interchangeable
The L8622's and L870's series walking belts are interchangeable.
The L8622's and L870's series drive and rear rollers are interchangeable.
L850's & L860's front and rear rollers are different from current production rollers.

DEFINITIONS OF COMPONENTS

ANTA PWM COMBO BOARD:

This Control Board is a combination of the PWM (Pulse Width Modulation), relay board, and DC Transformer. This is also known as a combo board and used in home setting. Delivers power to the upper board, elevation motor, and drive motor.

CAPACITOR

Stores energy to smooth out voltage to Drive Motor. Used with SCR Motor Control Boards .

CHOKE (Inductor)

Acts like a filter to smooth out voltage to Drive Motor. Used with SCR Motor Control Boards.

DCP (DISPLAY CONTROL PACKAGE)

Package containing all of the components relative to the Upper Display Console. This includes the membrane/faceplate, upper display board, & wire harness. DCP's also include owner's manuals, warranty cards, and cardio pulse transmitter strap (if applicable). DCP's are for HOME TREADMILLS ONLY and are rarely a warranty part.

DIAGNOSTIC MODE

The test mode that allows access button feedback, potentiometer calibration, speed control (PST, CT, & ET), total hours and miles, and pulse reading.

DRIVE BELT

This connects the Drive Motor to Sheave (Pulley) on Drive Roller.

DRIVE MOTOR

Provides power to Drive Belt to turn Pulley on Drive Roller to move Treadbelt. This gets its power from the PWM or SCR. Landice Drive Motors are either 110v for 220v.

DRIVE ROLLER W/ SHEAVE

This is the Roller at the front of the Treadmill. The Sheave (pulley) is pressed onto the roller and allows transfer of movement from Drive Belt to Treadbelt.

ELEVATION LEG ASSEMBLY

Connects to Elevation Motor to allow movement of front of treadmill up or down.

ELEVATION MOTOR

This motor works through the elevation leg assembly to raise or lower the front of the treadmill. It gets its power from the Combo Board on Home models and from the SCR on LTD and Club models.

ELEVATION POTENTIOMETER

Attaches to Elevation Motor and gives feedback to Upper Display as to what incline the treadmill is at. Needs to be calibrated whenever elevation motor is replaced. A Potentiometer should be checked whenever there is a problem with elevation or when the Error Code "PO" comes up.

ESI PWM COMBO BOARD

This Control Board is a combination of the PWM (Pulse Width Modulation), relay board, and DC Transformer. This is also known as a combo board and used in home setting. Delivers power to the upper board, elevation motor, and drive motor.

FACEPLATE

This overlay is found on our Sports Trainer and RTM models and is screwed onto the Upper Display Board.

FRAMES (SIDE)
One on either side, these connect with the Deck Slats to form the frame of the machine.

FRAME COVERS (SIDE)
These sit on top of the Frame Rails and keep Deck in place. They also form the base for the Traction Strip.

IR POTENTIOMETER
The IR Pot is located on the Combo Control Board and is used to adjust the time it takes the PWM to react to a load or amperage spike. It normally requires adjustment if the motor feels like it's surging or lacking torque.

MEMBRANE PANEL
This takes information from the display membrane keys and transmits it to Upper Display Board via the ribbon cable. It is found on the PST3, CT2, and ET2 models.

OPEN LOOP SPEED (O.L.S.) MODE
The test mode which remove the speed sensor from equation of running treadmill. This mode will give access to speed feedback and control the speed of the treadmill on a running unit. NOTE: RTM & ST has a separate command for entering into O.L.S.

SAFETY LANYARD
This is a safety feature that completes a switch in the Display Board. If it is not connected the treadmill will display a "SAFE" message. Works with the stud and flux guide.

SCR (Silicon Controlled Rectifier) Control Boards-Used in LTD (110v) and Club Models (220v)
This circuit board is designed to run the drive motor, elevation relays, the belt relay, DC transformer for power to Upper Display Board, and on board diagnostic lights. The SCR requires a Capacitor and Choke to provide "clean" power to the Drive Motor

SPEED SENSOR
Landice uses a magnetic speed sensor (Baldor motors) or optical speed sensor (McMillan Motors) to receive accurate speed readings. Readings are taken directly from the flywheel on the motor and sent to the Combo Board or SCR.

TAKE UP ROLLER
This is the Roller at the rear of the treadmill. It completes the loop for Treadbelt movement and allows tracking and tension adjustment of Treadbelt.

TREADBELT
This is the surface the user walks on. It rides over the deck and rollers.

UPPER DISPLAY BOARD
This controls information from the Membrane panel or Faceplate. It then transmits it to the Combo board on Home models and the SCR on Club or LTD models.

UPRIGHTS
One on either side, these hold the wire harness, the upper display, the cross member, and the handrails.

UPPER WIRE HARNESS
Transmits data from lower electronics to upper electronics.

VFX SYSTEM
Shock-absorbing Deck. Consists of wood Deck, VFX Deck Post, Deck Spacer, Deck Load Washer, Deck Felt Washer, and Deck Impact Absorber.

TESTING COMPONENTS

MOTOR COMPONENTS

DRIVE MOTOR:

Generation Test – all Landice drive motors (110 & 220) are direct current or DC. A DC drive motor can produce (generate) a DC voltage when it's manually rotated. The DC output is linear to the speed the motor is rotated. To perform the "Generation Test" follow these steps:

1. **Un-plug treadmill from wall outlet.**
2. **Disconnect drive motor from motor control board.**
3. **Connect DMM (Digital Multi-Meter) to the drive motor wires.**
   Note: Your DMM should be set on Volts DC (VDC)
   Motor plus (+) = Red test lead from DMM
   Motor minus(-) = Black test lead DMM
4. **Position your DMM so you can read it while standing on the treadbelt.**
5. **Start to push / run on the treadbelt.**
   Note: You are spinning the drive motor manually. The faster you spin the motor, the higher the output of DC voltage will register on your DMM.

110 VAC treadmills use a 90 VDC drive motor. For every mile per hour you spin the drive motor you will generate approximately 10 VDC output. So, at 1 mph you will measure 10VDC +/- and at 9mph you will measure 90VDC +/-.

220 VAC treadmills use a 180 VDC drive motor (double the input voltage, double the size of the drive motor). For every mile per hour (mph) you spin the drive motor you will generate approximately 20 VDC output. So, at 1.0mph you will measure 20 VDC +/- and at 9.0mph you will measure 180 VDC +/-.

If you measure very low DC voltage or zero DC voltage, first check the drive motor brushes for condition. Motor brushes are the leading cause for drive motor failure. If the motor brushes are worn below 3/8" in length, replace them. (90VDC Motor Brush part#70222, 180 VDC Motor Brush part#70223)

Alternate Test 1: Attach 9 or 12 volt battery to motor leads. There should be motor movement.
Alternate Test 2: Unplug Treadmill. Disconnect Drive Motor wires. Disconnect Drive Belt. Hold black and white wires together. Spin flywheel. There should be resistance when wires are connected.

ELEVATION MOTOR

Using your voltmeter measure the input voltage (AC) to the elevation motor. Secure the black (negative) meter probe to a good chassis ground. Place the red meter probe on the RED wire in the elevation harness. Press the elevation DOWN key and you should get 120 /220VAC. Place the red meter probe on the BLACK wire in the elevation harness. Press the elevation UP key and you should get 120/220VAC. If the elevation motor is getting the proper AC voltage in but does not turn, replace it.

ELEVATION POTENTIOMETER

Remove the elevation pot from elevation motor but <u>do not</u> disconnect the brown, orange and blue wires. Using a digital voltmeter set to ohms (Ω), place meter probes on the pot prongs with the (orange) and (brown) wires. You are measuring resistance so you do not need to observe polarity.

- *Turn pot shaft completely clockwise (0-1000Ω).*

- *Turn pot shaft completely counterclockwise (1000-0Ω).*

Now place meter probes on prongs (orange) and (blue) wires.

- *Turn shaft of the potentiometer completely clockwise (1000-0Ω).*

- *Turn pot shaft completely counterclockwise (0-1000Ω)*

If the elevation potentiometer does not indicate the proper resistance readings, it is must be replaced. Note: Potentiometer should fit snugly into motor. Check for tight fit. Also check that nut on Potentiometer is tight.

<u>MOTOR CONTROL COMPONENTS</u>

PWM MOTOR CONTROL

The PWM board runs on AC voltage. The AC voltage is delivered to the PWM board across two input terminals marked L1 and L2. Confirm AC voltage into the PWM by measuring across these terminals with your voltmeter. You should measure 120/220VAC input. The DC voltage comes out of the PWM board (going to the drive motor) across two output terminals marked A+ and A-. Power up treadmill in Open Loop Speed OLS mode and bring to maximum speed. Confirm DC voltage out by measuring across these two terminals with your voltmeter. You should measure 90/180VDC output. If the PWM board is getting the proper AC voltage in but does not supply any DC voltage out, it must be replaced. (This holds true as long as proper speed reference voltage is being supplied from relay board to PWM across the V+, P1, & P2 terminals. SEE PAGE 45)

SCR MOTOR CONTROL

The SCR board runs on AC voltage. The AC voltage is delivered to the SCR board across two input terminals marked HOT and NEUT. Power up treadmill in Open Loop Speed (OLS) mode (see Page 56) and bring displayed speed to the max. Confirm AC voltage into the SCR board by measuring across these terminals with your voltmeter. You should measure 120/220VAC across these terminals. The DC voltage comes out of the SCR board (going to the drive motor) across two output terminals marked MTR+ and MTR-. Confirm DC voltage out by measuring across these two terminals with your voltmeter. You should measure 90/180VDC output. If the SCR board is getting the proper AC voltage in but does not supply any DC voltage out, it must be replaced.

SPEED SENSOR

The speed sensor can be checked for proper operation by entering the Open Loop Speed (OLS) Mode. (See page 39) There is a yellow SPD LED mounted to either the relay board (HOME PWM models) or the SCR board (LTD and CLUB models). The light will flash ON and OFF when you rotate the drive motor flywheel slowly by hand. This indicates the proper operation of the speed sensor. If you do not get this flashing to occur, then check for proper speed sensor alignment (only on Baldor motors). If this does not help, replace the speed sensor.

DISPLAY COMPONENTS

UPPER DISPLAY BOARD

The upper display board is powered by DC voltage. On HOME treadmills this DC voltage is supplied by the DC power supply. On LTD/CLUB treadmills the SCR board supplies this DC voltage. Confirm the upper display is getting DC voltage delivered to it. If the display board has the proper DC voltage supplied and does not light, it must be replaced.

FACEPLATE

The faceplate has no mechanical or electrical components that can fail. However, if you press a key and it fails to respond check for proper display board spacing. The faceplate is designed as a passive panel. When the user presses a key (pushes through the faceplate) they activate a switch mounted on the upper display board. If the display board to face plate distance is too great, the display board switch will not be fully activated and result in a dead response. Small washers are placed between the display board and mounting studs to adjust this distance. This is performed at the factory but can be upset if disassembled in the field.

MEMBRANE PANEL

The membrane panel has small micro switches laminated inside that transmit the user's commands into treadmill functions. Enter "Diagnostic Mode" to confirm proper operation of the membrane panel. In this test mode you will be able to check each key on the membrane panel. By pressing a key, you will hear an audible beep and also see a numeric code appear in the speed window. There is a numeric code assigned to each key on the panel (except the OFF key). For a complete list of these codes, see the chart on opposite page. If you do not hear a "BEEP" or see the proper code appear the key is bad and the membrane panel must be replaced.

McMillan Drive Motor Brush Replacement & Commutator Inspection Instructions.

Drive Motor brush inspection and maintenance is important especially for LTD or Commercial Machines. If motor brushes get worn down too low, it is possible it will harm the drive motor as well. Here are simple instructions on how to remove/inspect/replace motor brushes as well as inspect the commutator on our McMillan Drive Motors.

Step 1

Remove the cap with a flat head screwdriver.

This exposes the brush holder and brush

STEP 2

Take a needle nose pliers and use them to remove the motor brush wires from the connector

STEP 4

Press down on the metal spring, slide the motor brush holder and take the clip out.

STEP 5

A good motor brush will be shiny. Free from scorch marks, chips, and not dull where the commutator would make contact.

STEP 6

The commutator is copper color and shiny. Cleaning the commutator with a cleaning stone or piece of emery cloth may remove the dull appearance & black scorch marks.

STEP 7 :

Connect the motor brush to the terminal using the needle pliers.

STEP 8

Insert the motor brush back Inside the brush holder.

STEP 9

After the motor brush is seated back in and secured down, just pop the cover back on and repeat these instructions for the other side.

McMillan SPEED SENSOR REPLACMENT

TOOLS REQUIRED

½ INCH SOCKET WRENCH
7/16 & ¼ INCH SOCKET

STRAIGHT EDGE SCREWDRIVER

INSTRUCTIONS

1) **Loosen & Remove the two 7/16 nuts holding the plastic cover located on the back of the drive motor.**

2) **Remove the plastic cover from the drive motor.**

3) **Loosen & remove the ¼ inch set screw holding the black round speed wheel.**

4) **Remove the speed wheel.**

5) **Remove the speed sensor by using a screwdriver and carefully prying the clips holding the sensor.**

6) **To install the new sensor just line up the sensor with the alignment pole on the plastic mount on the drive motor to the sensor alignment hole and push the sensor on the clip.**

7) **After installing the speed sensor, follow steps 1 thru 4 in the reverse order to reassemble.**

REMOVAL AND REPLACEMENT OF COMPONENTS

1. **Before beginning any removal or replacement of components unplug power cord from wall.**
2. **Make a note of serial number, model (L7, L8, Home, LTD, or Club) and type (Sport, Pro, Cardio, CRT, or Executive). Landice tracks all information from this serial number and it must be given when requesting parts or technical assistance.**
3. **Always remove one component at a time to test for problems and to simplify replacement.**

POWER CORD (LINE CORD)

1. **Unplug from wall. Remove motor cover screws and motor cover. Follow cord to where it enters frame. Remove screw holding Green wire to frame and remove Green wire. Remove Blue wire and Brown wire from motor control board. Remove old cord. Remove strain relief (have a spare in case it's damaged in removal). Push new cord through motor pan. Replace green ground wire to frame and Blue (Neutral) and Brown (Hot) wire to motor control board.**

ANTA/PWM or MOTOR CONTROL BOARD (MCB) – Cut plastic wire ties as needed but remember to replace them when done!

1. **Disconnect the line cord from the HOT and NEUT terminal.**
2. **Remove the speed sensor connector and upper harness connector**
3. **Remove White wire from A-. This wire connects MCB to Drive Motor.**
4. **Remove Black wire from A+. This wire connects MCB to Drive Motor.**
5. **Remove four screws attaching board to frame and remove MCB.**
6. **Reverse to install new MCB.**

SCR Generation 1 – LTD and Club ONLY

1. **Remove Clip with Blue, Orange, Brown, Red, Black, and White wires. These wires connect SCR to Elevation Motor.**
2. **Remove Clip with Red, Green, and Black wires. These wires connect SCR to Speed Sensor on Drive Motor.**
3. **Remove Black and White wires from connections marked MTR. These connect SCR to Drive Motor.**
4. **Remove Red wire. This connects SCR to Choke.**
5. **Remove Green wire. This connects SCR to Ground on Frame.**
6. **Remove Black wire. This connects SCR to Capacitor.**
7. **Remove White wire. This connects SCR to Capacitor.**
8. **Remove Clip with Green and Black wires. This SCR to Upper Display.**
9. **Remove Clip with Red, Blue, White, and Orange wires. This connects SCR to Control Panel.**
10. **Reverse to install.**

CHOKE- LTD and Club ONLY

1. **Remove Red wire. This connects Choke to SCR.**
2. **Remove Purple wire. This connects Choke to SCR.**
3. **Reverse to install.**

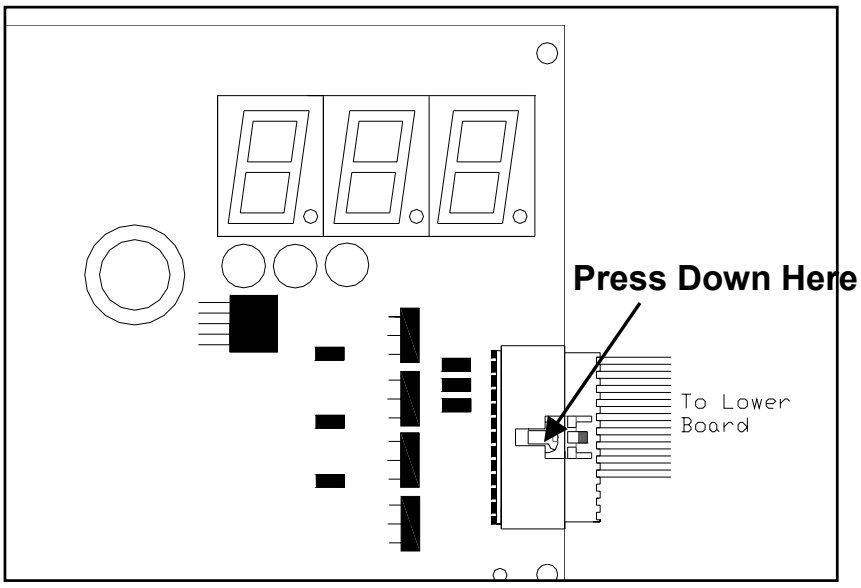
CAPACITOR- LTD and Club ONLY

1. **Remove White wire. This connects Capacitor to SCR.**
2. **Remove Black wire. This connects Capacitor to SCR.**
3. **Remove Purple wire. This connects Capacitor to Choke.**
4. **Remove Resistor. This connects both Poles of the Capacitor.**
5. **Reverse to install.**

UPPER DISPLAY BOARD

1. **Remove screws from control end caps upright on either side of display.**
2. **Remove Caps from Display.**
3. **Display is attached to upright with Velcro. Pull from top of display to remove.**
4. **Remove Membrane from Display.**
5. **Disconnect main wire harness clip. (See Diagram below) IMPORTANT: Remove the display board from the membrane BEFORE removing the wire harness from the defective display board. Please review the following to prevent breaking the connector:**

The wire harness locks into place on the display board. Press firmly down on the clip to unlock and slowly move the harness side to side until it is disconnected from the display board.



6. **Reverse to install.**

MEMBRANE PANEL

1. **Remove screws from control end caps on either side of Display panel.**
2. **Remove Caps from Display panel.**
3. **Display is attached to upright with Velcro. Pull from top of Display panel to remove.**
4. **Disconnect main wire harness clip.**
5. **Lay display on a clean towel on a workbench and carefully remove Display Board from Membrane panel.**
6. **Reverse to install.**

FACEPLATE (Replaces Membrane Panel on Sport Trainer and Pro Sports Trainer Models)

1. **Remove screws from control endcaps on either side of Faceplate.**
2. **Remove Caps from Faceplate.**
3. **Faceplate is attached to upright with Velcro. Pull from Top to remove.**
4. **Disconnect main wire harness clip.**
5. **Lay Faceplate on clean towel on workbench and carefully remove display board.**
6. **Reverse to install.**

DRIVE MOTOR

1. **Elevate treadmill to 15%. Unplug power cord.**
2. **Remove motor cover screws (4)**
3. **Disconnect white, green, and black wires from MCB.**
4. **If applicable remove green ground wire from frame.**
5. **Remove drive belt tension adjustment bolt by removing nut. Nut is located on bottom of motor pan. Note: See section on Tracking and Tensioning**
6. **Remove drive belt from motor.**
7. **Locate Drive Motor hitch pins on bottom of motor pan. Remove hitch pins using needle nose pliers. Note: When reinstalling hitch pins make sure to crimp ends to insure positive locking.**
8. **Remove Motor Spacers: The rubber and metal spacers mounted between the motor mount and the motor pan are arranged in a specific manner. The reason for this is to reduce vibration. If your standing on the treadmill, the following arrangement applies: On the right side you will have (0) spacers on top of pan and (1) rubber, (1) metal followed by (1) retaining clip on bottom. On the left side you will have (1) metal spacer on top of the pan and (1) rubber on the bottom followed by (1) retaining clip.**
9. **Remove Drive motor. Be sure not to lose metal spacer from under right side.**
10. **When re installing make sure to properly position foam block under motor.**
11. **Reverse to install**

BALDOR DRIVE MOTOR BRUSHES

1. **Unplug Treadmill.**
2. **Remove Motor Brush caps (2) with large flat head screwdriver.**
3. **Remove Motor Brushes and inspect. They should be replaced if 1/4 inch or less. Inspect motor commutator for wear (Black-scoring present on copper segments) Try to dress out (clean up) commutator with a commutator stone or emery cloth.**

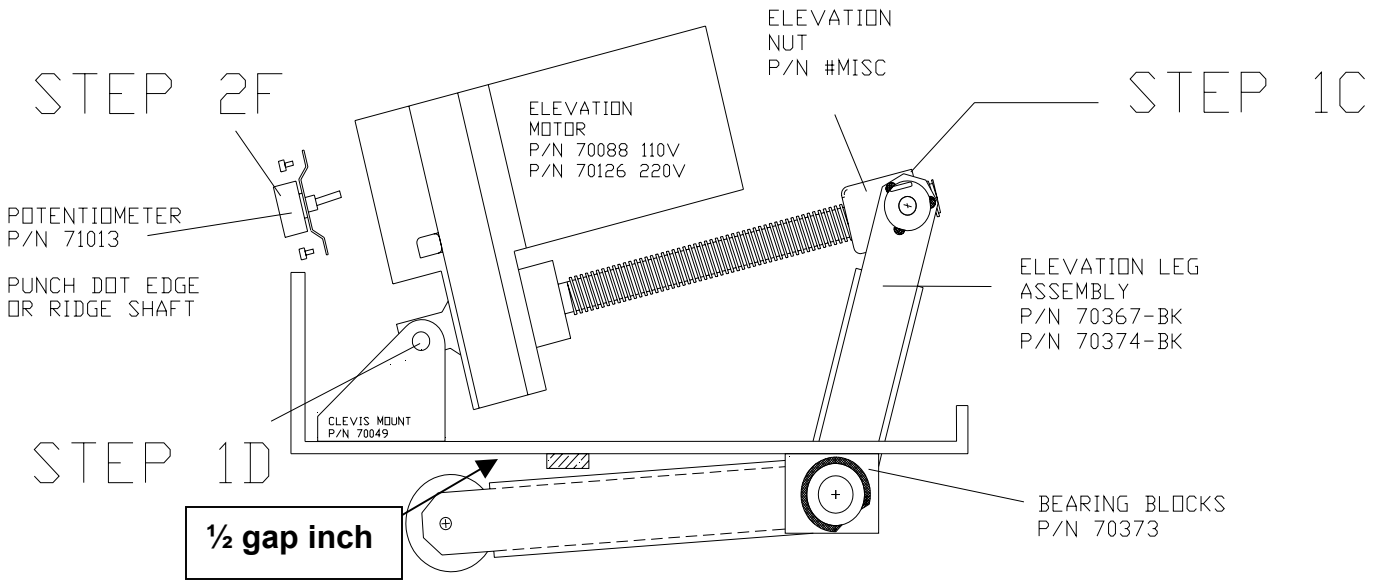
4. When you reinstall motor brushes make sure the brush does not bind up in its holder. The motor brush must move freely the full length with zero resistance. If resistance is present you must carefully dress out the brush until the correct tolerance is achieved.

ELEVATION MOTOR

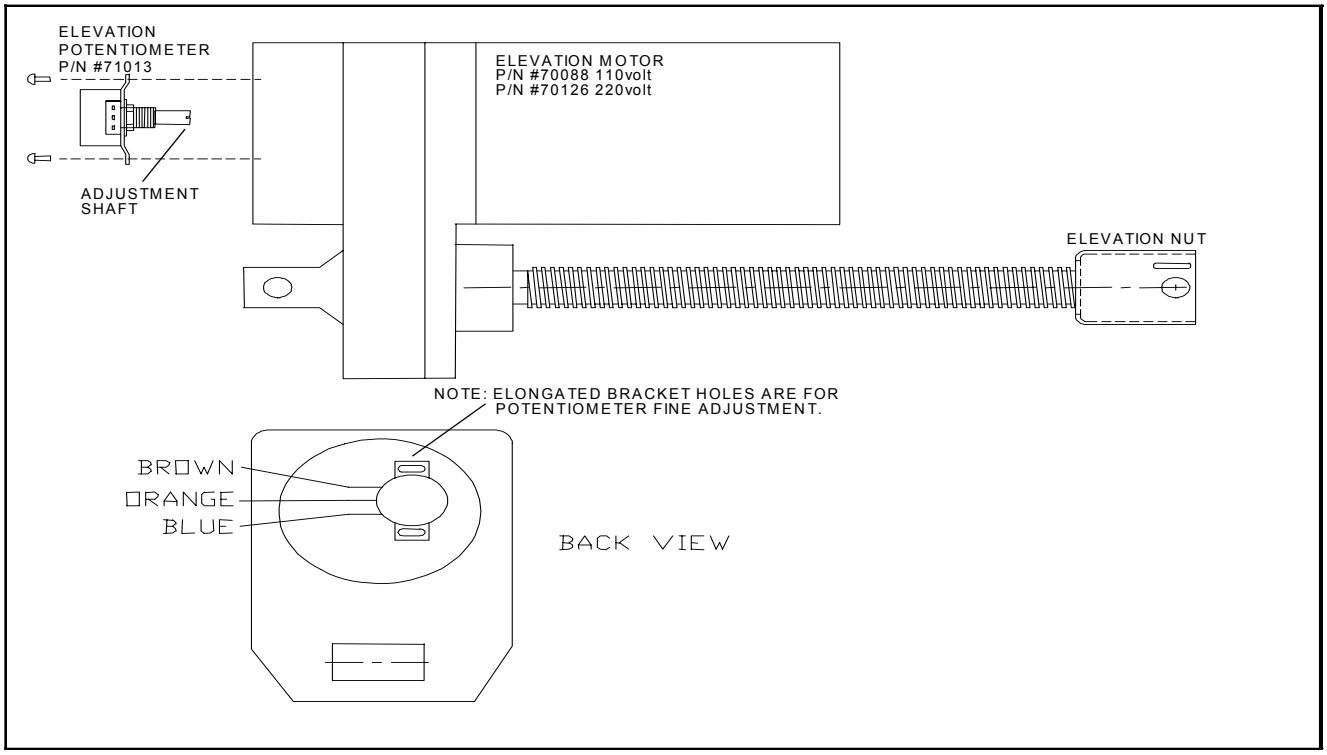
1. **Remove Elevation Motor.**
   - A. **Remove all weight from the elevation assembly by placing a suitably strong object under the under motor pan (many technicians use their toolbox) so that the wheels are in the air.**
   - B. **Disconnect Elevation Motor wires. (Step 2F)**
   - C. **Disconnect the Elevation Motor nut from the elevation assembly. To do this, loosen the two (2) ¼-20 screws and slide the two (2) ¼" dia. pins out. (Step 1C)**
   - D. **Remove the 3/8" dia. Elevation Motor mounting pin from the Clevis mount. (Step 1D)**
   - E. **Remove Elevation Motor.**

2. **Install new Elevation Motor.**
   - A. **Remove your toolbox and set the treadmill on the ground.**
   - B. **Align the Elevation Motor with the Clevis mount and install the 3/8" diameter mounting pin. Insert the hitch pin.**
   - C. **Reconnect the Elevation Motor wires.**
   - D. **Enter diagnostic mode. (See page 56.) Press the UP key briefly and then hold the DOWN key until the motor stops. NOTE: This process sets the elevation lower limit switch and <u>MUST</u> be done to obtain maximum elevation range.**
   - E. **Hold the ¾" dia. elevation screw to prevent it from turning and turn the elevation nut to line it up with the holes on the elevation assembly (or just short of them). *** NOTE-*L7 & L8* elevation nut setting must be flush as insert to the elevation shaft. *L9* nut setting must rotates 8 full turns. Slide the two (2) ¼" dia. pins through the elevation assembly and into the elevation nut, then secure the pins with the two (2) ¼-20 screws.**

Proceed with the instructions on the next page for calibrating the potentiometer.



770 SERIES ELEVATION CALIBRATION



DIAGNOSTIC MODE:

Executive Trainer 2: MENU & START simultaneously
Cardio Trainer 2: NEXT & START simultaneously
Pro Sport Trainer 3: NEXT & START simultaneously
Sport Trainer 2/Rehabilitation Treadmill: DISPLAY & START simultaneously

Calibrate the elevation potentiometer:

1. Visually confirm treadmill is level. Press down arrow for elevation till machine is level.
2. The potentiometer should read 0.1 for all models.
   NOTE: Elevation window shows actual elevation. Display shows potentiometer setting.
3. If the setting is incorrect, follow the steps below.
   STEP 1: Turn the post of the potentiometer all the way **CLOCKWISE**
   STEP 2: Slowly turn the potentiometer **COUNTER CLOCKWISE** until the setting is correct. (**NOTE:** If the setting seems stuck at 25.5 check that pot wires are seated in the correct order and that upper wire harness connection is seated tightly.)

4. Carefully install potentiometer into the motor housing.

   ***NOTE:* The setting may vary when inserting the potentiometer into the motor. As long as the change is minimal, fine adjustment can achieved after the potentiometer is secured into the motor housing.**

5. Press **OFF** to turn treadmill off.

COMMON PROBLEMS

Symptom: Treadbelt feels like it's slipping or grabbing when walked on.

Possible Cause: Loose drive belt or treadbelt. Adjust as per manual. Remember to adjust only till slipping stops. **DO NOT OVER TIGHTEN**

Possible Cause: Worn treadbelt and/or deck. If treadbelt or deck is worn it will cause excessive friction and the user will feel like belt is slipping or grabbing.

1. Reach hand under front of treadbelt and see if deck feels rough, grooved, or if you see bare wood. These are signs the belt needs to be replaced and the deck needs to be reversed or replaced if it has already been reversed.

2. Compare the outer edge of the treadbelt to the middle of the treadbelt. The outer edge wears less since the user walks near the center of the belt. You will be able to see the cross weave of fabric on a good treadbelt. This cross weave design traps air inside tiny pockets. The treadbelt glides on this trapped air. When a belt wears, the cross weave becomes flat and smooth. This is not good because there are no more pockets to catch the air. If the center of the treadbelt is smooth (glazed) and exhibits black streaks it's time to replace.

3. **If amp draw is high (8 amps or more on home) it is advisable to check belt and deck for wear. Tip: If Red Current Lamp is lit then Amp Draw is high.**

TREADBELTS AND DECK SURFACE SHOULD ALWAYS BE REPLACED TOGETHER IF EITHER IS WORN OUT.

Symptom: Treadmill slows down when user steps onto treadbelt.

Possible Cause: Worn out treadbelt or deck. See above.

Possible Cause: Worn or defective motor brushes and/or scorched commutator on drive motor. Dress out commutator and replace brushes.

