

**MEDTRACK®
ST 55 and ST 65
TREADMILLS
SERVICE MANUAL**



The general quality system at Quinton Instrument Company has been certified by British Standards Institution (BSI) to ISO 9001/EN 46001 standards under Certificate Number 0357.



This is the CE marking of conformity indicating that the device having this symbol on its immediate label meets the applicable requirements of the European-Medical Device Directive.

Trademarks

Quinton and MedTrack are registered trademarks of Quinton Instrument Company. All other product and company names are trademarks or registered trademarks of their respective companies.

Service Manual

Publication Number 000378-830

Text Number 033386-001A

Copyright © 1995 Quinton Instrument Co. All rights reserved.

Quinton Instrument Company
3303 Monte Villa Parkway, Bothell, WA 98021-8906
Telephone 206/402-2000 Fax 206/402-2001
USA and Canada: Sales 800/426-0347 Service 800/426-0538

INTERNATIONAL SALES

Latin America & Asia-Pacific

Telephone 206/402-2000 Fax 206/402-2005

Europe/Hoofddorp, The Netherlands

Telephone 31-2503-51514 Fax 31-2503-51660

Middle East/Dubai, U.A.E.

Telephone 971-4-511491 Fax 971-4-515741

Preface

This manual contains information for servicing and repairing Quinton® MedTrack® ST 55 (P/N 00378) and ST 65 (P/N 00383) treadmills to the module level. The manual covers domestic and international versions of the treadmills, which are differentiated by dash number—see Appendix C, *Part Numbers*.

This manual is designed for use by Quinton-authorized service personnel with proper training. There are no user-serviceable parts in either treadmill. Any attempt by non-Quinton-trained personnel to service the equipment may void the warranty. For service information, call Quinton Technical Service: 1-800-426-0538.

Before servicing the treadmill, read the safety requirements listed in Appendix A.

IMPORTANT Do not use this manual when servicing Series 90 or Q-Series treadmills.

Contents

Preface	iii
1. Introduction	
Models	1-1
Controls	1-2
Power	1-2
Operation	1-2
Emergency Stop Button	1-2
Indicators	1-2
Installation	1-2
Accessories	1-3
2. Theory of Operation	
Overview	1-1
ECG Monitor	1-1
Headframe Assembly	1-1
Deck and Roller Assembly	1-1
ECG Monitor to Treadmill Interface	1-2
Headframe Assembly	1-2
Input Power Module	1-2
Drive Board	1-2
Drive Motor Assembly	1-2
Grade Motor Assembly and System	1-2
Deck and Roller Assembly	1-3
3. Troubleshooting	
Diagnosis	3-1
Tools	3-1
Electrical Problems	3-2
Electronic Problems	3-3
Error Codes	3-3
Mechanical Problems	3-3
Walk Belt	3-3
Drive Belt	3-3
Treadmill Noise	3-4
Flow Charts	3-4
4. Repair/Replacement and Calibration	
Warnings	
Electrical Shock	4-1
Burns	4-1
Mechanical Hazards	4-1

Tools	4-2
Removing the Treadmill Hood	4-3
Replacing the Configuration Plate	4-5
Replacing the Power Cord	4-6
Hard-wired Cords	4-6
Detachable Cords	4-6
Replacing the VSD Board/Card Cage Assembly	4-6
BUS Recovery System (BRS)	4-7
Replacing the Tensioner	4-8
Replacing the Poly-V Drive Belt	4-9
Replacing the Drive Motor	4-10
Replacing the Transformer	4-12
Replacing the Grade Motor	4-13
Grade Motor Chain	4-14
Replacing the Grade Potentiometer (POT)	4-14
Grade Pot Wires	4-15
Removing the Rack Gears	4-16
Reassembling the Rack Gear	4-17
Replacing a Jammed Rack Gear	4-18
Replacing the Pinion Shaft	4-19
Adjusting the Grade Limit Switches	4-20
Walk Deck Assembly	4-21
Replacing Rollers	4-21
Replacing Walk Belt	4-22
Removing Deck	4-23
Adjusting Walk Belt	4-23
Belt Tension	4-23
Belt Tracking	4-24
Rear Roller Guard Adjustment	4-25
Replacing the Emergency Stop Switch	4-25
Replacing the Emergency Stop Cable	4-26
Calibration Procedures	4-26
Grade Potentiometer (POT) Calibration	4-26
Speed and Grade Calibration	4-27

5. Preventive Maintenance

Warning	5-1
Recommended Service	5-1
Routine Maintenance	5-1
Visual Inspection	5-1
Cleaning Treadmill Surfaces	5-1
Disinfection	5-2
Vacuuming Under The Treadmill Hood	5-2
Replacement Schedules	5-2
Electrical Testing	5-2

Appendix A. Safety Requirements

Appendix B. Specifications

Appendix C. Part Numbers

Final Assemblies.....	C-1
Spares	C-1

Appendix D. Assembly Drawings

Symbol Definitions

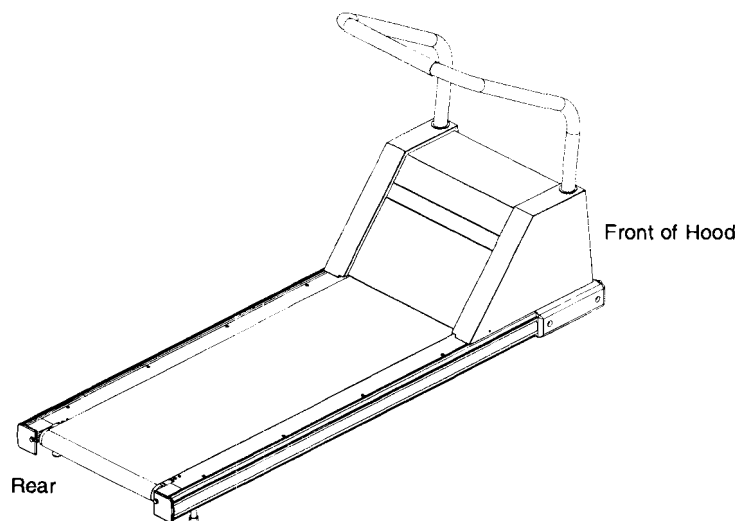
Index

1. Introduction

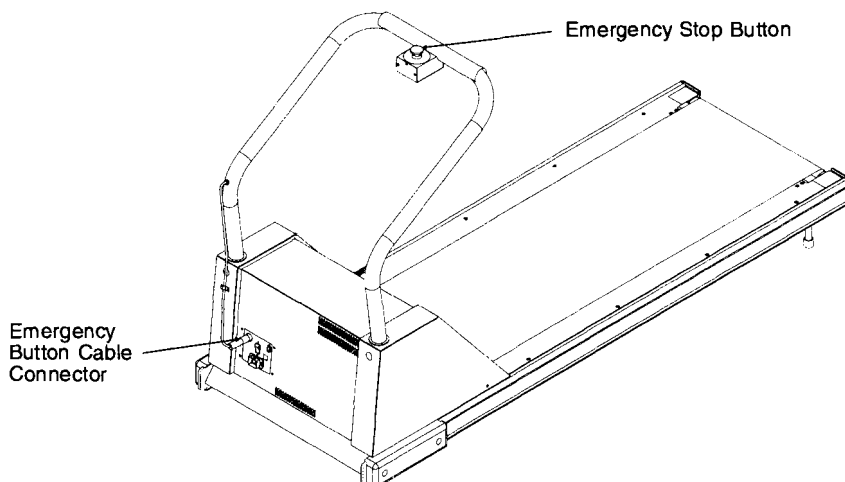
MedTrack ST medical treadmills are designed specifically for stress test applications. The treadmills are not intended to operate independently or with a treadmill controller. They are designed for use in conjunction with either the Q4500 stress-test monitor (Quinton P/N 00301) or the Q710 Exercise Monitor (Quinton P/N 00334).

Two MedTrack models are available: the ST 55 (P/N 00378) and the ST 65 (P/N 00383). International versions have a detachable power cord and an emergency stop control.

ST Treadmill



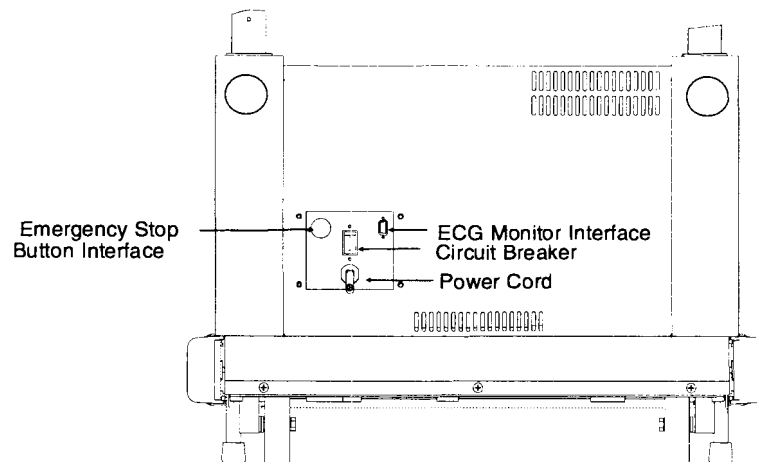
International Version



CONTROLS

Power The treadmill must be connected to the ECG monitor and plugged into a dedicated line. The treadmill circuit breaker, located on the front of the treadmill hood, must be set to ON and the ECG monitor power must be on for the treadmill to operate.

NOTE Always turn off the circuit breaker on the treadmill before connecting to or disconnecting from the power source.



Operation Except for the emergency stop button, all commands, including walk belt power, speed, grade, and protocol, are entered from the ECG monitor. All patient data appear on the monitor screen. Use the manuals supplied with the ECG monitor to operate the treadmill and to enter service mode.

Emergency Stop Button The treadmill may have an emergency stop button located on the front handrail: the button is optional in the U.S.A. When pressed, the button stops the belt abruptly. **The stop button is intended only for emergency.**

INDICATORS

There are no visual indicators on the treadmill. All patient responses and warnings appear on the monitor screen.

INSTALLATION

Complete treadmill installation procedures, including site requirements, are given in Appendix C of the MedTrack treadmill operator manuals.

ACCESSORIES

The following accessories are shipped with each MedTrack ST treadmill:

13802-005	Hand grip
00378-840	Operator manual (English language)
32596-840	Operator manual (French language)
32598-840	Operator manual (German language)
32600-840	Operator manual (Spanish language)
32602-840	Operator manual (Italian language)
00378-830	Service manual (English language only).

2. Theory of Operation

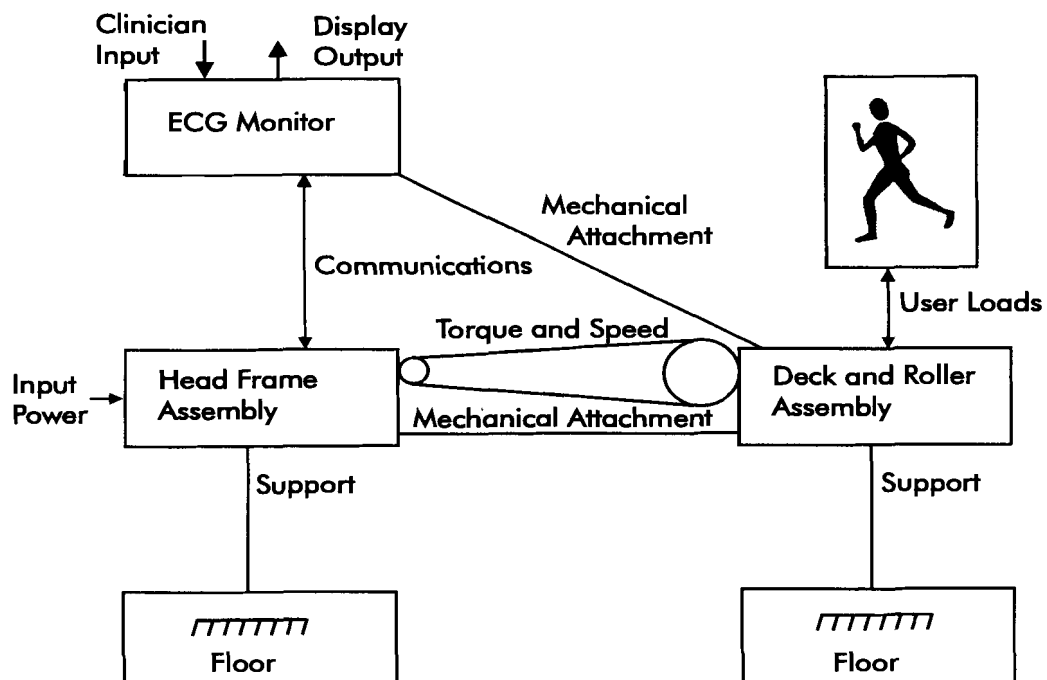
OVERVIEW

The treadmill consists of two subassemblies: the headframe and the deck and roller assembly. The ECG monitor, which is attached by cable to the treadmill, functions as the user interface.

ECG Monitor The user enters all treadmill commands through the ECG monitor; the information appears on the monitor display. The monitor processes the information and sends commands to the headframe assembly.

Headframe Assembly The headframe assembly receives speed and grade commands from the ECG monitor. The assembly includes the drive and grade systems and the electronics that drive these systems. A three-phase AC motor drives the walk belt. A DC motor moves the front of the treadmill up or down to simulate hills. The drive motor supplies torque and speed to the drive pulley through a drive belt.

Deck and Roller Assembly The deck and roller assembly is attached to the headframe and supports the rear of the treadmill. It provides the platform for the walking belt. The drive belt supplies torque to the walk belt through the drive roller pulley.



ECG MONITOR TO TREADMILL INTERFACE

The ECG monitor communicates with the treadmill VSD board through a standard RS422 interface. The monitor sends commands to the VSD board and receives acknowledge and status statements from the board.

HEADFRAME ASSEMBLY

The headframe assembly consists of the following components:

- Input power module
- Drive board assembly
- Transformer assembly
- Drive motor assembly
- Grade motor assembly
- Grade system consisting of a pinion shaft, rack gears, feedback potentiometer, and limit switches.

Input Power Module The input power module receives line power from the power outlet. All treadmills sold for use in the United States and Canada use 115 VAC power. All units sold for use in Europe and the United Kingdom use 230 VAC power. The power input module also has a connector for use with the emergency stop switch. The emergency stop switch is an option on units sold in the US and Canada and is standard on units sold in Europe and the United Kingdom.

Drive Board The treadmill drive board uses line power to develop 300VDC which is then used to create three-phase power for the drive motor assembly. The frequency of the three-phase signal sent to the drive motor determines the drive motor rotational speed. The motor current draw is a function of the torque load placed on the motor through the deck assembly by the user.

The treadmill drive board also uses 110VAC power to generate a half wave rectified signal used to drive the grade motor. Two solid state relays drive the grade motor: one in the direction of increasing grade, the other in the direction of decreasing grade.

Drive Motor Assembly The drive motor, which is driven by the drive board, delivers torque and speed to the front roller of the treadmill through a poly-V belt and a set of appropriate speed reduction pulleys. A flywheel, integral to the motor poly-V pulley, is used to average the pulsing runner loads.

Grade Motor Assembly and System The grade motor drives the grade pinion shaft using a chain and a set of speed reduction sprockets. The grade pinion shaft in turn drives a set of rack gears, which raise and lower the front of the treadmill.

A grade potentiometer senses the actual treadmill grade for the grade system feedback. Limit switches limit the travel of the rack gears in the event of a potentiometer failure or incorrect calibration.

DECK AND ROLLER ASSEMBLY

The deck and roller assembly provides the running surface for the user. This surface consists of a movable and flexible walk belt supported by a semi-rigid platform. This platform is supported by a steel-welded frame.

A poly-V belt, coupled through a pulley to the drive motor, drives the front roller. The front roller uses friction to drive the walk belt. A rear roller, acting as an idler pulley, tensions the walk belt. Both rollers are mounted to the steel support structure.

3. Troubleshooting

DIAGNOSIS

The tables and flow charts in this chapter cover the following potential problems:

- electrical: power, cable connections
- electronic: error codes on ECG monitor
- mechanical: noise, vibration, grade, speed, belts

Use the following tables and flow charts to diagnose problems. See Chapter 4 for repair and replacement procedures.

Tools The following tools may be required:

- Phillips and flatblade screwdrivers
- ½-inch hex wrench
- stethoscope
- ohm meter

WARNING



- **High voltage is present under the hood when the treadmill is plugged into a power source; residual high voltage remains for a few minutes after the power is removed. Turn off the treadmill circuit breaker, then unplug the treadmill from the power source before removing the hood. Use extreme caution at all times when the hood is removed.**
- **Secure loose clothing, jewelry, and long hair before working near treadmill parts.**
- **Never place your fingers near rotating parts.**
- **Do not start the walk belt when someone is on the treadmill.**

ELECTRICAL PROBLEMS

Treadmill Does Not Start - No Display

Possible Cause	Action
Treadmill not plugged in	Plug power cord into appropriate outlet.
Power not on	Turn on power on ECG monitor.
Circuit breaker on treadmill set to <i>OFF</i>	Set treadmill circuit breaker to <i>ON</i> .
Building circuit breaker tripped	Contact building maintenance to reset circuit breaker. If circuit breaker trips again, 1. Check outlet voltage. If necessary, verify that power at the outlet and at the breaker is the correct rating for the treadmill. 2. Verify that the power cord is not caught in the rack gear. 3. Replace the configuration plate (faulty in-rush limiter).
Power cord cut	Remove cord from outlet and replace.
Fuse in treadmill blown	If any of the transformer primary fuses, F3 through F6, are blown: 1. Check the primary transformer windings for continuity (P/N 327065-001). Should be 2 ohms or less. 2. Replace fuses and if the fuses blow again, isolate the mechanical assembly and ensure that no parts are jammed (e.g. rack gear in grade change assembly). If F1 or F2 are blown, check the 12 Volt power supply.
Control cable between variable speed drive (VSD)* and ECG monitor faulty	Check for bent or broken pins. Replace control cable.
VSD failure	Check power supply at test points. Replace VSD if necessary.
Config plate connection faulty	Replace configuration plate.
Optional emergency off button activated	Push in button and twist counter-clockwise to unlock.
* VSD: the circuit board assembly that controls the motor	

ELECTRONIC PROBLEMS

Error Codes Error codes provide the first means of treadmill diagnostics. The treadmill performs an electronic self-test each time that it is powered up. If a problem is detected during either power-up or operation, an error code appears on the ECG monitor. Note the code recorded by the owner and reference the table of error codes in the ECG monitor service manual.

If you replace a faulty PCB Assembly, return it to the factory and note the error code.

MECHANICAL PROBLEMS

Mechanical problems can include noise and vibration caused by loose or worn parts. Use the following tables to diagnose mechanical failures.

Walk Belt

Problem	Action
Walk belt slipping	1. Adjust walk belt tension. 2. Check drive motor belt. Adjust tensioner. Replace drive belt if necessary.
Walk belt not tracking	Adjust tracking.
Walk belt worn out	Replace walk belt.
Walk deck worn out	Replace deck.

Drive Belt

Symptom	Possible Cause	Action
Squealing sound similar to automobile fan belt -or- Walk belt slows when user's foot strikes the deck.	Drive motor belt (poly-V belt) is slipping.	Adjust belt tension.
Belt stops and an overcurrent error code appears.	1. Stopping the belt for more than 2 seconds when the belt is set to on can cause an overcurrent shutdown. 2. The deck surface is worn.	1. Don't hold belt longer than 2 seconds. 2. Turn over or replace the deck.

Treadmill Noise The following table provides a diagnostic summary of bearing noises, along with other noises that may indicate problems.

Noise	Possible Cause	Action
Knocking or thumping. Rate increases or decreases with walking belt speed.	Front or rear roller (pulley) assembly bearings	Isolate* and replace roller.
Squealing (similar to loose automobile fan belt)	Drive belt loose	Adjust belt tension. Replace belt if necessary.
Popping during grade change	Faulty elevation chain alignment	Adjust alignment of sprockets.

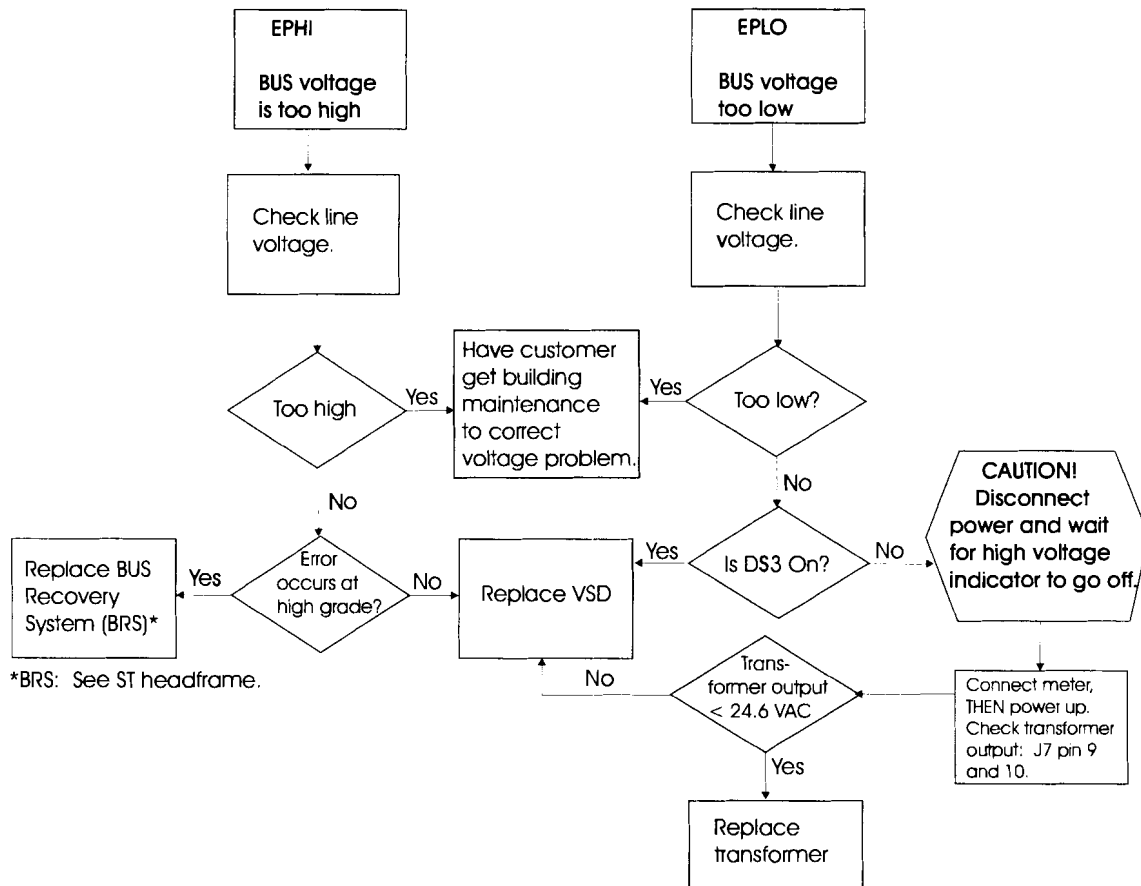
- * The type and the rate of bearing noise can help determine which bearing is at fault. The number of knocks per minute varies with treadmill speed because the roller speeds change as the belt speed changes.

