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- Display
- HTR Handlebar (left)
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- EMI Filter
- Motor
- Optic Sensor
- Calibration Switch
- Incline Motor
- Transformer
- Drive Board
- Motor Thermal Sensor
- Optic Wheel
- Inductor
4. T620/T625 Display
7.T620/T625 Drive Board Components
## 8.T620/T625 Display Components – Other

<table>
<thead>
<tr>
<th>Part</th>
<th>Key Pad Keys</th>
<th>Part</th>
<th>Optic Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Key Pad Keys Image" /></td>
<td><img src="image2.jpg" alt="Optic Sensor Image" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image3.jpg" alt="HRC Board Image" /></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### 9.T620/T625 Display Components - Other

<table>
<thead>
<tr>
<th>Part</th>
<th>HTR Board</th>
<th>Part</th>
<th>EMI Filter</th>
</tr>
</thead>
</table>

![HTR Board Image](image1)

![EMI Filter Image](image2)
# T620/T625 Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>Exterior Power Supply 110V (USA); 220V (Europe)</td>
<td></td>
</tr>
<tr>
<td>Main Window Display</td>
<td>HRC heart rate window: 65%, 80%, Heart Rate, Calories, Speed, Time, Distance, Cal/hr, Mets, Pace, Incline</td>
<td></td>
</tr>
<tr>
<td>Secondary Window Display</td>
<td>Dot Matrix 15 X 8 Window</td>
<td></td>
</tr>
<tr>
<td>Speed Range</td>
<td>T620&lt;br&gt;0.2 - 20.0KPH&lt;br&gt;0.1 – 12.0MPH&lt;br&gt;T625&lt;br&gt;0.1-16KPH&lt;br&gt;0.1-10MPH</td>
<td></td>
</tr>
<tr>
<td>Incline Range</td>
<td>0 % to 15 %</td>
<td>AC Motor Program/Control</td>
</tr>
<tr>
<td>Heart Rate Detection</td>
<td>HTR Heart Touch Rate (contact pads)&lt;br&gt;Wireless Telemetry Heart Rate (HR Transmitter)</td>
<td></td>
</tr>
<tr>
<td>KPH/MPH Setting</td>
<td>Program</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Manual, Hill, Random, Interval, WT Loss, Cardio, Glute, Zone Trainer</td>
<td></td>
</tr>
</tbody>
</table>
T620/T625 Introductions — Display Board

1. Display Window Introduction

- **65% Heart Rate Target**
  - Shows 65% Heart Rate Target

- **HEART RATE Window**
  - Shows Actual Heart Rate

- **80% Heart Rate Target**
  - Shows 80% Heart Rate Target

- **Information Window**
  - Workout Feedback

- **Dot Matrix**
  - Workout Illustrations

- **1. This LED flashes when heart rate is detected.**

---

HEART RATE Window

429.3 35 2707 102
T620/T625 Introductions – Display Indicators

Calories & Cal/HR Window
- Calories lit = shows calories expenditure
- Cal/HR lit = shows Cal/HR value

Time & Pace Window
- Time lit = Exercise time
- Pace lit = Pace value

Speed & Mets
- Speed lit = shows speed
- Mets lit = shows METS value

Exercise Program Area
- Lit = shows exercise programs: Interval, Random, Hill, Manual, Zone Trainer, Personal Trainer, Glute, Cardio, WT Loss

Distance & Incline Window
- Distance lit = shows distance
- Incline lit = shows incline position
**T620/T625 Introductions — Display Keys**

- **<START> <QUICK START> <ENTER> Key**
  - Press Start to start. Press Quick Start to start without entering user information. Press ENTER to confirm your choice.

- **<CHANGE> Key**
  - Press to change feedback information.

- **< INTERVAL > < RANDOM > < HILL > < MANUAL > < ZONE TRAINER > < PERSONAL TRAINER > < GLUTE > < CARDIO > < WT LOSS > Keys**
  - Press to choose an exercise program.

- **<1>~<9> and <CLEAR> Keys**
  - Press to directly set numerical values or to clear settings. It replaces the ▲▼ keys.

- **< QUICK START > Key**
  - Press to start without inputting user information.

- **< STOP > Key**
  - Press to stop operation.

- **SPEED ▲ / ▼ Key**
  - Press to set unit speed.

- **INCLINE ▲ / ▼ Key**
  - Press to set incline position.
T620/T625 Operation

1. Start Up
   Function: Press the Quick Start key to start operating the unit.
   Operation: (1) The display shows “SPORTSART – T62X”.
      After two seconds, “SELECT PROGRAM OR QUICKSTART” scrolls across the display.
      Press the QUICK START key to start operating or press the PROGRAM key to operate
      an exercise program.
      (2) The PROGRAM LED flashes
         After pressing a program key, the associated program indicator lights up.
         The setting window shows two seconds. If you press the <RANDOM> key,
         the RANDOM LED lights. “RANDOM” appears.
   (3) User age and weight setting
      When “AGE – 35” appears, press the numerical keys or INCLINE▲/▼.
      Then press the <ENTER> key to confirm your setting.
      When “WEIGHT -- 75 KG” appears, press the numerical keys or INCLINE▲/▼.
      Then press the <ENTER> key to confirm your setting.
   (4) After entering such information, you can start operating the treadmill.

2. SPEED Key
   Function: Set speed function
   Operation: (1) Press the SPEED <▲> key. Values in the speed window increase.
      Speed increases.
   (2) Press the SPEED <▼> key. Values in the speed window decrease. Speed decreases.
   (3) SPEED range:
      T620 0.2~20 KPH (0.1~12 MPH).
      T625 0.2~16 KPH (0.1~10 MPH).
3. INCLINE Key Function
Function: Set treadmill incline position.
Operation: (1) Press the INCLINE<▲> key. Values in the incline window increase.
Incline operates up.
(2) Press the INCLINE<▼> key. Values in the incline window decrease.
Incline operates down.
(3) INCLINE range: 0~15%; increments of 0.5%.

4. STOP Key Function
Function: Leave an exercise program.
Operation: (1) In QUICKSTART mode, press the <STOP> key to leave the exercise program.
(2) If in the START mode, having entered user information, press the <STOP> key to stop exercising. Feedback pauses as is.
(3) In any mode, hold the <STOP> key three seconds to leave the present mode and return to start up screen.

5. CHANGE Key Function
Function: Change the display feedback row.
Operation: (1) Press the <Change Display> key while exercising to toggle from one feedback row to another feedback row. Corresponding LEDs light. Top row: CALORIES、SPEED、TIME、DISTANCE. Bottom row: CAL/HR、METS、PACE、INCLINE.
(2) In SCAN mode, the SCAN LED lights. Every four seconds, the display toggles from one feedback row to the other row. If you press the SCAN key again, the scan LED extinguishes. The display continues to show the activated feedback row.
6. CLEAR Key
   Function: Clear entered values to 0.
   Operation: Press to clear entered values to 0.