Possible Cause: Demagnetized stator magnets on drive motor.
Make sure that treadmill is unplugged! Disconnect drive motor from lower circuit board. Hold the two motor wires, Black A+ and White A-, together and rotate the motor flywheel by hand. Get a good feel for the rotational friction of the drive motor. Then disconnect the two motor wires and rotate the drive motor by hand. If the drive motor begins to spin much easier, then your motor is not the problem. If you notice no difference, then replace the drive motor. **NOTE:** A good drive motor will spin freely with little friction when disconnected from the lower circuit board. If the two motor wires are connected together, the drive motor will become much harder to rotate. Also see: **Component Testing –Drive Motor**

Symptom: **Treadbelt is moving diagonally**.

If a belt is moving diagonally on the treadmill it can be corrected with the following steps:

1. Loosen the take up roller (both sides)
2. Take off the motor cover.
3. Loosen the drive roller adjustment bolt on the right side (opposite the sheave pulley).
4. Using a large screw driver or pry bar move the drive roller forward if the belt is angled right to left or backward if it's angled left to right.
5. Tighten drive roller until star washer bites into aluminum frame, start treadmill, and adjust tracking. If belt is straight then put on motor cover. If belt is still not straight, go to #6.
6. If there is improvement and there is still room to move drive roller adjustment bolt, continue to adjust until fixed.
7. If there is no more adjustment on right side adjustment bolt, go to left side adjustment bolt (make sure to loosen the drive belt via the drive belt tension adjustment bolt and re-tension when done).

Landice has adjustment on the front roller to correct for this type of problem. The front roller will not be damaged by the adjustment providing these steps are followed. If this doesn't correct problem please call 1-800-LANDICE.

Symptom: **Treadmill speed is erratic and/or surges**.

Possible Cause: Defective drive motor
See Component Testing -drive motor:

Possible Cause: Loose drive belt or treadbelt.
Check for proper drive belt and treadbelt tension. If one of these belts are not tight enough, they will slip and create a treadbelt skip or surge. This will usually be more apparent with heavier users. (See belt-tensioning procedures)

Possible Cause: High drive motor current due to excessive treadbelt friction.
Check for treadbelt and tread deck for wear. Check that Red Lamp marked Current is not on.

Possible Cause: Worn or defective motor brushes and /or commutator.
Check Motor brushes move freely in holder. Brushes should be at least ¼ inch long, approximately the same length, and free of cracks, splits, and fraying.

Possible Cause: Line voltage surging.
Use voltmeter, monitor line voltage supply. Make sure customer has the treadmill plugged into a circuit that meets our electrical requirements. (Home & LTD Treadmills = 120V / 15 amp dedicated circuit), (Club Treadmills = 220V / 15 amp dedicated circuit)
NO extension cord should exceed 6 feet in length and must be 12Awg, same as linecord.
NO surge suppressors or GFI outlets.

Possible Cause: (PWM boards ONLY Home Mills) IR potentiometer out of adjustment.
Adjust the IR "pot" on the lower motor control board until the surge subsides.

IR POTENTIOMETER ADJUSTMENTS, HOME TREADMILLS ONLY:
IR = I (amperage) R (resistance)

The IR potentiometer that is located next to the MAX speed potentiometer on the PWM motor control board is used to adjust the time it takes the PWM to react to a load or amperage spike. When the user steps onto the treadbelt a load is introduced to the system which creates an amperage spike. The PWM board senses this amperage spike and reacts by feeding more power to the drive motor. This “more power” compensates the amperage spike (load) and the treadmill does not slow down. If the IR was adjusted to react slowly the user would notice a lag in belt movement when stepping onto the treadbelt. If the IR was adjusted to react too quickly the user would notice a quick surge when stepping onto the treadbelt. Either way, the treadmill will surge considerably when this occurs. There have also been isolated cases where the treadmill will surge without a user walking on it. When this occurs, the red light on the PWM (LED1) will flash in sequence with the belt surge.

To adjust the IR potentiometer:
No load / belt surging / LED1 flashing = use a small screwdriver to rotate IR pot. Make this adjustment while the treadmill is running (surging). Rotate the pot in small increments until the treadmill surge subsides and runs smoothly.
NOTE: the IR pot can be rotated Clockwise or Counter Clockwise to achieve smooth operation.

With load / belt surging / LED1 may be flashing = use a small screwdriver to rotate IR pot. Make this adjustment while the user is walking on the treadmill. Rotate the pot in small increments until the treadmill surge subsides and runs smoothly. Keep speed setting under 2.0mph for safety.
NOTE: the IR pot can be rotated CW or CCW to achieve smooth operation.

Possible Cause: Damaged motor control board.
Disconnect the drive motor from the motor control board. Enter OLS (Open Loop Speed) mode and bring displayed speed to max. Measure with a voltmeter across the lower motor control board output terminals A+ and A-. Monitor the DC voltage on your meter. If the DC voltage is surging, the motor control board is defective. Replace the motor control board.

Symptom: **Display reads “SAFE”**
Possible Cause: Safety Lanyard is missing.
Solution: Replace Safety Lanyard.

Possible Cause: Flux guide is missing/out of position.
Solution: Check flux guide for proper alignment.

Possible Cause: Safety Leash is defective/missing from Upper Display board.
Solution: Replace Safety leash.

Possible Cause: Defective Display Board.
Solution: Replace Display Board.

Symptom: Speed shown is not actual speed.
Possible Cause: Speed needs to be calibrated (Home treadmills only). Page 46 illustrates how to calibrate.

NOISES

Many times a treadmill will tell you what's wrong with it by the noises it makes. We strongly recommend the use of an automotive stethoscope.

Service Tip: Treadmill making noise but can't tell from where.
Solution: Must isolate all moving parts.

1) Unplug treadmill.
2) Disconnect Drive Belt.
3) Turn treadmill on, listen for noise.
    a) If noise is not present proceed to next step.
    b) If noise is present, drive motor must be source.
4) *Reconnect the Drive Belt and loosen the Treadbelt completely.
5) Turn treadmill on, listen for noise.
    a) If noise is not present, Rear Roller must be source. (bearings)
    b) If noise is present, Drive Roller must be source. (bearings)
6) With Treadmill off, bounce or jog in place on Deck. If noise is present then deck or frame is making the noise.

* The Treadbelt must be loose enough that when the treadmill is powered up the Treadbelt does not move.

Rollers (Drive and Take up) Rollers only have two moving parts, i.e. the bearings located on either end of the roller. The place to check for noise is on the shaft coming out of the roller since it is close to the bearings and doesn't move. Many technicians will hold the blade end of screwdriver onto the shaft and their ear next to the handle end to be sure they are identifying the location of the noise. The most common sound is a clicking that comes from a bearing that is no longer round. Other noises can be a rumbling (like rolling something around in a metal drum) and in worse cases a grinding metallic noise.

Treadbelt noises

Questions to ask:

1. Has the belt been broken in correctly? Treadbelts need to be walked on to have wax penetrate them. Starting at the back walk from side to side and up and down for at least 20-30 minutes to break in belt at a speed of 2 mph.
2. Is treadbelt tracked correctly? If belt is off to one side it may be rubbing, making noise. Track using bolts on rear roller.
3. Is treadbelt over-tightened? This is the most common cause of groaning type noises. First, loosen treadbelt and see if noise goes away. If noise goes away, tighten belt only until there is no slippage when walking.
4. Is belt rubbing on cross brace underneath treadmill? Sometimes these get bent during shipping. Bend back so belt will not rub.

5. Is there excess wax build up on deck, belt, and rear roller? Remove belt and wipe down deck and rear rollers.
6. Is there excess Slip Coat? If you see Slip Coat oozing from sides of belt or off end of deck remove belt and wipe down deck, belt, and rollers.
7. Is it a commercial treadmill? Landice uses a stiffer belt on Club models to increase treadbelt life. These stiffer belts make a little more noise that is considered normal.
8. On older machines check that the treadbelt and deck are not worn excessively and making noise. We recommend the replacement of both deck (and reversing deck) and belt if either is worn.
9. Does noise occur when seam passes over roller? A slight amount of noise is normal. If it is excessive check the seam for damage or for wax buildup on roller.
10. If noise occurs when walking, check that customer is not walking too far to the rear causing the belt to drag over the rear of the deck.
11. Noises can travel. Make sure noises are not coming from rollers, drive belt, drive motor, rear roller touching frame, misaligned end caps, or deck. Use automotive stethoscope and or process of elimination to be sure where noise is coming from.
12. Check that Drive roller is parallel to Take Up roller. If its not, the belt will be tensioned unevenly and the side that is overly tight will make noise. Some adjustment is possible on front roller (try side opposite motor and pulley first) and should be enough to bring Drive and Take Up roller into correct alignment.
13. Check that frame is square. Sometimes mills can be jarred out of square and this can cause tracking and noise problems. Check frame corners with square.
14. If deck appears higher than usual so that it seems to be rubbing against treadbelt try installing additional felt washers between the frame and the deck.
15. Check that the Impact absorbers (part of the VFX system) are not broken causing the deck to go off level and making deck and belt rub or bang against other components.
16. Examine the belt guides for proper alignment and function.

Decks and VFX - Decks are solid pieces of wood with a phenolic coating that rest on the VFX cushioning system.

1. The deck can make a squeaking noise when the VFX hardware is not properly tightened or lubricated. You can test for this by bouncing on the deck when the machine is not running.
2. Sometimes the deck will need to be lubricated on the sides that go into the frame rails. Use Lubriplate grease sparingly.
3. If a part on the VFX system is broken the deck will make a clunky noise when it bounces against the damaged part. Check the Impact absorbers,
4. A deck can also make a scraping noise when it is worn out.

Drive Belts- Drive belts make a high pitched squeal when they are worn or improperly tensioned. It can also happen when the drive pulley and Drive roller are misaligned.

Elevation Motor- Elevation Motors consist of an electric motor and screw shaft.

1. Elevation Motor makes a crunchy noise when the main screw gear is dirty or corroded.
2. It may make a grinding noise if the gearbox is damaged.
3. Always check that the motor itself is not damaged and making noises because of broken mounts, etc.

Drive Motor- The Drive Motor is an electric motor with a flywheel and pulley attached. The only serviceable parts are the Drive Motor Brushes.

1. Drive Motors can make a clicking noise if the bearings in the motor shaft are no longer round.
2. Grinding noise if the bearings are out of round/damaged.
3. Thumping, clunky noise if the drive shaft is bent or broken.
4. Tinny or clicking sound if the fan is rubbing against the fan cover.
5. Metallic grinding noise if the motor brushes are very worn.
6. Buzzing noise if the brushes are hung up in the brush holder.
7. Whining noise from bearings or internal problems.
8. Humming noise- could be a faulty Capacitor, Choke Filter, or lower board affecting motor.

Visual Clues-

To paraphrase Yogi Berra, sometimes you can see a lot just by looking. The following is a breakdown of things to look for when troubleshooting these components.

Decks- Check for wood showing through black phenolic. Check for ridges or cupping of deck especially in front middle of deck. Both of these indicate that deck should be replaced or reversed if other side is unused.

Drive Motors-

1. Motor Brushes-
   a. Are they worn so that less than 3/8 of an inch is left? Replace Brushes.
   b. Are they wearing on an angle? Check that brushes are seated correctly and that motor brush holder and spring are installed properly. Replace if necessary.
2. Commutator-
   a. Is it burnt, scratched, or scored? Use commutator stone to clean. If it is too badly damaged motor must be replaced.
3. Motor Shaft-
   a. Does it seem to wobble? Check that flywheel and pulley are tight and in line.
   b. Is shaft visibly bent/broken? Replace motor.

Electronic Boards-

1. Any burn marks? Check for correct voltage coming in and out of board. If voltage is incorrect replace board.

2. Loose or detached components? Reattach if possible or replace if not.

Elevation Motor-

1. Check for fractured housing or broken motor mounts- Replace if necessary

Treadbelts-

1. Check for fraying on sides of belt. Likely cause is improper tracking. Check if tracked correctly. If minor, cut frayed ends off. If major, replace belt.
2. Lines or wear or top of belt one or two inches in from sides. Caused by user standing on side rails and letting heel of shoe rub on belt. Instruct user on proper use of treadmill.
3. Running on diagonal. Check the belt is tracked correctly. Check that front roller is properly aligned. Rarely, treadmill frame may be out of square.
4. Underneath belt- If belt is glazed, has black lines running through it, or is worn through backing, replace belt and use new deck surface.

Treadmill- Does it appears to be off level? Check that wheels in front are not broken. Check that feet in back are installed properly. Check that mill is on level surface and shim accordingly.

70 SERIES CONTROL PANEL & FEATURES

(Starting serial numbers L7-64947, L8-14596, & L9-5020)

L70-Series Sport Trainer Faceplate

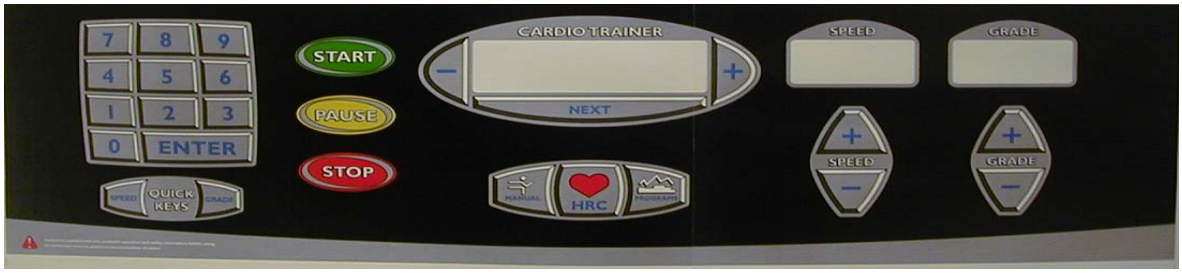
Sport Trainer is used on all models L770, L870, and L970.
Production Date: November 10, 2006 – Serial Number: L7-64951, L8-14681, & L9-5140; Starting DCP 36756
Electronic: Anta/PWM Combo boards, ESI-PWM, SCR I & SCR 2 (110v and 220v),
Home setting: 0.5-12 mph and max elevation is 15%
Commercial setting: 0.5-11 mph and max elevation is 15% (L9 treadmills max elevation is 12%**)**

L70-Series Pro Sport Trainer Membrane 3

Pro Sport Trainer is used on all models L770, L870, and L970.
Production Date: November 10, 2006 – Serial Number: L7-64948, L8-14542, & L9-5113; Starting DCP 36769
Electronic: Anta/PWM Combo boards, ESI-PWM, SCR I & SCR 2 (110v and 220v),
Home setting: 0.5-12 mph and max elevation is 15%
Commercial setting: 0.5-11 mph and max elevation is 15% (L9 treadmills max elevation is 12%**)**

70 SERIES CONTROL PANEL & FEATURES

L70-Series Cardio Trainer Membrane 2



Cardio Trainer is used on all models L770, L870, and L970.
Production Date: November 10, 2006 – Serial Number: L7-64947, L8-14596, & L9-5062; Starting DCP 36763
Electronic: Anta/PWM Combo boards, ESI-PWM, SCR I & SCR 2 (110v and 220v),
Home setting: 0.5-12 mph and max elevation is 15%
Commercial setting: 0.5-11 mph and max elevation is 15% (L9 treadmills max elevation is 12%**)**

L70-Series Executive Trainer Membrane 2

Executive Trainer is used on all models L770, L870, and L970.
Production Date: November 10, 2006 – Serial Number: L7-65027, L8-14606, & L9-5020; Starting DCP 37879
Electronic: Anta/PWM Combo boards, ESI-PWM, SCR I & SCR 2 (110v and 220v),
Home setting: 0.5-12 mph and max elevation is 15%
Commercial setting: 0.5-11 mph and max elevation is 15% (L9 treadmills max elevation is 12%**)**

70 SERIES CONTROL PANEL & FEATURES

L70-Series Rehabilitation Faceplate

Models That Use this Faceplate
L7-RTM, L8-RTM, L7-RTM-REV, L8- RTM-REV,
Production Time Frame: 2004- November 10, 2006 for 60 Series
Starting Serial numbers: L7-65055, L8-14622
Electronics: ESI PWM-R, 110V, 220v See Wiring Diagram
Settings Used In: Rehabilitation, Physical Therapy, and Hospitals
Key Features: Closed Loop Treadmill (w/ speed sensor), Safety Lanyard, Push Button Speed and Elevation Control, Isolation Leakage Package to keep current leakage under 100 micro-amps.

RTM: Moves in forward direction only, Speed range is from 0.0 to 12.0 mph in 0.1 mph increments, No reverse button on display panel, Optional Remove Start/Stop switch holder.

RTM-REV: Moves in forward and reverse direction, Standard remote start/stop switch holder, Speed range in forward direction is 0.0 to 12.0 mph in 0.1 increments. Speed range in reverse direction is 0.0 to 3.0 to 0.1 mph increment (slow scroll). Tracking is accomplished by use of reverse guide rollers. Production treadmills to have metal guide rollers then could change to plastic guide rollers. While belt is moving in reverse, treadbelt will move slightly until the reverse guide rollers activate. This treadmill is slightly louder due to our treadbelt guide system. Reverse button on display panel has red reverse LED. The REVERSE button allows user to switch treadbelt direction from forward to reverse and vice versa. The Rehabilitation treadmill will run in reverse when Reverse button is pressed and red reverse light is illuminated.

Accessing Features on the 70 series Treadmill

To access functions, turn treadmill off and press and hold first button listed then press next button listed. Release ALL buttons at same time to access feature.

Executive Trainer 2

1) MENU/START	Diagnostic mode & Open Loop
2) MAIN MENU go to SETUP Go to UNITS	Configures Metric or English
3) GRADE +/ GRADE -/START	12% and 15% elevation selection
4) GRADE -/PAUSE/START	Reboots
5) MAIN MENU go to SETUP Go to RESET STAT	Resets hours and miles

Cardio Trainer 2

1) NEXT/START	Diagnostic mode & Open Loop
2) “Display + & -“/START	Self-Diagnostics
3) MANUAL/PROGRAM/START	Configures Metric or English
4) GRADE +/ GRADE -/START	12% and 15% elevation selection
5) GRADE -/PAUSE/START	Reboots
6) 1/5/START	Resets hours and miles

Pro Sport Trainer 3

1) NEXT/START	Diagnostic mode & Open Loop
2) “Display + & -“/START	Self-Diagnostics
3) MANUAL/PROGRAM/START	Configures Metric or English
4) GRADE +/GRADE -/START	12% and 15% elevation selection
5) GRADE -/PAUSE/START	Reboots
6) 1/5/START	Resets hours and miles

Sport Trainer 2 & Rehabilitation Treadmill (RTM)

1) DISPLAY/START	Diagnostic mode
2) Speed +/START	Open Loop Speed
3) SPEED -/ELEVATION -/START	Configures Metric or English
4) GRADE+/ GRADE -/START	12% and 15% elevation selection
5) PAUSE/START	Display Software version
6) GRADE -/PAUSE/START	Reboots

70 SERIES BUTTON FEEDBACK

	Executive Trainer	***Cardio Trainer***	***Pro Sport Traîner***	***Sports Traîner***	***RTM***
1	LEFT 1 (TOP)	QUICK SPEED	QUICK SPEED	START	START
2	LEFT 2	0	0	PAUSE	PAUSE
3	LEFT 3	1	1	DISPLAY	DISPLAY
4	LEFT 4 (BOTTOM)	START	START		REVERSE (ONLY ON RTM-REV)
5	RIGHT 1 (TOP)	4	4	SPEED UP	SPEED UP
6	RIGHT 2	7	7	SPEED DOWN	SPEED DOWN
7	RIGHT 3	PAUSE	PAUSE	ELEVATION UP	ELEVATION UP
8	RIGHT 4 (BOTTOM)	DISPLAY -	DISPLAY -	ELEVATION DOWN	ELEVATION DOWN
9	BACK	QUICK GRADE	QUICK GRADE		
10	MENU	ENTER	ENTER		
11	NEXT	2	2		
12	START	PROGRAM	PROGRAM		
13	PAUSE	5	5		
14	SPEED UP	8	8		
15	SPEED DOWN				
16	ELEVATION UP	NEXT	NEXT		
17	ELEVATION DOWN	ELEVATION DOWN	ELEVATION DOWN		
18	QUICK SPEED				
19	QUICK GRADE	3	3		
20	0	SPEED DOWN	SPEED DOWN		
21	1	6	6		
22	2	9	9		
23	3				
24	4				
25	5	ELEVATION UP	ELEVATION UP		
26	6				
27	7				
28	8				
29	9	HRC BUTTON			
30	NEXT	MANUAL	MANUAL		
31		SPEED UP	SPEED UP		
32		DISPLAY +	DISPLAY +		

Membrane Panel Bypass Test

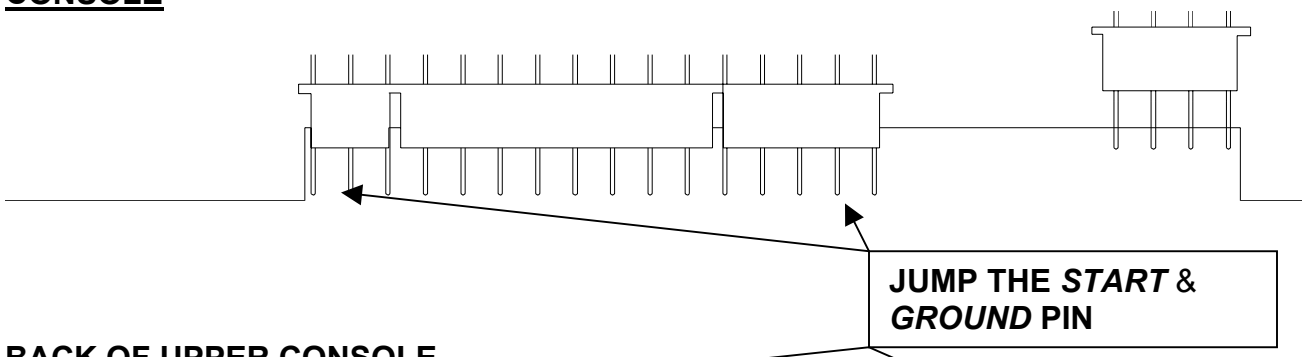
Conducting a membrane bypass test can test the functionality of a membrane panel.

When a treadmill with a membrane experiences no lights on the upper display, such as when a customer presses the START button and nothing happens, a possible cause of this is a bad membrane panel. A membrane panel bypass test can verify this. The membrane panel has small micro switches laminated inside that transmit the user's commands into treadmill functions. These functions can be simulated by means of a membrane bypass:

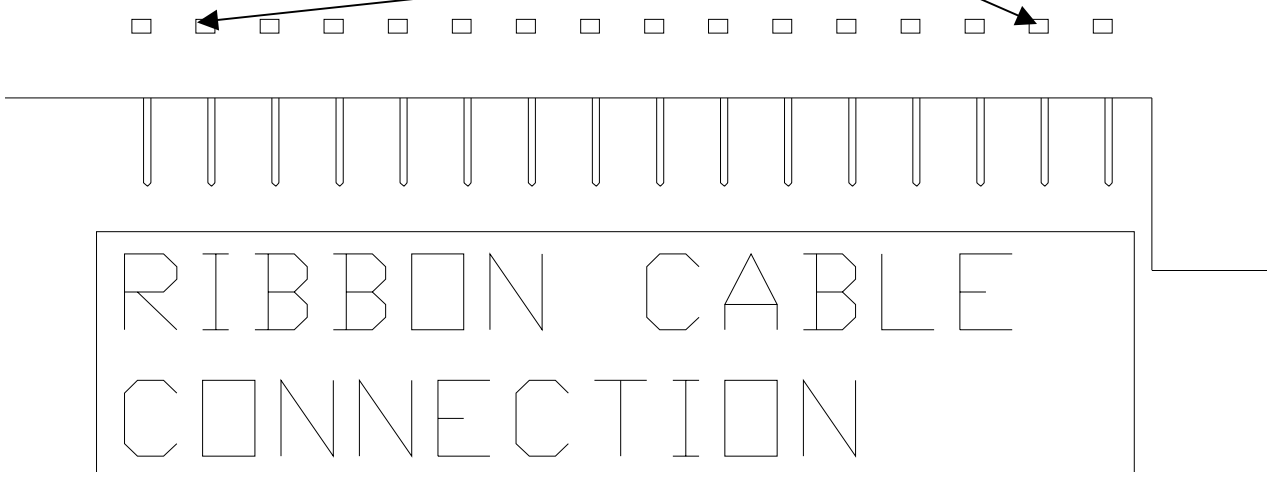
1. Disconnect the ribbon cable from the membrane panel to the display board.
2. Remove the membrane panel completely from the upper display board.
3. Use a **DRY** towel or a terry cloth to wrap over the open area of the control panel frame. Place the upper display board with wire harness still attached on top of the towel to prevent it from touching any metal and shorting out.
4. Look at the pins where the silver membrane ribbon cable connected to the display board.
5. Using a jumper (i.e. a jumper wire with two copper ends, a paper clip, or a voltmeter set to continuity) bypass the start button by touching one end of the jumper to the pin labeled **GND** or **GROUND**, and the other end of the jumper to the pin labeled **START** or **ON**. (Note: to locate these pins on various Landice display boards) If the membrane is bad the treadmill will turn on and read **"SAFE."**

6. If it is necessary, replace the damaged membrane panel.

FRONT OF UPPER CONSOLE



BACK OF UPPER CONSOLE



Error Codes Definition

“SAFETY SHUTDOWN Loss of Speed Signal” or “L5” ***WITH*** belt movement

This is usually an indication of a speed control malfunction. The upper board is not recognizing a signal pickup from the speed sensor. This could be due to the speed sensor being misaligned, improper connection, or bad speed sensor. Refer to the flowchart on page

“SAFETY SHUTDOWN Loss of Speed Signal” or “L5” WITH ***NO*** belt movement

The speed sensor is not recognizing any motor movement. This displays the error message to the upper board. Refer to the proper flowchart.

“Potentiometer Out of Range” or “PO”

There’s a failure in the elevation system. The potentiometer, elevation motor, lower board, upper harness and finally the upper board can cause this error. Refer to the proper flowchart.

“Overspeeding” or “O5”

The speed sensor recognizes the actual speed of the treadmill is faster then the command speed.
Note: During high elevation and low speed the role of the user’s weight and gravity is likely to cause an Overspeed error.

“Comm Error”, “CE Error”, or “Communication error”

This will occur when there’s a break in communication between the upper board and the lower board. If the upper board does not identify signal to the lower board it‘s very likely the main upper harness has a poor connection. Re-seat the main harness at the upper and lower board.
Note: A signal break may also cause an O5, PO, or L5 error.

Self-diagnostic Error Detections

SAFETY KEY:
The upper console is not identifying the safety key. This could be the result of the failure in the reed switch, short in the safety cable, the magnetic flux guide is not in position, and/or the safety key is missing.

DISPLAY MEMORY:
Checking for RAM and ROM memory within the programs of the upper board. This will notify you if there's a problem with the software within the upper board.

BELT OVERSPEEDING:
This will compare the requested speed versus the actual speed of the treadmill to confirm if the speeds of the treadmill are within parameter. Speed fluctuation or overspeed can by caused by improper position to the speed sensor, a bad speed sensor, or a bad motor control board.

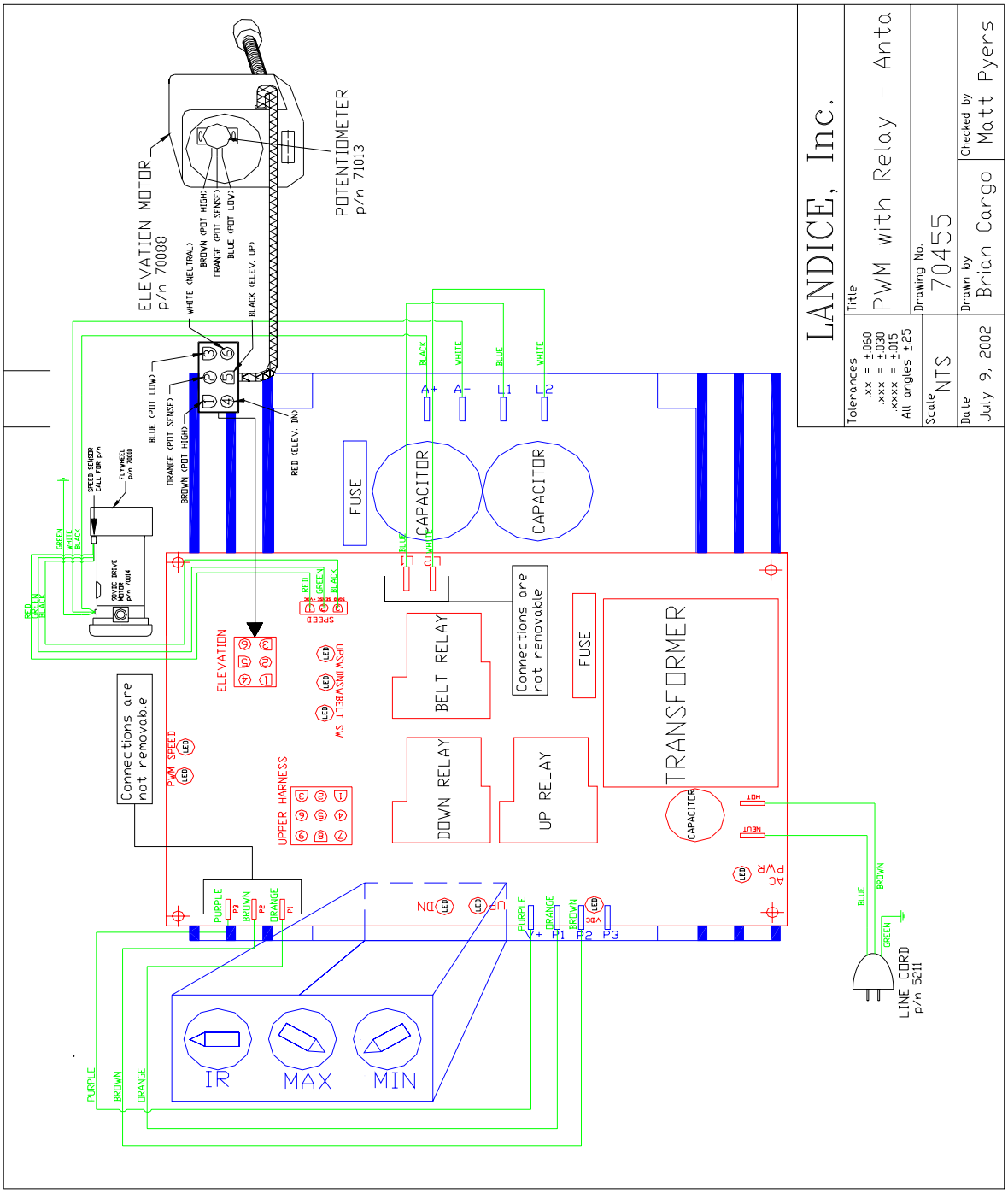
SPEED SENSOR:
The speed sensor reads the RPM from the flywheel and relays this information to the upper board. The speed sensor must be positioned perpendicularly at a gap of 1/16 of an inch from the flywheel. The SPEED LED will flicker on and off when it detects the gaps in the flywheel "teeth". This is most easily demonstrated when the treadmill is not running and the flywheel is spun slowly by hand.