Use a stethoscope with a tube-like end, or a piece of hose about two feet long, to isolate bearing problems. Hold one end of the hose near the suspected bearing, and the other end near your ear. Compare several bearings to determine which is the faulty one.

FLOW CHARTS

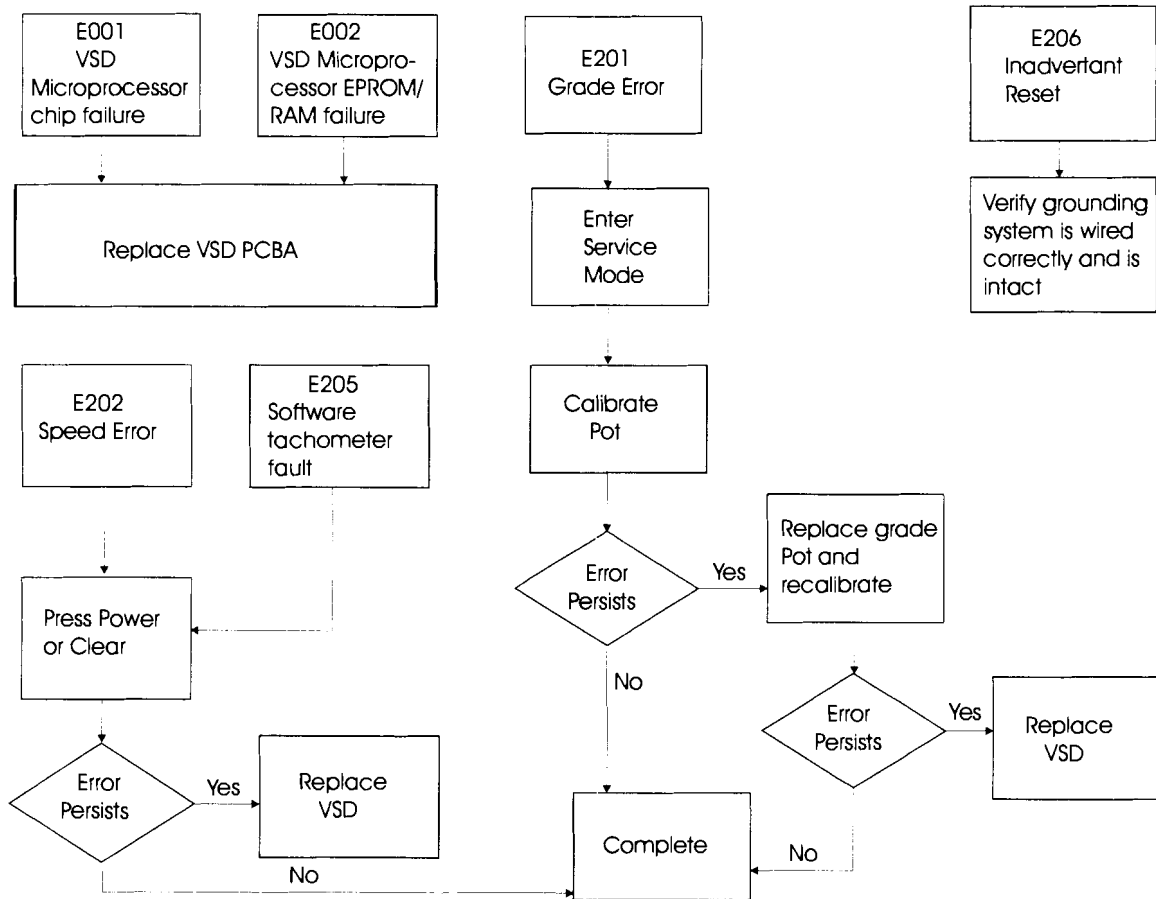
Use the following flow charts for step-by-step troubleshooting.

ERROR CODE FLOW CHART: EPHI and EPLO



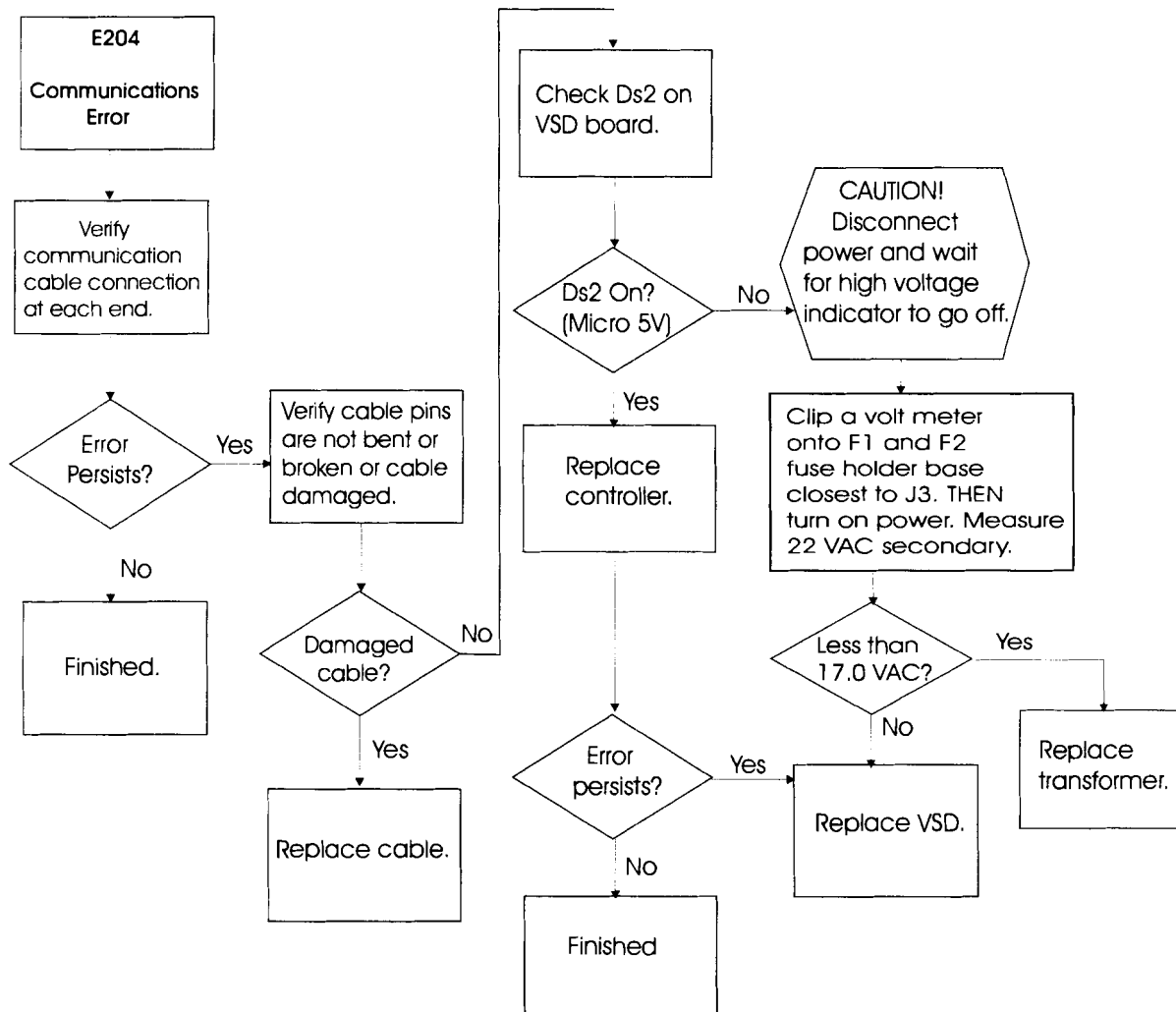
BUS Voltage

ERROR CODE FLOW CHART: E001



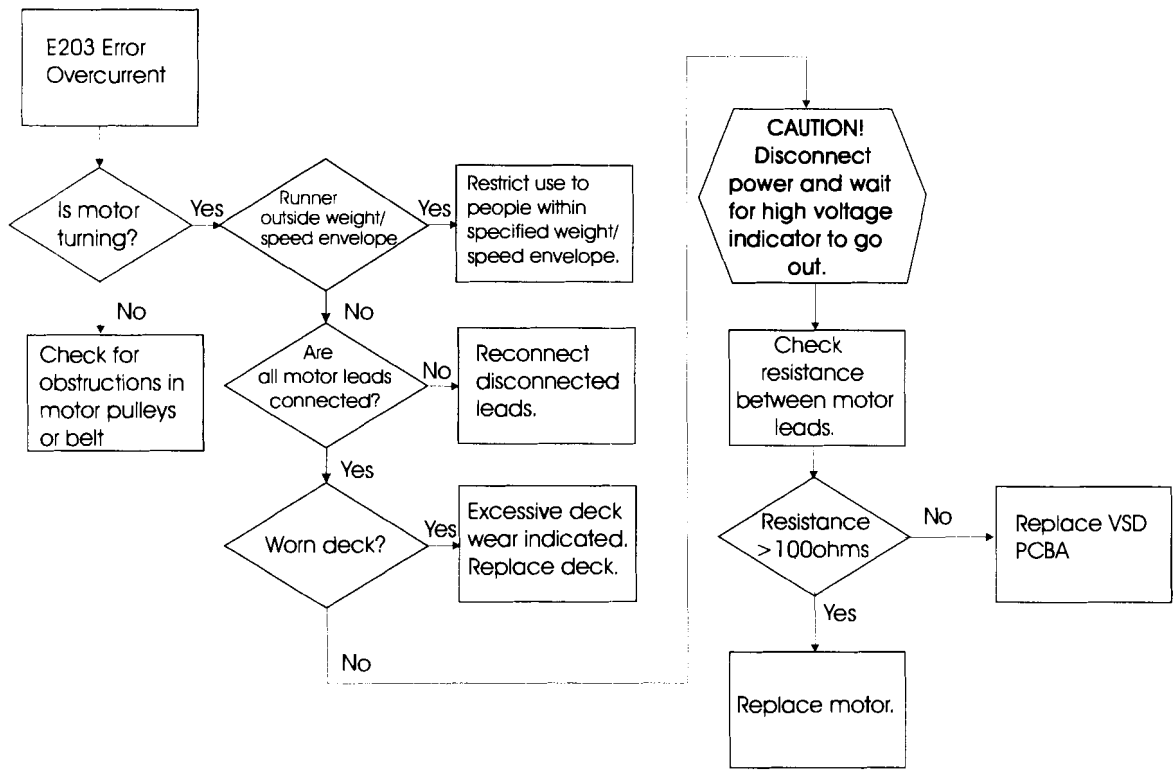
VSD Board

ERROR CODE FLOW CHART: E204

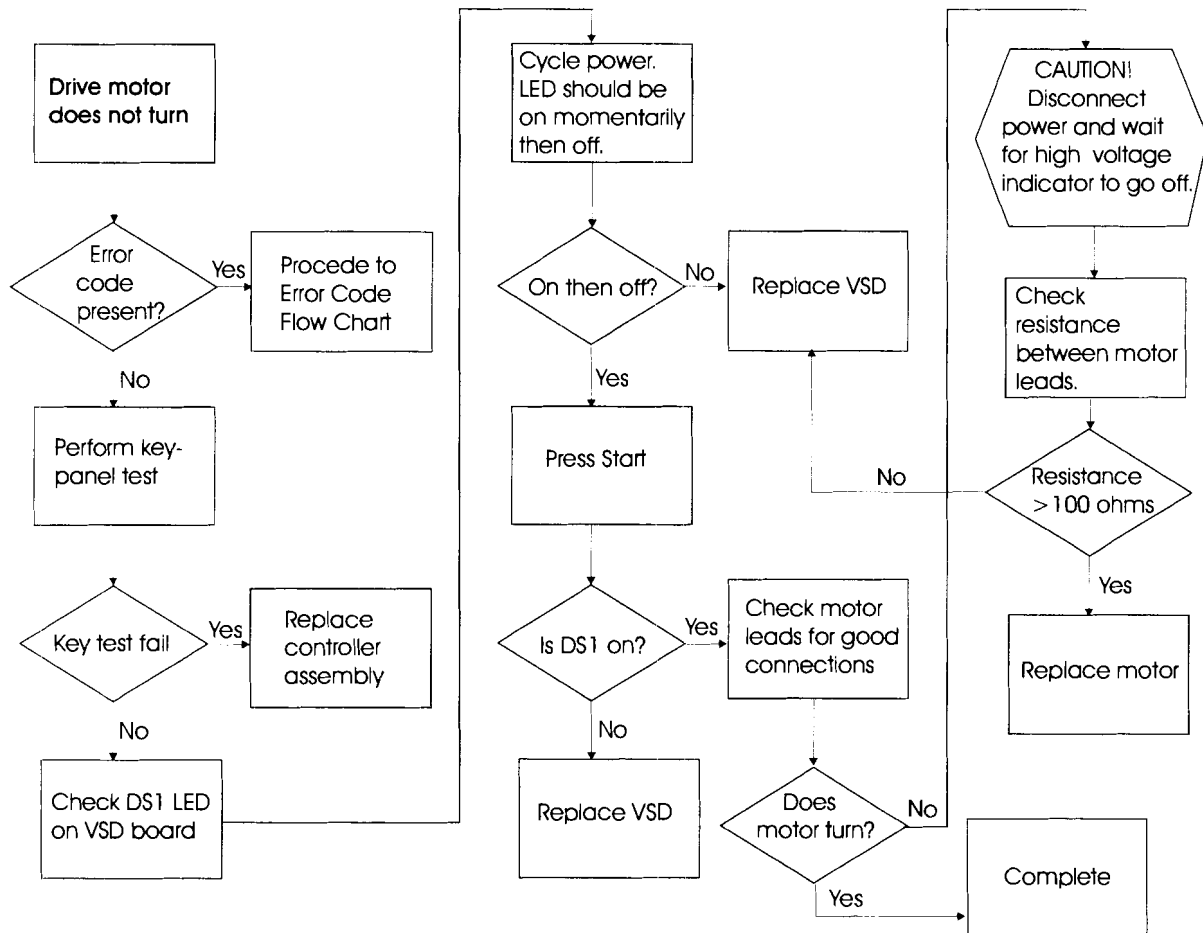


Communications Link

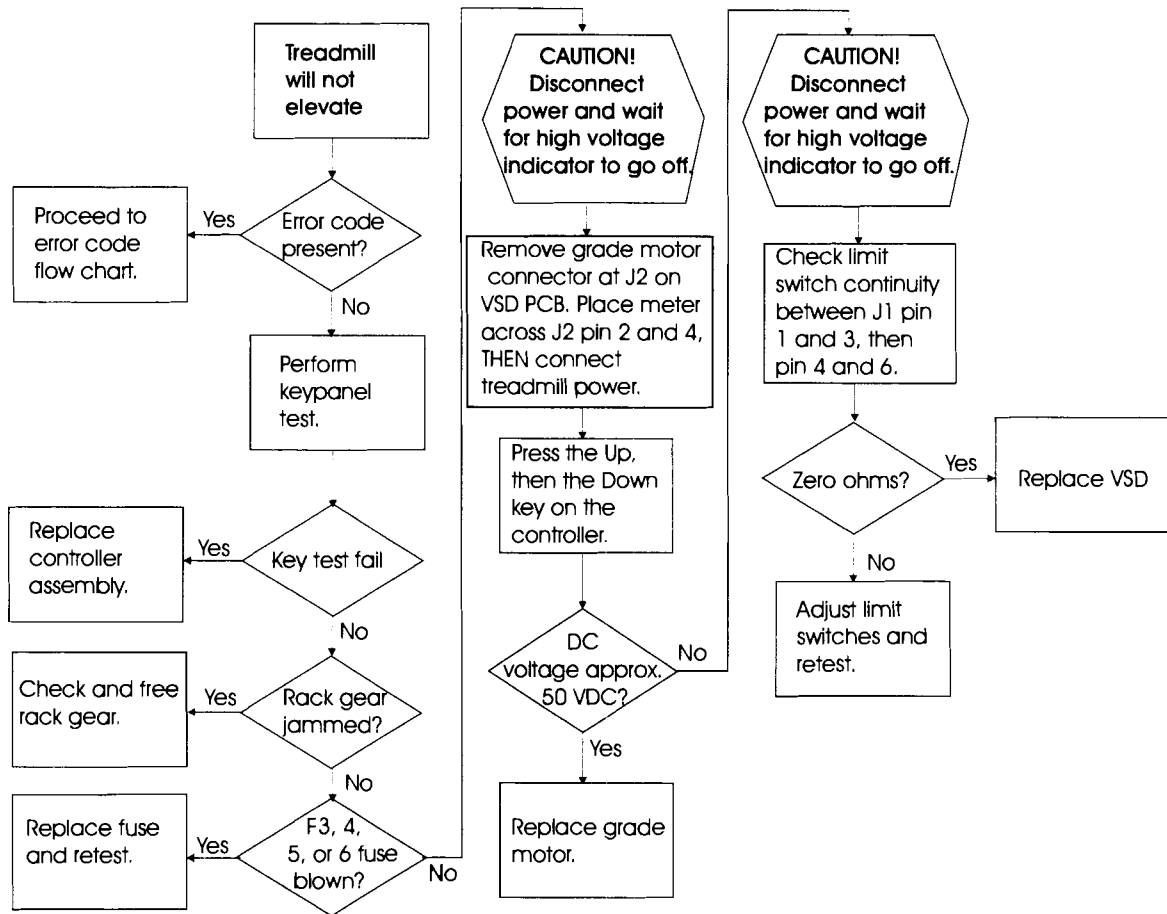
ERROR CODE FLOW CHART: E203



Motor Overcurrent



Drive Motor



4. Repair/Replacement and Calibration

The procedures that follow apply to both the ST 55 and the ST 65 treadmills. Field repair and replacement is to the modular level. No procedures are included for component-level repair.

WARNING



ELECTRICAL SHOCK

- High voltage is present beneath the treadmill hood while the treadmill is connected to a power source. Residual high voltages remain for a few minutes after the plug is removed. To prevent high-voltage electrical shock:
 - Turn off the treadmill circuit breaker, then unplug the treadmill and ECG monitor power cords every time you remove the hood.
 - Before working on or around any electrical or mechanical component under the hood, wait at least two minutes from the time you unplug the power cord and be sure the red LEDs on the VSD board are off.
- The power control on the ECG monitor does not turn off electrical current to the treadmill.
- Be sure treadmill area is free of liquid spills before removing hood.

BURNS

- Allow pulleys, chain, motor, and other treadmill parts to cool sufficiently before touching them.
- Unplug the treadmill immediately if signs of overheating occur.

MECHANICAL HAZARDS

- Be sure the treadmill power cord is unplugged before working with chains, rack gear, belt, and pulleys.
- Secure long hair, loose clothing, and jewelry before working near the treadmill, particularly near walking surface and rotating parts.
- Before running the treadmill, check for worn parts which could break loose during service or operation.
- Keep fingers away from rotating parts.
- To avoid eye contaminants, clean away dust and debris from moving parts before servicing.
- Beware of sharp edges when replacing worn parts.
- Do not start the walk belt when someone is on the treadmill.

- **Improper lifting can cause back strain. It also can cause injury to others if the treadmill is dropped. Lifting the treadmill requires at least two people.**

TOOLS

- Phillips and flatblade screwdrivers
- Hex socket wrenches: $\frac{5}{32}$ in, $\frac{9}{16}$ in, $\frac{7}{16}$ in, $\frac{1}{2}$ in, $\frac{5}{16}$ in
- $1\frac{1}{32}$ -inch nut driver
- Heyco® strain relief pliers for replacing power cord
- $\frac{1}{2}$ -inch crowfoot open-end wrench for removing drive motor
- Torque wrench for rackgear replacement, $46\pm$ 4ft-lbs
- Frequency counter
- Tachometer
- Wooden blocks
- Belt-tension calipers (optional) P/N 30113-001
- Masking tape or heavy pencil

NOTE Although some procedures are used for several applications (removing the hood, for example), each procedure is explained only once. Reference procedures under their headings for subsequent applications.

All references to front, rear, left, and right are given as though you were facing the front handrail while walking on the deck.

REMOVING THE TREADMILL HOOD

1. For your convenience, elevate the treadmill to its maximum height if possible.
2. Turn off the circuit breaker on the treadmill hood, then unplug the treadmill and the ECG monitor from the power outlets.

