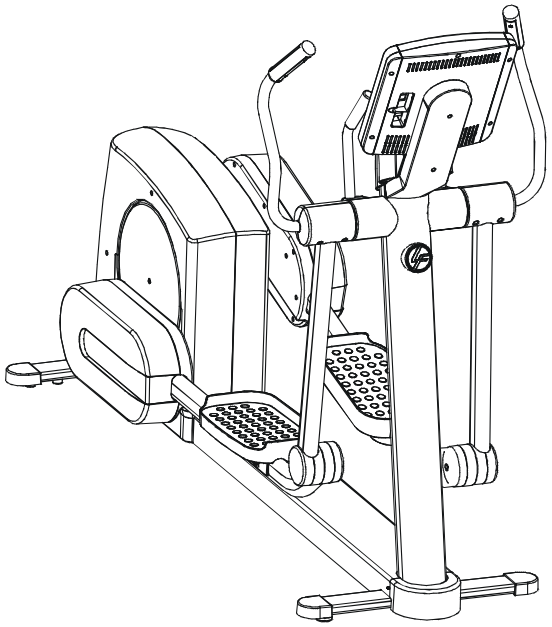
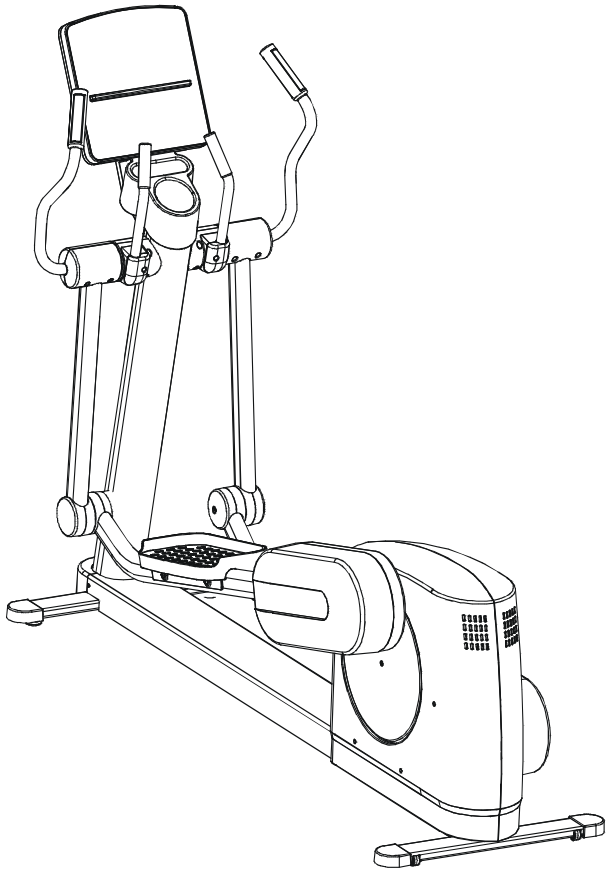
LifeFitness

Fixed Stride Cross-Trainers
90X, 93X, 95Xe and 95Xi





Customer Support Services
SERVICE MANUAL

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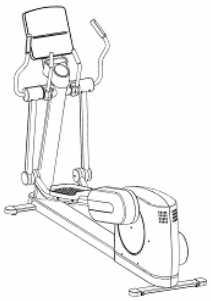


LifeFitness

Quiet Drive Cross-Trainer

INTRODUCTION

INTRODUCTION

This service manual covers Life Fitness Cross-Trainers 93X, 95Xe, and 95Xi with the Quiet Drive module. If an operating problem should arise, turn to the troubleshooting guides and attempt to isolate what is causing the malfunction. The guides are listed by symptoms and contain suggestions regarding the most probable cause of the problem. Once you have pinpointed the source of the problem, turn to the appropriate "How To..." section and review the proper procedures for removing, replacing or adjusting a part. The "How To..." sections are organized by replaceable part (or assembly). Each page lists any special tools required to complete the task. If you do not have a part in stock, call Life Fitness Customer Support Services any Monday through Friday from 8:00 AM to 6:00 PM (Central time). When you place a call, in order to speed our response, please have the following information available for the customer service phone technician:

1. The cross-trainer model number
2. The serial number
3. The symptom of the problem
4. The part name and number to order

When you receive your order, review the appropriate "How To..." section and follow the step-by-step procedures designed to help you install the part quickly and correctly. If you have any questions or comments please phone, mail, or fax us at:

LIFE FITNESS - CUSTOMER SUPPORT SERVICES
5100 River Road, Schiller Park, IL 60176, U.S.A.
Telephone: 847-451-0036, Toll Free: 800-351-3737, FAX: 847-288-370

SPECIAL SERVICE TOOL REQUIREMENTS

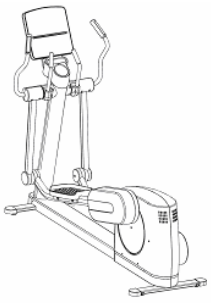
Unless otherwise specified, only basic hand tools are required to perform service procedures outlined in the "How To" section. Some of these standard tools are Phillips and slotted screwdrivers, Torx bits, pliers, a rubber mallet, a pry bar, snap ring pliers (internal and external), English and metric socket wrenches (3/8" or 1/2" drive), and combination, open-end, or box wrenches in both English and metric sizes.

Specialized tools required for some service procedures are listed immediately below their subheadings. Specialized tools must be used to safely and effectively complete the service procedures. Improvisation or attempts to use any other tool could result in personal injury or unnecessary damage to the equipment.

GLOSSARY

The following words and acronyms are commonly referenced in this manual.

Expression	Meaning
Connectors	Electrical plugs used to connect wiring into electrical component.
Display console board	Electronic board for making settings and monitoring physical output.
EEPROM	Electrically Erasable Programmable Read Only Memory.
EEROM	Electrically Erasable Read Only Memory.
LDC	Load Duty Cycle.
LED	Light Emitting Diode --used to show a state of operation
Lifepulse™	Heart rate sensors on hand grips
PCB	Power Control Board --regulates voltage to the alternator, console, and battery.
Polar® Receiver	A device directly in front of the operator that monitors heart rate.
Rear Drive	The area where all the drive components reside.
RPM	Revolution Per Minute --describes the number of times something turns in a minute.



LifeFitness

Quiet Drive Cross-Trainer

TROUBLESHOOTING

TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
No power	Faulty battery	Using multi-meter, verify that the battery voltage is greater than 6 volts DC. Replace battery if voltage is below 6 volts.
	Main cable connection	Verify that the main cable is plugged into both the console and the power control board. Check for loose wires at connectors. Replace as necessary.
	Faulty reed switch	Using a multi-meter, verify the continuity of the reed switch cable assembly (see wiring diagram). Replace the reed switch, if necessary.
	Magnet	Verify the presence of the magnet on the drive pulley. Install a new one if it is missing.
Console lights then fails	Faulty battery	Using a multi-meter, verify that the battery voltage is greater than 6 volts DC. Replace the battery if the voltage is below 6 volts.
	Faulty reed switch	Using a multi-meter, verify continuity of the reed switch cable assembly (see wiring diagram). Replace the reed switch if necessary.
No LEDs or random LEDs lit on display	Faulty battery	Using a multi-meter, verify that the battery voltage is greater than 6 volts DC. Replace the battery if the voltage is below 6 volts.
	Faulty cable connection or damage to main cable	Verify that the main cable is properly plugged into the console. Inspect the main cable for damage or crimps. Using a multi-meter, verify continuity of the main cable.
	Faulty console or power control board	Using a multi-meter, verify 6 volts DC at the console connector –pins 4 (+) and 11 (GND). If voltage is present, replace the console. If not, replace the power control board.
Unit auto starts but does not read RPM	Faulty cable or faulty cable connection	Verify the cable connections at the console, power control board, and alternator. Check for loose wires and/or connectors. Using a multi-meter, verify continuity of all cables associated with these components. Replace any defective cables.

TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Unit does not auto start	Faulty battery	Using a multi-meter, verify that the battery voltage is greater than 6 volts DC. Replace the battery if it is below 6 volts.
	Magnet	Verify the presence of the magnet on the drive pulley. If not present, install a new one.
	No RPM	Operator must be pedaling the unit to activate the auto start feature.
	Faulty cable connection at the console, power control board, or reed switch	Verify that the cable connections at the console, power control board, and reed switch are properly plugged in. Using a multi-meter, verify continuity on all cables. Replace defective cables.
	Faulty power control board	Using a multi-meter, verify continuity on the reed switch cable and the main cable. If both are good, replace the power control board.
No load	Faulty cables, power control board, or alternator	Verify the cable connections at the console, power control board, and alternator. Check for loose wires and/or connectors. Using a multi-meter, verify continuity of all cables associated with these components. Enter diagnostic state 3, execute the field duty cycle test, and increase the duty load. If the load does not increase, replace the alternator.
Noisy operation	Loose or missing hardware	Verify that all hardware is present, has been tightened, and that Loctite 242 is applied where necessary.
	Pedal rollers worn or dirty	Inspect pedal rollers for debris or wear and replace as necessary.
	Debris in pedal roller track	Clean pedal roller track.
	Worn bearings	Replace bearings and associated shaft.
	Alternator	Relieve tension on the alternator belt and spin the flywheel to check for smooth operation. Thumping indicates a faulty alternator. Replace the alternator.

TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Erratic heart rate from Lifepulse™ sensors	Lifepulse sensors dirty from usage or from being cleaned with incorrect solution	Clean Lifepulse sensors with mild soap and water. Replace the sensors if condition warrants.
	User is repositioning hands while acquiring a heart rate reading	Instruct user on proper technique for acquiring heart rate readings.
	Pinched heart rate cable	Remove deadshaft covers and console. Inspect the connection between the user arm heart rate cables and the console heart rate cable. Using a multimeter, verify continuity from the hand sensors to the heart rate cable connector at the back of the console. Check from hand sensor to frame ground to verify presence of shorts. Then check for an electrical short between the hand sensor and the frame. Replace any defective cables.
No heart rate from Lifepulse sensors	Pinched heart rate cable	Remove deadshaft covers and console. Inspect the connection between the user arm heart rate cables and the console heart rate cable. Using a multimeter, verify continuity from the hand sensors to the heart rate cable connector at the back of the console. Check from hand sensor to frame ground to verify presence of shorts. Then check for an electrical short between the hand sensor and the frame. Replace any defective cables.
	Faulty heart rate cable connection	Remove deadshaft covers and console. Inspect the connection between the user arm heart rate cables and the console heart rate cable. Using a multimeter, verify continuity from the hand sensors to the heart rate cable connector at the back of the console. Check from hand sensor to frame ground to verify presence of shorts. Replace any defective cables.
	Inadequate contact with Lifepulse sensors	Full contact must be maintained on all Lifepulse sensors in order to obtain a heart rate reading.
	Faulty Lifepulse sensors	Replace the sensors
	Faulty console board	Replace the console board

TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
No heart rate reading using Polar® transmitter[1]	Transmitter is incorrectly positioned or is not making good contact with the body	Reposition the transmitter on the chest. Moisten the transmitter for better skin contact and a stronger signal.
	User is out of monitoring range	User must be within three feet (one meter) of the Polar receiver.
	Telemetry option turned off	Verify in Diagnostics that Telemetry is turned on.
	Faulty connection between console and receiver	Verify that the Polar heart rate cable is properly connected. Using a multi-meter, verify continuity between the receiver jack and the cable connector at the console. Replace the cable if necessary.
	Faulty receiver	If possible, swap the receiver with a known working unit. Replace the transmitter if necessary.
	Faulty console board	Replace the console board
Erratic heart rate using the Polar transmitter[1]	Cross talk from another transmitter. Possible interference from other electronic devices	Position the cross-trainer at least three feet (one meter) from other units with Telemetry.
	Faulty console board	Replace the console board.
Screen is blank	LCD backlight	Reconnect the LCD touchscreen. Replace if necessary.
	Faulty backlight power inverter	Reconnect the backlight inverter. Replace if necessary.
	LCD screen failure	Reconnect the LCD touchscreen. Replace if necessary.
	Problem on the single board computer	Replace the single board computer.
Channels do not change	Keypad malfunction	Run the keypad test in Diagnostics.
	Defective interface PC board	Replace the interface PC board
Sound does not change	Keypad malfunction	Run the keypad test in Diagnostics.
	Defective interface PC board	Replace the interface PC board

[1] on Telemetry-equipped units only

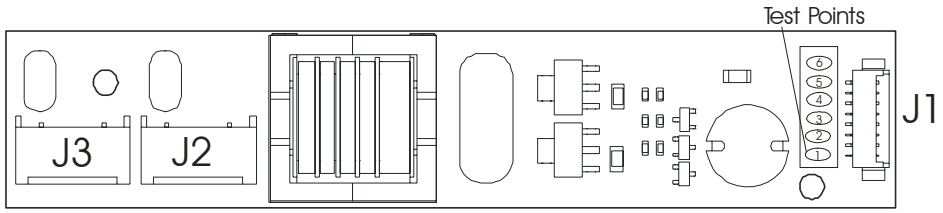
TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
No sound	Faulty headphones	Test with known good headphones. Replace headphones if necessary
	Faulty headphone jack assembly	Replace the headphone jack assembly
	Faulty cable to headphone jack assembly	Replace the headphone jack assembly
	Problem on the single board computer	Replace the single board computer
	Problem on the interface board	Replace the interface board
	Incorrect air/cable setting	Follow the setup procedures in the Operation Manual
Unable to receive any channels when using cable	Incorrect air/cable setting	Follow the setup procedures in the Operation Manual
	Faulty coax cable	Replace coax cable
	Coax cable unplugged	Check coax cable connection.
Snow on the screen	Incorrect air/cable setting	Follow the setup procedures in the Operation Manual.
	Faulty coax cable	Replace the coax cable.
Screen is dark	LCD backlight	Reconnect the LCD touchscreen. Replace if necessary.
	Faulty backlight power inverter	Reconnect the backlight power inverter. Replace if necessary.
Screen does not respond to touch	Touchscreen failure	Reconnect the touchscreen. Replace if necessary.
	Problem with the single board computer	Replace the single board computer.
Wrong buttons activate when the screen is touched	Touchscreen incorrectly calibrated	In Diagnostics, calibrate the touchscreen. Replace the touchscreen if necessary.

TROUBLESHOOTING GUIDE – TESTING THE INVERTER BOARD

Special service tools required: multimeter

CAUTION! HIGH VOLTAGE AT CONNECTORS J2 AND J3!



1. Remove the entertainment system console from the unit.
2. Remove the rear cover from the console assembly.
3. Plug in the power supply and remote control to the console.
4. Press the "Power On" key on the remote control.
5. Test No. 1:
6. Place the red lead from the multi-meter onto Test Point 1 and the black lead onto Test Point 3. Voltage should be 12 Vdc (+/- 0.5 V).
7. Test No. 2:
8. Place the red lead from the multi-meter onto Test Point 5 and the black lead onto Test Point 3. Voltage should be 12 Vdc (+/- 0.5V).

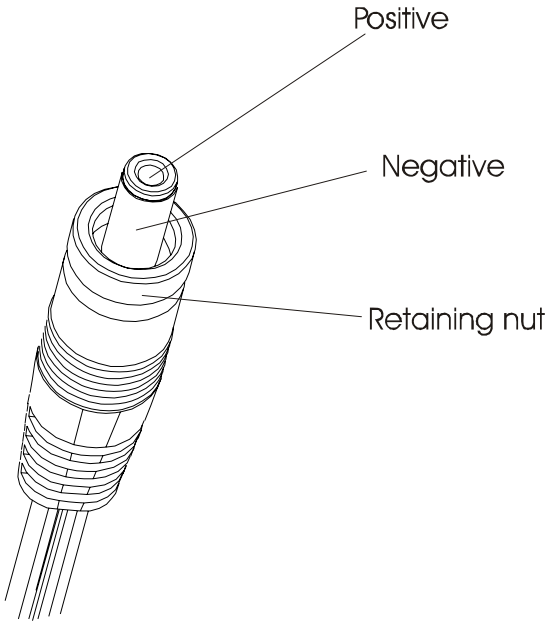
PROBLEM	SOLUTION
No voltage on Test Point 1	Replace cable, remote, or main PC
Voltage present on Test Point 1	Replace the inverter board.
Voltage on Test Points 1 and 2 but no	Replace the cable between the inverter

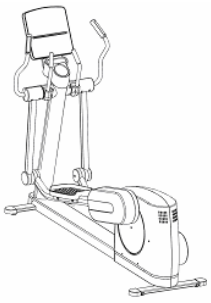
TEST POINT	VOLTAGE	DESCRIPTION	PIN NUMBER
1 & 2	12 Vdc	VIN	1 & 2
3 & 4	O Vdc	Ground	3 & 4
5	12 Vdc	Enable	5
5	0 Vdc	Disable	5
6	Not used	Not used	6, 7, 8

TROUBLESHOOTING GUIDE – TESTING THE POWER SUPPLY CABLE

Special service tools required: multi-meter

1. Unscrew the RETAINING NUT securing the POWER CABLE PLUG.
2. Remove the CABLE.
3. Using a multi-meter, touch the red lead to the POSITIVE (center) area on the CABLE.
4. Touch the black lead to the NEGATIVE area (the outside of the inner cable).
5. The meter should read 12 Vdc.





LifeFitness

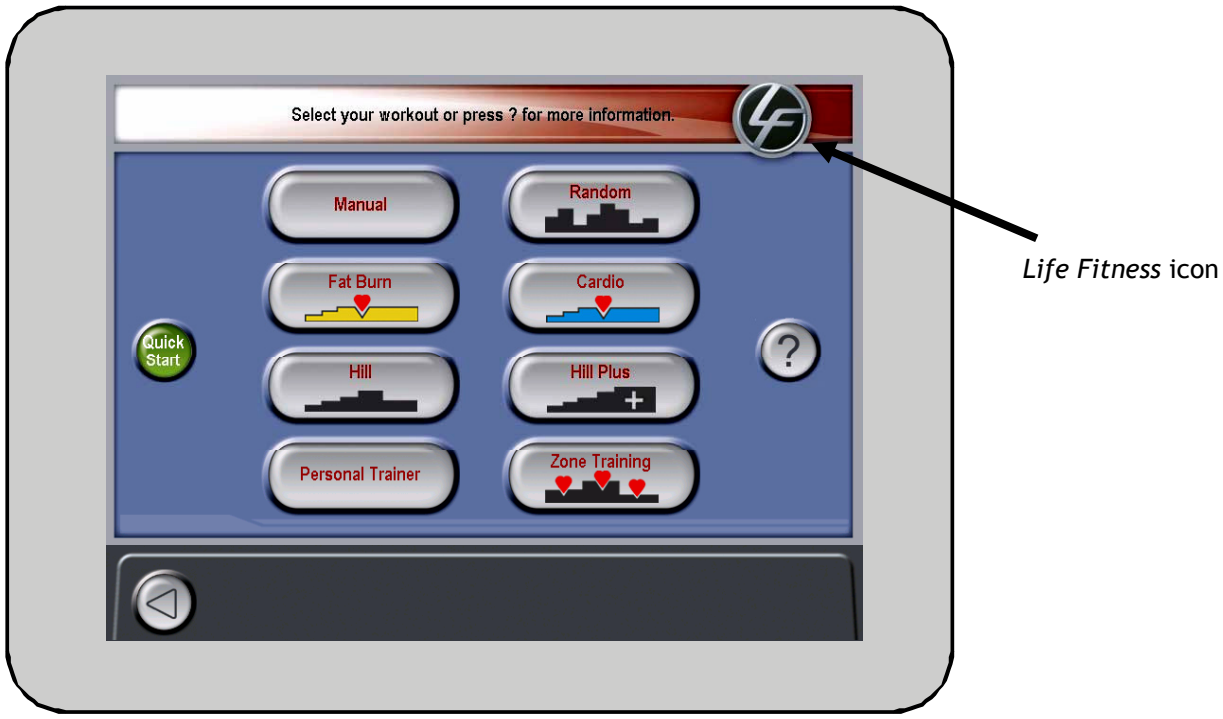
Quiet Drive Cross-Trainer

LCD DIAGNOSTICS

WELCOME SCREEN

The welcome screen appears immediately after power-up and when the unit is not in use. Touch the screen to bring up the workout selection screen.

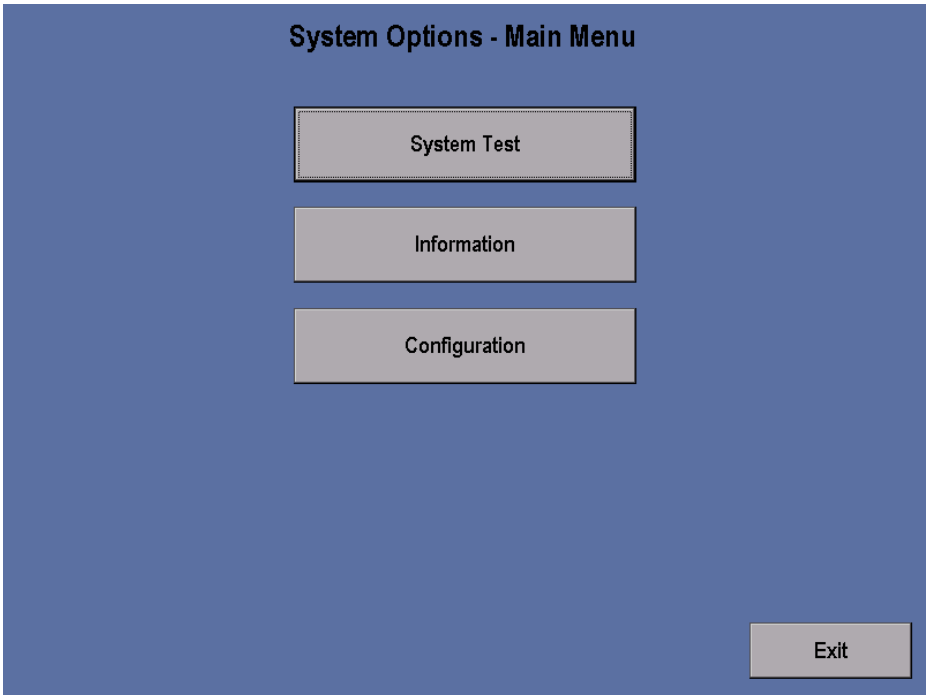
WORKOUT SELECTION SCREEN



To enter the systems option menu from the workout selection screen, hold down the COOLDOWN key and double-tap the *Life Fitness* icon.

After entering the system options, the main menu will appear. Refer to the operator's manual for more information about these programs.

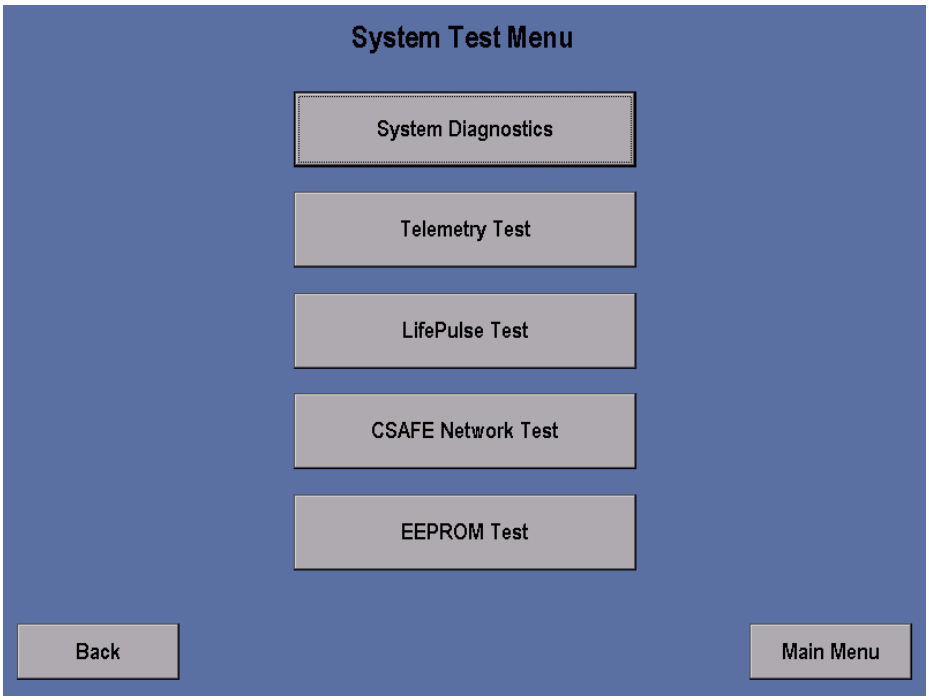
SYSTEM OPTIONS – MAIN MENU



The System Options – Main Menu selections allow access to the system test menu, information menu, and configuration menu.

Press the Exit key to return to the workout selection screen.

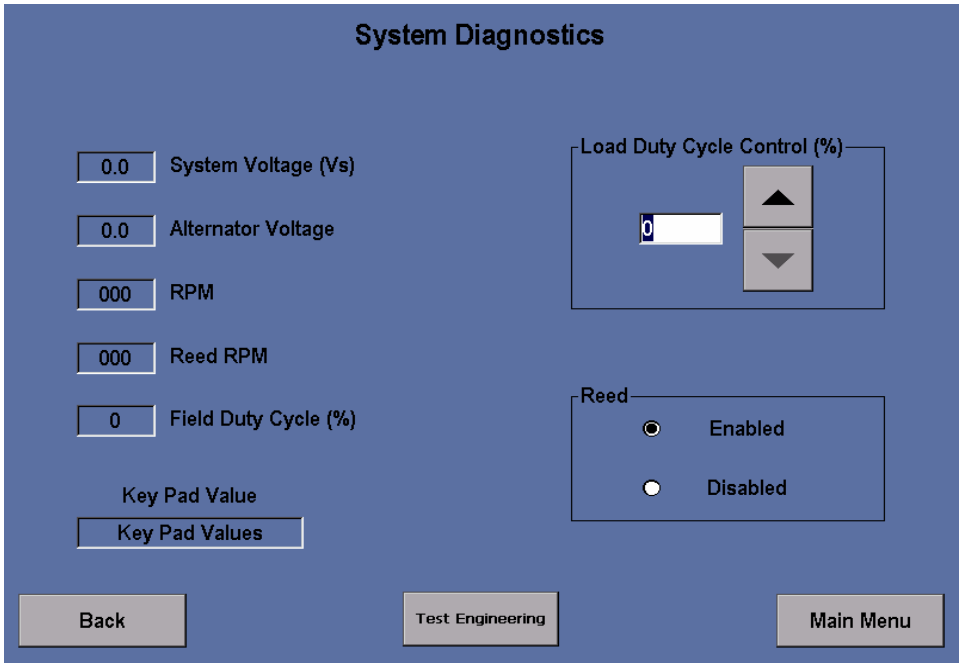
SYSTEM TEST MENU



The System Test menu allows access to the systems diagnostics, telemetry test, Lifepulse Test, CSAFE network test, and EEPROM test screens.

Press the Exit key to return to the system options – main menu screen.

SYSTEM DIAGNOSTICS

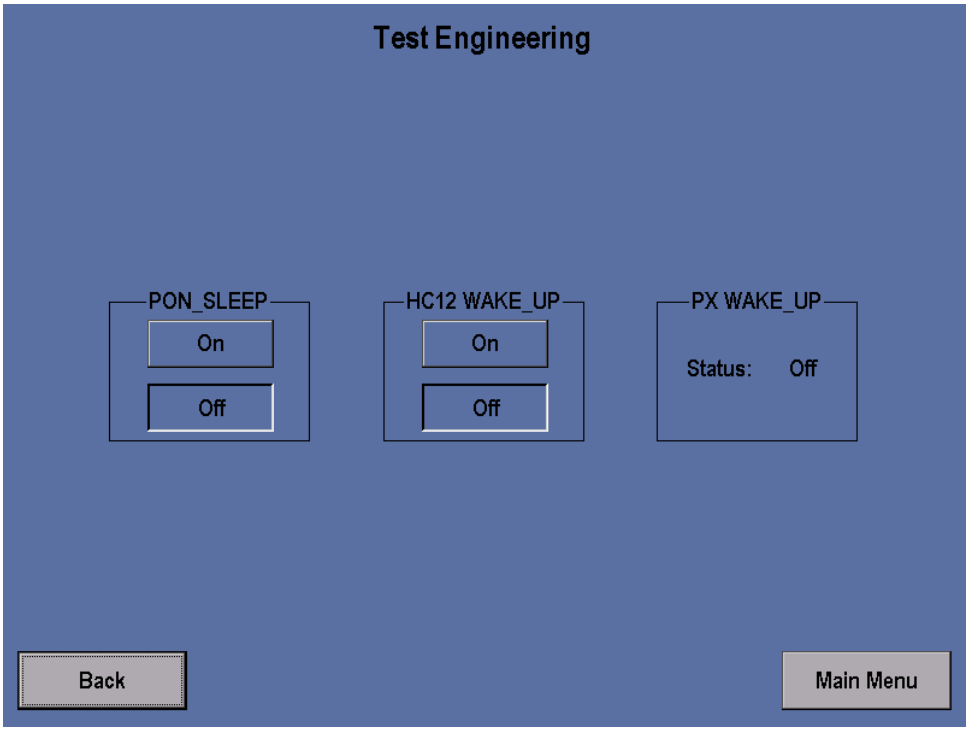


The System Diagnostics screen allows access to this information:

SYSTEM VOLTAGE	system voltage (at the console)
ALTERNATOR VOLTAGE	voltage output from the alternator
RPM	pedal lever RPMs from the alternator
REED RPM	pedal lever RPMs from the Reed switch
FIELD DUTY CYCLE %	the percentage the alternator is being activated to produce a load (the higher the number, the harder it is to pedal)
KEYPAD VALUE	displays an acknowledgement when a key is pressed on the console
LOAD DUTY CYCLE %	controls the current Load Duty Cycle (can be adjusted using the UP ARROW and DOWN ARROW keys)
REED	indicates whether the Reed switch is enabled or disabled (can be toggled by pressing the corresponding circle)
TEST ENGINEERING	this test is for engineering purposes only (*i.e.*, not applicable for servicing)

To exit system diagnostics, press the Main Menu button, then press the Exit button. To return to the system test menu, press the Back key.