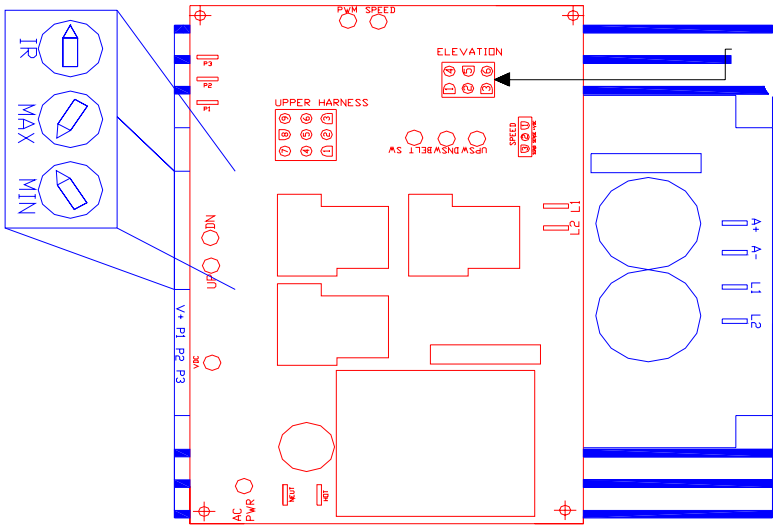
MOTOR VOLTAGE: This test DC voltage from the motor control board to the drive motor. Upon testing the drive motor will move. If this test fail measure voltage output while in diagnostic mode.

INCLINE SENSOR: This will confirm feedback from the potentiometer. A working potentiometer will give 1000 ohms, or 1KΩ, reading. See page 20

ELEVATION MOTOR: This will test elevation motor movement.

GRADE POTENTIOMETER: This test works in relation with the INCLINE SENSOR test. Test will check if the potentiometer reading is calibrated and compare the feedback are within parameter.


LANDICE, Inc.
Title
PWM with Relay - Anta
Drawing No.
70455
Drawn by
Brian Cargo
Checked by
Matt Pyers
Date
July 9, 2002
Scale
NTS
Tolerances
.xx = ±.060
.xxx = ±.030
.xxxx = ±.015
All angles ±25
ELEVATION MOTOR
p/n 70088
POTENTIOMETER
p/n 71013
WHITE (NEUTRAL)
BROWN (POT HIGH)
ORANGE (POT SENSE)
BLUE (POT LOW)
BLACK (ELEV. UP)
RED (ELEV. DN)
FUSE
CAPACITOR
CAPACITOR
BELT RELAY
DOWN RELAY
UP RELAY
TRANSFORMER
FUSE
Connections are not removable
Connections are not removable
ELEVATION
UPPER HARNESS
PWM SPEED
SPEED
UP/DN/BELT SW
IR
MAX
MIN
LINE CORD
p/n 5211



Speed Calibration: L-Series ANTA/PWM Treadmills

1. Enter into Open Loop Speed mode (O.L.S.) by pressing simultaneously

Executive Trainer	MENU & START
Cardio Trainer	NEXT & START
Pro Sport Trainer	NEXT & START
Sport Trainer	Fast & START

2. Adjust the max speed first. Bring the set speed to 12mph. Let actual speed stabilize.
3. Adjust the MAX potentiometer on the pwm motor control board accordingly.

Clockwise = increase speed / Counterclockwise = decrease speed.

The actual speed will be displayed in the center display window.

4. Decrease set speed to .5mph. Let actual speed stabilize. Adjust the MIN pot accordingly. (.48 to .52mph is acceptable)
5. Before turning treadmill off, check the MAX speed one more time for accuracy.

DIAGNOSTIC FLOWCHART

NOTE: USE THIS FOR DIAGNOSING THE PWM/RELAY COMBO BOARD
Upper display lights up but treadbelt doesn't move: L5 Error

6.1
1. Enter Open Loop Speed Mode.(See pg. 39)
2. Press FAST until 12.0mph is displayed.

6.2 Confirm proper line voltage input to PWM board. Measure across L1 and L2 terminals for proper line voltage.

NO → Is the green BELTSW light on the relay board lit?

NO →
1. Check RED wire on 9-pin harness for loose connection or pushed pin.
2. Replace upper display board.

YES →
1. Replace anta/relay board.

YES

6.3 **Is speed control wiring OK?**
Purple wire from V+ on pwm board to P3 on relay board.
Orange wire from P1 on pwm board to P1 on relay board.
Brown wire from P2 on pwm board to P2 on relay board.
P3 on pwm board has no connection.

NO → Correct speed control wiring.

YES

6.4 **Is the motor wiring OK?**
Check the wires from motor to A+ & A-

NO → Correct motor control wiring.

YES

6.5 **Are the motor brushes OK?**
UNPLUG treadmill and unscrew brush caps. Verify brushes are at least 3/8" long and slide freely, Verify brushes are curved and have no burns or cracks. Check springs, verify copper wire is not broken or burned.

NO → Replace motor brushes. (2 required)

YES

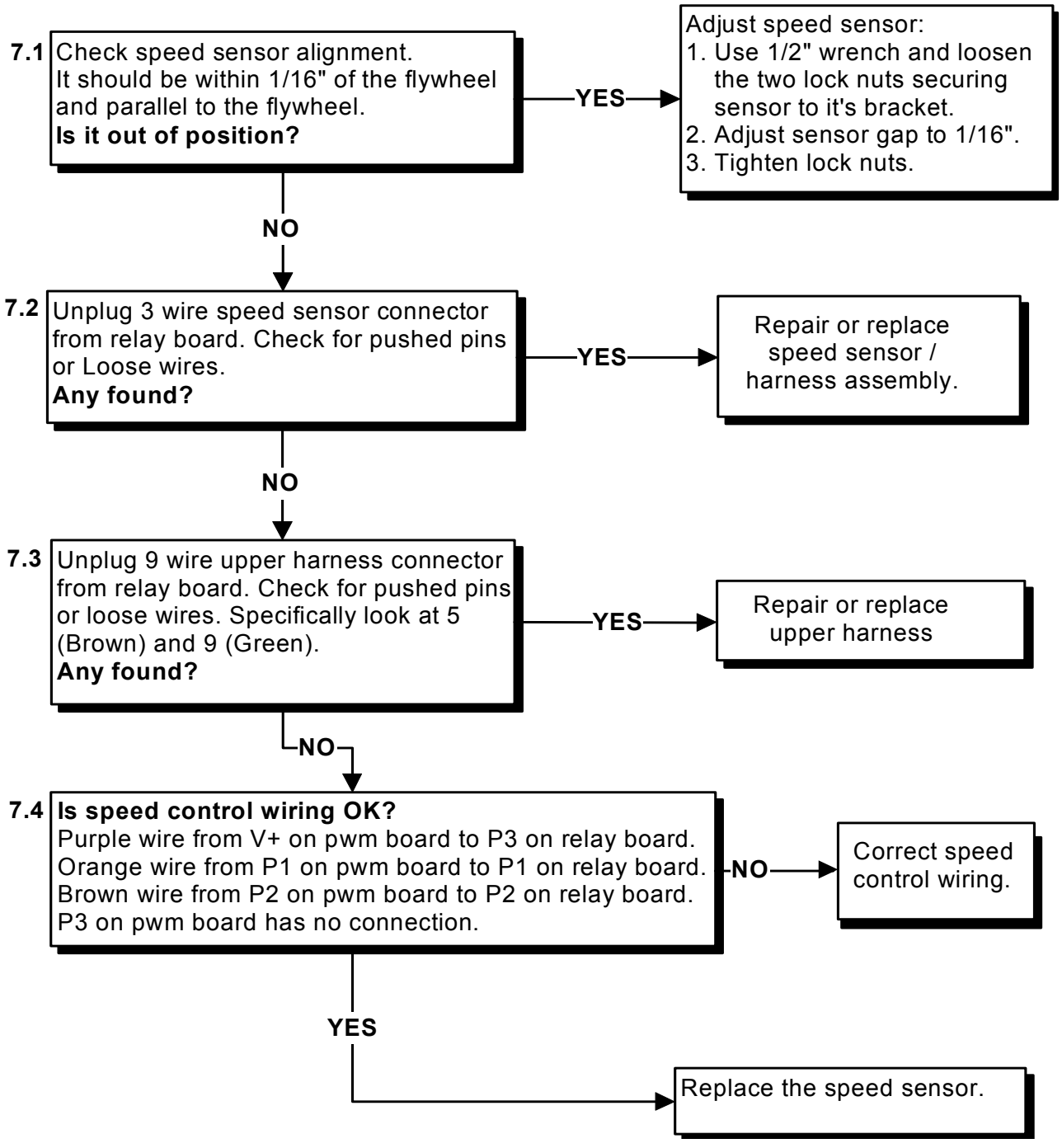
6.6 Spin the motor shaft by hand.
Is the motor seized or is the shaft broken?

NO → Verify at least 90VDC from Black (A+) wire and White (A-) wire from PWM to Drive Motor. No voltage, replace PWM/RELAY combo board. Voltage, replace drivemotor.

YES

Replace motor/flywheel

NOTE: USE THIS FOR DIAGNOSING THE PWM/RELAY COMBO BOARD
Upper display lights up; treadbelt moves; speed will not increase; L5 error.



NOTE: USE THIS FOR DIAGNOSING THE PWM/RELAY COMBO BOARD

Upper display fails to light when START is pressed.

8.1 Is the green AC PWR light on the relay board lit?

NO

1. Plug a lamp into the wall outlet to confirm it it is live.
2. Check line cord condition and connection.
3. Unplug treadmill and use a multimeter to check the fuse. If it is bad, swap with a spare MDA-15 fuse.
4. Plug in treadmill and use a multimeter to check for 120VAC across HOT and NEUT terminals of relay board.

YES

8.2 Is the green VDC light on the relay board lit?

NO

1. Check all connections to black 12VDC power supply.
2. Confirm the wire with a dashed white line (or ribbed black) is plugged into +VDC terminal on the relay board.
3. Confirm the solid black wire is plugged into SGND terminal on the relay board.
4. Replace 12VDC power supply.
5. Confirm voltage reading of 12-17 VDC across dashed white line wire & solid black wire.

YES

8.3

1. Unplug the 9 wire connector from the relay board and inspect all wires for a loose or pushed pin. Be sure harness is routed under the elevation motor.
2. Unplug the 12 wire connector from the upper display board and inspect all wires for a loose fit or pushed pin. Check for 12 to 15VDC across the Black (+) wire and the Green (-) wire.
3. Perform a continuity test on the upper wire harness.

Are harness wire connections intact?

YES

8.4

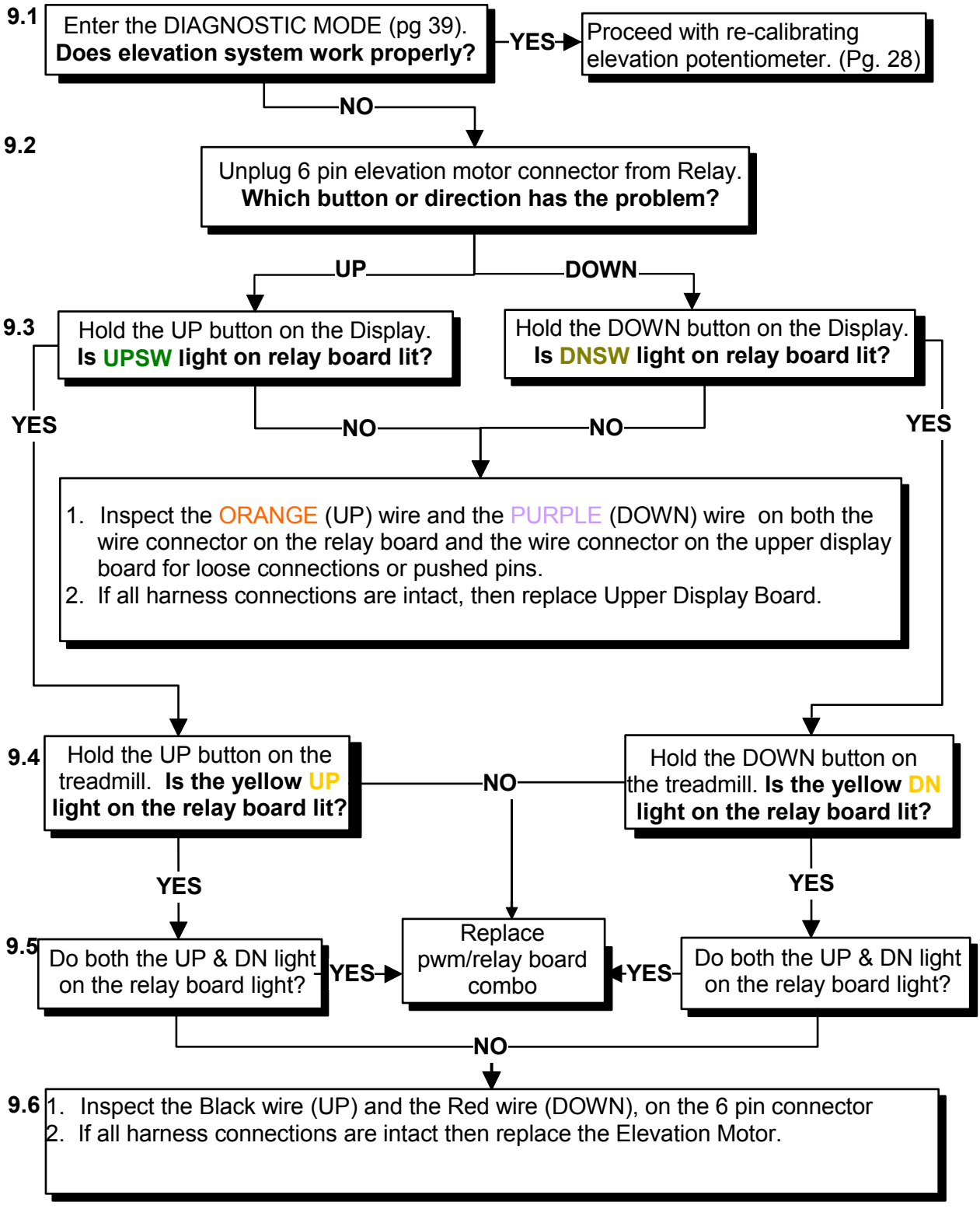
1. On ST2's and RTM only, remove Faceplate from the display board and press START button on display board. If treadmill starts use a phillips head screwdriver or x-acto knife to spread fastener pins. If display board will not stay mounted or any buttons are concave replace the faceplate.

2. On PST3's CT2's & ET2's conduct Membrane bypass test (See page 41) If treadmill starts replace Membrane Panel. If not replace the upper display board.

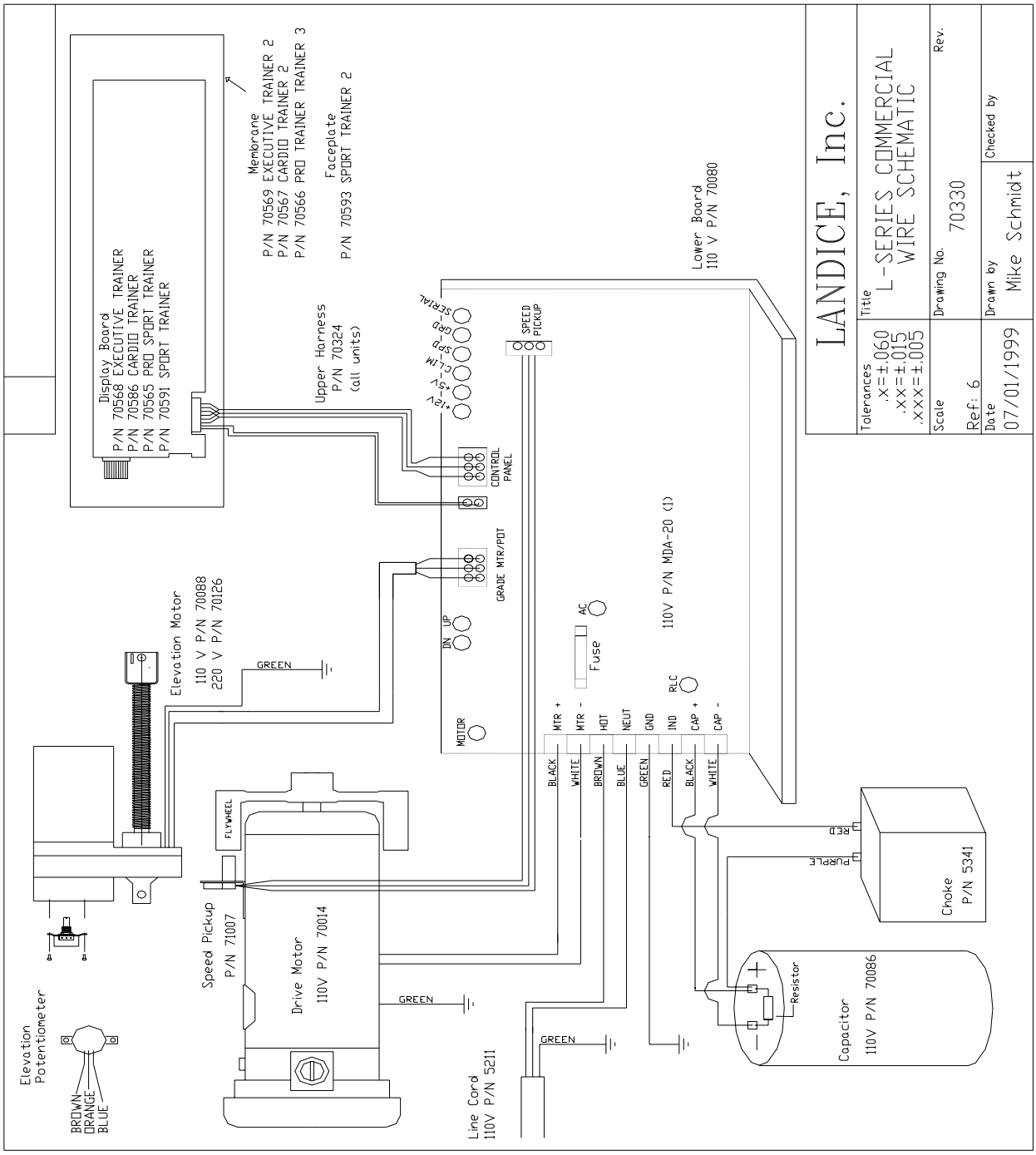
NO

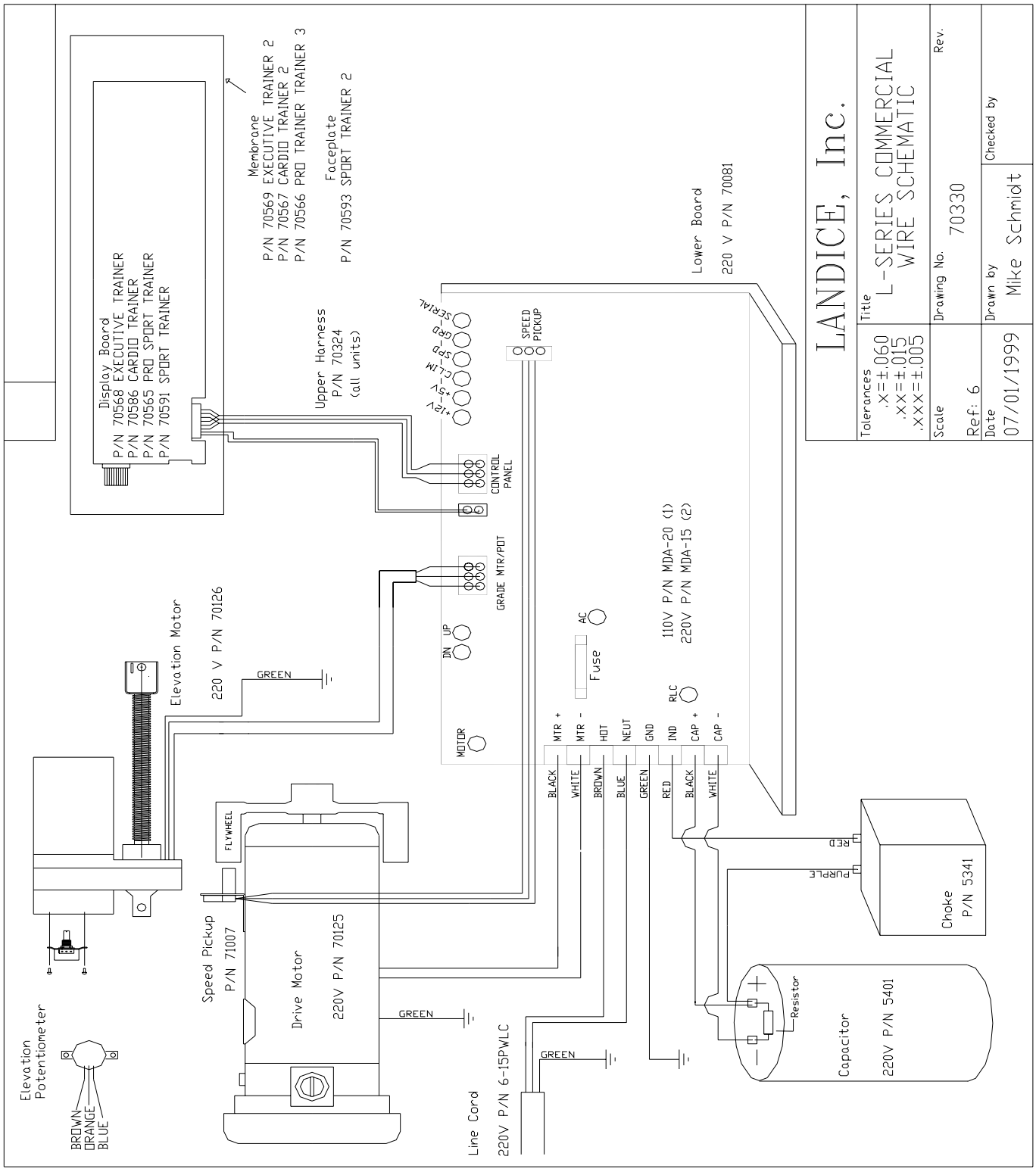
Repair upper harness or replace upper harness.

NOTE: USE THIS FOR DIAGNOSING THE PWM/RELAY COMBO BOARD
Elevation system not functioning or PO (Pot Out) error code displayed in the two digit speed window.

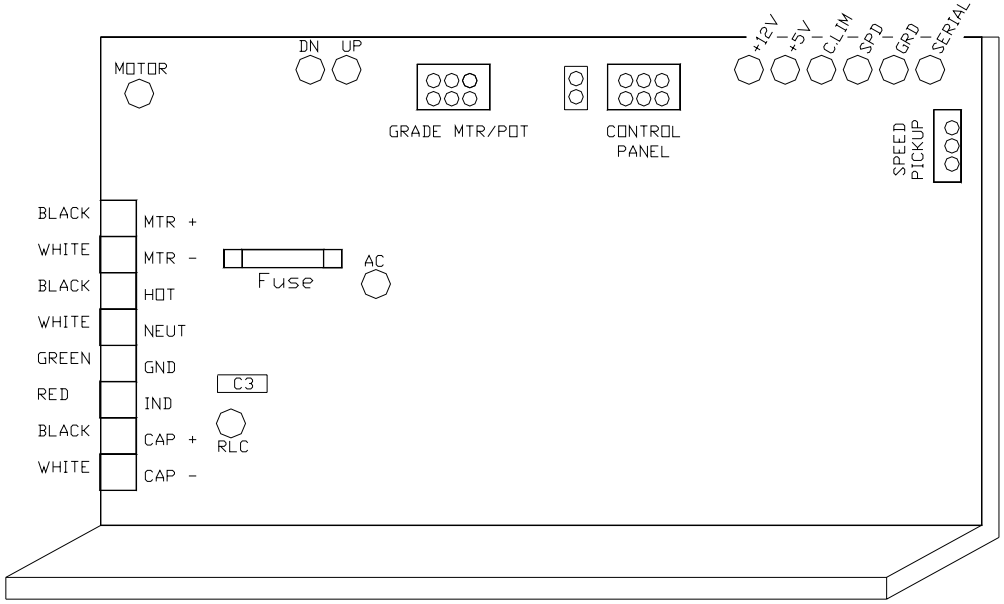


L-SERIES 110V COMMERCIAL LOWER WIRE SCHEMATIC




LANDICE, Inc.
Title
L-SERIES COMMERCIAL
WIRE SCHEMATIC
Tolerances
.X=±.060
.XX=±.015
.XXX=±.005
Drawing No.
70330
Rev.
Scale
Ref: 6
Date
07/01/1999
Drawn by
Mike Schmidt
Checked by
Display Board
P/N 70568 EXECUTIVE TRAINER
P/N 70586 CARDIO TRAINER
P/N 70565 PRO SPORT TRAINER
P/N 70591 SPORT TRAINER
Membrane
P/N 70569 EXECUTIVE TRAINER 2
P/N 70567 CARDIO TRAINER 2
P/N 70566 PRO TRAINER TRAINER 3
Faceplate
P/N 70593 SPORT TRAINER 2
Upper Harness
P/N 70324
(all units)
Lower Board
220 V P/N 70081
+12V
+5V
SPD_LIM
SPD
SERIAL
SPEED PICKUP
CONTROL PANEL
GRADE MTR/PDT
DN
UP
MOTOR
AC
Fuse
RLC
110V P/N MDA-20 (1)
220V P/N MDA-15 (2)
MTR +
MTR -
HOT
NEUT
GND
IND
CAP +
CAP -
BLACK
WHITE
BROWN
BLUE
GREEN
RED
BLACK
WHITE
Elevation Motor
220 V P/N 70126
GREEN
FLYWHEEL
Speed Pickup
P/N 71007
Drive Motor
220V P/N 70125
GREEN
Line Cord
220V P/N 6-15PWLC
GREEN
Elevation
Potentiometer
BROWN
ORANGE
BLUE
RED
PURPLE
Choke
P/N 5341
Resistor
Capacitor
220V P/N 5401

LED CONFIGURATIONS: SCR GEN 1



The SCR lower board is designed with diagnostic LED lights. The LED's are color coded according to their specific function. Green indicates a properly operating treadmill; the green lights should always be ON when power is supplied to the treadmill. Yellow indicates a treadmill function. Red indicates a treadmill malfunction. Here is a list of each LED and what it signifies:

MOTOR (yellow) – The MOTOR LED illuminates when dc (direct current) voltage is sent to the drive motor. The LED gets brighter when the dc output is increased.

RLC (yellow) – The RLC (R = Reactance / L = Inductance / C = Capacitance) LED illuminates when the filtering system is properly working. The filtering system includes the capacitor and filter choke. If there is a short in either component then the RLC light will not come on.

DN & UP (yellow) – The DN and UP LED lights tell us if the elevation DN and UP relays are functioning properly. When the LED lights, it tells us that the relay has energized and is sending high voltage (110vac or 220vac) to the elevation motor.

AC PWR (green) – The AC PWR (Alternating Current Power) illuminates when AC line voltage is delivered to the treadmill. It then passes through the in-line fuse (110)/s(220) and lights the AC PWR LED.

+12V (green) – When the proper AC voltage is delivered to the treadmill, passes through the in-line fuse/s, through the full wave bridge rectifier (changes AC to DC), through the transformer (steps down DC to +12vdc) then the +12V LED lights.

C. LIM (red) – The C.LIM or Current Limit LED should **NEVER** come on. This diagnostic light is used to determine the condition of the treadbelt and deck. The SCR board has a built-in amp meter. When the treadbelt belt and deck system wears, the amperage will increase. When this amperage reaches its max limit, the lower board will shut down its power (treadbelt will slow down / low torque) to the drive motor and the C.LIM LED will illuminate.

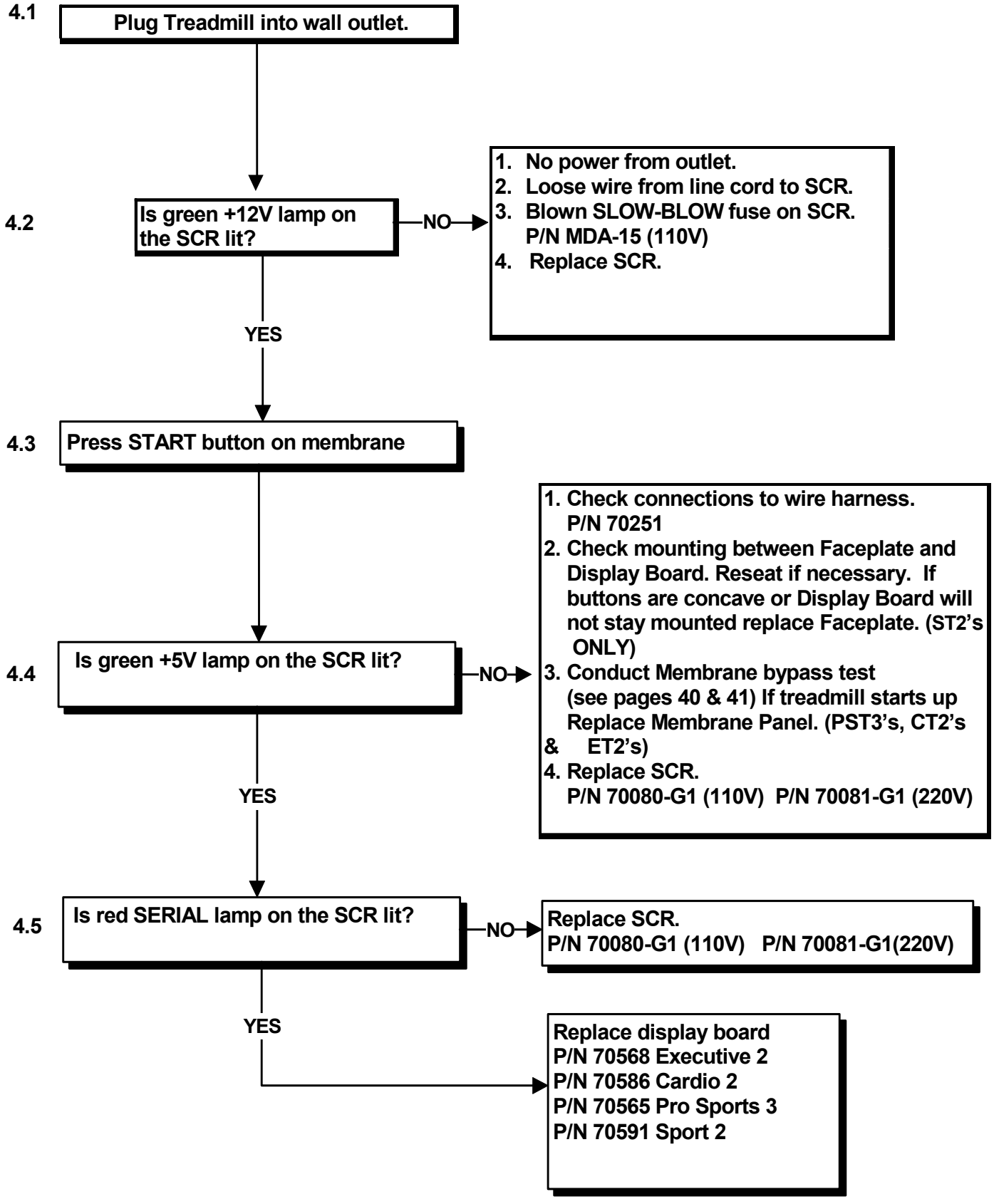
SPD (yellow) – The SPD LED flashes on and off (relative to speed) when the speed sensor is operating properly.

