Z700-A82 / 120V Treadmill

Service Manual

WARNING:

ALWAYS UNPLUG THE TREADMILL FROM THE ELECTRICAL OUTLET BEFORE SERVICING THE UNIT.

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DESCRIPTION

A ELECTRICAL CONFIGURATION

> ***Note:*** *Electrical servicing of this treadmill is limited to board level replacement.*

1. Z700-A82 TREADMILL COMPONENTS

a) Safety key:

Magnetic key fits in the Console to activate all functions.

b) Console:

Interface that controls all functions of the treadmill.

c) Main controller:

A circuit board that incorporates the DC power supply and takes input from the console and sends out appropriate voltages that control the treadmill functions.

d) Treadmill motor:

A variable speed, reversing 0 - 90 volt D.C. motor that powers the main running belt.

B GENERAL INFORMATION

1. CONSOLE

a) Contains 6 windows which are twenty rows of Tri-color “dots” (8high) indicate each segment of a workout.

2. MAIN CONTROLLER

a) Contains power supply and control circuits

3. TREADMILL MOTOR

a) Variable speed reversing 0-90 volt DC motor.

b) Has three wires red, black and green.

If there is DC voltage on the Red wire (M+) the treadmill motor will turn clockwise.

If there is DC voltage on the Black wire (M-) the treadmill motor will turn counter-clockwise

The higher the voltage the faster the motor turns.

The green wire is ground.

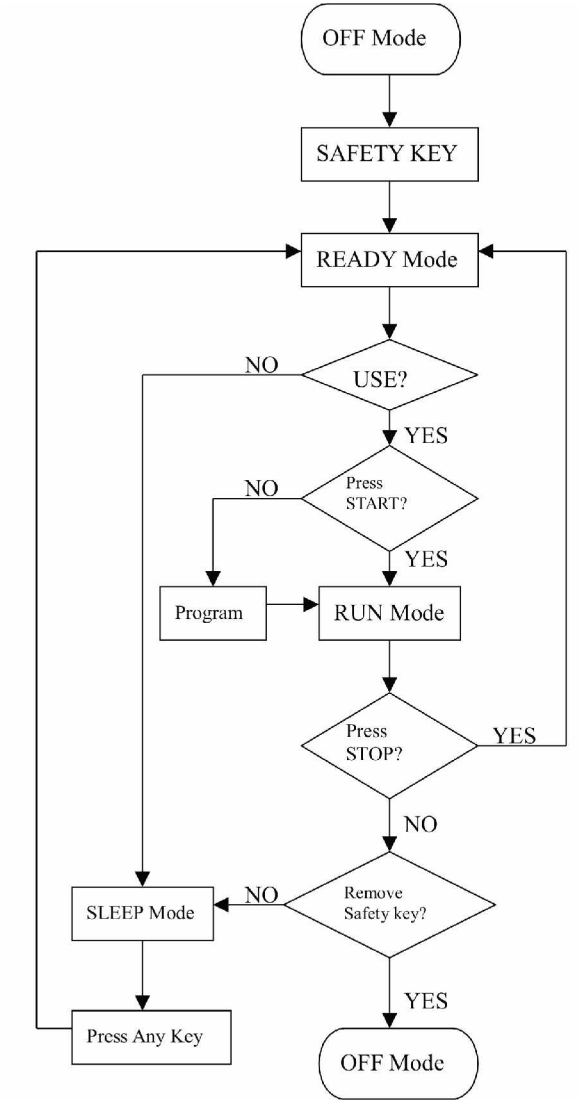


Figure 1 Operational Flowchart

OPERATION

A WINDOW DISPLAY MODE

1. OFF MODE

a) If console can't be displayed, be sure your safe key has attached. Pull the safe key away will power off the treadmill.

2. READY MODE

a) When the treadmill is ON and the SAFETY KEY is inserted in console, (6 LED windows and twenty rows of Tri-color "dots" (8high)) 7 SEGMENT LED display "0:00", MANUAL LED will be bright, the LAP light s run a circle each second. ????

b) TIME, DISTANCE and CALORIES Values will all be saved when RUN Mode enters READY Mode.

c) In READY Mode, if user doesn't press any button for 30 minutes it will automatically turn off (blank out).

d) Console will display current software version in MESSAGE window; DISTANCE window displays total accumulated working distance; TIME window displays total accumulated working time.

e) Incline will be calibrated to zero automatically. If incline is faulty, INCLINE window will display ERR (At this time, incline is non-function but other functions are normal.

