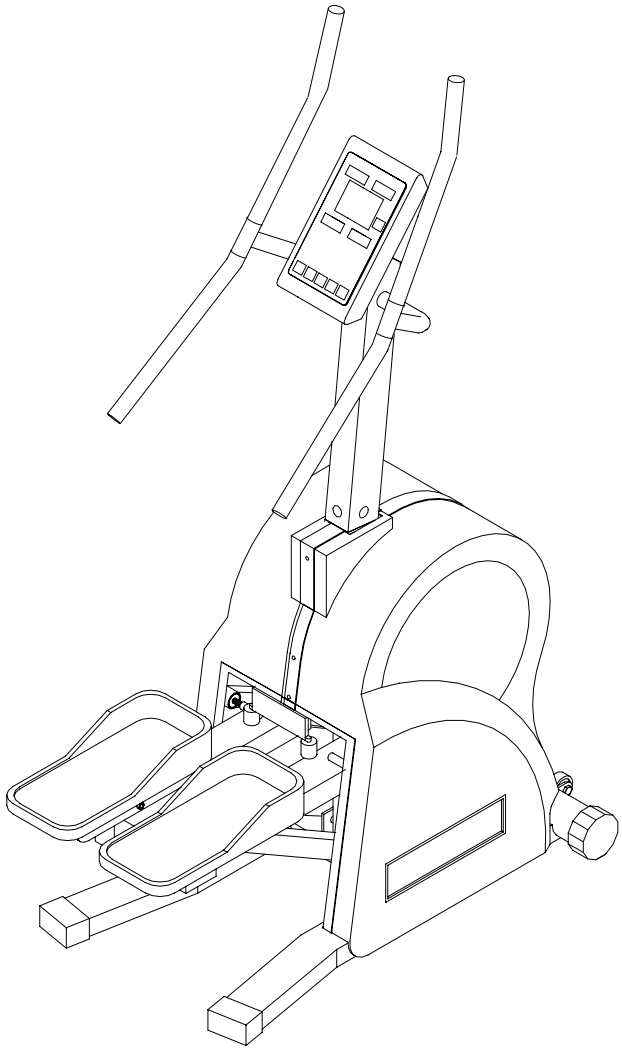


TC1000

Service Manual

SALES: 800-278-3933
CUSTOMER SERVICE: 800-745-1373

Table of Contents

Section		Page
I.	Overview	2
II.	Troubleshooting Tables	3
III.	Maintenance Procedures	
	Procedure 1 – Removal and Reinstallation of the Power Supply Board	6
	Procedure 2 – Checking Voltage at the Power Supply Board	6
	Procedure 3 – Checking and Adjusting the Speed Sensor	7
	Procedure 4 – Removal and Replacement of the Brake Assembly	7
IV.	Figures	
	Figure 1 – TC1000 Total Assembly (Items 1-20)	9
	Figure 2 – TC1000 Main Frame (Items 21-43)	10
	Figure 3 – Power Entry Module with Fuse Holder	11
	Figure 4 – TC1000 Wiring Diagram	12
V.	TC1000 Parts List	13

I. Overview

Purpose.

This manual is designed to assist in service of **SCIFIT** TC1000 exercise machines. The manual is divided into sections to diagnose and isolate problems. Troubleshooting tables and procedures, along with drawings, are provided to aid technicians in servicing equipment. The Item Numbers given in the parts list in Section V can be used to determine the location of various parts in Figures 1 and 2.

When troubleshooting, the actions taken to resolve problems should be performed in the order stated. Deviating from this sequence may cause damage to the equipment and lead to unnecessary repairs.

Technical Support.

For further assistance in service of **SCIFIT** products, please call **(800) 745-1373**, extension **21**. The technical support department is staffed from 8 AM to 5 PM CST Monday through Friday. A voicemail service is available 24 hours daily for recording messages to request technical support and to order replacement parts.

Please have the following information prior to calling technical support:

- Model number of equipment
- Serial number of equipment
- Point of contact name and phone number
- Detailed description of symptoms encountered.