7. PROGRAM Key
   Function: Select exercise programs.
   Operation: (1) Press any PROGRAM key. Its corresponding LED lights.
               (2) Programs include MANUAL, HILL, RANDOM, INT, Wt LOSS, CARDIO,
                   ZONE TRAINER, GLUTE.
9. Basic Settings: KPH/MPH
Function: (1) KPH/MPH setting
Operation: (1) Hold the <Change Display> key for three seconds to enter the basic setting mode. The present setting appears as either “UNIT - MPH” or “UNIT - KPH”. Press the INCLINE <▲/▼> key to toggle between the two settings. Then press the <ENTER> key to confirm your choice and return to the startup banner or press the <STOP> key to exit the basic setting mode.

10. Basic Settings: Distance
Function: (1) Clear total distance, show total distance, show total time
Operation: (1) Press the INCLINE ▲+INCLINE ▼+STOP key 1.5 seconds.
“PRESS INCLINE UP / DN TO SELECT CLEAR TOTAL TIME AND DISTANCE YES / NO” scrolls across the screen. Press INCLINE <▲/▼> keys to toggle between YES and NO. YES = erase total time and distance. NO = do not change.
(2) Press the <ENTER> key to confirm your choice. The display shows total distance as either “DIST – XXXX KM” or “DIST – XXXX MILE”.
(3) Press the <ENTER> key to enter the total TIME display. Total time appears as follows: “TIME – XXXXXX HOUR”.
(4) Press the <ENTER> key to return to the start up screen or press the <STOP> key to exit.
1. T620/T625 Display Board Cable Connections

- Telemetry Receiver Board
- HTR Board
- HTR Handlebar (left/right)
- Display Board
- Key Board
- Drive Board
2. T620/T625 Drive Board Cable Connections

- Power Cord
- On/Off Switch
- EMI Filter
- Inductor
- Transformer
- Display Board
- Drive Board
- Incline Motor
- Calibration Switch
- Motor
- Thermal Sensor
- Optic Sensor
1. T620/T625 Display Board Cable Connections

- Telemetry Receiver Board
- HTR Board
- HTR Handlebar (left/right)
- Display Board
- Key Board
- Drive Board
2. T620/T625 Display Board Components
3. T620/T625 Display Board LED Indicators

POWER1 Indicator
Lit indicates 5 VDC power supply
4. T620/T625 Display Board Cable Connectors

CON1 ➔ To drive board
CON2 ➔ To EMG STOP
CON3 ➔ To heart rate board
CON4 ➔ To telemetry receiver board
CON5 ➔ To key board
1. T620/T625 Drive Board Cable Connections

- Power Cord
- Fuse
- On/Off Switch
- EMI Filter
- Inductor
- Transformer
- Drive Board
- Display Board
- Incline Motor
- Calibration Switch
- Motor
- Thermal Sensor
- Optic Sensor

5-2-1
2. T620/T625 Drive Board Components
3. T620/T625 Drive Board LED Indicators

- **LED1 SOFT Indicator**: Lit indicates power supply.
- **LED2 POWER Indicator**: Lit indicates power supply.
- **LED5 EMG Indicator**: Lit indicates drive board is supplying power to motor. Not lit indicates emergency off function is activated.
- **LED7 DN Indicator**: Lit indicates incline is operating down.
- **LED9 UP Indicator**: Lit indicates incline is operating up.
- **LED10 Motor Overheat Shutoff Indicator**: Lit indicates motor overheat shutoff is activated.
4. T620/T625 Drive Board LED Indicators

- **LED6 MC Indicator**
  - Flashing indicates motor is moving.

- **LED8 ZERO Indicator**
  - Lit indicates incline is calibrated.

- **LED11 I SENSE LED**
  - Lit indicates start up current restriction is activated.
5. T620/T625 Drive Board Cable Connections

- **CON7** ➔ To incline calibration switch
- **CON2, CON3** ➔ To display board
- **CON5** ➔ To optic sensor
- **CON8** ➔ To motor thermal sensor
- **CON1** ➔ To transformer
- **CON6** ➔ To incline motor
- **M+, M-** ➔ To motor
- **AC1, AC2** ➔ To power cord
- **L1, L2** ➔ To inductor
6. T620/T625 Drive Board Jumper Placement

JP3
1. Using the jumper to make electrical continuity across pin 1 & 2 makes the incline operate up.
2. Using the jumper to make electrical continuity across pin 2 & 3 makes the incline operate down.
T620/T625 Error Message: ERR 1-Motor Does Not Rotate

1. **Definition:**
   (1) Motor doesn’t rotate.
   (2) Display board CPU does not read the optic sensor signal.

2. **Block Diagram**

![Block Diagram Image]

- **Display Board**
- **Motor**
- **Drive Board**
- **Optic Sensor Signal**
- **Motor Speed Signal**
- **LED6_MC**
- **Inductor (220V only)**
- **Transformer**
- **Motor Voltage 2 pin**
- **Transformer Voltage**
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 1     | Display Board     | 1. Display CPU sends out the motor control signal to the drive board to control motor speed.  
       |                   | 2. If the CPU does not receive the motor speed CLOCK signal, the display shows ERR1. |
| 2     | 13-PIN Data Cable | 1. The SPEED signal travels from the display to the drive board via the data cable.  
       |                   | 2. The CLOCK signal travels from the drive board to the display board via the data cable. |
| 3     | Drive Board       | 1. After processing the motor signal, the drive board emits voltage to the motor, making the motor rotate.  
       |                   | 2. The drive board sends the CLOCK signal to the display board.                   |
| 4     | Motor             | 1. According to voltage supply from the drive board, the motor rotates, rotating the walk belt. |
| 5     | Inductor (220V)   | 1. Inductor is used only on 220V models.                                        
       |                   | 2. Inductor processes AC voltage from the drive board into VH voltage for the drive board drive circuit. |
| 6     | Transformer       | 1. The transformer supplies power for all drive board circuits.                 |

### 4. Circumstance of Malfunction

(1). Press SPEED<▲> or <▼>. The walk belt does not rotate. The display shows “ERR1”.