3. SLEEP MODE

a) In SLEEP Mode, if any buttons are pressed then the treadmill enters READY Mode.

4. RUN MODE

a) In RUN Mode, press the “STOP” button and remove the SAFETY KEY will cause the treadmill stop instantly and enter OFF Mode.

b) Display will automatically shift every 5 seconds.

c) Press “Display” button to exchange the displaying of LED which includes laps of Track, Incline profile and Speed profile.

B FUNCTION

1. SPEED

a) In RUN Mode, DISPLAY range is 0.0 to 99.9 km.

b) WORK range is 1 to 18 km.

c) Press “FAST” or ”SLOW” to adjust speed, each increment and decrement is 0.1mph/km.

2. TIME

a) In RUN Mode, TIME divides into COUNT UP and COUNT DOWN. System preset is COUNT UP; if user sets the time then timer is COUNT DOWN.

b) DISPLAY range is 0:00 to 99:59.

c) WORK range is 0:00 to 99:59.

d) COUNT DOWN setup range is 10:00 to 99:59.

e) When TIME is set, the count will go to zero.

f) In RUN Mode, press “START” button to save value of time and enter “RUN” Mode again that value will continue count up time.

3. DISTANCE

a) In RUN Mode, DISTANCE preset is COUNT UP.

b) DISPLAY range is 0.00 to 999.

c) WORK range is 0.0 to 999.

d) In RUN Mode, press the “START” button that DISTANCE value will still display and save all data. If RUN Mode is entered, the distance will count up again.

4. CALORIES

a) In RUN Mode, CALORIES preset is COUNT UP.

b) DISPLAY range is 0.0 to 999.

c) WORK range is 0.0 to 999.

d) In RUN Mode, press the “START” button to save value of distance and entering “RUN Mode” again that value will continue count up time.

5. PULSE

a) In RUN Mode, DISPLAY range is 0 to 999.

b) WORK range is 40 to 240.

c) If the treadmill doesn’t have a signal for 8 seconds then value will become “P”.

6. LAPS

a) Display your current laps. (One lap means 0.4km).

7. SCAN

a) Display will automatically shift every 5 seconds.

b) At the Dot Matrix window that displays profiles of speed and incline which will shift every 5seconds.

C FUNCTION BUTTON IN MAIN MODE

1. READY MODE

a) In “READY” mode, user could choose any programs which includes MANUAL, HILL, FATBURN, CARDIO, STRENGTH, INTERVAL, USE1, USE2, HR1, HR2 or press

“START” button to execute directly.

b) START button: When press “START” button, there will be 3 warning beep, then machine starts running. In MANUAL, treadmill starts at MIN SPEED and treadmill starts at program preset value in PROGRAM.

c) When press the “Stop” button once, pause is executed. If press “Stop” button a second time, the program will end and a workout summary will be displayed. If press “Stop” button a third time, the console will return to the idle mode (start up) screen. If the Stop button is held down for more than 3 seconds the console will reset.

d) RESET button: Press ”RESET” button to reset all data.

e) ENTER button: Press “ENTER ” button to setup COUNT DOWN time.

f) FAST button: If user doesn’t enter a setting then this button is non-functional.

g) SLOW button: If user doesn’t enter a setting then this button is non-functional.

h) UP button: Press “UP” button to increase your incline and each increase is 1 level.

i) DOWM button: Press “DOWN” button to decrease your incline and each decrease is 1 level.

j) 10 preset program buttons and 6 preset buttons for rapid speed and rapid incline

2. SLEEP MODE

a) MANUELL, HILL, FATBURN, CARDIO, STRENGTH, INTERVAL, USE1, USE2, HR1, HR2 buttons: Enter the READY Mode.

b) START button: Enter the READY Mode.

c) Enter button: Enter the READY Mode.

d) FAST button: Enter the READY Mode.

e) SLOW button: Enter the READY Mode.

3. RUN MODE

a) MANUAL, HILL, FATBURN, CARDIO, STRENGTH, INTERVAL, USE1, USE2, HR1 buttons: above mentioned buttons are non-functional.

b) START button: press “START” button to stop and enter READY Mode. (Which nearby Dot Matrix window.)

c) DISPLAY button 1 (which nearby Display window): press “DISPLAY” button to select displaying mode and the LED will be light per your current mode.

d) In “SCAN” mode, display automatically shifts every 5 seconds and the LED light will flash per your current profile.