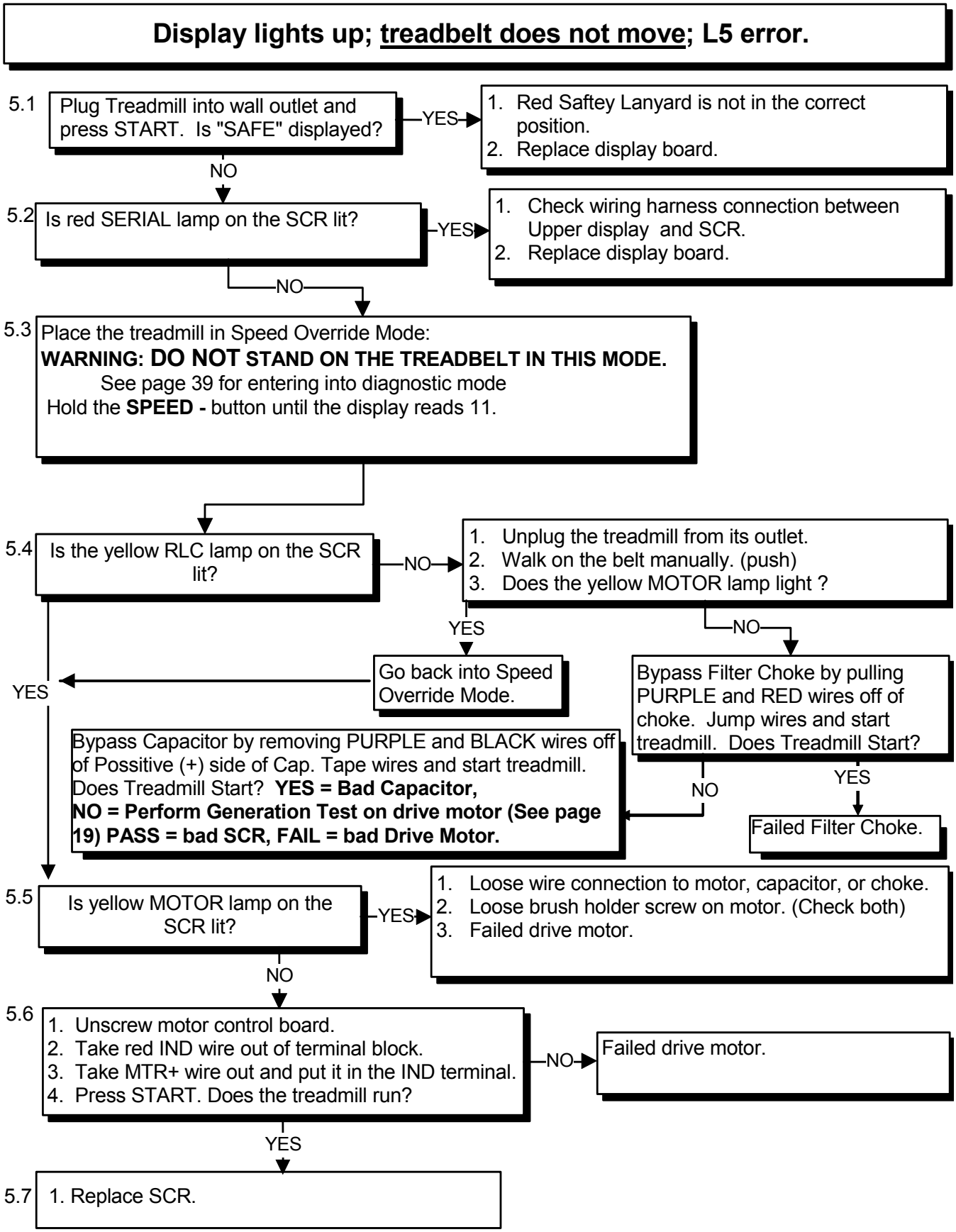
GRD (red) – The GRD (GRADE) LED should **NEVER** come on. It illuminates only when the elevation potentiometer becomes out of calibration.

SERIAL (red) – The SERIAL LED should **NEVER** come on. It illuminates only when there is an interruption of the flow of data between the upper and lower boards. This could be a loose or pushed pin on the main wire harness.

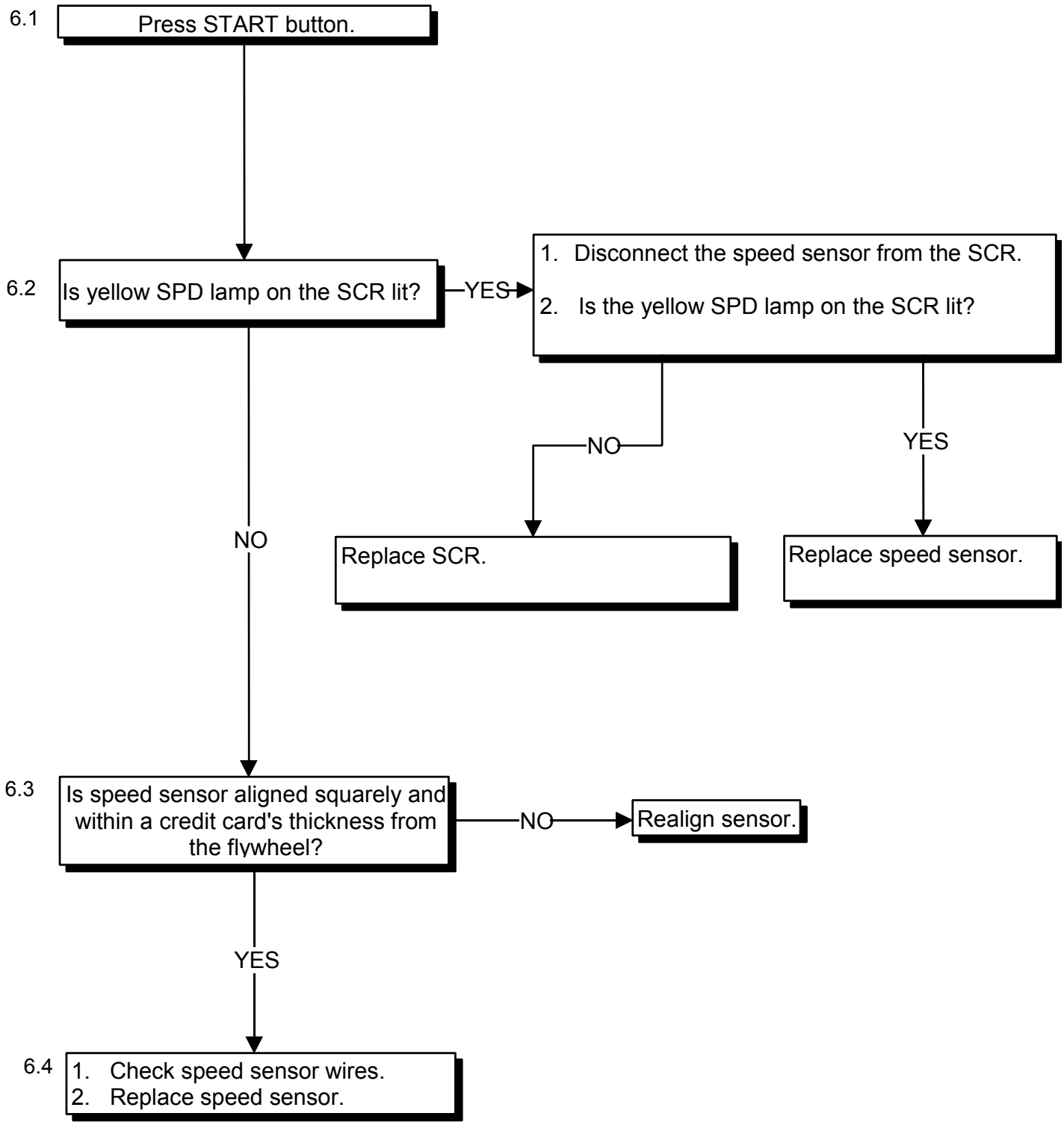
+5V (green) – The +5V light comes on when there is power going to the Upper Display. If the light is not on check wire harness for connections. If it is not the wire harness then the MCB is defective.

Upper display fails to light when START is pressed.

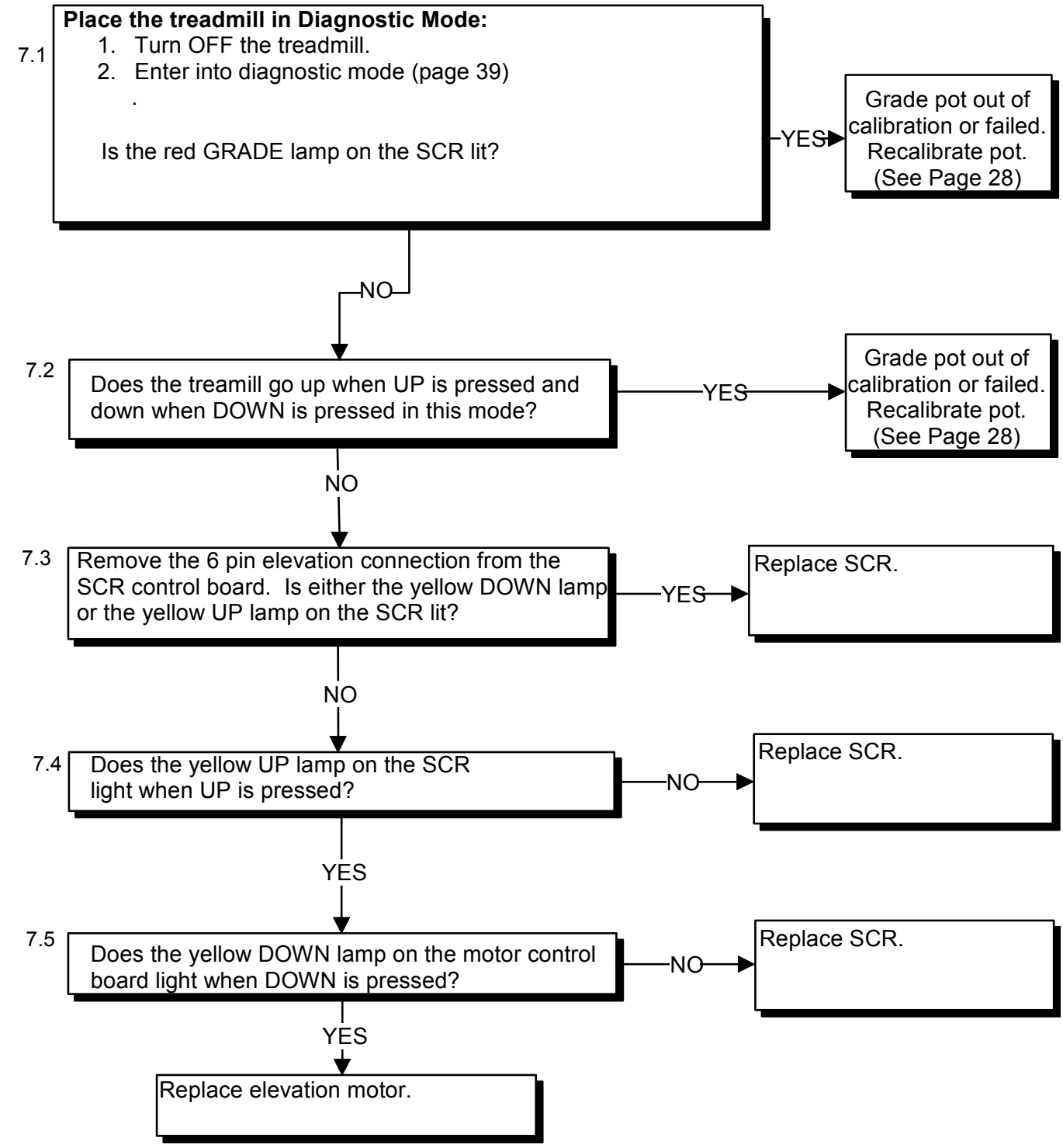



Display lights up; treadbelt does not move; L5 error.
5.1
Plug Treadmill into wall outlet and press START. Is "SAFE" displayed?
YES
1. Red Saftey Lanyard is not in the correct position.
2. Replace display board.
NO
5.2
Is red SERIAL lamp on the SCR lit?
YES
1. Check wiring harness connection between Upper display and SCR.
2. Replace display board.
NO
5.3
Place the treadmill in Speed Override Mode:
WARNING: DO NOT STAND ON THE TREADBELT IN THIS MODE.
See page 39 for entering into diagnostic mode
Hold the SPEED - button until the display reads 11.
5.4
Is the yellow RLC lamp on the SCR lit?
NO
1. Unplug the treadmill from its outlet.
2. Walk on the belt manually. (push)
3. Does the yellow MOTOR lamp light ?
YES
Go back into Speed Override Mode.
YES
NO
Bypass Filter Choke by pulling PURPLE and RED wires off of choke. Jump wires and start treadmill. Does Treadmill Start?
NO
YES
Failed Filter Choke.
Bypass Capacitor by removing PURPLE and BLACK wires off of Possitive (+) side of Cap. Tape wires and start treadmill. Does Treadmill Start? YES = Bad Capacitor, NO = Perform Generation Test on drive motor (See page 19) PASS = bad SCR, FAIL = bad Drive Motor.
5.5
Is yellow MOTOR lamp on the SCR lit?
YES
1. Loose wire connection to motor, capacitor, or choke.
2. Loose brush holder screw on motor. (Check both)
3. Failed drive motor.
NO
5.6
1. Unscrew motor control board.
2. Take red IND wire out of terminal block.
3. Take MTR+ wire out and put it in the IND terminal.
4. Press START. Does the treadmill run?
NO
Failed drive motor.
YES
5.7
1. Replace SCR.

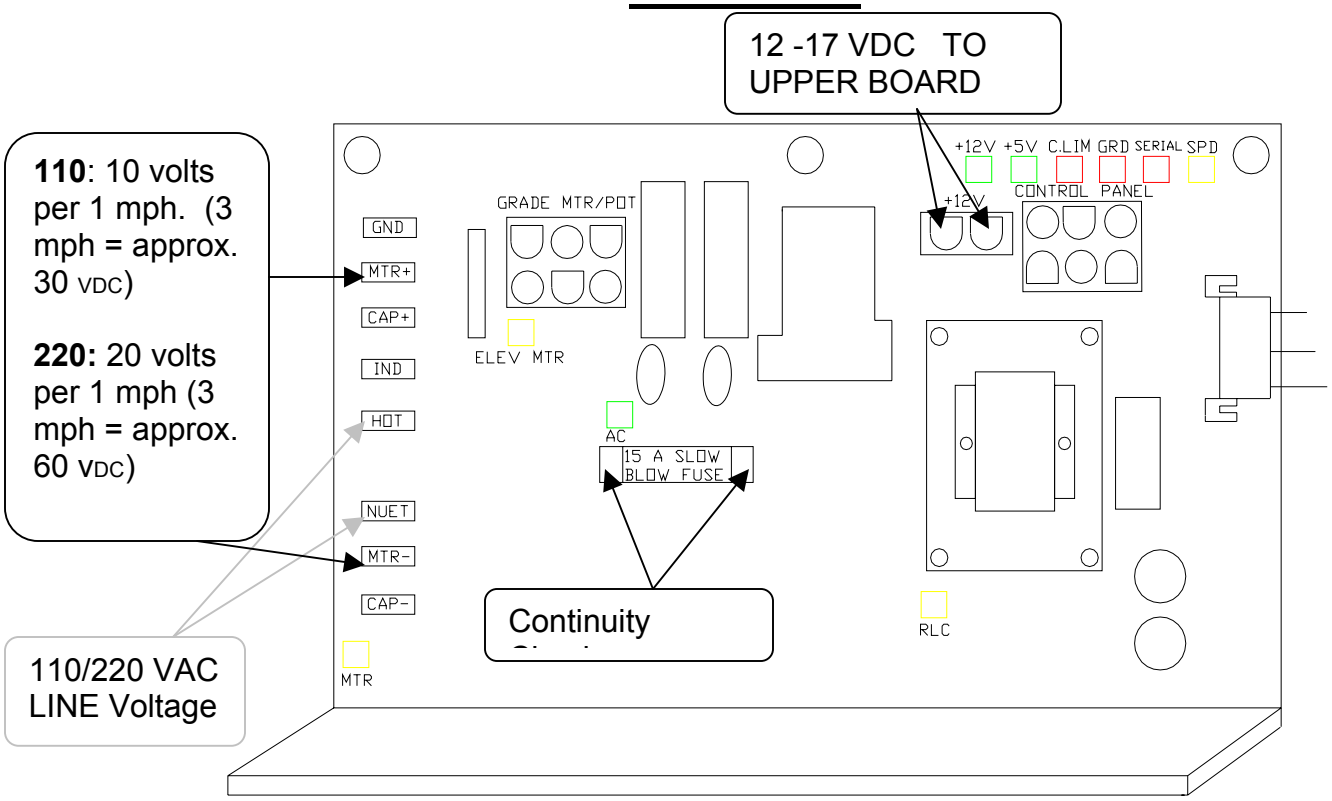
Display lights up; treadbelt moves; speed does not increase; L5 error.



Elevation system failure; "PO" error.



LED CONFIGURATIONS: **ESI SCR II** LOWER BOARD



AC VOLTAGE TO THE TREADMILL

15 Amp Slow Blow Fuse – must always have flow of continuity

AC LED (green) – The AC (Alternating Current) LED illuminates when AC line voltage is delivered to the treadmill. It then passes through the in-line fuse and lights the AC LED.

+12V (green) – As the proper AC voltage is delivered to the treadmill it passes through the in-line fuse and through the full wave bridge rectifier. This changes AC to DC voltage and the transformer steps down DC to +12V VDC.

TREADMILL POWERED ON

+5V (green) – The +5v LED turns on when the upper board is power on. This activates the Belt Relay Switch on and there's belt movement at 0.5 mph.

MTR (yellow) – The MTR LED illuminates when direct current (dc) voltage is sent to the motor. The LED gets brighter when the dc output increase.

SPD (yellow) – The SPD LED flashes on and off when the speed sensor reads the gaps in the "teeth" of the flywheel on the drive motor. When the flywheel is moved slowly the speed sensor will flash on and off (it will appear to be on constantly at higher speeds. *Note-On McMillan Motors it is located inside the motor housing but can be checked the same way.

RLC (yellow) – The RLC (R = Reactance / L = Inductance / C = Capacitance) LED illuminates when the filtering system is properly working. The filtering system includes the capacitor and filter choke.

DN & UP (yellow) – The DN and UP LED's indicates the elevation DN and UP relays are functioning properly. When the LED is on the relay has energized and is sending high voltage to the elevation motor.

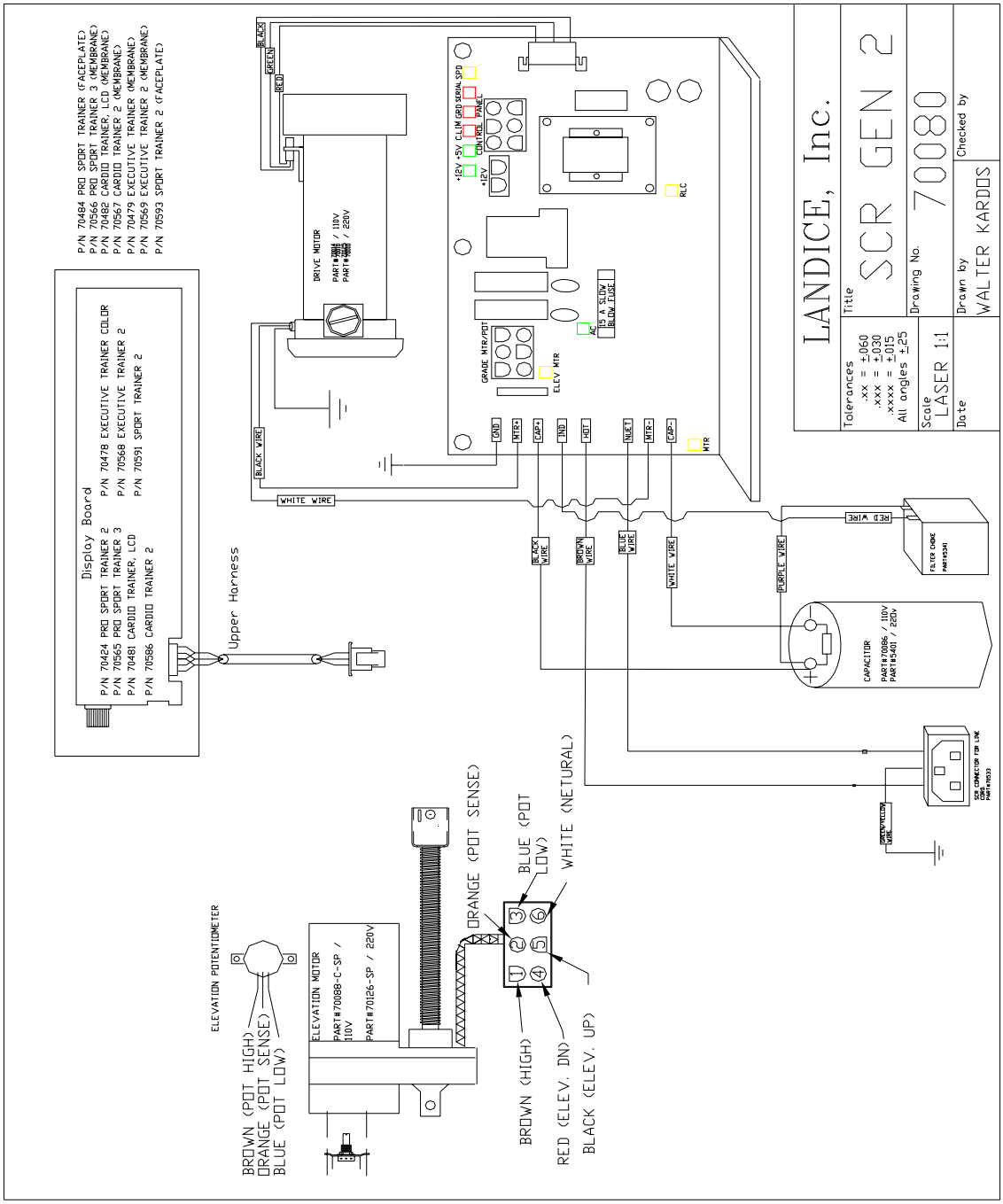
MALFUNCTION LED's

C.LIM (red) – The C.LIM (Current Limit) should **NEVER** be on. This diagnostic LED is use to determine the condition of the treadbelt and deck. The SCR board has a built-in amp meter. When the treadbelt and deck system wears, the amperage will increase. When this amperage reaches its max limit, the lower board will shut down its power (treadbelt will slowdown/low torque) to the drive motor and C.LIM LED will illuminate.

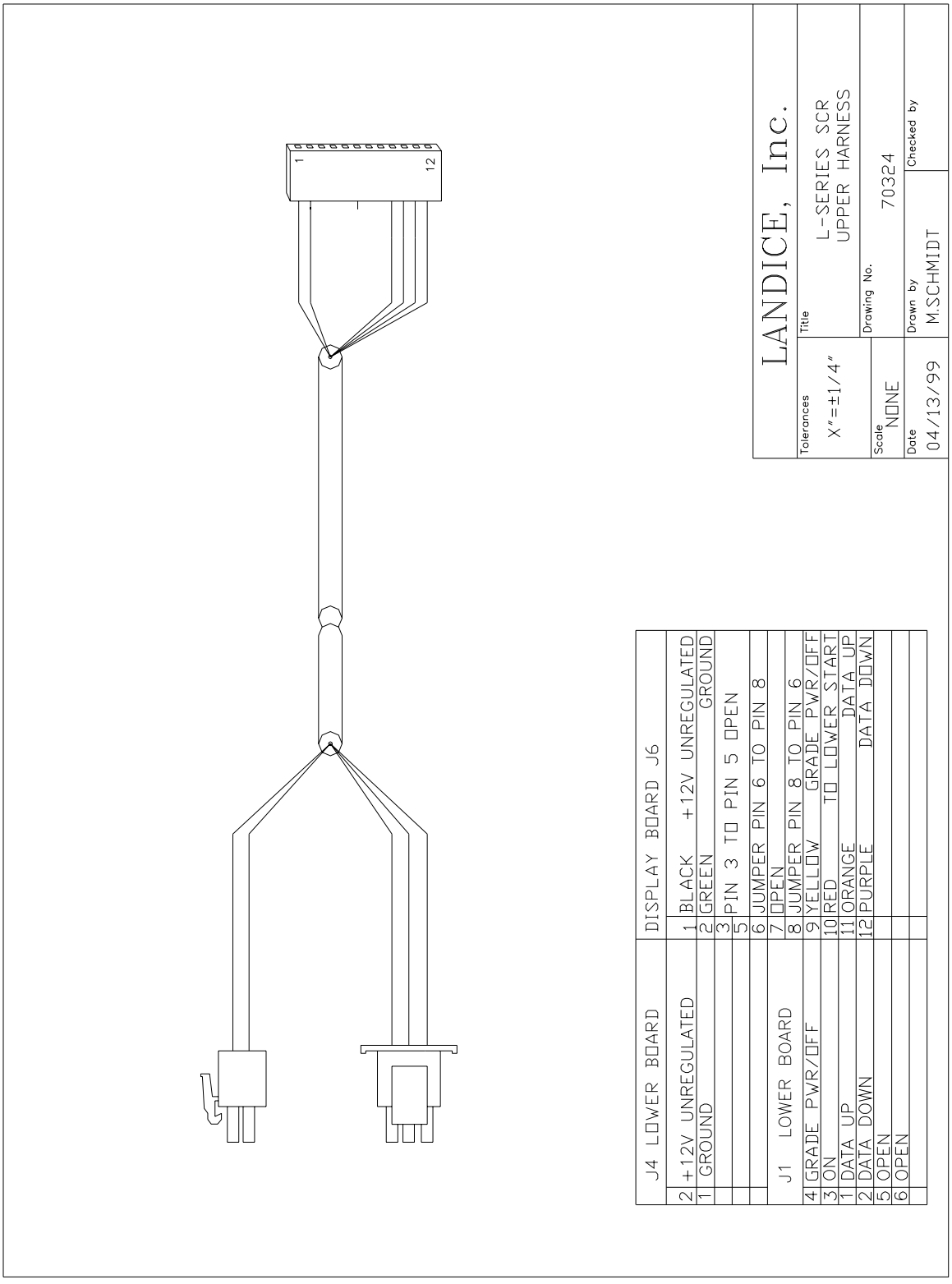
GRD (red) -The GRD (GRADE) LED should **NEVER** come on. It illuminates only when there's an elevation malfunction.

SERIAL (red) – The SERIAL LED should **NEVER** come on. This is an indication of an interruption of the flow of data between the upper and lower board. It's usually due to a loose connection to the main harness.