### 5. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 1     | Display Board     | 1. Inspect the display CON1 cable connections.                                  
       |                   | 2. Inspect the display board U6 connection. Replace as a test.                  
       |                   | 3. Replace the display board as a test.                                         |

6-1-2
<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>13-PIN Data Cable</td>
<td>1. Inspect the data cable and its connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect drive board CN2, CN3 connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect CN1 or L1, L2 connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect whether the drive board EMG indicator is lit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the drive board as a test.</td>
</tr>
<tr>
<td>3</td>
<td>Drive Board</td>
<td>1. Please see basic testing on pages 7-4, 7-5, 7-6.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect drive board CN2, CN3 connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect CN1 or L1, L2 connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect whether the drive board EMG indicator is lit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the drive board as a test.</td>
</tr>
<tr>
<td>4</td>
<td>Motor</td>
<td>1. Please refer to basic testing on page 7-2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect motor M+, M- connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Test for voltage at motor M+, M- terminals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect the motor brushes for wear.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the motor as a test.</td>
</tr>
<tr>
<td>5</td>
<td>Transformer</td>
<td>1. Please see basic testing on page 7-4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Inspect the transformer wires and their connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Test the transformer secondary wires for voltage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the transformer as a test.</td>
</tr>
<tr>
<td>6</td>
<td>Inductor (220V)</td>
<td>1. The inductor is used only on 220V models.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the inductor wire connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the inductor as a test.</td>
</tr>
</tbody>
</table>

1. Definition: The motor rotates but the display CPU does not read the optic sensor signal.

2. Block Diagram

---

**Display Board**

**Drive Board**

**Motor**

**Optic Sensor**

4-pin

LED6_MC

OS Signal

Optic Sensor (OS) Signal
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 1     | Display Board       | 1. Display CPU sends out the motor control signal to the drive board to control motor speed.  
2. If the CPU does not receive the motor speed CLOCK signal, the display shows ERR1. |
| 2     | 13-PIN Data Cable   | 1. The SPEED signal travels from the display to the drive board via the data cable.  
2. The CLOCK signal travels from the drive board to the display board via the data cable. |
| 3     | Drive Board         | 1. After processing the motor signal, the drive board emits voltage to the motor, making the motor rotate.  
2. The drive board sends the CLOCK signal to the display board. |
| 4     | Motor               | 1. According to voltage supply from the drive board, the motor rotates, rotating the walk belt. |
| 5     | Inductor (220V)     | 1. Inductor is used only on 220V models.  
2. Inductor processes AC voltage from the drive board into VH voltage for the drive board drive circuit. |
| 6     | Transformer         | 1. The transformer supplies power for all drive board circuits.                                                                                   |

### 4. Circumstance of Malfunction

(1). Press SPEED<▲> or <▼>. The walk belt does not rotate. The display shows “ERR1”.

### 5. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 1     | Display Board       | 1. Inspect the display CON1 cable connections.  
2. Inspect the display board U6 connection. Replace as a test.  
3. Replace the display board as a test. |
<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>13-PIN Data Cable</td>
<td>1. Inspect the data cable and its connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Please see basic testing on pages 7-4, 7-5, 7-6.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect drive board CN2, CN3 connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the drive board as a test.</td>
</tr>
<tr>
<td>3</td>
<td>Drive Board</td>
<td>1. Please see basic testing on pages 7-4, 7-5, 7-6.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect drive board CN1 or L1, L2 connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect whether the drive board EMG indicator is lit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the drive board as a test.</td>
</tr>
<tr>
<td>4</td>
<td>Motor</td>
<td>1. Please refer to basic testing on page 7-2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect motor M+, M- connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Test for voltage at motor M+, M- terminals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the motor as a test.</td>
</tr>
<tr>
<td>5</td>
<td>Optic Sensor</td>
<td>1. Inspect the optic sensor wires and their connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect whether the MC indicator on the drive board flashes as the optic sensor wheel rotates.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the optic sensor as a test.</td>
</tr>
</tbody>
</table>
T620/T625 Error Message: ERR 3

1. Definition: Display SPEED setting and actual speed differ.

2. Block Diagram
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 1     | Display Board                 | 1. Display CPU sends out the motor control signal to the drive board to control motor speed.  
                                                    2. If the CPU does not receive the motor speed CLOCK signal, the display shows ERR1.          |
| 2     | 13-PIN Data Cable             | 1. The SPEED signal travels from the display to the drive board via the data cable.  
                                                    2. The CLOCK signal travels from the drive board to the display board via the data cable.      |
| 3     | Drive Board                   | 1. After processing the motor signal, the drive board emits voltage to the motor, making the motor rotate.  
                                                    2. The drive board sends the CLOCK signal to the display board.                                 |
| 4     | Optic Wheel Optic Sensor      | 1. When the motor moves, the optic sensor moves.  
                                                    2. The optic sensor detects optic wheel movement.                                             |

### 4. Circumstance of Malfunction

1. Press the SPEED<▲> or <▼> key. The treadmill walk belt rotates. Then “ERR:3” appears.
## 5. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. Inspect the display board CON1 cable connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect U6 IC on the drive board.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the display as a test.</td>
</tr>
<tr>
<td>2</td>
<td>13-PIN Data Cable</td>
<td>1. Inspect the data cable and its connections.</td>
</tr>
<tr>
<td>3</td>
<td>Drive Board</td>
<td>1. Please see basic testing on pages 7-6.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect drive board CN5 connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the drive board as a test.</td>
</tr>
<tr>
<td>4</td>
<td>Motor</td>
<td>1. Please refer to basic testing on page 7-2.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace the motor as a test.</td>
</tr>
<tr>
<td>5</td>
<td>Optic Wheel</td>
<td>1. Inspect whether the optic wheel has all of its teeth.</td>
</tr>
<tr>
<td>6</td>
<td>Optic Sensor</td>
<td>1. Inspect whether the optic sensor is connected properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect whether the drive board optic sensor MC LED on the drive board flickers when the optic wheel is rotated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the optic sensor as a test.</td>
</tr>
</tbody>
</table>
**T620/T625 Error Message: ERR 7**

1. **Definition:** Incline motor calibration malfunction: Decline order was issued 35~40 seconds but there was no calibration signal.

2. **Block Diagram**

   ![Block Diagram](Image)

   - Display
   - Calibration Signal
   - Drive Board
     - LED9 INC_UP
     - LED7
     - INC_DN
     - LED8 ZERO
   - AC Incline Motor Voltage
   - Incline Motor
   - Calibration Switch
     - Calibration Signal
     - 2PIN
     - 13PIN
3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
</table>
| 1     | Display Board             | 1. Per the incline setting on the display, the display board CPU sends the INCLINE command signal to the drive board.  
2. If the INCLINE is at 0% for 35 seconds and no calibration signal is received, ERR7 appears. |
| 2     | 13-PIN Data Cable         | 1. The incline command signal travels via the data cable from the display board to the drive board.  
2. The calibration signal travels via the data cable from the drive board to the display.            |
| 3     | Drive Board               | 1. After processing the incline command signal, the drive board emits power to the incline motor, making the motor operate.  
2. The drive board sends the incline calibration signal to the display board.                         |
| 4     | Incline Calibration Switch| 1. When the incline motor declines to 0%, the calibration switch operates.                                                                                                                                   |
| 5     | 2-PIN Cable               | 1. The incline calibration signal travels the incline calibration switch cable to the display.                                                                                                                |

4. Circumstance of Malfunction

1. When the treadmill starts up or when incline operates down, if the display does not receive the incline calibration signal within 35~40 seconds, ERR7 appears.