→TRACK→SPEED PROFILE→INCLINE PROFILE→TRACK

e) DISPLAY button 2 (which nearby Message window): Press ”DISPLAY” button to change displayed windows which include Time, Distance, Kcal, Pulse/ Speed, Incline, Kcal/HR, Pace/Scan.

f) FAST button: Press the button to increase your speed and each increase is 0.1mph/km. If button is pressed continuously then speed increases to MAX SPEED quickly.

g) SLOW button: Press the button to decrease your speed and each decrease is 0.1mph/km. If button is pressed continuously then speed decreases to MIN SPEED quickly.

D CALIBRATION PROCEDURE

1. CALIBRATION

a) Turn on power.

b) Press “START” and “FAST” button at the same time.

c) Inserts the SAFETY KEY on monitor that will display ”FACTORY SETTING PRESS NETER” in MESSAGE window.

d) Km/Mile Mode: Press “NETER” to choose the unit mode and in Dot Matrix will display ”UNIT ENGLISH”, press “FAST” button to change to Mile which will display ”UNIT METRIC.

e) Set wheel size: Press “NETER” button to set “WHEEL SIZE” and in “TIME” window will display 2.5(preset value). Dot Matrix will display “ADJUST WHEEL SIZE THEN PRESS NETER” then adjust the value from 1.5 to 3.5. (preset value is 2.72)

f) Set Min. speed: Press “NETER” button to set the minimum speed that will display the value 1.0 in the TIME window. Dot Matrix will display ”ADJUST MIN SPEED THEN PRESS NENTER”.

g) Set Max. speed: Press “NETER” button to set the high speed that will display the value 20 in TIME window. Dot Matrix will display ”ADJUST MIN SPEED THEN PRESS NENTER” then enter the value “18”.

h) Set Max. elevation: In “TIME” window displays “MAX ELEVATION” and in Dot Matrix window displays “ADJUST MAX ELEVATION THEN PRESS START TO CALIBRATION”.

i) Press “FAST/SLOW” buttons to adjust the setting values.

j) After correcting, treadmill would reset then enter “READY MODE”.

TROUBLESHOOTING

WARNING:

ALWAYS UNPLUG THE TREADMILL FROM THE ELECTRICAL OUTLET BEFORE SERVICING THE UNIT.

1. GENERAL

a) Do a visual check of all wiring and connections looking for chafed wires or lose connections.

b) Make sure any wiring is safely positioned and/or secured away from moving parts.

c) If you find a fuse blown on a circuit board replace the circuit board.

2. TROUBLESHOOTING MATRIX

Condition	Reason	Solve
When turn on power, ON/OFF switch isn't bright.	1. Power cord don't plug into outlet in right position. 2. Power cord don't plug into unit. 3. The voltage of outlet is too lower. 4. Plug or connector of power cord is imperfection. 5. Connector of power cord was broken. 6. Connecting cable came away. 7. Breaker tripped. 8. Breaker was broken. 9. ON/OFF switch was broken.	Plug the power cord into outlet. Plug the power cord into unit. Check the voltage of outlet. Replace power cord. Replace power cord. Check the wire if came away, connect it again. Press the small red button to come back original status. Replace breaker. Replace A.C switch.
After turning on power, treadmill has sound of blowing.	1. Power cord plug in wrong position, varistor was broken on controller.	Check the voltage of power is 110V.
When insert safe key, no display is on monitor.	1. Haven't switch ON/OFF switch. 2. Insert the Safe key on wrong position. 3. Computer cable of 12PIN was broken. 4. Fuse of controller was broken. 5. Varistor of controller was broken.	Switch the A.C switch. Insert the safe key on right position. Replace computer cable of 12PIN. Replace fuse or controller. Replace varistor or controller.