WARNING

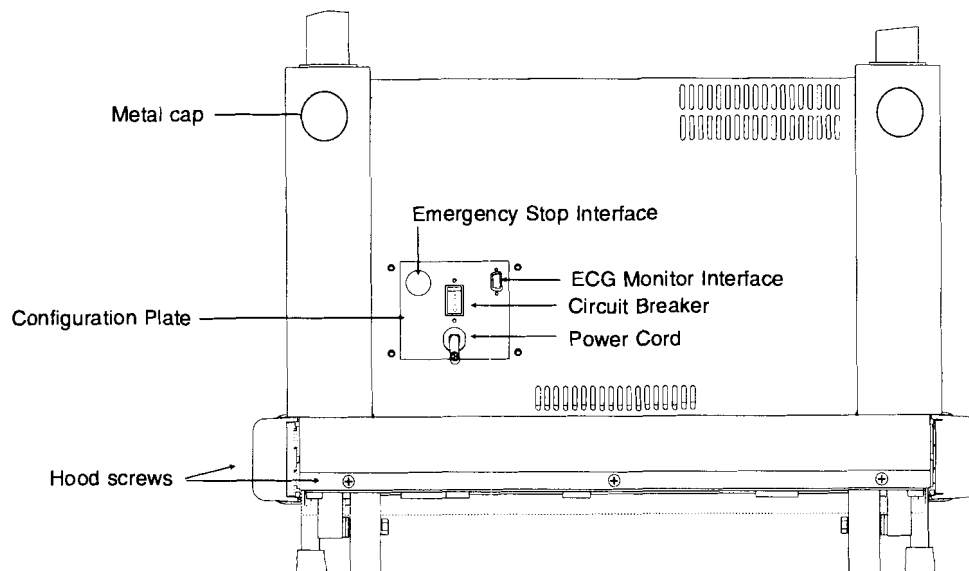


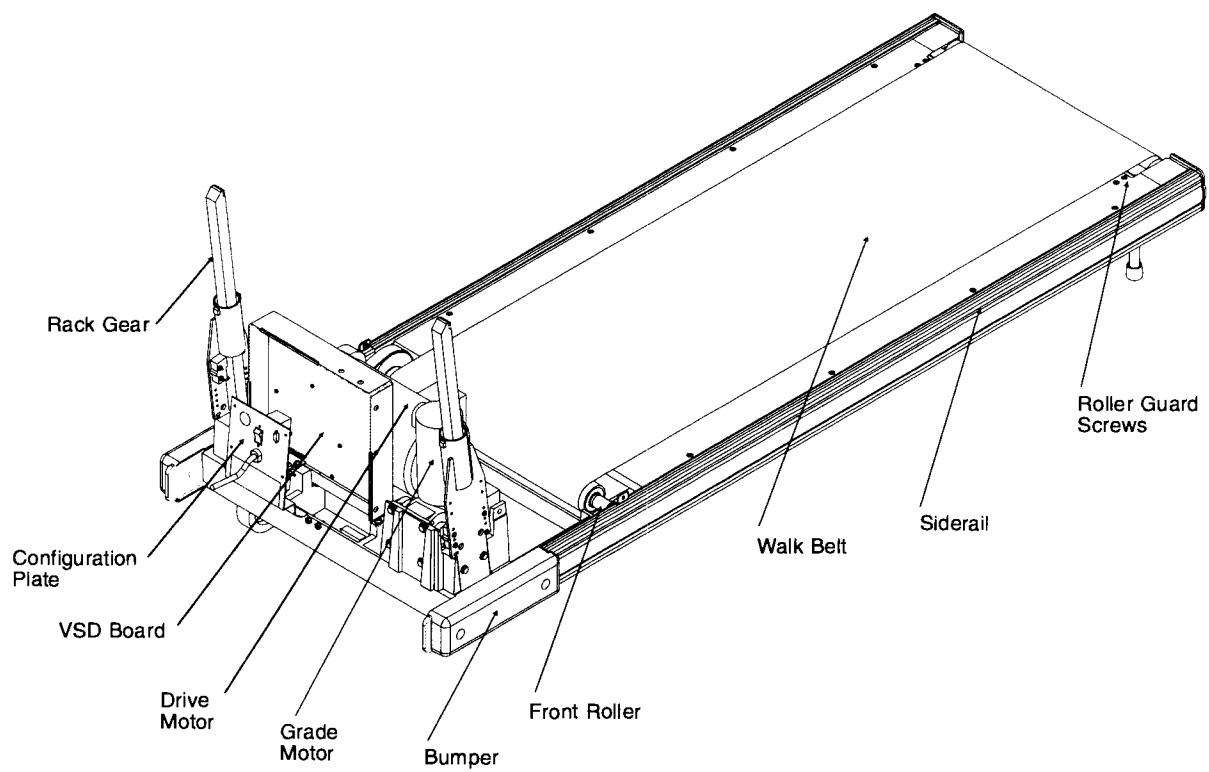
To prevent high voltage electrical shock, wait at least two minutes from the time you unplug the power cords before working on or around any electrical or mechanical component under the hood.

International units: Disconnect the power cord and the emergency button cable from the configuration plate and remove the power cord retainer bracket.

3. Disconnect the ECG monitor cable from the treadmill.
4. Use a flathead screwdriver to remove the metal cap on each handrail near the front of the hood. Use a $\frac{3}{16}$ -inch Allen wrench to loosen the hexhead socket screw inside.
5. Stand on the walk belt and pull the handrail up and out. If necessary, first use a screwdriver to pry the seals loose. Be careful not to damage them.
6. Remove the four Phillips-head screws from the configuration plate.
7. Remove the five Phillips-head screws holding the hood to the headframe: three at the front, below the label panel, and one on each side of the hood.
8. Lift the hood straight up and off. (With hard-wired power cords, feed the cord through the hood.)
9. To replace the hood, perform Steps 1-8 in reverse order.

Recommended: Vacuum the internal components before replacing the hood or applying power. **Use caution near the VSD card cage. Do not vacuum the VSD board.**





Treadmill with hood removed

REPLACING THE CONFIGURATION PLATE

On U.S. units, the configuration plate module includes the power cord, which is attached to the plate. On units designed for use outside the U.S., the power cord is removable and is not part of the configuration plate module.

1. Switch off the treadmill circuit breaker and remove the power cords from the power outlet.
2. Remove the hood as previously described.
3. Remove the two 1/4-20 hex head screws that attach the power-cord ground wires to the headframe. The screws are located in the center of the headframe—protective ground is represented by the ground symbol shown here. Be sure to rewire correctly.



4. Cut the plastic ties and remove the four configuration plate connections (three quick disconnects, one multi-connector) from the VSD board. Remove the communication cable. Note the direction of the fish hook on the configuration harness. Note the wire colors and connection points:

Short blue to Neut Blue

Brown to Line Brown

Longer blue (not present on international units) to Neut 2.

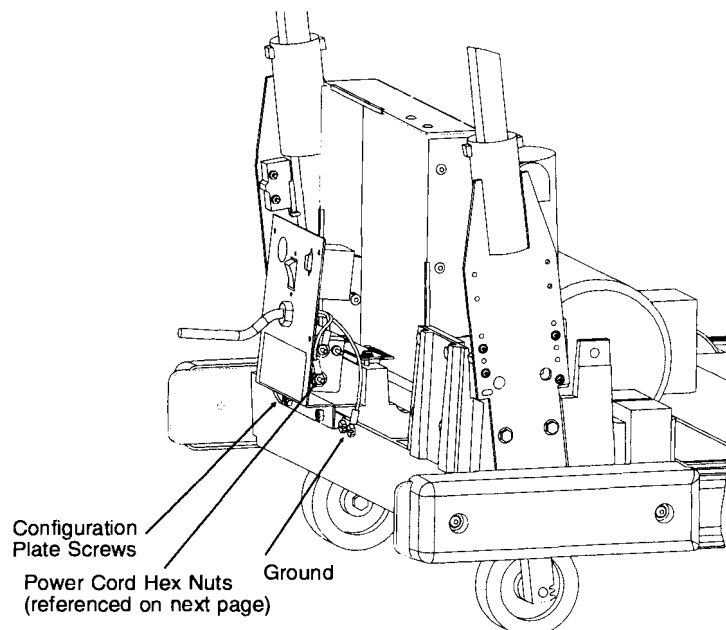
5. Remove the two 1/4-20 hex-head screws that hold the configuration plate to the headframe.

Caution



Hold the plate so that it doesn't fall into the PCBA.

6. Replace the configuration plate module following Steps 2 through 5 in reverse order.



REPLACING THE POWER CORD

Hard-wired Cords Tools: Heyco strain relief hand pliers

1. Remove the configuration plate as described on previous page.
2. Use strain relief pliers to squeeze the strain relief on the power cord and pull it free of the configuration plate.
3. Clip the power cord wire ties.
4. Remove the two hex nuts holding the power cord to the line filter: the hex nuts are behind the configuration plate, down and to the right (see previous figure).
5. Remove the ground wire.
6. Pull the power cord out of the configuration plate.
7. Feed the new cord into the configuration plate and reverse the procedure by following Steps 4 through 1.
 - Twist the power leads before connecting.
 - Connect the white wire to the bottom connector.

Detachable Cords (International units): Unplug the power cord from the connector on the configuration plate and plug in the new cord.

REPLACING THE VSD BOARD/CARD CAGE ASSEMBLY

The VSD board is installed within the card cage located in front of the drive motor. The board alone is not field replaceable; you must remove the card cage/board assembly and replace it with another card cage module.

1. Turn off the treadmill circuit breaker and unplug the power cords from the power outlet.
2. Remove the hood as previously described.

WARNING



To prevent high voltage electrical shock: Before working on or around any electrical or mechanical component under the hood, wait at least two minutes from the time you unplug the power cord and be sure the red LEDs on the VSD board are off.

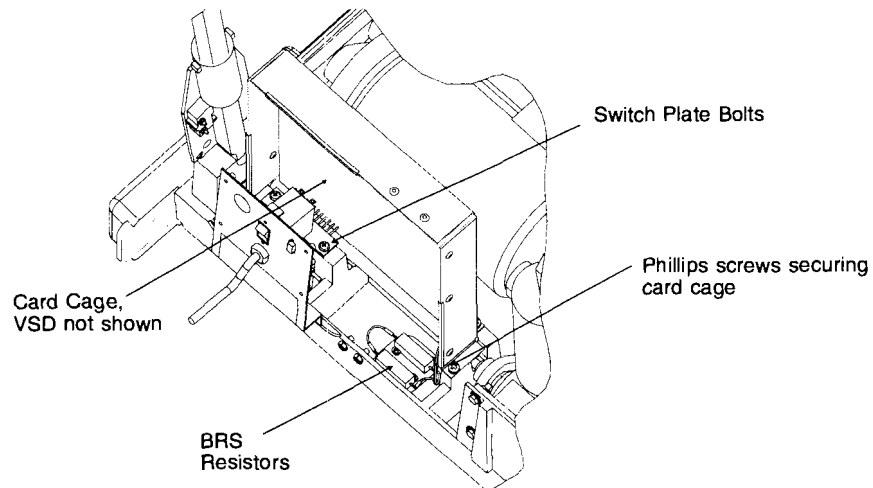
3. Disconnect the ECG monitor cable and the ground wire from the VSD board.
4. Loosen the two screws that hold the configuration plate to the headframe; the screws are located below the plate (previous figure). Move the plate out of the way.

IMPORTANT

In the following steps, note the connection points and the colors of the wires as you remove them from the VSD board. All the wires are harnessed. Cut the plastic ties to free the wires as necessary. Reference wiring schematic.

5. Unplug the grade motor wires from the VSD board.
6. Unplug the isolation transformer wires.

7. Unplug the non-isolation transformer wires.
8. Unplug the grade potentiometer wires. Clip the plastic ties around the cage only, not around the headframe.
9. Unplug the limit switch wires.
10. Unplug the power resistor wires.
11. Unplug the drive motor wires.
12. Unplug the configuration plate wires.
13. Remove the two Phillips screws that hold the switching module (figure below) and remove the hold-down plate.



14. Remove the four Phillips screws securing the card cage.
15. Remove the VSD/card cage assembly and return it to Quinton.
16. Replace the sil pad for the switching module before installing the new card cage.
17. Reassemble in reverse order.



Use caution when reassembling the hold-down plate. Alternate torquing the screws just until the split lock washer is compressed. Over-torquing can damage the module.

BUS RECOVERY SYSTEM (BRS)

The Bus Recovery System (BRS) uses a bleeder resistor to protect the treadmill from high voltage damage when the treadmill is used at high grade.

Two rectangular BRS resistors are wired together, then wired to a connector that plugs into the VSD board. The resistors are located below the card cage to the right of the configuration plate (see figure above).

To replace the BRS resistors:

1. Raise the treadmill to at least 15 percent grade.

2. (Optional) For easier access to the resistors:
 - a. Remove the configuration plate.
 - b. Remove the transformer and BRS wire harnesses from the VSD board.
3. Loosen the four screws holding the resistors to the headframe, then remove the nuts and washers holding the screws beneath the headframe. Remove the old resistors.
4. Install the new resistors and replace the screws, washers and nuts.
5. Reconnect the wire harnesses and the configuration plate if they were removed.

REPLACING THE TENSIONER

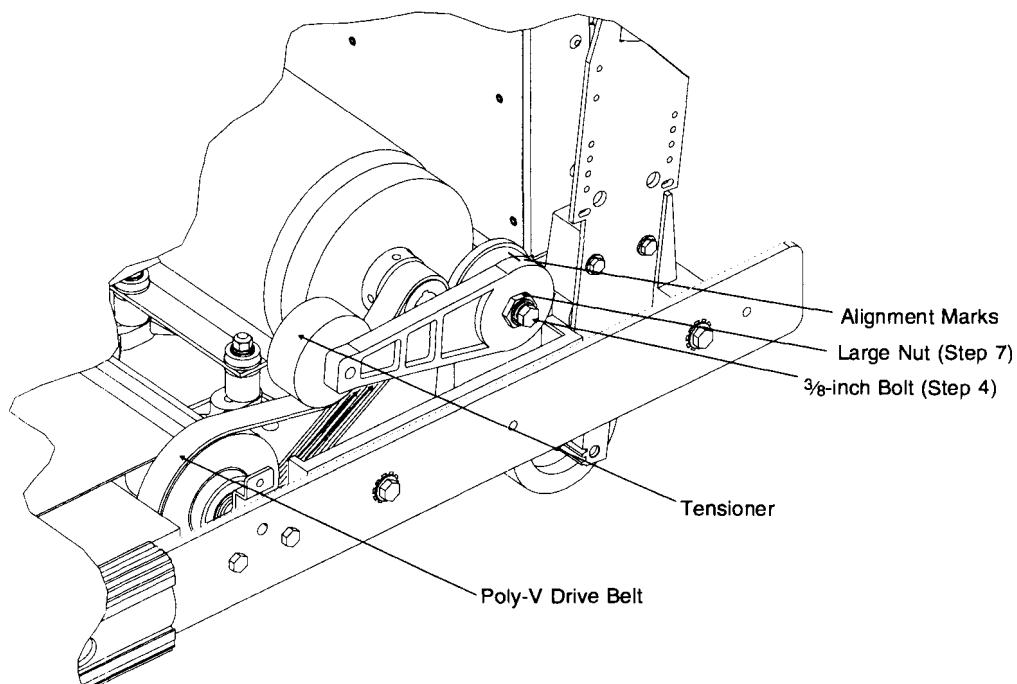
The tensioner may need to be replaced if the poly-V belt slips, if the idler pulley bearing makes noise, or if the tensioner roller is damaged.

WARNING



Do not attempt to disassemble the tensioner. The internal springs are tightly compressed and could cause injury if released.

1. Switch off the treadmill circuit breaker and remove the ECG monitor and treadmill power cords from the outlet.
2. Remove the hood as described (page 4-3).
3. Use a $\frac{9}{16}$ -inch open end wrench to remove the $\frac{3}{8}$ -inch bolt from the base of the tensioner. Remove and discard the old tensioner.
4. Be sure the belt is centered on the pulleys.



5. Place the new tensioner onto the headframe in the same position as before and *loosely* bolt it to the headframe.
6. Use either a $\frac{15}{16}$ -inch open-end wrench or a large adjustable wrench to turn the *large* nut on the tensioner counter-clockwise; put tension on the poly-V belt until the two lines on the tensioner line up. Tighten the $\frac{3}{8}$ -inch bolt to 19 foot-pounds torque.
7. Replace the hood.

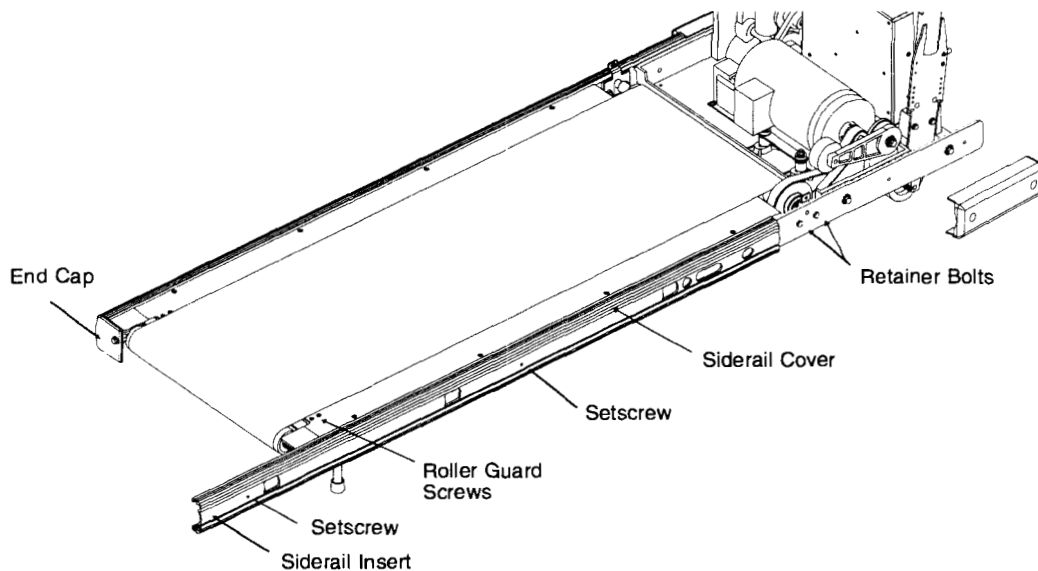
REPLACING THE POLY-V DRIVE BELT

1. Remove the power and the hood as described.



The drive belt tensioner is spring loaded. Do not let it snap closed after removing the drive belt.

2. Loosen the drive belt tensioner by turning the $\frac{3}{8}$ -inch mounting bolt counter-clockwise, then pivot the tensioner away from the belt.
3. Remove the drive belt from the drive pulley.
4. Loosen the roller guard screws.
5. Loosen tension on the walk belt.
6. Use a $\frac{1}{2}$ -inch socket wrench to remove the end caps from the siderails.
7. Remove the plastic insert from the siderail cover.
8. Loosen the two siderail setscrews on the pulley side only.
9. Slide the siderail cover backwards approximately 10 inches to expose the two front-roller retainer bolts.
10. Use a $\frac{1}{2}$ -inch wrench to remove the four $\frac{5}{16}$ -inch hex bolts that hold the two front-roller retainers to the frame. There are two bolts on each side of the roller.



11. Pull up the drive roller on the right side and remove the poly-V belt from the roller.
12. Replace with a new belt, then remount the front drive roller assembly.

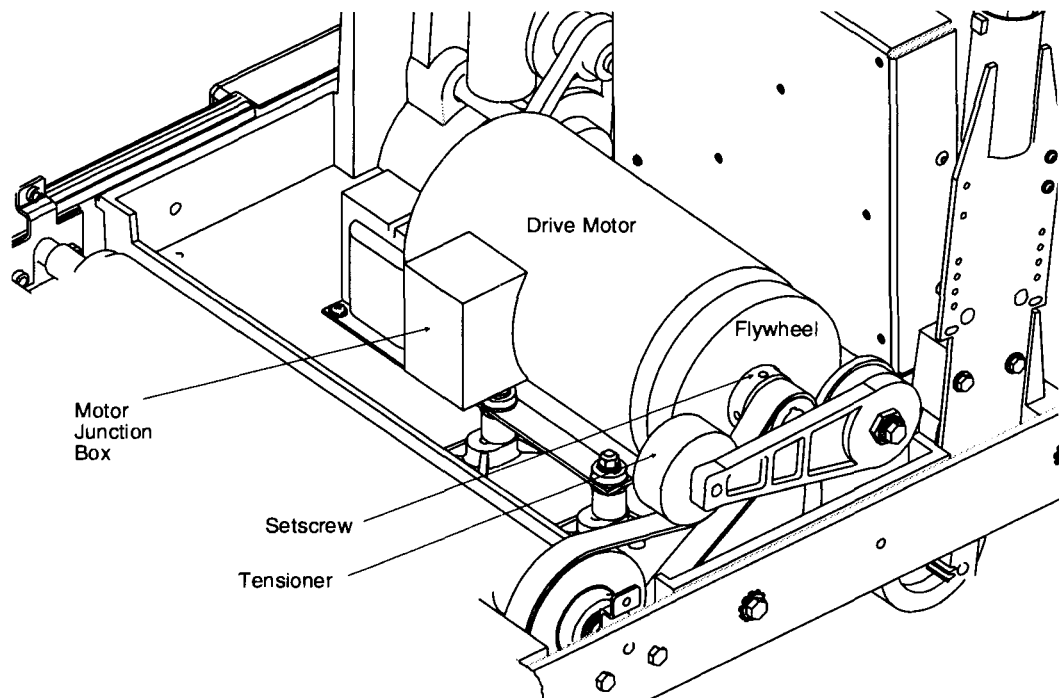
NOTE When replacing the belt, be sure to center it on the pulleys.