II. Troubleshooting Tables

Table 1 – Electrical Troubleshooting

Problem	Possible Reasons	Solutions
1.1 The machine appears to be off when plugged in and switched "on".	Faulty power supply board (Item 23).	If buttons on the control display beep when pressed, replace power supply board. See Procedure 1. Otherwise, check power supply board. See Procedure 2.
	Faulty fuse.	Check and replace fuse if needed. (See Fig. 3)
	Loose cable connection.	Check wire connections at power supply and display boards.
1.2 Upper control panel (Item 2) lights are dim.	Power supply board (Item 23) is faulty.	Replace power supply board. See Procedure 1.
1.3 Upper board (Item 2) accepts commands but rotational resistance does not change.	Dip switch setting is incorrect.	Set dip switch to 01.
	Power supply board (Item 23) is faulty.	Check and replace power supply board as needed. See Procedure 2.
1.4 LED's on upper board (Item 2) blinking off/on, then go dead.	Ribbon cable (Item 5) connections are loose.	Check and replace accordingly. Unplug and re-plug machine to reset.
	Faulty power supply board (Item 23).	Check and replace power supply board as needed. See Procedure 2.
	Display board (Item 2) is faulty.	Replace display board.
1.5 Heart rate displays zero (0) in window	Chest strap and trans-mitter improperly worn.	Verify that they are being properly worn.
	Loose sensor lead connection at display board (Item 2).	Check and adjust as needed.
	Faulty receiver.	If there is no audible signal, replace receiver.
1.6 Unit keeps blowing fuses.	Too many units are daisy-chained together.	Do not daisy chain more than 3 units together.
	Faulty power supply board (Item 23).	Check and replace power supply board as needed. See Procedure 2.

1.7 The upper display (Item 2) resets after starting a program.	Ribbon cable connection is loose (Item 5). Power cord is loose. Display board is faulty.	Check cable connection at power supply and display boards (Items 23 and 2, respectively). Check and adjust as needed. Replace display board.
1.8 Program stops, lines of dots shoot across screen.	Ribbon cable (Item 5) connection is loose. Display board (Item 2) is faulty.	Check and adjust cable connection as needed. Replace display board.
1.9 Machine shuts down in programs but works in manual.	Display board (Item 2) is faulty.	Replace display board.
1.10 Can't select program or enter information and no beep when buttons are pressed.	Overlay/switch panel (Item 1) is faulty.	Replace overlay/switch panel.

Table 2 – Mechanical Troubleshooting

Problem	Possible Reasons	Solutions
2.1 Pedals lock up while operating.	Power supply board (Item 23) is faulty.	Unplug power cord. If pedals now move freely, replace power supply board.
	Brake (Item 30) is faulty.	If pedals do not move with power cord unplugged, replace brake. See Procedure 4.
2.2 No resistance on pedals when in a program.	No speed signal	Check and adjust the speed sensor (Item 37) as needed. See Procedure 3.
	Wires going to brake (Item 30) are disconnected.	Check that brake wires are properly connected.
	Power supply board (Item 23) is faulty.	Check and replace power supply board as needed. See Procedure 2.
2.3 Very little resistance at any level.	Speed sensor (Item 37) improperly adjusted.	Check and adjust the speed sensor as needed. See Procedure 3.
	Bad speed sensor connection with power supply board (Item 23).	Check voltage at power supply board. See Procedure 2.

III. Maintenance Procedures

Procedure 1 - Removal and Reinstallation of the Power Supply Board

1. Unplug the unit from the power source.
2. Remove the screws (Item 17) that fasten the covers (Items 10 and 16) to the main frame. The covers can be removed now.
3. Locate the power supply cover (Item 22) on unit. Remove the four (4) screws and the power supply cover. Be careful when removing the power supply cover because of the plastic ties and brake wires.
4. Cut all the plastic ties.
5. Before disconnecting any of the wires, make note of the wiring sequence. Refer to the wiring diagram, Fig. 4.
6. Disconnect the following:
    a. The two (2) white (110 V) and two (2) black (24 V) transformer wires. These are all the wires from J4 on Fig. 4.
    b. The black and white wires from the power entry module – total of two (2). These are the wires at terminals ACIN1 and ACIN2 on the LCB.
    c. The two (2) red brake wires.
    d. The one (1) speed sensor plug – J5 on Fig. 4.
    e. The one (1) ribbon cable.
8. The power supply board (Item 23) can now be removed. Reinstallation is the reverse of removal.
9. After reinstalling the power supply board, perform the following procedure to test correct reinstallation.
    a. Plug into power source and turn on.
    b. The message “SCIFIT FOR SCIENTIFIC SOLUTIONS” should be scrolling across upper display board. If not, see troubleshooting table.
    c. Press the start button.
    d. Press SCAN/HOLD so that the CLIMB RATE indicator light stays lit.
    e. Move the pedals as if exercising.
    f. Verify that the values are increasing in the CLIMB RATE window.
    g. Press the down arrow key to slow the pedal speed. It should be slow and smooth. If not, consult the trouble-shooting table.
    h. Press the up arrow key to increase pedal speed. The stepping motion should be fast and smooth. If not, refer to the troubleshooting table.