	6. Reed switch of console was broken. (open) 7. Other components are imperfection.	Replace reed switch or console. Replace console.
When console didn't insert safe key but treadmill could display or operate.	1. Reed switch of console was broken. (short) 2. Have other magnetic components on console.	Replace reed switch or console. Remove magnetic component beside safe key.
When press "START", treadmill don't start.	1. Motor M+ or M- wire didn't connect into right position. 2. Controller was broken. (No power to motor) 3. Motor was broken.	Please check and plug again. Replace controller or IGBT G30N60 and add the Silicone Heat Sink Paste suitably. Replace motor. Please check the wire and connector if it was broken.
Treadmill stops or shuts off by itself.	1. House breaker tripped. 2. Treadmill breaker tripped. 3. Treadmill controller fuse was broken. 4. Treadmill controller shut down and LED would be bright.	Reset it. Reset treadmill breaker. Replace fuse Turn off the AC switch and turn on power.
After removing safe key, treadmill can't stop.	1. Reed switch of console was broken.	Replace reed switch or console.
LED has problem that would be not bright, incomplete or imperfect.	1. LED light was broken.	Replace LED or console.

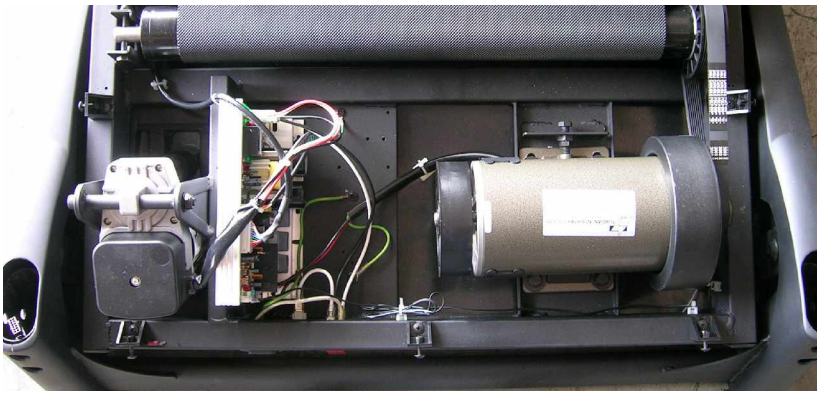
Seven segment displays have problem that would be not bright, incomplete or imperfect.	1. Seven segment displays was broken.	Replace console and calibrate it.
When press “START” button to start treadmill, running belt isn’t running and window displays “LS” error message after 8 seconds.	1. Controller has unusual with shut down, the S_D light will be always bright. 2. Motor wires (red, black) didn’t plug into controller. 3. Computer cables don’t connect on right position. 4. Computer cables were broken that got damage. 5. Motor belt was cut off. 6. Controller was broken. 7. Motor was broken. 8. Console was broken.	Turn off power and reset the treadmill. Plug wires again. Plug the wire again on controller, connector and console. Replace the wires. Replace motor belt. Replace controller. Replace motor. Replace console.
When press “START” button to start treadmill, running belt is running but window displays “LS” error message after 8 seconds. *Speed sensor cable was broken,(open) console can’t receive	1. The distance is too long between speed sensor cable and magnet. 2. Don’t have magnet or magnet fall off. 3. Magnet doesn’t have magnetic. 4. Speed sensor cable was broken.(short) 5.The 12C508A was broken on the controller.	Adjust the distance to 5mm between speed sensor cable and magnet. Replace a magnet. Use metal material to test the magnet if have magnetic. Replace sensor cable. Replace “12C508A” or controller.

the speed.	6. Computer cable of 12PIN didn't connect into right position. 7. Computer cable of 12PINwas broken. 8. Console was broken.	Plug the cable again on controller, connector and console. Gray and purple wires got damage, replace the wires. Replace console.
When press "START" button to start treadmill, running belt is getting running but window displays "LS" error message after 8 seconds. *Speed sensor cable was broken (open), console can't receive signal for unusual speed.	1. The distance is too long between speed sensor cable and magnet. 2. Sensor cable was broken. 3. Computer of 12PIN didn't connect in right position. 4. Computer cable of 12PIN was broken. 5. Console was broken.	Adjust the distance to 5mm between speed sensor cable and magnet. Replace sensor cable. Plug the cable again on controller, connector and console. Gray and purple wires got damage, replace the wires. Replace console.
The windows display is not 1 to 18.0 km/h	1. Monitor is not calibrated.	Calibrate the monitor.
The speed of running doesn't match with console display.	1. Monitor is not calibrated.	Calibrate the monitor.
The windows display "Err"	1. EEPROM was broken or accessing problem.	Replace console and calibrate it.
After pressing "START" button, the treadmill stop immediately.	1. Controller was broken.	Replace controller and calibrate it.