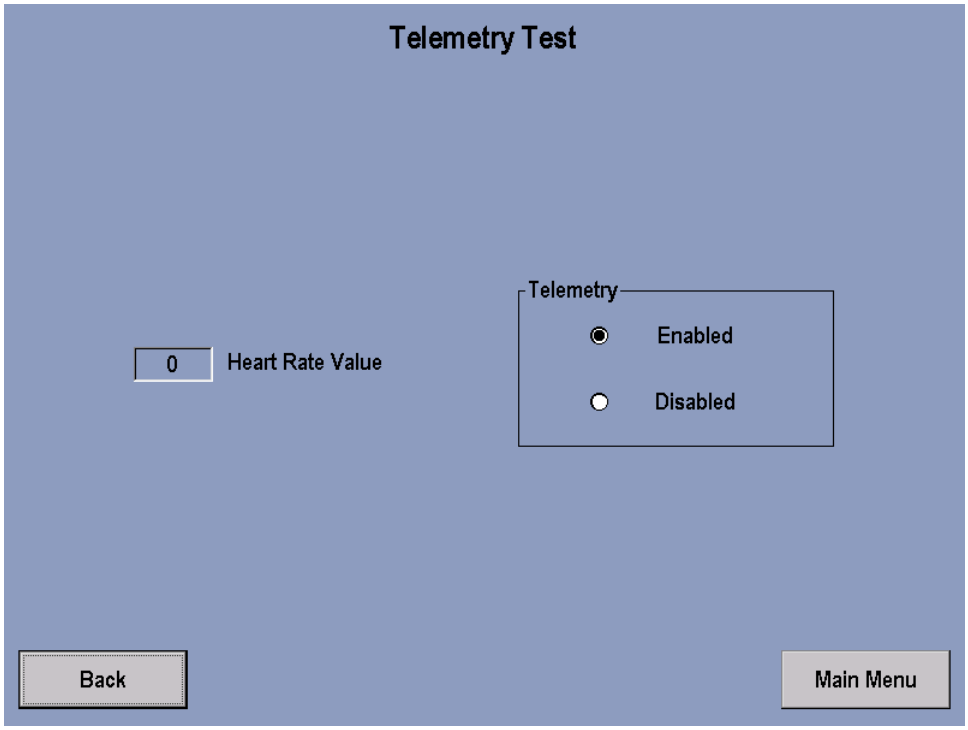
TEST ENGINEERING



All status windows on this screen should display off and should be changed only at the direction of Life Fitness Customer Support.

Press the Back key to return to the system diagnostics screen.

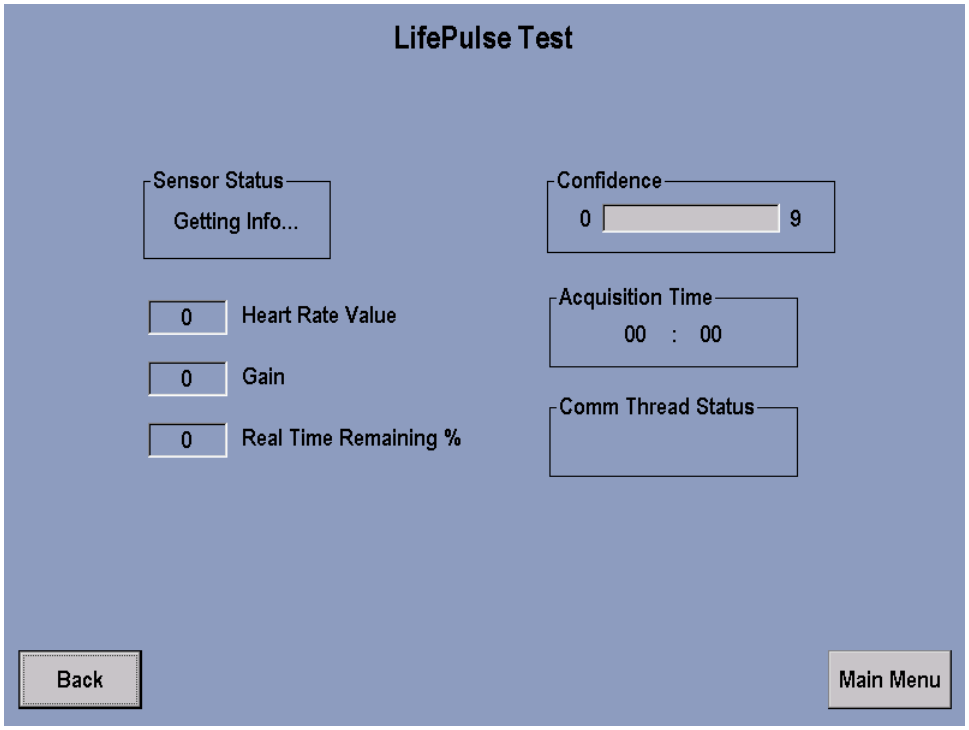
TELEMETRY TEST



The circles in the telemetry box indicate whether telemetry is enabled or disabled. Telemetry can be toggled on and off by pressing the corresponding circle. When telemetry is enabled, the user's heart rate is displayed in the heart rate value window.

Press the Back key to return to the previous screen or the Main Menu key to return to the unit's main menu.

LIFEPULSE™ TEST



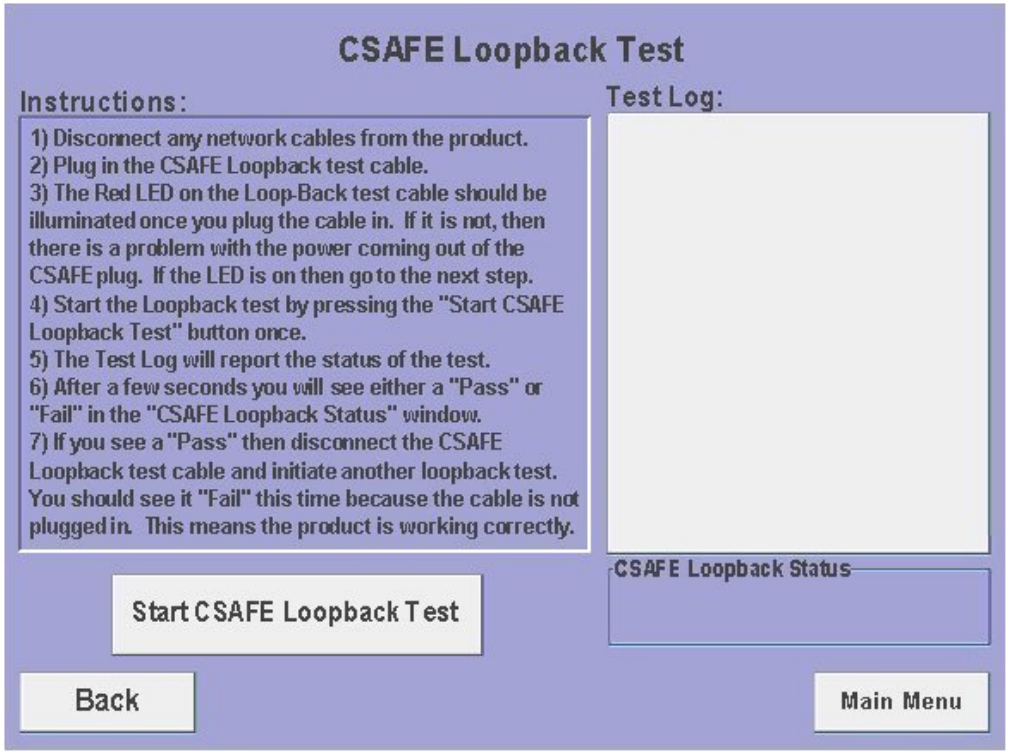
Lifepulse can be tested manually. The system displays a "hands on" reading when it detects the user's hands on the Lifepulse sensors.

Detecting both left and right "hands on" conditions activates a timer (displayed in the acquisition time window). The timer stops when a reading appears in the heart rate value window.

The gain and confidence level values are displayed in the appropriate windows. Gain indicates the strength of the heart rate signal the unit is receiving. A low number indicates a strong signal, a high number indicates a weak signal. Confidence levels range from 0 to 9 (the higher the number, the higher the confidence).

Press the Back key to return to the previous screen or the Main Menu key to return to the unit's main menu.

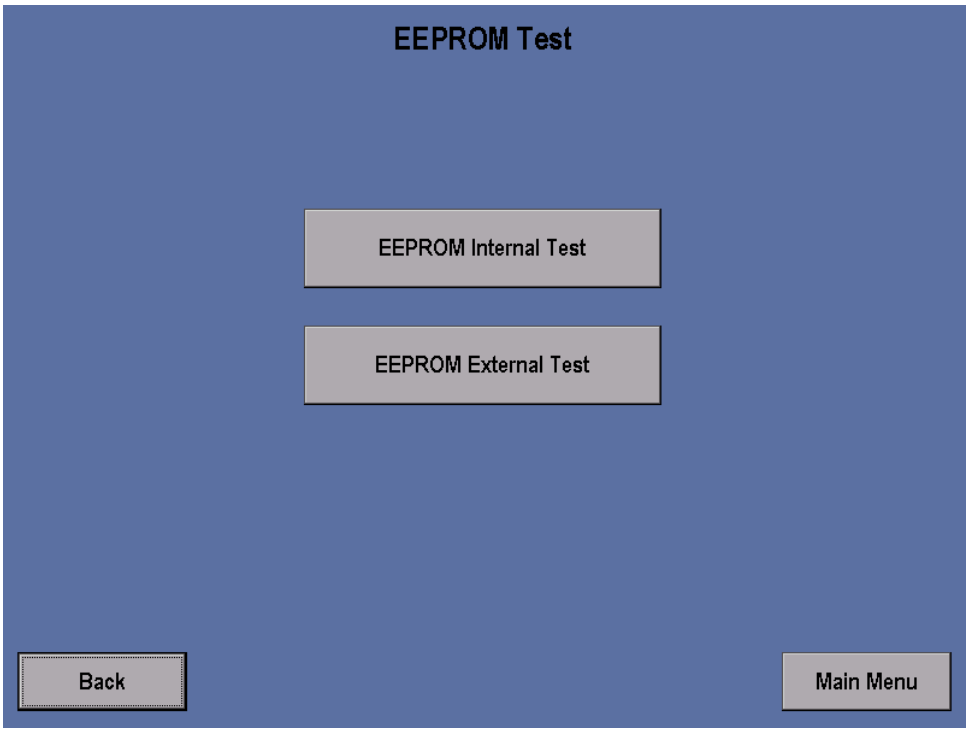
CSAFE NETWORK TEST



This test will allow the user to verify that the cross-trainer's connectivity features are functioning properly. Follow the on-screen instructions to perform the CSAFE loopback test. The responses "Ready," "Running," and either "Pass" or "Fail" will appear in the Test Log window.

Press the Back key to return to the previous screen or the Main Menu key to return to the unit's main menu.

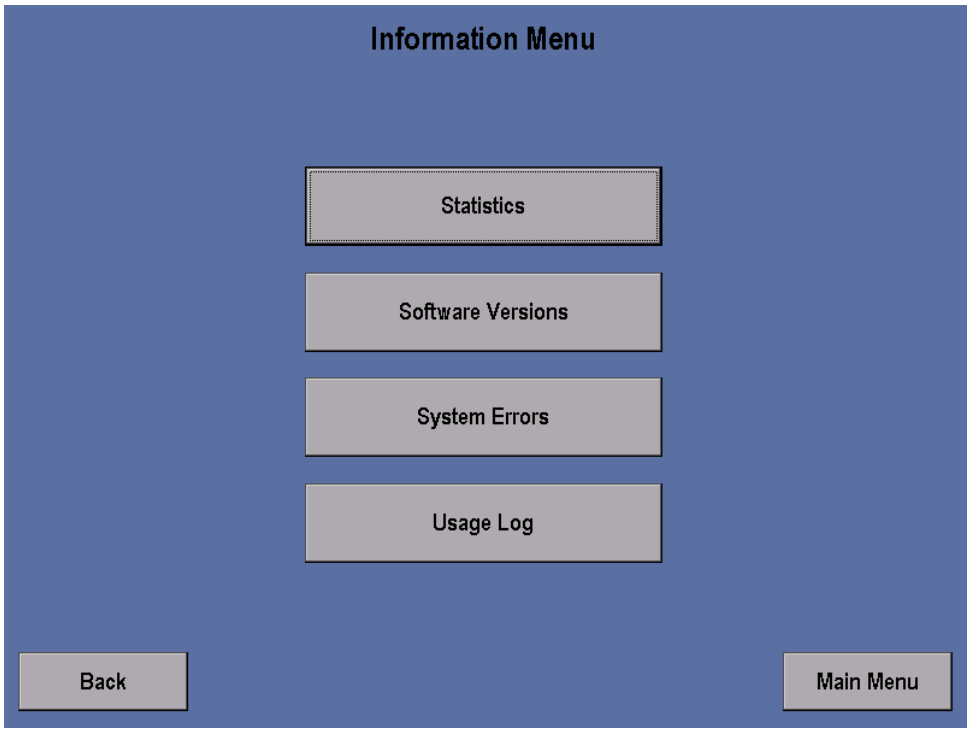
EEPROM TEST



Press the EEPROM Internal Test key to test the EEPROM on the single board computer. Press the EEPROM External Test key to test the interface board's EEPROM. In either test, a "PASS" message indicates a good EEPROM.

Press the Back key to return to the previous screen. Press the Main Menu to return to the unit's main menu.

INFORMATION MENU

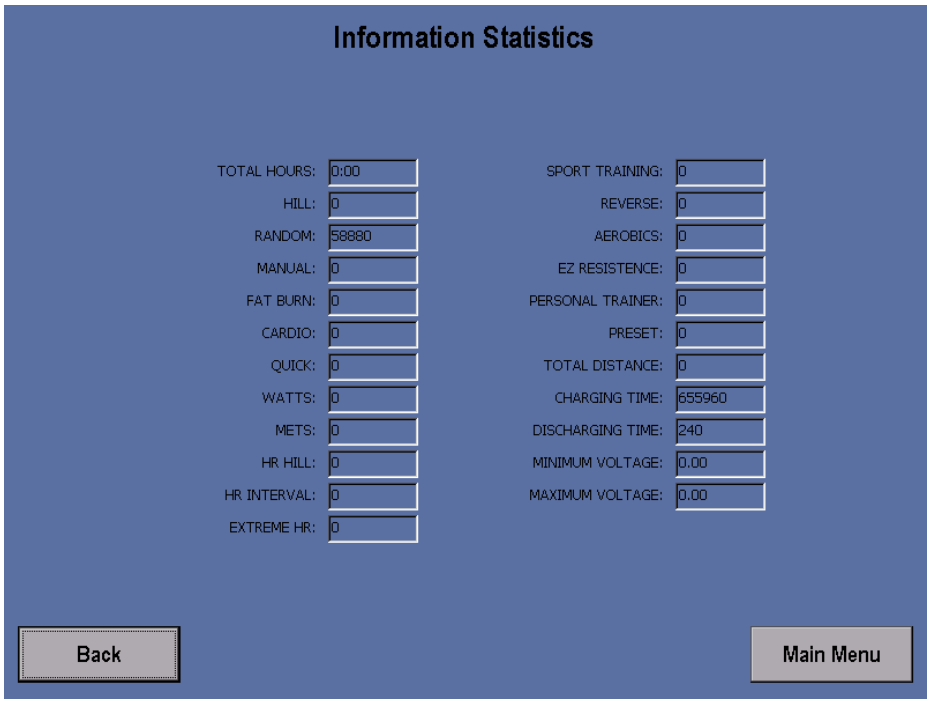


The Information Menu screen allows access to this information:

STATISTICS	historical data regarding individual workout program usage and critical system power levels
SOFTWARE VERSIONS	information about current software versions
SYSTEM ERRORS	historical information on system errors encountered during operation
USAGE LOG	historical information regarding pedal speeds and user weights

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

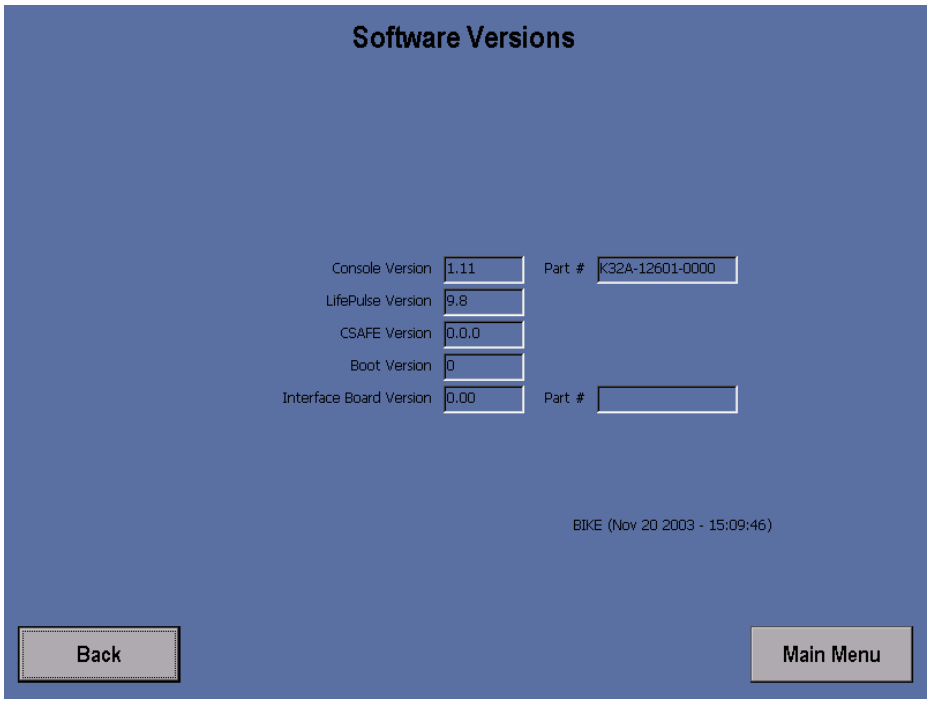
INFORMATION STATISTICS



Statistics such as total hours of use and hours of use per program can be seen on this screen.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

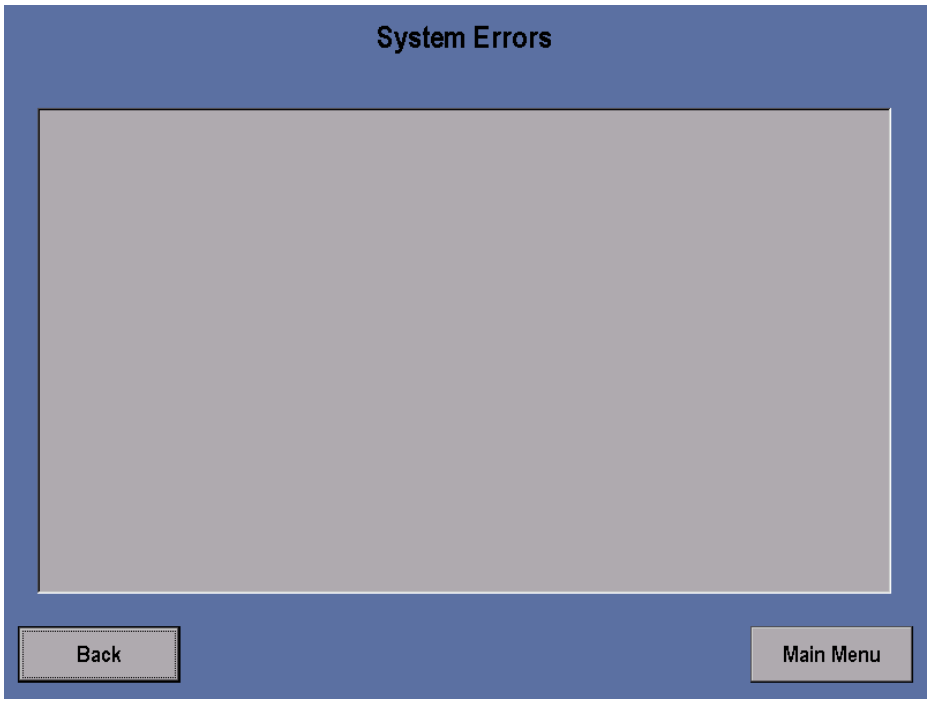
SOFTWARE VERSIONS



This screen displays the unit's current software versions and, where applicable, their corresponding Life Fitness part numbers.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

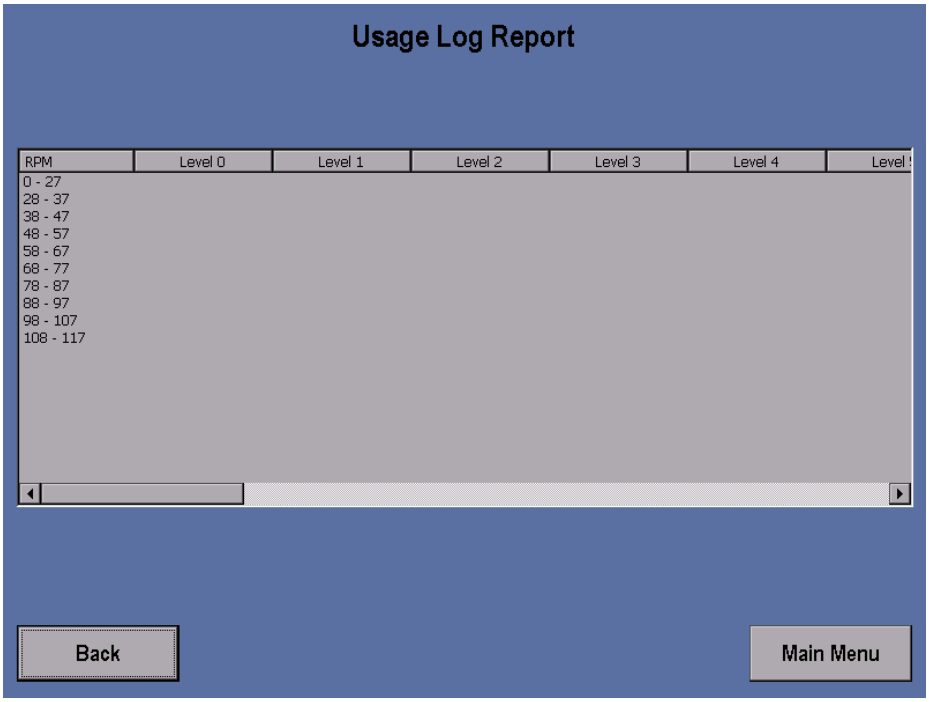
SYSTEM ERRORS



System errors that have been logged into the unit's memory can be seen on this screen.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

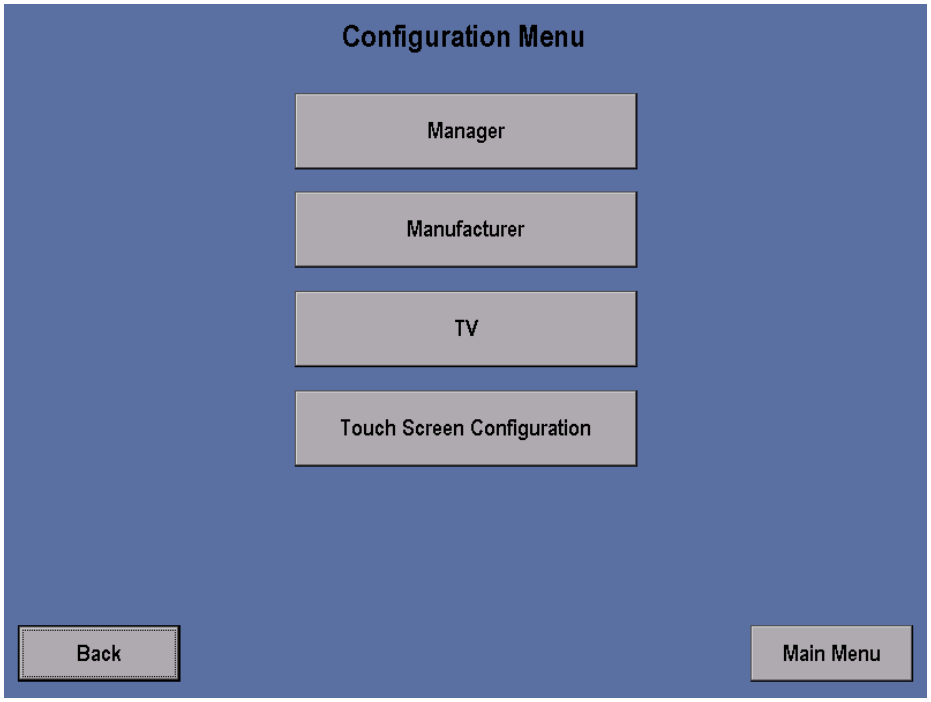
USAGE LOG REPORT



The usage log report allows the user to see detailed information regarding the RPMs used at various levels.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

CONFIGURATION MENU

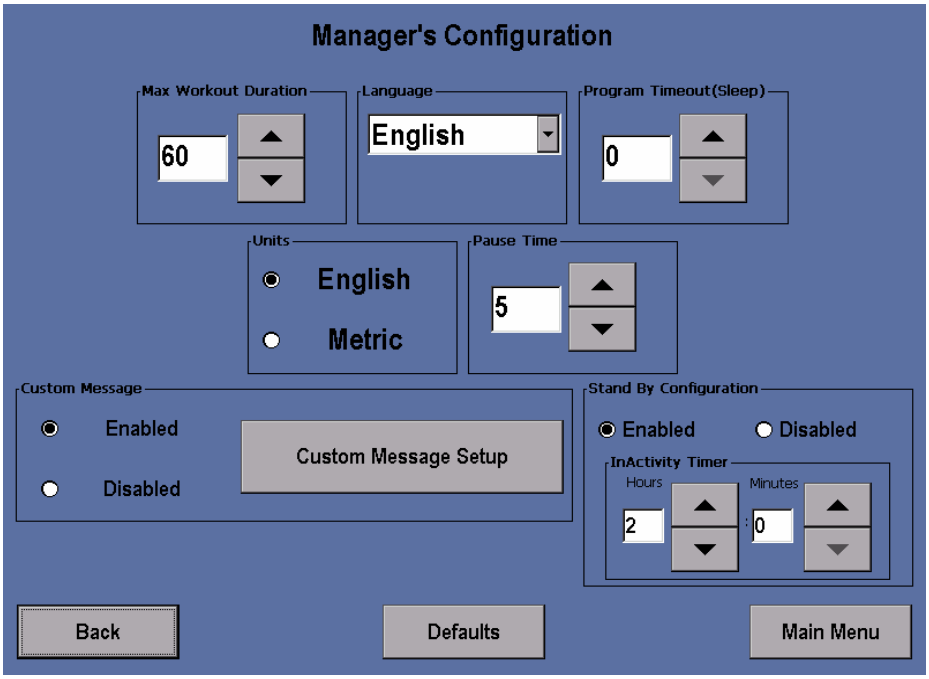


The Configuration Menu screen allows access to this information:

MANAGER	supervisory workout parameter setup
MANUFACTURER	critical system parameter setup
TV	television configuration
TOUCHSCREEN CONFIGURATION	touchscreen proximity calibration

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

MANAGER'S CONFIGURATION

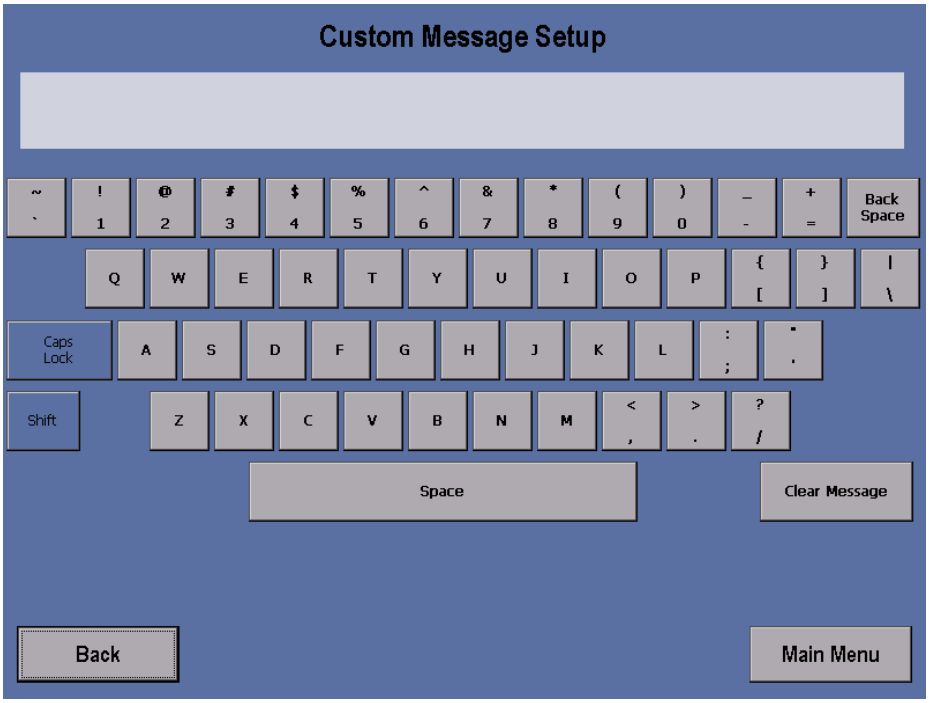


The Configuration Menu screen allows access to this information:

MAXIMUM WORKOUT DURATION	Allows the manager to set the maximum workout time between 1 and 99 minutes (the default is 60 minutes). Times can be modified with the UP ARROW and DOWN ARROW keys.
STANDBY CONFIGURATON	Sets the amount of inactive time (from 0 to 24 hours) required before the LCD screen backlight goes off. The backlight comes on when the unit detects activity.
PROGRAM TIMEOUT	Sets the amount of time (from 20 to 255 seconds) the user can go without touching the screen before the console resets to the Welcome screen. The default is 60 seconds.
PAUSE TIME	Sets the amount of time (between 1 and 99 minutes) the unit can be inactive before it reverts to the Welcome screen. The default is 60 minutes.
UNITS	Allows the user to choose between English and metric units.
LANGUAGE	Allows the user to choose among eleven languages (English, Portuguese, Spanish, Dutch, Japanese, French, Italian, Chinese, Korean, Russian, and German)
CUSTOM MESSAGE SETUP	Allows a custom message to be displayed on the Welcome screen.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

CUSTOM MESSAGE SETUP



This section allows the user to display a custom message on the welcome screen.

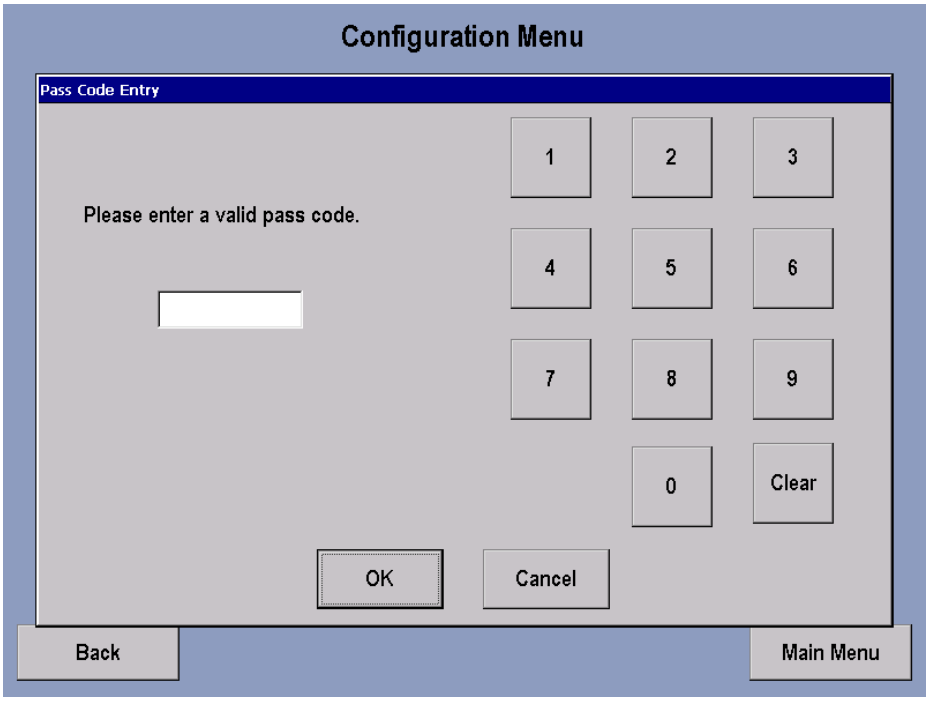
To create or change a custom message: enter the Manager's Configuration, Enable Custom Message, and Select Custom Message Setup. Enter the message using the on-screen keyboard shown in the illustration. The shift key is used to input capital letters and special characters. The message will scroll across the top of the screen, giving real-time feedback

To accept a custom message, press the Main Menu button.