Procedure 2 - Checking voltage at the Power Supply Board

1. Follow steps 1-3 in Procedure 1.
2. Disconnect the speed sensor from the lower supply board at the J5 terminal. See Fig. 4. Use a voltmeter to measure the DC voltage across the speed sensor pins on the power supply board. Measure the voltage across the pin with the red wire (+) and either one of the center pins (-). The voltmeter should measure 4-5 volts DC.

3. If there is no voltage, replace the power supply board. See Procedure 1.

Procedure 3 – Checking and Adjusting the Speed Sensor

1. Turn machine on and press START/STOP.
2. Set the LEVEL to 0.0. Stand on the two pedals until they go down as far as they will go. The number in the DISTANCE window should increase every time the pedals are pressed down.
3. If the number in the DISTANCE window does not increase each time the pedal is depressed, proceed to the next step to adjust the speed sensor.
4. Remove the covers on the machine (Items 10 and 16). Locate the speed sensor on the unit (Item 37).
5. The air gap between the brake flywheel and speed sensor should be 1/8”-3/16”.
6. The speed sensor must be pointed directly at the flywheel so the eyes of the sensor will intersect the center of the axis of the brake. Adjust as needed.
7. Again, stand on the two pedals until they go down as far as they will go. If the number in the DISTANCE window is greater than zero but does not increase by one, repeat steps 1-7. If a reading of zero (0) is displayed, proceed to step 8.
8. Use a voltmeter to measure the DC voltage across J5 pin 1 (+) and J5 pin 2 (-) on the power supply board. Refer to Fig. 4. The voltmeter should read 4-5 VDC.
9. If there is no voltage, replace the power supply board (Item 23). If 4-5 volts are present, replace the speed sensor.

Procedure 4 – Removal and Replacement of the Brake Assembly

1. Remove the screws (Item 17) that fasten the covers (Items 10 and 16) to the main frame. The covers can be removed now.
2. Tip the entire unit back so that it is resting horizontally on its two rectangular shaped feet and the two pedals. This will allow better access to the brake from the underside of the unit.
3. Disconnect the two red wires on the right side of brake (Item 30).
4. Relieve the tension in the brake drive belt (Item 42) by loosening the turnbuckles (Item 29) that are attached to the brake brackets.
5. Remove the nuts and threaded bar that hold the brake drive idler (Item 25) onto the bracket. Also, loosen the nuts at the lower end of the brake brackets. With the idler removed and the brackets loose, the brake should be loose enough to remove the belt.
6. Remove the three (3) socket head screws that hold the brake assembly to the support bracket.
7. Pull brake away from main frame. Be careful not to damage the speed sensor when removing the brake.
8. Remove the brake from the machine and set aside to return

to SCIFIT (request a UPS call tag by phone).

9. Reinstallation is the reverse of removal. Before tightening the tension in the brake drive belt, make sure that it is centered correctly.
10. After brake assembly has been aligned and tension set, attach speed sensor tape to the brake armature. First peel off tape backing on the end with the wide silver band and stick on the brake surface hanging down. The tape should be on center with the speed sensor. Slowly rotate the brake upward and wrap tape around the circumference of the brake. It is extremely important that the speed sensor be centered over the tape.
11. Stand unit up in its proper position. Perform steps 12-16. If the indicated results are not attainable, see Procedure 3.
12. Plug in and turn on machine but don't press any buttons. The display will be scrolling the message, "SCIFIT…"
13. Press the START/STOP button.
14. If the LEVEL light is not lit, press the SCAN/HOLD button until it becomes lit. Use the down arrow key to set the LEVEL to 0.0.
15. Stand on the two pedals simultaneously so that they move once through their entire range of motion. The TOTAL CLIMB window should display 1. If it does proceed to step 16; otherwise, check that the air gap between the speed sensor and brake flywheel is 1/8"-3/16" then repeat steps 14 and 15.
16. Use the UP arrow button to set the LEVEL to 4.0.
17. Stand on the pedals and begin moving them at a rate typical of a workout.
18. The resistance on the pedals should feel smooth and consistent. If it does, installation is complete; otherwise, see Procedure 3.