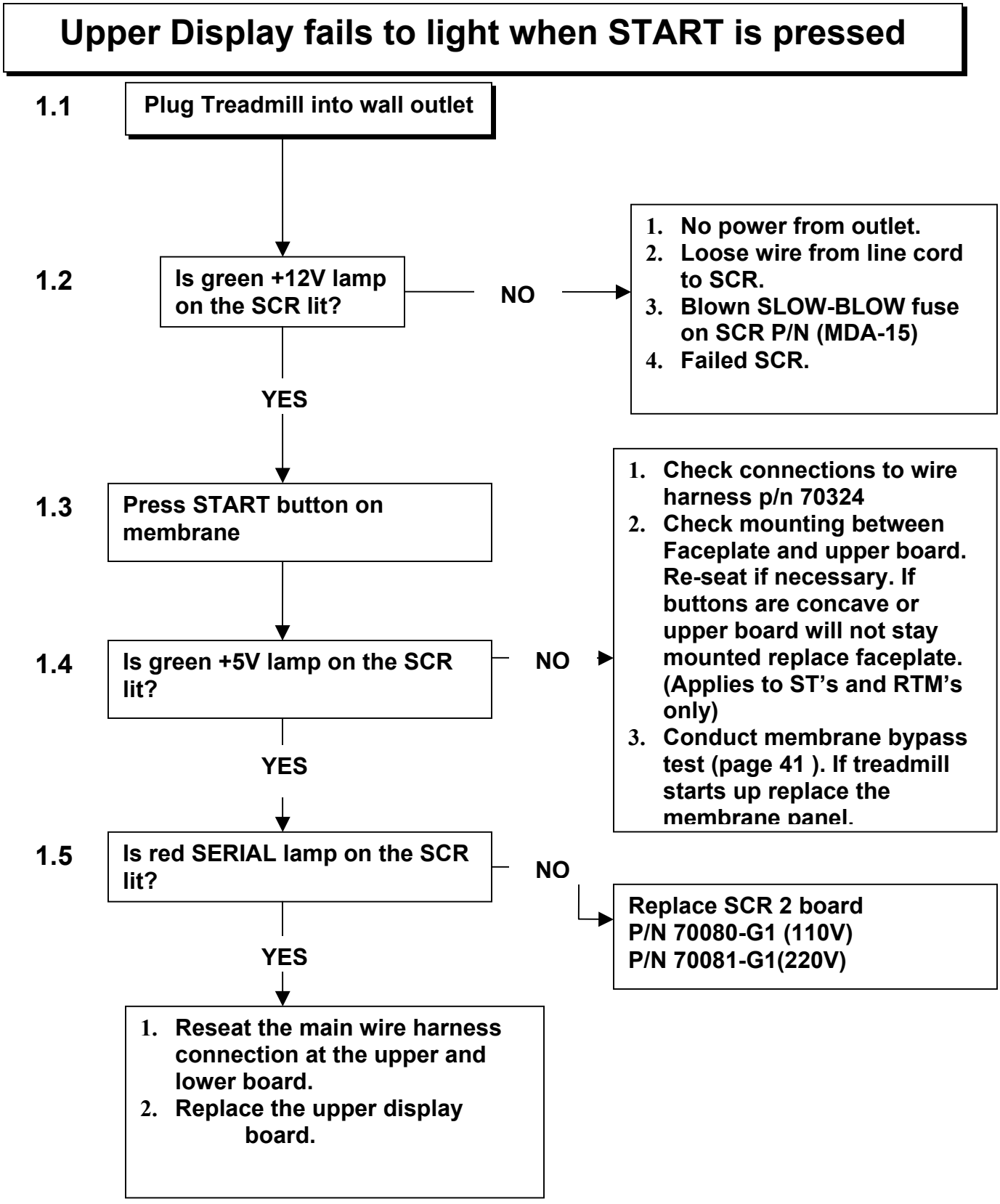
ESI SCR 2ND GENERATION LOWER SCHEMATIC



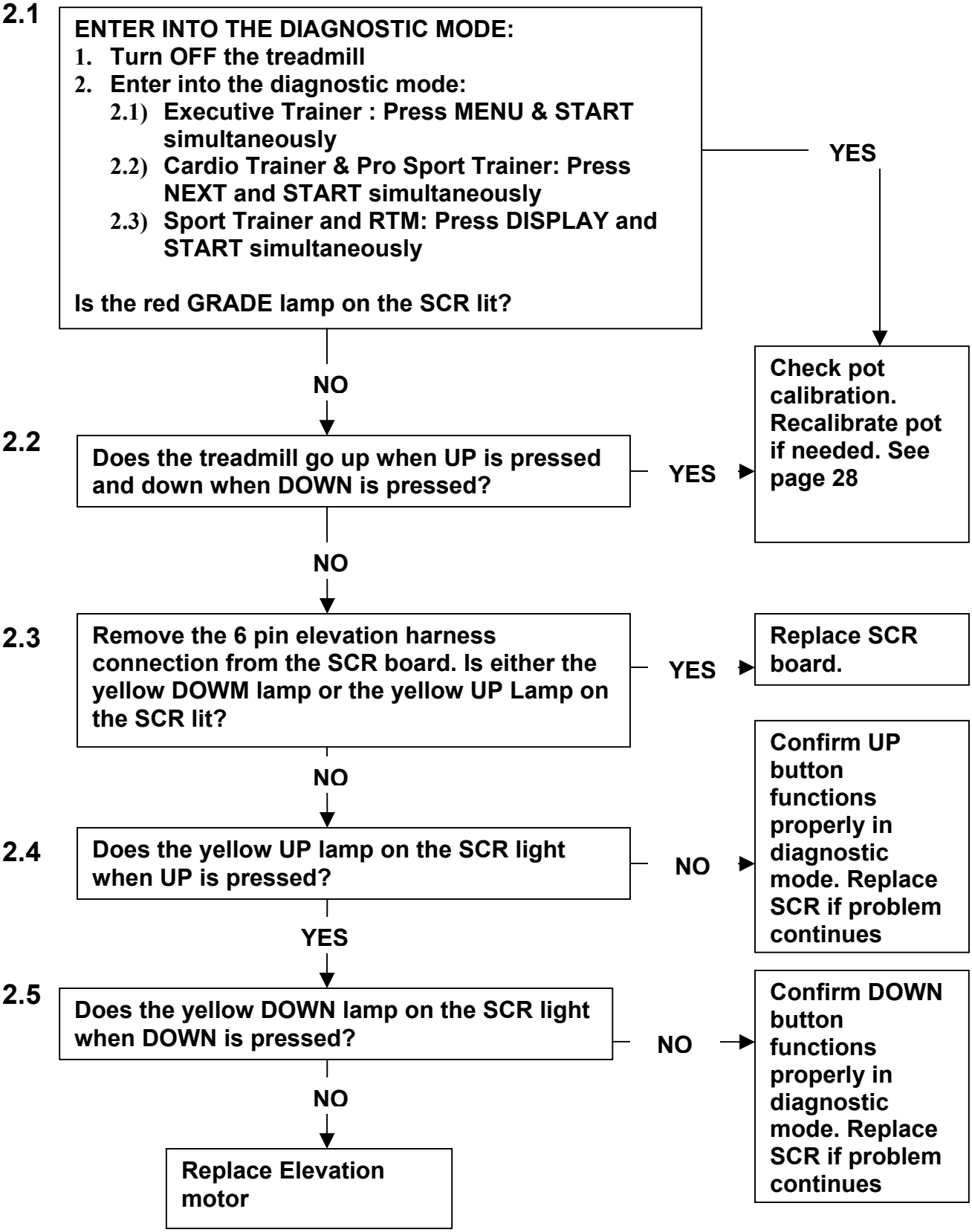
SCR MAIN WIRE HARNESS



DIAGNOSTIC FLOWCHART



"POTENTIOMETER OUT OF RANGE"; ELEVATION MALUFUNCTION



Display lights up: "L5" error or "LOSS OF SIGNAL" with no walking belt movement

3.1 Plug Treadmill into wall outlet and press START. Confirm Safety leash is inserted. Is "SAFE" displayed?

- **YES** →
  1. Red Safety Lanyard or flux guide is out of position.
  2. Replace the upper board.
- **NO** ↓

3.2 Is red SERIAL lamp on the board lit or blinking?

- **YES** →
  - If red SERIAL LED is blinking:
    1. Check wire harness connections between upper board & SCR board.
    2. Replace upper board
  - If red SERIAL LED is constantly on: Replace the SCR board.
- **NO** ↓

3.3 ENTER INTO THE DIAGNOSTIC MODE:

1) Turn OFF the treadmill
2) Enter into the diagnostic mode:
   - 2.1) Executive Trainer : Press MENU & START simultaneously
   - 2.2) Cardio Trainer & Pro Sport Trainer: Press NEXT and START simultaneously
   - 2.3) Sport Trainer and RTM: Press DISPLAY and START

3.4 Is the yellow RLC lamp on the SCR lit?

- **NO** → Bypass Filter Choke by pulling Purple and Red wires off of Choke. Jump Wires and start Treadmill. **Does Treadmill Run?**
  - **YES** → **Failed Filter Choke**
  - **NO** → Bypass Capacitor by removing Purple and Black wires off Positive (+) side of capacitor. Tape wires and start treadmill. Does treadmill start? **YES= Failed Capacitor**
- **YES** ↓

3.5 Is Yellow MOTOR lamp on SCR lit?

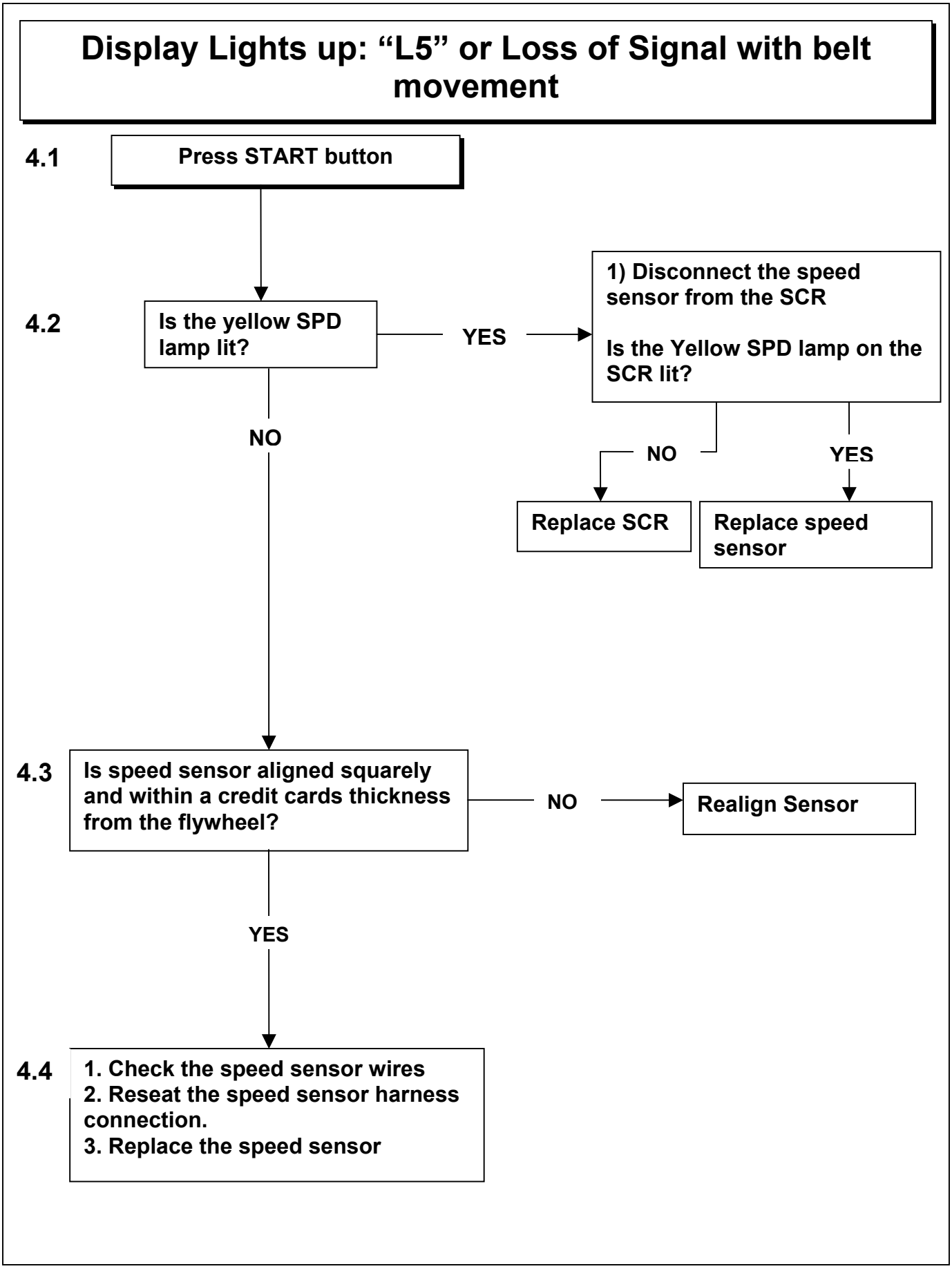
- **YES** →
  1. Loose Wires Connection to motor, capacitor or choke
  2. Loose brush holder screw on motor. (Check both)
  3. Failed drive motor
- **NO** ↓

3.6

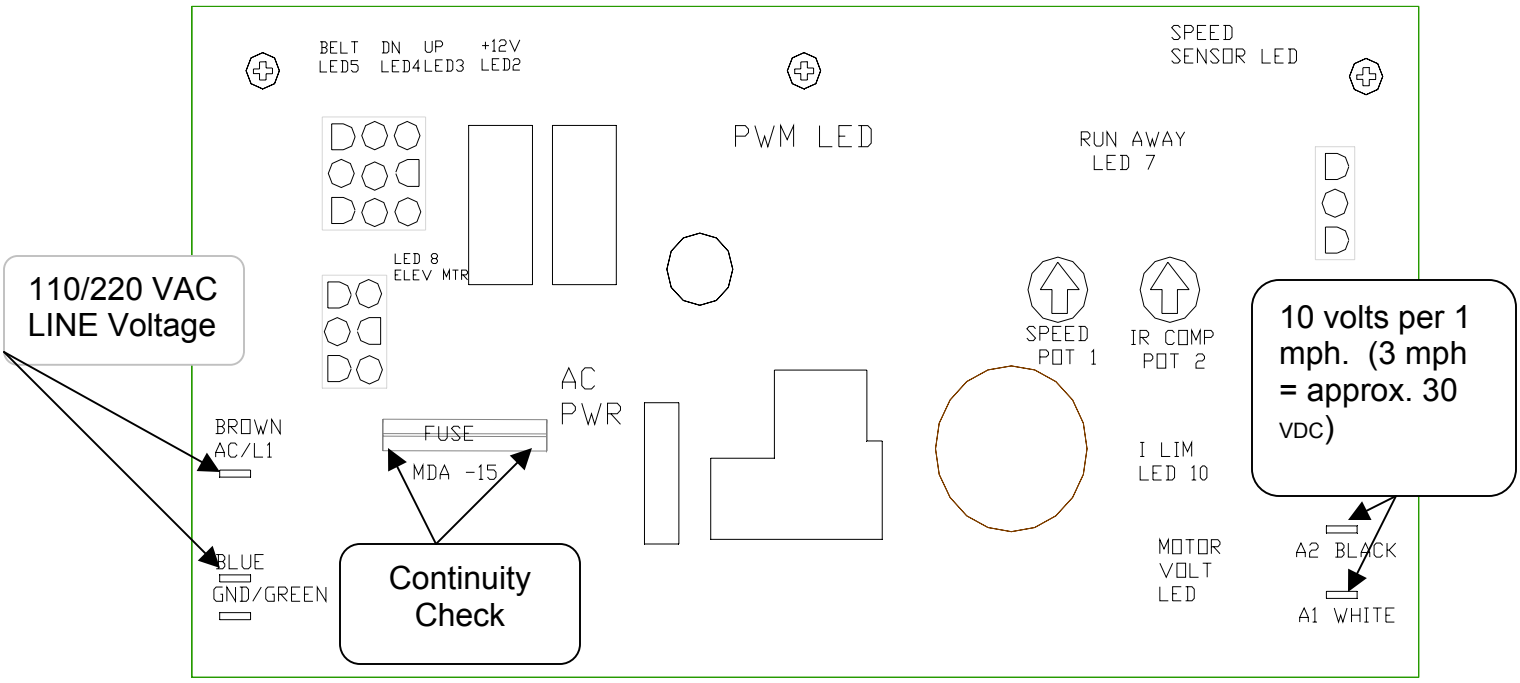
1. Unscrew motor control board
2. Take red IND wire out of terminal block
3. Take MTR+ out and put it in the IND terminal
4. Press START. Does the treadmill run?

- **NO** → Failed drive motor
- **YES** → SCR is Bad

Display Lights up: “L5” or Loss of Signal with belt movement



LED CONFIGURATIONS: **ESI PWM** LOWER BOARD



AC VOLTAGE TO THE TREADMILL

15 Amp Slow Blow Fuse – must always have flow of continuity

AC LED (green) – The AC (Alternating Current) LED illuminates when AC line voltage is delivered to the treadmill. It then passes through the in-line fuse and lights the AC LED.

+12V (green) – As the proper AC voltage is delivered to the treadmill it passes through the in-line fuse and through the full wave bridge rectifier. This changes AC to DC voltage and the transformer steps down DC to +12V VDC

TREADMILL POWERED ON

+12V (green) – The +12 V DC is always is on. This sends voltage to the upper board.

MOTOR Volt (yellow) – The MTR LED illuminates when direct current (dc) voltage is sent to the motor. The LED gets brighter when the dc output increase.

PWM (yellow) – This LED will light when the upper board is sending a speed signal to the PWM. Both the PWM LED and BELTSW LED must be lit for belt movement.

SPEED (yellow) – The SPD LED flashes on and off when the speed sensor is working properly. The sensor is reading the grooves of the flywheel of the drive motor.

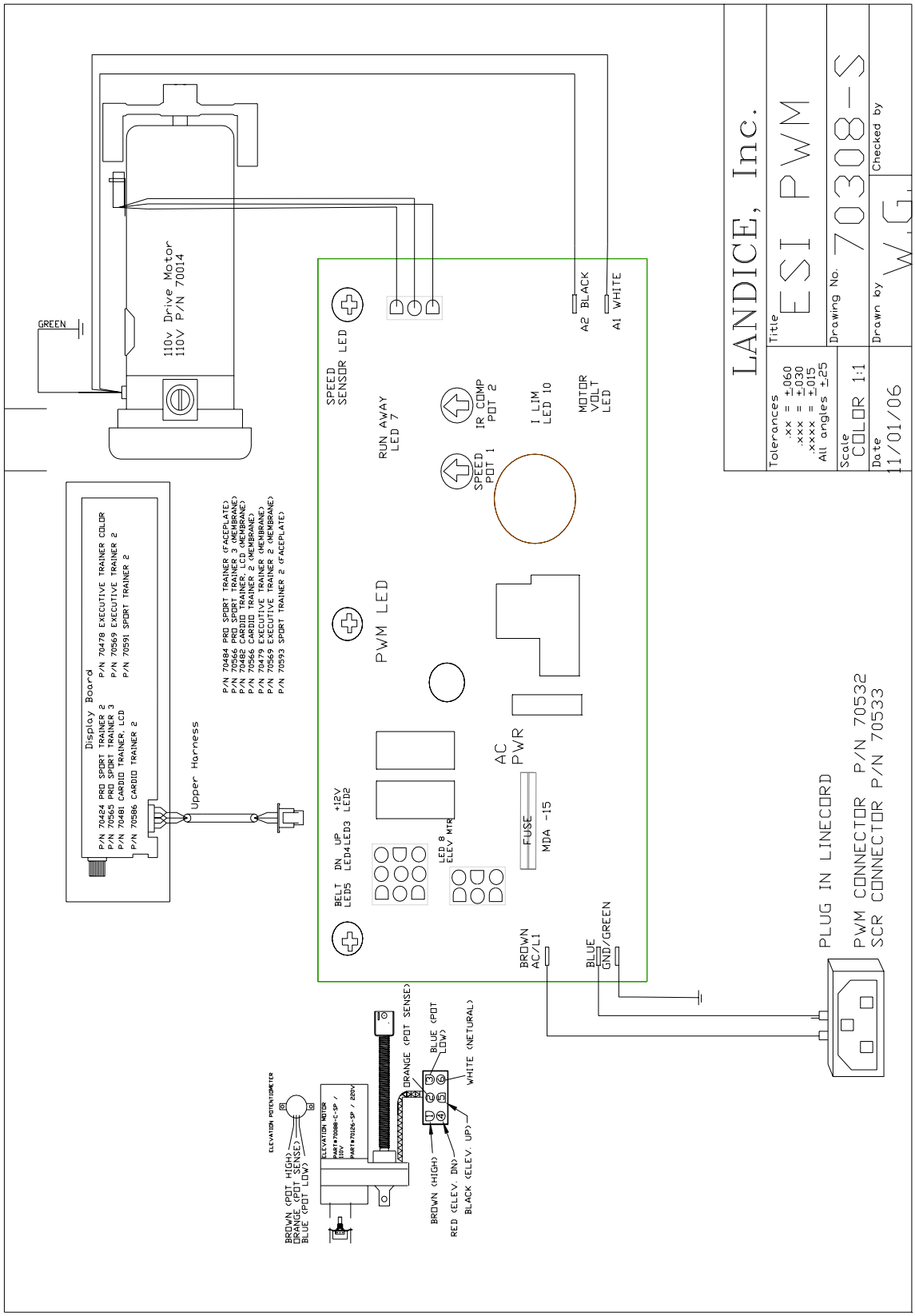
DN & UP (yellow) – The DN and UP LED's indicates the elevation DN and UP relays are functioning properly. The LED's on the relay has energized and is sending high voltage to the elevation motor.

MALFUNCTION LED's

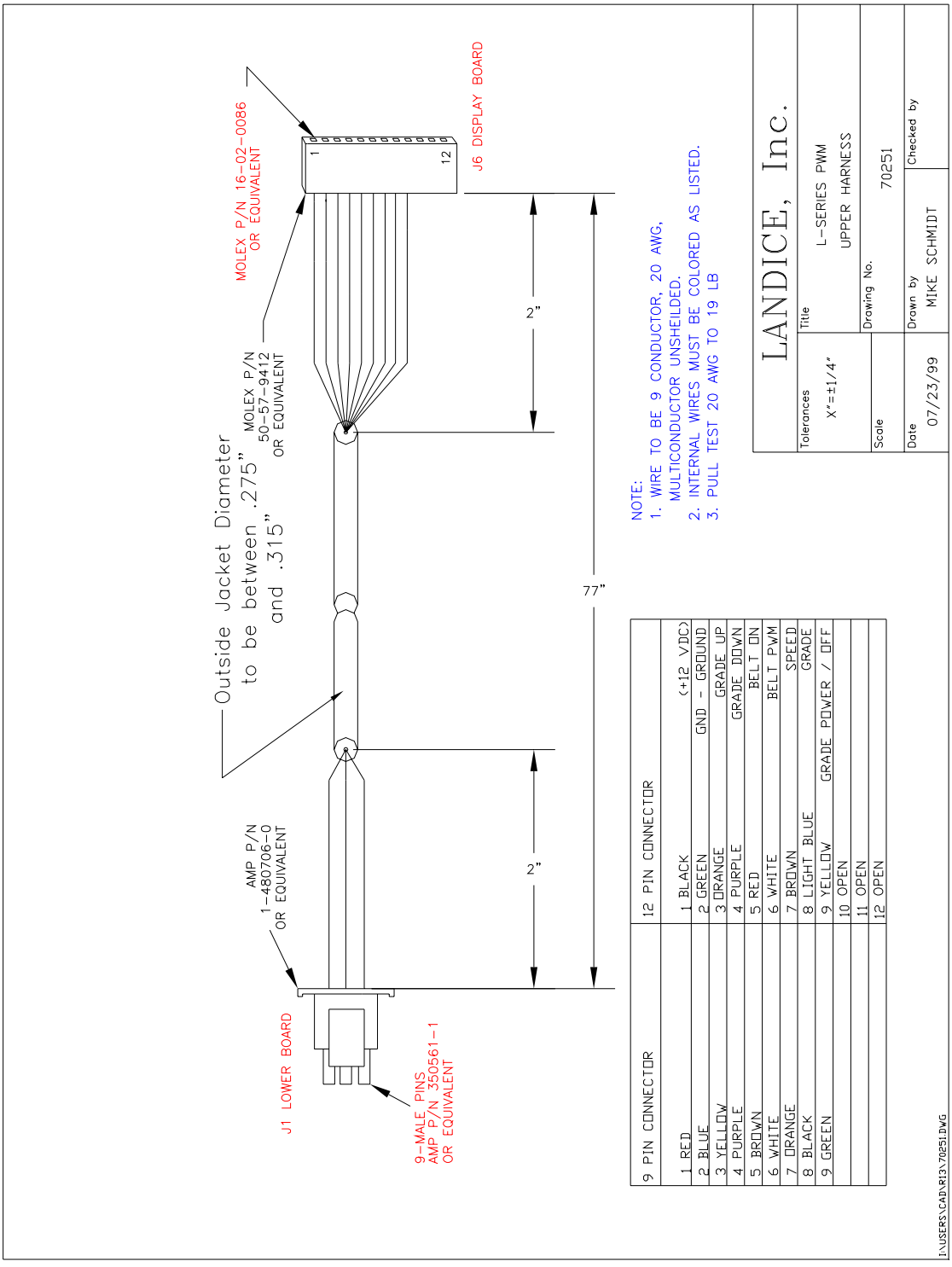
C.LIM (red) – The C.LIM (Current Limit) should **NEVER** be on. This diagnostic LED is use to determine the condition of the treadbelt and deck. The SCR board has a built-in amp meter. When the treadbelt and deck system wears, the amperage will increase. When this amperage reaches its max limit, the lower board will shut down its power (treadbelt will slowdown/low torque) to the drive motor and C.LIM LED will illuminate.

RUN AWAY (red) - This is an indication the speed of the treadmill is running faster than the commanded speed.

ESI PWM LOWER WIRE SCHEMATIC



PWM MAIN WIRE HARNESS



NOTE:
1. WIRE TO BE 9 CONDUCTOR, 20 AWG, MULTICONDUCTOR UNSHEILDED.
2. INTERNAL WIRES MUST BE COLORED AS LISTED.
3. PULL TEST 20 AWG TO 19 LB

9 PIN CONNECTOR	
1 RED	
2 BLUE	
3 YELLOW	
4 PURPLE	
5 BROWN	
6 WHITE	
7 ORANGE	
8 BLACK	
9 GREEN	

12 PIN CONNECTOR	
1 BLACK	(+12 VDC)
2 GREEN	GND - GROUND
3 ORANGE	GRADE UP
4 PURPLE	GRADE DOWN
5 RED	BELT ON
6 WHITE	BELT PWM
7 BROWN	SPEED
8 LIGHT BLUE	GRADE
9 YELLOW	GRADE POWER / OFF
10 OPEN	
11 OPEN	
12 OPEN	

LANDICE, Inc.

Tolerances	Title		
X"=±1/4"	L-SERIES PWM UPPER HARNESS		
Scale	Drawing No.		
	70251		
Date	Drawn by	Checked by	
07/23/99	MIKE SCHMIDT		

I:\USERS\CAD\R13\70251.DWG

NOTE: USE THIS WHEN DIAGNOSING THE ESI-PWM BOARD
Upper display lights up but the treadbelt doesn't move: L5 Error

1. Enter into diagnostic mode. (see pg 39)
2. Press the fast button until 12.0 mph is displayed.

Is the GREEN BELT LED 5 lit on the ESI-PWM board?

NO

1. Check the red wire on the 9-pin wiring harness for a loose wire or connection.
2. Replace the upper display board.

YES

1. Shut the treadmill off by pressing the stop button. Remove the drive motor wires from terminals A-1 and A-2 from the ESI-PWM board.
2. Enter into diagnostic mode.
3. Press the fast button until 12.0 mph is displayed.
4. Using your voltmeter on vdc setting check for proper voltage from the ESI-PWM board A-1 and A-2 terminals at the ESI-PWM board for 90 vdc or better.

DID YOU MEASURE 90 VOLTS OR BETTER?

YES

1. Check the motor brushes on the drive motor to be about 3/8 inch thick.

ARE THE BRUSHES AT LEAST 3/8" LONG?

NO

1. Replace the ESI-PWM board. (70455)

YES

NO

1. Replace both motor brushes.

1. Perform a generation test on the drive motor by connecting the voltmeter to the drive motor black & white wires and manually run on the treadmill. You should generate at least 20 to 30 vdc when running on the treadmill.
2. Perform an ohms test on the drive motor with your voltmeter by turning the voltmeter to ohms and connecting the black and white wires to your voltmeter. You should get a reading of .9 ohms or lower on your voltmeter
3. Spin the drive motor flywheel with your hand to see if the flywheel spins.
4. Do a resistance test on the drive motor by touching the black & white wires together to see if the drive motor flywheel spins with resistance.

IF ANY OF THESE TESTS FAILS THEN REPLACE THE DRIVE MOTOR

NOTE: USE THIS FOR DIAGNOSING THE ESI-PWM BOARD.
Elevation system not functioning: PO Error

Enter into diagnostic mode.
1. On ET'S Press MENU & START
2. On CT'S & PST'S: Press NEXT & START
3. On ST'S & RTM'S: Press DISPLAY & START

DOES THE ELEVATION SYSTEM WORK?

YES → Is there elevation pot feedback present when mill elevates.

YES → Proceed w/ recalibrating the elevation pot (See Page # 28).

NO → Check wire harness

Connections. Good?

NO

1. Check on the ESI-PWM board for the ORANGE ELEVATION MTR LED-8 to be lit.

YES

NO → 1. Replace the ESI-PWM board.

Unplug the 6-pin elevation motor harness connector from the ESI-PWM board.
WHICH BUTTON OR DIRECTION HAS THE PROBLEM?

UP

Press the elevation UP button.
IS THE UP LED-3 ON THE ESI-PWM

NO

DOWN

Press the elevation DOWN button.
IS THE DN LED-4 ON THE ESI-PWM LIT?

NO

1. Inspect the ORANGE (UP) wire and the PURPLE (DOWN) wire on both the wire connectors on the ESI-PWM board and on the upper display board for any crimped, frayed, broken or loose wires.
2. IF THE HARNESS CONNECTORS ARE IN TACT, REPLACE THE DISPLAY

YES

1. Check the 6-pin elevation harness connection for any crimped, frayed, broken or loose wires.
2. Replace the elevation motor.

110-V ELEVATION MOTOR (70088)
220-V ELEVATION MOTOR (70126)

NOTE: USE THIS FOR DIAGNOSING THE ESI-PWM BOARD
Upper display fails to light when start is pressed

Is the GREEN AC-PWR led-9 on the ESI-PWM board lit?

NO

1. Check the outlet for proper line voltage supply.
2. Check the line cord condition and connection.
3. Unplug the treadmill and use a multimeter to check the fuse. If the fuse is bad swap out the fuse with the spare. (MDA-15 FUSE) slow blow.
4. Plug in the treadmill and use a mulitmeter to check for 120vac across HOT & NEUT terminals on the ESI-PWM board.
5. Failed ESI-PWM board (70455)

YES

Is the GREEN +12VDC led-2 lit on the ESI-PWM

NO

Failed Transformer. Replace ESI-PWM board. (70455)

YES

1. Unplug the upper wiring harness from the lower board and inspect all of the wires for any crimped, frayed, broken or loose wires. Be sure the harness is routed underneath the elevation motor and secured with a plastic zip tie or plastic clip.

2. Unplug the upper harness from the display board and inspect all of the wires for any loose wires or push pins. Using your multimeter check for proper voltage from the GREEN & BLACK wires for +12VDC.

DOES THE UPPER HARNESS AND SUPPLIED VOLTAGE READING CHECK OUT?

YES

1) On 70 ST'S Only, Remove the display board from the faceplate and press the start button. If the display powers up then check for proper mounting on the faceplate. If the display doesn't power up then replace the display board.

2) On 70-ET's & CT's & PST'S Conduct a membrane bypass test by jumping the ground and start pins on the display board with your voltmeter set on continuity or a piece of wire or paper clip. If the display lights up then replace the membrane panel. If the display doesn't light up then replace the display board. To perform a membrane bypass test follow the instructions on pages 41 & 42!

NO

1) Do a continuity test on the upper harness. If you don't have any continuity on the upper harness then replace the harness.
2) Replace the ESI-PWM lower board. (70455)

NOTE: USE THIS WHEN DIAGNOSING THE ESI-PWM BOARD
Upper display lights up: Treadbelt moves: Speed won't increase: L5 Error

1. Check the speed sensor alignment.
2. Check the speed sensor is gapped 1/16" from the flywheel.

IS IT OUT OF POSITION OR GAPPING?

YES → ADJUST SPEED SENSOR
1. Use ½" wrench and loosen the two lock nuts securing the sensor to the bracket.
2. Adjust sensor gap to 1/16".
3. Tighten the lock nuts.

NO ↓

Unplug the 3-wire speed sensor connector from the ESI-PWM board. Check for any crimped, frayed, broken or loose wires.
ANY FOUND?

YES → Repair or replace the speed sensor

NO ↓

Unplug the 9-pin upper wiring harness connector from the ESI-PWM board. Check for any crimped, frayed, broken or loose wires. Specifically look at pin-5 (BROWN) AND PIN-9 (GREEN) wire.
ANY FOUND?

YES → Repair or replace the upper harness.

NO ↓

ENTER INTO DIAGNOSTIC MODE:
1) On ET'S Press MENU & START.
2) On CT'S & PST'S Press NEXT & START.
3) On ST'S & RTM'S Press FAST & START.

Press the fast button and check for speed sensor feedback.

YES → Replace ESI-PWM board.