To erase a custom message, press the Clear Message button.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

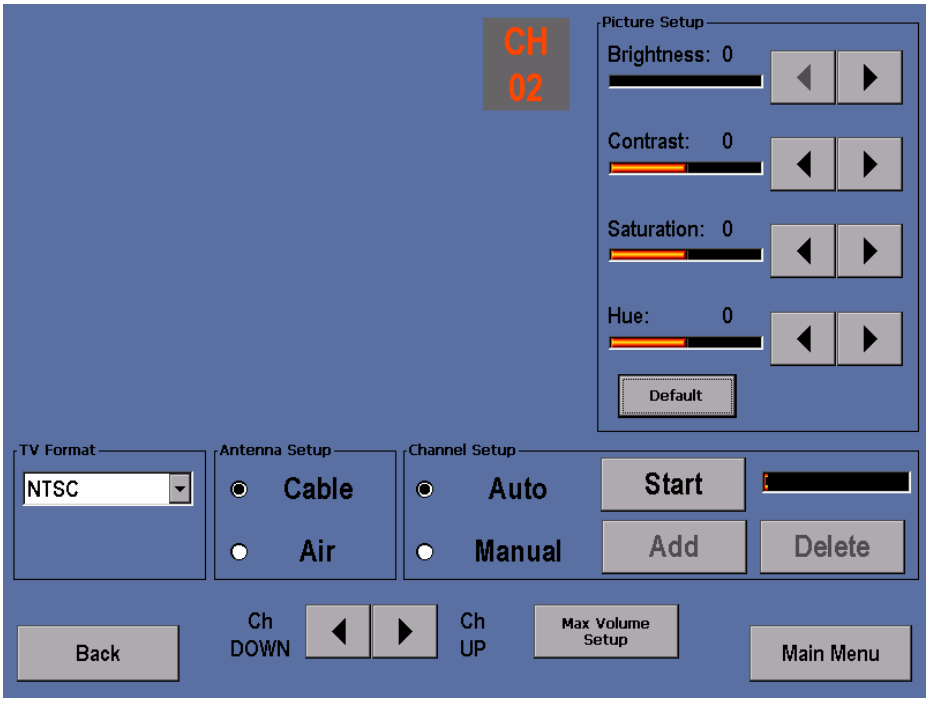
MANUFACTURER'S CONFIGURATION MENU



This screen is available only to certified Life Fitness technicians.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

TV SETUP



The TV Setup mode allows adjustment of the screen's brightness, contrast, saturation, and hue. TV format, antenna setup, and channel setup are also chosen here.

To set up channels: In Channel Setup, select Auto, then press Start.

To delete an unwanted channel: In Channel Setup, select Manual, then use the CH Down and CH Up controls to change channels. Press Delete to delete a channel, then press Auto to return Channel Setup to Auto.

To restore a channel: In Channel Setup, press Manual, then use the CH Down and CH Up controls to change channels. Press Add to add a channel, then press Auto to return Channel Setup to Auto.

continued...

TV SETUP - CONTINUED

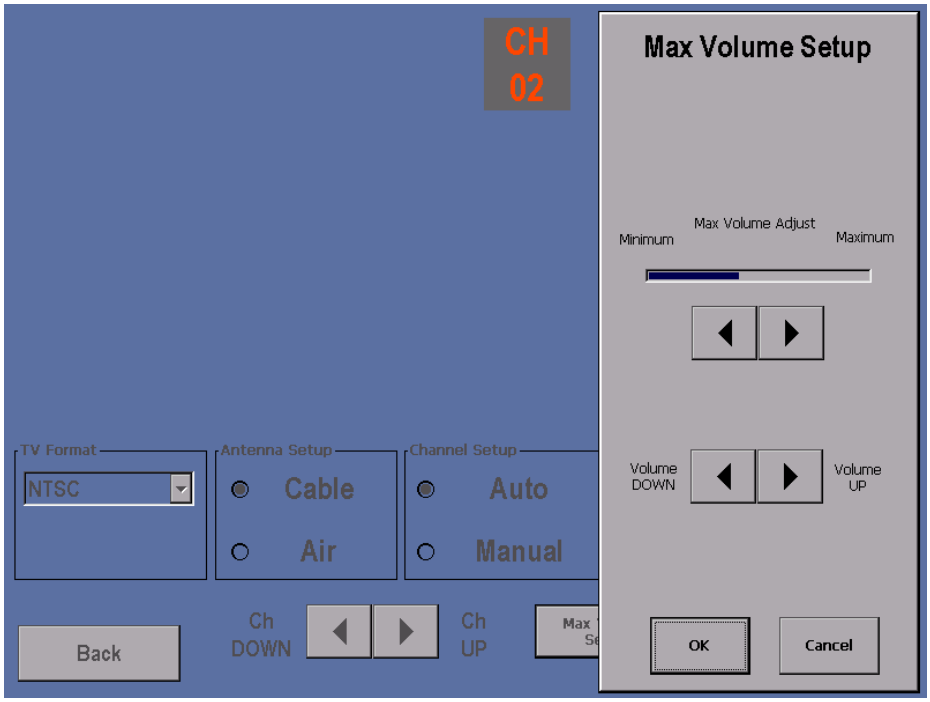
To adjust brightness, contrast, saturation, and hue: Use the corresponding Left Arrow and Right Arrow buttons. To return the unit to default settings, press Default[1].

Use the Max Volume Setup key to adjust the unit's volume.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

[1] The default settings are brightness, 180; contrast, 71; saturation, 64; and hue, 0.

MAX VOLUME SETUP



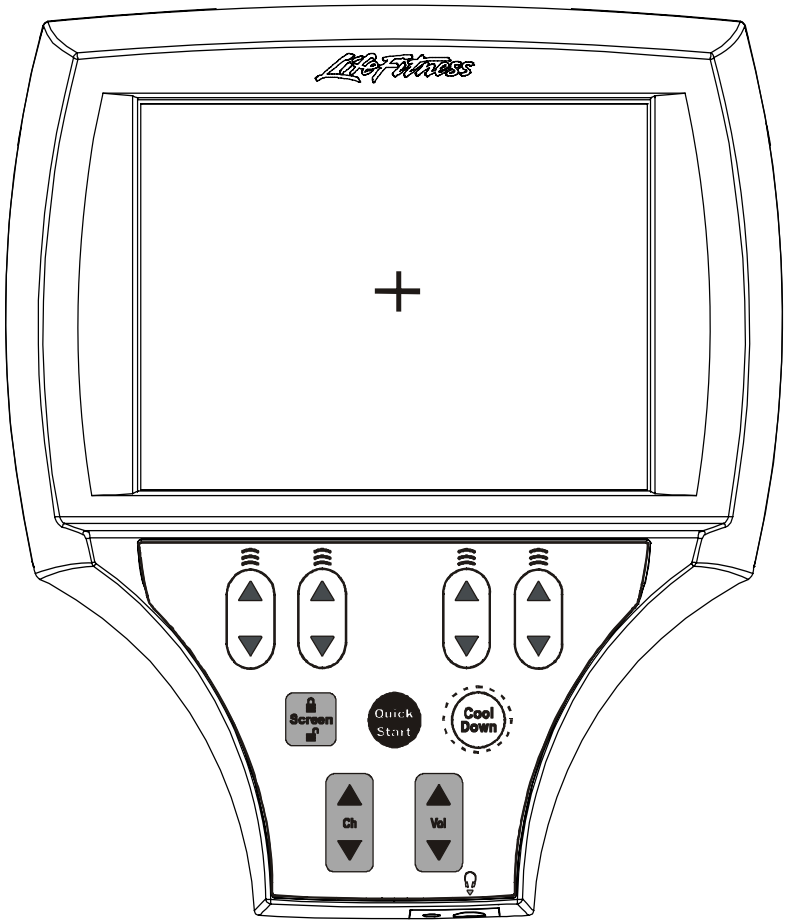
The unit's volume is adjusted at this screen. Headphones must be used for this function.

The upper set of arrow keys adjust the unit's volume capacity. This allows managers to compensate for the ambient noise levels. The maximum volume returns to this default after each workout.

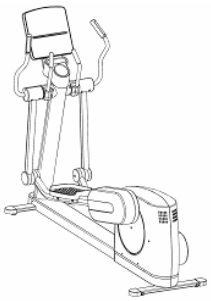
The lower pair of arrow keys control the unit's current volume. The unit resets to the mid-range volume corresponding to the maximum volume setup after each session.

Press the Back key to return to the systems options – main menu screen. Press the Main Menu key to return to the unit's main menu.

TOUCHSCREEN CONFIGURATION



Entry into this screen will allow the user to reconfigure the touchscreen. The display will show a blank screen with a plus sign in the middle as shown in the illustration above. Follow the directions that appear at the top of the screen, pressing on the plus sign as it moves to the four corners of the screen. If the user's press does not register, the procedure will have to be repeated. This configuration state will be exited automatically when the screen has been calibrated successfully.

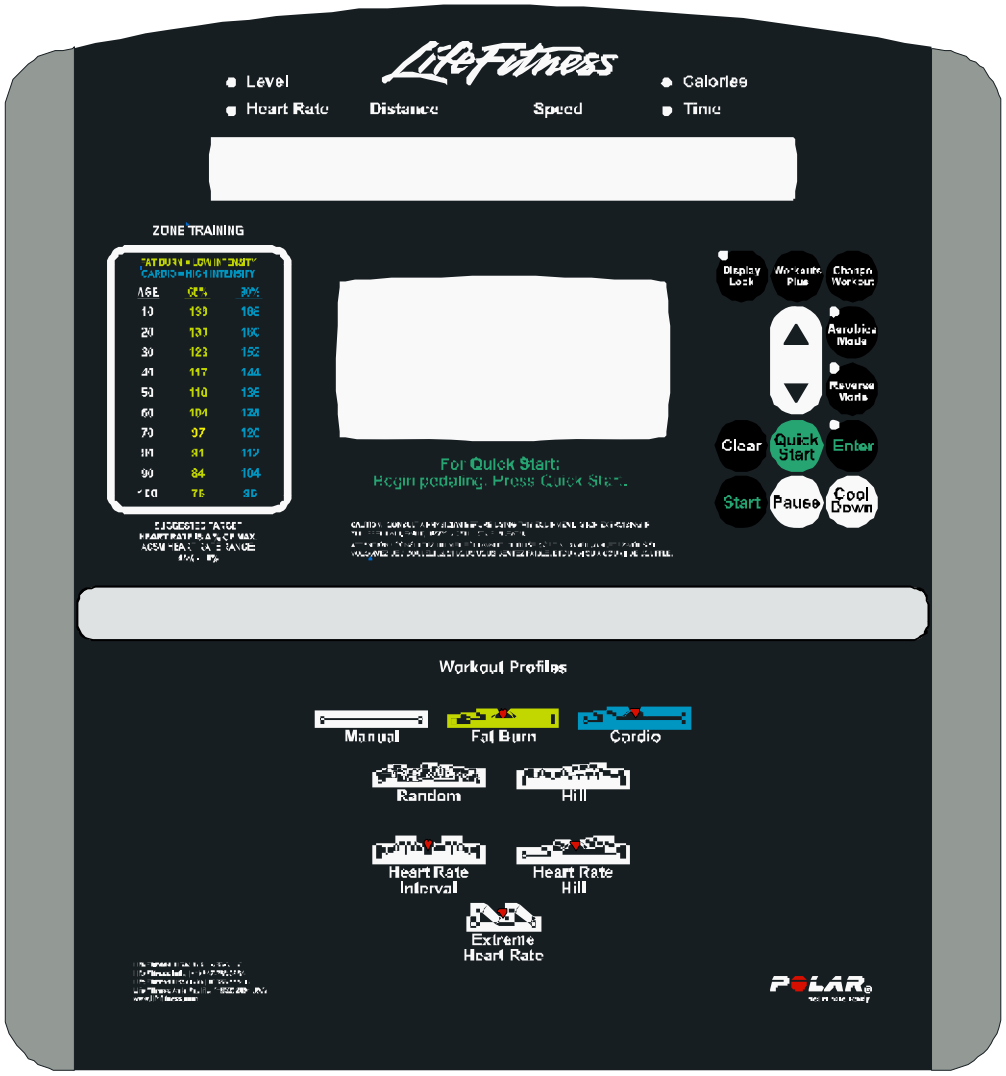


LifeFitness

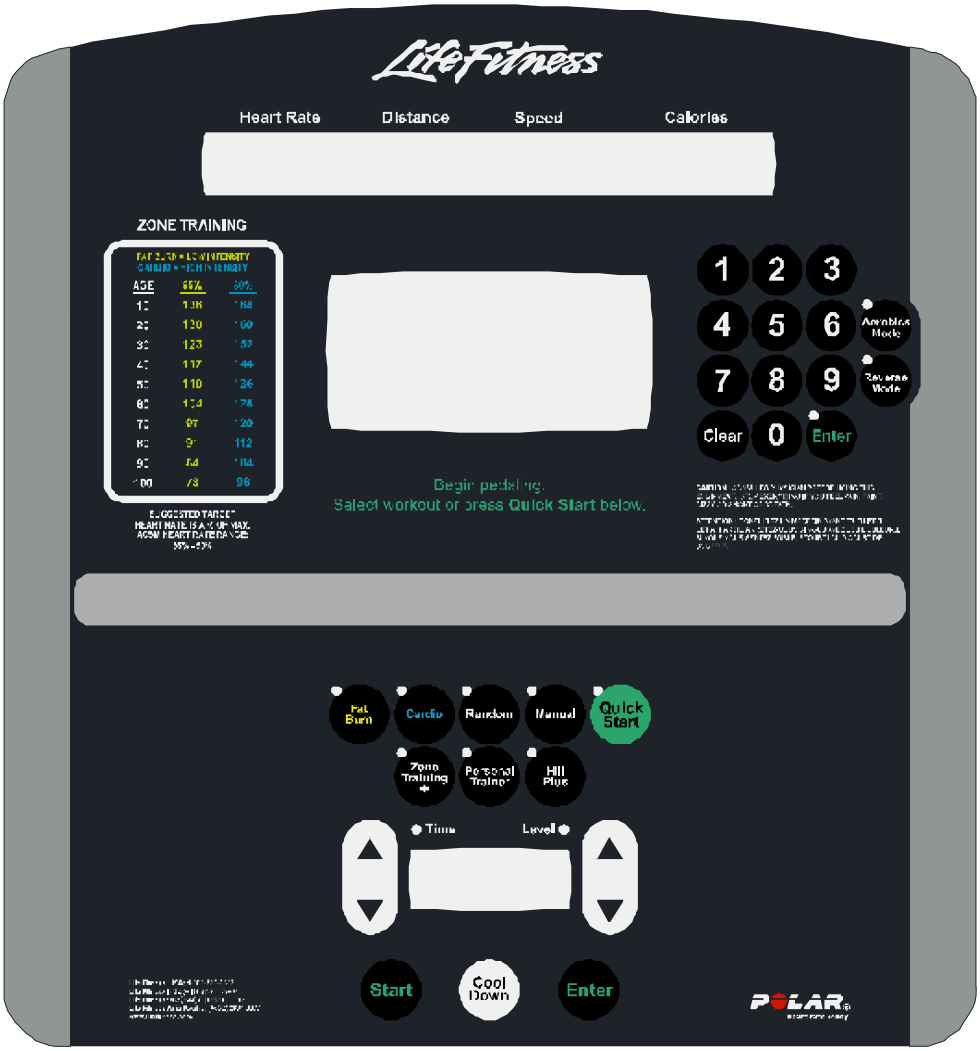
Quiet Drive Cross-Trainer

LED DIAGNOSTICS

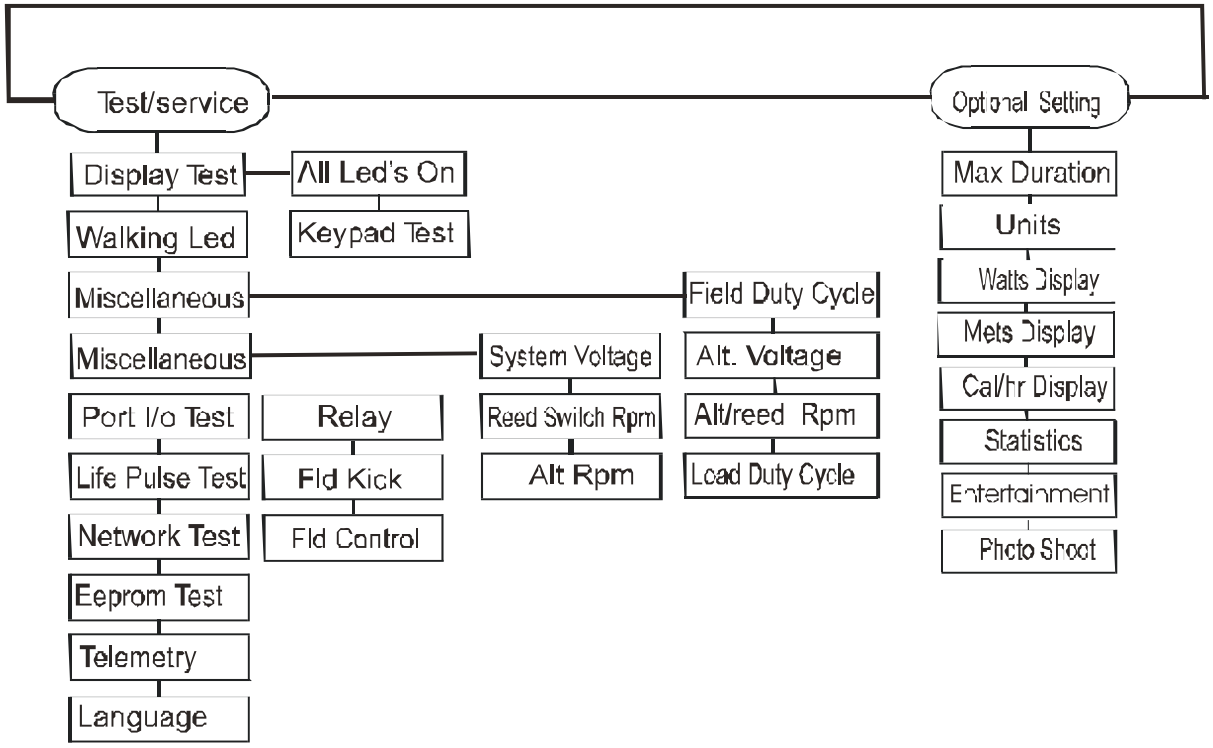
93X DISPLAY CONSOLE



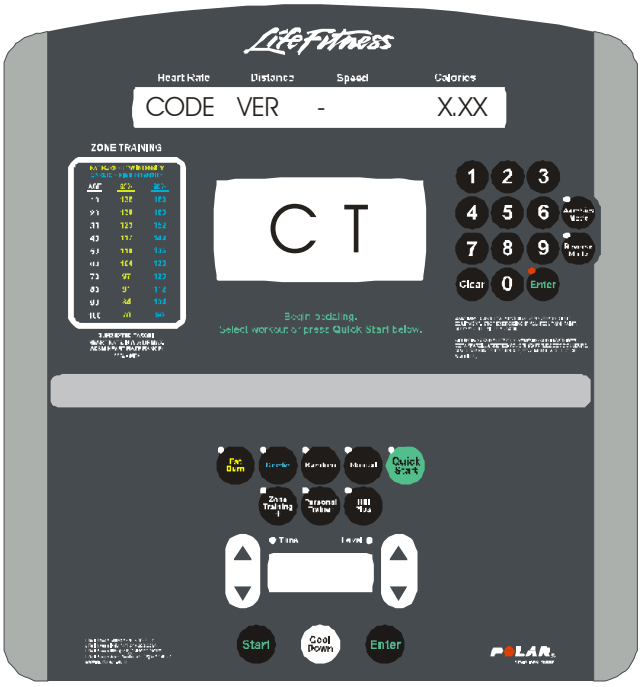
95XI DISPLAY CONSOLE



MAP


Test/service
Optional Setting
Display Test
All Led's On
Keypad Test
Walking Led
Miscellaneous
Field Duty Cycle
Miscellaneous
System Voltage
Alt. Voltage
Port I/o Test
Relay
Reed Swich Rpm
Alt/reed Rpm
Life Pulse Test
Fld Kick
Alt Rpm
Load Duty Cycle
Network Test
Fld Control
Eeprom Test
Telemetry
Language
Max Duration
Units
Watts Display
Mets Display
Cal/hr Display
Statistics
Entertainment
Photo Shoot

ENTRY LEVEL



Hold down the "5" key (on 95Xi units) or the Up Arrow key (on 93X units) then press the Clear key twice. Pressing the Up Arrow key repeatedly will cycle through the following:

CODE VERSION (example: CODE VER - XX)
CSAFE VERSION (example: CSAFE VER - X.XX.XX)
PART NUMBER (example: XXXX-XXXX-0000)
BOOT LOADER VERSION (example: BOOT VER - X)

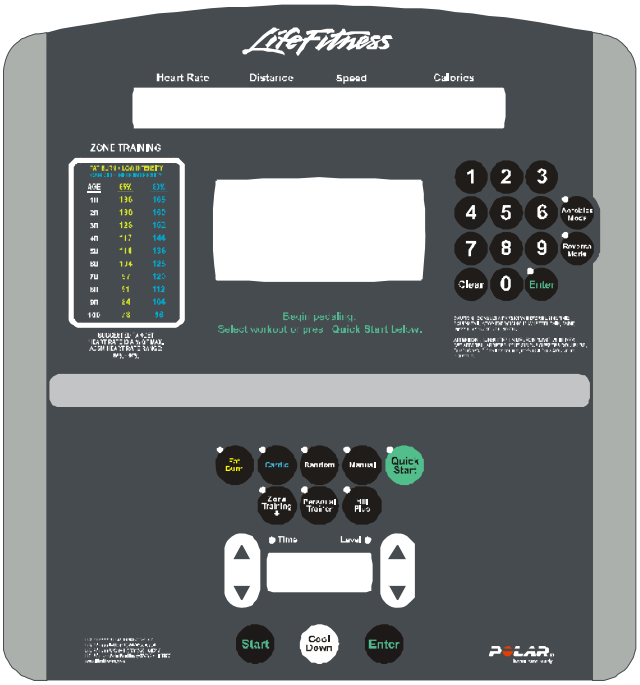
Press Enter for access to the Optional Settings (see the diagnostics map on the previous page). While pressing and holding COOL DOWN, press Enter for the Test/Service menu.

TEST/SERVICE ALL LEDS AND KEYPAD TEST

On entry into this state, all the LEDs will turn on. Pressing any key except Start, Enter, or Clear will result in a beep. A character will also be displayed and repeated across the message center.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

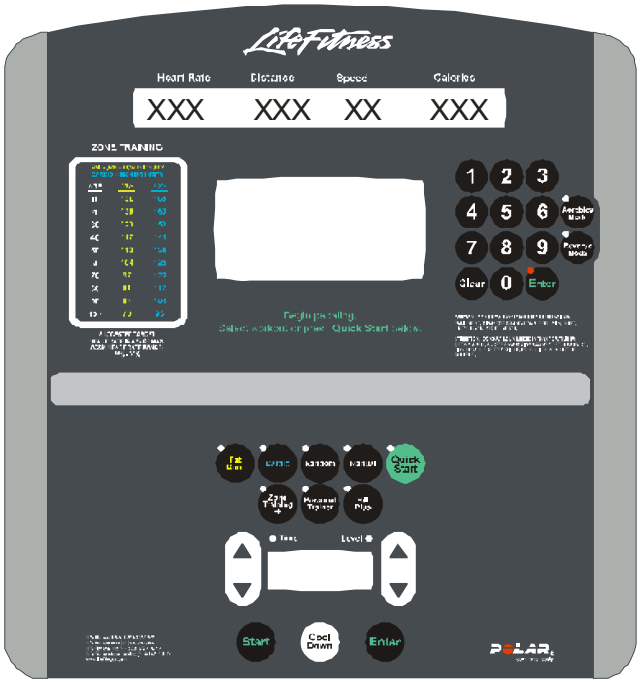
TEST/SERVICE – WALKING LED TEST



On entering this state, the LEDs in the Message Center and the Profile Window will display an animated motion effect ("walking LED").

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

TEST/SERVICE – MISCELLANEOUS TESTS 1



The field duty cycle being applied to the alternator is displayed in the heart rate window. This value ranges from 0 to 255. The alternator output voltage is displayed in the Distance window. The alternator RPM is displayed in the RPM window.

The load duty cycle applied to the alternator will be displayed in the Calories window. The value ranges from 0 to 250 and can be adjusted using the Time Up and Time Down arrow keys (on model 95Xi) or the Up Arrow and Down Arrow keys (on the 93X).

Pressing the Aerobics Mode key will toggle the speaker on and off (not available on model 90X.)

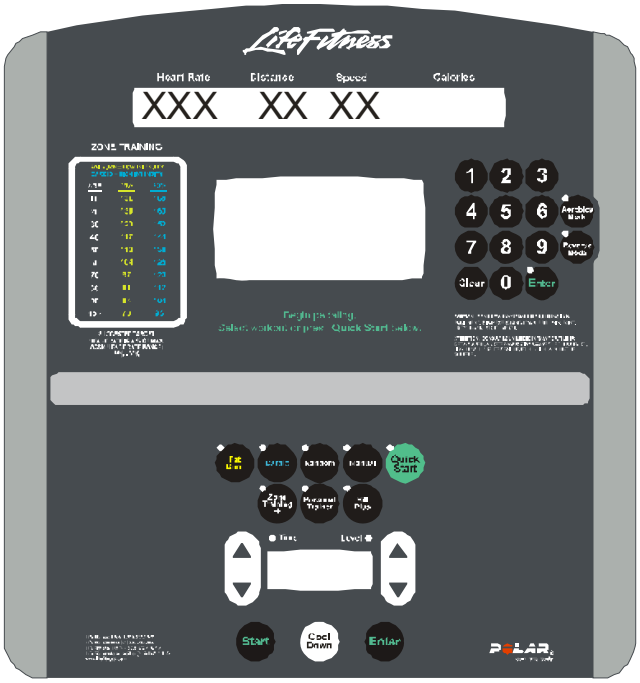
continued…

TEST/SERVICE – MISCELLANEOUS TESTS 1 - CONTINUED

Pressing the "5" key (with model 95Xi) will toggle the alternator on and off.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

TEST/SERVICE – MISCELLANEOUS TESTS 2

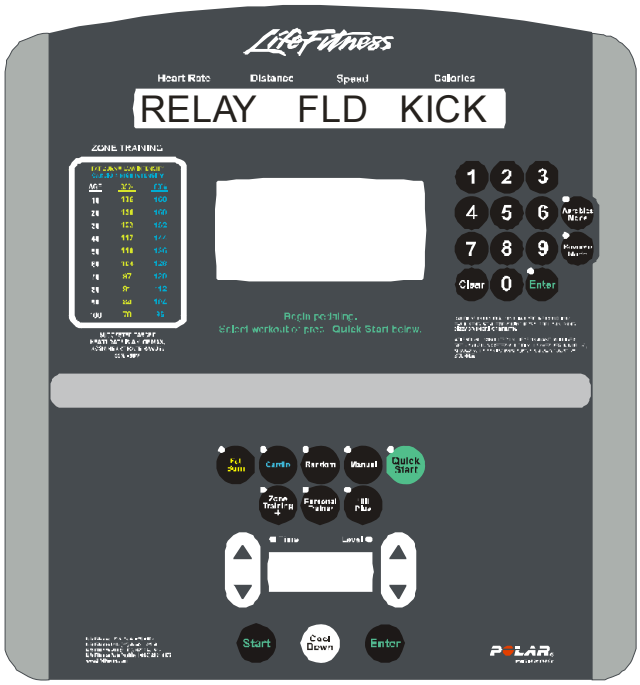


The system voltage (Vsys) supplied to the console is displayed in the Heart Rate window. The reed switch RPM is displayed in the Distance window. The reed switch RPM will not display when the alternator is running. The alternator RPM is displayed in the RPM window.

Pressing the "5" key (on model 95Xi) or the Down Arrow key (on model 93X) will display the value of Vsys at startup (before the alternator is turned on). This is useful because it will indicate the voltage of the 6 volt battery. Note: since the current has gone through several voltage drops, this voltage will be lower than when readings are taken at the battery's terminals.

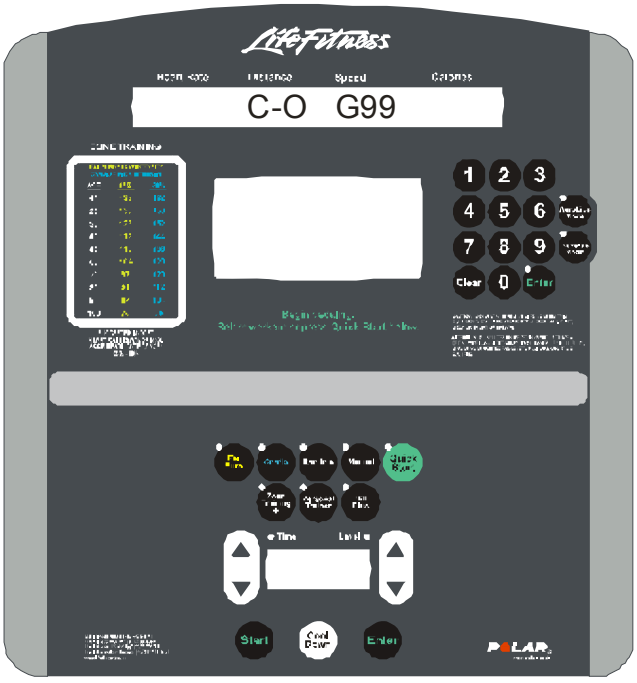
Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

TEST/SERVICE – PORT I/O TEST



Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

TEST/SERVICE – LIFEPULSE TEST



Upon entering this test, a heart will be displayed in the profile window along with two messages in the message center. The first message indicates the version number of the Lifepulse software. The second indicates whether the Lifepulse communication system is on or off. (This system enables external communications for Lifepulse development only and should be left off.) Following these messages, the unit will be ready for manual testing and will display the diagnostic information described below.