IV. Figures

Figure 1 – TC1000 Total Assembly (Items 1-20)

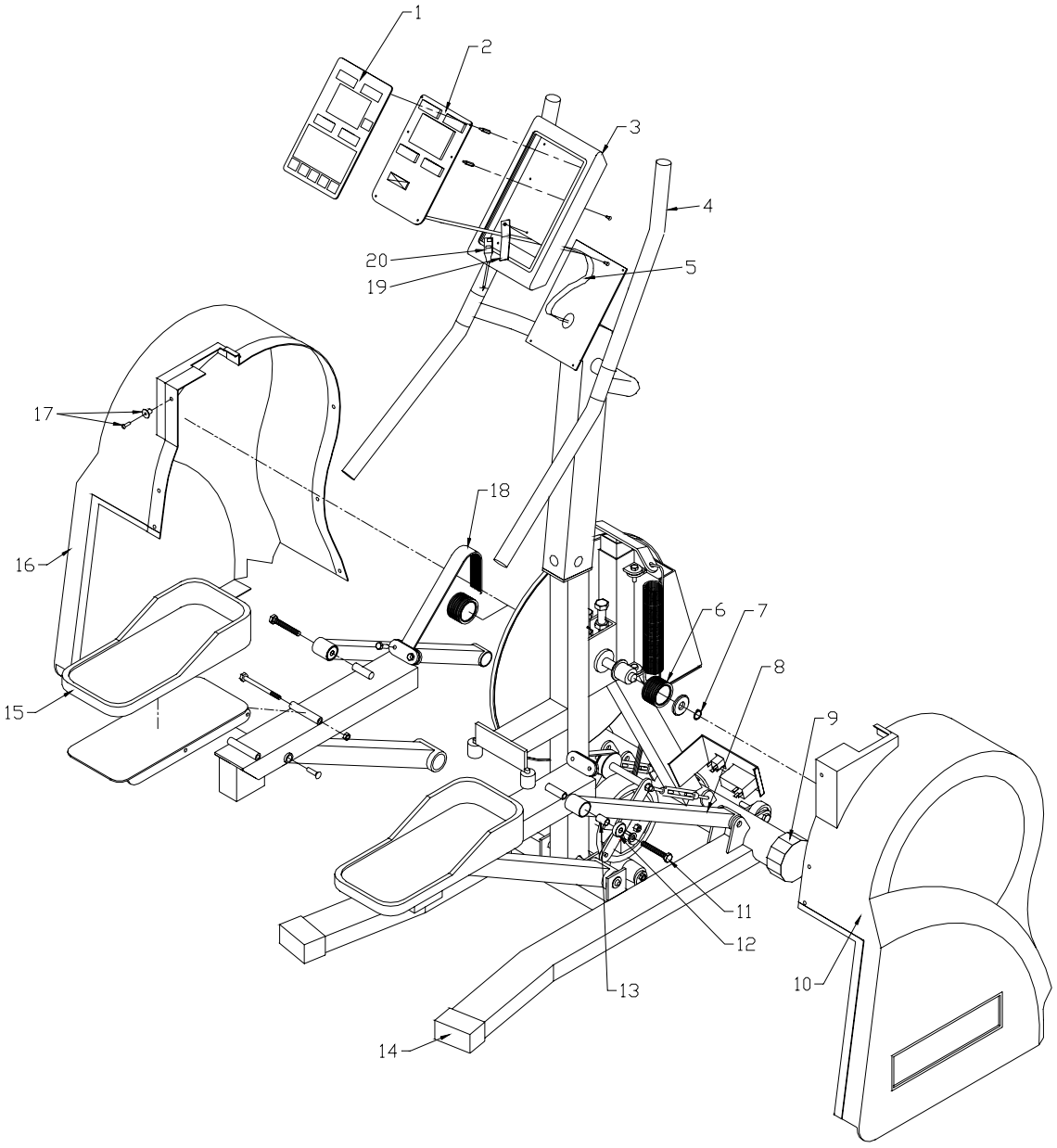


Figure 2 – TC1000 Main Frame (Items 21-43)

