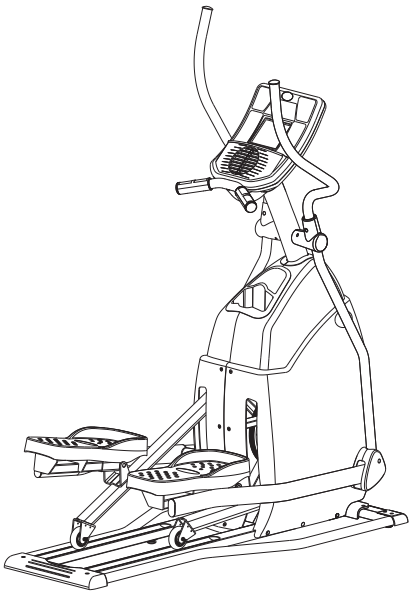
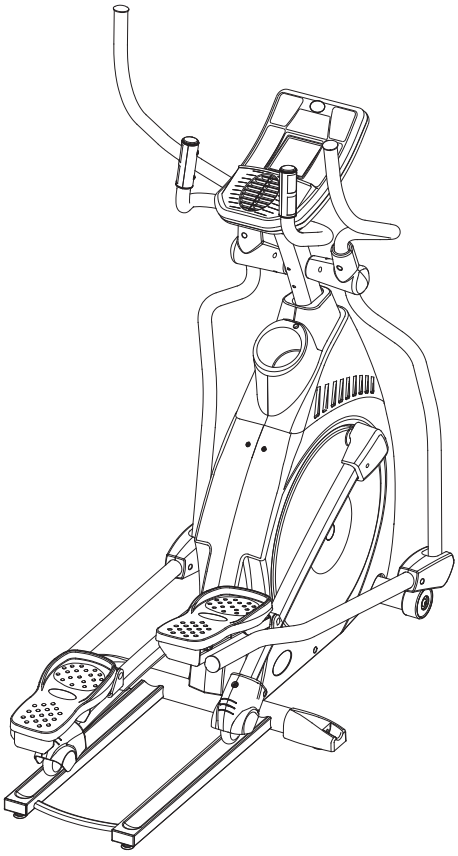




Horizon Fitness

Models

EX-22, EX-33, EX-44,

CSE 3.5, CSE 4.5, EG5,

1.2E, 2.1E, 3.1E, 4.1E

Designed for life.™

2006
Elliptical Service Manual

TABLE OF CONTENTS

Limited Home Use Warranty

FRAME • LIFETIME
Horizon Fitness warrants the frame against defects in workmanship and materials for the lifetime of the original owner.

EX-22: BRAKE • 7 YEARS
Horizon Fitness warrants the brake against defects in workmanship and materials for the period of seven years of the original owner.

EX-33: BRAKE • 10 YEARS
Horizon Fitness warrants the brake against defects in workmanship and materials for the period of ten years of the original owner.

EX-44: BRAKE • 12 YEARS
Horizon Fitness warrants the brake against defects in workmanship and materials for the period of twelve years of the original owner.

ELECTRONICS & PARTS • 1 YEAR
Horizon Fitness warrants the electronic components and all original parts for a period of one year from the date of original purchase, so long as the device remains in the possession of the original owner.

LABOR • 1 YEAR
Horizon Fitness shall cover the labor cost for the repair of the device for a period of one year from the date of the original purchase, so long as the device remains in the possession of the original owner.

EXCLUSIONS AND LIMITATIONS

Who is covered:
• The original owner and is not transferable.

What IS covered:
• Repair or replacement of a defective motor, electronic component, or defective part and is the sole remedy of the warranty.