The left hands-on circuitry can be tested by grasping the left-hand pair of electrodes. When the sensor detects a hand in contact with both electrodes, an "L" is displayed in the profile window with the heart. Similarly, an "R" is displayed when a hand is detected by the right-hand electrodes.

continued…

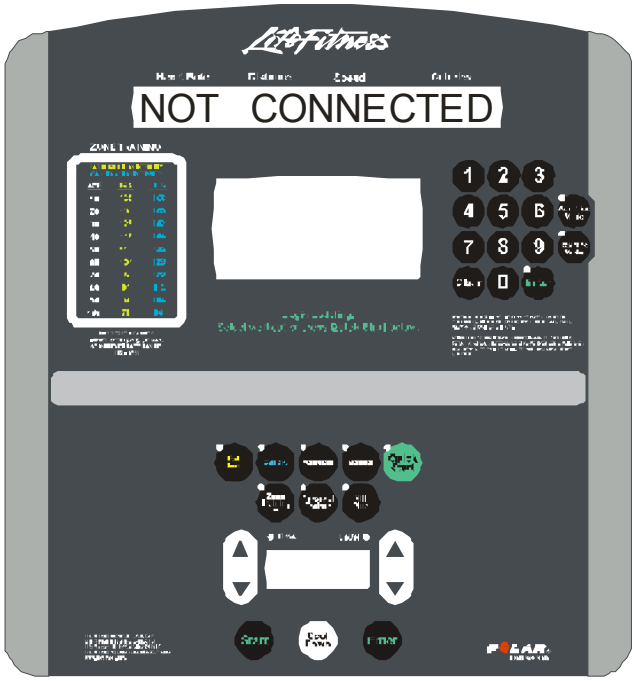
TEST/SERVICE – LIFEPULSE TEST - CONTINUED

Two timers begin counting when both left and right hands-on conditions occur. The first timer, located on the upper console message center display, stops when Lifepulse computes and displays an initial peak detected heart rate. The second timer is located on the lower console display window. It will continue counting until Lifepulse can reliably determine a user heart rate. These timer readings are used for reference only.

The gain value of the heart rate signal is shown following the "G" in the message center display window. Values range from 0 to 99. Gain values near either extreme would be considered undesirable. Values between 15 and 40 are considered normal. Variations in that range would indicate whether the user is exercising or standing still during the test.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

TEST/SERVICE – CSAFE NETWORK TEST

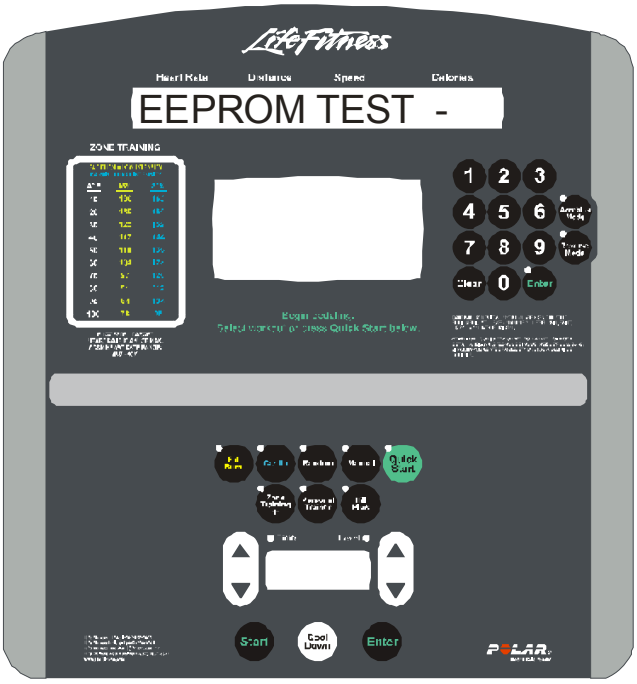


The CSAFE network is tested in this state. This procedure will determine whether there is any communication from the network system:

1. Make sure the network cable is plugged in.
2. Press the Cool Down key. This will reset the console and send a standard power up message to the network. This is the same message the console sends every time it is turned on (or any time it is used on self-powered products). The console will display a "RESETTING NETWORK" message.
3. If the network receives the CSAFE communication packet from the console and responds with a configuration communication packet, the console will display "RECEIVING."
4. If the network does not respond to the console, a "NOT CONNECTED" message will be displayed. This means that the console has not received any valid CSAFE communications from the network and indicates a problem with the network or the network cable.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

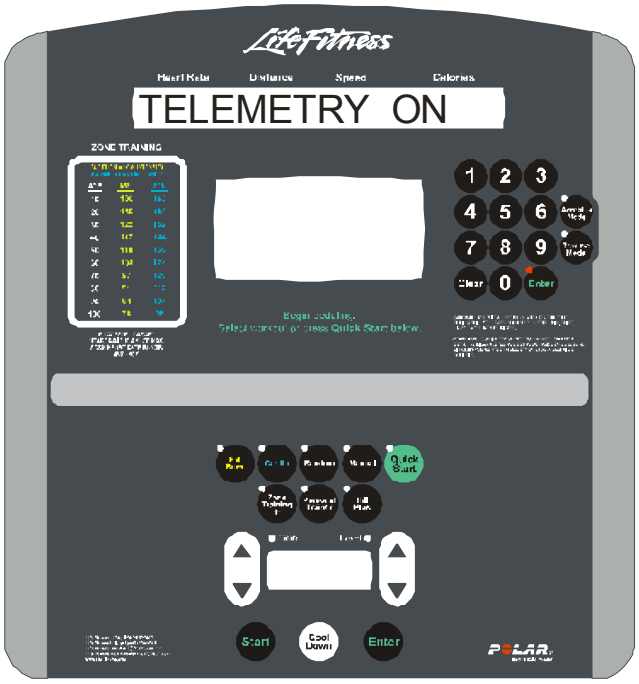
TEST/SERVICE – EEPROM TEST



This diagnostic state tests the display console EEPROM by reading, writing, and replacing all used locations in the EEPROM. The location being tested will be displayed in the message center. Pressing the Down Arrow will initiate the EEPROM test. If the test is completed successfully, the message "EEPROM GOOD" will appear. If the test fails, "EEPROM BAD AT ##" will display with the faulty location.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

TEST SERVICE – TELEMETRY ENABLE/DISABLE



TELEMETRY can be turned on and off in this state (the default state is on). If a telemetry heart rate can be detected, it will be displayed when telemetry is on.

The Down Arrow will turn telemetry off. The Up Arrow will turn it on and display a heart shape in the program profile window.

The Enter key LED indicates when the value is at the default (on) setting. This value is stored in EEPROM and is kept when the unit is turned off.

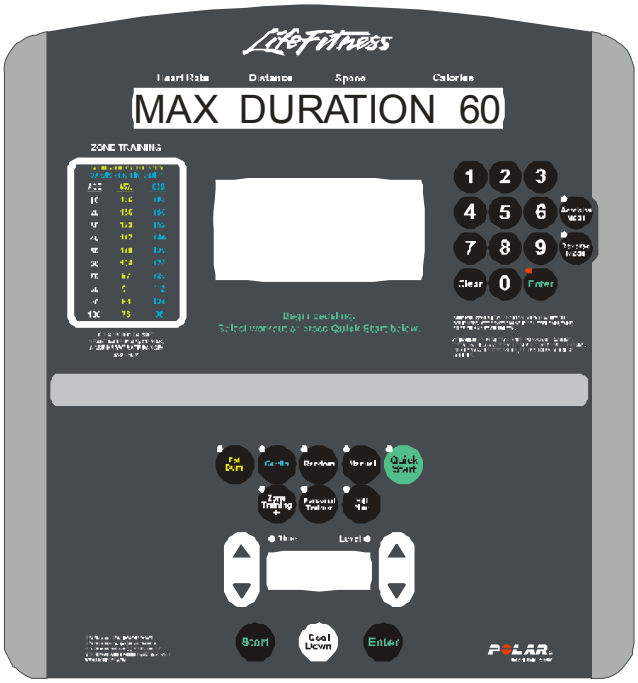
Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

TEST/SERVICE – LANGUAGE

One of nine languages (English, German, French, Italian, Japanese, Dutch, Turkish, Spanish, or Portuguese) can be selected in this state. Pressing the Up Arrow and Down Arrow keys cycle through the choices. The Enter key LED indicates when the language is set to the default (English). This value is stored in EEPROM and is kept when the unit is turned off.

This is the final diagnostic state in Test/Service. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

OPTIONAL SETTINGS – MAX PROGRAM DURATION



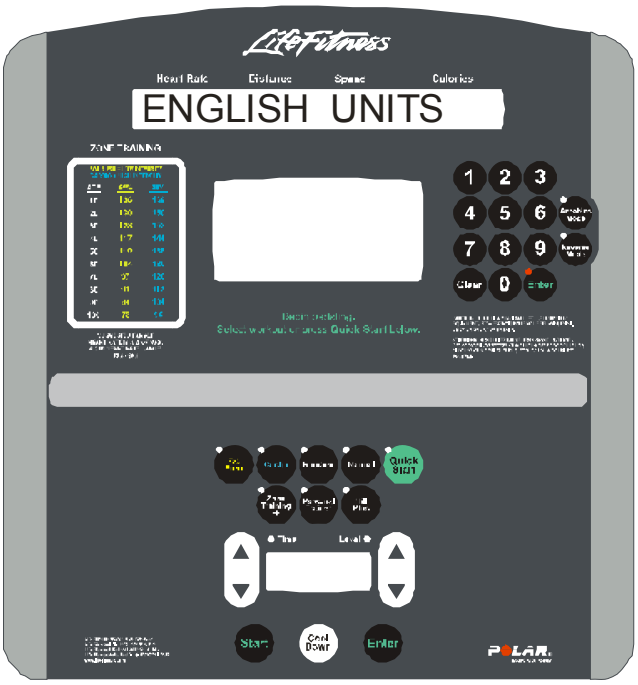
The maximum program duration can be adjusted from 10 to 99 minutes in this state.

Pressing the Down Arrow key will decrease the value in 1-minute increments. The Up Arrow key will increase it in 1-minute increments. Both keys auto-repeat if held down.

The Enter key LED indicates when the value is at the default (60 minutes). This value is stored in EEPROM and is kept when the unit is not in use.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

OPTIONAL SETTINGS – ENGLISH/METRIC UNITS



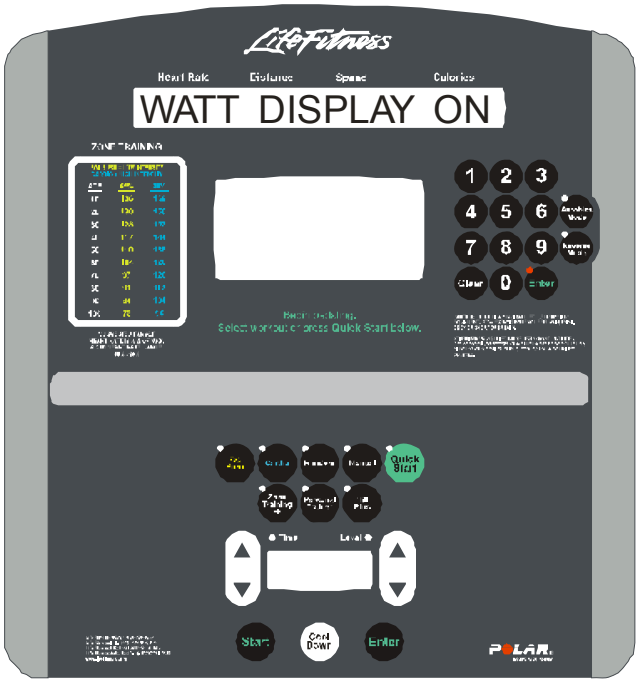
English or metric units can be chosen in this state.

The Down Arrow key selects metric units, the Up Arrow key selects English units.

The Enter key LED indicates when the default setting (English units) is on. This value is stored in EEPROM and is kept when the unit is turned off.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

OPTIONAL SETTINGS – WATTS DISPLAY ENABLE/DISABLE



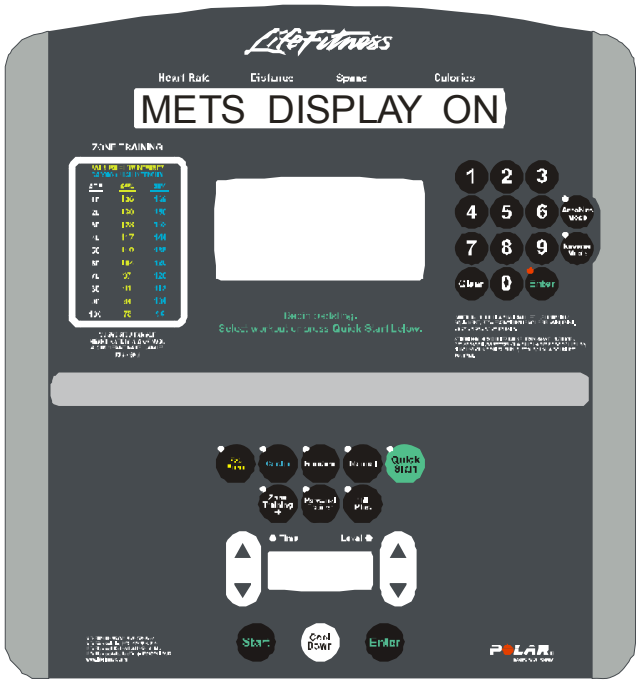
When this option is enabled, the message center displays the watts equivalent of the workload. This information is displayed only after level changes.

The Down Arrow turns off the watts program. The Up Arrow turns it on.

The Enter key LED indicates when the default (watts on) setting has been chosen. This value is stored in EEPROM and is kept when the unit is turned off.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

OPTIONAL SETTINGS – METS DISPLAY ENABLE/DISABLE



When this option is enabled, the message center displays the METS equivalent of the workload. This information is displayed only after level changes.

The Down Arrow turns off the METS program. The Up Arrow turns it on.

The Enter key LED indicates when the default (METS on) setting has been chosen. This value is stored in EEPROM and is kept when the unit is turned off.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

OPTIONAL SETTINGS – CAL/HR DISPLAY ENABLE/DISABLE

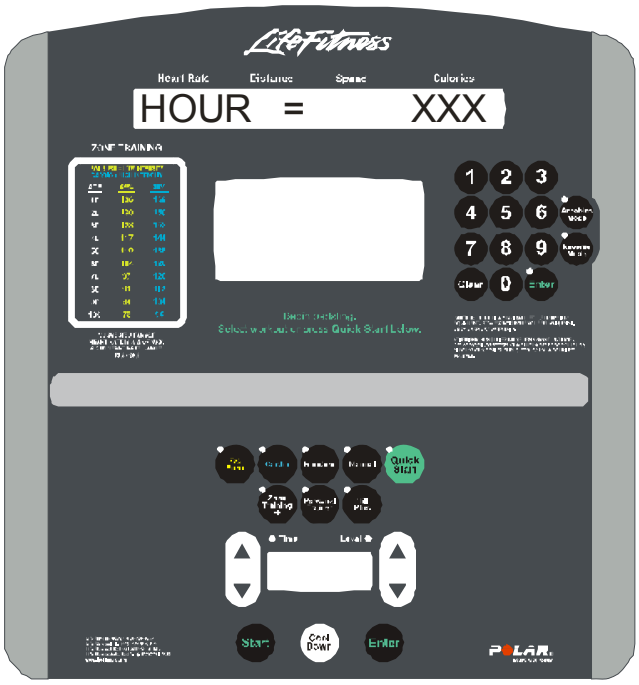
When this option is enabled, the message center displays the workload's calories-per-hour equivalent. This information is displayed only after level changes.

The Down Arrow turns off the CAL/HR program. The Up Arrow turns it on.

The Enter key LED indicates when the default (on) setting has been chosen. This value is stored in EEPROM and is kept when the unit is turned off.

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

OPTIONAL SETTINGS – TOTAL HOURS AND STATISTICS



This state displays total hours.

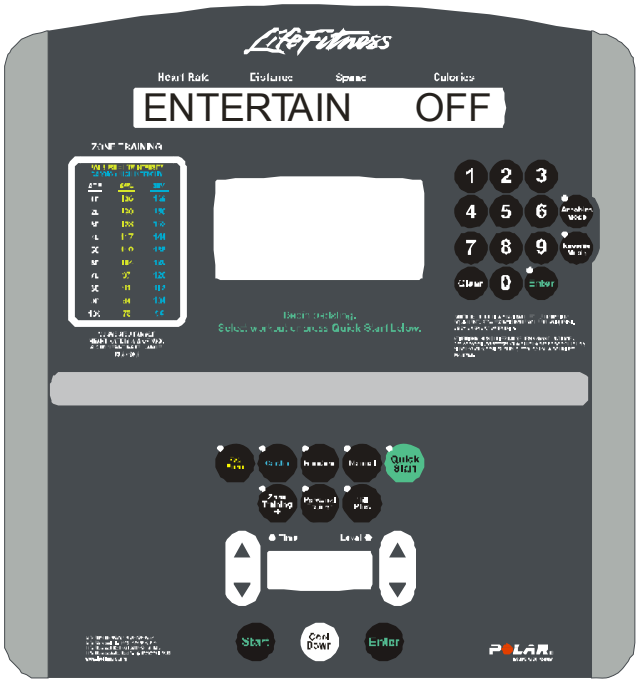
Statistics can be displayed by pressing the Up Arrow and Down Arrow keys. The Up Arrow key allows scrolling through the available programs and indicates the number of times each has been chosen. The Down Arrow key backs through the same list (shown in the table on the right).

Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

AVAILABLE PROGRAMS
HOUR[1]
DIST[2]
X-REV
QUICK START
HILL
HEART HILL
RANDOM
HEART INT
MANUAL
HEART EXT
PRE SET
FAT
CARDIO
CUSTOM
AEROBICS

[1]total hours on the console
[2]total distance on the console, in miles

OPTIONAL SETTINGS – ENTERTAINMENT CONTROLS ON/OFF

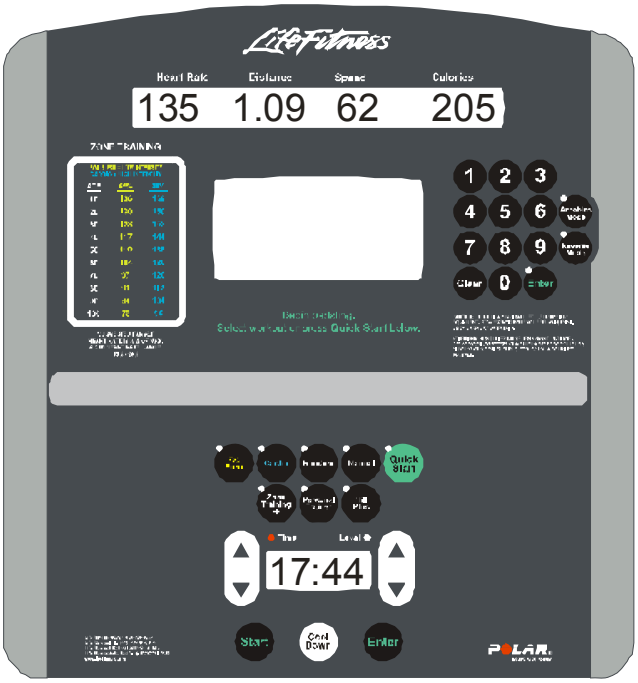


The Up Arrow and Down Arrow keys will turn on and off the channel and volume controls for third-party entertainment systems (such as Cardio Theater). The default setting is off.

Note: this does not turn on or off the power to the C-SAFE port.

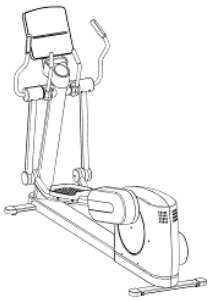
Press Enter to advance to the next diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.

OPTIONAL SETTINGS – PHOTO SHOOT



In Photo Shoot mode, the data displayed in the Message Center is non-functional and is intended only to simulate values for photographic sessions.

This is the final diagnostic state. Press Clear to return to the previous state. Press Clear repeatedly to exit diagnostics.



LifeFitness

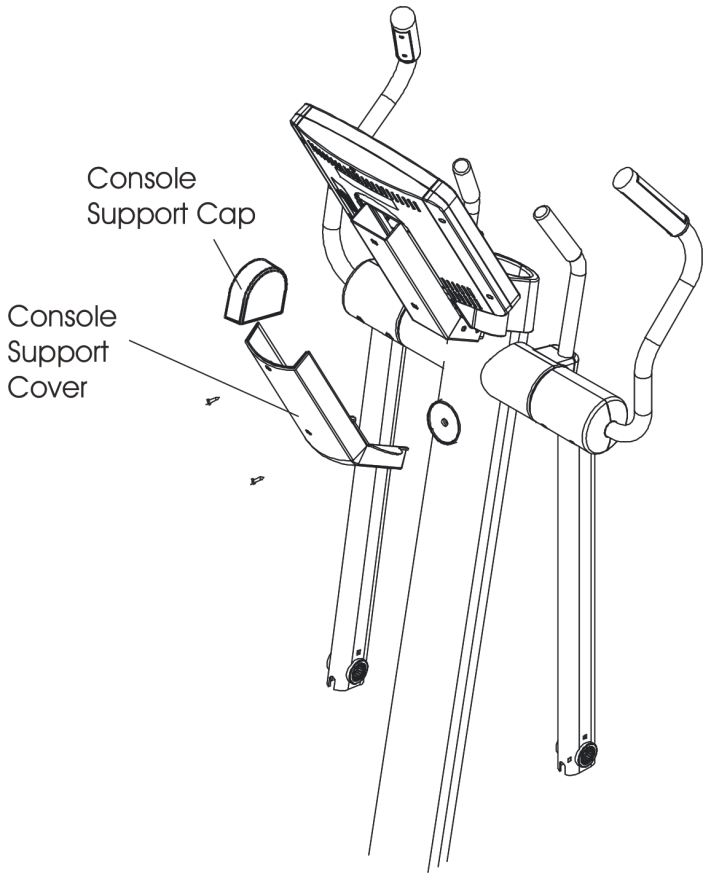
Quiet Drive Cross-Trainer

HOW TO

HOW TO… REPLACE THE CONSOLE SUPPORT COVER

Special service tools required: none

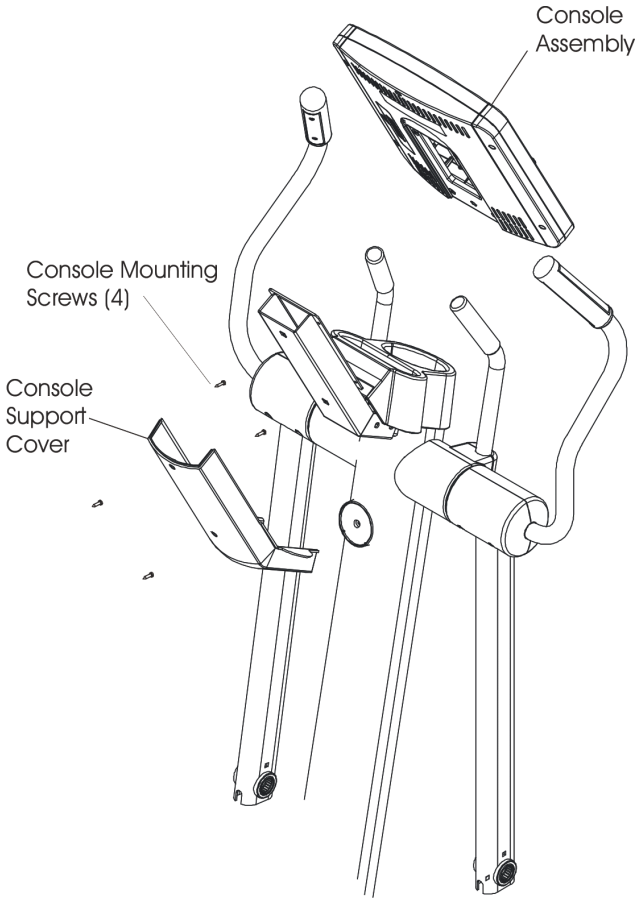
1. Remove the console support cap by squeezing the sides and pulling it away from the console support.
2. Remove the two Phillips screws securing the console support cover to the console support.
3. Reverse steps 1 and 2 to install the new console support cover.



HOW TO… REPLACE THE CONSOLE ASSEMBLY

Special service tools required: none

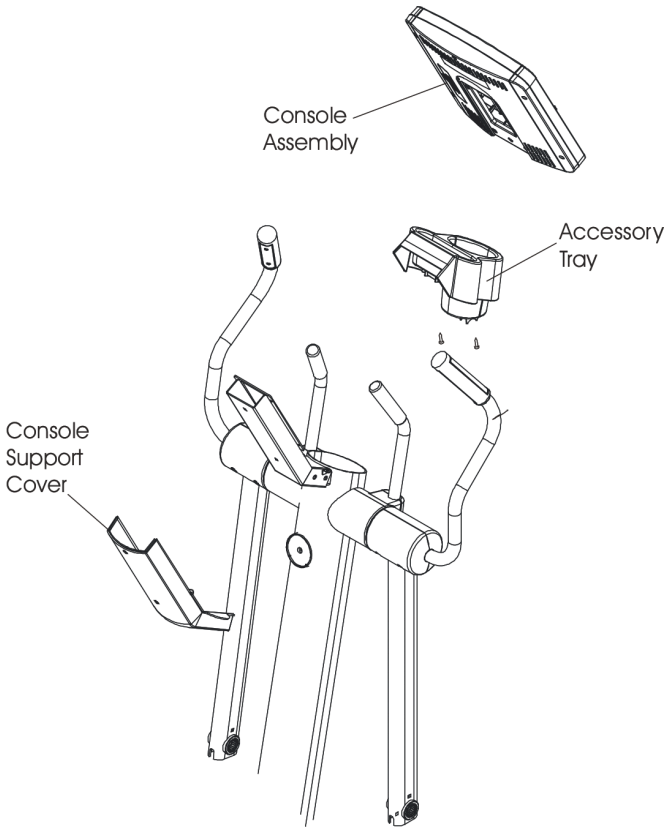
1. Remove the console support cover (see "How To…" on page 75).
2. Remove the four Phillips screws securing the console to the console support
3. Disconnect the main cable and the heart rate cable, if present, from the rear of the console.
4. Reverse steps 1 through 3 to install the new console.



HOW TO… REPLACE THE ACCESSORY TRAY

Special service tools required: none

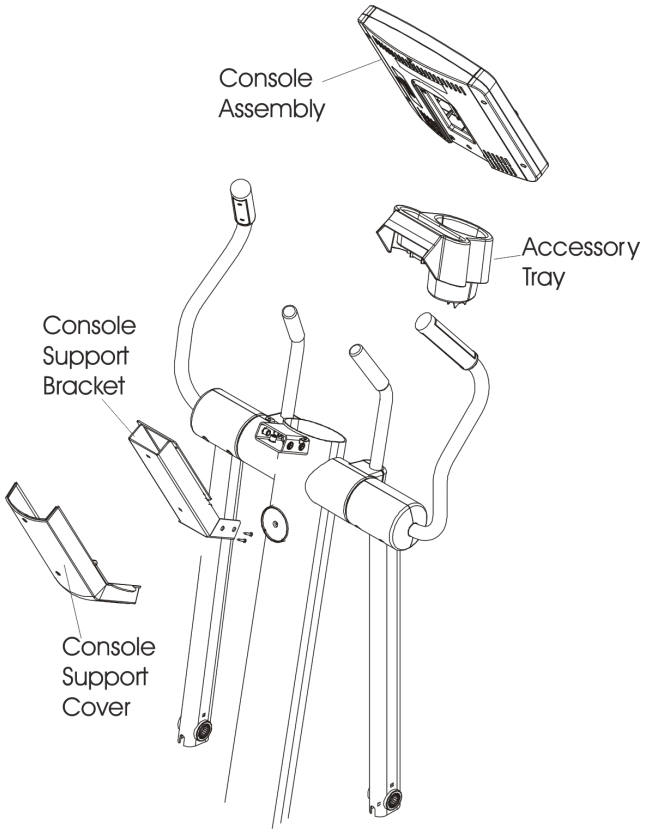
1. Remove the console support cover (see "How To…" on page 75).
2. Remove the console (see "How To…" on page 76).
3. Remove the two Phillips screws securing the accessory tray to the console support.
4. Lift the accessory tray up and out of the main upright.
5. Reverse steps 1 through 4 to install the new accessory tray.



HOW TO… REPLACE THE CONSOLE SUPPORT BRACKET

Special service tools required: none

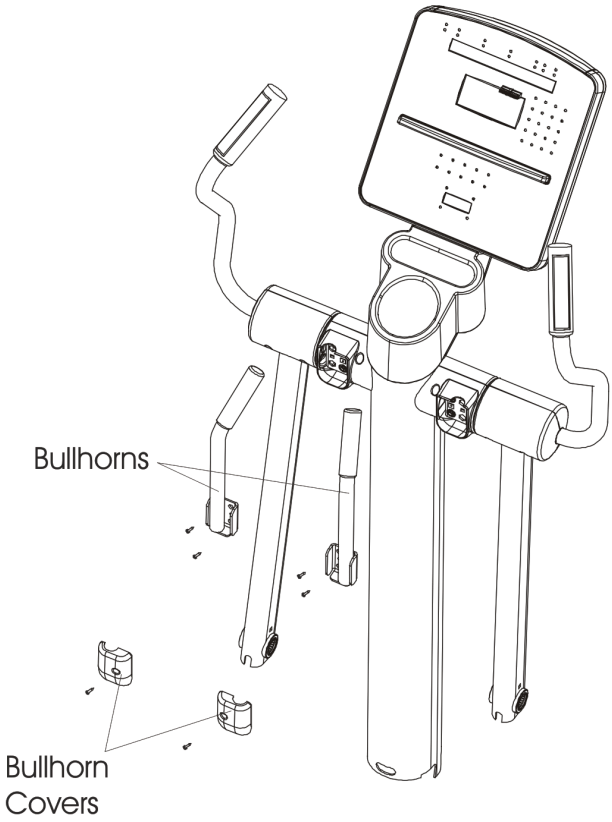
1. Remove the console support cover (see "How To…" on page 75).
2. Remove the console (see "How To…" on page 76).
3. Remove the accessory tray (see "How To..." on page 77).
4. Remove the six Allen bolts securing the console support to the main upright.
5. Reverse steps 1 through 4 to install the new console support bracket.



HOW TO… REPLACE THE BULLHORNS

Special service tools required: none

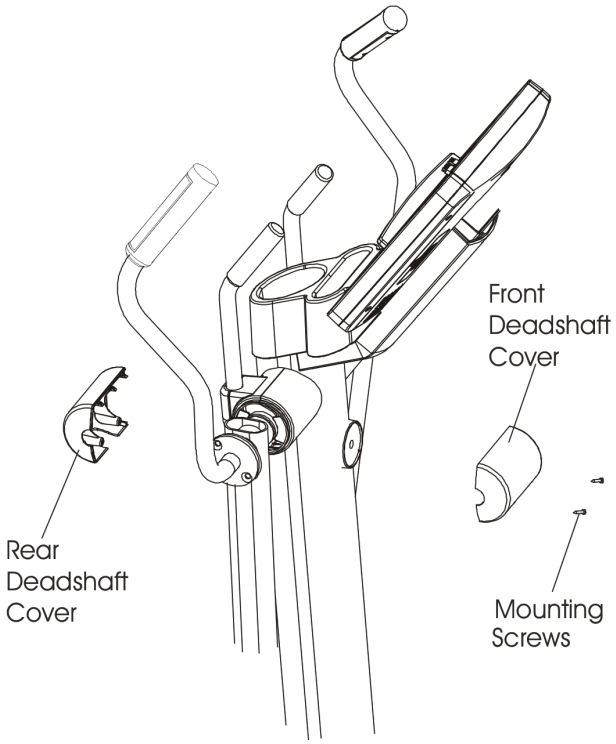
1. Remove the Phillips screw securing the bullhorn cover to the bullhorn.
2. Remove the two Torx bolts securing the bullhorn to the deadshaft.
3. Reverse steps 1 and 2 to install the new bullhorns.