13. Assemble the treadmill following Steps 1-9 in reverse order.
14. Tension the drive belt as previously described.
15. Set the walk belt tension and tracking. Adjust the roller guard.

REPLACING THE DRIVE MOTOR

Replace the drive motor when the motor is inoperative: see *Drive Motor* flow chart, Chapter 3.

1. Remove the power cord from the power outlet.
2. Remove the treadmill hood as previously described.
3. Release the drive belt tensioner and remove the poly V-belt from the motor drive pulley as previously described.
4. Remove the configuration plate as previously described.
5. Cut the wire ties that hold the drive motor cable to the headframe and disconnect the motor cable at the VSD board.
6. Remove the four hex nuts that hold the motor on the headframe. Note the arrangement of the isolation mounts. (You may need to use a ½-inch clawfoot, open-end wrench to remove the inner bolt near the card cage.)
7. Pull the motor off the headframe.



8. Loosen the two setscrews on the flywheel/drive pulley and remove. Use a gear puller to pull the flywheel off the motor shaft.
9. Reinstall the flywheel onto the motor shaft and loosely tighten the setscrews.
10. Replace the motor following Steps 4 through 8 in reverse order.

NOTE The new motor and flywheel assembly must be aligned with the front roller drive pulley. Use a straight-edge ruler placed on the outside of the front roller drive pulley to align the outside face of the motor drive pulley to within 0.020 inch. Tighten the setscrews.

11. Replace the poly V-belt as previously described.
12. Replace the hood assembly as previously described.

REPLACING THE TRANSFORMER

1. Turn off power and remove power cord from power outlet.
2. Remove hood as previously described.

WARNING



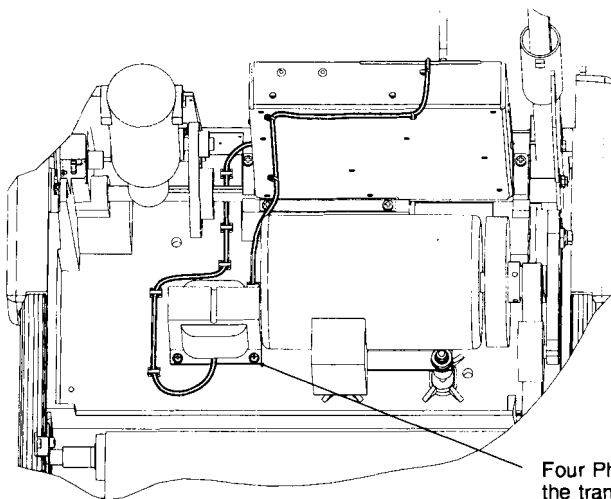
To prevent high voltage electrical shock: Before working on or around any electrical or mechanical component under the hood, wait at least two minutes from the time you unplug the power cord and be sure the red LEDs on the VSD board are off.

3. Unplug the transformer wires from the VSD board. Note the wire colors and connection points. Cut the plastic cable ties that secure the transformer wiring.
4. Remove the Phillips-head screws that hold the transformer to the headframe.
5. Discard the old transformer. Replace with new one in reverse order.

NOTE

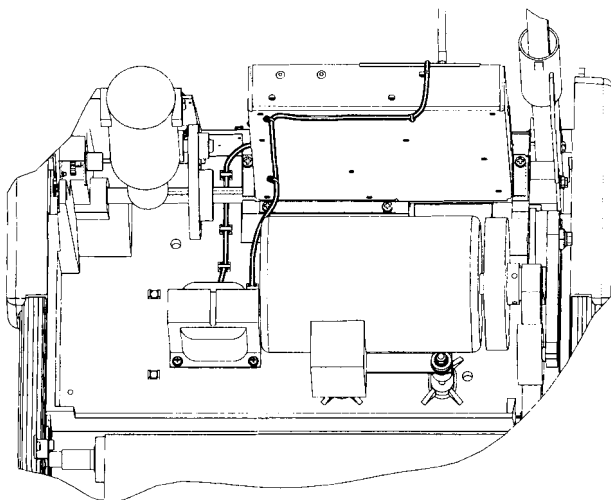
Wire routing depends upon the transformer you are installing (see below).

Two-sided wiring



Four Phillips screws secure the transformer.

One-sided wiring



REPLACING THE GRADE MOTOR

NOTE Place a clean sheet of cardboard or a clean rag on the treadmill deck before starting this procedure.

Do not elevate the treadmill.

1. Block the treadmill headframe securely with wooden blocks to ensure that the treadmill will not drop when you remove the grade motor.
2. Turn off the treadmill circuit breaker, then unplug the ECG monitor and the treadmill. Remove the hood as previously described.
3. Remove the cable ties that hold the grade motor wires, then disconnect the wire connector on the VSD board.
4. Remove the four $\frac{7}{16}$ -inch hex head bolts that attach the grade motor to the headframe, then remove the motor.
5. Install a new grade motor, following Steps 3 - 4 in reverse. Use a straight edge to align the motor sprocket with the pinion shaft.
6. Restore power to the treadmill and ECG monitor and test the new grade motor.

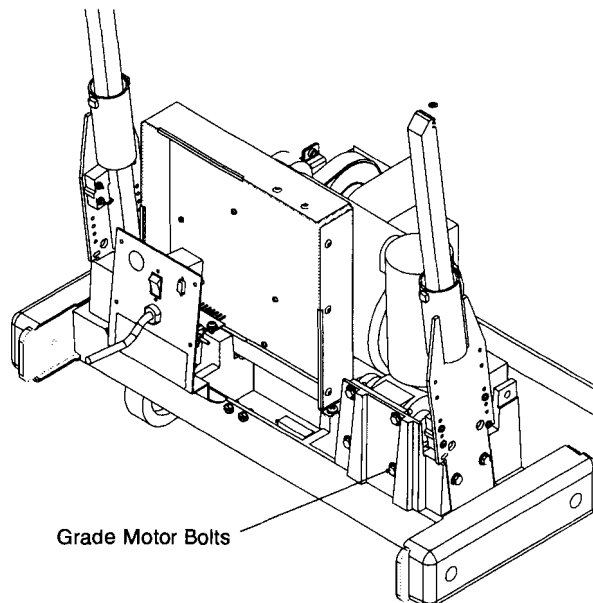
WARNING



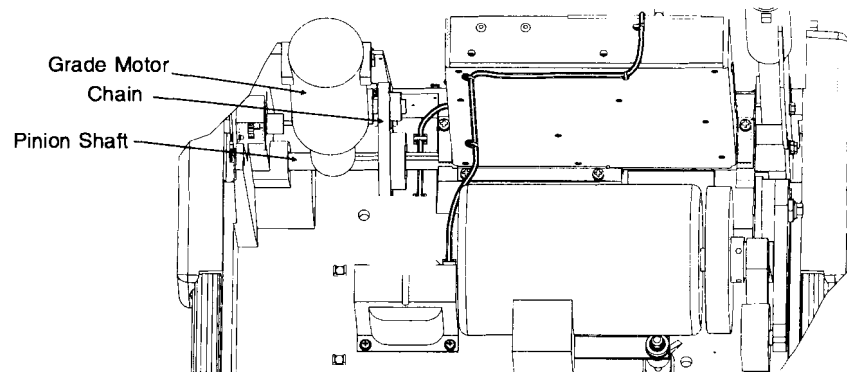
High voltage is present when the treadmill is plugged into a power source. Secure loose hair, clothing, and jewelry before working near rotating machinery.

Verify that:

- a. the treadmill operates over the full range of 0-25% grade.
 - b. there is no binding when it moves up or down.
 - c. the chain is aligned correctly. A popping sound in the chain indicates that it is misaligned.
7. Turn off the power to treadmill and monitor. Remove the power cords from the outlets, then reinstall the hood.



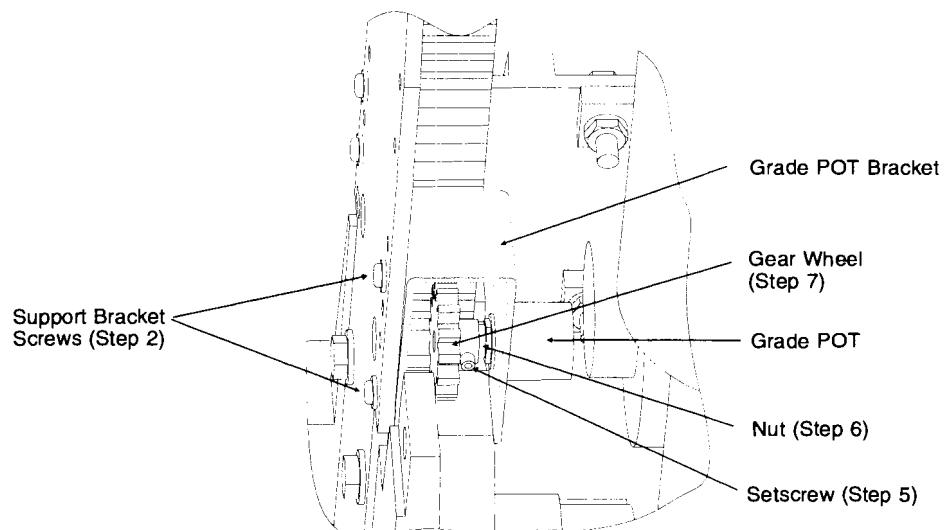
Grade Motor Chain To change the chain, first remove the grade motor as described on previous page.



1. Use a flathead screwdriver to pop off the C-clip master link on the chain.
2. Slide out the link.
3. Install the new chain, aligning it correctly on the sprockets.
4. Reinstall the grade motor as described on previous page.

REPLACING THE GRADE POTENTIOMETER (POT)

1. Turn off the treadmill circuit breaker and unplug the power cords. Remove the treadmill hood as previously described. **Maintain caution throughout the following steps.**
2. Remove the two screws from the support bracket.
3. Cut the cable ties.
4. Unplug the cable from the VSD board.
5. Remove the setscrew on the gear wheel.
6. Remove the nut holding the grade pot to the bracket.



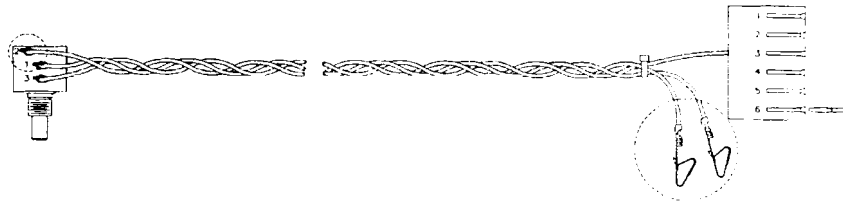
7. Slip the grade pot out of the gear wheel and bracket.
8. Replace with new pot:
 - a. Slip the grade pot into the hole in the pot bracket, then into the gear wheel. Tighten the nut to 20 inch-pounds torque.
 - b. Use the two screws from Step 2 to reinstall the pot bracket, engaging the gear wheel with the rack gear as you install.



**To prevent damage, don't mesh the gears too tightly.
Leave $\frac{1}{16}$ inch clearance for each gear.**

- c. Be sure to leave the setscrew accessible and loose.
 - d. See *Grade Pot Wires* below.
9. Calibrate the grade pot.

Grade Pot Wires At the end of each grade pot wire is a pin with a small metal flange. The flange has a corresponding slot on the connector housing.



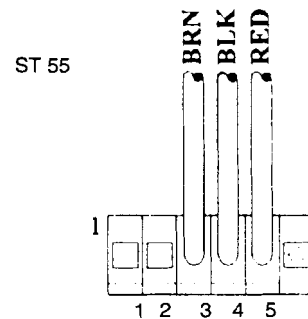
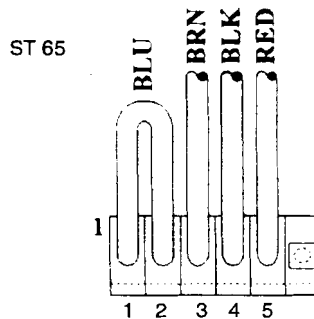
1. Insert each pin into the connector housing until it clicks slightly. The flanges will be visible through the slots in the housing.

ST 65

Red wire: slot 5
Black wire: slot 4
Blue wire: slots 1 & 2

ST 55

Red wire: slot 5
Black wire: slot 4
No blue wire



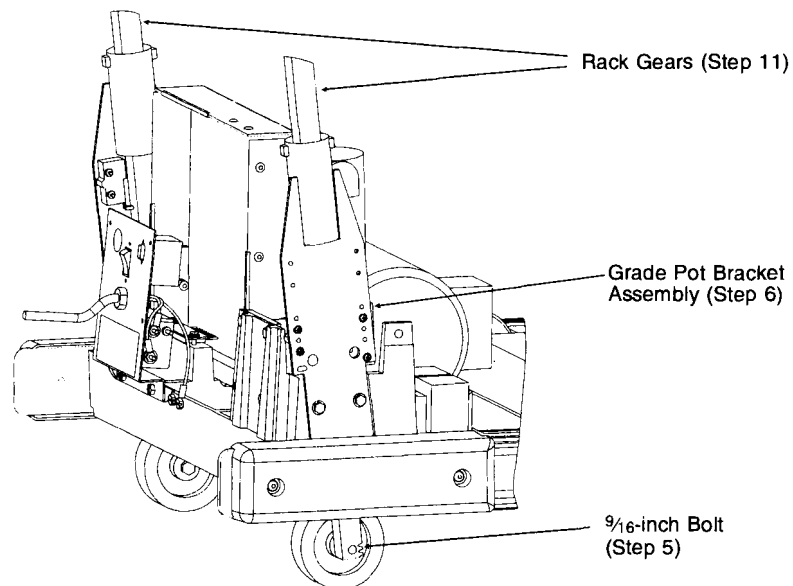
2. Verify that the pin has engaged by pulling lightly on the wire.

REMOVING THE RACK GEARS

1. If the treadmill will change grade, set the grade to 12% (6-7°).
2. Lower the front of the headframe onto 6-inch wooden blocks to take the weight off the wheels.
3. Turn off the treadmill circuit breaker, unplug the treadmill and ECG monitor, then remove the hood (page 4-3).

NOTE If the rack gear is jammed (no play in it), replace as described in *Replacing a Jammed Rack Gear*, next page.

4. Restore power to the treadmill and decrease the grade until the wheels are approximately half inch above the floor.
5. Remove the two $\frac{9}{16}$ -inch hex-head bolts holding the wheels to the rack gears. Note the arrangement of washers used as spacers.

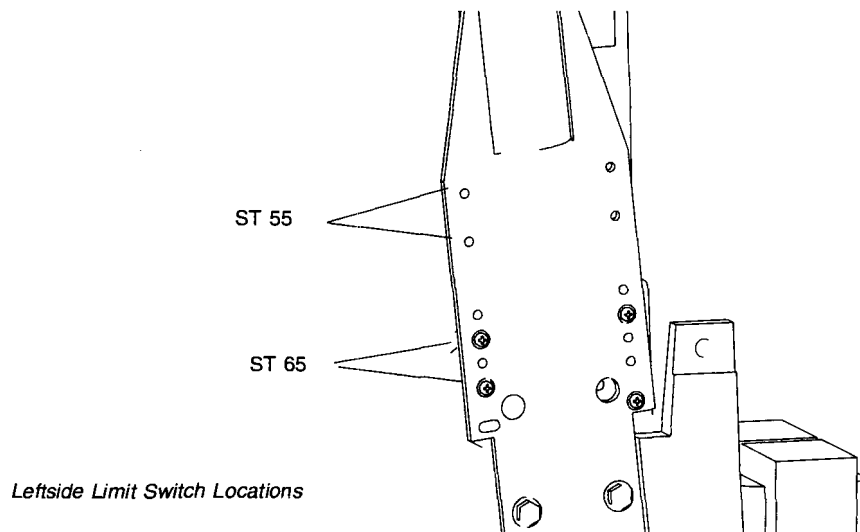


6. Remove the grade pot and bracket assembly.
7. Put the ECG monitor into service mode (see monitor manual).
8. Rotate the grade pot until a positive number appears in the grade display window. (Step 9 will not work until the number is positive.)
9. (Requires two people) Decrease grade until rack gears start bouncing on the pinion shaft. Hold the limit switches closed to let the rack gear travel beyond its normal range.
10. Turn off and unplug the treadmill.
11. Lift rack gears straight out top.

Reassembling the Rack Gears

Install new rack gears at the same time so that they extend an equal distance through the headframe.

1. Restore power to the treadmill.
2. Loosen the setscrew that secures the grade potentiometer gear and remove the gear.
3. Put the ECG monitor into service mode.
4. Insert rack gears into headframe.
5. Decrease the grade until the gears bounce two or three times, then increase the grade. This should cause both rack gears to mesh in exactly the same place.
6. Run the rack gears down past the bottom of the headframe. Hold the limit switches closed to let the rack gear travel beyond its normal lower limit.
7. Check below the headframe to verify that the rack gears are meshing properly. The gears should protrude an equal distance.
8. Run the rack gears down until there is enough room to replace the wheels.
9. Bolt the wheels to the rack gears.
 - Replace washers used as spacers in the correct arrangement.
 - Torque the bolts tightly to 46 ft-lb $\pm$ 4 ft-lb.
10. Increase the grade until the wheels touch the floor.
11. Grease the rack gears with wheel bearing grease.
12. Remove the blocks that support the headframe.
13. Reinstall the grade pot bracket and assembly.
14. Calibrate the grade potentiometer.
15. Turn the treadmill power off, remove the power cord from the outlet, then reinstall the hood.

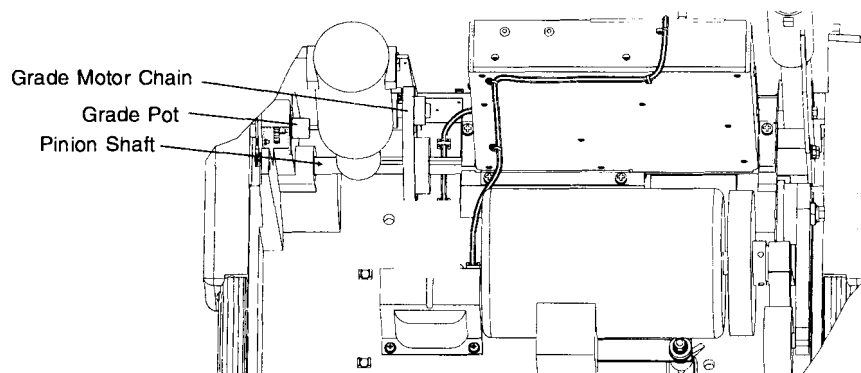


REPLACING A JAMMED RACK GEAR

1. Turn off the treadmill circuit breaker and unplug treadmill.
2. Remove the hood as previously described.
3. Block the headframe securely with wooden blocks to take the weight off the wheels.
4. Shake each gear lightly at the top to determine which rack gear is jammed. If there is no play in a rack gear, it is jammed.
5. Remove the rack gear wheels from the rack gear. Note the arrangement of washers used as spacers.
6. Remove the side bumpers.
7. Remove the poly-V belt from the motor pulley.
8. Use a $\frac{9}{16}$ -inch socket wrench to remove the two hex-head bolts that hold each siderail to the headframe. Remove the deck assembly from the headframe.
9. Remove the grade pot bracket and assembly. Remove the four bolts that hold the handrail bracket in place and remove the bracket.
10. Slide the rack gear out sideways.
11. Inspect the gear on the pinion shaft. If it is damaged, replace *both* the rack gear and the pinion shaft as described below.
12. Bolt the handrail bracket back into place.
13. Reassemble the deck assembly and poly-V belt.
14. Restore power and decrease the grade to run the other rack gear out the top.
15. Reassemble the rack gear as described above.
16. Calibrate the grade potentiometer.
17. Test the treadmill grade. Verify that:
 - a. it operates over the full range of 0-25%.
 - b. there is no binding when it moves up or down.
 - c. the chain is aligned correctly. A popping sound in the chain indicates misalignment.
18. Turn the treadmill off and unplug it.
19. Replace the bumpers.
20. Replace the hood.

REPLACING THE PINION SHAFT

1. Remove the deck assembly, then remove the rack gear as previously described for *jammed* rack gears.
2. Restore power to the treadmill, then use the grade motor to turn the pinion shaft until the setscrew on the grade pot sprocket is visible.



3. Turn off the power and the treadmill circuit breaker, then unplug the treadmill.
4. Loosen the setscrews from the grade sprocket.
5. Remove the grade motor chain as previously described.
6. Remove the handrail support bracket on the right side.
7. Slide out the pinion shaft.
8. Slide the new pinion shaft into place: be sure to reinstall the grade sprocket while installing the pinion shaft.
9. Replace the handrail support bracket.
10. Use a straight edge to align the grade sprocket and grade motor sprocket, then tighten the setscrew.
11. Replace the grade motor chain as previously described.
12. Reassemble the deck assembly and poly-V belt.
13. Reassemble the rack gear.
14. Calibrate the grade potentiometer (see *Calibration Procedures* at end of chapter).
15. Test the treadmill grade. Verify that:
 - a. it operates over the full range of 0-25%.
 - b. there is no binding when it moves up or down.
 - c. the grade motor chain is aligned correctly. A popping sound in the chain indicates misalignment.
16. Unplug the treadmill, then replace the hood and side bumpers.