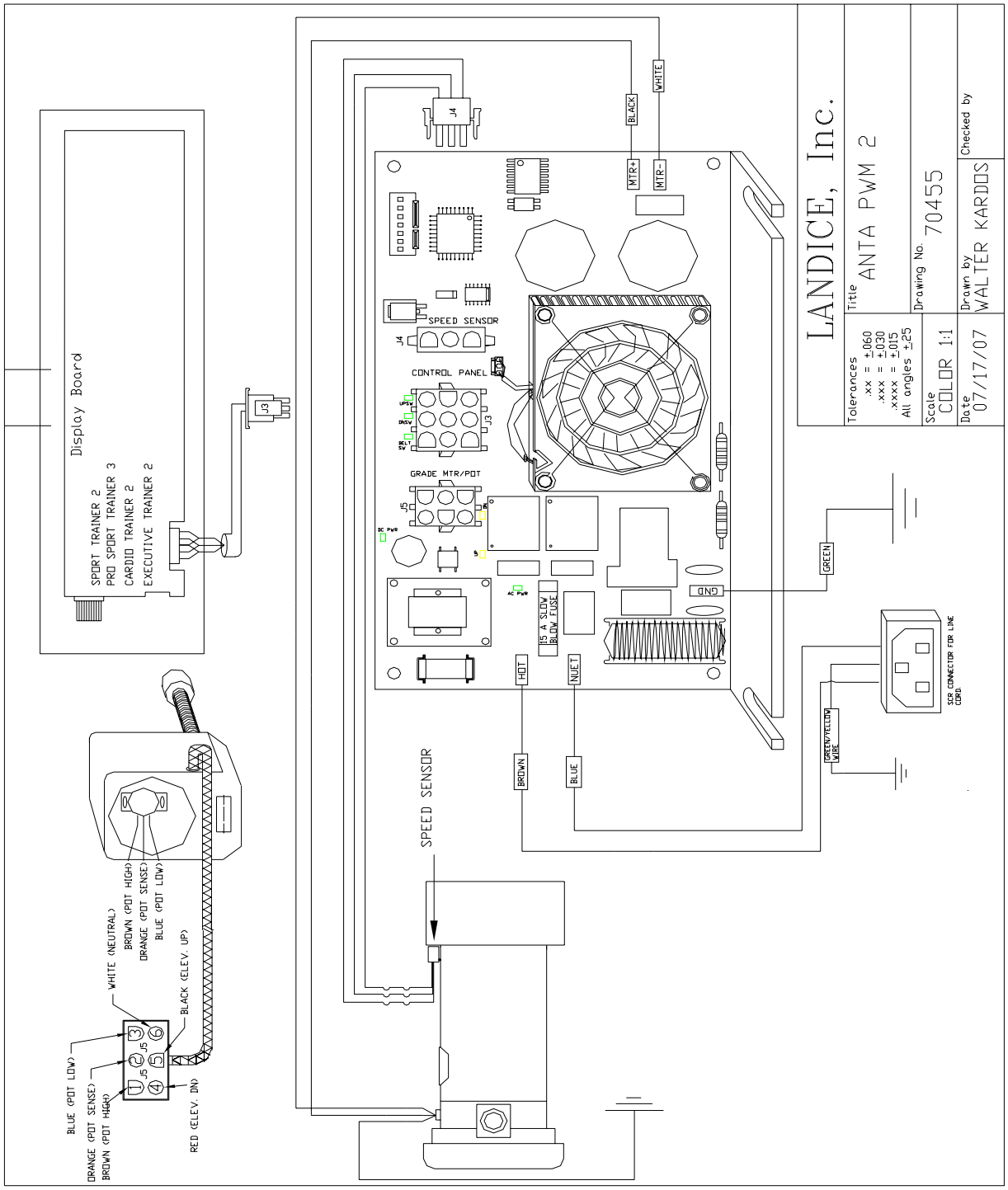
NO ↓

1. Disconnect the speed sensor from the ESI-PWM board.

NO ↓ REPLACE THE ESI-PWM BOARD

YES ↓ REPLACE THE SPEED SENSOR

ANTA/PWM 2 BOARD



NOTE: USE THIS FOR DIAGNOSING THE ANTA PWM2 / REV. D1
UNIT FAILS TO LIGHT UP WHEN START IS PRESSED

Is the green **AC PWR LED** on the ANTA PWM2 Board lit?

NO →
1. Check outlet for proper line voltage.
2. Check line cord connections and condition.
3. Unplug treadmill & with your multimeter set to continuity, check the fuse. If its bad swap it out with spare MDA-15 slow blow fuse.
4. Plug in treadmill and with your multimeter set to Volts AC, check for 120Vac across the HOT & NEUT terminals on the PWM 2 board. If 120Vac is confirmed then replace ANTA PWM2 / Part # 70455.

YES ↓

Is the green **DC PWR LED** on the ANTA PWM2 Board

NO → Check the smaller fuse (F2) located next to the transformer (T1) using your multimeter set to continuity. Is the fuse good?

- **YES** → Replace ANTA PWM2 / Part#70455
- **NO** → Replace the Fuse / Part# MDA-15

YES ↓

1. Unplug the upper harness connectors from the board & inspect all wires for loose or pushed pins. Make sure harness is routed under the elevation motor & secured down w/ harness clip.
2. Unplug the upper harness connector from the upper display & inspect all wires for loose fit or pushed pins. Confirm the upper display board is receiving +12Vdc at the BLK & GRN wires. Does the upper harness & supplied voltage check out?

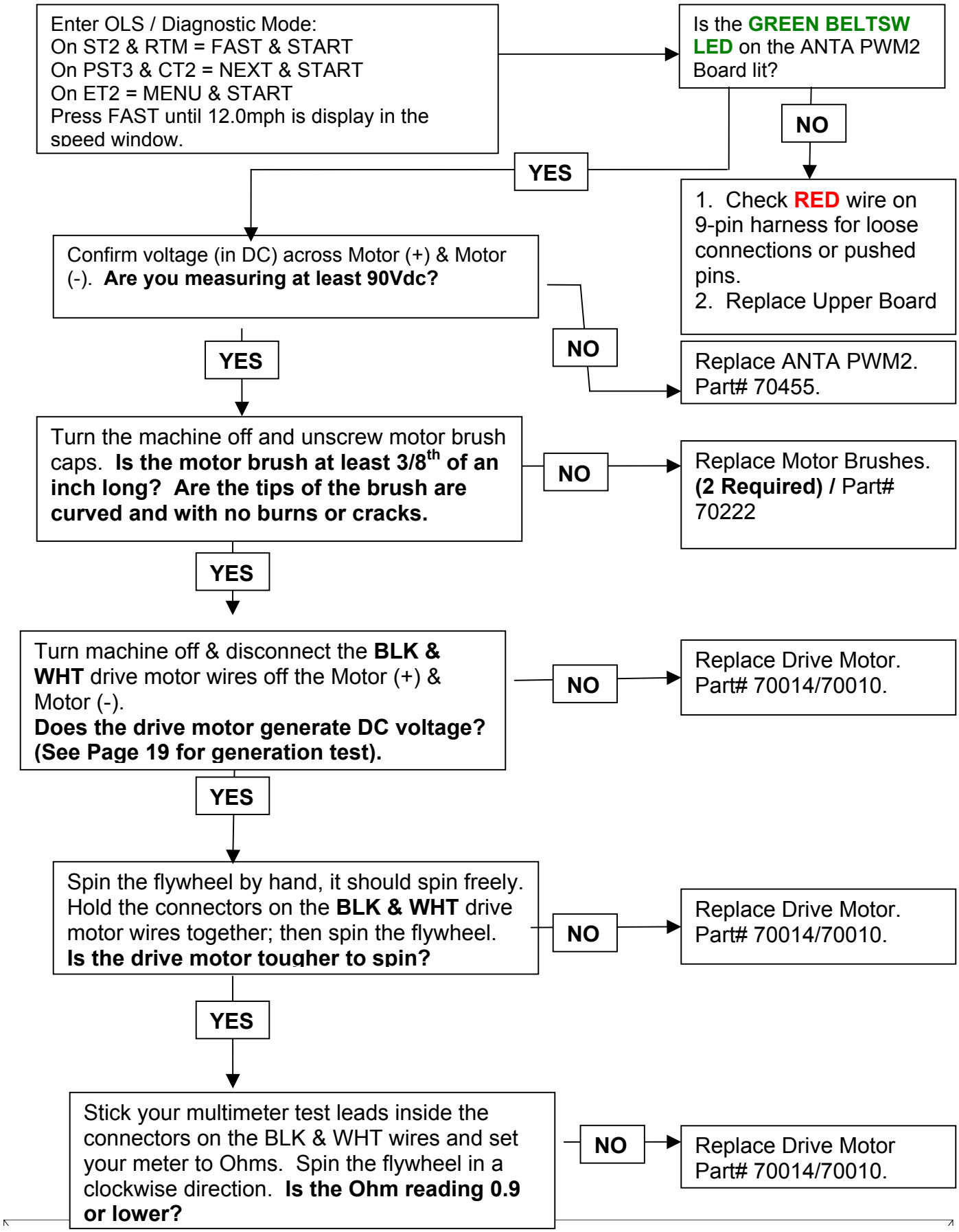
NO → Replace upper wire harness if connections are loose. Part# 70251

Replace ANTA PWM2 if 0Vdc are measured across the BLK & GRN wire. Part# 70455.

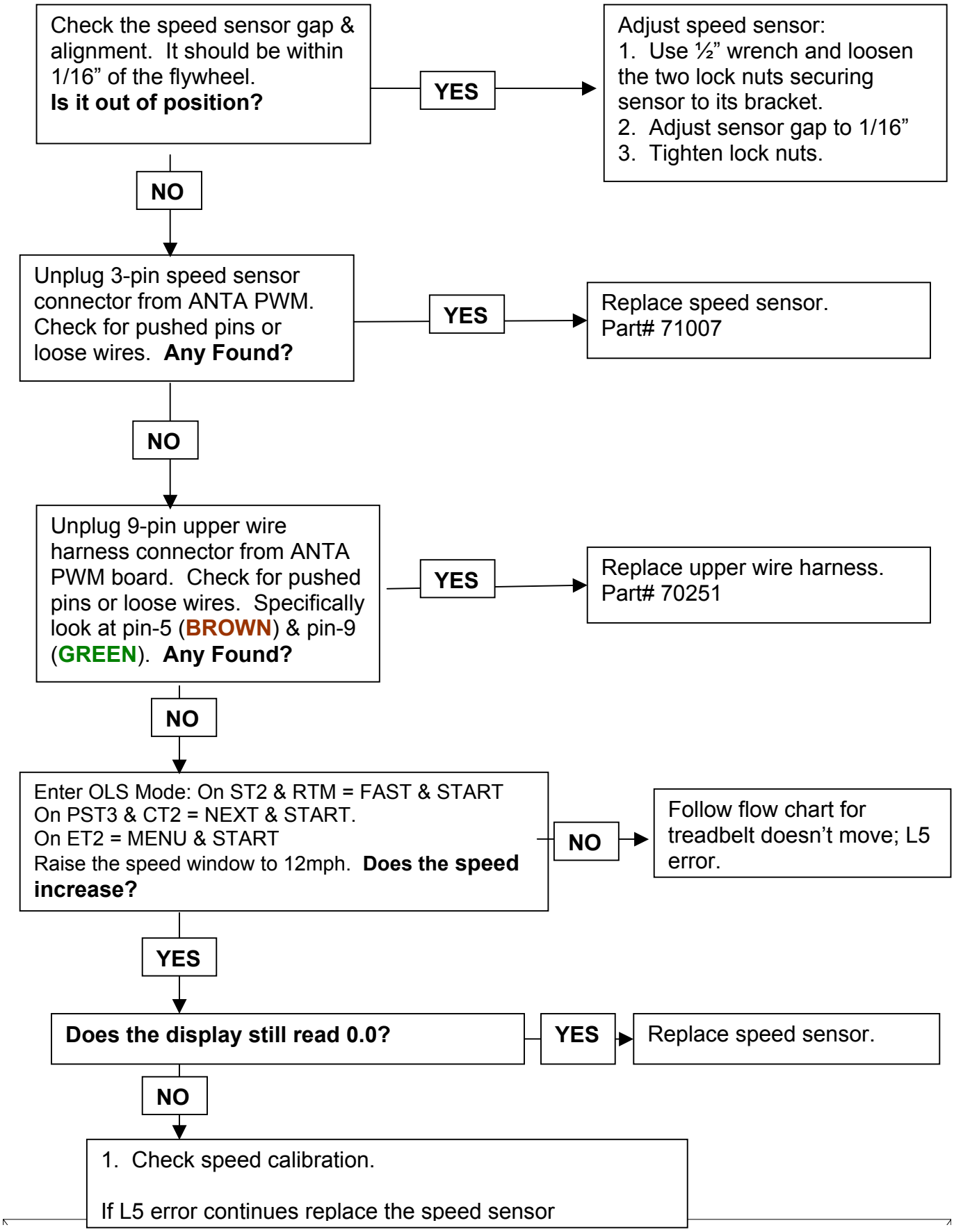
YES ↓

On ST2 & RTM's: Remove the display board from the faceplate, place it on a towel and press the START button manually on the upper board. If the display board lights up then check for proper display board to faceplate mounting. If the display board doesn't light up then replace the display board.
On PST3, CT2, & ET2: Conduct Membrane Bypass Test (See Page 41 & 42). If upper board lights up then replace Membrane Panel. If upper board doesn't light up, replace upper display board.

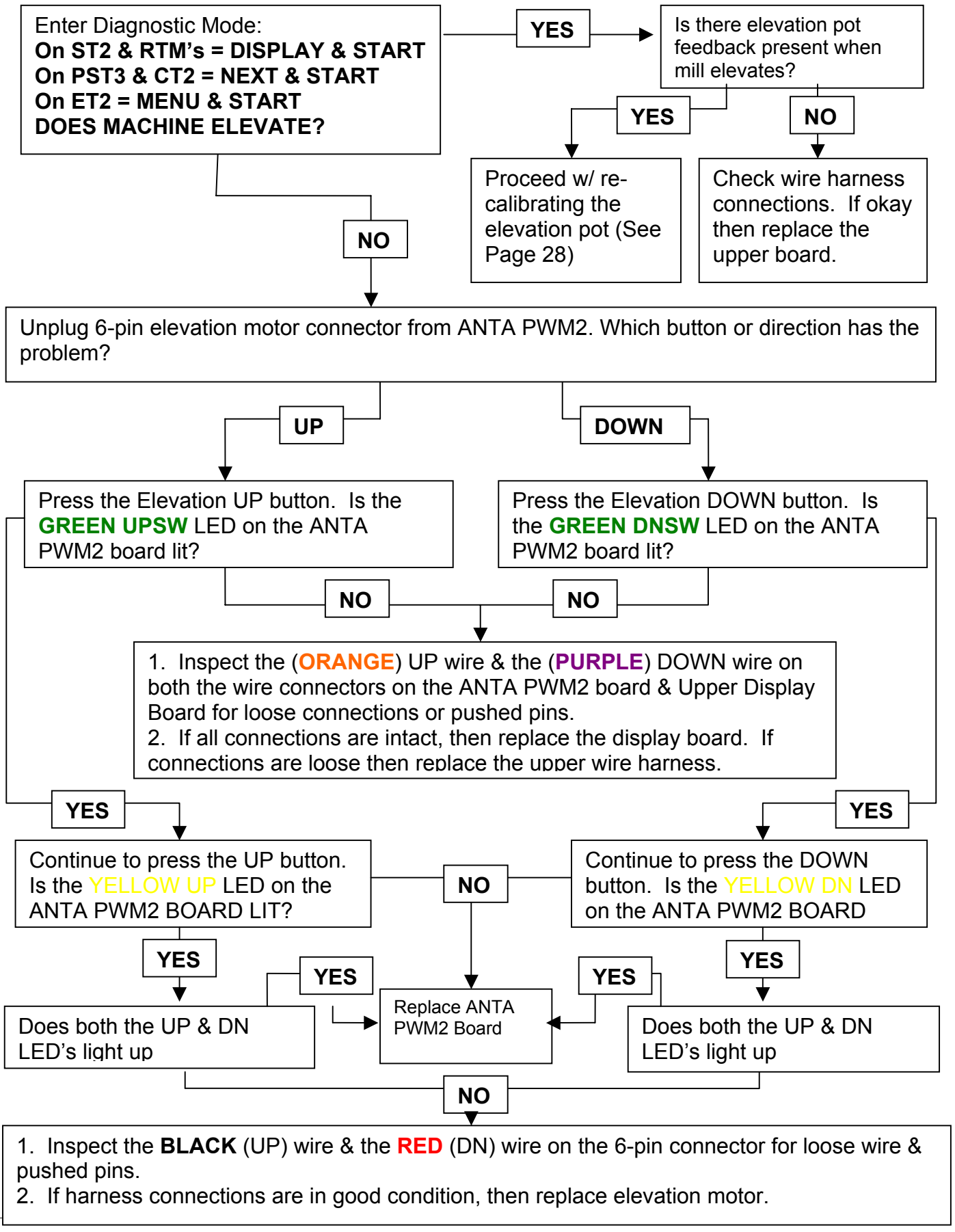
NOTE: USE THIS FOR DIAGNOSING ANTA PWM2 / REV. D1
UPPER DISPLAY LIGHTS UP BUT TREADBELT DOESN'T MOVE; L5 ERROR



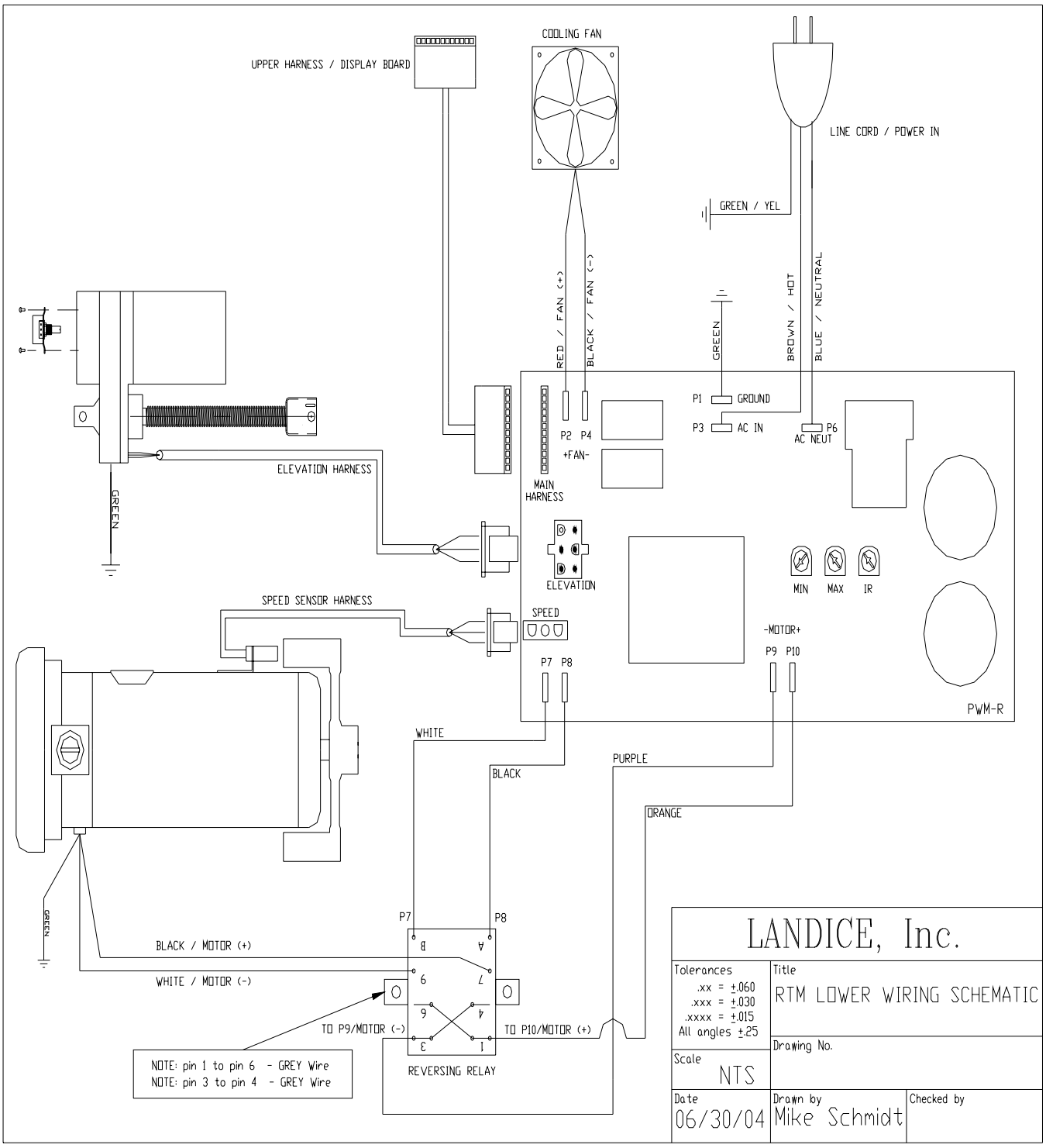
NOTE: USE THIS FOR DIAGNOSING ANTA PWM2/ REV. D1 (W/ BALDOR MOTOR)
UPPER BOARD LIGHTS UP; TREADBELT MOVES; SPEED WILL NOT INCREASE; L5 ERROR



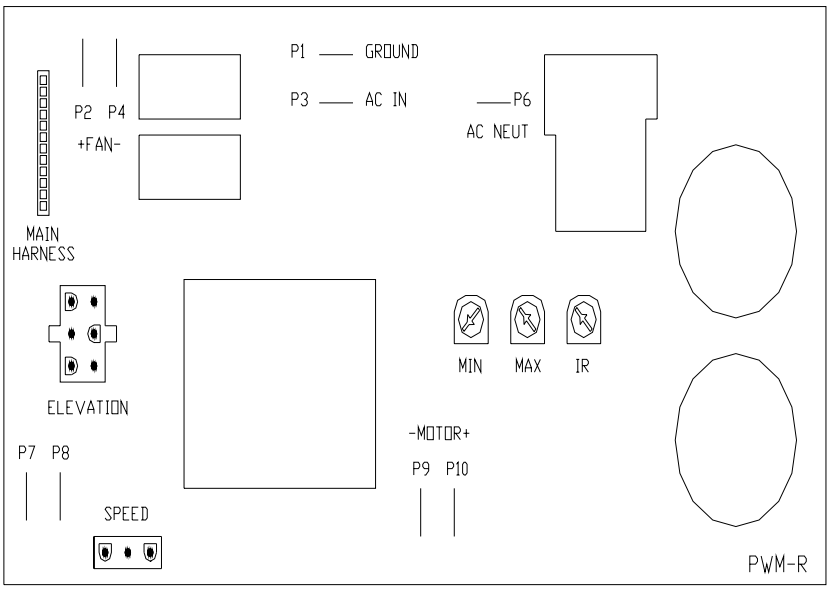
NOTE: USE THIS FOR DIAGNOSING ANTA PWM SUPERBOARD / REV. D1
ERROR DETECTED IN ELEVATION CONTROLLER OR PO ERROR



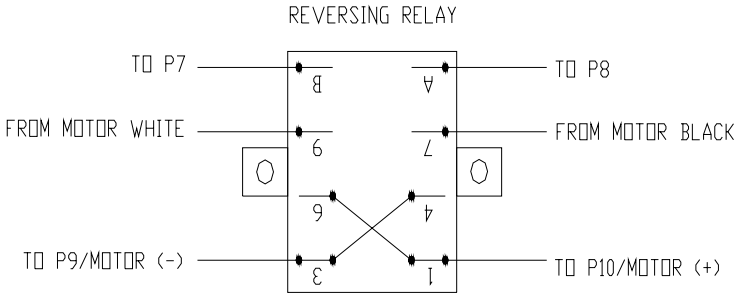
LOWER SCHEMATIC FOR REVERSING REHABILITATION



LOWER SCHEMATIC WITH REVERSE RELAY



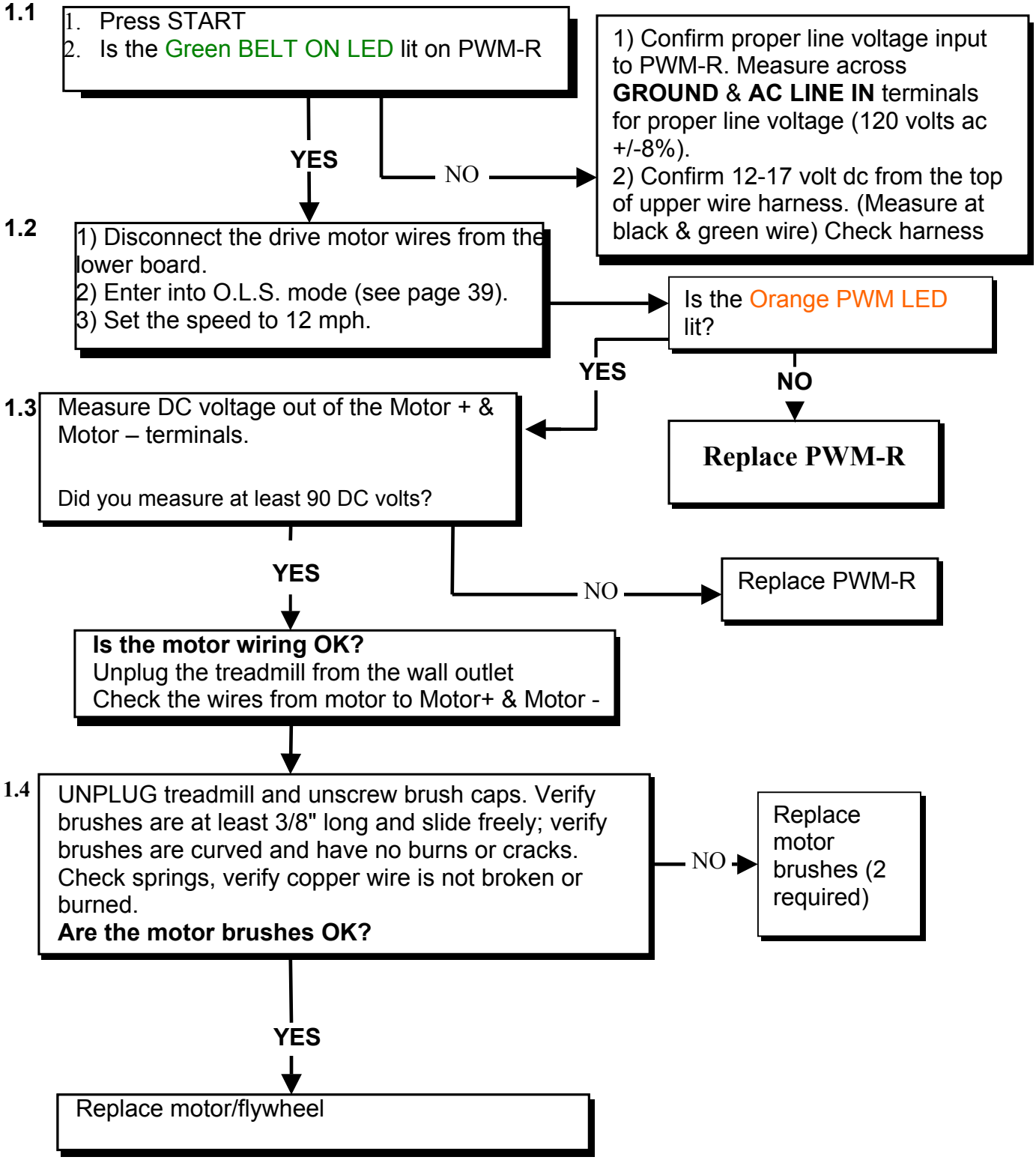
CONNECTION	WIRE COLOR
1 TO P10	ORANGE
1 TO 6	GREY
3 TO P9	PURPLE
3 TO 4	GREY
7 TO MOTOR BLK	BLACK
9 TO MOTOR WHT	WHITE
A TO P8	BLACK
B TO P7	WHITE
PAN GRND TO P1	GREEN
AC IN TO P3	BROWN
AC NEUT TO P6	BLUE
FAN (+) TO P2	RED
FAN (-) TO P4	BLACK



LANDICE, Inc.

Tolerances .xx = ±.060 .xxx = ±.030 .xxxx = ±.015 All angles ±.25	Title RTM Relay wiring	
Scale NTS	Drawing No.	
Date	Drawn by D. Erazo	Checked by

NOTE: USE THIS DIAGNOSING FOR THE RTM-REVERSE
Treadmill will start; no belt movement, L5 error code



NOTE: USE THIS FOR DIAGNOSING THE RTM - REVERSE

Treadmill does not go in Reverse, No error code

2.1 1) Press the START button
2) Press the REVERSE button

Is the red LED on the REVERSE button lit?

NO → 1) Re-seat the upper board to the faceplate.
2) Replace upper board

YES

2.2 Is the green REVERSE LED lit on the PWM-R?

NO → 1) Check wire harness connections
2) Replace upper board

YES

2.3 Disconnect the black and white wires from the relay coming from P7 & P8 and measure DC voltage.
Did you measure at least 15 volts dc?