HOW TO… REPLACE THE DEADSHAFT COVERS

Special service tools required: none

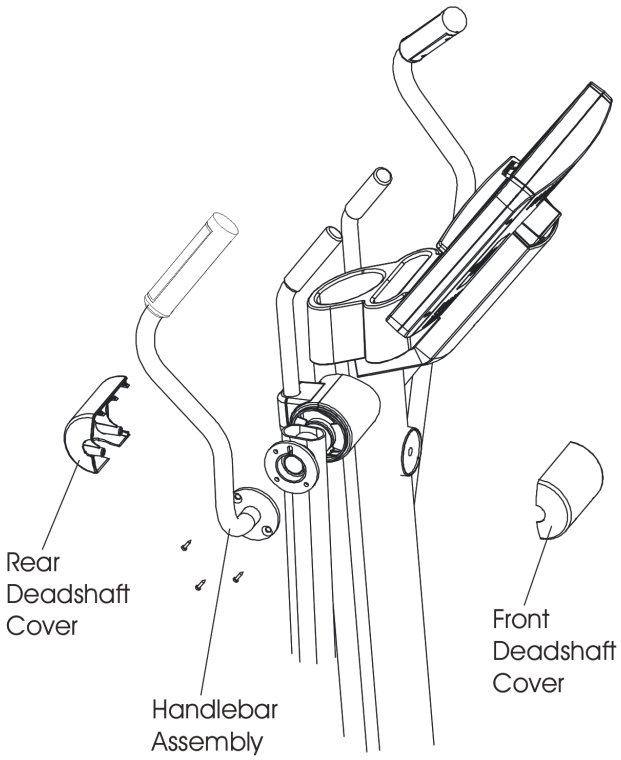
1. Remove the two screws securing the deadshaft covers to each other.
2. Use the same screws to install the new deadshaft covers.



HOW TO… REPLACE THE HANDLEBARS

Special service tools required: none

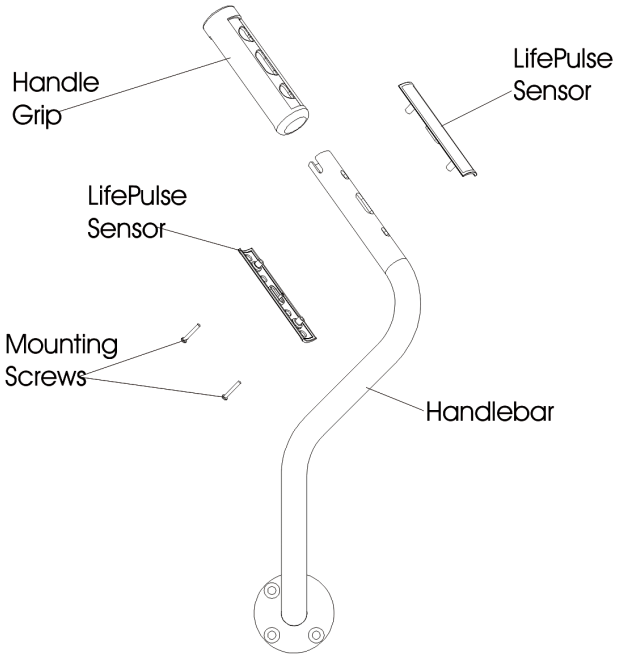
1. Remove the outside deadshaft covers (see "How To..." on page 80).
2. Remove the three Torx bolts securing the handlbar to the end of the deadshaft.
3. Disconnect the heart rate cable, if it is present.
4. Reverse steps 1 through 3 to install the new handlebars.



HOW TO… REPLACE THE LIFEPULSE SENSORS

Special service tools required: none

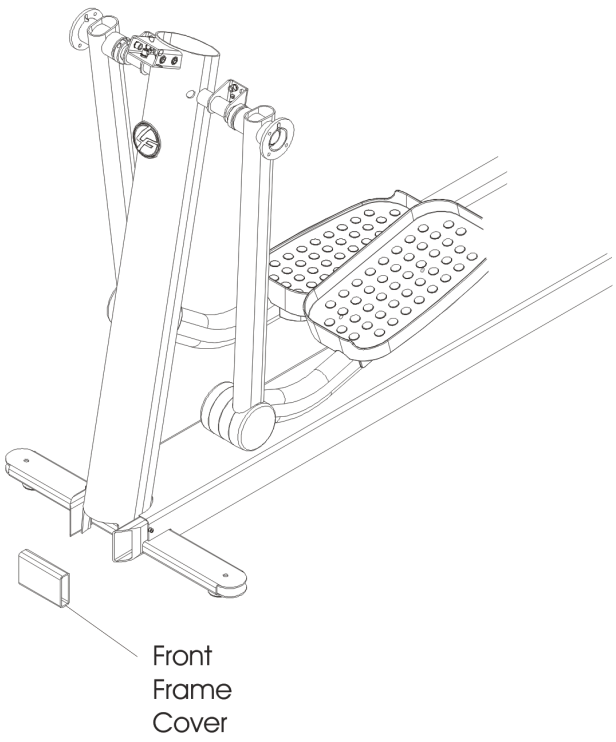
1. Remove the two screws securing the Lifepulse sensors to the handlebar.
2. Disconnect the heart rate cable from the Lifepulse sensors.
3. Reverse steps 1 and 2 to install the new Lifepulse sensors.



HOW TO… REPLACE THE FRONT FRAME COVER

Special service tools required: none

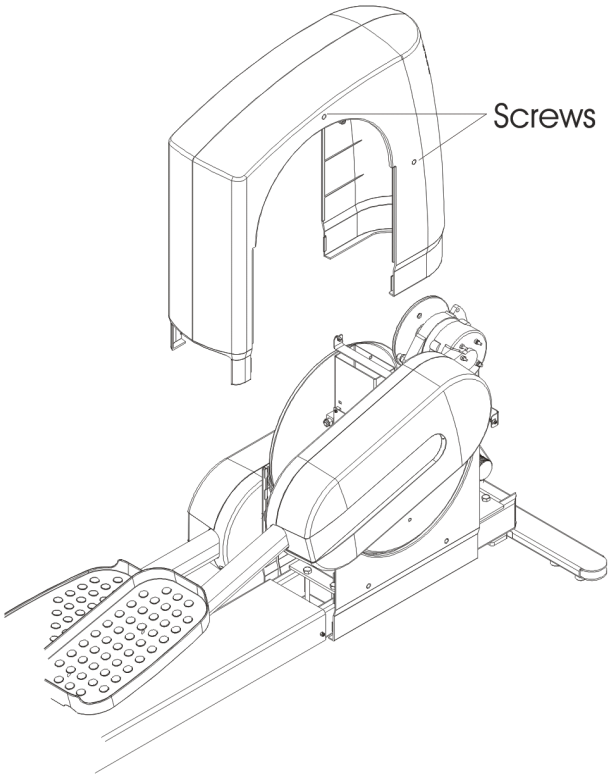
1. Remove the two screws securing the front frame cover to the frame.
2. Slide the front frame cover forward until it is free of the ladder frame cover.
3. Reverse steps 1 and 2 to install the new front frame cover.



HOW TO… REPLACE THE MAIN SHROUD ASSEMBLY

Special service tools required: none

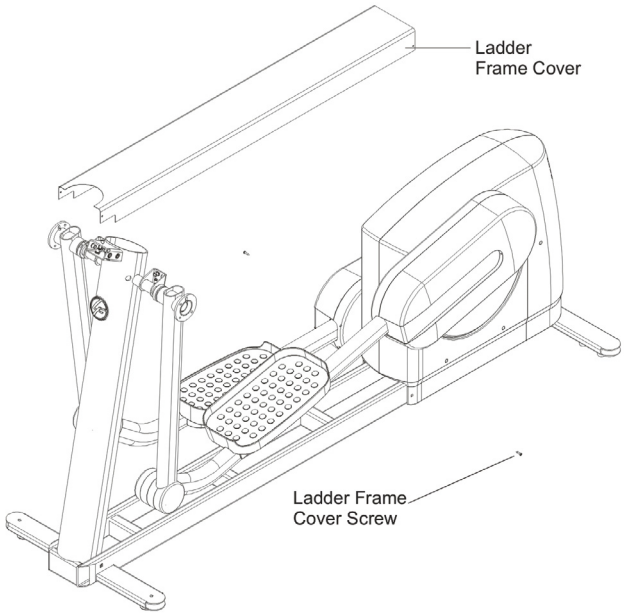
1. Remove the four Phillips screws (two on each side) that secure the main shroud assembly to the drive frame assembly.
2. Remove the main shroud assembly by lifting it straight up.
3. Reverse steps 1 and 2 to install the new main shroud assembly.



HOW TO… REPLACE THE LADDER FRAME COVER

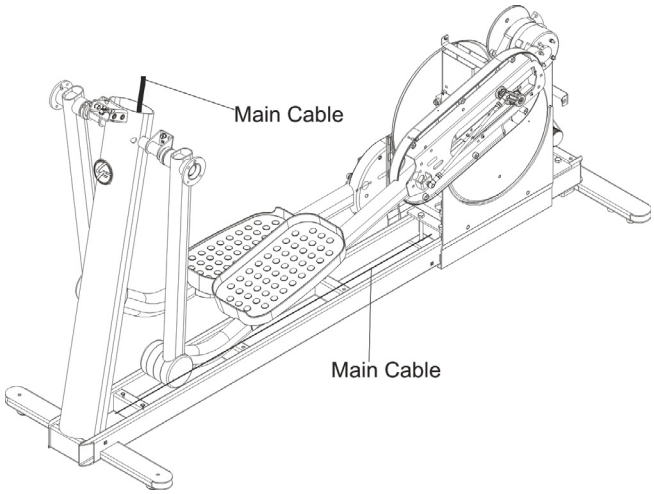
Special service tools required: none

1. Remove the front frame cover (see "How To..." on page 83).
2. Remove the main shroud assembly (see "How To..." on page 84).
3. Remove the two Phillips screws securing the ladder frame cover to the ladder frame.
4. Remove the ladder frame cover.
5. Reverse steps 1 through 4 to install the new ladder frame cover.



HOW TO… REPLACE THE CONSOLE CABLE ASSEMBLY

Special service tools required: none

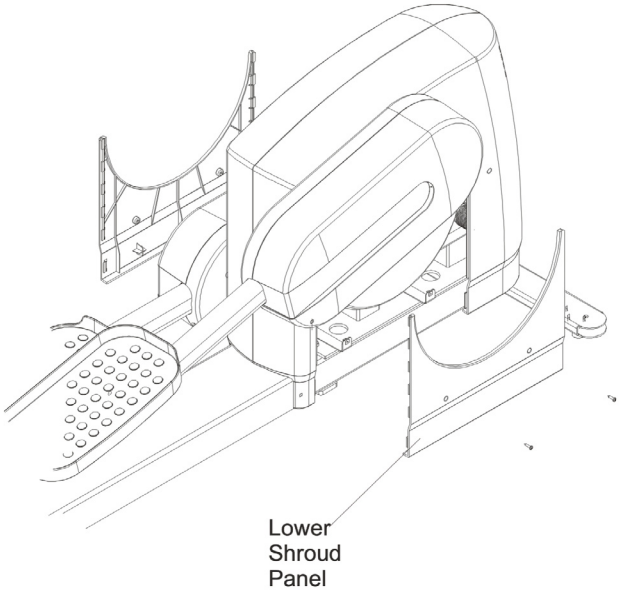


1. Remove the front frame cover (see "How To..." on page 83).
2. Remove the main shroud assembly (see "How To..." on page 84).
3. Remove the ladder frame cover (see "How To..." on page 85).
4. Remove the console support cover (see "How To…" on page 75).
5. Remove the console assembly (see "How To..." on page 76).
6. Disconnect the console cable assembly from the console and the power control board.
7. Remove the cable ties that secure the console cable assembly to the ladder frame.
8. Fasten one end of the new cable to one end of the old cable before removing it from the unit. (This will enable you to route the new cable through the upright more easily.)
9. Route the new cable through the upright and reverse steps 1 through 7 to complete the console cable assembly installation.

HOW TO… REPLACE THE LOWER SHROUD PANELS

Special service tools required: none

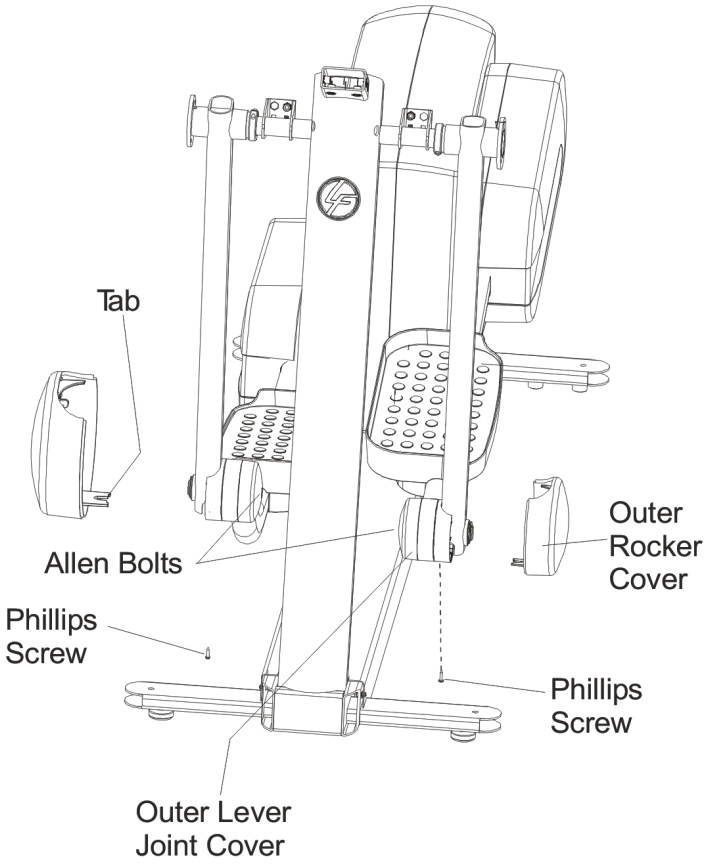
1. Remove the four Phillips screws securing the lower shroud panels to the drive fame assembly. There are two screws for each panel.
2. Use the same screws to install the new lower shroud panels. make sure the main shroud assembly and lower shroud panels fit into each other.



HOW TO… REPLACE THE OUTER LEVER JOINT COVER AND ROCKER ARM COVER

Special service tools required: none

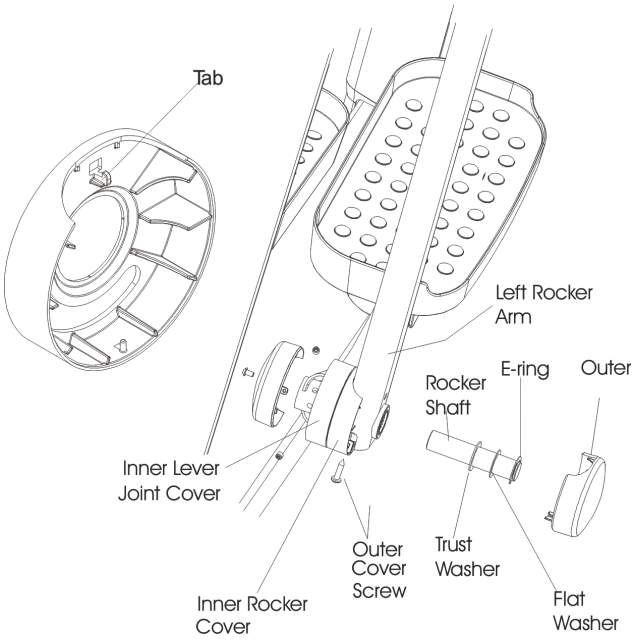
1. Remove the Phillips screw securing the outer rocker cover to the inner rocker cover.
2. Remove the Allen bolt securing the outer pedal joint cover to the pedal and rocker shaft.
3. Reverse steps 1 through 3 to install the new outer pedal joint cover and rocker arm cover.



HOW TO… REPLACE THE INNER LEVER JOINT COVER AND INNER ROCKER ARM COVER

Special service tools required: none

1. Remove the outer lever joint and rocker arm covers (see "How To..." on page 88).
2. Remove the two set screws securing the pedal/rocker shaft to the pedal lever assembly and slide the pedal rocker shaft out of both the pedal lever and rocker arm.
3. Carefully separate the pedal lever from the rocker arm. The inner covers will remain on each assembly.
4. Remove the inner pedal lever cover and inner rocker arm cover.
5. Reverse steps 1 through 5 to install the new inner pedal lever cover and inner rocker arm cover.

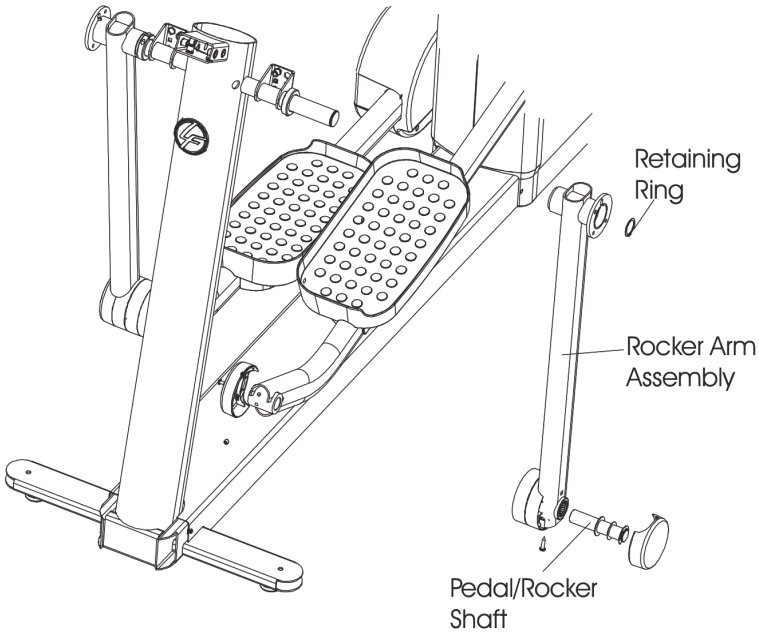


Note: Each cover has a tab on it which must be inserted into either the square hole in the rocker arm or the pedal lever assembly. Once the tab has been engaged, seat the cover and complete the installation.

HOW TO… REPLACE THE ROCKER ARM

Special service tools required: none

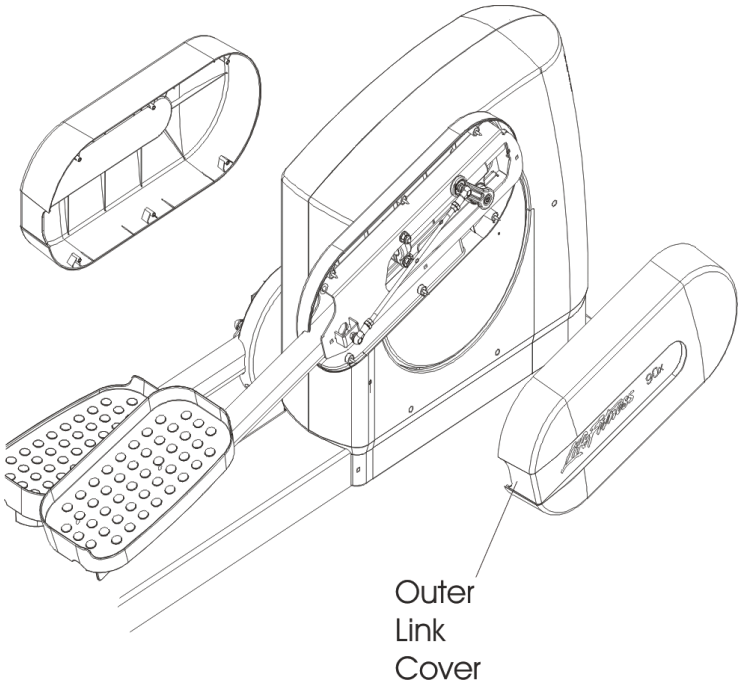
1. Remove the outer deadshaft covers (see "How To..." on page 80).
2. Remove the handlebar (see "How To..." on page 81).
3. Remove the outer lever joint cover and rocker arm cover (see "How To..." on page 88).
4. Remove the retaining ring and washer securing the rocker arm to the deadshaft
5. Remove the set screws securing the pedal/rocker shaft to the pedal lever, then slide the pedal rocker shaft out of both the pedal lever and rocker arm.
6. Carefully slide the rocker arm off the deadshaft.
7. Reverse steps 1 through 6 to install the new rocker arm.



HOW TO… REPLACE THE OUTER LINK COVER

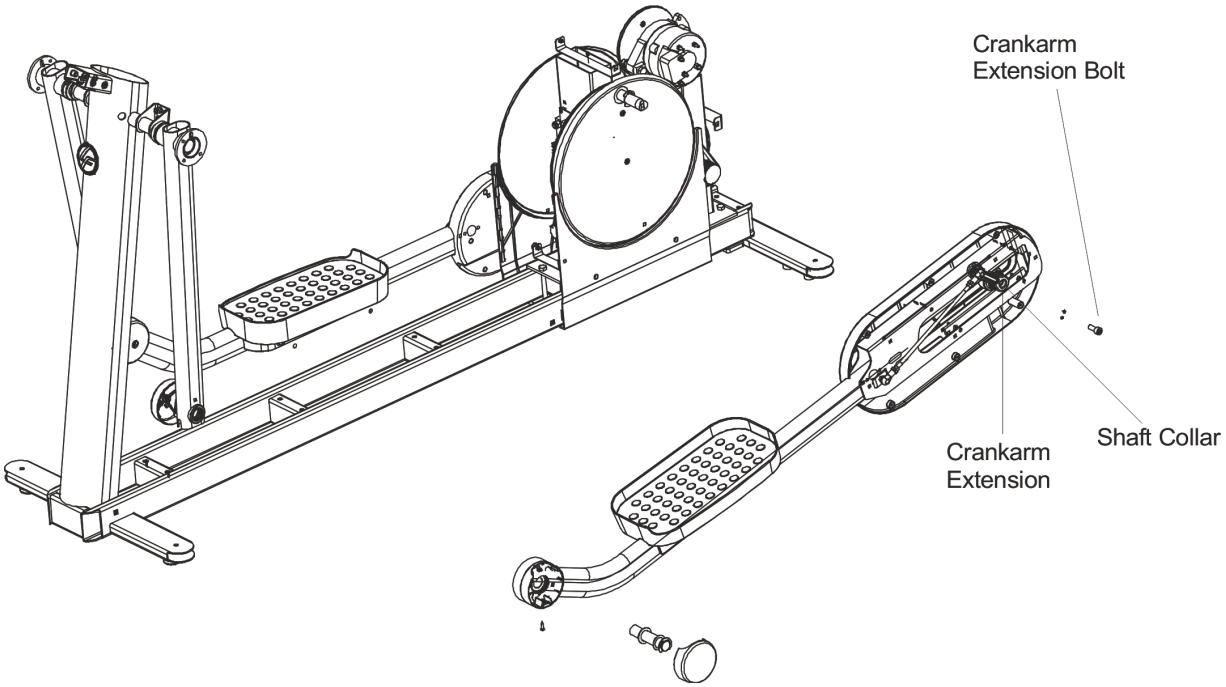
Special service tools required: none

1. Remove the main shrouds (see "How To..." on page 84).
2. Remove the six Phillips screws (three at the top, three at the bottom) that secure the outer link cover to the inner link cover.
3. Reverse steps 1 and 2 to install the new outer link cover.



HOW TO… REPLACE THE PEDAL LEVER ASSEMBLY

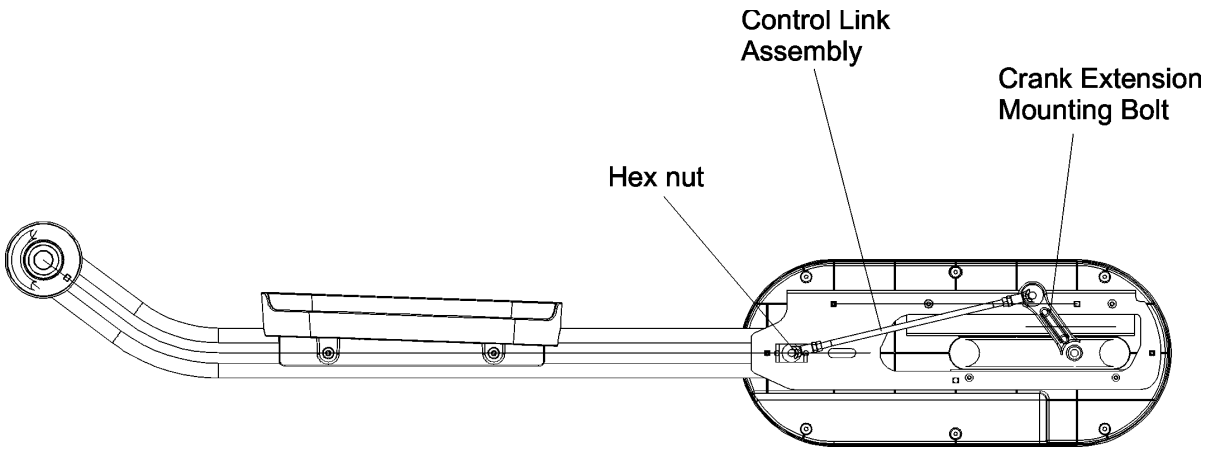
Special service tools required: none



1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the outer link cover (see "How To…" on page 91).
3. Remove the outer lever joint and rocker covers (see "How To…" on page 88).
4. Remove the set screws securing the pedal/rocker shaft to the pedal arm.
5. Slide the pedal/rocker shaft out of both the pedal lever assembly and the rocker arm.
6. Remove the bolt securing the crank extension to the Crankarm.
7. Remove the set screws that secure the shaft collar to the Crankarm and remove shaft collar.
8. Slide the pedal lever assembly off the crankshaft.
9. Reverse steps 1 through 8 to install the new pedal lever assembly.

HOW TO… REPLACE THE CONTROL LINK ASSEMBLY

Special service tools required: none

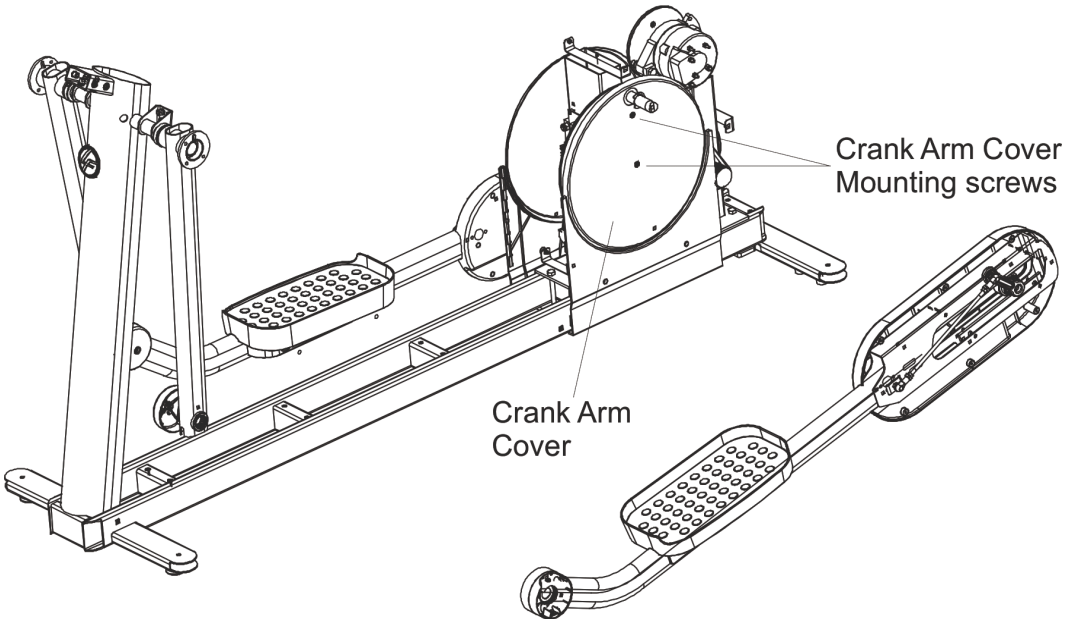


1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the outer link cover (see "How To..." on page 91).
3. Remove the hex nut securing the front end of the control link assembly to the pedal lever.
4. Remove the crank extension mounting bolt that secures the rear of the control link assembly.
5. Reverse steps 1 through 4 to install the new control link assembly.

Note: apply Loctite 242 to the Torx bolts and nuts that secure the control link and crank extension to the unit.

HOW TO… REPLACE THE CRANKARM COVER

Special service tools required: none

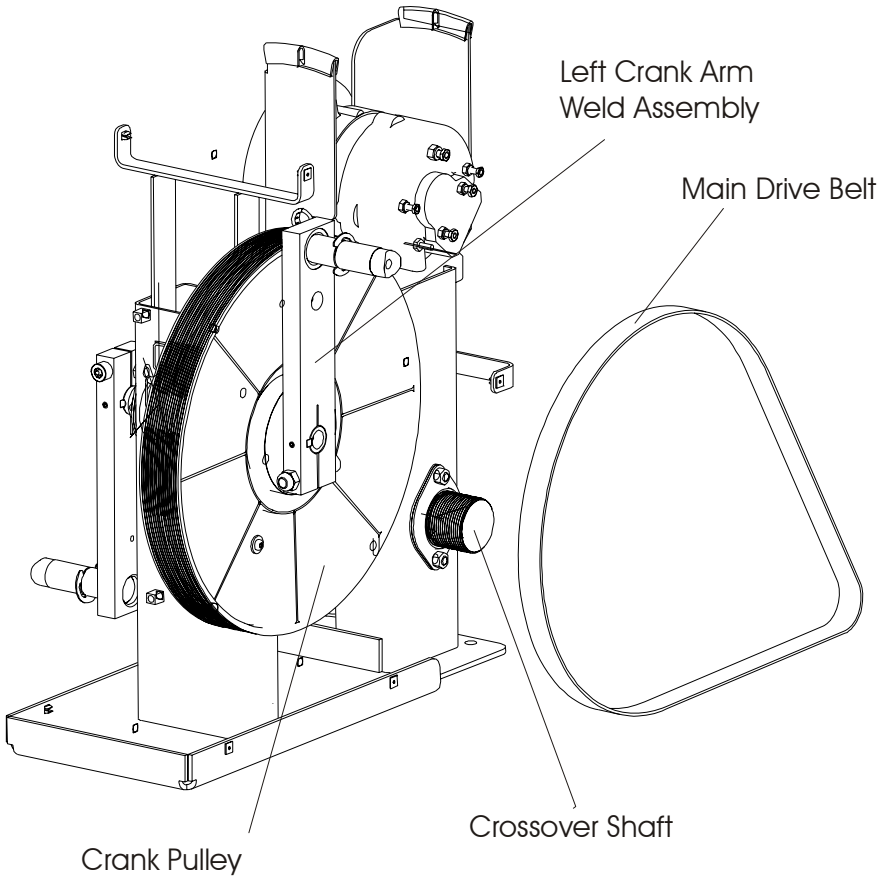


1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the outer link cover (see "How To..." on page 91).
3. Remove the outer lever joint cover (see "How To..." on page 88).
4. Remove the pedal lever assembly (see "How To..." on page 92).
5. Remove the Allen bolts securing the crankarm cover to the crankarm.
6. Reverse steps 1 through 5 to install the new Crankarm cover.