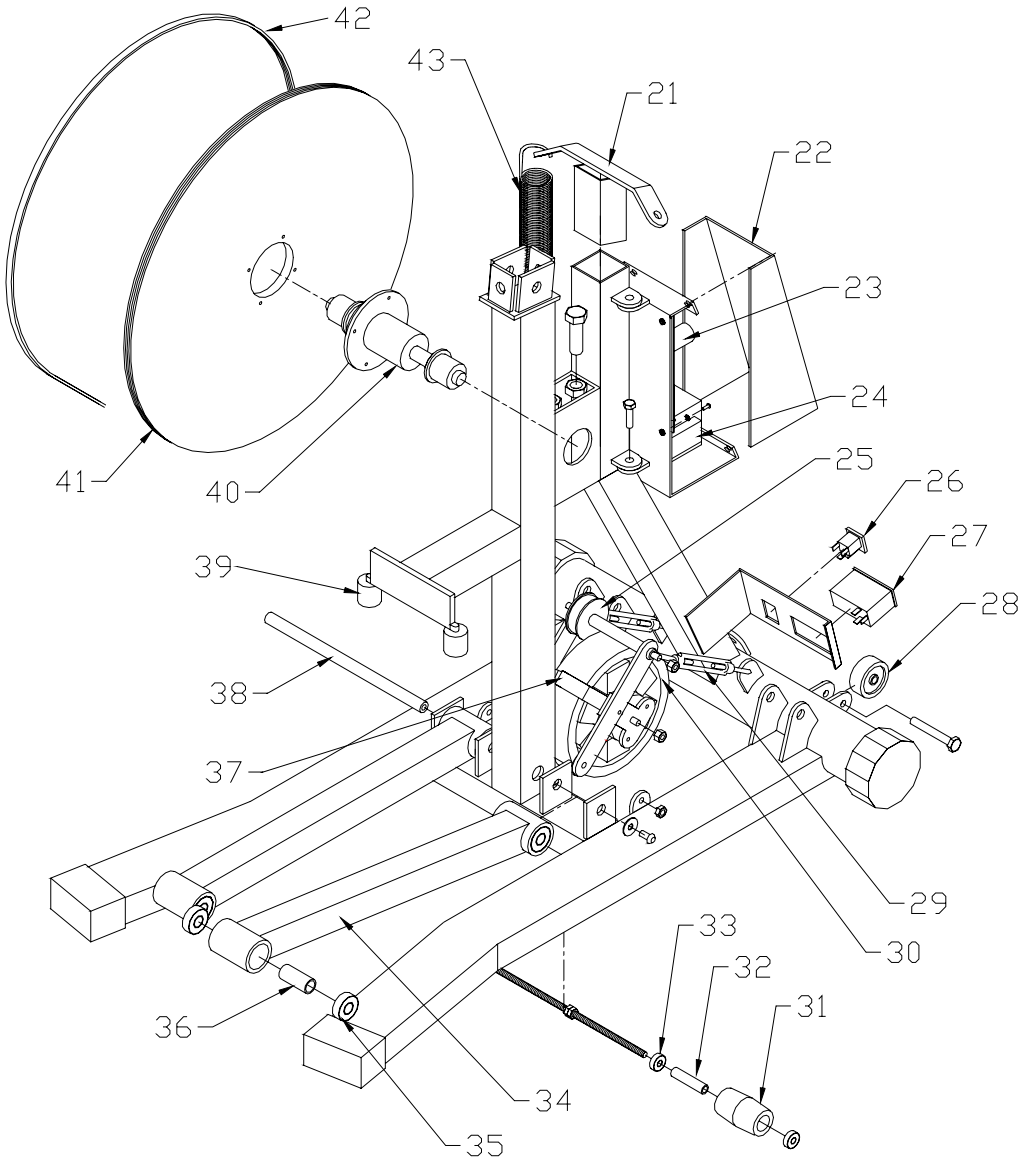

42
43
21
22
23
24
25
26
27
28
39
38
37
41
40
29
30
33
32
31
36
34
35