Hand pulse lost its function. (No pulse displayed on monitor)	1.Hands don't hold the hand pulse or hold the hand pulse with single hand. 2.The connector of HANDPULSE W/WIRE and Console don't connect into position. 3.The wires got damage with connecting the HANDPULSE W/WIRE and Console.	Two hands hold the hand pulse. Connect the wires again. Replace wires.
Tread belt does not run in center.	1. Tread belt tension not even across tread belt.	See treadbelt adjustment *(see Appendix A)*
Tread belt hesitates while being stepped on.	1. Insufficient lubricant on tread belt.	See treadbelt lubrication *(see Appendix B)*
Black particles collecting under treadmill.	1. Drive belt is breaking in.	Vacuum under treadmill periodically.
Noise under motor cover.	1.Worn brushes or bearings on motor. 2.Front roller bearings are defective. 3.Drive belt is misadjusted (too tight or too loose).	Replace motor. Replace front roller. Adjust motor position.
Noise in the rear of the treadmill.	1.Rear roller bearings are defective. 2.Rear roller misaligned.	Replace rear roller. Adjust rear roller position.

DIAGRAMS AND SCHEMATICS

Figure 2 Console Layout



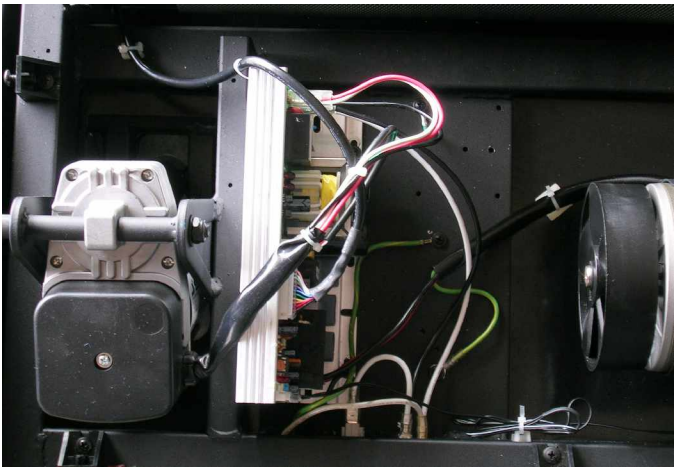


Figure 3 Mechanical Layout

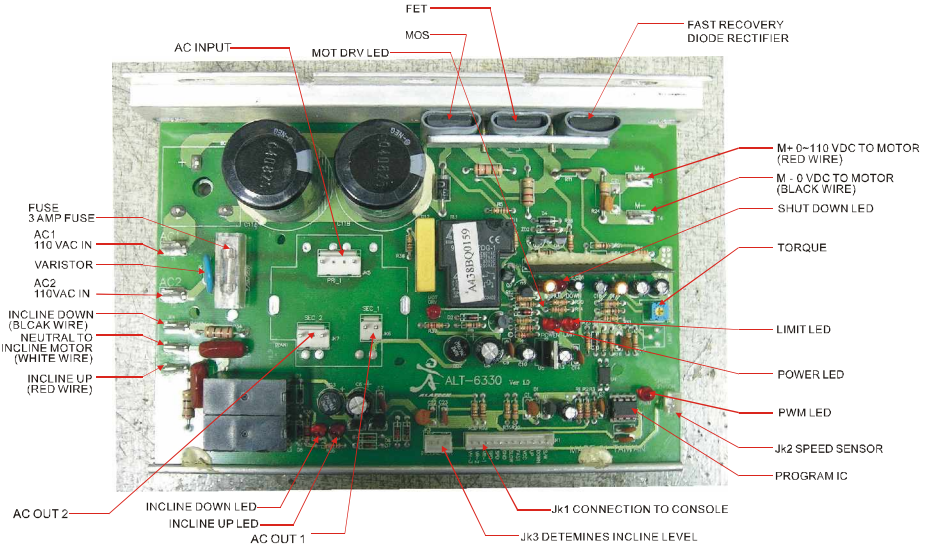


Figure 4 Main Controller information & voltages

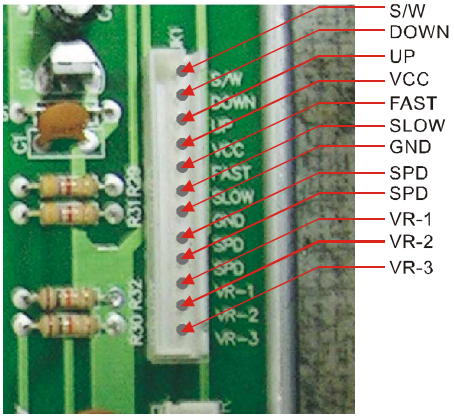


Figure 5 Function JK1 connector on Main Controller

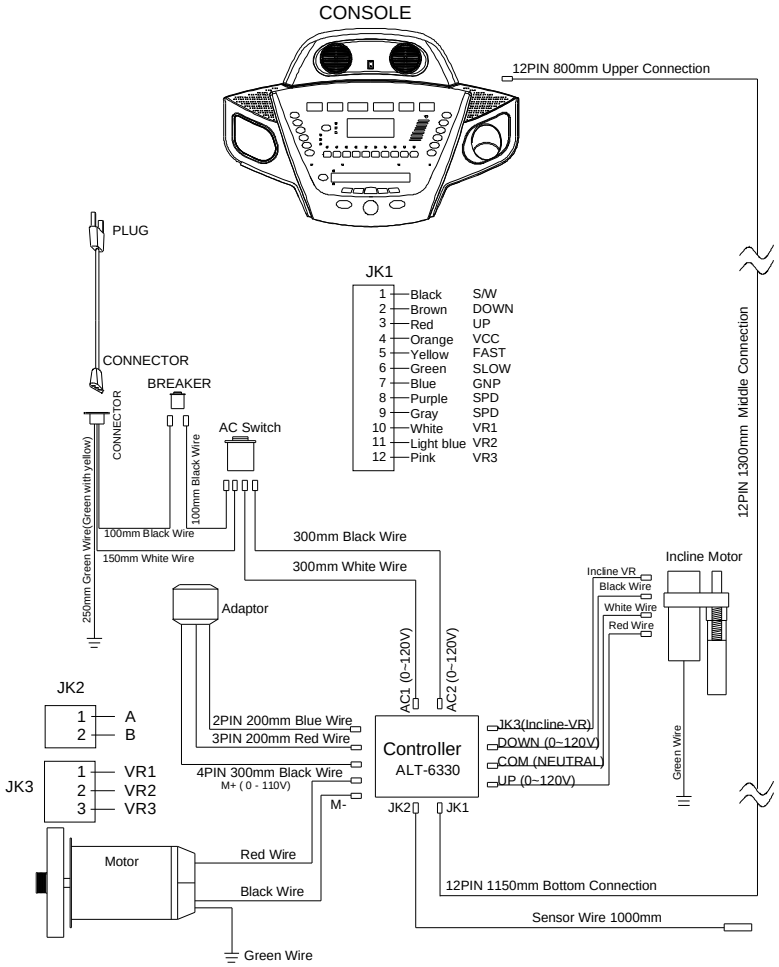


Figure 6 Wiring Diagram