5. Circumstance of Malfunction

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Inspection</th>
</tr>
</thead>
</table>
| 1     | Display Board            | 1. Inspect the CON1 connection on the display board.  
2. Inspect whether U6 IC on the display is seated properly. Replace as a test.  
3. Replace the display as a test.                                                                                                       |
<p>| 2     | 13-PIN Cable             | 1. Inspect the cable and its connections.                                                                                                                                                                  |</p>
<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Inspection</th>
</tr>
</thead>
</table>
| 3     | Drive board                 | 1. Please see basic testing, pages 7-8 and 7-9.  
2. Inspect the connections of CON6 and CON7 on the drive board.  
3. Replace the drive board as a test. |
| 4     | Incline Calibration Switch  | 1. Please refer to basic testing 7-9.  
2. Inspect the incline wire connection.  
3. Replace the incline calibration switch. |
| 5     | 2-PIN Cable                 | 1. Inspect the cable and its connection.                                                        |
T620/T625 Error Message: Display Key Malfunction

1. Troubleshooting: (1) Turn on the treadmill. Do not press any key. The display key operates. (2) Press a key during operation. There is no response.

2. Block Diagram
### 2. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. Display board CPU sends signals to control speed, incline, etc.</td>
</tr>
<tr>
<td>2</td>
<td>9-PIN Cable</td>
<td>1. Signals travel the 9-pin cable between the key board and the display board.</td>
</tr>
<tr>
<td>3</td>
<td>Key Board</td>
<td>1. SPEED, INCLINE, STOP and QUICK START are controlled from the key board.</td>
</tr>
</tbody>
</table>

### 3. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 1     | Display Board| 1. Please refer to basic testing, pages 7-15 and 7-16.  
2. Inspect the display CON5 connection.  
2. Replace the display board as a test. |
| 2     | 9-PIN Cable  | 1. Inspect the cable and its connections.                                       |
| 3     | Key Board    | 1. Please refer to basic testing, page 7-14.  
2. Inspect the key board wire and its connections.  
3. Replace the key board as a test. |
T620/T625 Error Message: Unit Does Not Turn On

1. Circumstance of Malfunction: (1) Turn on the unit. The display does not beep or light up.

2. Block Diagram

![Block Diagram]

- Power Cord
- EMI Filter
- On/Off Switch
- Transformer
- Drive Board
- Voltage
- AC1
- AC2
- FUSE
- Display Board
- 13-PIN
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. After the display board receives VCC power, the display lights up.</td>
</tr>
<tr>
<td>2</td>
<td>13-PIN Cable</td>
<td>1. The drive board VBB power travels the data cable to the display.</td>
</tr>
<tr>
<td>3</td>
<td>Drive Board</td>
<td>1. After stabilizing voltage, the drive board supplies VBB and VCC voltage.</td>
</tr>
<tr>
<td>4</td>
<td>F1 Fuse</td>
<td>1. The fuse protects the drive board by breaking when current is too high.</td>
</tr>
<tr>
<td>5</td>
<td>Power Cord</td>
<td>1. Provides power.</td>
</tr>
<tr>
<td>6</td>
<td>EMI Filter</td>
<td>1. Filters power.</td>
</tr>
<tr>
<td>7</td>
<td>Fuse</td>
<td>1. The fuse protects the unit by breaking when current is too high.</td>
</tr>
<tr>
<td>8</td>
<td>On/Off Switch</td>
<td>1. When set to “0”, the drive board receives no power.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. When set to “1”, AC1, AC2 send power to the drive board.</td>
</tr>
<tr>
<td>9</td>
<td>Transformer</td>
<td>1. The transformer provides power for drive board circuits.</td>
</tr>
</tbody>
</table>

### 4. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. Please refer to basic testing, pages 7-15 and 7-16. 2. Inspect whether display board CON1 is connected properly. 2. Replace the display as a test.</td>
</tr>
<tr>
<td>2</td>
<td>13-PIN Data Cable</td>
<td>1. Inspect whether the data cable and its connections.</td>
</tr>
<tr>
<td>3</td>
<td>Drive Board</td>
<td>1. Please refer to basic testing, pages 7-4 and 7-7. 2. Inspect drive board CON2, CON3 connections. 3. Inspect drive board AC1, AC2 connections. 4. Inspect drive board CON1 connections. 5. Replace the drive board as a test.</td>
</tr>
</tbody>
</table>
### 5. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>F1 Fuse</td>
<td>1. Inspect whether the F1 fuse has blown.</td>
</tr>
<tr>
<td>5</td>
<td>Power Cord</td>
<td>1. Inspect the power cord connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect whether the power cord is connected to the unit properly.</td>
</tr>
<tr>
<td>6</td>
<td>EMI Filter</td>
<td>1. Please refer to basic testing on page 7-1.</td>
</tr>
<tr>
<td>7</td>
<td>Fuse and Fuse Holder</td>
<td>1. Inspect whether the fuse has blown.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the fuse holder wire connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the fuse as a test.</td>
</tr>
<tr>
<td>8</td>
<td>On/Off Switch</td>
<td>1. When the on/off switch is on “1”, does the switch light up?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If not, inspect the power cable connections and EMI filter connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the on/off switch.</td>
</tr>
<tr>
<td>9</td>
<td>Transformer</td>
<td>1. Please refer to basic testing page 7-4.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the transformer cable and its connections.</td>
</tr>
</tbody>
</table>
T620/T625 Error Message: No Telemetry Heart Rate

1. Circumstance of Malfunction: (1) There is no telemetry heart rate on the display.
   (2) The heart rate on the display differs from the actual heartrate.

2. Block Diagram
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. The display shows the heart rate value after receiving it.</td>
</tr>
<tr>
<td>2</td>
<td>2-PIN Cable</td>
<td>1. The heart rate signal travels the cable to the display board.</td>
</tr>
<tr>
<td>3</td>
<td>Heart Rate Receiver Board</td>
<td>1. The heart rate receiver board receives and transmits the heart rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>signal to the display board.</td>
</tr>
<tr>
<td>4</td>
<td>Heart Rate Transmitter</td>
<td>1. The heart rate transmitter strap detects the user's pulse and transmits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>it to the receiver board.</td>
</tr>
</tbody>
</table>

### 4. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. Inspect whether the display CON3 cable is connected properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the U6 IC connection. Replace as a test.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace the display board as a test.</td>
</tr>
<tr>
<td>2</td>
<td>2-PIN Cable</td>
<td>1. Inspect the cable and its connections.</td>
</tr>
<tr>
<td>3</td>
<td>Heart Rate Receiver Board</td>
<td>1. Replace the receiver board as a test.</td>
</tr>
<tr>
<td>4</td>
<td>Heart Rate Transmitter</td>
<td>1. Please refer to basic testing on page 7-17.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace the transmitter as a test.</td>
</tr>
</tbody>
</table>
T620/T625 Error Message: Incline Does Not Operate Up or Down

1. **Circumstance of Malfunction:** After pressing the incline key, the display incline values change but the incline does not operate up or down.