Figure 3 – Power Entry Module with Fuse Holder

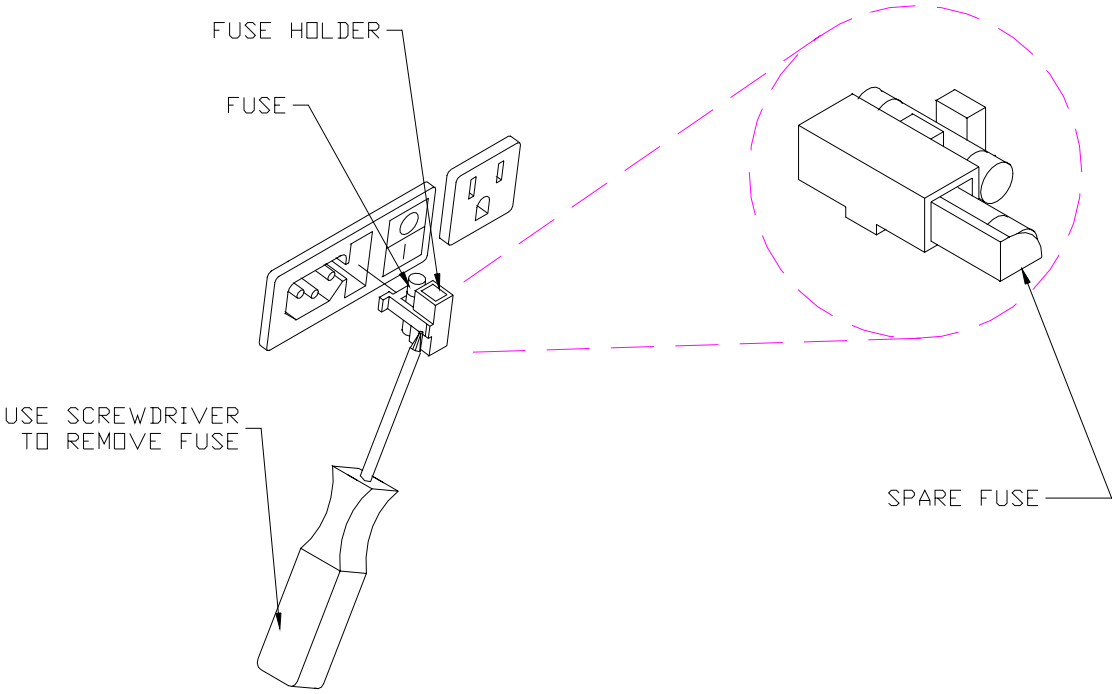
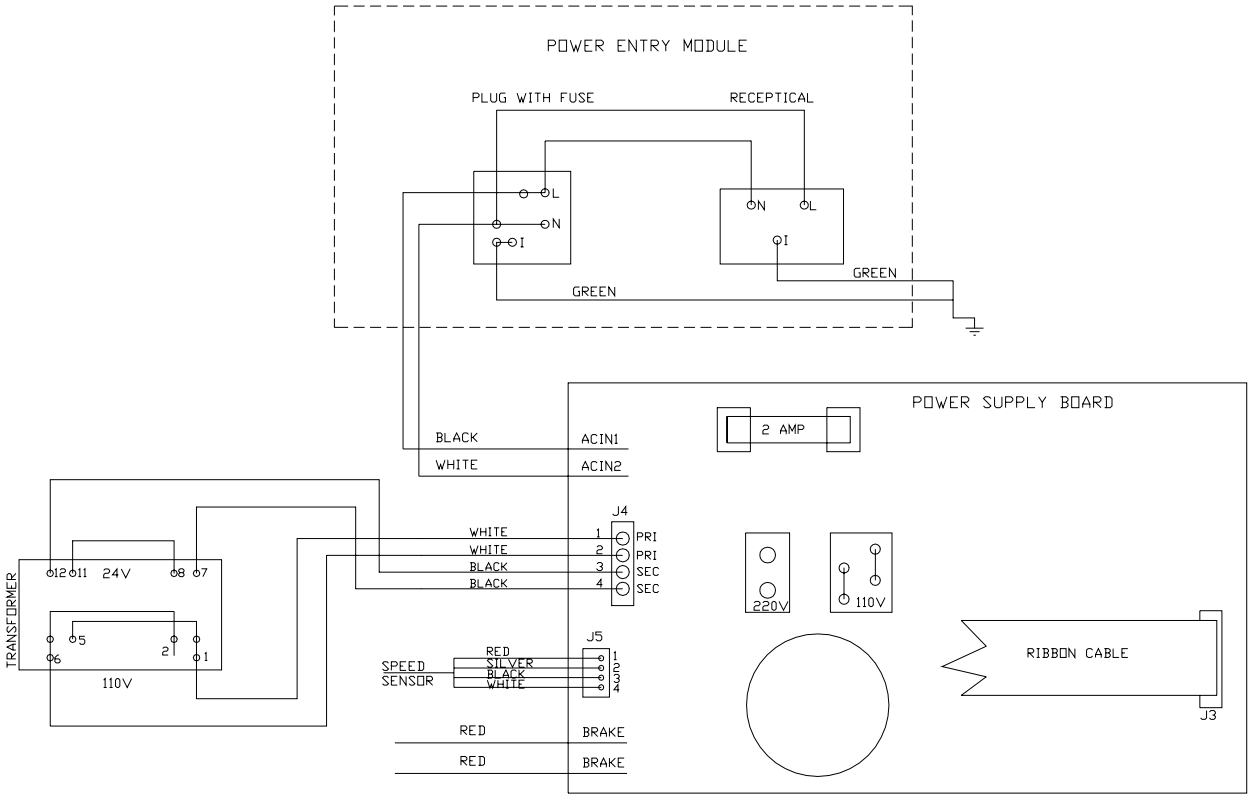