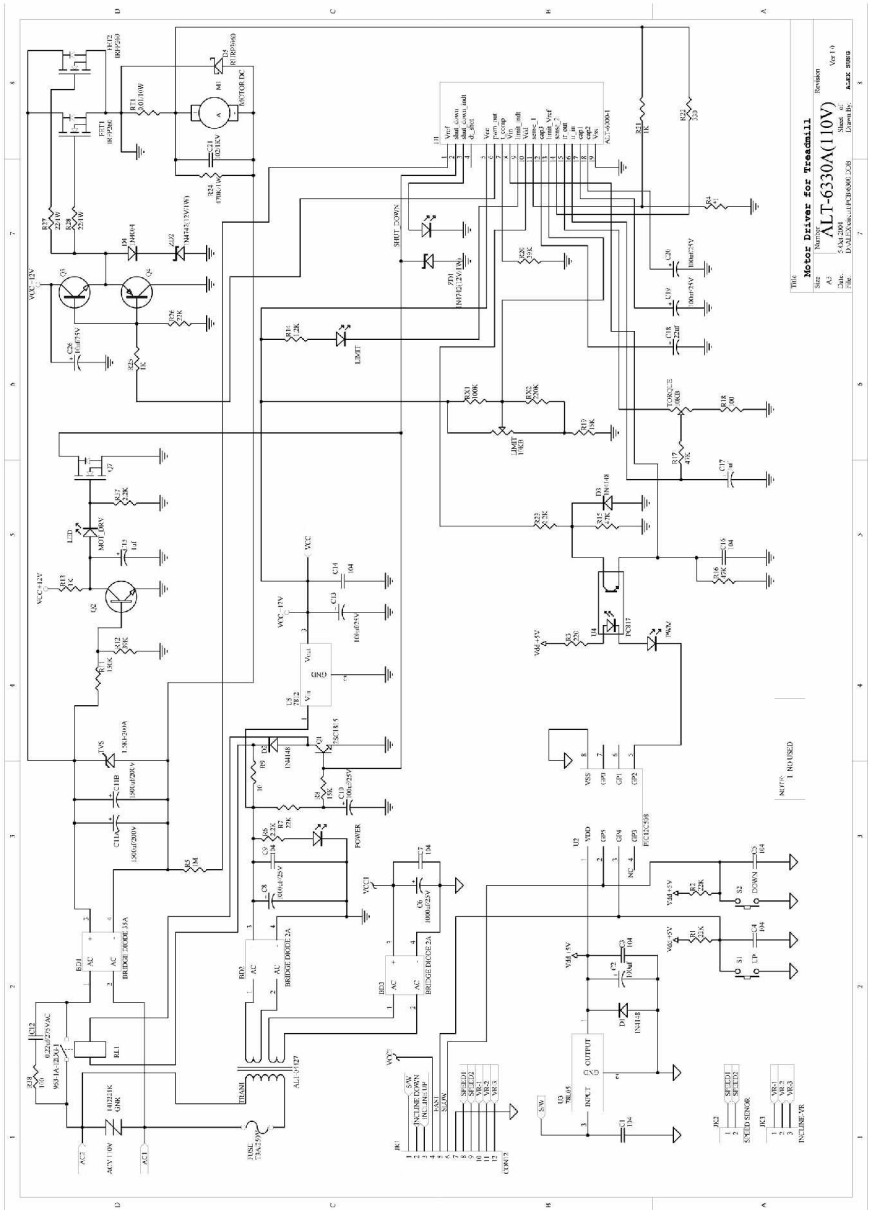


Figure 7 Schematic Diagram

APPENDIX A

1. TREADBELT ADJUSTMENT

The treadbelt has been factory pre-adjusted, however if during the operation:

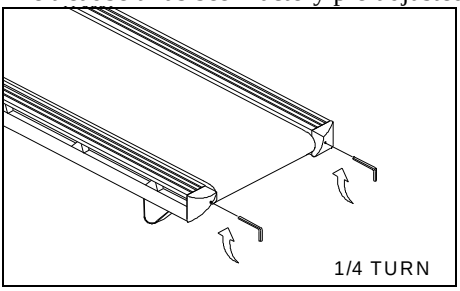


Figure 8 If Treadbelt slips

The treadbelt is too loose:
Tighten both rear roller adjusting bolts
1/4 turn clockwise using allen wrench

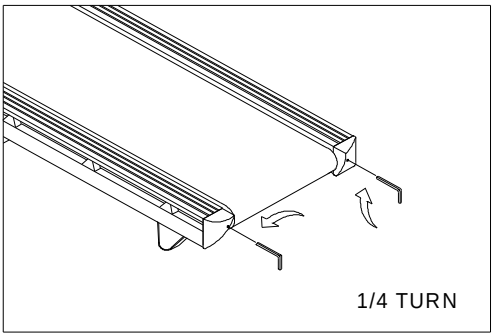


Figure 9 If tread belt shifts too far to the <u>Right</u>

a) Set the treadmill speed to 3.5 mph/5.6 km.
b) Tighten the right adjusting bolt a 1/4 turn clockwise using allen wrench
c) Wait 15 seconds: if no change; turn the left adjusting bolt a 1/4 turn counter-clockwise using allen wrench e) Repeat steps b and c until belt is centered