HOW TO… REPLACE THE MAIN DRIVE BELT

Special service tools required: none

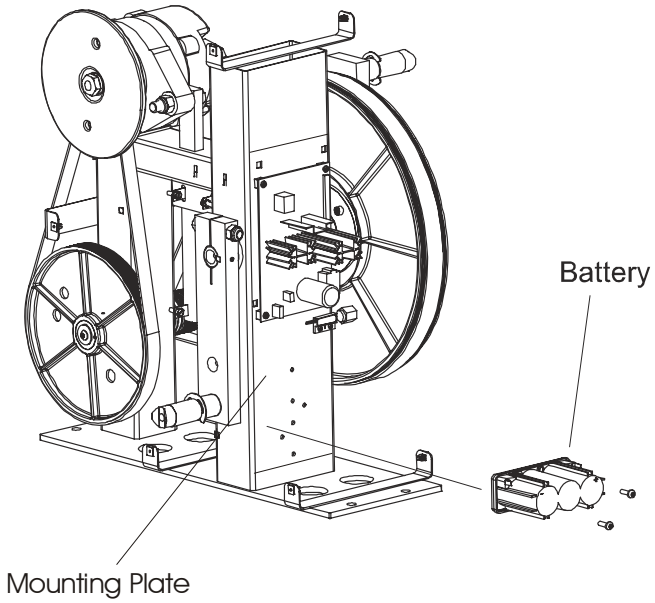
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the left outer link cover (see "How To..." on page 91).
3. Remove the outer lever joint and rocker arm cover on the left pedal lever assembly (see "How To..." on page 88).
4. Remove the left pedal lever assembly (see "How To..." on page 92).
5. Remove the left crankarm cover (see "How To..." on page 94).
6. Walk the main drive belt off the crossover shaft and remove the main drive belt from the unit.
7. Install the new belt around the crossover shaft first, then walk it onto the crank pulley.
8. Reverse steps 1 through 5 to complete the replacement.



HOW TO… REPLACE THE BATTERY

Special service tools required: none

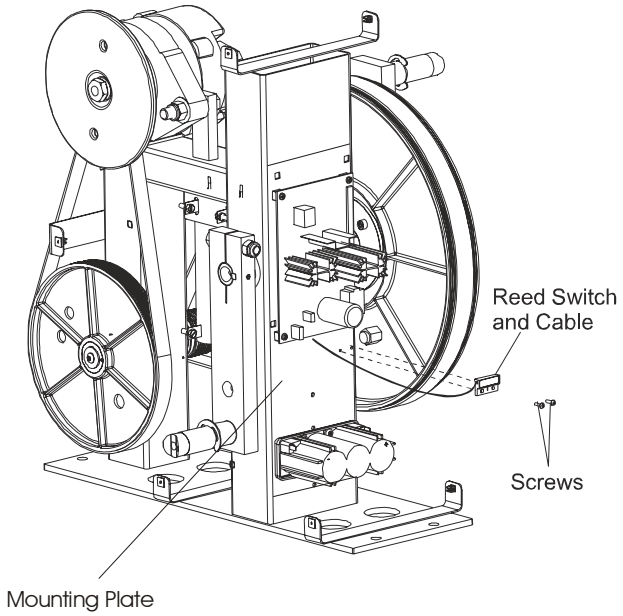
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Disconnect the red and black wires from the battery.
3. Remove the two screws that secure the battery to the mounting plate.
4. Reverse steps 1 through 3 to install the new battery.



HOW TO… REPLACE THE REED SWITCH CABLE ASSEMBLY

Special service tools required: none

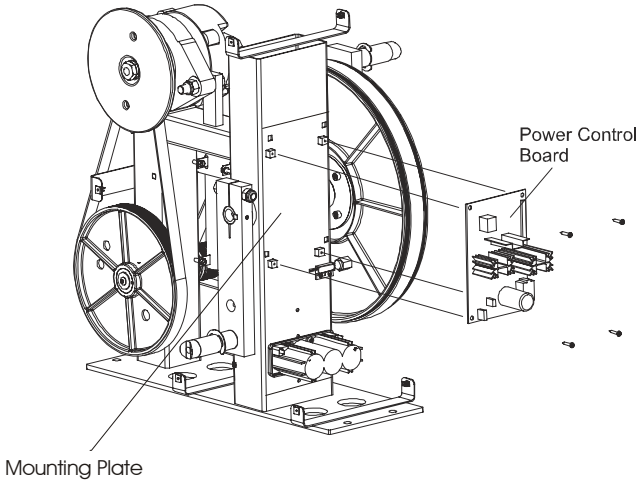
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Disconnect the reed switch cable from the power control board.
3. Remove the two screws securing the reed switch to the mounting plate.
4. Reverse steps 1 through 3 to complete the installation.



HOW TO… REPLACE THE POWER CONTROL BOARD

Special service tools required: none

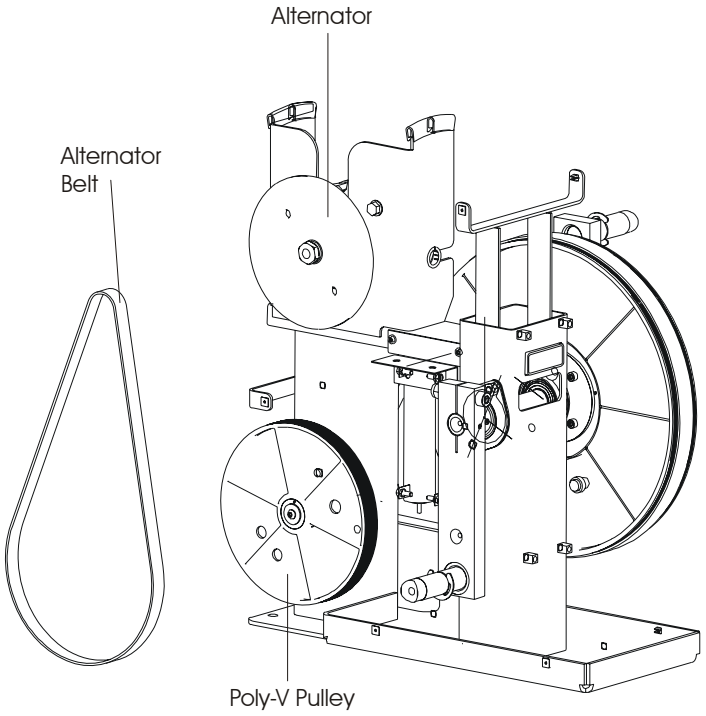
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Tag and identify wiring at the power control board.
3. Disconnect the wiring from the power control board.
4. Remove the four screws that secure the power control board to the mounting plate.
5. Use the same four screws to install the new power control board.
6. Connect the wiring to the new power control board.
7. Reinstall the main shroud assembly.



HOW TO… REPLACE THE ALTERNATOR BELT

Special service tools required: none

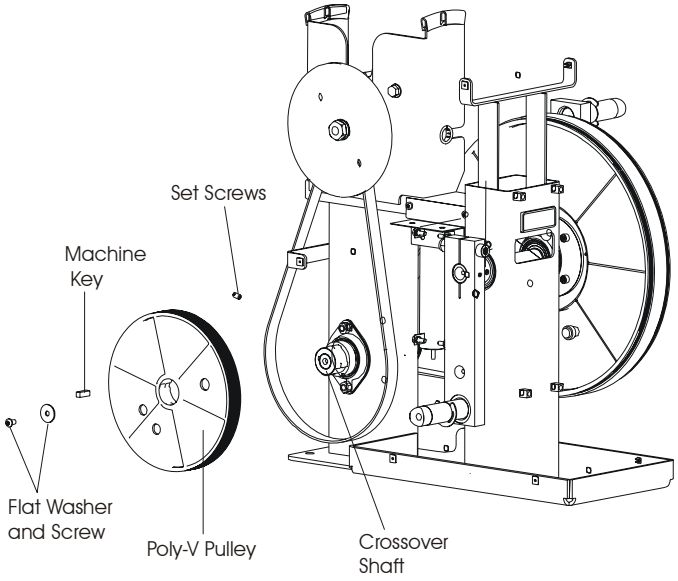
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Walk the alternator belt off the Poly-V pulley and remove the belt.
3. Place the new alternator belt around the alternator pulley and slowly walk the belt onto the Poly-V pulley until it is centered.
4. Reinstall the Main shroud assembly.



HOW TO… REPLACE THE POLY-V PULLEY

Special service tools required: none

1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the right lower shroud panel (see "How To..." on page 87).
3. Walk the alternator belt off the Poly-V pulley and remove the belt.
4. Remove the Allen screw and washer securing the Poly-V pulley to the crossover shaft.
5. Remove the set screws securing the Poly-V pulley to the machine key.



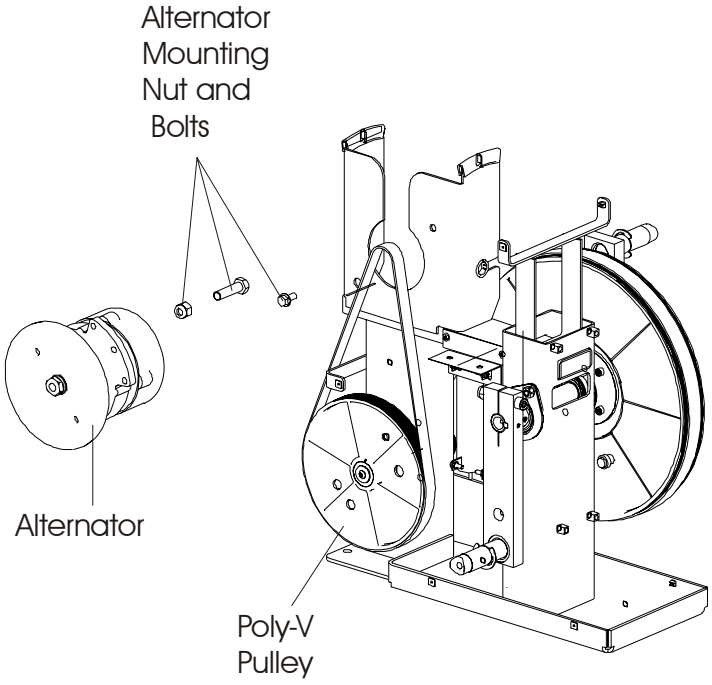
6. Slide the Poly-V pulley off the crossover shaft
7. Reverse steps 1 through 6 to install the new Poly-V pulley.

Note: apply Loctite 242 to all screws securing the Poly-V pulley to the crossover shaft.

HOW TO… REPLACE THE ALTERNATOR

Special service tools required: none

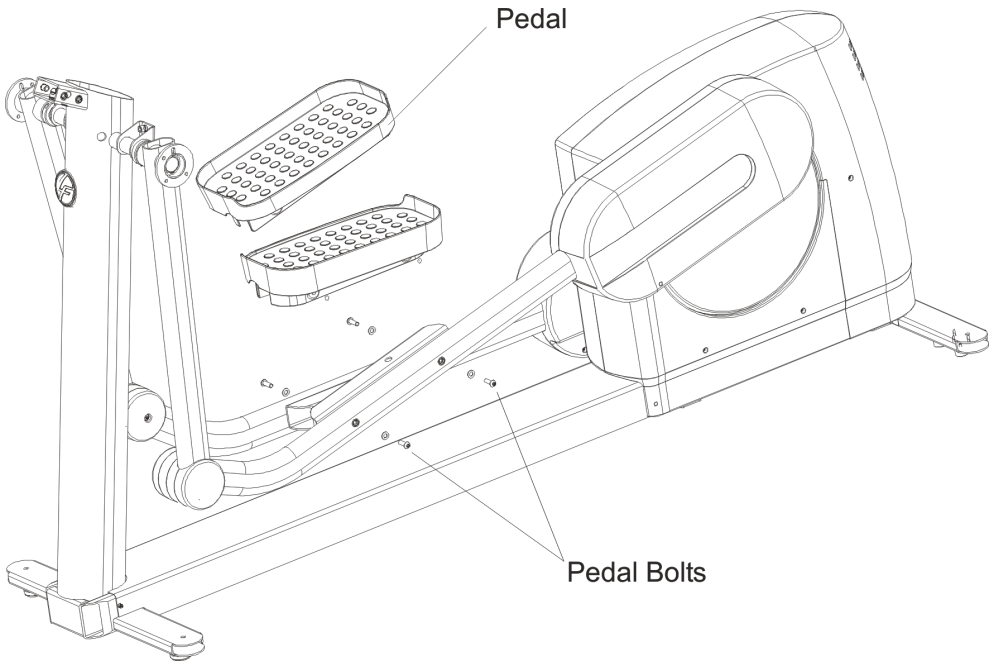
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Walk the alternator belt off the Poly-V pulley.
3. Remove the alternator belt.
4. Note where each wire terminates on the alternator.
5. Disconnect all wires attached to the alternator.
6. Remove the hex nut and mounting bolts securing the Alternator to the drive module.
7. Install the new alternator in reverse order ensuring that all wires are connected to the proper terminals.



HOW TO… REPLACE THE PEDAL

Special service tools required: none

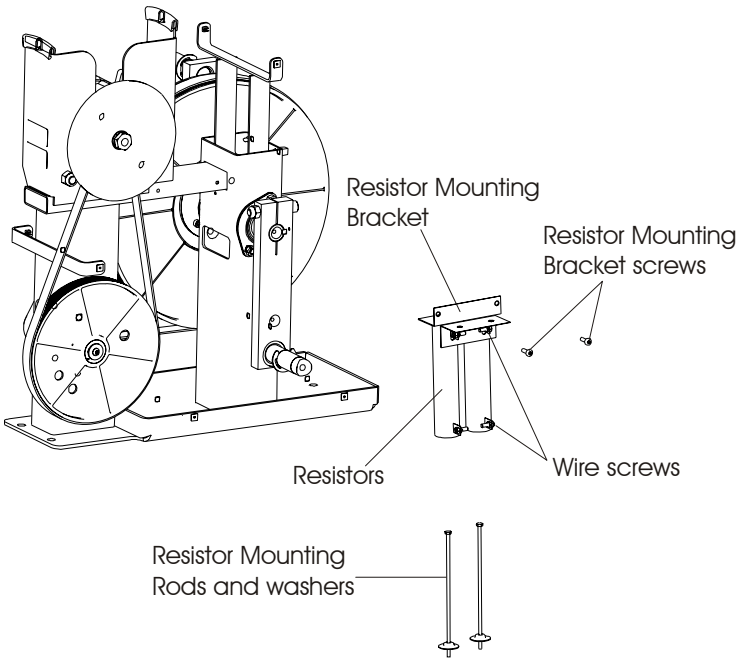
1. Remove the four Torx bolts securing the pedal to the pedal lever assembly.
2. Use the same bolts to install the new pedal.



HOW TO… REPLACE THE RESISTOR BRACKET ASSEMBLY

Special service tools required: none

1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the lower shroud panels (see "How To..." on page 87).
3. Disconnect all wires attached to the alternator. Note where each wire terminates on the alternator.
4. Disconnect connector end of cable from power control board at P2. A new cable is included with the new resistor bracket assembly and is already connected to the resistors.

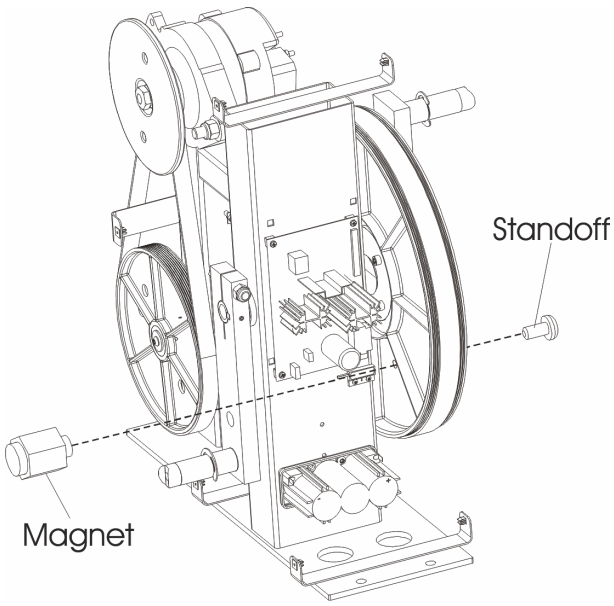


5. Remove two screws securing resistor mounting bracket to frame.
6. Reverse steps 1 through 5 to install the new resistors bracket assembly.

HOW TO… REPLACE THE MAGNET AND STANDOFF ASSEMBLY

Special service tools required: none

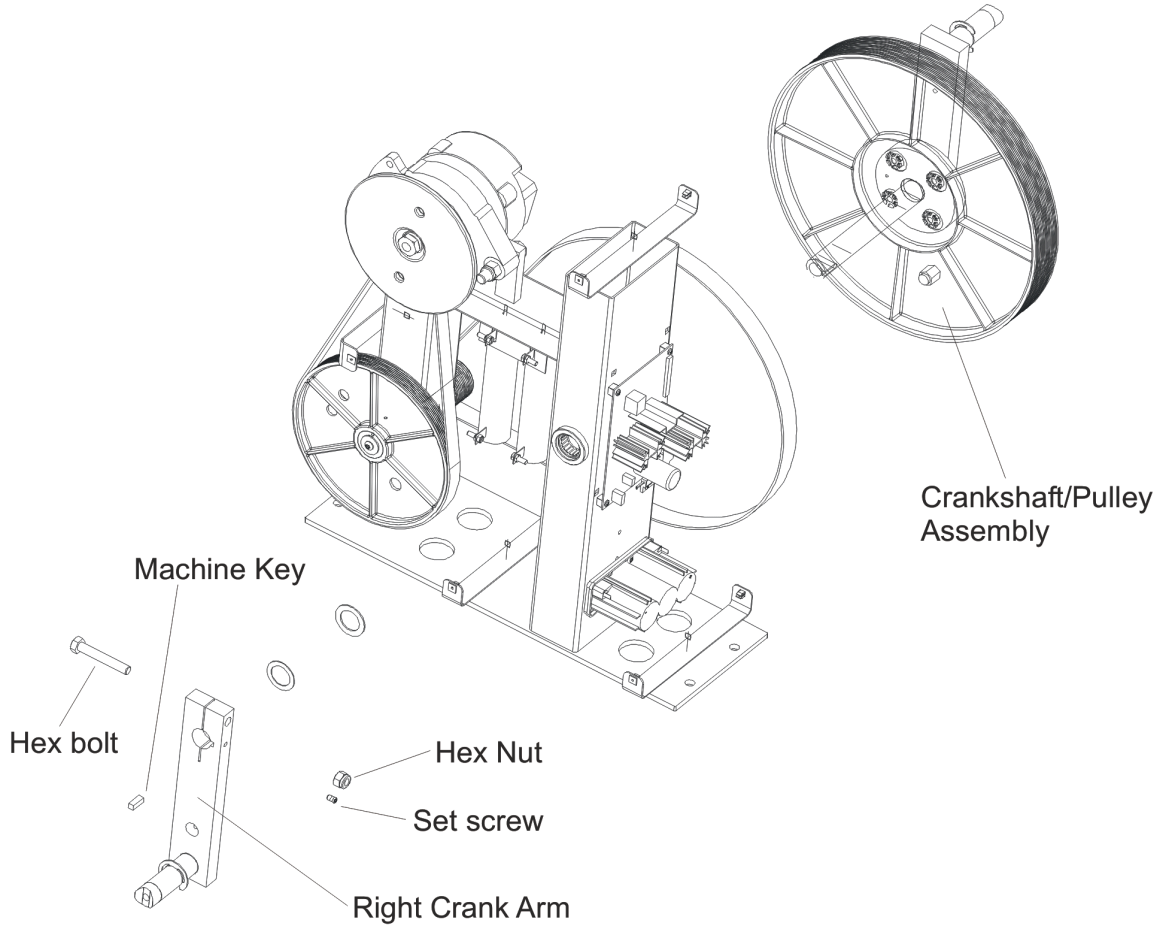
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the left outer link cover (see "How To..." on page 91).
3. Remove the left pedal lever assembly (see "How To..." on page 92).
4. Remove the crankarm cover (see "How To..." on page 94).
5. Remove the screw securing the magnet/standoff assembly to the main drive pulley.
6. Reverse steps 1 through 5 to install the new magnet/standoff assembly.



HOW TO… REPLACE THE RIGHT CRANKARM

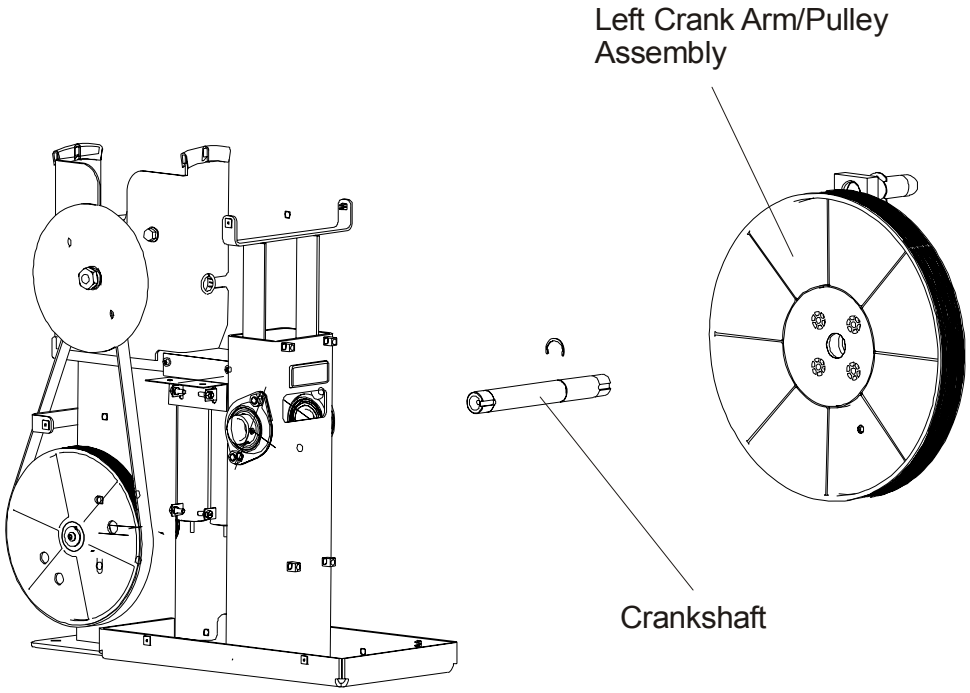
Special service tools required: none

1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the right outer link cover (see "How To..." on page 91).
3. Remove the right pedal lever assembly (see "How To..." on page 92).
4. Remove the right crankarm cover (see "How To..." on page 94).
5. Loosen the hex bolt and nut securing the right Crankarm to the crankshaft/pulley assembly.
6. Loosen the set screw securing the machine key to the crankshaft/pulley assembly.
7. Slide the right Crankarm off the crankshaft /pulley assembly.
8. Reverse steps 1 through 7 to install the new right Crankarm.



HOW TO… REPLACE THE LEFT CRANKARM/PULLEY ASSEMBLY

Special service tools required: none

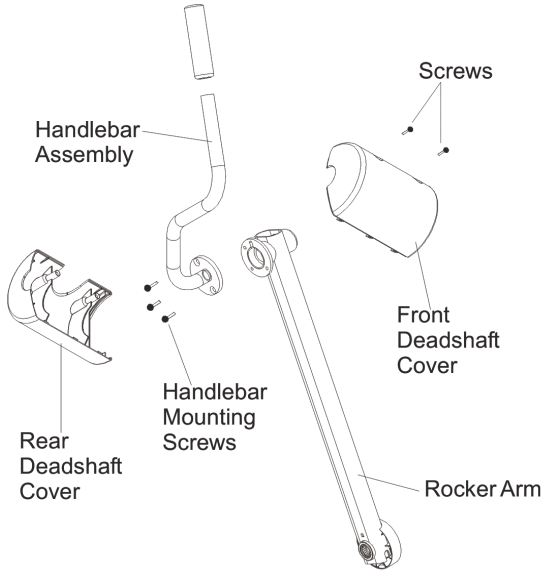


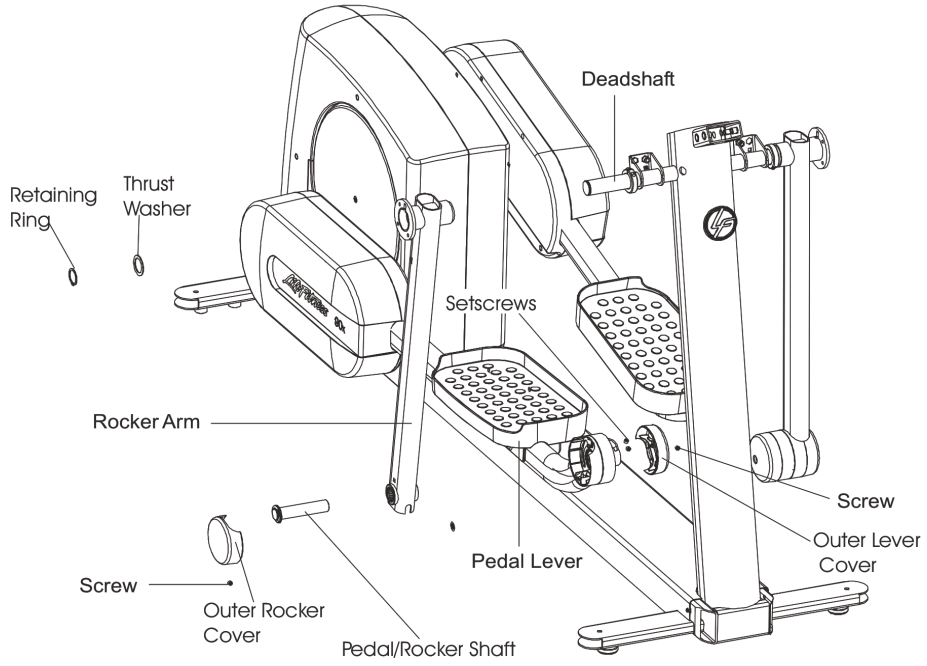
1. Remove the main shroud assembly (see "How To..." on page 84).
2. Remove the outer link covers (see "How To..." on page 91).
3. Remove the pedal lever assemblies (see "How To..." on page 92).
4. Remove the left crankarm cover (see "How To..." on page 94).
5. Walk the main drive belt off the crank pulley.
6. Loosen the bolt, nut and set screw securing the left crankarm/pulley assembly to the crankshaft.
7. Remove the left Crankarm/pulley assembly by sliding off of the left end of crankshaft.
8. Remove the four Allen bolts that connect the crankshaft plate, crank pulley, and left Crankarm weld assembly together.
9. Replace left Crankarm, drive pulley or both components at this time.
10. Reverse steps 1 through 8 to install the new crankshaft and pulley assembly

HOW TO… REPLACE THE PEDAL/ROCKER SHAFT BEARINGS

Special service tools required: bearing tool kit

1. Remove the front and rear deadshaft covers.
2. Remove the three bolts securing the handlebar to the rocker arm and remove the handlebar.
3. If so equipped, disconnect the heart rate cable.
4. Remove the retaining ring and washer that secures the rocker arm to the deadshaft.
5. Remove the outer pedal lever cover and outer rocker arm cover.
6. Remove the two Allen screws that secure the pedal lever to the pedal/rocker shaft and remove the pedal.
7. Remove the rocker arm unit (discard the pedal/rocker shaft).

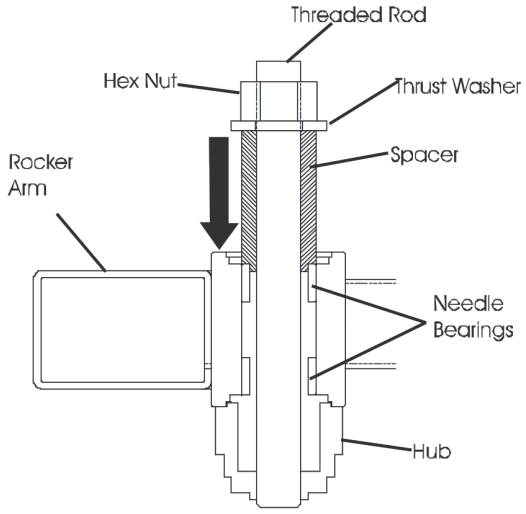




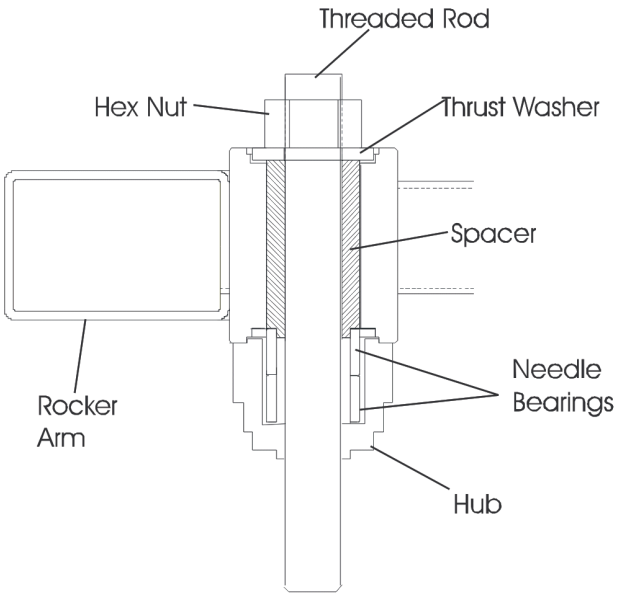
continued…

HOW TO… REPLACE THE PEDAL/ROCKER SHAFT BEARINGS – CONTINUED

8. Install the bearing puller on the rocker arm as shown.
9. Press the needle bearings out by rotating the hex nut clockwise until the bearings drop into the puller.
10. Once the bearings are out of the rocker arm, disassemble the puller assembly and discard the bearings.
11. Clean the housing before installing the new bearings.