2. **Block Diagram**

   ![Block Diagram]

   - **Display Board**
     - Incline Up/Down Signal
     - LED9 INC_UP
     - LED7 INC_DN
     - LED8 ZERO

   - **Drive Board**
     - 13-PIN Signal
     - F2 FUSE

   - **Incline Motor**
     - AC Incline Motor Voltage 3-PIN
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. The display board CPU sends INCLINE command signals to the drive board to control incline operation.</td>
</tr>
<tr>
<td>2</td>
<td>13-PIN Cable</td>
<td>1. INCLINE command signals travel the display board to the drive board.</td>
</tr>
<tr>
<td>3</td>
<td>Drive Board</td>
<td>1. After processing incline command signals, the drive board emits voltage to the incline motor, making it operate.</td>
</tr>
<tr>
<td>4</td>
<td>3-PIN Cable</td>
<td>1. Voltage travels the three-in cable from the drive board to the incline motor.</td>
</tr>
<tr>
<td>5</td>
<td>Incline Motor</td>
<td>1. When the drive board INC_UP indicator lights, the incline operates up. 2. When the drive board INC_DN indicator lights, the incline operates down.</td>
</tr>
</tbody>
</table>

### 4. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display Board</td>
<td>1. Inspect whether incline window values change when you press INCL&lt;▲&gt;/&lt;▼&gt;. 2. Inspect whether the display CON1 cable is connected properly. 3. Replace the display board as a test.</td>
</tr>
<tr>
<td>2</td>
<td>13-PIN Cable</td>
<td>1. Inspect the 13-pin data cable and its connections.</td>
</tr>
<tr>
<td>3</td>
<td>Drive Board</td>
<td>1. Please refer to basic testing, page 7-8. 2. Inspect CON2, CON3 cable connections on the drive board. 2. Inspect CON6, CON7 connections on the drive board. 3. Replace the drive board as a test.</td>
</tr>
<tr>
<td>4</td>
<td>3-PIN Cable</td>
<td>1. Inspect the 3-pin incline cable and its connections.</td>
</tr>
<tr>
<td>5</td>
<td>Incline Motor</td>
<td>1. Please refer to basic testing, page 7-13. 2. Replace the incline motor as a test.</td>
</tr>
</tbody>
</table>
T620/T625 Error Message: Main Fuse Broke

1. **Circumstance of Malfunction:** (1) Main fuse is broken. Turn on unit power. Display does not light up.
(2) Replace the fuse. Turn on power. The fuse breaks again.

2. **Block Diagram**

![Block Diagram](image-url)

- EMI Filter
- On/Off Switch
- Display Board
- Drive Board
- LED1
- LED2 PWR
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EMI Filter</td>
<td>1. Provides voltage from the exterior power supply.</td>
</tr>
<tr>
<td>2</td>
<td>Fuse and Fuse Holder</td>
<td>1. When the drive board or other components malfunction, the fuse breaks.</td>
</tr>
<tr>
<td>3</td>
<td>On/Off Switch</td>
<td>1. When the “-” side on the On/Off switch is pressed, exterior power is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>provided to the drive board.</td>
</tr>
<tr>
<td>4</td>
<td>Drive Board</td>
<td>1. If there is no component malfunction, the display operates normally.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. If there is a component malfunction, the drive board shorts out.</td>
</tr>
</tbody>
</table>

### 4. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EMI Filter</td>
<td>1. Please refer to basic testing, page 7-1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the wire connectors at the EMI filter.</td>
</tr>
<tr>
<td>2</td>
<td>Fuse and Fuse Holder</td>
<td>1. Inspect the fuse specifications: Is the fuse the correct type?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the fuse holder.</td>
</tr>
<tr>
<td>3</td>
<td>On/Off Switch</td>
<td>1. Inspect the power supply cord connections.</td>
</tr>
<tr>
<td>4</td>
<td>Drive Board</td>
<td>1. Inspect the drive board wire connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the drive board bridge rectifier BD1 for a short.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Inspect the drive board IGBT for a short.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the drive board if necessary.</td>
</tr>
</tbody>
</table>
T620/T625 Error Message: Service Required

1. **Definition:** The motor has overheated. The unit is operating in a protective mode.

2. **Block Diagram**

   ![Block Diagram of T620/T625 Error Message]

   - Display
   - Drive Board
   - Motor
   - Thermal Sensor
   - LED10_MT-OTP

   Thermal Sensor Signal
   
   Thermal Sensor Signal
   
   LED10_MT-OTP
### 3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
</table>
| 1     | Motor Thermal Sensor| 1. When the thermal sensor is not too hot, the sensor circuit is an electrical short.  
|       |                     | 2. When the thermal sensor is too hot, the sensor circuit is an electrical open. |
| 2     | Drive Board         | The drive board sends the thermal sensor signal to the display.            |
| 3     | Data Cable          | 1. The thermal sensor signal travels from the drive board to the display.   |
| 4     | Display Board       | 1. The display CPU detects the thermal sensor signal.                      |
|       |                     | 2. If the thermal sensor circuit is an electrical open, the display shows Service Required and beeps. |

### 4. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| 1     | Walk Belt                   | 1. Add lubrication as a test.  
|       |                             | 2. Adjust walk belt tightness.  
|       |                             | 3. Inspect the walk belt wear. Replace if necessary.                           |
| 2     | Walk Deck and Front and Rear Rollers | 1. Clean the front and rear rollers.  
|       |                             | 2. Inspect the walk deck for wear. Replace if necessary.                      |
| 3     | Motor                       | 1. Inspect the motor cable and its connection.  
|       |                             | 2. When the display shows Service Required, inspect whether the motor is too hot. If so, inspect the walk belt, deck, and motor.  
|       |                             | 3. Inspect the motor brushes for wear. Replace if necessary.                 |
|       |                             | 4. Replace the motor as a test.                                              |
| 4     | Drive Board                 | 1. Inspect the motor thermal sensor cable and its connections.              |
|       |                             | 2. Replace the drive board as a test.                                       |
T620/T625 Error Message: Heart Touch Rate (HTR) Malfunction

1. **Circumstance of Malfunction:**
   1. Place both hands on the HTR contacts. Display shows no reaction.
   2. Do not place hands on the HTR contacts. Display shows a heart rate value.