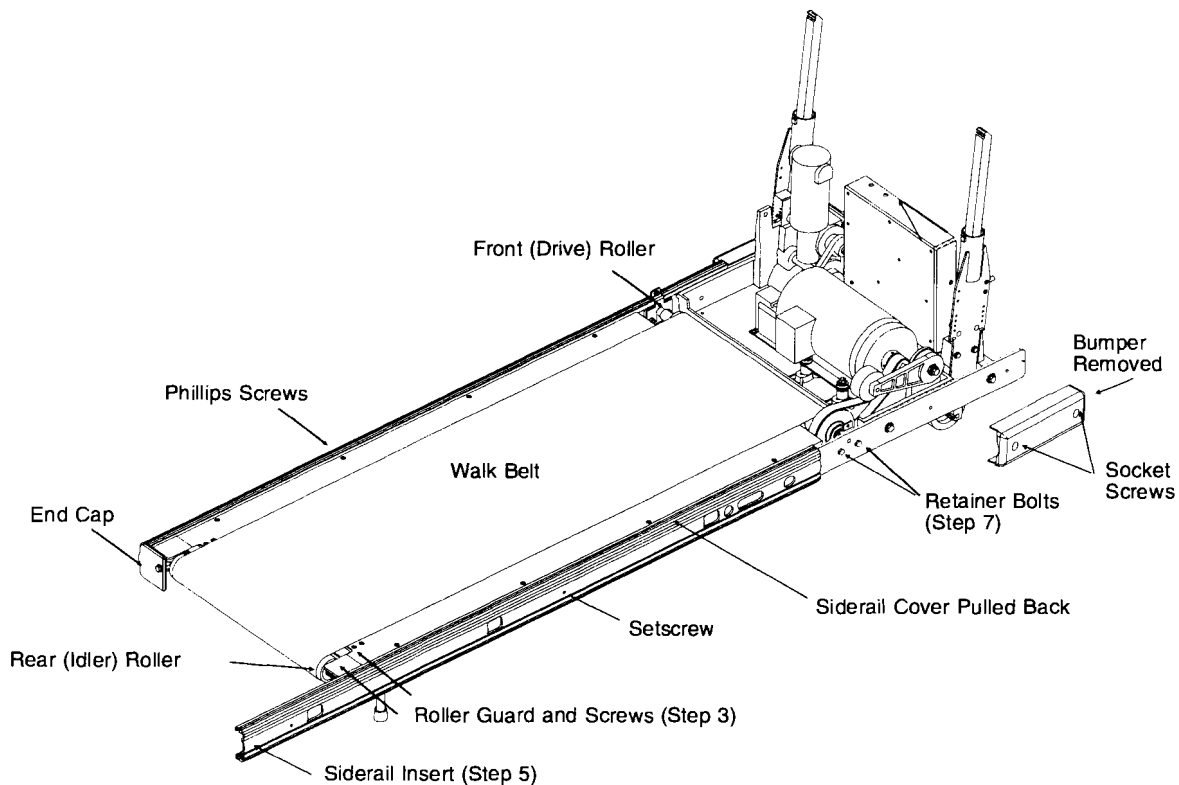
ADJUSTING THE GRADE LIMIT SWITCHES

Grade limit switches prevent the treadmill from exceeding the preset maximum grade. When a roller on the limit switch reaches a trigger in each rack gear, a lever moves outward, opening the switch and stopping the grade motor. Two grade limit switches, one on each side of the treadmill, are mounted on brackets attached to the front of the headframe.

NOTE Grade limit switch settings are preset at the factory and normally do not require adjustment. They should be adjusted if the rack gear is changed.

1. Turn off the treadmill circuit breaker and unplug the power cords from the power source. Remove the hood as previously described.
2. Loosen, but do not remove, the two Phillips screws that secure each grade limit switch to its bracket.
3. Pivot the switch on the upper screw towards, then away from, the rack gear. You should hear a click as the switch opens or closes.
4. Set the switch wheel on a flat part of the rack gear. Pivot the switch towards the rack gear just until it clicks, then tighten both screws.
5. If required, repeat Steps 2-4 for the other grade limit switch.
6. Replace the treadmill hood.
7. Operate the treadmill to verify that it reaches the upper and lower grade limits (25% and 0%).

WALK DECK ASSEMBLY



REPLACING ROLLERS

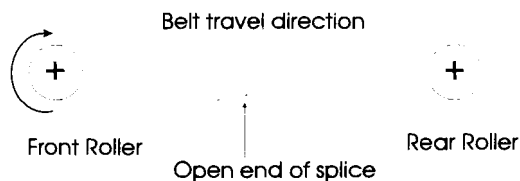
1. Turn off the treadmill circuit breaker and unplug the power cords. Remove optional siderails and remove the hood as previously described.
2. Remove the poly-V belt as previously described.
3. Loosen the four Phillips screws securing the rear roller guards. (Four wing nuts hold the screws in place on the underside of the treadmill.)
4. Remove the end caps from both sides of the belt at the rear of the walking platform.
5. Remove the siderail insert from one side of the deck, then loosen the two setscrews that hold the siderail covers to the siderails.
6. Slide the siderail cover back 10 inches.
7. Remove the four ½-inch hex bolts (two on each side) that hold the two front roller retainers to the siderail.
8. Slide the front roller up and out from the walk belt.

9. Pull the walk belt towards the rear of the deck, then slide the rear roller out from between the siderails toward the *rear* of the treadmill.
10. Replace the rollers and reassemble the treadmill following Steps 1-9 in reverse order.
11. Adjust the walk belt tension and tracking using the procedures on the following pages.
12. Adjust the rear roller finger guards.

REPLACING THE WALK BELT

- NOTE
- Quinton recommends installing a new deck when installing a new walk belt.
 - The following steps are oriented as though you were exercising on the treadmill.
 - This procedure entails removing the headframe.
1. Lower the treadmill to zero grade.
 2. Turn off the treadmill circuit breaker, unplug the power cords, and remove the treadmill hood as previously described.
 3. Use an Allen wrench to remove the four buttonhead socket screws holding the right and left bumpers to the siderails, then remove the bumpers.
 4. Slide both siderail covers back 10 inches.
 5. Remove the front and rear rollers as previously described.
 6. Remove the drive pulley bottom cover:
 - a. Remove the two screws holding the cover to the headframe.
 - b. Remove the two hex nuts holding the cover to the deck frame.
 7. Use a $\frac{9}{16}$ -inch wrench to remove the four bolts holding the deck frame to the headframe.
 8. Slide the walk belt off the deck assembly.

- NOTE When you install a new belt, verify that the closed end of the splice on the walk belt hits the roller *first* as the belt rotates.



9. Install a new belt, rough side up, and reassemble the treadmill following Steps 1-9 in reverse order.
10. Adjust the belt tension and tracking.
11. Adjust the rear roller guards.

REMOVING THE DECK

1. Remove the front and rear roller assemblies as previously described.
2. Remove the Phillips screws holding the deck to the deck frame, then remove the deck.

NOTE The two front screws also attach to the drive pulley cover underneath the treadmill.

3. To replace the deck, follow Steps 1-2 in reverse order.
4. Adjust the belt tension and tracking.
5. Verify that the gap between the rear roller guards and the rear roller does not exceed $\frac{3}{8}$ inch. Adjust as necessary.

ADJUSTING THE WALK BELT

Belt Tension Adjust the walk belt tension:

- whenever the belt slips or moves unsteadily during operation.
- after installing a new walk belt.
- each time you remove or replace the walk belt or deck.

Two adjustment methods are specified. Method 1 is preferred, but two belt tension calipers (Quinton p/n 30113-001) are required.

NOTE Both adjustment screws must be completely slack before starting this procedure.

Method 1: Using Calipers

1. Turn both tension adjustment screws clockwise until most of the slack is removed from the belt.

NOTE Do not stretch the walk belt at this point.

2. Position one caliper on each side of the belt, approximately 18 inches from the rear roller assembly.
3. Grasp the belt with one caliper clamp.
4. Pull the slack out of the belt with your fingers, then grasp the belt with the second clamp.
5. Repeat Steps 4 and 5 on the other side of the belt using the other caliper.
6. Set the dials of both calipers to zero.
7. Alternately tighten each tension adjustment screw in 0.1% increments until both sides read 0.4%. Be sure that the pointer is *exactly* on the line increment of the dial for each setting.



Do not overtighten the adjustment screws. Overtightening can damage the walk belt and roller assemblies.

8. Remove both gauges.
9. Adjust the walk belt tracking.

Method 2: Without Calipers

NOTE Both adjustment screws must be completely slack before starting this procedure.

Use this method only if two belt adjustment calipers are not available. An accurate measuring device is required.

1. Turn both tension adjustment screws clockwise until most of the slack is removed from the belt.

NOTE Do not stretch the walk belt at this point.

2. Place two pieces of masking tape or two light pencil marks on the right edge of the belt exactly 50.000 inch apart.
3. Repeat Step 3 on the left edge of the belt.
4. Alternately turn the left and right adjustment screws one-half turn until the distance between the tape or pencil marks is 50.203 inch (± 0.016) on both sides.



Do not overtighten the adjustment screws. Overtightening may damage the walk belt and roller assemblies.

5. Remove the tape.
6. Adjust the walk belt tracking.

Walk Belt Tracking Perform this procedure:

- whenever the belt moves to one side
- after installing a new walk belt.
- each time you adjust the walk belt tension.

WARNING



Do not stand on the belt when adjusting the tracking.

1. Adjust the walk belt tension as described on the previous page.
2. Start the treadmill and let it run for at least one minute at minimum speed and grade. **Do not start the treadmill when someone is on the walk belt.**
3. Make the following adjustment to the *right* adjustment screw only:
 - a. If the belt moves to the right, turn the screw $\frac{1}{4}$ turn clockwise.
 - b. If the belt moves to the left, turn the screw $\frac{1}{4}$ turn counter-clockwise.
4. Run the treadmill for at least one minute to observe the tracking. Adjustments to belt tracking take some time to become apparent.
5. Repeat Steps 3 and 4 as required.

Caution



Do not overtighten the adjustment screw. Overtightening can damage the walk belt and assemblies.

6. Increase the speed to 8 mph, then repeat Steps 3 and 4 as required.
7. Turn off the ECG monitor power.

Rear Roller Guard Adjustment

Check the position of the rear roller guards each time you readjust the belt tracking or the belt tension. The roller guards are located at the rear of the treadmill between the rear roller and the deck. Adjust the guards when the gap between the roller and the guard exceeds $\frac{3}{8}$ inch (9.5 mm).

1. Loosen, but do not remove, the two screws attaching the rear roller guard to the deck (hold the nuts on the underside with your finger).
2. Slide the rear roller guard towards the rear roller until the gap between the two is approximately 0.1 inch (2.5 mm or the thickness of two quarters).
3. Tighten the mounting screws loosened in Step 2.
4. Connect the power cord.

WARNING

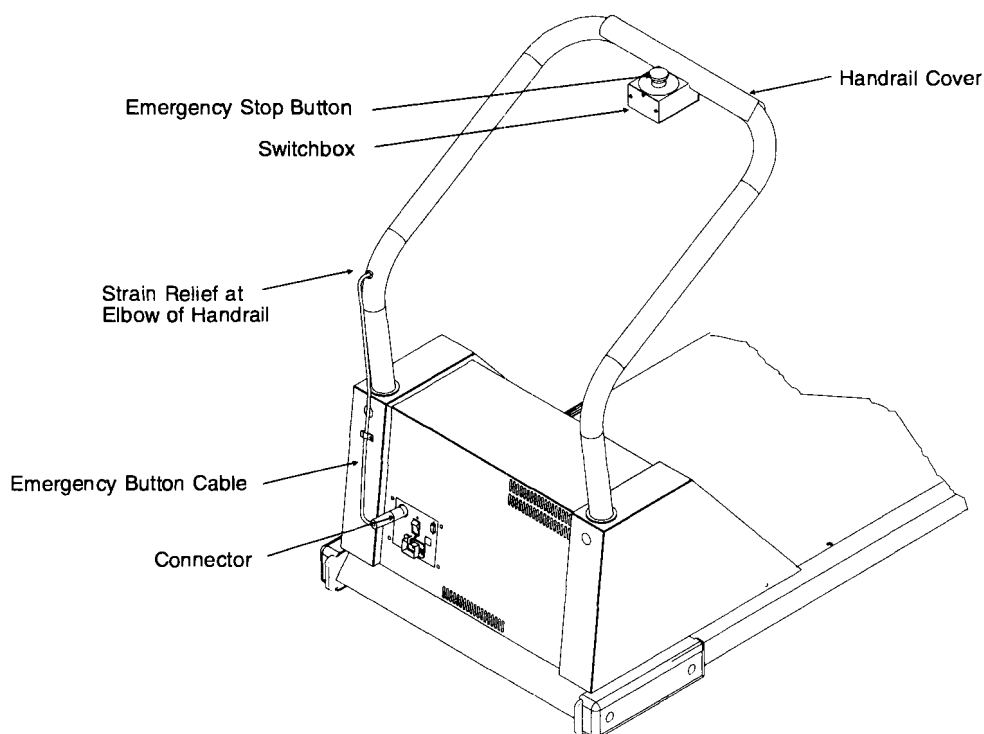


Do not let anyone to stand on the treadmill belt when it is started.

5. Use the controls on the ECG monitor to turn on the treadmill.

REPLACING THE EMERGENCY STOP SWITCH

1. Turn off the treadmill circuit breaker and disconnect the power.
2. Remove the seven screws from the switchbox cover and remove the cover.



3. Disconnect the two wires attached to the switch.
4. Push down the two white tabs on the sides of the switch contactor and remove the contactor.
5. Loosen, but do not remove, the two screws that hold the switch housing and the button assembly together.
6. Twist and separate the button assembly from the switch housing.
7. Reassemble in the reverse order.
8. Restore power and test operation.

REPLACING THE EMERGENCY STOP CABLE

1. Turn off the treadmill circuit breaker and unplug the power cords.
2. Remove the handrail cover.
3. Remove the seven screws from the switchbox beneath the emergency stop button.
4. Disconnect the cable from the switch and pass it through the hole in the handrail.
5. Remove the strain relief located at the elbow of the handrail, grab the cable where it extends from the rail, and pull it out.
6. Disconnect the cable from the configuration plate.
7. Place a strain relief on the handrail, then pass the new cable through it, directing it up through the hole in the handrail.
8. Attach the cable wires to the emergency switch: the wires are interchangeable.
9. Replace the switchbox cover and the handrail cover.
10. Connect the cable to the configuration plate.
11. Restore the power and test operation.

CALIBRATION PROCEDURES

Grade Potentiometer (Pot) Calibration Calibrate the grade pot whenever specified in the procedures in this chapter.

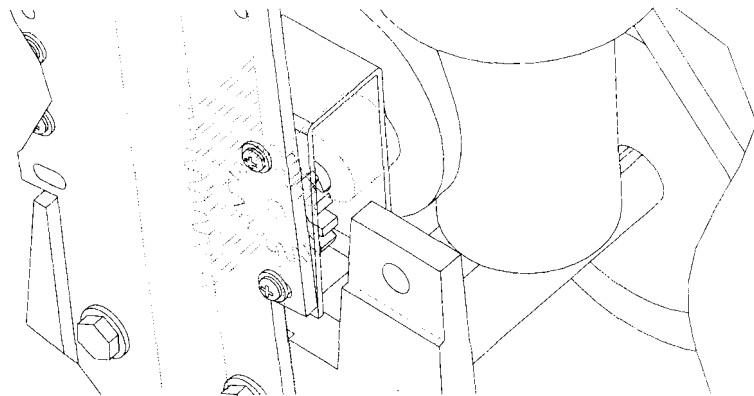
1. Remove the hood (page 4-3).
2. Restore power to the treadmill.
3. Lower the grade until the treadmill is level.
4. Remove the bumper on the left side.
5. Slide the siderail cover away approximately six inches.
6. Measure from the bottom of the siderail to the floor at both the front and rear of the treadmill. Adjust the grade until both measurements are identical.

7. Refer to the ECG monitor service manual to set the treadmill to service mode.
8. Loosen the screw that holds the grade pot sprocket to the grade pot. This may require removing then replacing the two Phillips screws from the pot assembly bracket.
9. Place a flathead screwdriver through the handrail bracket and turn the pot shaft until the ECG monitor displays zero grade.
10. Position the bracket so that the gear is meshed with the rack gear teeth (illustrated below) and tighten the screws loosened in Step 8.

Caution



To prevent damage when replacing the bracket, don't mesh gears too tightly. Leave $\frac{1}{16}$ inch clearance for each gear.



11. Take the ECG monitor out of service mode.
12. Verify that the treadmill operates through its full grade range (0 – 25%) and that the treadmill is nearly all the way to the top of the the rack gear when the display reads 25%.
13. Turn off the power and disconnect the power cord from the power outlet.
14. Reassemble the siderails and bumpers.

Speed and Grade The circuitry in the treadmill is self-calibrating for speed and grade. No additional calibration is required.

5. Preventive Maintenance

WARNING



- Before working on the treadmill or its components, turn off the treadmill circuit breaker and unplug the power cords.
- High voltages remain under the treadmill hood for a few minutes even after the plug has been removed.
- Secure long hair, loose clothing, and jewelry before working near the treadmill, particularly near the walking surface or pulleys.
- Do not permit anyone to stand on the treadmill belt when it is started.

RECOMMENDED SERVICE

With normal upkeep, no routine service is necessary. When service is required, repairs can be done to the modular level.

ROUTINE MAINTENANCE

Visual Inspection

- Inspect the treadmill power cord for wear. Inspect all connector cables and the power receptacle. Check for worn or damaged plastic coverings, frayed or broken wires, cracked connections, and other signs of damage.
- Inspect the walking belt for wear. Be sure it is not rubbing against the frame. The belt should be centered within 0.25 inch of the sides; adjust if necessary.
- Check the handrail(s) and optional emergency stop button to be sure they are fastened securely.
- Remove potential hazards from the treadmill area.

CLEANING THE TREADMILL SURFACES

Follow these steps to clean the treadmill after servicing or as required:

- Elevate the treadmill to maximum height and vacuum the floor under it to prevent excess dust and dirt from interfering with operation.
- Clean the treadmill exterior with a damp sponge, then dry thoroughly.
- **Never wipe the deck under the belt, even when replacing a belt. Wiping can damage the surface.**

Caution



- Do not use detergents or cleaning agents on any part of the deck.
- Do not let liquid enter the treadmill interior. If it does, inspect and test the equipment for safety before using it again.

Disinfection Disinfection, when necessary, is the responsibility of the individual facility, which should follow its own established procedure. **Do not use liquids on the deck surface.**

VACUUMING UNDER THE TREADMILL HOOD

Dust and dirt beneath the hood can restrict the air flow needed to cool the unit and disipate heat from the drive motor and VSD board. To prevent damage to components, periodically vacuum the mechanical drive and the area behind the VSD board.

Frequency Treadmill use and environment determine how much dust accumulates and how frequently you need to vacuum the components. Inspect the internal components at least every six months. Adjust the inspection schedule as needed. If significant accumulations occur more frequently, vacuum as needed.

WARNING



To avoid electric shock, turn off the treadmill circuit breaker and unplug the treadmill and ECG monitor power cords before removing the hood. Before working near components, wait at least two minutes from the time you unplugged the power cord. Be sure the red LED on the VSD board is off.

The power control on the ECG monitor does not turn off electrical current to the treadmill.

Caution



Use extreme caution to avoid physical damage to the internal components. Avoid static discharge, which can damage the electronic components.

1. Remove the hood as previously described (pg 4-3).
2. Vacuum the areas behind the VSD cage (deck side).
Do not vacuum the VSD board.
3. Replace the hood.

REPLACEMENT SCHEDULES

Belts should be replaced if they are frayed or show excessive wear.

ELECTRICAL TESTING

Electrical testing is do be done by the facility's biomedical department as required. Check the leakage current of the treadmill periodically—at least every nine months—to be sure it does not exceed local or provincial standards. See Appendix B, *Specifications*, for limitations.

Appendix A. Safety Requirements

- Read this manual in full before servicing and operating the treadmill.
- Before each use of this equipment, check the power receptacle for signs of damage. Be sure the connection for the optional Emergency Off switch is secure. Test the switch to verify proper operation. Do not operate the equipment if the integrity of these items is in question.
- Do not start the treadmill when someone is standing on the belt.
- Keep speed and grade at the lowest settings when getting on and off the treadmill.
- Keep the area underneath and around the treadmill clear.
- When connecting Quinton-approved auxiliary equipment, be certain the summation leakage current does not exceed local or provincial standards.
- To avoid potential safety and electrical problems, use parts and accessories that meet Quinton specifications.
- This equipment is classified Class I, Type B, ordinary equipment. Not protected against fluid ingress. Rated for continuous operation. Do not operate this equipment in the presence of flammable anesthetic mixtures.
- The treadmill must be on an appropriate, dedicated electrical circuit. Nothing else should be connected to the circuit.
- Increased risk due to leakage current can result if this equipment is not grounded properly.
- **Failure to follow these guidelines can produce a serious or possibly fatal electrical shock hazard. Consult a qualified electrician as required.**

Appendix B. Specifications

The following specifications apply to both the ST 55 (00378) and the ST 65 (00383) except where noted.