INSTALLING CRANK BEARING KIT



PUSHING OUT THE NEEDLE BEARINGS INTO THE HUB

continued…

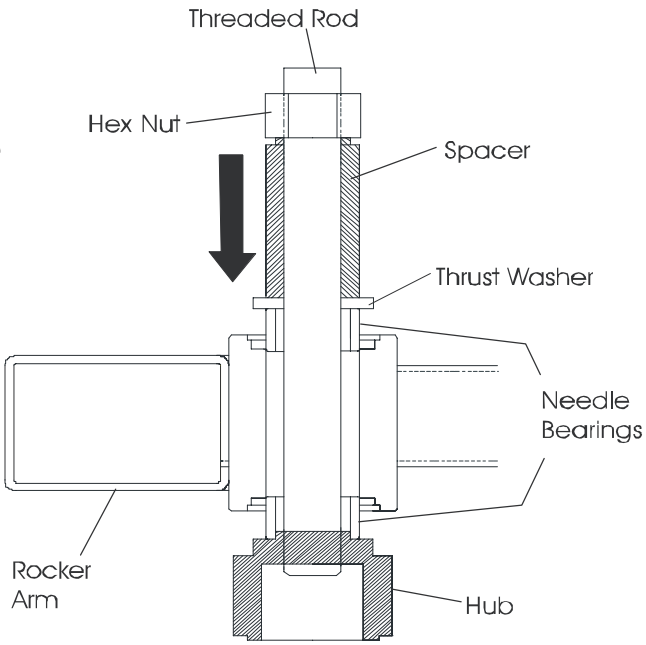
HOW TO… REPLACE THE PEDAL/ROCKER SHAFT BEARINGS – CONTINUED

12. Position the new needle bearings and bearing tool as shown. Make sure the bearings are squared and aligned with the bearing markings (the markings should be facing outward).

13. Tighten the hex nut. Hold the spacer if it turns with the hex nut.

14. Continue pressing in the new needle bearings until the thrust washer and hub stop against the rocker arm housing.

15. Reassemble the shaft, rocker arm, handlebar assembly, and covers.

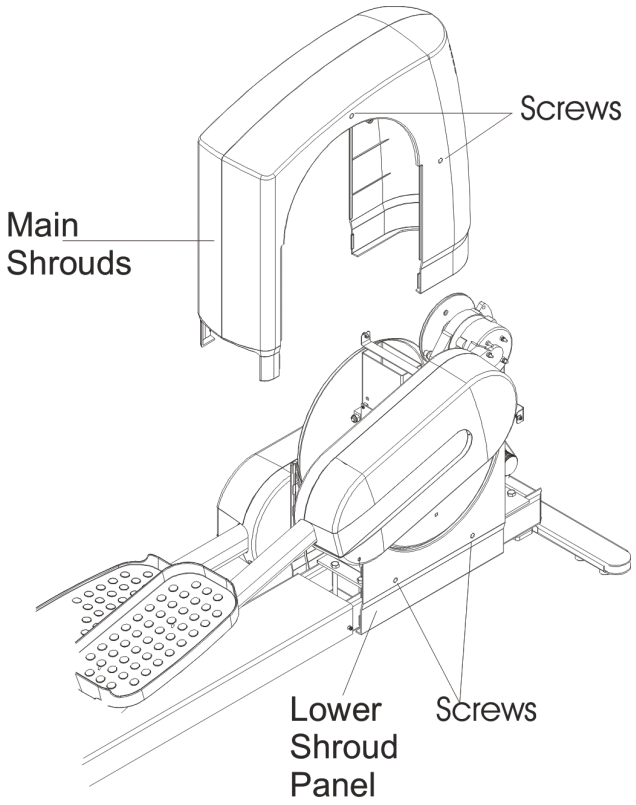


INSTALLING NEW NEEDLE BEARINGS

continued…

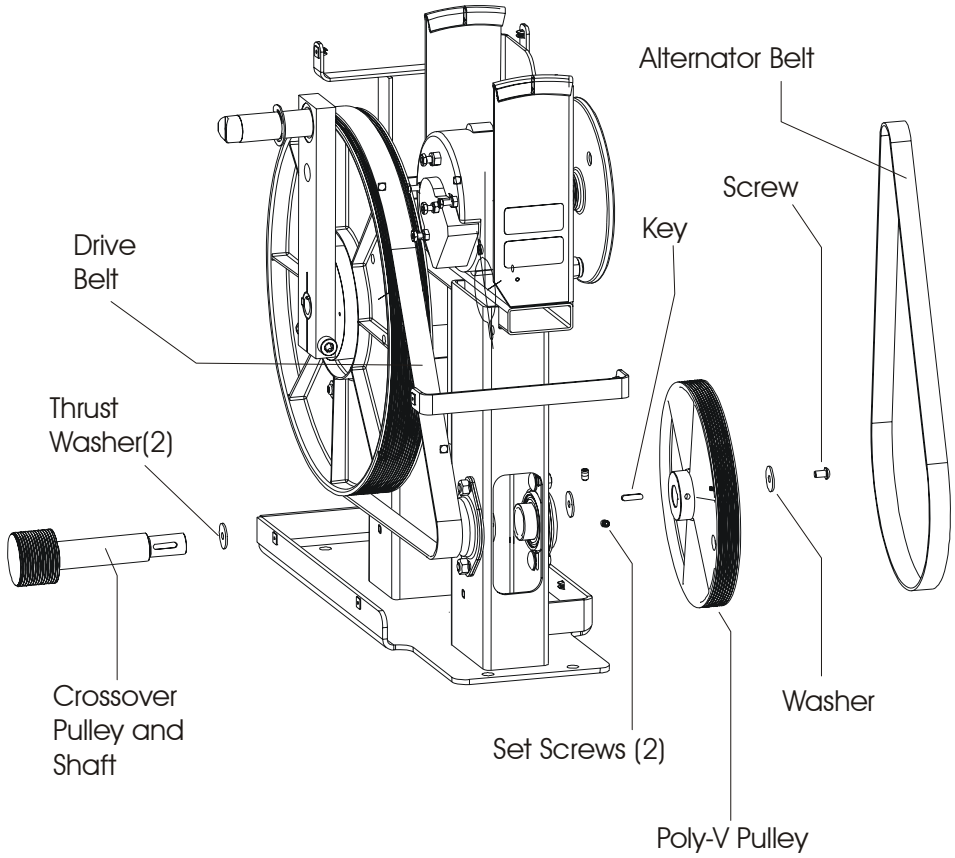
HOW TO… REPLACE THE CROSSOVER SHAFT AND/OR CROSSOVER BEARINGS

1. Remove the screws securing the main shrouds to the frame (two screws per shroud).
2. Remove the screws securing the lower shroud panels to the frame (two screws per shroud).



continued…

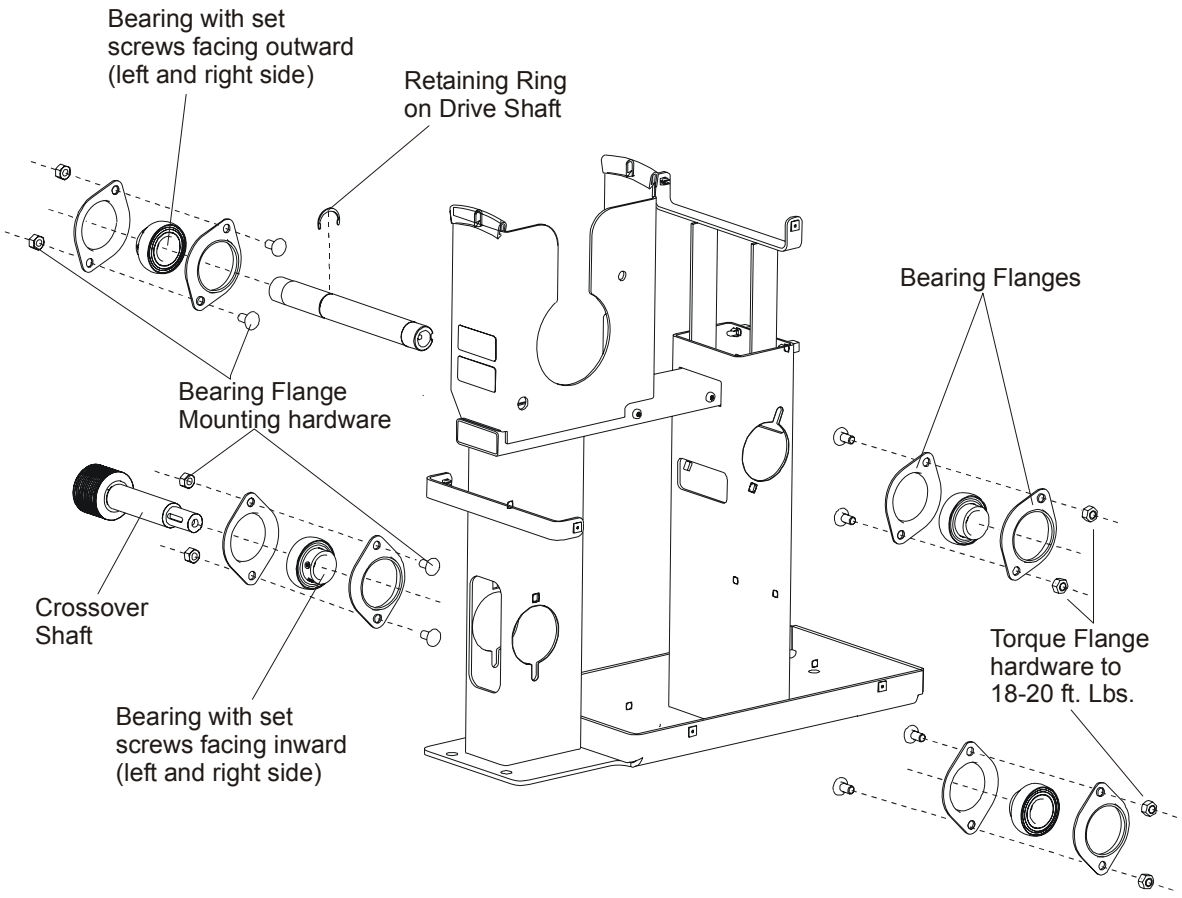
HOW TO… REPLACE THE CROSSOVER SHAFT AND/OR CROSSOVER BEARINGS - CONTINUED



3. Walk the alternator belt off the alternator and Poly-V pulley.
4. Walk the main drive belt off the crank pulley and crossover pulley.
5. Remove the Torx screw, washer and set screws securing the Poly-V pulley to the crossover shaft
6. Loosen the set screws securing the right side crossover bearing to the crossover shaft.
7. Remove the nuts and bolts securing the bearing flanges to the drive module and remove right side crossover bearing and flanges.
8. Slide the crossover shaft out of the user's left side of the drive module and remove left bearing from crossover shaft by loosening the set screws on the bearing.

continued…

HOW TO… REPLACE THE CROSSOVER SHAFT AND/OR CROSSOVER BEARINGS - CONTINUED



9. Discard the old hardware, bearing flanges, bearings and crossover shaft if necessary.

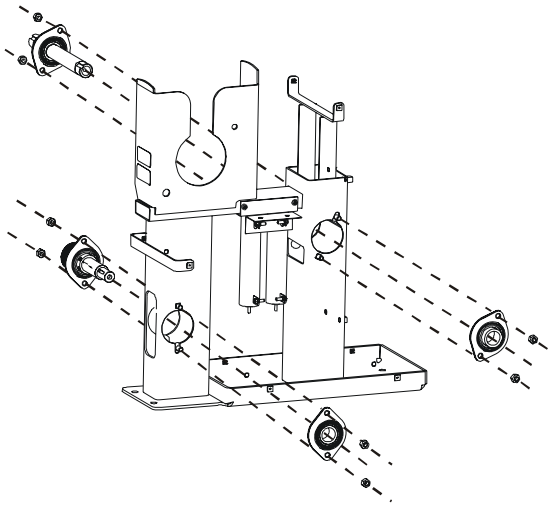
Note: It is recommended that the flanges be replaced when replacing bearings.

10. Position two new bearing flanges around one new bearing and loosely mount them to the users' right side of the drive module using new nuts and bolts. The holes in the flanges should line up with the holes in the drive module. The bearing set screws should face towards the inside of the drive module frame.

11. Slide the remaining new bearing onto either the existing crossover shaft or a new crossover shaft until it is flush against the pulley on the left side of the crossover shaft. With the bearing set screws facing toward the inside of the drive module tighten the bearing set screws.

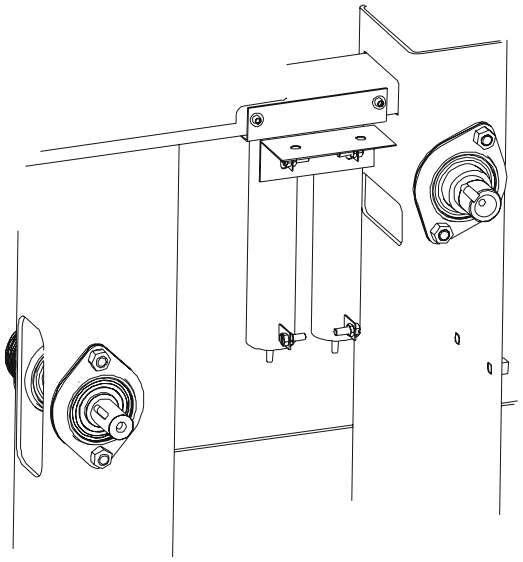
continued…

HOW TO… REPLACE THE CROSSOVER SHAFT AND/OR CROSSOVER BEARINGS - CONTINUED



12. Position the remaining two bearing flanges around the bearing mounted to the crossover shaft. Slide this assembly through the left side of the drive module and then through the right side bearing.

13. Loosely secure the left side bearing to the drive module using new nuts and bolts. Move the crossover shaft up and down to ensure proper seating of bearing flanges around bearings and then hand tighten nuts.



14. With all parts and hardware in position slowly tighten the mounting hardware. Start with the upper right side nut followed by the lower right side nut and then the upper left side nut and lastly the lower left side nut. Tighten these nuts in the same manner you would lug nuts on a tire (a little at a time on each nut), constantly turning the crossover shaft to ensure that it turns freely.

15. If the crossover shaft turns freely continue to tighten the nuts to 18-20 ft. lbs. If the it binds, loosen the bearing flange hardware and adjust the position of the bearing in the bearing flanges by moving the crossover shaft up and down until the crossover shaft turns freely and then tighten.

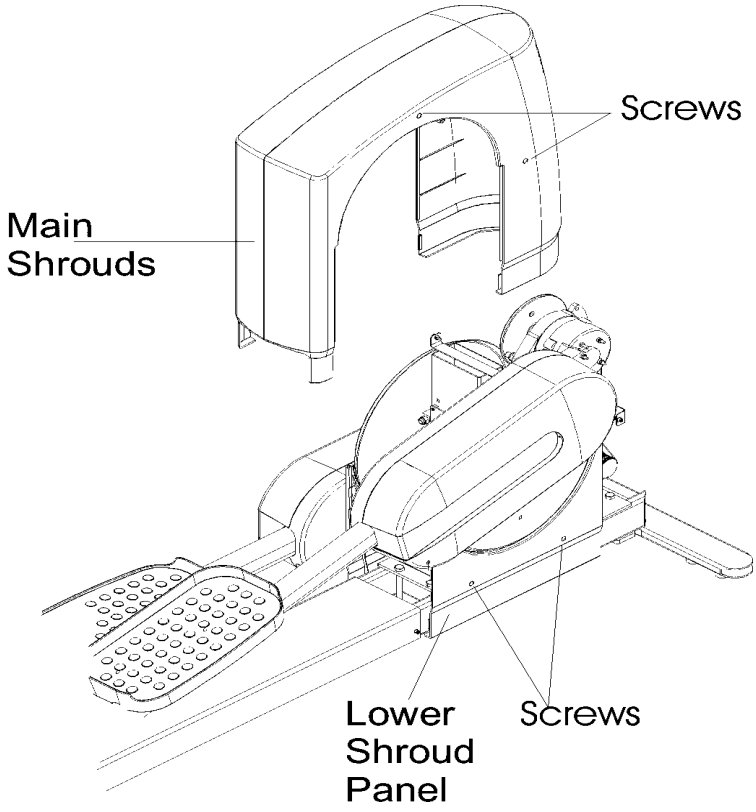
16. With the hardware tightened to 18-20 ft. lbs. Give the crossover shaft one final check for binding. If the crossover shaft turns freely the set screws on the users right side bearing may now be tightened. If the crossover shaft binds, loosen the hardware slightly and adjust the position of the bearing in the bearing flanges until the shaft turns freely. Then tighten to 18-20 ft. lbs. And check for binding.

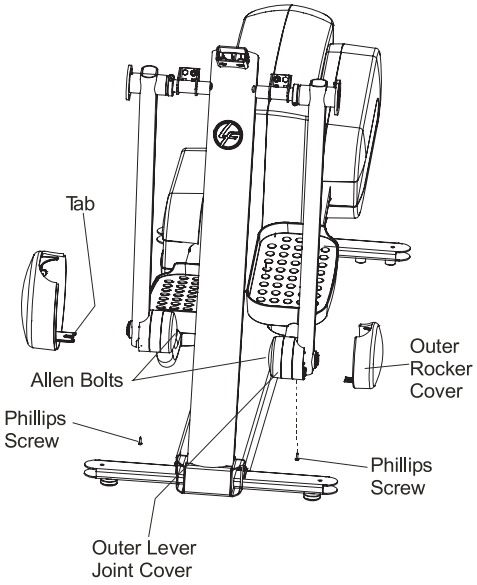
17. Install the remaining components in reverse order.

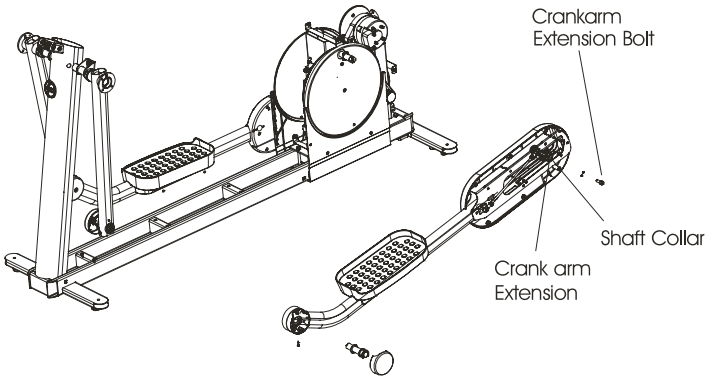
HOW TO… REPLACE THE CRANKSHAFT AND/OR CRANKSHAFT BEARINGS

Special service tools required: none

1. Remove the screws securing the main shrouds to the frame (two screws per shroud).
2. Remove the screw securing the lower shroud panels to the frame (two screws per shroud).
3. Remove the outer link covers. (see "How To…" on page 91)
4. Remove the right and left pedal lever assemblies. (see "How To…" on page 92)



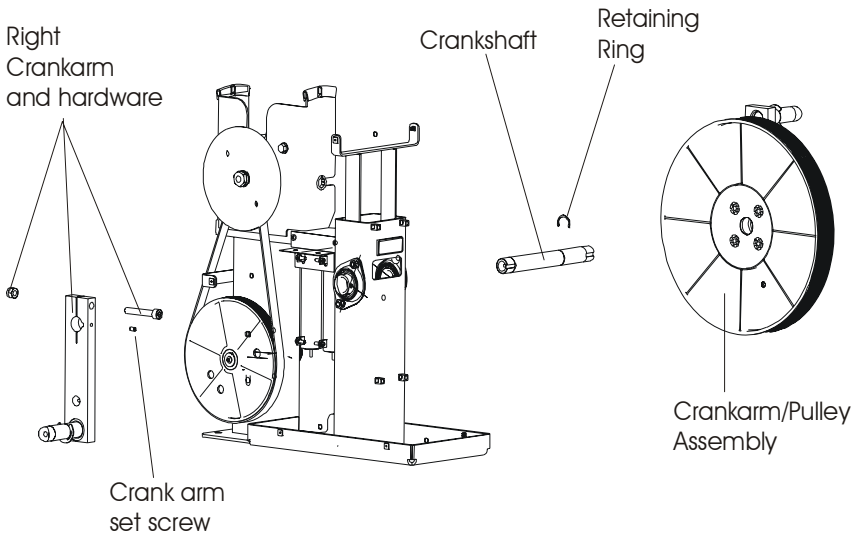




continued…

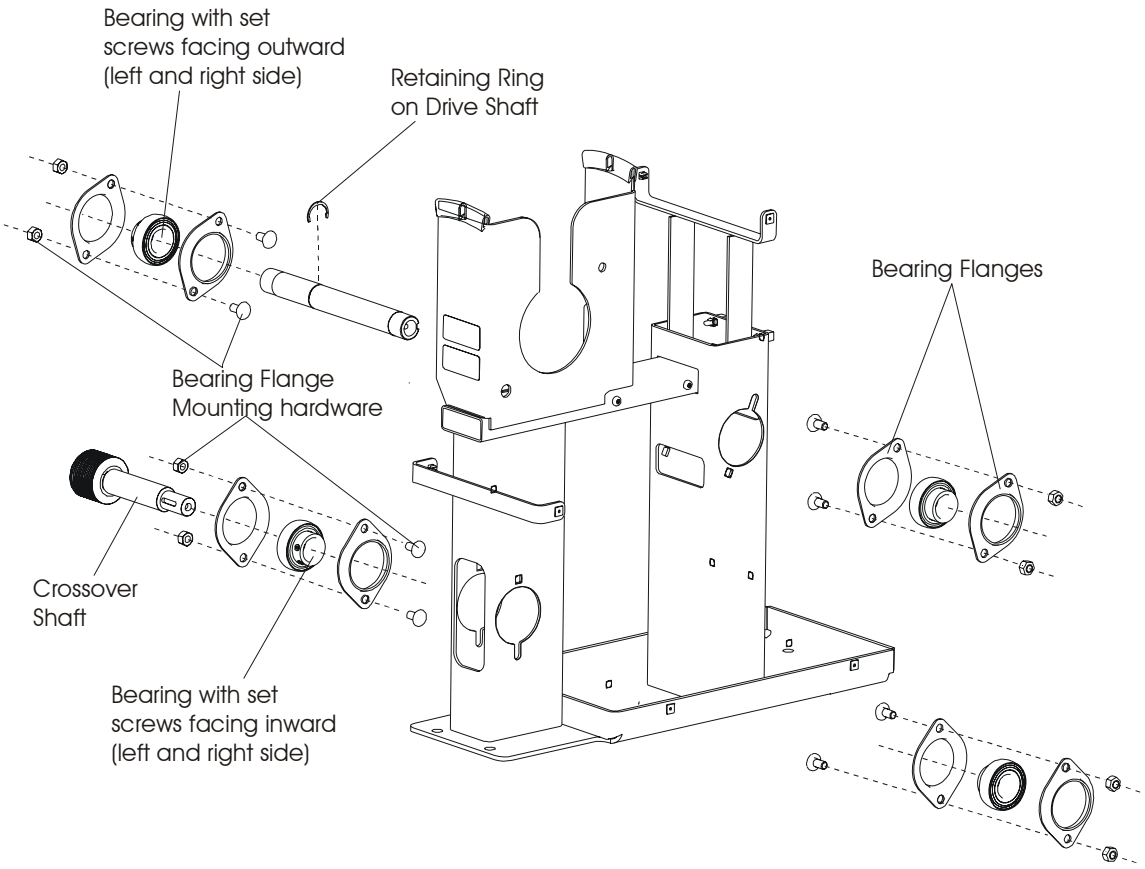
HOW TO… REPLACE THE CRANKSHAFT AND/OR CRANKSHAFT BEARINGS - CONTUNUED

5. Walk the alternator belt off of the alternator and Poly-V pulley.
6. Walk the main drive belt off of the crank pulley and crossover pulley.
7. Remove four screws securing the PCB/reed switch/battery bracket to the drive module. This will allow easy access to the bearing flange bolts.
8. Remove the crankarm covers. (see "How To…" on page 94)
9. Remove the right crankarm by loosening the set screw, nut and bolt securing it to the crankshaft.
10. Remove the left crankarm weldment by loosening the set screw, nut and bolt securing it to the crankshaft.



continued…

HOW TO… REPLACE THE CRANKSHAFT AND/OR CRANKSHAFT BEARINGS - CONTINUED



11. Loosen the set screws securing the right side crankshaft bearing to the crankshaft.

12. Remove the nuts and bolts securing the right side bearing flanges to the drive module.

13. Remove the right side bearing and bearing flanges from the crankshaft.

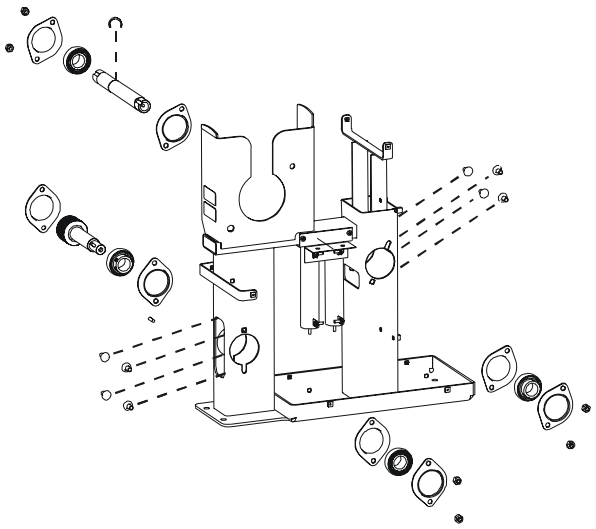
14. Remove the nuts and bolts securing the left side bearing flanges to the drive module.

15. Slide the crankshaft out of the left side of the drive module and remove left bearing from crankshaft by loosening the set screws on the bearing.

16. Remove retaining ring from old crankshaft if replacing crankshaft and install on new crankshaft. Discard old bearings, bearing flanges, hardware and crankshaft if necessary.

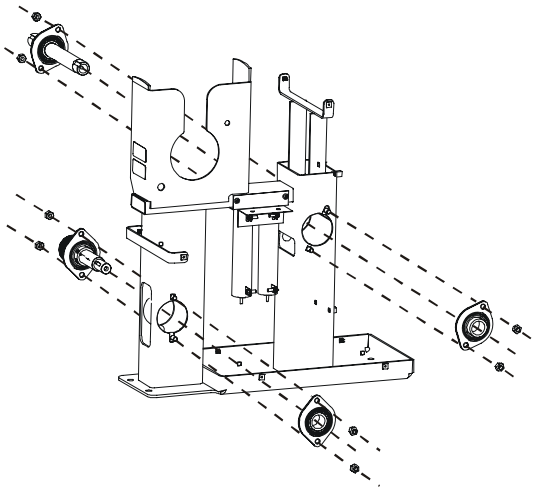
HOW TO… REPLACE THE CRANKSHAFT AND/OR CRANKSHAFT BEARINGS – CONTINUED

17. Position two new bearing flanges around one of the new bearings and loosely mount them to the users' right side of the drive module using new nuts and bolts. The holes in the bearing flanges should line up with the holes in the drive module. The set screws on the bearing should be facing away from the drive module.



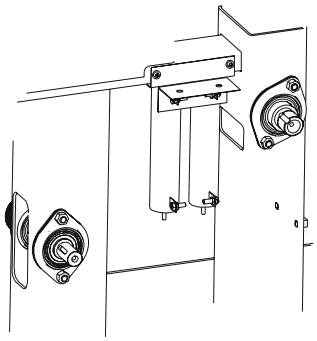
18. Slide the other new bearing onto left side of the crankshaft until it is flush against the retaining ring. With the set screws on the bearing facing away from the drive module tighten the bearing set screws.

19. Position the remaining set of new bearing flanges around the left side bearing and slide the assembly through the left side of the drive module and then through the right side bearing .



20. Loosely secure the left side bearing flanges to the drive module with the new nuts and bolts. Move the crankshaft up and down to ensure proper seating of bearing flanges and bearings and then hand tighten nuts.

21. With all the hardware in place slowly tighten all mounting hardware starting with the upper right side nut followed by the lower right side nut then the upper left side nut and lastly the lower left side nut. Tighten these nuts in the same manner you would lug nuts on a tire (a little at a time on each nut) constantly turning the crankshaft to ensure it turns freely.



continued…

HOW TO… REPLACE THE CRANKSHAFT AND/OR CRANKSHAFT BEARINGS - CONTINUED

22. If the crankshaft turns freely, continue to fully tighten the hardware to 18-20 ft. lbs. If the Crankshaft binds, loosen the hardware slightly and adjust the position of the bearing in the bearing flanges by moving the crankshaft up and down until the crankshaft turns freely and then tighten.

23. Once the hardware has been fully tightened to 18-20 ft. lbs. the crankshaft must be turned again to check for binding. If the crankshaft turns freely the right side bearing set screws may now be tightened. If the crankshaft binds loosen the hardware slightly and adjust the position of the bearings in the bearing flanges until the crankshaft turns freely and then tighten.

24. Once the crankshaft turns freely the right side bearing set screws can be tightened securely.

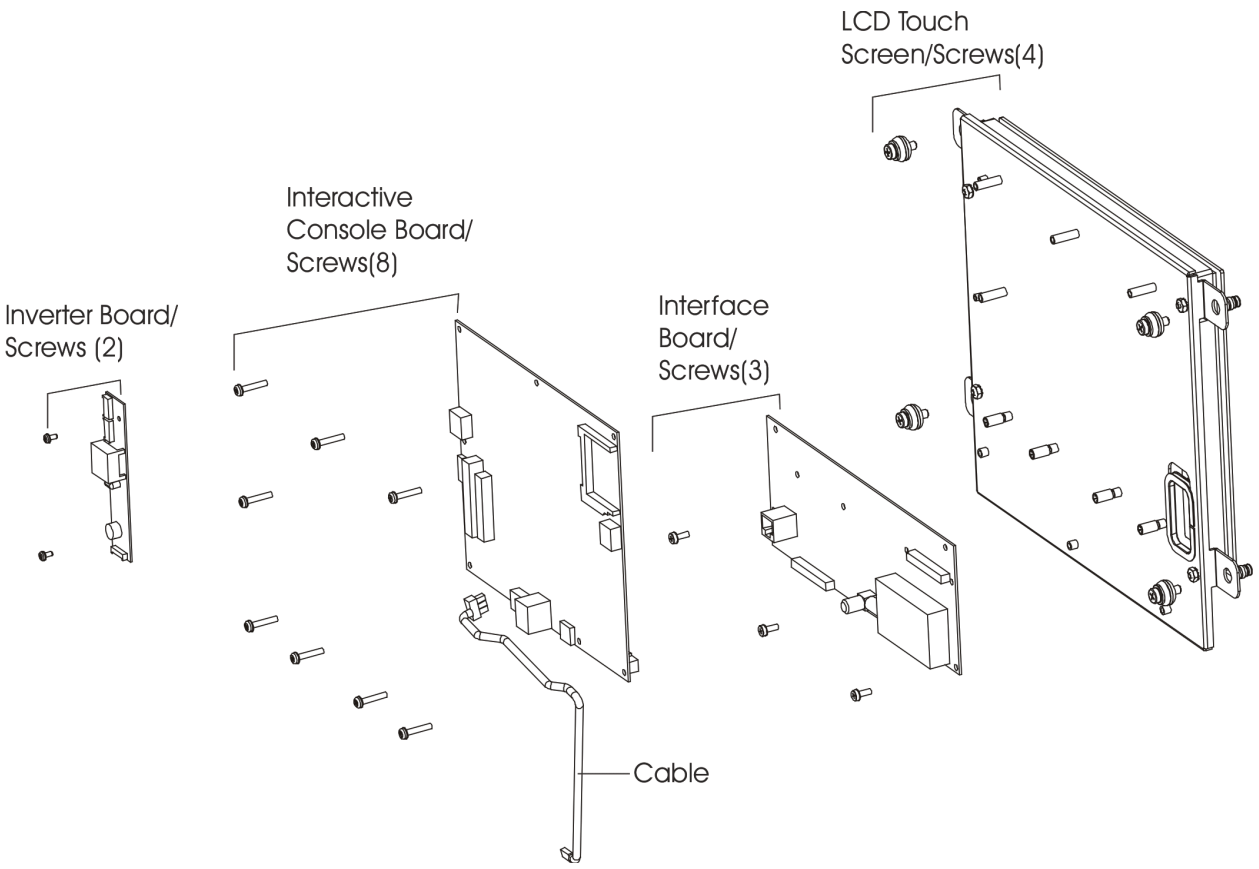
25. Install remaining components in reverse order.