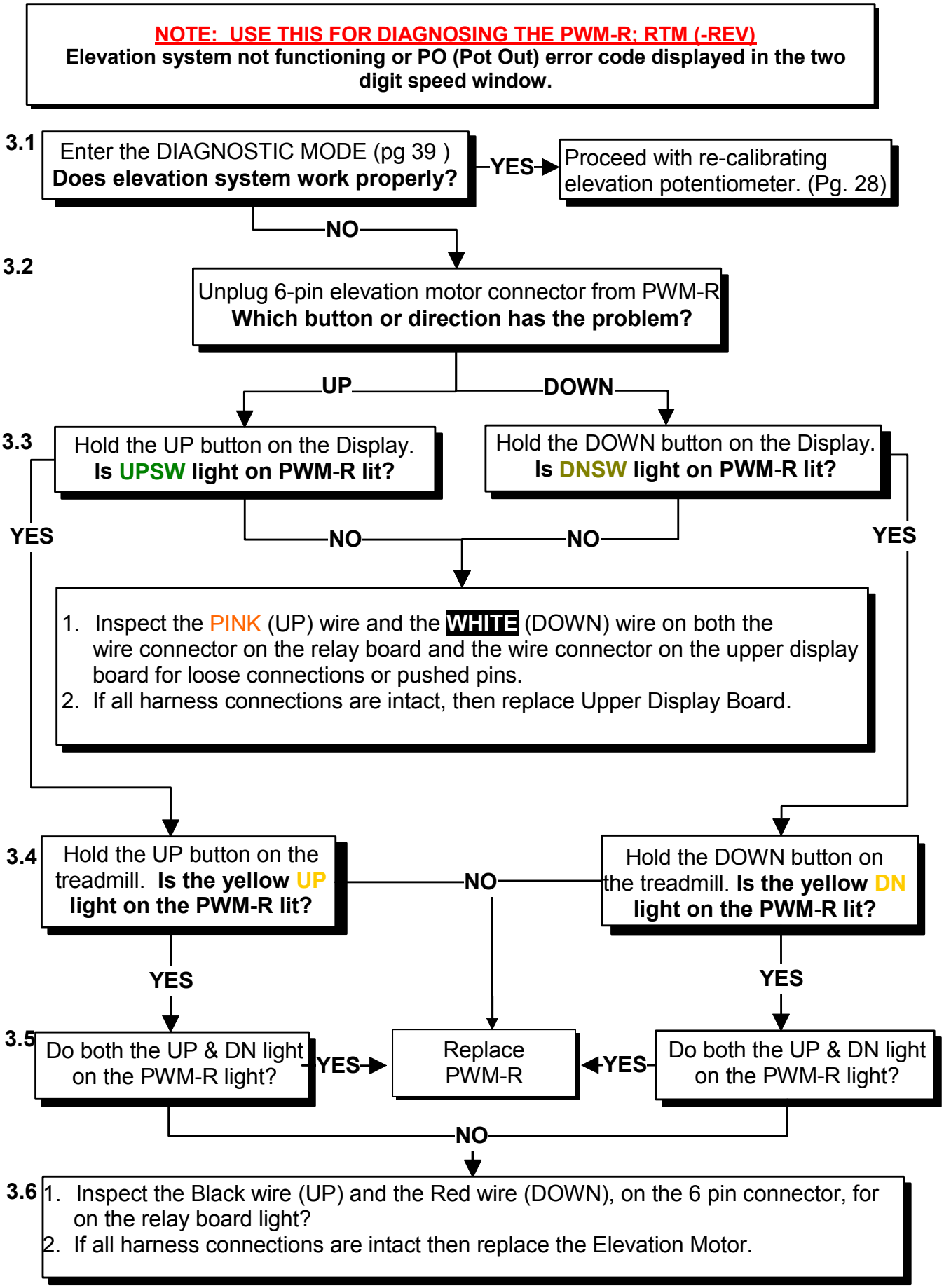
NO → Replace PWM-R board

YES

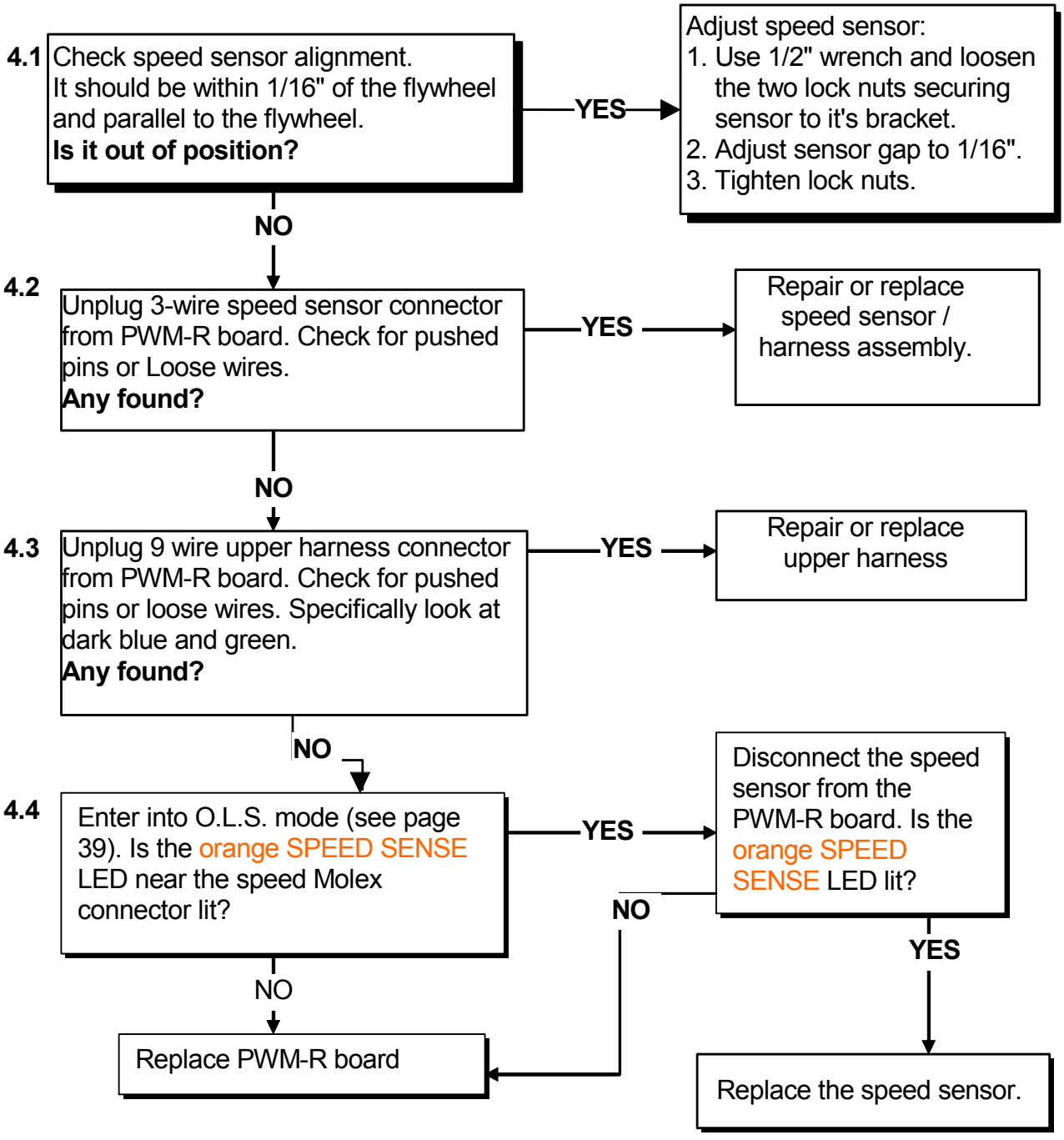
2.4 1) Turn machine off
2) Disconnect drive motor wires from the lower board
3) Enter into Open Loop Speed Mode (see page 39). Increase the speed to 12 mph.
4) Measure from the **Motor+** & **Motor-** wire terminal in volts dc with your meter.
Do you measure at least 90 dc voltages?

YES ← 1) Check if drive motor is seized
2) Check if the motor brushes are least 3/8" long.
3) Replace the Drive Motor?

NO → Replace PWM-R board


NOTE: USE THIS FOR DIAGNOSING THE PWM-R; RTM (-REV)
Elevation system not functioning or PO (Pot Out) error code displayed in the two digit speed window.
3.1
Enter the DIAGNOSTIC MODE (pg 39)
Does elevation system work properly?
YES
Proceed with re-calibrating elevation potentiometer. (Pg. 28)
NO
3.2
Unplug 6-pin elevation motor connector from PWM-R
Which button or direction has the problem?
UP
DOWN
3.3
Hold the UP button on the Display.
Is UPSW light on PWM-R lit?
Hold the DOWN button on the Display.
Is DNSW light on PWM-R lit?
YES
NO
NO
YES
1. Inspect the PINK (UP) wire and the WHITE (DOWN) wire on both the wire connector on the relay board and the wire connector on the upper display board for loose connections or pushed pins.
2. If all harness connections are intact, then replace Upper Display Board.
3.4
Hold the UP button on the treadmill. Is the yellow UP light on the PWM-R lit?
NO
Hold the DOWN button on the treadmill. Is the yellow DN light on the PWM-R lit?
YES
YES
3.5
Do both the UP & DN light on the PWM-R light?
YES
Replace PWM-R
YES
Do both the UP & DN light on the PWM-R light?
NO
3.6
1. Inspect the Black wire (UP) and the Red wire (DOWN), on the 6 pin connector, for on the relay board light?
2. If all harness connections are intact then replace the Elevation Motor.

NOTE: USE THIS DIAGNOSING FOR RTM(-REV)
Upper display lights up; treadbelt moves; speed will not increase; L5 error.



Landice Pot calibration for ESI 110-v PWM-R on Rehabilitation treadmill

MOTOR SPEED	
OPEN LOOP	
COMMANDED	SENSOR
0.1	0.2/0.3
0.5	0.5/0.6
1.0	1.0/1.1
5.0	4.3/4.4
10	8.5/8.6
11	9.2/9.3
12	10.1

POT SETTING

MIN POT
8 o'clock

MAX POT
10:45

IR POT
11 o'clock

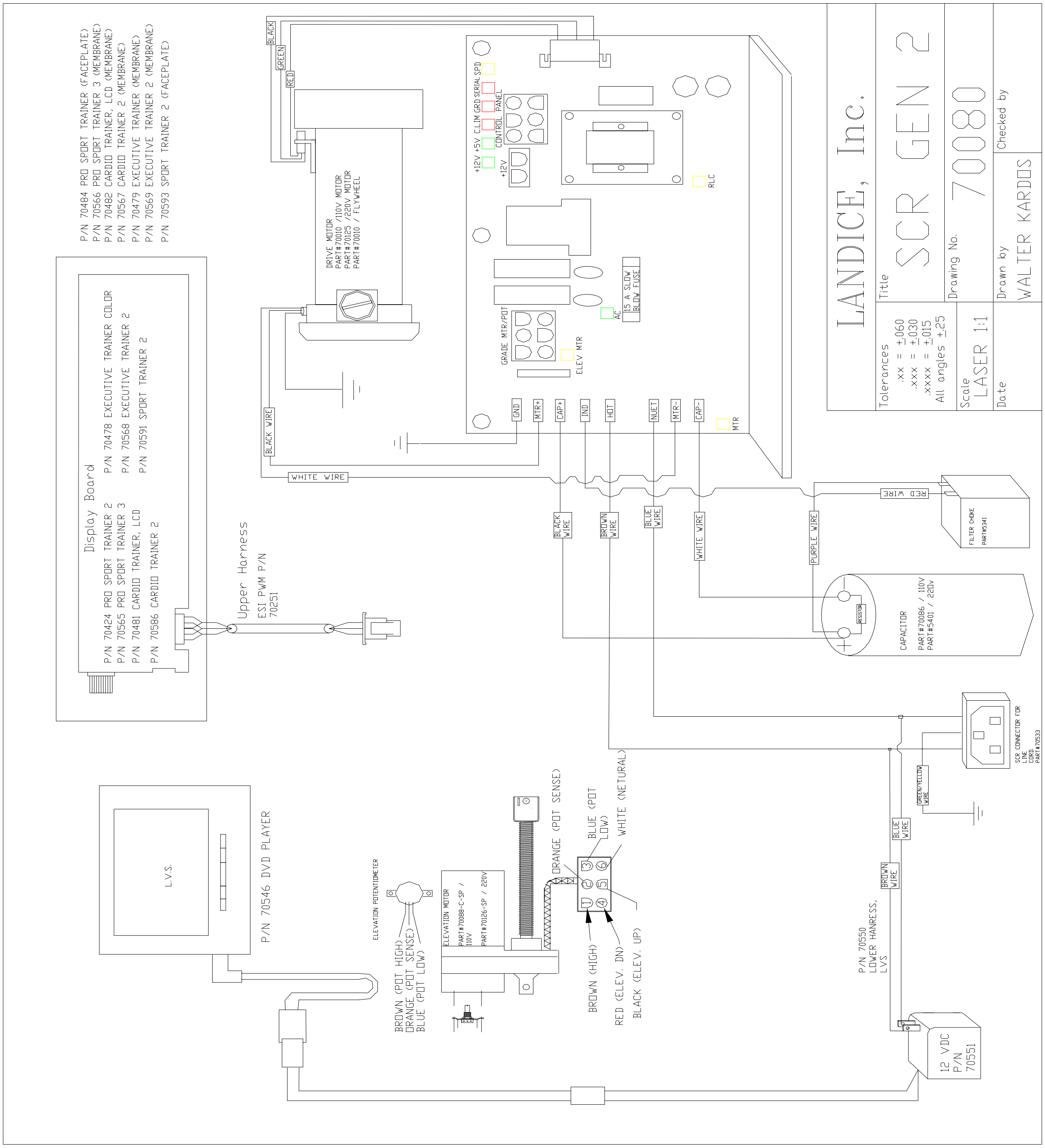
Enter into O.L.S. Mode is Fast and START simultaneously

Speeds and pot setting listed above are taken from the factory setting.

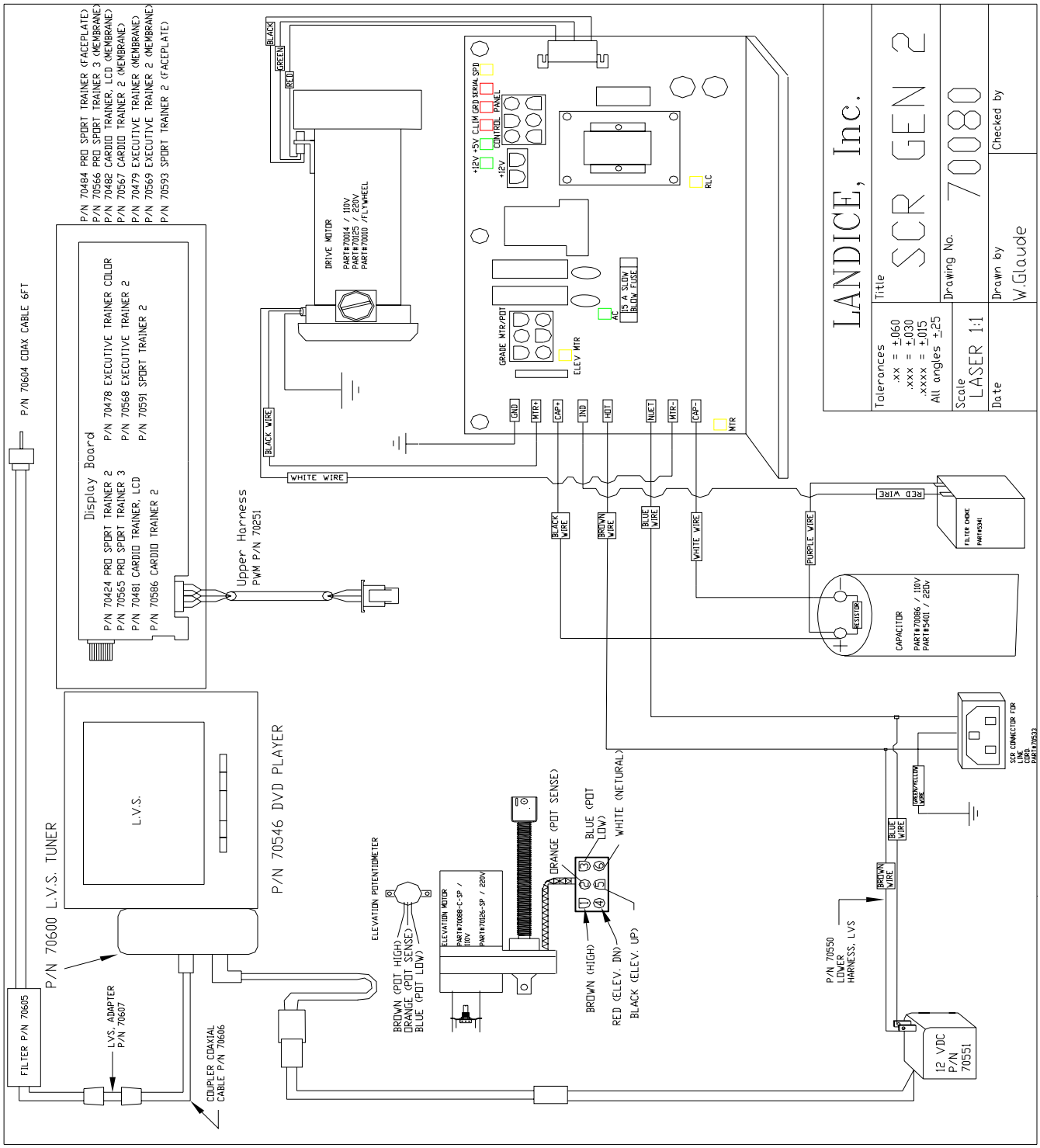
For best low-speed feel we set the MIN pot so that speed reads from 0.2 to 0.3 mph when commanded to 0.1 in open loop. This is usually done by calibrating the MIN pot around 8 o'clock. The MAX is set around 10:45 for the best high-speed feel. Then, the IR pot is a set to give smooth belt movement with a load. The IR pot calibration setting is generally around 11 o'clock.

Note: All settings are preset from the factory, however, by changing the min/max necessary speed pot the speed of the machine will vary. For torque and surging adjust the IR pot. If the treadmill speed is not resolved from speed calibration then replace the PWM-R board.

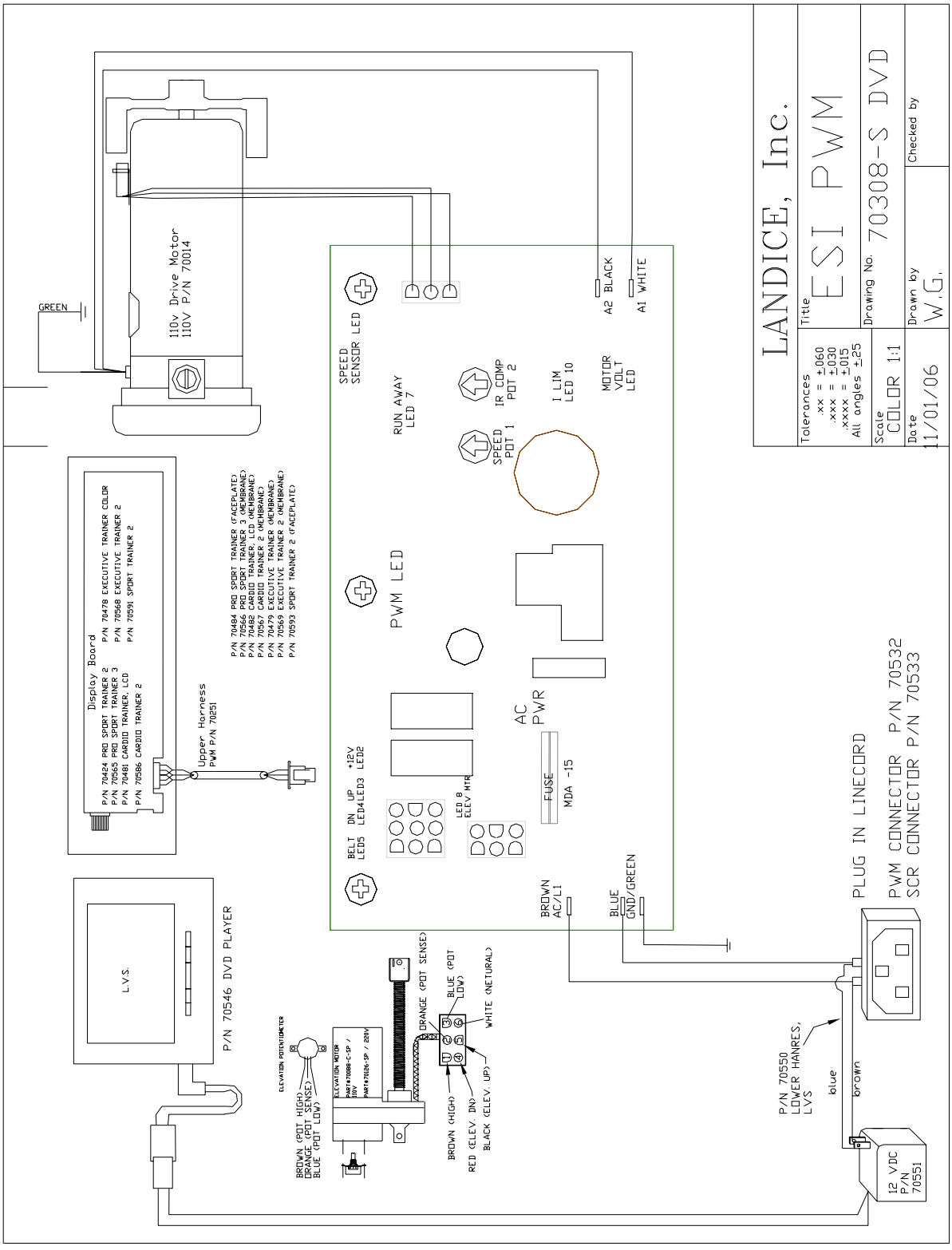
SCR 2/ LVS


LANDICE, Inc.
Title
SCR GEN 2
Drawing No.
70080
Checked by
Drawn by
WALTER KARDOS
Tolerances
.xx = ±.060
.xxx = ±.030
.xxxx = ±.015
All angles ±.25
Scale
LASER 1:1
Date
P/N 70484 PRO SPORT TRAINER (FACEPLATE)
P/N 70566 PRO SPORT TRAINER 3 (MEMBRANE)
P/N 70482 CARDIO TRAINER, LCD (MEMBRANE)
P/N 70567 CARDIO TRAINER 2 (MEMBRANE)
P/N 70479 EXECUTIVE TRAINER (MEMBRANE)
P/N 70569 EXECUTIVE TRAINER 2 (MEMBRANE)
P/N 70593 SPORT TRAINER 2 (FACEPLATE)
Display Board
P/N 70424 PRO SPORT TRAINER 2
P/N 70565 PRO SPORT TRAINER 3
P/N 70481 CARDIO TRAINER, LCD
P/N 70586 CARDIO TRAINER 2
P/N 70478 EXECUTIVE TRAINER COLOR
P/N 70568 EXECUTIVE TRAINER 2
P/N 70591 SPORT TRAINER 2
Upper Harness
ESI PWM P/N
70251
DRIVE MOTOR
PART#70010 /110V MOTOR
PART#70125 /220V MOTOR
PART#70010 / FLYWHEEL
BLACK
GREEN
RED
BLACK WIRE
WHITE WIRE
+12V +5V CLIM GRD SERIAL SPD
CONTROL PANEL
+12V
RLC
15 A SLOW BLOW FUSE
AC
GRADE MTR/POT
ELEV MTR
GND
MTR+
CAP+
IND
HOT
NUET
MTR-
CAP-
MTR
RED WIRE
FILTER CHOKE
PART#5341
BLACK WIRE
BROWN WIRE
BLUE WIRE
WHITE WIRE
PURPLE WIRE
RESISTOR
CAPACITOR
PART#70086 / 110V
PART#5401 / 220v
SCR CONNECTOR FOR LINE CORD PART#70533
GREEN/YELLOW WIRE
BLUE WIRE
BROWN WIRE
P/N 70550
LOWER HANRESS,
LVS
12 VDC
P/N
70551
L.V.S.
P/N 70546 DVD PLAYER
ELEVATION POTENTIOMETER
BROWN (POT HIGH)
ORANGE (POT SENSE)
BLUE (POT LOW)
ELEVATION MOTOR
PART#70088-C-SP / 110V
PART#70126-SP / 220V
ORANGE (POT SENSE)
BLUE (POT LOW)
WHITE (NETURAL)
BROWN (HIGH)
RED (ELEV. DN)
BLACK (ELEV. UP)

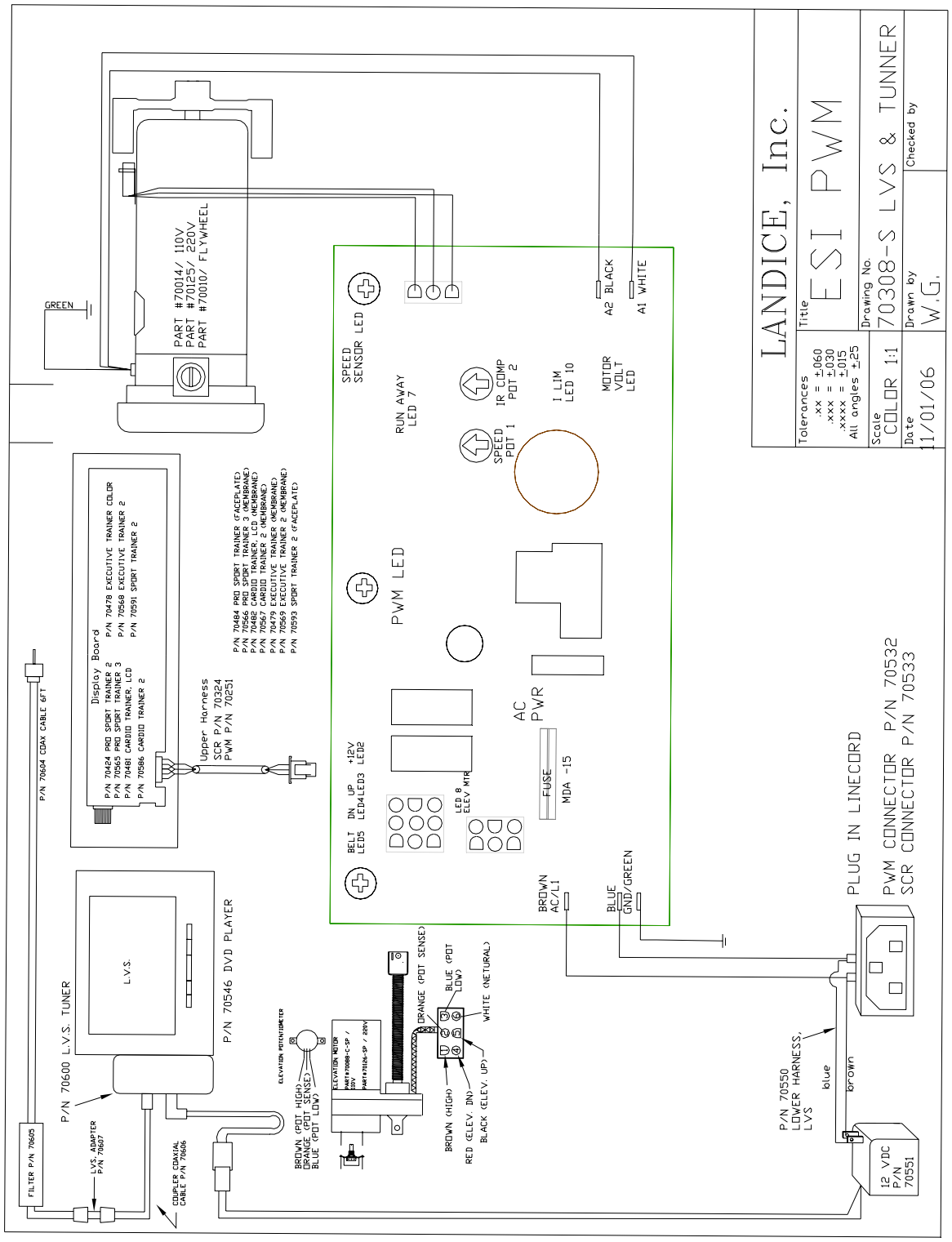
SCR 2/LVS WITH TUNER



ESI PWM/ LVS


LANDICE, Inc.
Title
ESI PWM
Drawing No. 70308-S DVD
Tolerances
.xx = ±.060
.xxx = ±.030
.xxxx = ±.015
All angles ±.25
Scale
COLOR 1:1
Date
11/01/06
Drawn by
W.G.
Checked by
110v Drive Motor
110V P/N 70014
GREEN
A2 BLACK
A1 WHITE
SPEED SENSOR LED
RUN AWAY LED 7
SPEED POT 1
IR COMP POT 2
I LIM LED 10
MOTOR VOLT LED
PWM LED
AC PWR
FUSE
MDA -15
BELT DN UP +12V
LED5 LED4 LED3 LED2
LED 8 ELEV MTR
Display Board
P/N 70424 PRO SPORT TRAINER 2
P/N 70565 PRO SPORT TRAINER 3
P/N 70481 CARDIO TRAINER, LCD
P/N 70586 CARDIO TRAINER 2
P/N 70478 EXECUTIVE TRAINER COLOR
P/N 70560 EXECUTIVE TRAINER 2
P/N 70591 SPORT TRAINER 2
Upper Harness
PWM P/N 70251
P/N 70484 PRO SPORT TRAINER (FACEPLATE)
P/N 70566 PRO SPORT TRAINER 3 (MEMBRANE)
P/N 70482 CARDIO TRAINER, LCD (MEMBRANE)
P/N 70567 CARDIO TRAINER 2 (MEMBRANE)
P/N 70479 EXECUTIVE TRAINER (MEMBRANE)
P/N 70569 EXECUTIVE TRAINER 2 (MEMBRANE)
P/N 70593 SPORT TRAINER 2 (FACEPLATE)
L.V.S.
P/N 70546 DVD PLAYER
ELEVATION POTENTIOMETER
BROWN (POT HIGH)
ORANGE (POT SENSE)
BLUE (POT LOW)
ELEVATION MOTOR
PART#70088-C-SP / 110V
PART#70126-SP / 220V
ORANGE (POT SENSE)
BLUE (POT LOW)
WHITE (NETURAL)
BROWN (HIGH)
RED (ELEV. DN)
BLACK (ELEV. UP)
BROWN AC/L1
BLUE GND/GREEN
PLUG IN LINECORD
PWM CONNECTOR P/N 70532
SCR CONNECTOR P/N 70533
P/N 70550
LOWER HARNESS, LVS
blue
brown
12 VDC P/N 70551

ESI PWM/LVS WITH TUNER



Medrail Installation

The L770 models are not pre drilled. Drill a ¼-20” hole in the frame for bed rail clamps
The L870 & L970 are pre-drilled.