PERFORMANCE	
Maximum Rated Load	400 lb (181.4 kg)
Belt Speed Range ± 0.2 mph (Continuously Adjustable)	0.8 to 9.6 mph (1.3 to 15.4 km/h)
Grade Range $\pm 0.5\%$	0 to 25%
PHYSICAL	
Weight	ST 55: 352 lb (160 kg) ST 65: 375 lb (170 kg)
Nominal Walking Area	ST 55: 20 in x 55 in (51 cm x 140 cm) ST 65: 20 in x 65 in (51 cm x 165 cm)
Treadmill Area	ST 55: 29.9 in x 80.2 in (76 cm x 204 cm) ST 65: 29.9 in x 90.2 in (76 cm x 229 cm)
Walking Surface Height	7.0 in (18 cm) from floor
Handrail Height	47.2 in (120 cm) from floor
ENVIRONMENTAL	
Temperature	Operating: 50 to 86°F (10 to 30°C) Storage: -13 to 122°F (-25 to 50°C)
Humidity (non-condensing)	Operating: 3 to 95% relative Storage: 3 to 95% relative
Atmospheric Pressure	Operating: 8.60 to 15.0 psia, 445 to 775 mmHg absolute Shipping & Storage: 8.22 to 15.0 psia, 425 to 775 mmHg absolute

POWER REQUIREMENTS

Dash No.	Voltage/Hz	Current Draw Amps	Minimum Branch Circuit Amps
- 001	99 - 132VAC, 60Hz	20	20
- 002	207 - 264VAC, 50Hz	10	10
- 003			
- 004			
- 005			
- 006			
- 007	90 - 110VAC, 50/60Hz	20	20
- 008	180 - 220VAC, 50/60Hz	10	10

Appendix C. Part Numbers

FINAL ASSEMBLIES

Treadmill	Part Number
MedTrack ST 55 Treadmill Assembly	00378
MedTrack ST 65 Treadmill Assembly	00383
The following dash numbers apply to both treadmill part numbers above:	
English U.S.A. 99 - 132V, 60 Hz, 20A	001
English U.K. 207 - 264V, 50 Hz, 10A	002
German, 207 - 264V, 50 Hz, 10A	003
French, 207 - 264V, 50 Hz, 10A	004
Italian, 207 - 264V, 50 Hz, 10A	005
Spanish, 207 - 264V, 50 Hz, 10A	006
Japanese, 90 - 110V, 50/60 Hz, 20A	007
Japanese, 180 - 220V, 50/60 Hz, 10A	008

SPARES

Item	Part Number
ELECTRICAL	
Power Cord	
U.S.A.	30610-004
Japan 100V	30610-004
U.K.	30736-012
Germany	30736-015
France	30736-015
Spain	30736-015
Italy	30736-013
Japan 200V	30736-020
Strain Relief, power cord	01227-006
Configuration Plate Assembly	
U.S.A.	32776-003
International	32776-004
PCBA Assy, Drive	32975-002
BUS Recovery System Assy Harness	033167-001
DRIVE	
Drive Motor Assy	32783-001
Drive Motor Isolation Kit	33503-001
Flywheel Assembly	32446-002
Drive Belt	32387-001
Tensioner Assembly	32784-001
Transformer Assembly	32706-001

GRADE	
Grade Motor Assy	33316-002
Grade POT Assy	33171-002
Grade Wheel Kit	33502-002
Pinion Shaft	13044-001
Grade Chain Kit	30448-001
Sprocket, Chain, Grade Motor	19081-004
DECK	
Deck	
ST 55	30205-004
ST 65	30205-005
Front Roller	33507-003
Rear Roller Assy	33508-002
Walkbelt	
ST 55	33510-001
ST 65	33510-002
End Cap, Front Left	19306-001
End Cap, Front Right	19306-002
End Cap, Rear Left	19057-002
End Cap, Rear Right	19058-002
Side Handrail Kit, Short, ST 55	32758-001
Side Handrail Kit, Short, ST 65	32758-002
Side Handrail Kit, Long, ST 55	32759-001
Side Handrail Kit, Long, ST 65	32759-002
Side Handrail Cover, Short	13802-005
Side Handrail Cover, Long	13802-006
Front Handrail—with emergency stop	32991-001
Front Handrail—without emergency stop	32991-002
Front Handrail Cover—for units with emergency stop button	31450-002
Front Handrail Cover—for units without emergency stop button	13802-005
HARDWARE	
Spare Hardware	33372-001
MISCELLANEOUS	
Emergency Stop Button Option	33506-001
Overhead Mask Support	13689-001
Catheter Arm Support	00043-002

Appendix D. Assembly Drawings

Cage Assembly, Drive PCBA

Configuration Plate Assembly

Harness Assembly, Limit Switch

Harness Assembly, BUS Recovery System

Motor, Drive, AC Variable

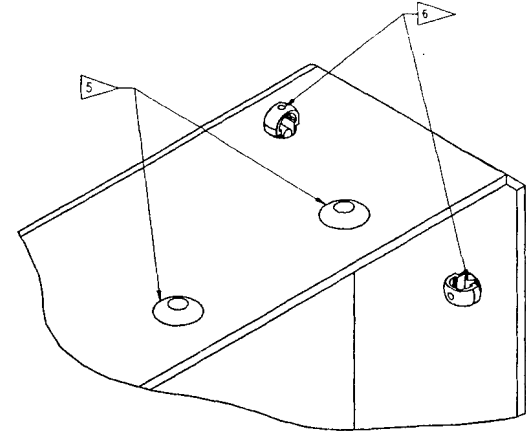
System Wiring

Transformer

7 LOCATE LABELS (ITEMS 10 AND 11) APPROXIMATELY AS SHOWN.

	I	1	033482-001	LABEL, DANGER	HIGH VOLTAGE WARNING	
	I	10	016222-003	LABEL, CAUTION	INT'L SHOCK HAZARD SYMBOL	
	I	9	012029-005	WASHER, INTERNAL STAR	#6	
	I	8	010827-242	SCREW, MACH. PN HD, PH	6-32 UNC-2A X .75LG	
		7	DELETED			
	I	6	033442-001	CLIP, CABLE TIE FASTENER		
	A	5	009794-002	GROMMET, CONTINUOUS		
	I	4	033174-001	SIL PAD		
	I	3	031127-003	BRIDGE RECTIFIER, 35A		
	I	2	031225-001	PCBA, VSD		
	I	1	032974-001	CARD CAGE		
	-	-	-001			

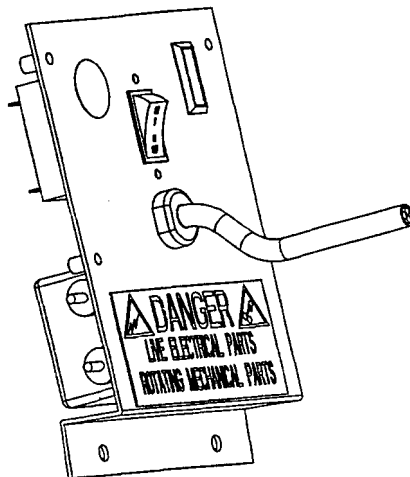
		QTY PER ASSEMBLY	DO NOT SCALE DRAWING	DRAWN: M. Resiole 12/14/94	PARTS LIST	REFERENCE DESIGNATION
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DIMENSIONS AND TOLERANCES PER ANSI Y14.5-1982	TOL	.XX : .25 XXX : .015 ANGLE : ---	ENGR: S. BECKERS 1/23/95	MFG: B. TRAETHEN 1/22/95	QUAL: <i>Kaplan</i> 2/29/95	3303 MONTE VILLA PARKWAY BOTHELL, WA 98021-0508 206/71-07-2000
NOTICE: QUINTON CONFIDENTIAL THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION THEREIN MAKES NO DISCLOSURE, USE OR REPLICATION AGREED EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT©1995 ALL RIGHTS RESERVED.				TITLE CAGE ASSEMBLY, DRIVE PCBA		
CLASS CODE ASSY	VALUE CODE TREML	BIST CODE 3	TECH SVCE	SIZE D	MODEL TREADMILL	OWG NO. 032975
				SCALE 1/2	SOURCE PRO	SHEET 1 OF 3

[illegible]

NOTICE: QUINTON CONFIDENTIAL THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION AGREES TO MAKE NO DISCLOSURE, USE OR DUPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT © 1995 QUINTON INSTRUMENT CO. ALL RIGHTS RESERVED.				SIZE D	MODEL TREADMILL	DWG NO. 032975	REV A
				SCALE 1/2	SOURCE PRO	SHEET 3 OF 3	

NOTES:

- 1 MARK WITH PART NO. AND REV. LETTER TO WHICH MFD. IN APPROXIMATE LOCATION SHOWN.
- 2 ADD LOCTITE (ITEM 24).
- 3 PART OF ITEM 29.
- 4 PART OF ITEM 30.
- 5 PART OF ITEM 31.
- 6 SEE -001 FOR WIRE ROUTING.
- 7 SEE -002 FOR WIRE ROUTING.



(-001 SHOWN)

-004		000383 000378
-003		000383 000378
-002	032359	000390 000382 000380 000377
-001		000390 000382 000380 000377
PART NO.	NEXT ASSY NO.	END ITEM NO.
APPLICATION		

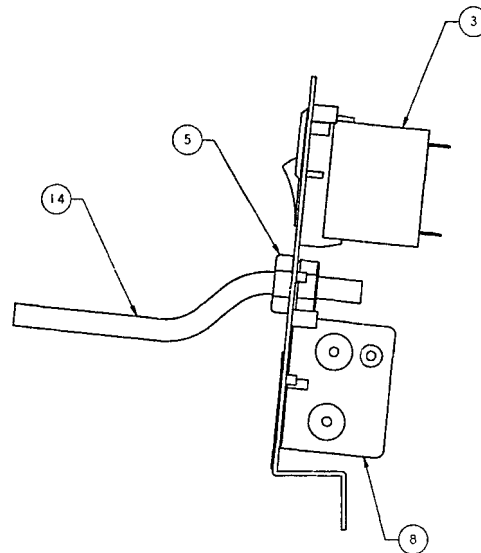
1	-	1	-	32	031453-011	CONNECTOR LOCK		
1	-	1	-	31	033311-002	WIRE SET, CONFIGURATION PLATE	220V	
-	1	-	1	30	033311-001	WIRE SET, CONFIGURATION PLATE	115V	
1	-	-	-	29	033315-004	ASSY. HARNESS, CONFIGURATOR		
-	-	1	-	28	033315-002	ASSY. HARNESS, CONFIGURATOR		
-	1	-	1	27	033315-001	ASSY. HARNESS, CONFIGURATOR		
AR	AR	AR	AR	26	001899-001	TIE, CABLE		
3	3	3	3	25	010561-001	ANCHOR, TIE		
-004	-003	-002	-001	ITEM NUMBER	PART NUMBER	DESCRIPTION	MATERIAL SPECIFICATION	REFERENCE DESIGNATION

PRODUCTION

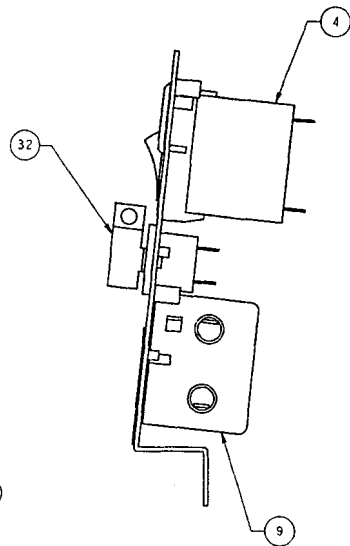
REVOLUTIONS									
LTR	ZONE	DESCRIPTION						APPROVE	DATE
ADON	NO	34212	34177	34087					
REVISION	LEVEL	A	B	C					
AR	AR	AR	AR	24	001739-001	ADHESIVE, SCREW LOCK	LOCTITE 222		
4	-	-	-	23	030577-001	NUT, HEX, LOCKWASHER, KEP	4-40		
2	2	-	-	22	001164-018	WASHER, FLAT	#4		
2	2	-	-	21	010511-003	WASHER, LOCK, SPLIT	#4		
2	2	-	-	20	019032-013	SCREW, JACK	MALE/FEMALE STANDOFF		
2	-	2	-	19	030579-004	SCREW, PM HD SEMS	4-40 X .375 L.		
3	3	3	3	18	012029-006	WASHER, LOCK, STAR,	INTERNAL #8		
6	6	6	6	17	016839-026	NUT, HEX	8-32		
2	2	2	2	16	012029-005	WASHER, LOCK, STAR, INTERNAL	#6		
2	2	2	2	15	010827-142	SCREW, PAN HEAD, PHILLIPS	6-32 X .25 L		
-	1	-	1	14	030610-004	CORD, POWER	115 v.		
1	1	1	1	13	032979-001	LABEL, DANGER, LIVE ELEC.	ROTATING MECHANICAL		
1	-	1	-	12	016950-003	LABEL, ATTENTION	INTERNATIONAL		
-	-	-	1	11	017829-002	COVER, CONNECTOR CUTOUT	D-SUBMINIATURE, 9 PIN		
-	1	1	1	10	011163-013	PLUG, HOLE	1.00 INCH		
1	-	1	-	9	032533-002	RFI NOISE FILTER	10ESKI		
-	1	-	1	8	032533-001	RFI NOISE FILTER	SUP-E20H-EP		
1	1	-	-	7	033166-001	ASSY. CABLE, TM COMM			
1	-	1	-	6	031453-001	CONNECTOR, POWER INLET,	IEC 320, 16 AMP		
-	1	-	1	5	001227-006	STRAIN RELIEF			
1	-	1	-	4	031396-014	CIRCUIT BREAKER	2 POLE, 10 AMP		
-	1	-	1	3	031396-015	CIRCUIT BREAKER	2 POLE, 20 AMP		
1	-	1	-	2	032482-002	PLATE, CONFIGURATION	EUROPEAN		
-	1	-	1	1	032482-001	PLATE, CONFIGURATION	U.S.A.		
-	-	-	-	-	-004	CONFIGURATION PLATE,	ST 55/65, EUROPEAN	10A	
-	-	-	-	-	-003	CONFIGURATION PLATE,	ST 55/65, U.S.A.	20A	
-	-	-	-	-	-002	CONFIGURATION PLATE,	CLUBTRACK, EUROPEAN	10A	
-	-	-	-	-	-001	CONFIGURATION PLATE,	CLUBTRACK, U.S.A.	20A	
001	002	003	004	ITEM NUMBER	PART NUMBER	DESCRIPTION	MATERIAL SPECIFICATION	REFERENCE DESIGNATION	
PARTS LIST									
QTY PER ASSEMBLY					DO NOT SCALE DRAWING				
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DIMENSIONS AND TOLERANCES PER ANSI Y14.5-1992					DRAWN: DERNOVSEK 11/13/95				
					TOL .XX : .03				
					ANG : 1/8				
					QUAL: 1/8				
					TECH SUCC: 3-25				
					CLASS CODE: PLAA				
					VALUE CODE: TREDML				
					QIST CODE: 2/3				
					SCALE 1/1				
					SOURCE PRO				
					SHEET 1 OF 6				

032776

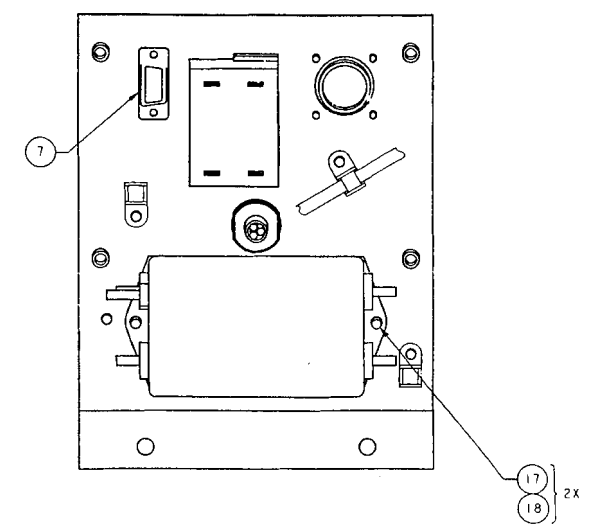
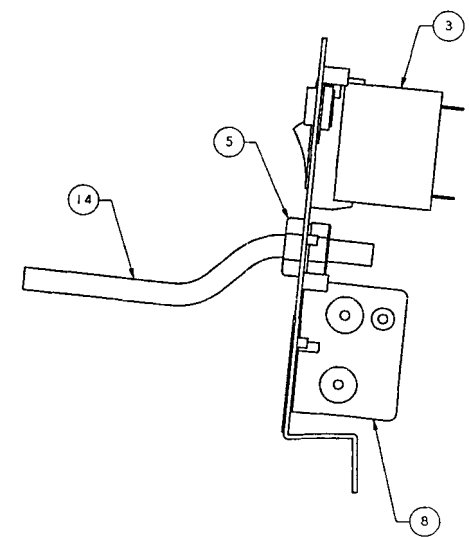
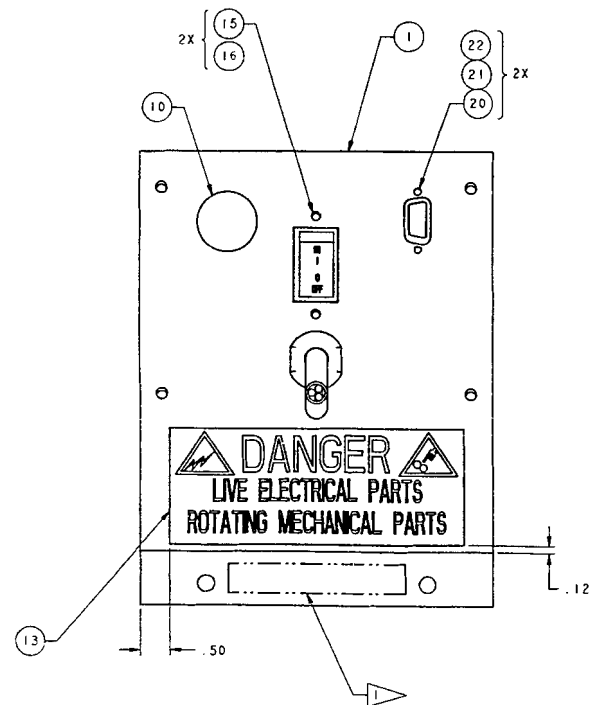
A

[illegible]

NOTICE: QUINTON CONFIDENTIAL THIS SHEET CONTAINS CONFIDENTIAL PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION AGREES TO MAKE NO DISCLOSURE, USE OR DUPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT © 1995 QUINTON INSTRUMENT CO. ALL RIGHTS RESERVED.				SIZE D	MODEL TREADMILL	DWG NO. 032776	REV. -
				SCALE 1/1	SOURCE PRO	SHEET 2 OF 6	

[illegible]

NOTICE: QUINTON CONFIDENTIAL THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION AGREES TO MAKE NO DISCLOSURE, USE OR DUPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT © 1995 QUINTON INSTRUMENT CO. ALL RIGHTS RESERVED.				SIZE D	MODEL TREADMILL	DWG. NO. 032776	REV. -
				SCALE 1/1	SOURCE PRO	SHEET 3 OF 6	



-003 6

PRODUCTION

8 7 6 5 4 3 2 1

D

C

B

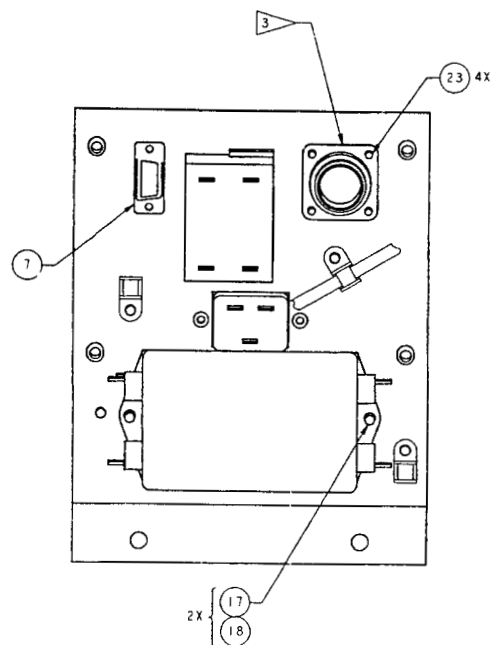
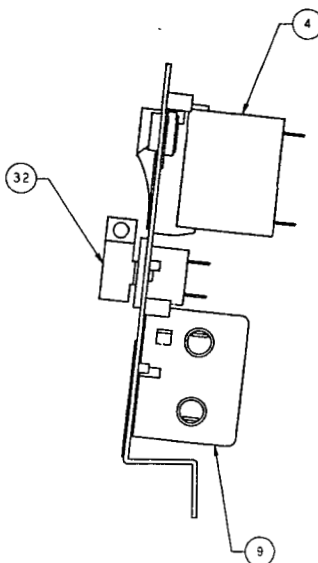
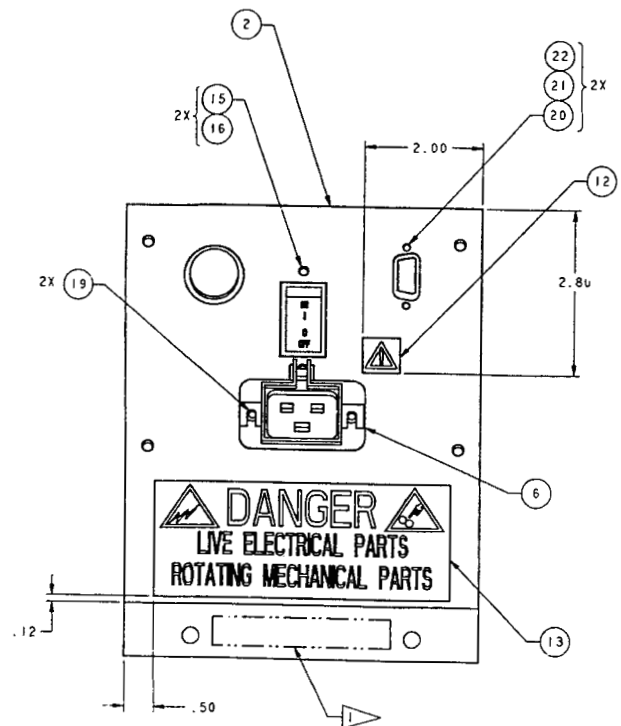
A

D

C

B

A



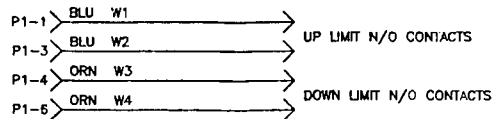
-004

PRODUCTION

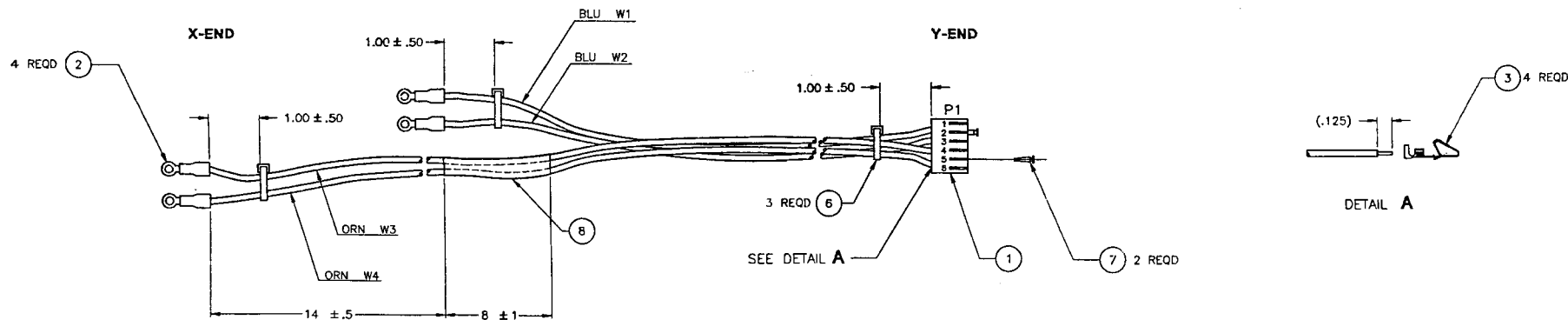
NOTICE: QUINTON CONFIDENTIAL - THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION AGREES TO MAKE NO DISCLOSURE, USE OR DUPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT © 1984 QUINTON INSTRUMENT CO. ALL RIGHTS RESERVED.				SIZE	MODEL	DWG NO	REV
				D	TRADWILL	032776	-
				SCALE	1/2	SOURCE	PRO
				SHEET 5 OF 5			

NOTES: UNLESS OTHERWISE SPECIFIED

1. ASSEMBLE WIRE HARNESS PER QUINTON WORKMANSHIP STANDARDS MANUAL, P/N 018124.
2. DO NOT TWIST WIRES.
3. P/N 011582-101 IS AN ACCEPTABLE ALTERNATE.
4. MARK WITH PART NUMBER AND REV LETTER TO WHICH MANUFACTURED.