LCD INTEGRATED CONSOLE OVERVIEW

Special service tools required: none

CAUTION! BEFORE REPLACING A CIRCUIT BOARD, ALWAYS GROUND YOURSELF TO THE MACHINE WITH AN ANTI-STATIC GROUND STRAP.

The following pages provide procedures for servicing the LCD integrated console. While the console housings may differ among the various products, the internal components which make up the consoles are identical. Use this exploded view to identify parts and locate components during service.



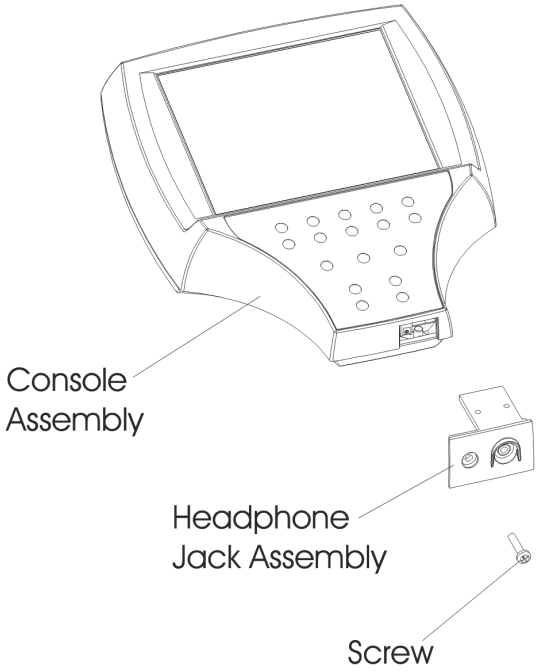
HOW TO… REPLACE THE HEADPHONE JACK

Special service tools required: none

CAUTION! BEFORE REPLACING A CIRCUIT BOARD, ALWAYS GROUND YOURSELF TO THE MACHINE WITH AN ANTI-STATIC GROUND STRAP.

Note for clarity, the console is shown separated from the unit. Headphone jack replacement does not require removal of the console from the unit.

1. Remove the Phillip screw securing the headphone jack at the bottom of the console.
2. Remove the headphone jack from the console.
3. Reverse steps 1 and 2 to install the new headphone jack.

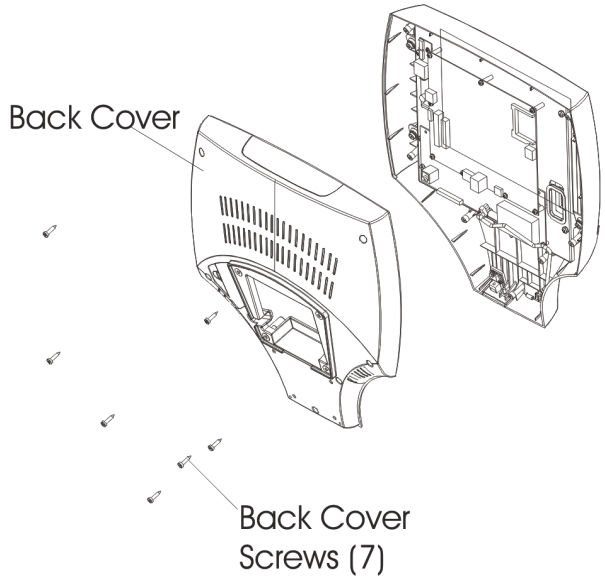


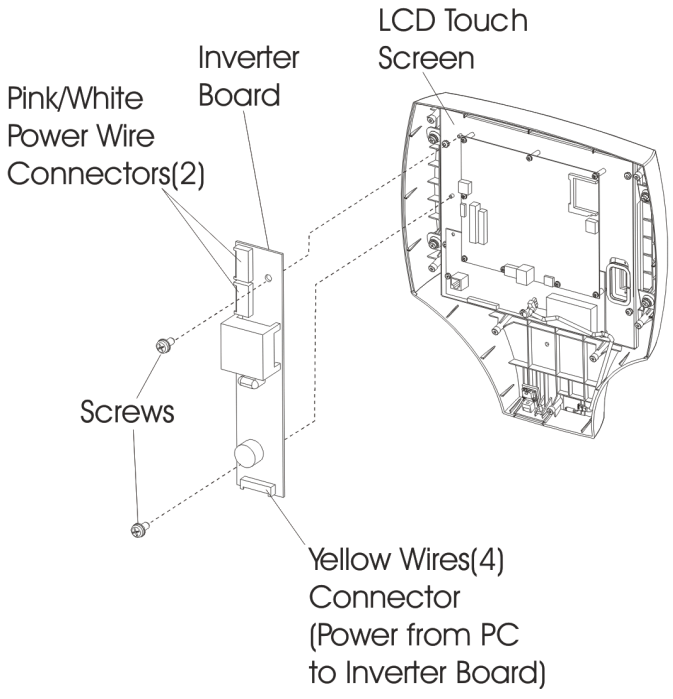
HOW TO… REPLACE THE INVERTER BOARD

Special service tools required: none

CAUTION! BEFORE REPLACING A CIRCUIT BOARD, ALWAYS GROUND YOURSELF TO THE MACHINE WITH AN ANTI-STATIC GROUND STRAP.

1. Remove the console from the unit.
2. Remove the seven screws from the back cover.
3. Lift the back cover off the front half of the console.
4. Disconnect the two pink/white power wire connectors from the top of the inverter board.
5. Disconnect the four yellow wires connector at the bottom of the inverter board.
6. Remove the two Phillip screws that secure the inverter board to the back of the LCD touchscreen.
7. Lift out the touchscreen.
8. Reverse steps 1 through 7 to install the new inverter board.



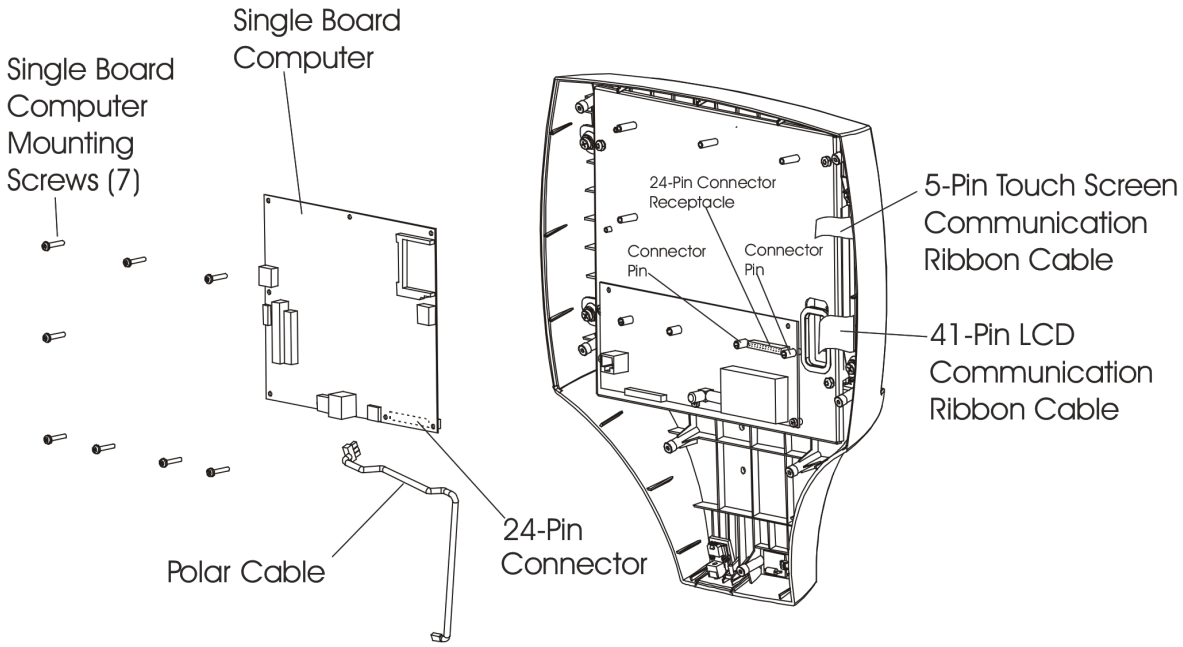


HOW TO… REPLACE THE SINGLE BOARD COMPUTER

Special service tools required: none

CAUTION! BEFORE REPLACING A CIRCUIT BOARD, ALWAYS GROUND YOURSELF TO THE MACHINE WITH AN ANTI-STATIC GROUND STRAP.

1. Remove the console from the unit (see "How To..." on page 76).
2. Remove the console back cover (see page 121).
3. Disconnect all of the cables from the single board computer.
4. Remove the seven screws that secure the single board computer to the back of the LCD touchscreen.
5. The single board computer remains plugged into the 24-pin connector receptacle, which is located between two connector pins on the interface board. Carefully wiggle the single board computer up and out of the interface board connector receptacle and connector pins.
6. Reverse steps 1 through 5 to install the new single board computer. Be careful when connecting the single board computer to the machine's interface board.

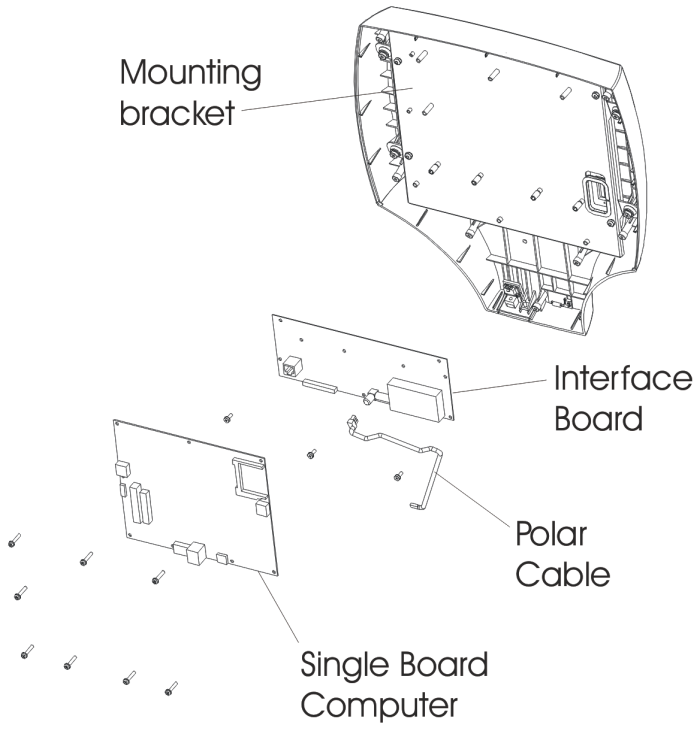


HOW TO… REPLACE THE INTERFACE BOARD

Special service tools required: none

CAUTION! BEFORE REPLACING A CIRCUIT BOARD, ALWAYS GROUND YOURSELF TO THE MACHINE WITH AN ANTI-STATIC GROUND STRAP.

1. Remove the console from the unit (see "How To..." on page 76).
2. Remove the console back cover (see page 121).
3. Remove the single board computer (see "How To..." on page 122).
4. Disconnect all cables from the interface board.
5. Remove the five screws that secure the interface board to the mounting bracket.
6. Remove the interface board.
7. Reverse steps 1 through 6 to install the new interface board. Be careful when connecting the single board computer to the machine's interface board.

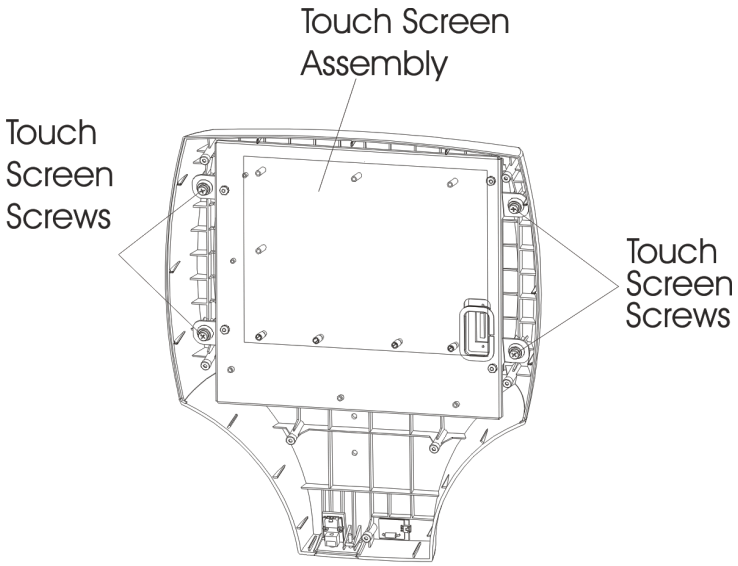


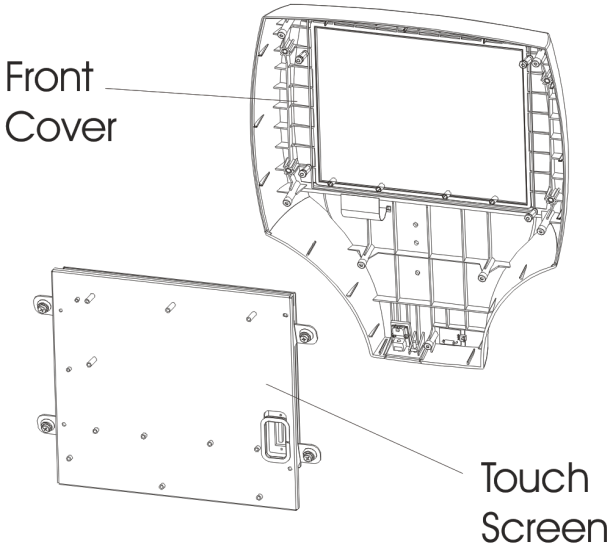
HOW TO… REPLACE THE TOUCHSCREEN ASSEMBLY

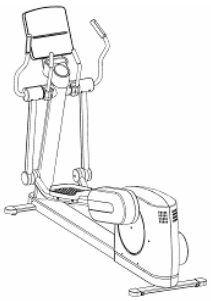
Special service tools required: none

CAUTION! BEFORE REPLACING A CIRCUIT BOARD, ALWAYS GROUND YOURSELF TO THE MACHINE WITH AN ANTI-STATIC GROUND STRAP.

1. Remove the console from the unit (see "How To..." on page 76).
2. Remove the console back cover (see page 121).
3. Remove the single board computer (see "How To..." on page 122).
4. Remove the interface board (see "How To..." on page 123).
5. Remove the inverter board (see "How To..." on page 121).
6. Remove the fours screws that secure the touchscreen bracket assembly to the bezel assembly.
7. Remove the touchscreen assembly from the console.
8. Remove the four nuts securing the LCD touchscreen to the bracket.
9. Separate the bracket from the assembly.
10. Reverse steps 1 through 9 to install the new touchscreen assembly.





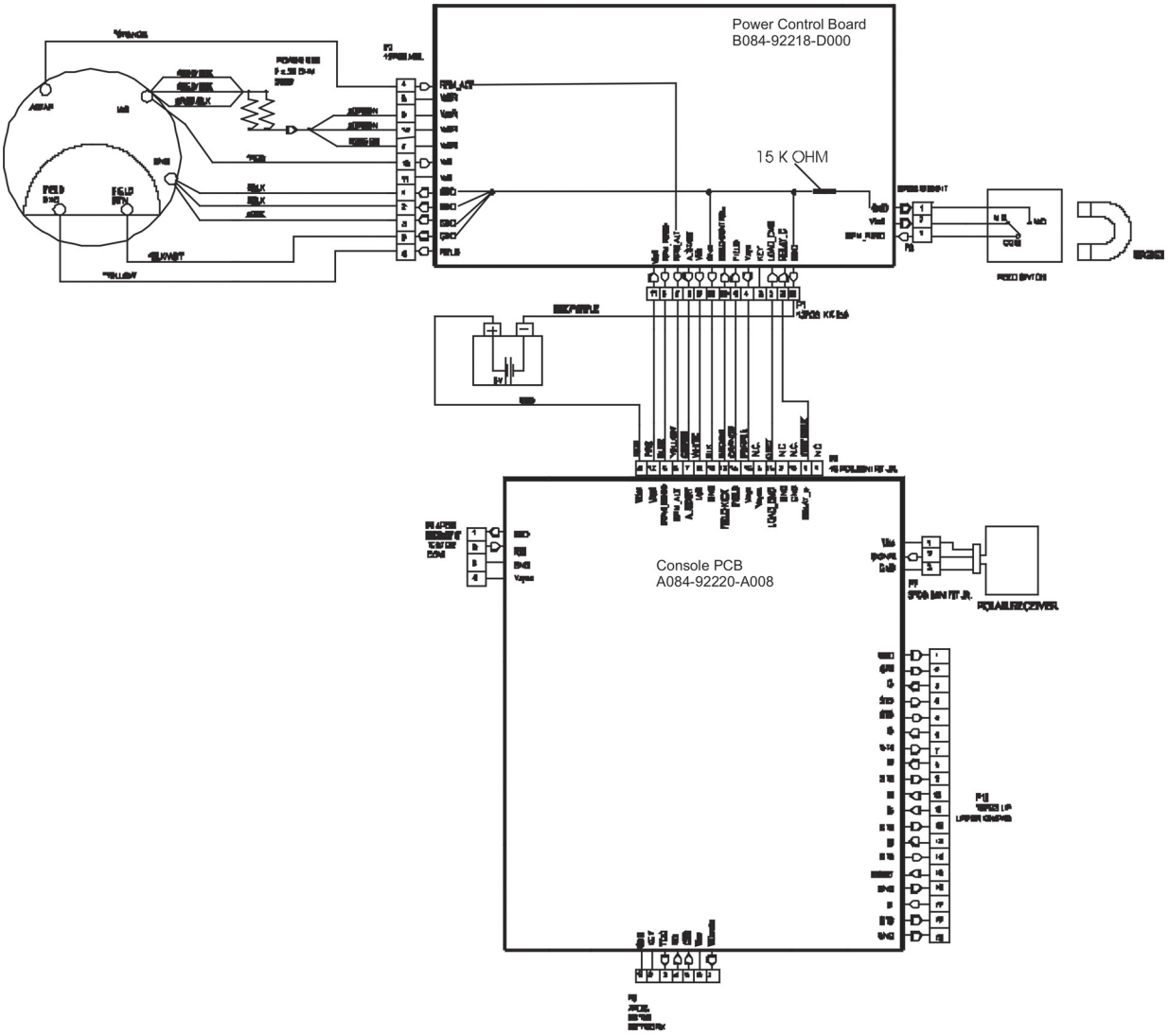


LifeFitness

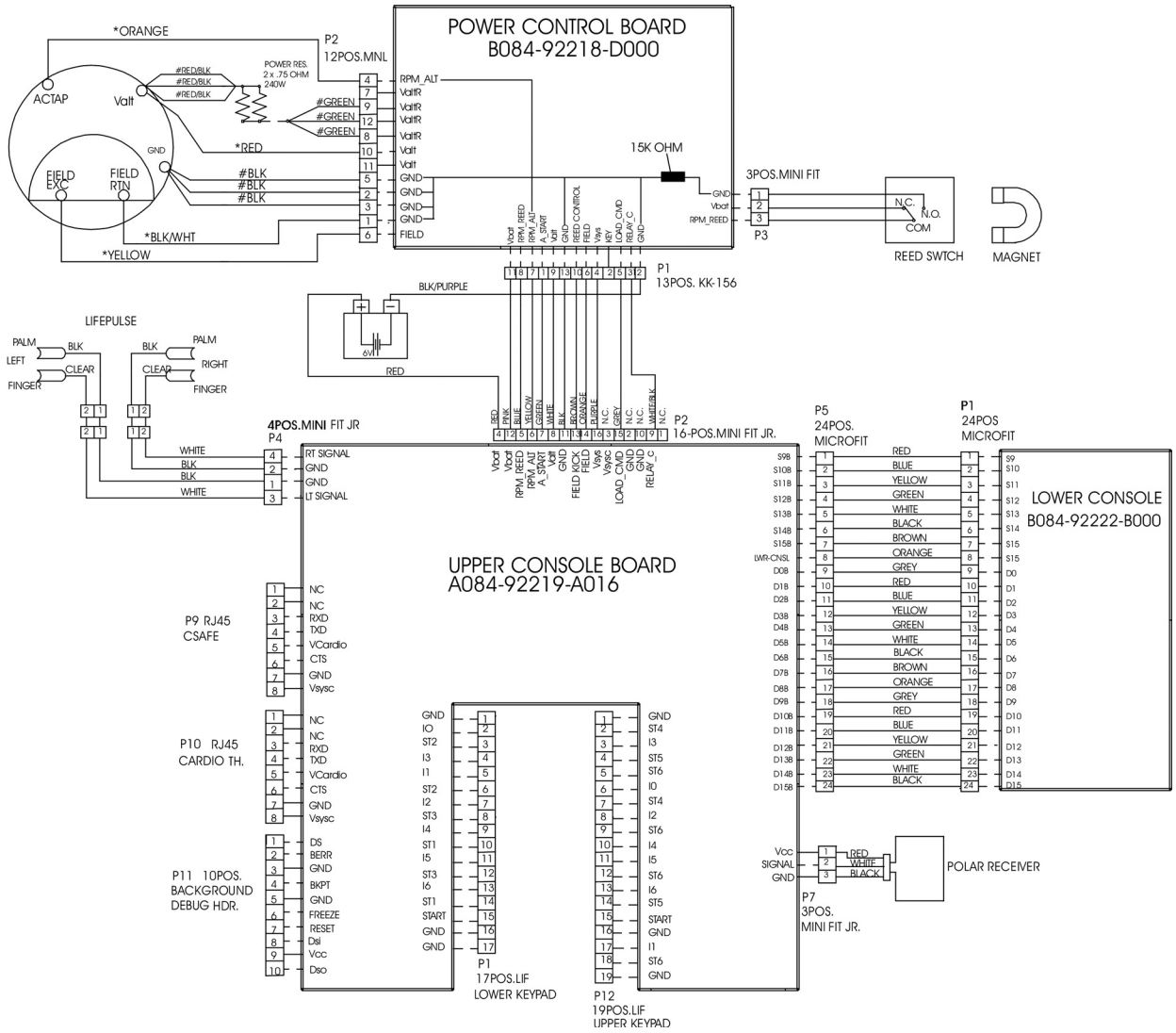
Quiet Drive Cross-Trainer

ELECTRONICS

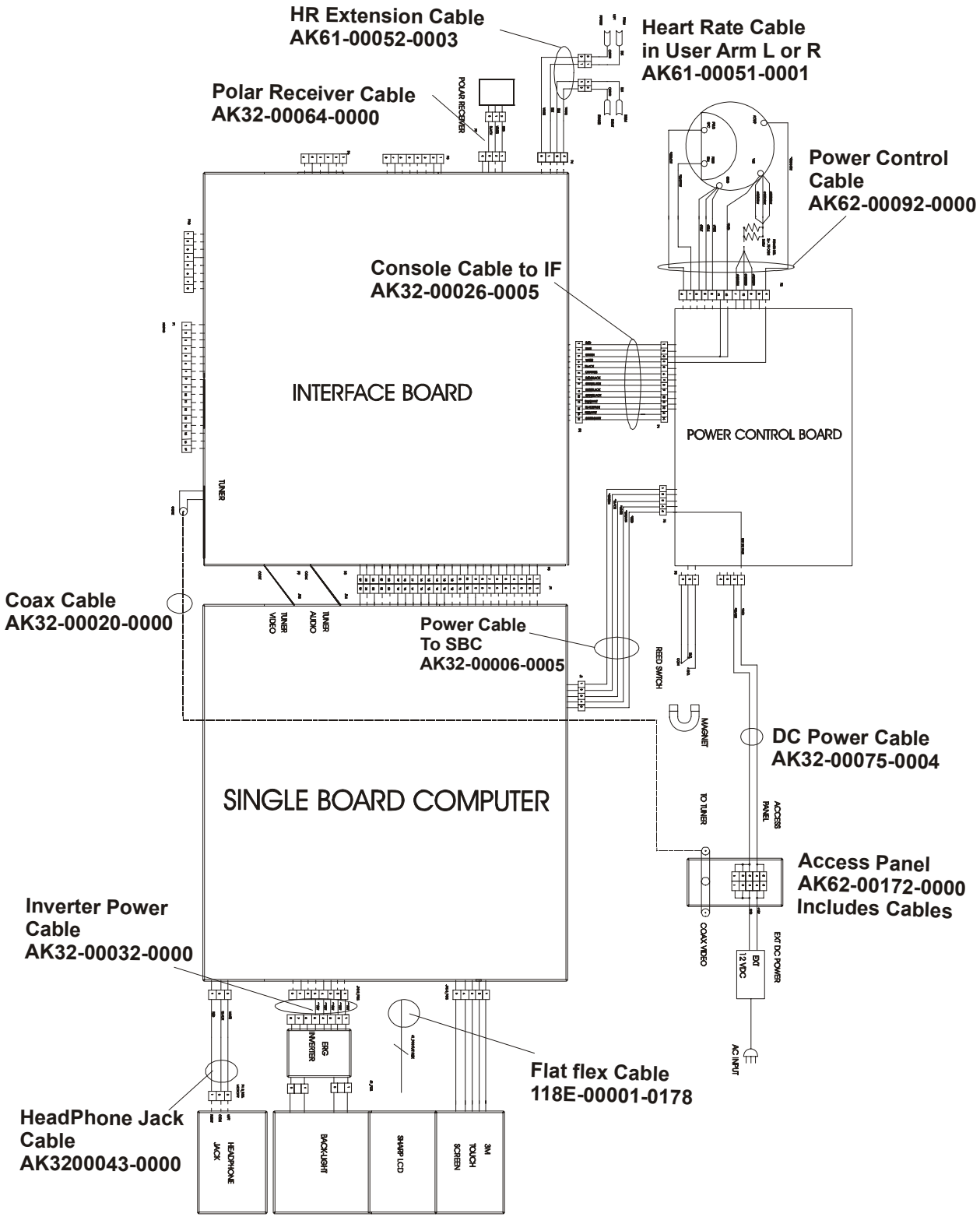
WIRING BLOCK DIAGRAM – MODEL 93X

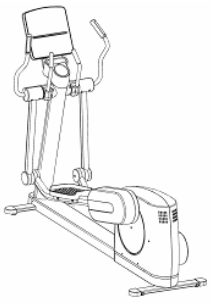


WIRING BLOCK DIAGRAM – MODEL 95XI



WIRING BLOCK DIAGRAM – MODEL 95XE



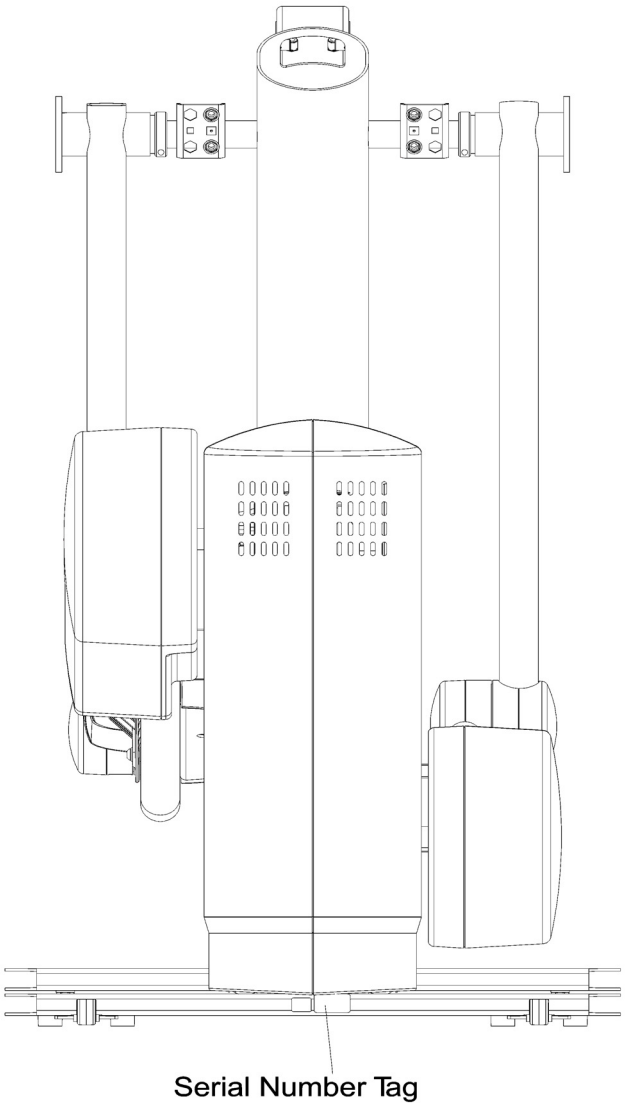


LifeFitness

Quiet Drive Cross-Trainer

MISCELLANEOUS

MODEL IDENTIFICATION AND SERIAL NUMBER LOCATION

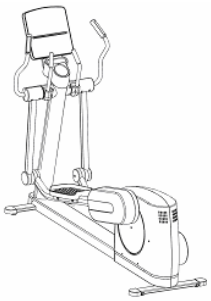


PREVENTIVE MAINTENANCE SCHEDULE

		Daily	Monthly	Biannually
Housing	**Inside**			Clean
	Outside	Clean		
Power Control	**Heatsink**			Clean
	Connectors			Inspect
	Board			Inspect
Console Assembly	**Overlay**	Clean		
	Mounting Bolts		Inspect	
	Connectors			Inspect
Alternator	**Belt Tension**			Inspect
	Brushes			Inspect
	Flywheel			Clean, Inspect
Mechanical Systems	**Main Drive Belt**		Inspect	
	Pedals		Inspect	
	Drive Pulley			Clean, Inspect
Heart Rate	**Sensors**	Clean	Clean	Clean

SAFETY INSTRUCTIONS

- DO NOT locate the Cross-Trainer outdoors, near swimming pools, or in areas of high humidity.
- DO NOT operate your Cross-Trainer if it has been dropped, damaged, or even partially immersed in water. Contact Life Fitness Customer Support Services at the number in the Operation Manual.
- DO NOT locate the Cross-Trainer closer than 30 inches (76 cm) from a television set.
- DO NOT locate additional Cross-Trainers less than 42 inches (107 cm) from center to center to avoid cross talk (interference) between the heart rate monitors.
- DO keep the area around your Cross-Trainer clear of obstructions (including furniture and walls).
- DO verify the contents of the delivery carton against the accompanying parts listing prior to setting the cartons and shipping materials aside. If any parts are missing, contact Life Fitness Customer Support Services at the number listed in the Operation Manual. Save the shipping cartons in case a return is needed.
- DO read the entire Operation Manual prior to attempting to operate the Cross-Trainer. This is essential for proper use.



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Quiet Drive Cross-Trainer

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AUG. 2005