2. **Block Diagram**
3. Operation

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HTR Contact</td>
<td>1. HTR contact pads detect the user’s pulse.</td>
</tr>
<tr>
<td>2</td>
<td>2-PIN Cable</td>
<td>1. The signal travels through two, 2-pin cables, one connected to the contact pads on each side.</td>
</tr>
<tr>
<td>3</td>
<td>5-PIN Cable</td>
<td>1. The 2-pin cable connects to a 5-pin cable, which connects to the HTR board.</td>
</tr>
<tr>
<td>4</td>
<td>HTR Board</td>
<td>1. The HTR board detects the heart rate signal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. The HTR board sends the heart rate signal to the display board.</td>
</tr>
<tr>
<td>5</td>
<td>4-PIN Cable</td>
<td>1. The HTR board signal travels via the 4-pin cable to the display board.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. VCC power supply travels to the HTR board.</td>
</tr>
<tr>
<td>6</td>
<td>Display Board</td>
<td>1. The display shows the heart rate value.</td>
</tr>
</tbody>
</table>

4. Troubleshooting

<table>
<thead>
<tr>
<th>Order</th>
<th>Part</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HTR Board</td>
<td>1. Clean the HTR contact pad.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Test the HTR cable.</td>
</tr>
<tr>
<td>2</td>
<td>2-PIN Cable</td>
<td>1. Inspect the cable and its connections.</td>
</tr>
<tr>
<td>3</td>
<td>5-PIN Cable</td>
<td>1. Inspect the cable and its connections.</td>
</tr>
<tr>
<td>4</td>
<td>HTR Board</td>
<td>1. Inspect the 4-pin cable from the HTR board to the display board.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Replace the HTR board as a test.</td>
</tr>
<tr>
<td>5</td>
<td>4-PIN Cable</td>
<td>1. Inspect the cable and its connections.</td>
</tr>
<tr>
<td>6</td>
<td>Display Board</td>
<td>1. Inspect the display CON4 cable connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Inspect the display board U2 IC connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Replace IC U2 or U4 40106 as a test.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Replace the display board as a test.</td>
</tr>
</tbody>
</table>
Testing—EMI Filter

(1) A to B Test
(2) C to D Test
(3) A to E Test

Test Procedure
1. Remove wires from the filter.
2. Set voltmeter to the 200 ohm setting. Place probes as indicated.
3. Normal test results are shown below.

<table>
<thead>
<tr>
<th>Test</th>
<th>Points</th>
<th>Normal Reading</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A-B</td>
<td>0 (continuity)</td>
<td>There should be continuity. OL means the line connection is broken.</td>
</tr>
<tr>
<td>2.</td>
<td>C-D</td>
<td>0 (continuity)</td>
<td>There should be continuity. OL means the line connection is broken.</td>
</tr>
<tr>
<td>3.</td>
<td>A-E</td>
<td>1 or OL (open line)</td>
<td>OL open line is normal. Continuity here indicates a short.</td>
</tr>
</tbody>
</table>
Troubleshooting
1. Continuity test: If there is not continuity during the A-B and C-D tests, the filter is bad. Replace it.
2. Open test: If there is a short across A-E, the filter is bad. Replace it.
Test Procedure
1. Remove motor M+, M- wire connections from the drive board.
2. Set multimeter to the 200 VDC setting. Place probes on the M+, M- wire connectors.
3. Rotate the motor. Motor should produce voltage.

If there is no voltage, the motor has an electrical “open.” Inspect the motor brushes and commutator.
Testing—Transformer

Test Configuration

CON1 Transformer Connections

Drive Board
Test Procedure
1. Inspect transformer wire connections at the drive board CON1 connector.
2. Set multi-meter to the AC 200V setting.
3. Turn on unit power. Place multi-meter probes on the connector for the transformer’s two red wires (or two blue wires on a 220V unit) as shown.
5. Test secondary (output) voltages in order. Note normal specifications below.

<table>
<thead>
<tr>
<th>Transformer Wires</th>
<th>Voltage (AC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red probe</td>
<td>Black probe</td>
</tr>
<tr>
<td>RED/(BLUE)</td>
<td>RED/(BLUE)</td>
</tr>
<tr>
<td>BLACK</td>
<td>BLACK</td>
</tr>
<tr>
<td>WHITE</td>
<td>WHITE</td>
</tr>
<tr>
<td>ORANGE</td>
<td>ORANGE</td>
</tr>
<tr>
<td>YELLOW</td>
<td>YELLOW</td>
</tr>
</tbody>
</table>

Inspection Points
1. If the transformer primary (red wires for 110V power supply or blue wires for 220V power supply) have no voltage, there is no incoming voltage to the transformer. Inspect F1 3A fuse on the drive board.
2. If any of the secondary wires have no voltage, the transformer is bad.
**Test Procedure**

1. Remove the inductor wires from the drive board.
2. Set voltmeter to the ohm setting. Place probes separately on the wire connectors.
3. Normal reading: 10 ohm or less.
4. If there is no reaction, the inductor has an electrical open. Replace it.
Testing—Drive Motor Voltage

Test Configuration
Test Procedure
1. Set voltmeter to the 200 VDC setting. Place probes separately on the M+, M- terminals.
   Normal reading at the lowest speed: 0.2 KPH (0.1 MPH), 5.5-6.5V (110V) or 9-11V (220V).
   Normal reading at highest speed: 20.0 KPH (12.0 MPH), 100-120V (110V) or 210-230V (220V).
3. If the drive board does emit voltage, the motor cannot operate. The problem is in front of the motor.

Inspect
If the motor does not operate:
1. If the drive board EMG indicator lights, IGBT has an electrical short. Test the IGBT.
2. Replace the drive board and test.
Testing — Drive Board IGBT

Component and LED Indicator Placement

LED11 Current Restriction Indicator

Q2

Q3
Test Procedure
Turn on unit power. Do not press keys.
Inspect whether the drive board LED11 lights.
If lit, one or more IGBTs have an electrical short.

Troubleshooting
If LED11 is lit, replace IGBT Q2 and/or IGBT Q3.
Testing—Drive Board VCC Power

Drive Board VCC Power Indicator Placement

LED2 VCC
Test Procedure
1. Turn on unit power. Power switch lights up.
2. Drive board LED2 lights.

Troubleshooting
If the drive board VCC power indicator does not light:
1. Inspect AC1, AC2 wire connections.
2. Inspect transformer wire connections.
3. Inspect whether fuse F1 2A is broken. Replace if necessary.
4. Inspect CON2, CON3 connections and wires.
Testing—Drive Board Incline Motor Power

Test Configuration

LED9 INC_UP

LED7 INC_DN
Test Procedure
1. Put voltmeter to the 600 VAC setting. Place the red probe on the CON6-WHITE wire pin. To test for up voltage, place the black probe on the CON6-BLACK wire pin. To test down voltage, place the probe on the CON6-RED wire pin.
2. Turn on power. Press QUICK START or another mode of operation.
5. If there is no voltage, the drive board may be defective.

Inspection Points
Press INCL<▲>. The drive board INC_UP LED lights. CON6 emits AC voltage. If not:
1. Inspect whether LED9 lights.
2. Inspect whether K5 RELAY activates.
3. Inspect the F2 3A fuse on the drive board.
4. Inspect whether Q15 BT137 is burnt.