SCHEMATIC DIAGRAM



PRODUCTION

WIRE TABLE					X-END		Y-END	
ITEM	WIRE	GAUGE	LENGTH	COLOR	STRIP	ITEM	STRIP	ITEM
4	W1	18	12.0 ± .5	BLU	.28 ⁺⁰⁴ ₋₀₀	2	.125 ⁺⁰⁴⁰ ₋₀₀₀	3
4	W2	18	12.0 ± .5	BLU	.28 ⁺⁰⁴ ₋₀₀	2	.125 ⁺⁰⁴⁰ ₋₀₀₀	3
5	W3	18	42.0 ± .5	ORN	.28 ⁺⁰⁴ ₋₀₀	2	.125 ⁺⁰⁴⁰ ₋₀₀₀	3
5	W4	18	42.0 ± .5	ORN	.28 ⁺⁰⁴ ₋₀₀	2	.125 ⁺⁰⁴⁰ ₋₀₀₀	3

AR 8	018179-007	TUBING, HEAT SHRINKABLE	FT-221V-3/8
2 7	007929-001	KEY, POLARIZING	
3 6	001899-001	CABLE TIE	
AR 5	010605-004	WIRE, INSULATED, STRANDED	18 AWG, 600V, ORANGE W3, W4
AR 4	010605-007	WIRE, INSULATED, STRANDED	18 AWG, 600V, B.U.E W1, W2
4 3	011582-111	CONNECTOR, CRIMP TERMINAL	CONTACT
4 2	030690-006	TERMINAL, RING TONGUE	#6, RED
1 1	011582-006	CONNECTOR, CRIMP TERMINAL	HOUSING
-	-001	HARNESS ASSY, LIMIT SWITCH	

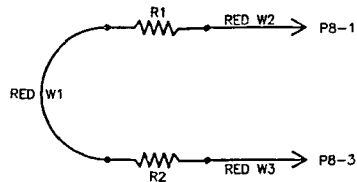
ITEM NUMBER	PART NUMBER	DESCRIPTION	MATERIAL SPECIFICATION	REFERENCE DESIGNATION
001				

QTY PER ASSY	DO NOT SCALE DRAWING	DRAWN: R. P-CANNON	12-18-84
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DIMENSIONS AND TOLERANCES PER ANSI Y14.5M-1982	XX ± --- XXX ± --- ANGLE ± ---	ENGR: V.PIPINICH	1/12/85
NOTICE: QUINTON CONFIDENTIAL THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION ACCEES TO MAKE NO DISCLOSURE, USE OR REPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT ©1984 ALL RIGHTS RESERVED	QUAL: B/H	DATE: 8-4-85	58-12
CLASS: SWIA	VALU: 1000	DIS: 3	TECH SVCE: ---

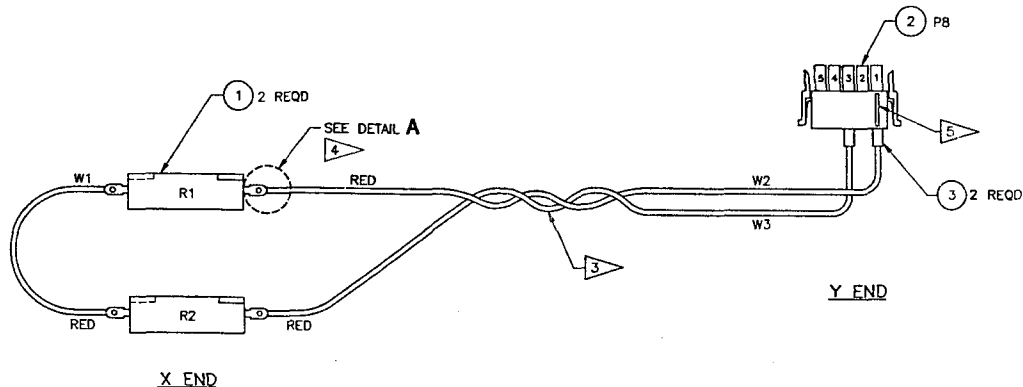
Quinton instrument co.		3303 MONTE VILLA PARKWAY BOTHELL, WA 98021-8908 206/402-2000	
TITLE: HARNESS ASSEMBLY, LIMIT SWITCH		SIZE: D	MODEL: TREDML
DWG NO: 033170		SCALE: NONE	SOURCE: AUTOCAD
REV: A		SHEET 1 OF 1	

NOTES: UNLESS OTHERWISE SPECIFIED

- ASSEMBLE WIRE HARNESS PER QUINTON WORKMANSHIP STANDARDS MANUAL, WIRE TABLE AND THIS DRAWING.
- MARK ASSEMBLY PART NUMBER AND REV. LETTER TO WHICH MFD PER QUINTON WORKMANSHIP STANDARDS MANUAL.
- TWIST WIRES W2 AND W3 TO FORM TWISTED PAIRS APPROXIMATELY ONE TWIST PER INCH.
- AFTER TIGHTENING HARDWARE, APPLY FLUX, MULTICORE XERSIN 2016. APPLY SOLDER, SU4005-001 (MAY USE -002).
- NUMBERS ON CONNECTOR HOUSING, (ITEM 2), ARE SHOWN FOR REFERENCE ONLY AND DO NOT APPEAR ON CONNECTOR. PIN 1 IS INDICATED BY INDEX FEATURE ON CONNECTOR HOUSING.

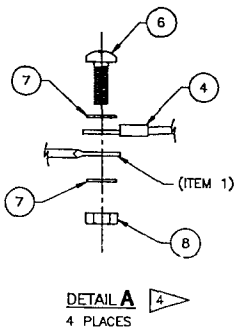


SCHEMATIC DIAGRAM



PRODUCTION

WIRE TABLE									
WIRE STRIP LENGTH TOL. $\pm .040$ $-.000$				X-END		Y-END			
ITEM	WIRE	GAUGE	LENGTH	COLOR	STRIP	ITEM	STRIP	ITEM	
5	W1	18	2.5 $\pm .5$	RED	.280	4	.280	4	
5	W2	18	9.5 $\pm .5$	RED	.280	4	.156	3	
5	W3	18	9.5 $\pm .5$	RED	.280	4	.156	3	



4	8	016839-019	NUT, HEX	2-56	
8	7	012029-001	WASHER, LOCK, INTERNAL STAR	#2	
4	6	010827-140	SCREW, PH PHILLIPS	2-56 X .250 Lg	
AR	5	010605-003	WIRE, INSULATED, STRANDED	600V, 18AWG, RED	
4	4	030690-020	TERMINAL, RING	#2, 22-16 AWG	
2	3	015031-002	CONTACT, UM+L	.760 Lg X .010 THK	W1, W2, W3
1	2	015032-004	HSG, CONN, 5 CIRCUITS		PB
2	1	032444-001	BLEEDER RESISTOR, BRS	820 Ohms, 5%, 50W	R1 & R2
		-001	ASSY HARN, BUS RCVY SYS, TREOML		
PART NUMBER		DESCRIPTION			MATERIAL SPECIFICATION
QTY PER ASSY		DO NOT SCALE DRAWING			REFERENCE DESIGNATION
UNLESS OTHERWISE SPECIFIED		ALL DIMENSIONS ARE IN INCHES			
DIMENSIONS AND TOLERANCES		PER ANSI Y14.5M-1982			
THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION AGREES TO MAKE NO DISCLOSURE, USE OR DUPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT © 1995 ALL RIGHTS RESERVED.		NOTICE: QUINTON CONFIDENTIAL			
CLASS CODE: HARFA	VALUE CODE: TREDML	DIST CODE: 3			
DRAWN: J. Dwyer		1/18/95	Quinton Instrument Co.		
ENGR: T. MYNTH		1/30/95	3303 MONTE VILLA PARKWAY		
MFG: S. CLURMAN		1/30/95	BOTHELL, WA 98021-8905		
QUAL: K. B. B.		8.4.95	206/402-2000		
CONVL: B. H.		2.8.95			
MKTG: _____					
TECH SVCE: _____					
SIZE: D	MODEL: ZODIAC	QWG NO. 033167	REV: A		
SCALE: NONE	SOURCE: AUTOCAD	SHEET 1 OF 1			

-001	032359	000383
		000378
PART NO.	NEXT ASSY NO.	END ITEM NO.
APPLICATION		

NOTES:

- 1 MATERIAL TO BE SUPPLIED BY VENDOR.
- 2 ALL PARTS PER DRAWING RECOMMENDATION.
- 3 PERMANENTLY MARK WITH QUINTON PART NUMBER, DASH NUMBER, REVISION LETTER TO WHICH MANUFACTURED AND VENDOR IDENTIFICATION.
- 4 THIS COMPONENT MUST BE CERTIFIED BY A RECOGNIZED TESTING AGENCY TO COMPLY WITH APPROPRIATE CSA AND UL STANDARDS.
- 5 REFERENCE DIMENSIONS SHOWN ARE FOR MFG CODE 2 (BALDOR). CONSULT VENDOR PART DRAWINGS FOR MFG 1 (LEESON) DIMENSIONS.
- 6 TWO EXTRA NEMA STANDARD MOUNTING HOLES OPTIONAL.
- 7 USE SEALED BALL BEARINGS IN MOTOR CONSTRUCTION. THERE ARE TO BE NO EXTERNAL GREASE FITTING ON MOTOR CASE.
- 8 WHEN WIRED PER SCHEMATIC ON THIS DRAWING, MOTOR ROTATION SHALL BE COUNTERCLOCKWISE WHEN VIEWED FROM OUTPUT SHAFT END.
- 9 DIMENSION TO BE MEASURED FROM SURFACE OF JUNCTION BOX TO END OF CONNECTOR (ITEM 37).

ONLY THE ITEMS DESCRIBED ON THIS DRAWING WHEN PROCURED FROM THE VENDOR(S) LISTED HEREON IS APPROVED BY THE QUINTON DESIGN ENGINEERING DEPARTMENT IN THE APPLICATIONS SPECIFIED BY THIS DOCUMENT NUMBER. SUBSTITUTE ITEMS SHALL NOT BE USED.

BALDOR ELEC. CO.
FORT SMITH, AR
121
LEESON ELEC. CORP.
GRANTON, WI
111
APPROVED DIMENSIONS
OF SUPPLY

REVISIONS				APPROVED	DATE
LTR	ZONE	DESCRIPTION			
B	1A6	A ADCN: 33413 ADDED NOTE 7 & 8 ADDED 000390 TO END ITEM NO REMOVED "ROTATION: R" FROM MOTOR SPECIFICATION		S. COZAD	3/8/95
	2B5 2C5	4X Ø.547 WAS 4X Ø.531 9 GAGE (.1495) WAS (.115) ACTION CODE: H1 MODIFIER: DATE OF RELEASE			
	2B4 2B8	B ADCN: 33904 ADDED FLAG 4 TO ITEM 1, PL REVISED FLAGNOTE 9 ADDED OPTIONAL HOLES DIM 28±.75 WAS 29±1 ACTION CODE: H1 MODIFIER: DATE OF RELEASE			
		ADCN NO. 3436			
REVISION LEVEL		C			

PRODUCTION

MOTOR SPECIFICATIONS:

HP: 2
NEMA FRAME: 145T
RPM: 1740
PHASE: 3
FREQUENCY: 60 HZ
PWM SWITCHING FREQUENCY: 12.5 KHZ
VOLTAGE: 290 V
MOTOR TYPE: AC

MAX FULL LOAD AMPS: 6.2 A
SERVICE FACTOR: 1.00
PROTECTOR: NONE
AMBIENT: 50°C CONTINUOUS
DUTY CYCLE: 100% AT 2 HP
INSULATION CLASS: H
ATTACH WIRE INSULATION CLASS: F
WINDING: MFG CODE 1 --T6341504
MFG CODE 2 - 35Y211
DOUBLE DIP BAKED
EXTRA PHASE PAPER

-001	MOTOR ASSY, DRIVE, AC VARIABLE	2	35M261Y211G1
		1	PR943068
DASH NO.	DESCRIPTION	MFG CODE	MFG PART NO.
SOURCE CONTROL DRAWING			

3	6	1	TERM, SOLDERLESS, CLE SPLC	18-10 AWG	
1	5	1	STRAIN RELIEF		
AR	4	1	POWER CORD	16 AWG SJT INSULATION	
3	3	1	OD TERMINAL, .25	FULLY INSUL, DBL CRIMP	
1	2	1	JUNCTION BOX		
1	1	1	DRIVE MOTOR	PER SPEC	
-	-	-	-001 MOTOR ASSY, DRIVE, AC VARIABLE		
QTY PER ASSEMBLY	DO NOT SCALE DRAWING	DRAWN	DATE	TITLE	
UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DIMENSIONS AND TOLERANCES PER ANSI Y14.5-1982	TOL .XX ± .01 .XXX ± .005 ANGLE °	DERNOVSEK	11/5/94	Quinton Instrument Co.	3303 MONTE VILLE PARKWAY BOTHELL, WA 98021-0906 206/402-2000
NOTICE: QUINTON CONFIDENTIAL THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION AGREES TO MAKE NO DISCLOSURE, USE OR DUPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT © 1995 ALL RIGHTS RESERVED.			MFG: S. DECKERS B. TRATHEN K. BAILEY	12/11/94 12/12/94 12/22/94	
CLASS CODE: MOTR	VALUE CODE: 111111	TEST CODE: 2	SCALE: 1/2	SOURCE: PRO	SHEET 1 OF 2

-001	032359	000390 000383 000382 000380 000378 000377
PART NO.	RELT ASSY NO.	END ITEM NO.
APPLICATION		

8

7

6

5

4

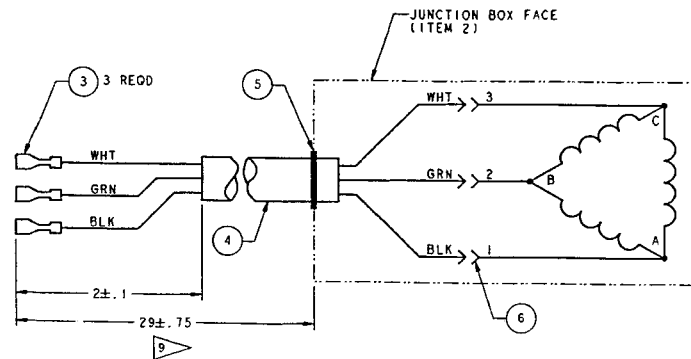
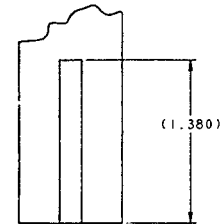
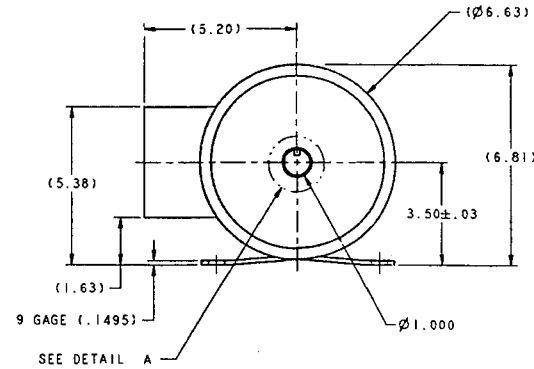
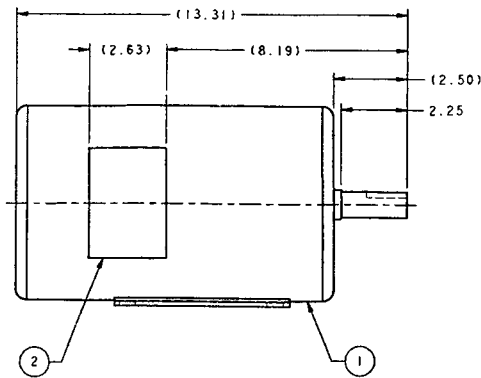
3

2

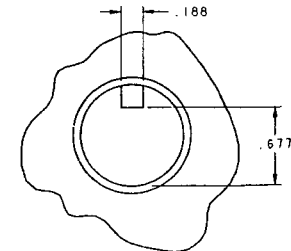
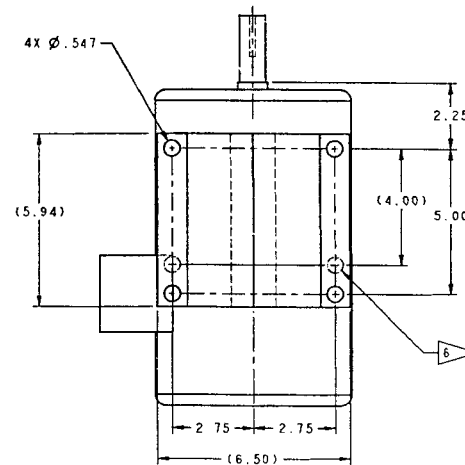
1

35M261Y211G1
032783
14
1
B

A



SCHEMATIC & WIRING DIAGRAM



DETAIL A
SCALE 2/1

PRODUCTION

NOTICE: QUINTON CONFIDENTIAL. THIS SHEET CONTAINS CONFIDENTIAL, PROPRIETARY INFORMATION OF QUINTON INSTRUMENT CO. ANY PERSON ACCEPTING THIS SHEET AND/OR INFORMATION AGREES TO MAKE NO DISCLOSURE, USE OR DUPLICATION THEREOF EXCEPT AS AUTHORIZED BY QUINTON AND TO RETURN THIS SHEET ON REQUEST. COPYRIGHT © 1955 QUINTON INSTRUMENT CO. ALL RIGHTS RESERVED.				SIZE D	MODEL TREADMILL	DWG NO. 032783	REV B
				SCALE 1/2	SOURCE PRO	SHEET 2 OF 2	

INITIAL APPLICATION			REVISIONS			
DASH NO.	NEXT ASSY.	END ITEM No.	LTR	DESCRIPTION	APPROVED	DATE
-001	032359	000377 000378 000380 000382 000383 000390	B	A ADCN: 34706 ADDED FLAGNOTE 4 ACTION CODE: F1 MODIFIER: 5/9/95	R. P-CANNON <i>Justin Hasso</i>	05/05/95 5-11-95
				DCN: 34570 ADDED SELF-RESETTING THERMAL PROTECTOR; FIG 1 & 3.2 ADDED 2ND WIRE COLOR TO T1; POSN 6, 8 & 10 REMOVED TWISTED PAIR WIRES ADDED FLAGNOTE 3 RELEASED DWG TO PRODUCTION ACTION CODE: F1 MODIFIER: DATE OF RELEASE	<i>Jim Lee</i> <i>KW Bailey</i> <i>BNL</i>	5-16-95 5-17-95 18 May 95

ONLY THE ITEM DESCRIBED ON THIS DRAWING WHEN PROCURED FROM THE VENDOR(S) LISTED HEREON IS APPROVED BY THE QUINTON DESIGN ENGINEERING DEPARTMENT IN THE APPLICATIONS SPECIFIED BY THIS DOCUMENT NUMBER. SUBSTITUTE ITEMS SHALL NOT BE USED.

UNIT OF MEASURE: EACH
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES.

1.0 DESCRIPTION: VARIABLE AC TREADMILL TRANSFORMER

1.1 The treadmill transformer provides electrical isolation between the primary and secondary voltages. It also provides stepped-down voltages for use with control electronics. Electrical isolation between windings (including secondary "x" to secondary "y") is paramount since this transformer will be used in medical applications which set strict limits for a system's leakage current.