Step 1	Step 2
	
Insert the side rail into the upper rail clamp and tighten the bolt using a ½: socket (do not over-tighten)	Fit the side rail to the bottom rail clamp
Step 3	**Step 4**
	
Use a soft mallet to firmly set the rails inside the clamp	**Use a 3/16” allen wrench to tighten the rail clamp bolts**

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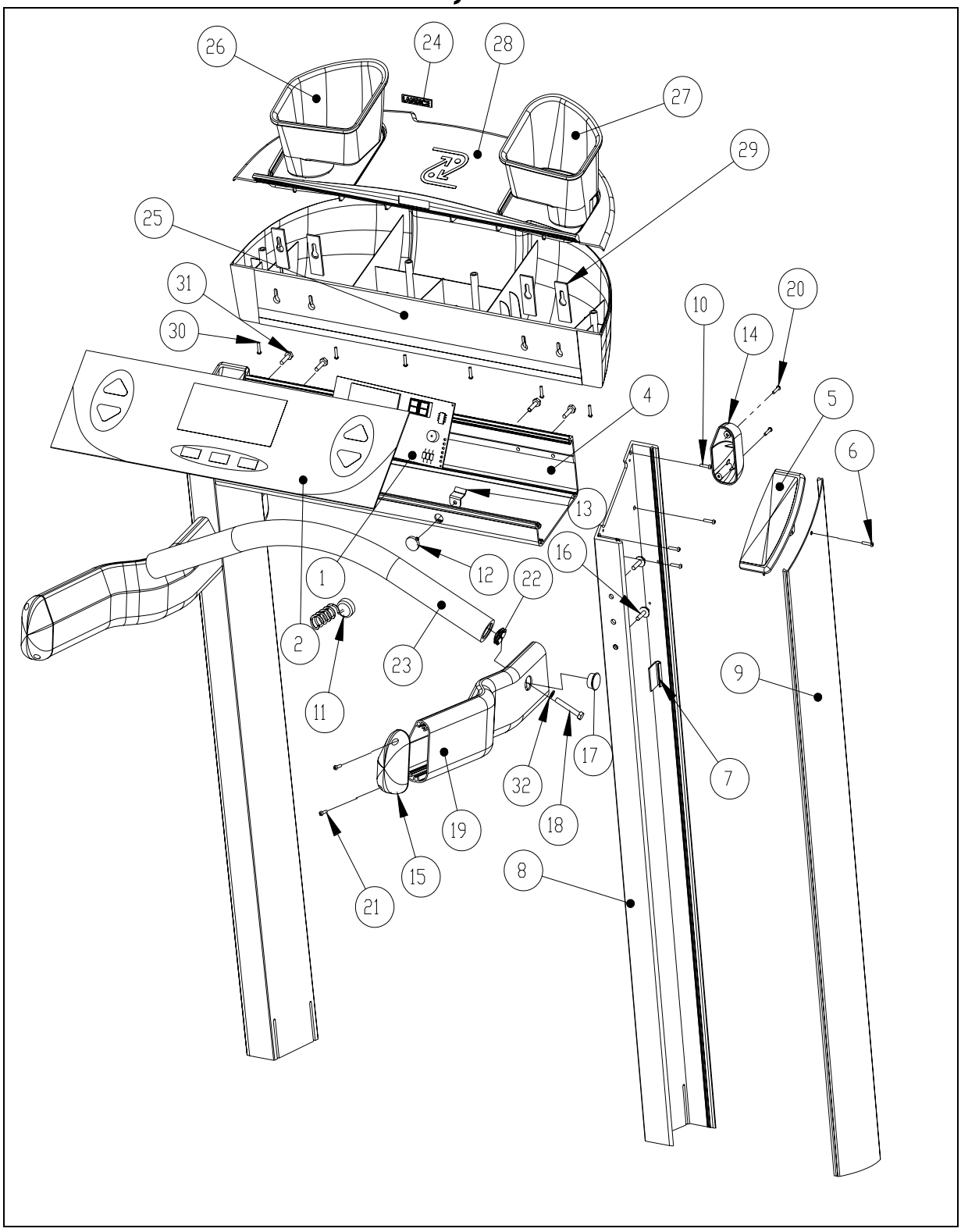
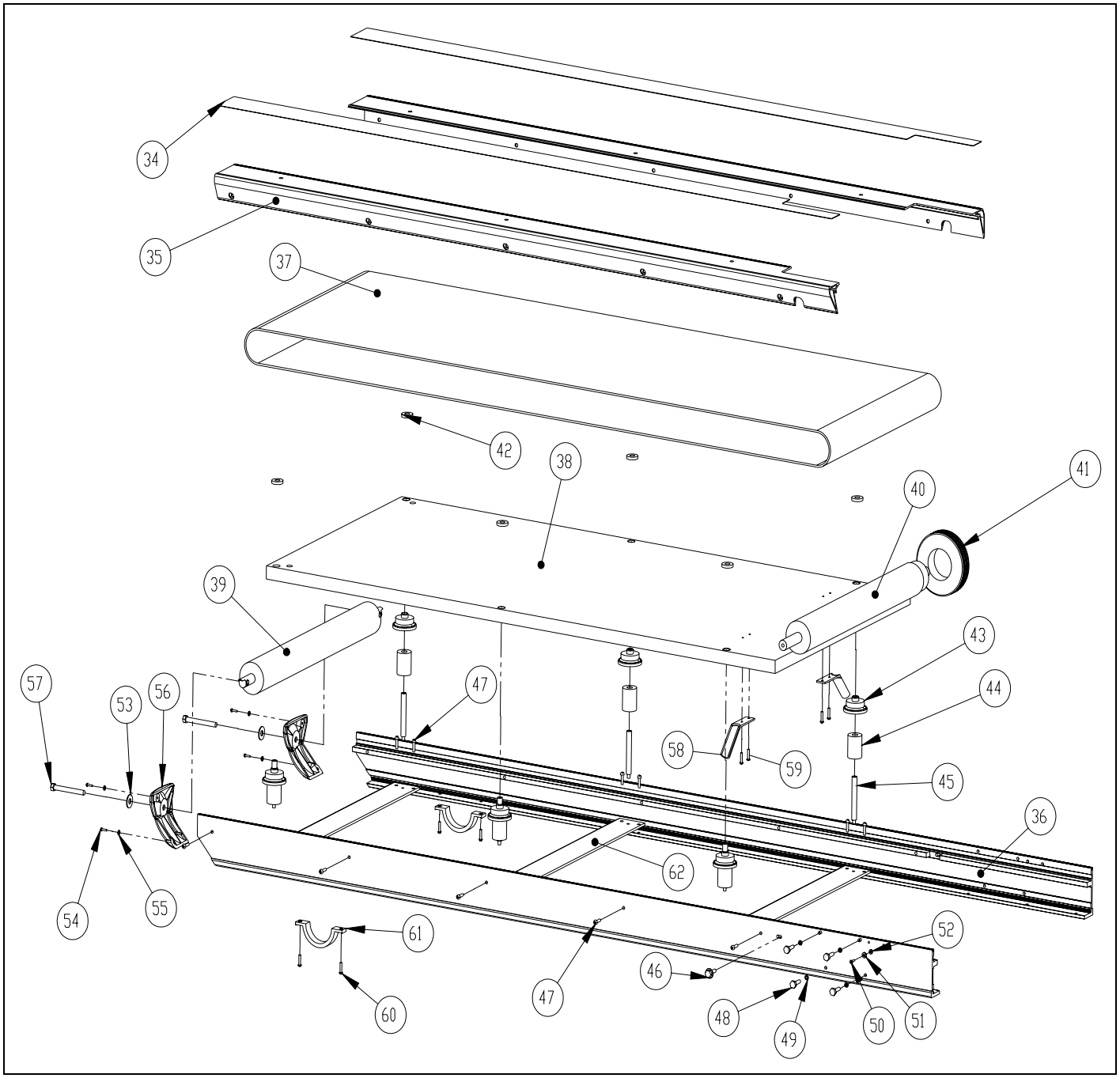
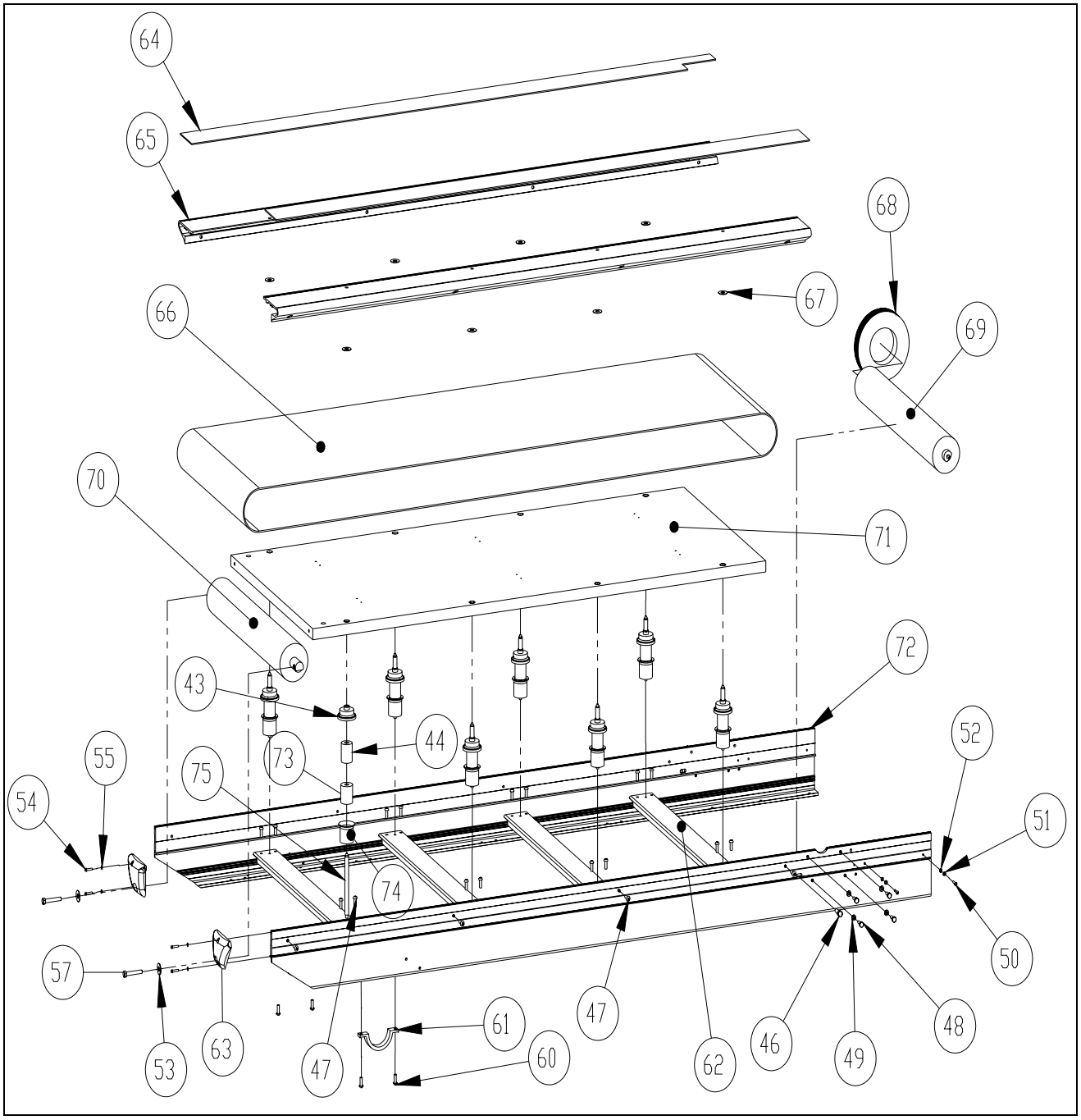
UPRIGHT, 70 SERIES



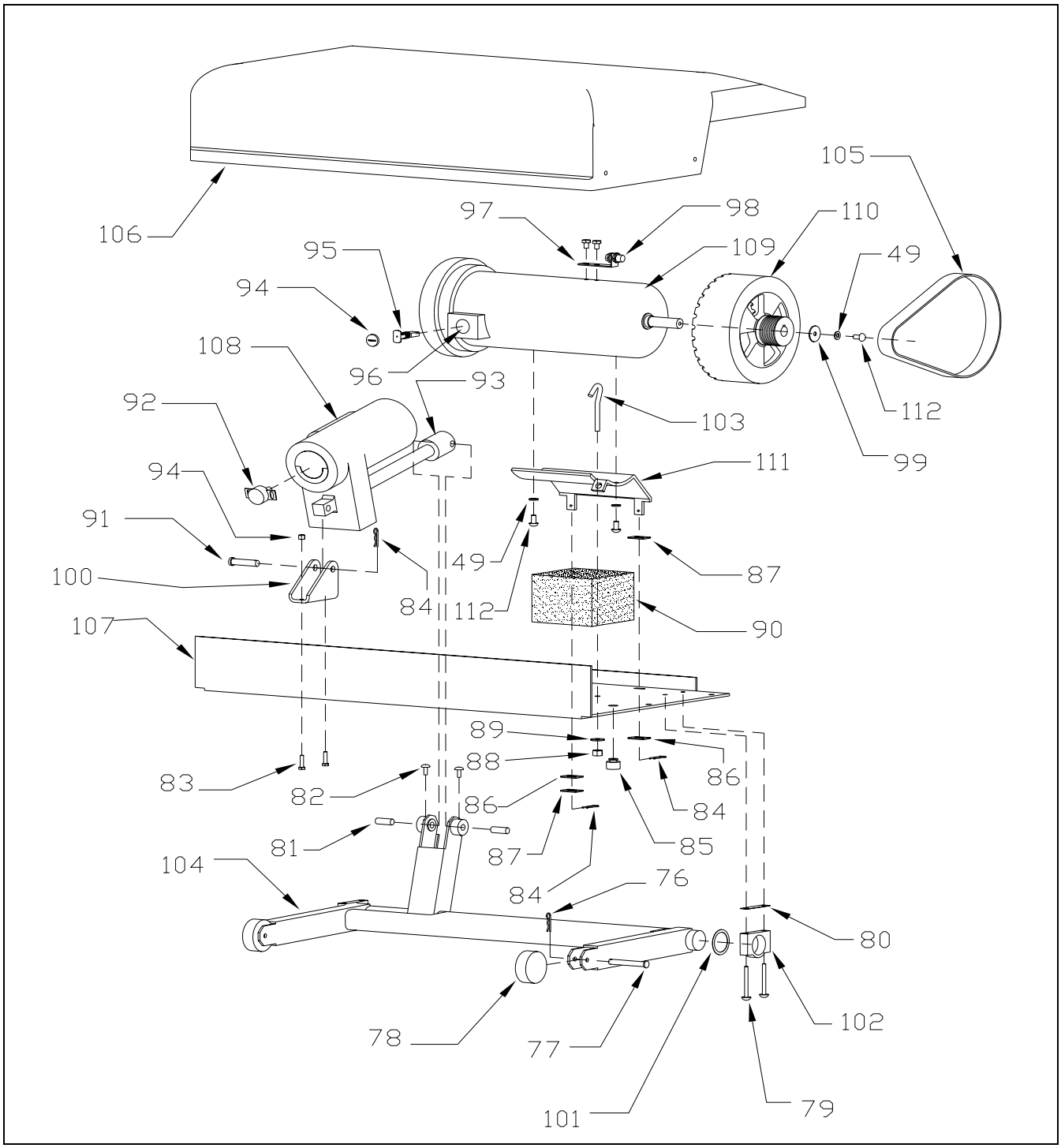
BED, L770 SERIES



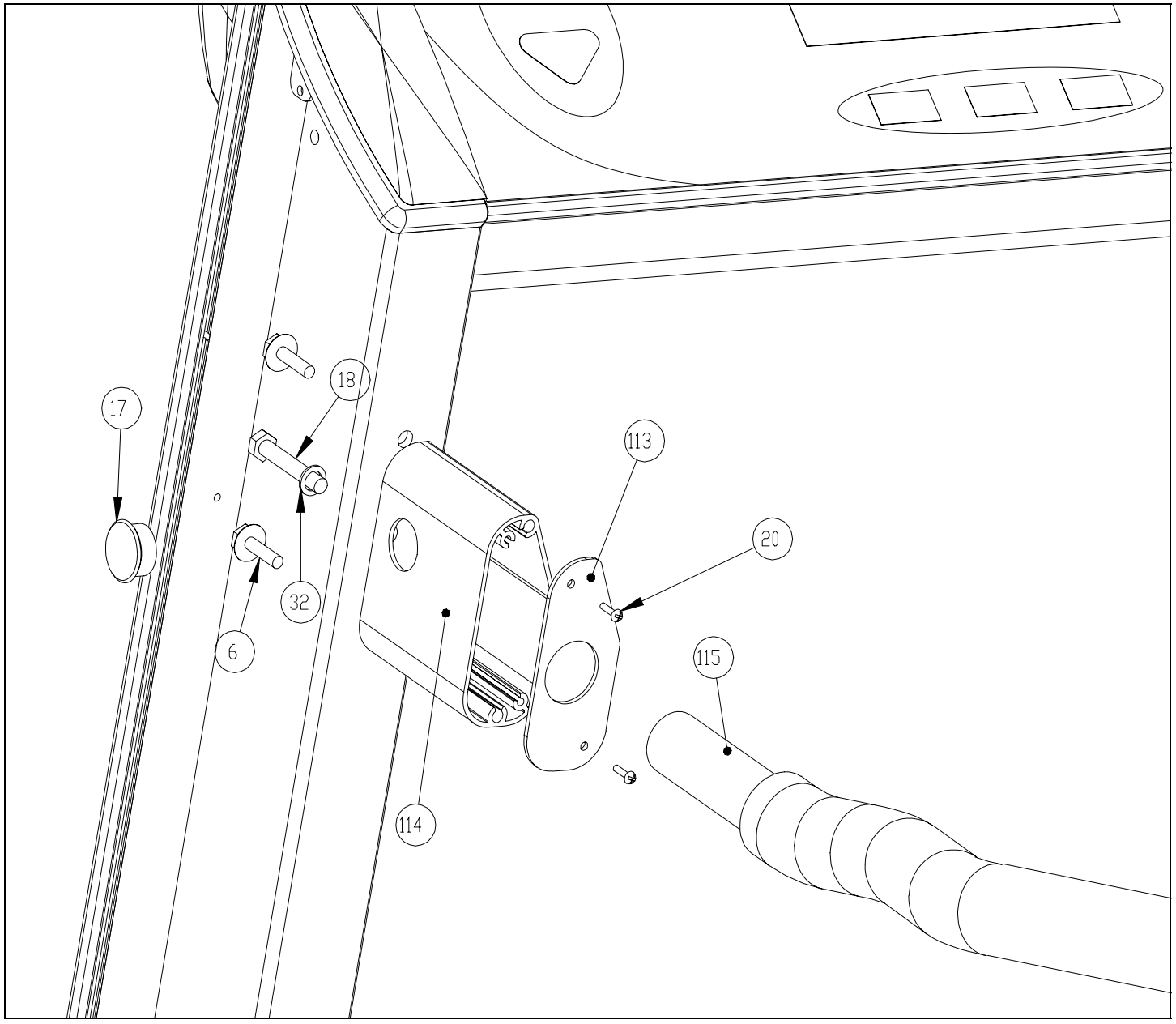
BED, L870 SERIES



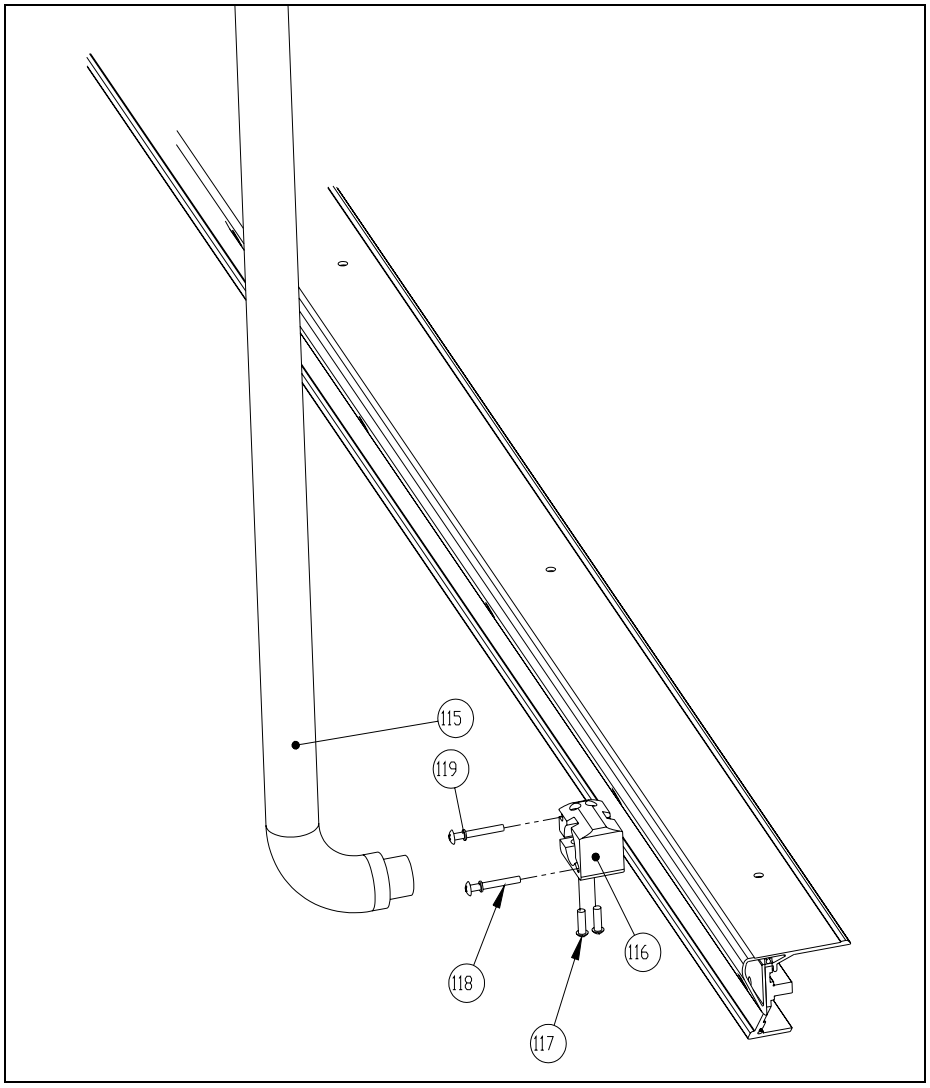
70 SERIES, MOTOR PAN



MEDRAIL CLOSE UP, 70 SERIES



MEDRAIL LOWER CLAMP, 70 SERIES



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October 2007

Parts List for Exploded View 70's series Treadmills

Note: Always get Version number for electronic components to insure compatibility.

NUMBER	MODEL	DESCRIPTION	PART NUMBER
1	L7/L8/L9	DISPLAY BOARD – SPORTS TRAINER	70591
		DISPLAY BOARD – PRO SPORT TRAINER 3	70565
		DISPLAY BOARD – CARDIO TRAINER 2	70586
		DISPLAY BOARD – EXECUTIVE TRAINER 2	70568
		DISPLAY BOARD – RTM/RTM-REV	70424-RTM
2	L7/L8/L9	FACEPLATE –SPORTS TRAINER	70593
		MEMBRANE PANEL – PRO SPORT TRAINER 3	70566
		MEMBRANE PANEL – CARDIO TRAINER 2	70567
		MEMBRANE PANEL – EXECUTIVE TRAINER 2	70569
		FACEPLATE – RTM 2	70594
		FACEPLATE – RTM 2, REVERSING	70595
3	L7/L8/L9	READING RACK, CADDY, ASSEMBLY	70522-SP (-BK, TI)
4	L7/L8/L9	CONTROL PANEL	70555(-BK, -TI)
5	L7/L8/L9	END CAP, UPRIGHT, RIGHT	70572
		END CAP, UPRIGHT, LEFT	70573
6	L7/L8/L9	ENDCAP SCREW, BLACK (1/2")	6-32_1/2_PFHMSB
		ENDCAP SCREW, TITANIUM	6-32X1/2_PMSZN
7	L7/L8/L9	WIRE RETAINER, UPRIGHT	70349
8	L7/L8/L9	UPRIGHT LEG, RIGHT	70556 (-BK, -T1)
		UPRIGHT LEG, LEFT	70557(-BK, -T1)
9	L7/L8/L9	UPRIGHT COVER – LEFT (BLACK)	70559-BK
		UPRIGHT COVER – RIGHT (BLACK)	70558-BK
		UPRIGHT COVER – LEFT (TITANIUM)	70559-TI
		UPRIGHT COVER – RIGHT (TITANIUM)	70558-TI
10	L7/L8/L9	UPRIGHT MOUNTING BOLTS	¼-20x3/4_TT
11	L7/L8/L9	MAGNETIC SAFETY LANYARD	71011-NEW
12	L7/L8/L9	MAGNETIC STUD	70492
13	L7/L8/L9	FLUX GUIDE	70340
14	L7/L8/L9	END CAP, HANDRAIL & UPRIGHT, LEFT*	70582
15	L7/L8/L9	END CAP, HANDRAIL & UPRIGHT, RIGHT*	70581
16	L7/L8/L9	HANDRAIL MOUNTING SCREWS	¼-20_X3/4_HWFL
17	L7/L8/L9	DOME PLUG, HANDRAILS	3149
18	L7/L8/L9	ACCUTRACK MOUNTING BOLT	5/16-18x2_HHMS
19	L7/L8/L9	HANDRAIL, RIGHT ASSEMBLY	70562-SP
		HANDRAIL, LEFT ASSEMBLY	70563-SP
20	L7/L8/L9	END CAP SCREWS TO UPRIGHT LEG	8-32_3/4_TTB
21	L7/L8/L9	END CAP SCREWS TO HANDRAIL	8x1_A_PPSTSZN
22	L7/L8/L9	RAM CONNECTOR, 1/12"	71039

23	L7/L8/L9	ACCUTRACK 4 ASSEMBLY	CONTACT-DCP
		CROSSBAR, ERGO	70564
24	L7/L8/L9	NAMEPLATE, READING RACK	70454
25	L7/L8/L9	BOTTOM, READING RACK	70522-BOTTOM
26	L7/L8/L9	LEFT BUCKET, READING RACK	70522-BUCKETL
27	L7/L8/L9	RIGHT BUCKET, READING RACK	70522-BUCKETR
28	L7/L8/L9	TOP, READING RACK	70522-TOP
29	L7/L8/L9	KEY HOLE PLATE, READING RACK	70522-KEYHOLE
30	L7/L8/L9	READING RACK COVER SCREW	8x1/2_A_PPSTSZN
31	L7/L8/L9	READING RACK CONSOLE SCREW	1/4-20X3/4_HHMS
32	L7/L8/L9	LOCK WASHER	5/16_LW
33	L7/L8/L9	----------	---------
34	L7	TRACTION TAPE, 770 (INDICATE LEFT OR RIGHT)	70585
35	L7	SIDE FRAME COVER, RIGHT	70576 (-BK, -TI)
		SIDE FRAME COVER, LEFT	70557 (-BK, -TI)
36	L7	SIDE FRAME, RIGHT	70560 (-BK, -TI)
		SIDE FRAME, LEFT	70561 (-BK, -TI)
37	L7	TREADBELT, L760/L770	70468
38	L7	DECK, L760/L770	70466
39	L7	TAKE UP ROLLER	70237
40	L7	DRIVE ROLLER	70236
41	L7	DRIVE ROLLER SHEAVE	CV-18-2
42	L7	FELT WASHER, 70	70220
43	L7/L8/L9	VFX DECK LOAD WASHER - 70 SERIES	70216
44	L7/L8/L9	IMPACT ABSORBERS – BLACK	70221
		IMPACT ABSORBERS – RED	70221-R
45	L7	POST, VFX DECK	70580
46	L7/L8/L9	DRIVE ROLLER SCREW	¼-20x3/4_HWFL
47	L7/L8/L9	SIDE FRAME COVER & DECK SLAT SCREWS	¼-20_3/4_TTZ
48	L7/L8/L9	UPRIGHT HEX HEAD BOLT	¼-20X3/4-TT`
49	L7/L8/L9	STAR WASHER	¼_LW_EXT
50	L7/L8/L9	MOTOR COVER SCREW	8-32_3/4_TTB
51	L7/L8/L9	MOTOR COVER FINISHING WASHER	10_FINISHING_W
52	L7/L8/L9	RUBBER MOTOR GROMENT	1259
53	L7/L8/L9	TAKE UP BOLT WASHER	3/8_FW_BL_OX
54	L7/L8/L9	BED END CAP SCREWS	8-32_3/4_TTB
55	L7/L8/L9	ZINC LOCK WASHER	8_LW
56	L7	END CAP, BED 70, RIGHT	70578
		END CAP, BED 70, LEFT	70579
57	L7/L8/L9	TAKE UP BOLT	3023
58	L7	BELT GUIDE	70208
59	L7	BELT GUIDE SCREW	8x1_A_PPSTS_ZN
60	L7/L8	FOOTBOLT	¼-20_3/4_TTZ
61	L7/L8	FOOT, SOLID FOOT	70008
	L9	FOOT, SOLID FOOT , L9	70421
62	L7/L8/L9	DECK SLAT, VFX	70240
63	L8/L9	BED ENDCAP, RIGHT, L8622	70508-BK
		BED ENDCAP, LEFT, L8622	70509-BK
64	L8/L9	TREADSTRIP (GRIP TAPE) Indicate left or right	70293
65	L8/L9	SIDE FRAME COVER, RIGHT, L8622	70286 (-BK, -TI)

		SIDE FRAME COVER, LEFT, L8622	70287 (-BK, -TI)
66	L8/L9	TREADBELT, L8622	70513
		TREADBELT, ORTHO, L8622	70535
67	L8/L9	FELT WASHER, L8622	70516
68	L8/L9	SHEAVE, DRIVE ROLLER, L8	70290
69	L8/L9	DRIVE ROLLER, L8622/70	70504
70	L8/L9	TAKE UP ROLLER, L8622/70	70505

71	L8/L9	DECK, L8622/70	70296
72	L8/L9	SIDE FRAME, RIGHT, L8622	70560
		SIDE FRAME, LEFT, L8622	70561
73	L8/L9	SPACER, L8622	70506
74	L8/L9	SLEEVE, SPACER, L8622	70515
75	L8/L9	VFX POST, L8/L9	70297
76	L7/L8/L9	HITCH PIN FOR AXEL, WIDE	213
77	L7/L8/L9	WHEEL AXEL, WIDE	70359
78	L7/L8/L9	WHEEL, WIDE	70358
79	L7/L8/L9	BEARING BLOCK BOLTS	¼-20_2_MSZ
80	L7/L8/L9	BEARING BLOCK SPACER, WIDE	70403
81	L7/L8/L9	ELEVATION PIN	70032
82	L7/L8/L9	ELEVATION PIN SCREWS	¼-20_9/16
83	L7/L8/L9	CLEVIS BOLT HARDWARE	70345
84	L7/L8/L9	HITCH PIN(MOTOR BRACKET AND CLEVIS)	233
85	L7/L8/L9	ELEVATION LEG RUBBER BUMPER	2215
86	L7/L8/L9	MOUTOR MOUNT SPACER, RUBBER	70090
87	L7/L8/L9	MOUTOR MOUNT SPACER, METAL	70089
88	L7/L8/L9	TENSION SCREW NUT	¼-20_NUT
89	L7/L8/L9	TENSION SCREW FLAT WASHER	1/4_SHOULDER_W
90	L7/L8/L9	FOAM BLOCK	70103
91	L7/L8/L9	CLEVIS PIN	70063
92	L7/L8/L9	ELEVATION POTENTIOMETER	71013
93	L7/L8/L9	ELEVATION NUT	MISC
94	L7/L8/L9	MOTOR BRUSH CAP	MISC
95	L7/L8/L9	MOTOR BRUSH, 110V	70222
		MOTOR BRUSH, 220V	70223
96	L7/L8/L9	MOTOR BRUSH HOLDER	MISC
97	L7/L8/L9	SPEED SENSOR BRACKET	70067
98	L7/L8/L9	SPEED SENSOR	71007
99	L7/L8/L9	FLYWHEEL FLAT WASHER	¼_FENDER_W
100	L7/L8/L9	ELEVATION CLEVIS	70049
101	L7/L8/L9	BEARING BLOCK WASHER, WIDE	70402
102	L7/L8/L9	BEARING BLOCK, WIDE (SINGLE PIECE)	70373
103	L7/L8/L9	TENSION SCREW	70071

104	L7/L8/L9	ELEVATION LEG ASSEMBLY, WIDE	70367
	L7/L8/L9	ELEVATION LEG ASSEMBLY, WIDE	70374
105	L7/L8/L9	DRIVE BELT, L760	220J10
	L7/L8/L9	DRIVE BELT, L860	70291
106	L7	MOTOR COVER AERO, 70	70574-SP
	L8/L9	MOTOR COVER, L870/L970	70575-SP

107	**L7/L8/L9**	**MOTOR PAN**	**70242-BK**
108	**L7/L8/L9**	**ELEVATION MOTOR W/ POTENTIOMETER, 110V**	**70088-C-SP**
		ELEVATION MOTOR W/ POTENTIOMETER, 220V	**70126-SP**
109	**L7/L8/L9**	**DRIVE MOTOR, 110V**	**70014**
		DRIVE MOTOR, 220V	**70125**
110	**L7/L8/L9**	**FLYWHEEL**	**70010**
111	**L7/L8/L9**	**MOTOR BRACKET**	**70071**
		MOTOR BRACKET, L8622	**70507**
112	**L7/L8/L9**	**MOTOR BRACKET SCREWS**	**1/4-20_9/16_MSZ**
113	**L7/L8/L9**	**END CAP, MEDICAL RAIL 70 (Left and Right)**	**70602**
114	**L7/L8/L9**	**CLAMP, MEDICAL RAIL 70, RIGHT**	**70589**
		CLAMP, MEDICAL RAIL 70, LEFT	**70590**
115	**L7/L8/L9**	**MEDICAL RAIL, 70 RIGHT**	**70597**
		MEDICAL RAIL, 70 LEFT	**70598**
116	**L7/L8/L9**	**RAIL CLAMP, 70**	**70435**
117	**L7/L8/L9**	**ALLEN BOLT**	**1/4-20_3/4_SHCS**
118	**L7/L8/L9**	**RAIL CLAMP BOLT**	**¼-20_2_PPHTTB**
119	**L7/L8/L9**	**STAR WASHER**	**¼-WASH_EXT_B**

Index