Press INCL<▼>. The drive board INC_DN LED lights. CON6 emits AC voltage. If not:
1. Inspect whether LED7 lights.
2. Inspect whether K5 RELAY activates.
3. Inspect the F2 3A fuse on the drive board.
4. Inspect whether Q15 BT137 is burnt.
Testing—Incline Limiter Switch

Test Configuration

LED8 ZERO Indicator
Test Procedure
Put voltmeter to the 20K Ω setting. Place probes on the calibration switch pins.
Touch the switch to activate it.
Normal reading: 0 Ω.
Turn on power. Touch the switch again. LED8 ZERO lights.

Inspection Points
If not as above, replace the switch and test again.
Testing – Optic Sensor Signal

Test Configuration

LED6 MC Indicator

Optic sensor board

Optic sensor wheel
Test Procedure
1. Make sure that the optic wheel spins in the middle of the optic sensor nibs and that there are no broken or bent teeth.
2. Inspect whether the optic sensor wire is connected properly.
3. Turn on power. Do not press any keys. Turn the motor slowly with your hand. The drive board MC indicator lights.
4. If the MC indicator does not flash, the optic sensor is bad. Replace it.

Inspection Points
If when the motor spins, the MC indicator on the drive board does not light, inspect:
1. whether the optic wheel spins in the middle of the optic sensor nibs.
2. whether the optic wheel has missing, broken, or bent teeth.
3. replace the optic sensor and test unit operation.
Testing — Optic Sensor LED

Test Configuration

LED6 MC Indicator

Optic Sensor

Optic Wheel
Test Procedure
1. Inspect whether the optic sensor wires are connected properly.
2. Turn on unit power. Do not press any keys. Rotate the motor slowly.
3. When the optic wheel moves, LED6 MC on the drive board flashes.
4. If the drive board MC LED does not flash, the optic sensor signal is malfunctioning.

Inspection Points
If the MC indicator on the drive board does not flash when the motor moves, inspect:
1. wire connections from the optic sensor to the drive board.
2. replace the optic sensor as a test.
Testing – Safety Key

Test Configuration
Test Procedure
1. Put voltmeter to the 200Ω setting.
2. Place probes on wires on both sides of the reed switch shown in Fig. 1. Normal reading with the magnet not in place: OL (Open Line).
3. Place probes and magnet as shown in Fig. 2. Normal reading: 0Ω.

Inspection Points
If not as above, the reed switch is malfunctioning. Replace the reed switch.
Testing—AC Incline Motor Resistance

Fig. 1

Test Position 1

Test Position 2

[Images of testing positions and a multimeter reading 21.9]
Test Configuration

Fig. 2

Test Position

43.5
Test Procedure
1. Remove the AC incline motor wire connection from the drive board.
2. Put voltmeter to the 200 ohm setting. Place probes separately on the red and white wires of the AC wires as shown in Fig. 1. Normal reading: 22.5 ohm or less. (Readings on black and white are the same.)
3. Place probes separately on red and black wires as shown in Fig. 2. Normal reading: 43.5 ohm or less.
4. If there is no reading, the incline motor is bad.

Circumstance of Malfunction
1. Press INCLINE<▲> or INCLINE<▼> key. Incline fails to operate. After about 35 seconds, ERR7 appears.
Testing—Keypad

Test Configuration

7-14-1
**Test Procedure**
1. Put the voltmeter to the 200 ohm setting. Place probes separately on key switch points A and B.
2. Do not press any keys. Voltmeter shows no reaction: OL (open line).
3. Press a key. Voltmeter shows 0 ohm.

**Circumstance of Malfunction**
1. If the key is not pressed and the voltmeter shows 0 ohm, the key switch has a permanent electrical short. Replace it.
2. If the key is pressed and the voltmeter shows no reaction, the key switch circuit has a permanent electrical open. Replace it.
Testing—Display Board VBB Circuit

Test Configuration
Test Procedure
1. Turn on power. Drive board LED2 lights.
2. Put multi-meter to the DC 20 VDC setting. Place probes as shown.
3. Normal reading: about 15~16 VDC.

Inspection Points
If there is not 15~16 VDC, inspect:
1. Data cable wire connections from the drive board to the display board.
2. Whether the data cable is pinched or broken.
3. Replace drive board component BD3 KBU1006 and test operation.
Testing — Display Board Vcc Circuit
Test Configuration

LED1 POWER Indicator

Digital Multimeter Reading: 4.98

SportsArt Fitness
Test Procedure
1. Turn on power. Drive board LED2 lights.
2. Put voltmeter to the DC 20 VDC setting. Place probes as shown.
3. Display board LED1 lights. Normal reading: 4.9~5 VDC.
4. Display beeps once and lights up.

Inspection Points
If after turning unit power, the LED1 POWER indicator on the display and other display windows do not light, inspect:
1. whether there is VCC voltage
2. replace D14 UF5406G or U5 SK8051S and test operation.
Testing—Telemetry Heart Rate

Telemetry Receiver Board (under display)

Heart rate telemetry transmitter
Static Test
1. Wear the telemetry strap in properly.
2. Turn on unit power. Stand on walk belt about 80 cm from the display.
3. After five seconds, the display shows heart rate value.

Active Test
1. Wear the telemetry strap in properly.
2. Press SPEED<▲> or <▼> key to set the SPEED setting.
3. After the walk belt starts to rotate, run on the walk belt about 80 cm from the display.
4. After five seconds, the display shows heart rate value.

Inspection Points
If the static test failed, inspect:
1. Wires from the display to the telemetry receiver board.
2. Replace the telemetry strap and test again.

If the static test passed but the active test failed, inspect:
1. The telemetry strap. Batteries may be low. The strap might not be fastened securely.
2. Replace the telemetry strap and test again.
## Testing – HTR Board LED Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Color</th>
<th>Indicates</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED1</td>
<td>Red</td>
<td>Telemetry heart rate signal</td>
<td>Flashes to indicate incoming telemetry signal</td>
</tr>
<tr>
<td>LED2</td>
<td>Green</td>
<td>HTR handlebar signal</td>
<td>Lights to indicate hands on HTR grips</td>
</tr>
<tr>
<td>LED3</td>
<td>Orange</td>
<td>HTR heart rate</td>
<td>Flashes to indicate incoming HTR signal</td>
</tr>
<tr>
<td>LED4</td>
<td>Red</td>
<td>Outgoing heart rate signal</td>
<td>Each flash indicates an outgoing heart rate signal</td>
</tr>
</tbody>
</table>
**Test Procedure**
1. Do not hold HTR grips. No LEDs on the HTR board light.
2. Hold the HTR grips with both hands. HTR board LED2 lights.
3. When the HTR signal enters the board, LED3 flashes.
4. When the HTR board emits the HTR signal to the display, LED4 flashes.
5. Within ten seconds, the heart rate window displays a heart rate value.