Figure 4 – TC1000 Wiring Diagram



V. TC1000 Parts List

Item	Description	Part No.	Qty.
1	overlay/switch panel	65112	1
2	Display board	65110	1
3	Console	65202	1
4	Handgrip set, TC1000	P1368	1
5	cable, ribbon, assy	65120	1
6	Pulley, clutch, roller, assy.	P1375	2
7	Ring, retainer		2
8	Arm, pedal, upper	P1376	2
9	Cap, base, 3", adjustable	70330	2
10	Cover, right, TC1000	P1362	1
11	Bolt, M10x1.5x70		2
12	Bearing, roller, 6200-2z	P1389	8
13	Spacer, arm, upper	P1390	4
14	Cap, base, rectangular	P1377	2
15	Pad, foot, rubber	P1378	2
16	Cover, left, TC1000	P1363	1
17	Screw, fastener, hood, TC1000	P1369	8
18	Belt, pedal, TC1000	P1366	2
19	Bracket, heartrate	A1124	1
20	Board, heartrate, PCB	65160	1
21	Bracket, spring	P1379	1
22	Cover, PSB, TC1000	P1380	1
23	Power supply, (lower), serial	65150S	1
24	Transformer, 24V, 5.4A	65180	1
25	Idler, brake drive, TC1000	P1381	1
26	Recept, PEM, Daisychain	65177	1
27	Module, power entry, RF/EFI	65178	1
28	Wheel, TC1000	P1382	2
29	Turnbuckle	P1383	2
30	Brake, assy.	68300	1
31	Roller, belt, pedal, TC1000	P1393	2
32	Spacer, roller, TC1000	P1394	2
33	Bearing, roller, 608-2SR	P1395	4
34	Arm, pedal, lower	P1384	2
35	Bearing, roller, 6202-2z	P1391	8
36	Spacer, arm, lower	P1392	4
37	Sensor, speed, cable, assy.	A1089	1
38	Shaft, F0.59x10.718	P1385	1

39	Stopper, rubber	P1386	2
40	Shaft, drive, main, assy.	P1387	1
41	Flywheel, TC1000	P1388	1
42	Belt, drive, brake, TC1000	P1367	1
43	Spring, return, pedal, TC1000	P1365	2