PRODUCTION

-001	TRANSFORMER, VARIABLE AC TREADMILL	2	33993
		1	BE27606001
DASH No.	DESCRIPTION	MFG CODE	MFG PART NUMBER
PARTS LIST			
SOURCE CONTROL DRAWING			
CLASS CODE: XFMA	VALUE CODE: 50/60/		
CTM MAGNETICS (2) TEMPE, AZ	DRAWN: R. P-CANNON 2/2/95	3303 MONTE VILLA PARKWAY BOTHELL, WA. 98021-8906 206/402-2000	
BASLER XFMRs (1) HIGHLAND, IL	ENGR: L. HASS 2/13/95	TITLE TRANSFORMER, VARIABLE AC TREADMILL	
	MFG: S. CURRAN 2/13/95		
APPROVED SOURCE(S) OF SUPPLY	QUAL: <i>KW Bailey</i> 5-17-95	SIZE A	DWG. NO. 032706
	COMPL: <i>BNL</i> 18 May 95		REV B
DISTRIBUTION CODE: 2	MKTG: _____	SCALE NONE	SOURCE: ACAD
	TECH SVCE: _____	SHEET 1 OF 6	

3.0 REGULATORY REQUIREMENTS:

Construction to comply with UL544 and appropriate IEC 601-1 standards (Non-patient connected). Construction details must be approved by Quinton Engineering and must not be changed without prior approval by Quinton Engineering.

3.1 Creepage distances and air clearances:

Required creepage distances are shown in millimeters in Figure 2. Refer to Table 1 for conversion of millimeters to inches and associated air clearance requirements.

NOTE: The SEC 2 winding is completely isolated (i.e. floating) in this application, with no connection to accessible parts.

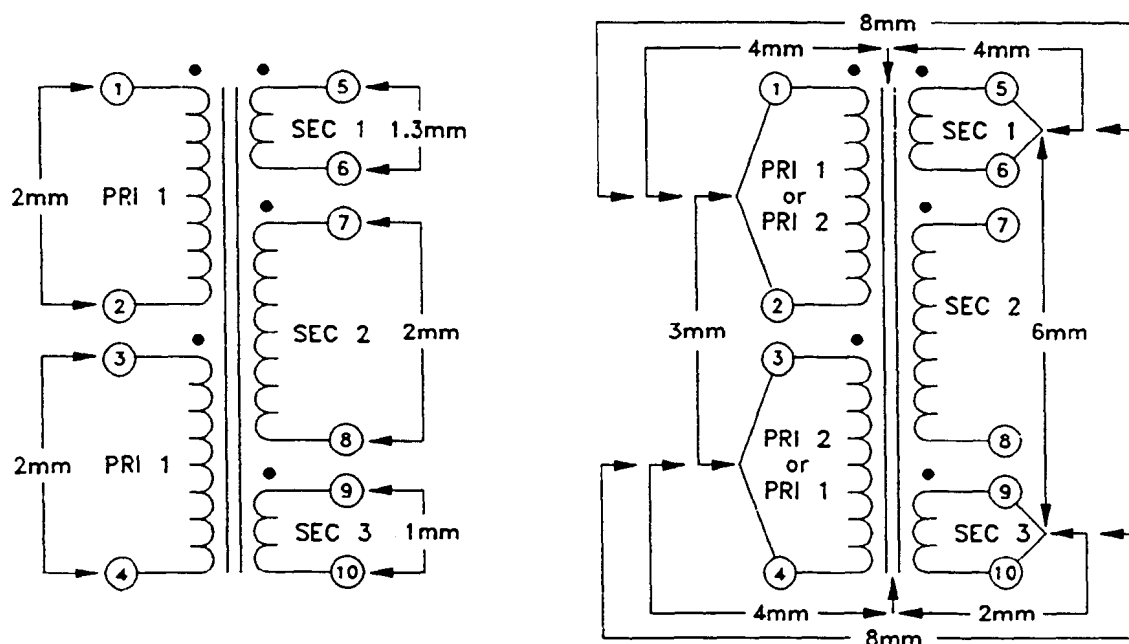


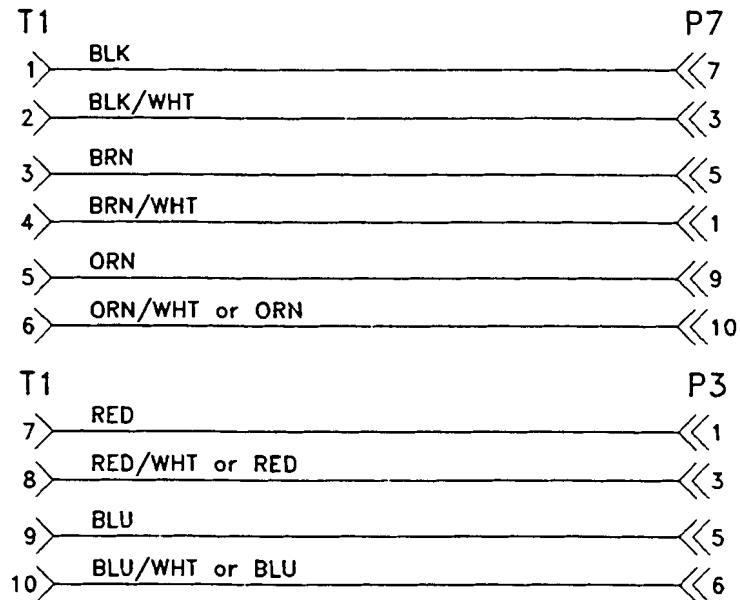
FIGURE 2

CREEPAGE DISTANCE MILLIMETERS	CREEPAGE DISTANCE INCHES	REQUIRED AIR CLEARANCE INCHES
1	.040	.020
1.3	.052	.028
2	.079	.040
3	.119	.063
4	.158	.099
6	.237	.126
8	.315	.197

TABLE 1

SIZE A	Quinton® instrument co.	DWG. NO. 032706	REV B
SCALE: NONE		SOURCE: ACAD	SHEET 3 OF 6

5.0 Termination of the transformer windings is to be completed as shown in the schematic (Figure 4), parts list (Table 2), and the assembly (Figure 5).



WIRE HARNESS SCHEMATIC

FIGURE 4

ITEM NO.	QTY	DESCRIPTION	QI P/N (REF ONLY)
1	1	TRANSFORMER, PER SPECIFICATIONS	
2	A/R	WIRE, 18 AWG, 300V, STRANDED, BLK	012753-009
3	A/R	WIRE, 18 AWG, 300V, STRANDED, WHT/BLK	
4	A/R	WIRE, 18 AWG, 300V, STRANDED, BRN	012753-001
5	A/R	WIRE, 18 AWG, 300V, STRANDED, WHT/BRN	
6	A/R	WIRE, 18 AWG, 300V, STRANDED, ORN	012753-003
7	A/R	WIRE, 18 AWG, 300V, STRANDED, WHT/ORN	
8	A/R	WIRE, 18 AWG, 300V, STRANDED, RED	012753-002
9	A/R	WIRE, 18 AWG, 300V, STRANDED, WHT/RED	012753-011
10	A/R	WIRE, 18 AWG, 300V, STRANDED, DK BLU	012753-010
11	A/R	WIRE, 18 AWG, 300V, STRANDED, WHT/BLU	012753-012
12	1	HOUSING, LOCKING CONNECTOR, 6 POSN	011582-006
13	1	HOUSING, LOCKING CONNECTOR, 10 POSN	011582-010
14	10	CONTACT, SOCKET	011582-101
15	6	KEY, POLARIZING	007929-001
16	3	TIE, CABLE	001899-001

TABLE 2

SIZE A	Quinton® instrument co.	DWG. NO. 032706	REV B
SCALE: NONE		SOURCE: ACAD	SHEET 5 OF 6

Symbol Definitions

Quinton products display one or more of the following symbols.
No one product displays them all.

	Attention: Consult accompanying documents		Earth ground (protective)
	Off (power disconnected from mains)		Type B equipment provides adequate protection against electric shock, particularly regarding allowable leakage current; reliability of the protective earth connection (when present)
	On (power connected to mains)		Type BF equipment contains an F-type isolated patient applied part providing a high degree of protection against electric shock
	Alternating current		Type BF equipment with defibrillation protection
	High voltage		Type CF equipment: contains an F-type isolated patient applied part and provides a degree of protection against electric shock higher than that for type BF equipment regarding allowable leakage currents
	Earth ground (functional)		Type CF equipment with defibrillation protection
	Replace fuse only as marked		Fuse
	Mains Power		Equipotentiality
	Warning		Timed fuse (slo-blo)
	Hertz		Volts
	Amperes		Volt Amperes

INDEX

A

accessories 1-3
assembly drawings D-1

B

BRS (BUS Recovery System) 4-7

C

calibration 4-26
calipers 4-23
card cage 4-6
chain, grade motor 4-14
circuit breaker 1-2, 4-3
classification A-1
cleaning 5-1
configuration plate 4-3, 4-5
controls 1-2

D

deck and roller assembly 2-1, 2-3
deck assembly 4-21
deck, removing 4-23
diagnosis 3-1
disinfection 5-2
drive belt 3-3, 4-9
drive board 2-2
drive motor 2-2
 -replacing 4-10

E

ECG monitor interface 1-1 - 1-2, 4-3
electrical problems 3-2
electrical testing 5-2
electronic problems 3-3
emergency stop button 1-1 - 1-2
 -interface 1-2, 4-3
 -replacing 4-25
environmental B-1

F

field replaceable modules C-1
flow charts 3-4
function 1-1

G

grade calibration 4-27
grade limit switches 4-20
grade motor 2-2
 -replacing 4-13
grade pot 4-14
 -calibration 4-26
 -wires 4-15

H

headframe 2-1 - 2-2
hood, removing 4-3

I

indicators 1-2
input power 2-2
installation 1-2: see treadmill operator manual
interface 2-2
introduction 1-1

L

limit switches 4-20

M

maintenance 5-1
mechanical problems 3-3
monitors, ECG 1-1

N

noise 3-4

O

operation 1-2

P

part numbers C-1
pinion shaft 4-19
poly-V belt 4-9
potentiometer (grade pot) 4-14
 -calibration 4-26
power 1-2
power cord 4-6
power requirements 2-2, B-1
preventive maintenance 5-1

R

rack gears 4-16 - 4-17
rack gears, jammed 4-18
rear roller guards 4-25
repair 4-1
replacement schedule 5-2
roller guard, adjusting 4-25
rollers, replacing 4-21

S

safety A-1
service mode (see ECG monitor service manual)
service, recommended 5-1
specifications B-1
speed calibration 4-27
subassemblies 2-1
summation leakage current A-1

T

tension, walk belt 4-23
tensioner 4-8
theory of operation 2-1
tools for repair 4-2
tools for troubleshooting 3-1

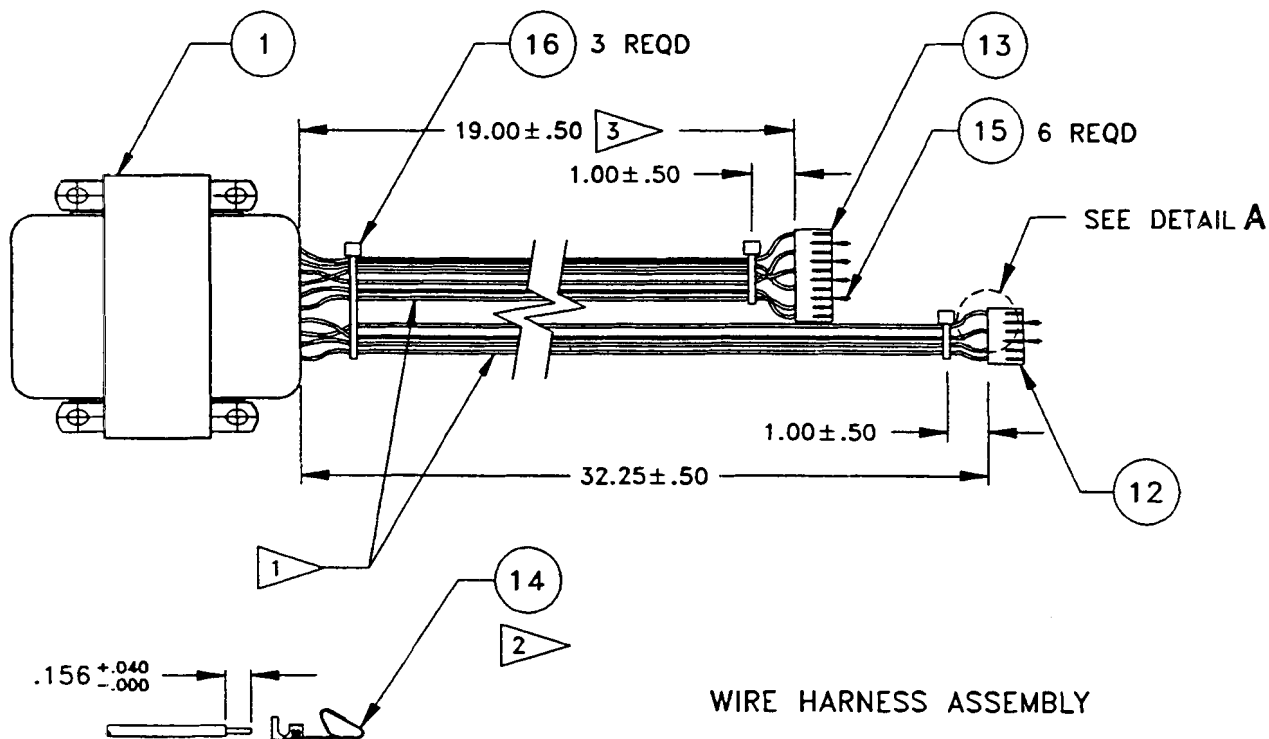
tracking, walk belt 4-24
transformer 4-12
troubleshooting 3-1

V

vacuuming under hood 5-2
VSD board 4-6

W

walk belt 3-3
 -adjusting 4-23
 -replacing 4-22
 -travel 4-22
walk deck assembly 4-21
warnings 3-1, 4-1, A-1



WIRE HARNESS ASSEMBLY
FIGURE 5

DETAIL A
10 PLACES

NOTES: UNLESS OTHERWISE SPECIFIED

- 1 Reference the parts list (Table 2) for the wire type and the schematic (Figure 4) for the wire connections.
- 2 Crimp contact (Item 14) onto the wire (Items 2 - 11) using the manufacturer-accepted tool, prior to installation into connector housing (Items 12 and 13).
- 3 Length is measured from indicated face of transformer, even if wires exit from the opposing face.

6.0 MARKING:

Device must be clearly marked with the manufacturer's name or symbol, the Quinton part number, and rev level to which manufactured.

7.0 PACKAGING:

Items shall be suitably packaged for acceptance by common carrier for surface transportation, handling, and storage without detrimental effects to the items. Each product shipment from the manufacturer must contain written certification of compliance with approved construction details.

3.2 WINDINGS:

Class B insulation; rated for 130°C: without crossover of primary and secondary and crossover of secondaries.

"SEC 2" must be thermally protected by a self-resetting switch (Refer to Figure 1).

3.3 BOBBIN:

Rated for 130°C; flame retardant to UL94HB (e.g. glass-filled nylon). Must provide separation between primary and secondary windings. Separation between individual secondary windings, while preferred, is not required if all other design criteria can be met.

3.4 HI-POT:

4KVAC, primary to secondary: 3KVAC, secondary to secondary, and 2.5KVAC, winding to core.

3.5 MOUNTING HARDWARE:

Mounting hardware must be electrically connected to the transformer core so the core is electrically connected to the mounting surface when installed using #10 star washers (external star).

4.0 DIMENSIONAL DATA:

4 DIMENSION; SOURCE 1: $3.750 \pm .015$
SOURCE 2: $3.750 \pm .050$

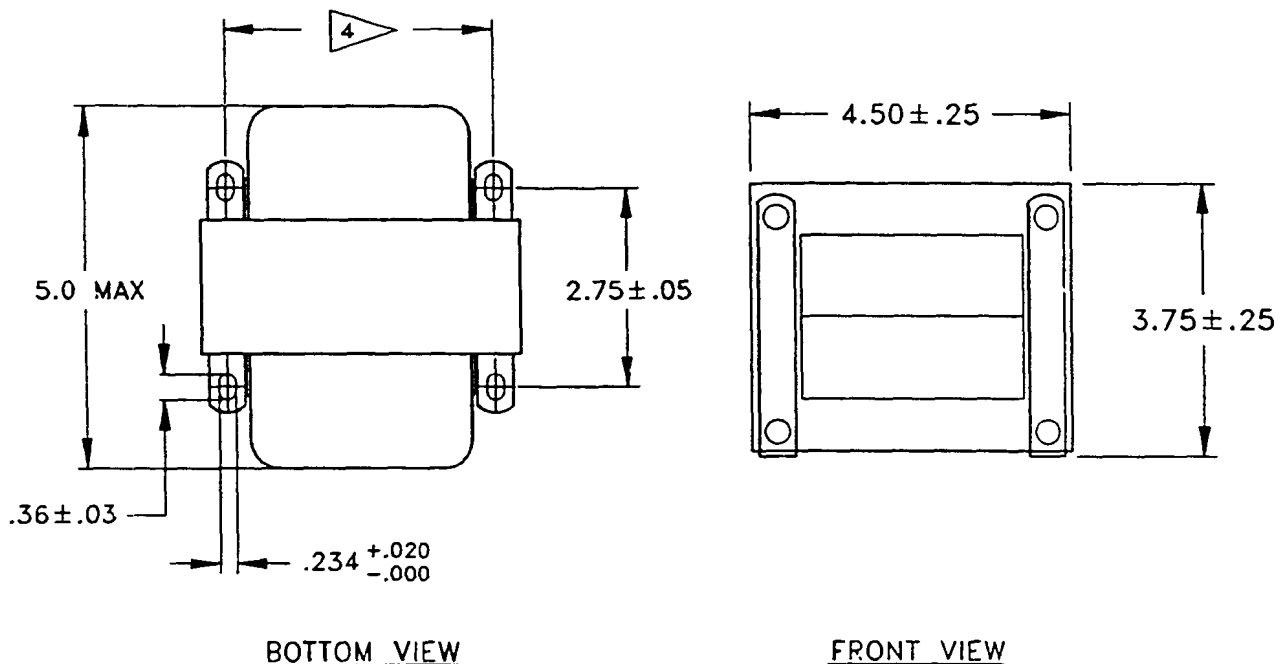


FIGURE 3

SIZE A	Quinton® Instrument co.	DWG. NO. 032706	REV B
SCALE: NONE	SOURCE: ACAD	SHEET 4 OF 6	

2.0 ELECTRICAL SPECIFICATIONS:

The transformer consists of a dual primary to allow either 110VAC or 220VAC operation and three secondary windings, as shown in Figure 1.

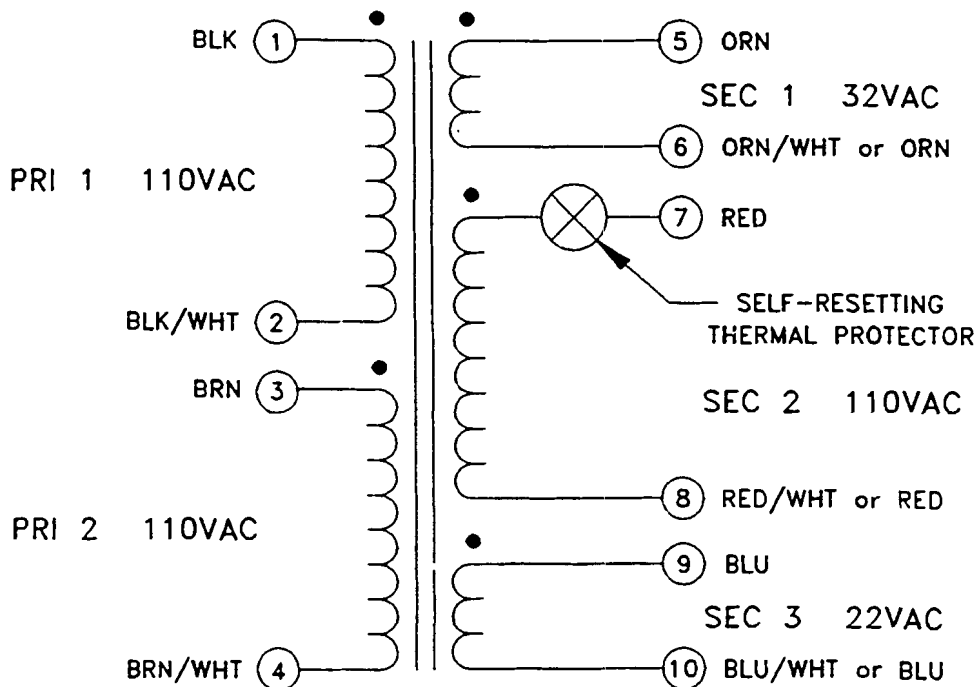


FIGURE 1

2.1 PRIMARY RATING:

(PRI 1 and PRI 2) 100/200 to 120/240VAC $\pm 10\%$, 50/60Hz, 330VA.

2.2 SECONDARY RATINGS:

(PRI 1 || PRI 2, 100-120VAC Configuration) $V_i = 132\text{VAC}$, 60Hz.

2.2.1 SEC 1: $\leq 39.0\text{VAC}$, no-load

2.2.2 SEC 2: $\leq 145\text{VAC}$, no-load

2.2.3 SEC 3: $\leq 28.0\text{VAC}$, no-load

(PRI 1 || PRI 2, 100-120VAC Configuration) $V_i = 90\text{VAC}$, 50Hz.

2.3.1 SEC 1: $\geq 24.6\text{VAC}$ @ 15.0VA

2.3.2 SEC 2: $\geq 75\text{VAC}$ @ 200VA

2.3.3 SEC 3: $\geq 17.0\text{VAC}$ @ 50VA