**Inspection Points**
If not as above, refer to the chart below.

<table>
<thead>
<tr>
<th>Order</th>
<th>Malfunction</th>
<th>Cause</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LED1 does not light</td>
<td>No telemetry signal is entering the board.</td>
<td>Telemetry transmitter, wires</td>
</tr>
<tr>
<td>2</td>
<td>LED2 does not light</td>
<td>No one is holding HTR grips.</td>
<td>HTR grips, wires from grips to HTR board.</td>
</tr>
<tr>
<td>3</td>
<td>LED3 does not light</td>
<td>No HTR is entering the board.</td>
<td>HTR grips, wires from grips to HTR board.</td>
</tr>
<tr>
<td>4</td>
<td>LED4 does not light</td>
<td>The HTR board is not emitting an HTR signal.</td>
<td>HTR board</td>
</tr>
<tr>
<td>5</td>
<td>No heart rate on display</td>
<td>HTR board is not sending a signal to the display.</td>
<td>3-pin cable, display</td>
</tr>
</tbody>
</table>
Testing—HTR System Continuity Test (3-pin cable to HTR handlebars)

1. Do not turn on unit power. Disconnect the 3-pin wire connectors from the HTR board.
2. Put voltmeter to the 200 ohm setting. Place probes as shown.
3. Test configuration

<table>
<thead>
<tr>
<th>Signal Line Continuity Test</th>
<th>Ground Line Continuity Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Points</td>
<td>Normal Reading</td>
</tr>
<tr>
<td>A-a</td>
<td>Continuity</td>
</tr>
<tr>
<td>A-b</td>
<td>Open</td>
</tr>
</tbody>
</table>

Fig. 1 (HTR board 3-pin cable)

Fig. 2
Test Procedure
1. Do not hold HTR grips. No LEDs on the HTR board light.
2. Hold the HTR grips with both hands. HTR board LED2 lights.
3. When the HTR signal enters the board, LED3 flashes.
4. When the HTR board emits the HTR signal to the display, LED4 flashes.
5. Within ten seconds, the heart rate window displays a heart rate value.

Inspection Points
1. If not as above, refer to the chart below.

<table>
<thead>
<tr>
<th>Order</th>
<th>Malfunction</th>
<th>Cause</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LED1 does not light</td>
<td>No telemetry signal is entering the board.</td>
<td>Telemetry transmitter, wires</td>
</tr>
<tr>
<td>2</td>
<td>LED2 does not light</td>
<td>No one is holding HTR grips.</td>
<td>HTR grips, wires from grips to HTR board.</td>
</tr>
<tr>
<td>3</td>
<td>LED3 does not light</td>
<td>No HTR is entering the board.</td>
<td>HTR grips, wires from grips to HTR board.</td>
</tr>
<tr>
<td>4</td>
<td>LED4 does not light</td>
<td>The HTR board is not emitting an HTR signal.</td>
<td>HTR board</td>
</tr>
<tr>
<td>5</td>
<td>No heart rate on display</td>
<td>HTR board is not sending a signal to the display.</td>
<td>3-pin cable, display</td>
</tr>
</tbody>
</table>
**T620/T625 Treadmill Walk Belt Adjustment**

Walk belt adjustment is needed when the belt tracks too much to one side or when the belt is too loose or tight.

**Step 1.** Set speed to 4 KPH/ 2.5 MPH.

**Step 2.** The walk belt should rotate in the center of the deck with equal space on both sides. To adjust a walk belt that tracks improperly to one side, turn one adjustment screw. Example: If the walk belt tracks to the right side, turn the right adjustment screw clockwise. This adjusts the right side of the rear roller toward the back, pushing the walk belt to the left side. Likewise, turning the left adjustment screw clockwise would make the walk belt move toward the right side.

**Step 3.** To increase or decrease walk belt tightness, turn adjustment screws on both sides. Turning adjustment screws clockwise pulls the belt tighter. Turning counterclockwise makes the belt looser. Tip: To maintain tracking when tightening or loosening a walk belt, simultaneously turn adjustment screws on both sides an equal amount.
T620/T625 Treadmill Walk Belt Tightness Adjustment

Step 1: Set speed to 4 KPH/2.5 MPH.

Step 2: If belt tends to one side, adjust one side only until the margin (A&B) on both sides is the same.

Clockwise tightens belt

Counter-clockwise loosens belt
T620/T625 Treadmill Walk Belt Tightness Adjustment

Step 3: Test belt tightness by lightly bearing against it.

Step 4. If too loose, turn adjustment screws on both sides equally one half to one turn. If too tight, turn adjustment screws on both sides counterclockwise one half to one turn.

Notes:
When you test belt tightness, if the motor operates normally,
1. But the walk belt can be stopped for more than ½ second, the walk belt is too loose. Simultaneously rotate both adjustment screws clockwise 1/2 to one turn. Test again. Adjust until the walk belt slips briefly but quickly regains traction and begins to rotate.
2. And the walk belt cannot be stopped or slowed whatsoever, the belt may be too tight. Simultaneously rotate adjustment screws counterclockwise 1/2 to one turn. Test again.
Incline System Software Calibration

**Calibration Through Operation**
1. Press INCL<▲> key until the incline window shows 15%. When the incline operates up, LED9 on the drive board lights. When the incline stops moving, LED8 extinguishes.
2. Press INCL<▼> key until the incline window shows 0%. When the incline operates down, LED7 on the drive board lights. When the incline stops moving, LED8 extinguishes.
3. When the drive board LED8 ZERO indicator lights, incline calibration has been completed.

**Calibration Through Restarting**
1. In QUICK START mode, press the STOP key. Or, in the PROGRAM mode, press the STOP key three seconds.
2. Turn off unit power. Then turn on unit power.
3. When the model number scrolls across the display, the incline declines until the calibration switch is hit, then the drive board LED8 ZERO indicator lights. In operation, the INCLINE window shows 0%, indicating incline calibration has been completed.
1. Prop up the unit frame.

2. Disconnect the calibration switch wire.

3. Remove the incline motor cover.

4. Press the incline down key to make the incline decline fully. Once the incline stops operating, turn off unit power.
5. The AC incline motor decline limiter operates.

6. Disconnect the CON6 connector and ground.

7. Remove the (lower) kotter pin and incline pin.

8. Remove the upper kotter pin and incline pin.
9. Remove the AC incline motor assembly.

10. Distance between both holes: 264 mm

11. After calibrating mechanically, secure the incline motor and its wire connections in place.

12. Press INC UP until the inclines to 2%. Then press incline down to 0%.
13. Test the Calibration
(a) Press INCL<▲> until the incline window shows 15%. As the incline operates upward, indicator LED 9 lights.
(b) When the incline stops operating, LED8 extinguishes.
(c) Press INCL<▼> until the incline window shows 0%. As the incline operates downward, LED7 lights.
(d) When the incline stops operating, LED8 lights.
(e) The LED8 ZERO indicator on the drive board lights to indicate completion of the calibration process.