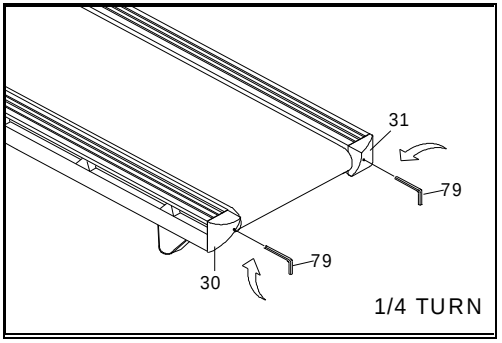


Figure 10 If tread belt shifts too far to the <u>Left</u>

a) Set the treadmill speed to 3.5 mph/5.6 km.
b) Tighten the left adjusting bolt a 1/4 turn clockwise using allen wrench
c) Wait 15 seconds: if no change; turn the right adjusting bolt a 1/4 turn counter-clockwise using allen wrench
e) Repeat steps b and c until belt is centered

IMPORTANT
<u>DO NOT OVERTIGHTEN TREADBELT</u>
If treadbelt is overtightened, edges of treadbelt will begin to curl
CAUTION!! **DO NOT ALLOW ANYONE TO WALK ON TREADBELT WHILE YOU ARE ADJUSTING.**

APPENDIX B

1. TREADMILL LUBRICATION

Your treadmill should require little maintenance other then periodically applying lubricant. Lubricating under the treadbelt will ensure superior performance and extend its life expectancy.

HOW TO CHECK TREADBELT FOR PROPER LUBRICATION
Lift one side of the treadbelt and feel the top surface of the treadboard
If the surface is (slick) to the touch, then no further lubrication is required
If the surface is dry to the touch, apply one packet of lubricant

HOW TO APPLY LUBRICANT
1. Lift one side of treadbelt.
2. Pour one half of the lubricant bottle under the center of the treadbelt on the top surface of the treadboard
3. Walk on the treadmill at a slow speed for 3 to 5 minutes to evenly distribute lubricant.

NOTE: DO NOT over lubricate treadboard. Any excess lubricant that comes out should be wiped off.

IMPORTANT: ONLY USE HALF THE BOTTLE OF LUBRICANT PER APPLICATION
LUBRICATION SCHEDULE
1. After the first 25 hours of use (2-3 months) apply one half bottle of lubricant
2. Every 50 hours of use (5-8 months) apply one half bottle of lubricant

We recommend that you use:
Lube-N-Walk™ Treadmill Lubrication Kit.

APPENDIX C

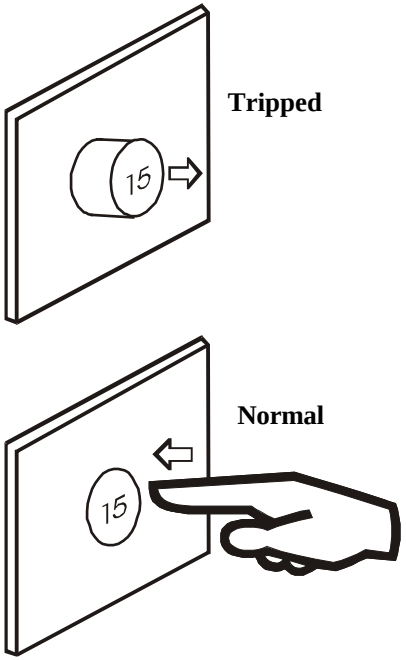


Figure 11 Resetting Reset switch

1. RESET SWITCH RESETTING

a) If the red button of reset switch is tripped, it will protrude out from the face of the switch.

b) Press in the red button of the switch.

c) If the red button of reset switch is not tripped, that means normal.

APPENDIX D

Figure 12 Fuse replacement

1. FUSE REPLACEMENT

If your treadmill loses power or will not start, check the fuse located on the motor controller.

DANGER: Turn the power switch off and unplug the treadmill to reduce the risk of an electric shock

Remove the motor cover
Remove and replace the fuse on the motor controller
Replace the motor cover

APPENDIX E

1. SPEED SENSOR ADJUSTMENT

If the monitor does not display speed or distance the speed sensor and magnet may be misaligned. Follow these steps to check and realign.
Remove the motor cover
Check the spacing and alignment between the magnet on the right side of the front roller and the speed sensor on the frame. The spacing must be 1/8".
Loosened screw and slide speed sensor in or out of clamp.
Retighten screw
Replace the motor cover.

2. SERVICE QUESTIONS