What IS NOT covered:
• Normal wear and tear, improper assembly or maintenance, or installation of parts or accessories not originally intended or compatible with the equipment as sold.
• Damage or failure due to accident, abuse, corrosion, discoloration of paint or plastic, neglect, theft, vandalism, fire, flood, wind, lightning, freezing, or other natural disasters of any kind, power reduction, fluctuation or failure from whatever cause, unusual atmospheric conditions, collision, introduction of foreign objects into the covered unit, or modifications that are unauthorized or not recommended by Horizon Fitness.
• Incidental or consequential damages. Horizon Fitness is not responsible or liable for indirect, special or consequential damages, economic loss, loss of property, or profits, loss of enjoyment or use, or other consequential damages of whatsoever nature in connection with the purchase, use, repair or maintenance of the product.
• Equipment used for commercial purposes or any use other than a single family or Household, unless endorsed by Horizon Fitness for coverage.
• Equipment owner or operated outside the US and Canada.
• Delivery, assembly, installation, setup for original or replacement units or labor or other costs associated with removal or replacement of the covered unit.
• Any attempt to repair this equipment creates a risk of injury. Horizon Fitness is not responsible or liable for any damage, loss or liability arising from any personal injury incurred during the course of, or as a result of any repair or attempted repair of your fitness equipment by other than an authorized service technician. All repairs attempted by you on your fitness equipment are undertaken AT YOUR OWN RISK and Horizon Fitness shall have no liability for any injury to the person or property arising from such repairs.

SERVICE/RETURNS
• In-home service is available only within 150 miles of the nearest authorized repair center.
• All returns must be pre-authorized by Horizon Fitness.
• Horizon Fitness' obligation under this warranty is limited to replacing or repairing, at Horizon Fitness' option, the product at one of its authorized service centers.
• A Horizon Fitness authorized service center must receive all products for which a warranty claim is made. These products must be received with all freight and other transportation charges prepaid, accompanied by sufficient proof of purchase.
• Parts and electronic components reconditioned to As New Condition by Horizon Fitness or its vendors may sometimes be supplied as warranty replacement parts and constitute fulfillment of warranty terms.
• This warranty gives you specific legal rights, and your rights may vary from state to state.

Safety Instruction

Warning statements indicate a particularly dangerous activity. Please read the following warnings before using, repairing or maintaining your exercise equipment:

- *Never drop or insert any object into any opening.*
- *Never operate the exercise equipment if it is not working properly, if it has been damaged, or immersed in water.*
- *Visually check the machine before beginning service or maintenance operations. If it is not completely assembled or is damaged in any way, exercise extreme caution while operating and checking the exercise equipment.*
- *Do not use outdoors.*
- *Do not wear clothing that might catch on any part of the exercise equipment.*
- *Use this exercise product for its intended use as described in the Owner's guide. Do not use attachments not recommended by the manufacture.*
- *Fold and securely latch your exercise equipment before moving it.*
- *Use care when getting on of off the exercise equipment. Use the handrails whenever possible.*
- *Do not rock the unit. Do not stand or climb on the handrails, electronic console, or side covers.*
- *If you experience chest pains, nausea, dizziness or shortness of breath, stop exercising immediately and consult your physician before continuing.*

CHILDREN

- *Keep children off of your exercise equipment at all times.*
- *When the exercise equipment is in use, young children and pets should be kept at least 10 feet away.*

Required Tooles and Equipment

The following list is a summary of the tools and equipment required by the procedures in this manual. Tools are not supplied by Horizon Fitness.

- *Phillips screwdrivers*
- *Flat-head screwdrivers*
- *Right angle screwdriver*
- *Digital multi-meter*
- *Allen wrench set (Metric)*
- *Open-end wrenches of assorted sizes (Metric)*
- *1⁄2" drive ratchet and sockets of assorted sizes*
- *Bearing thread lock*
- *Cable ties*
- *Needle nose pliers*
- *Damp cloth*
- *Rubber mallet*
- *Drop cloth (to protect floor surfaces)*
- *Ruler*
- *Snap ring pliers*
- *Wire cutters*
- *Drive belt tension gauge**
- *Crank Puller (Park Tool CCP-2, 22mm)**
- *Bearing Extractor**

** Available through Horizon Fitness at cost.*

Preventative Maintenance Procedures

WHAT KIND OF ROUTINE MAINTENANCE IS REQUIRED?
We use sealed bearings throughout our ellipticals so lubrication is not needed. The most important maintenance step is to simply wipe your perspiration off the trainer after each use.

HOW DO I CLEAN MY ELLIPTICAL?

Clean with soap and water cleaners only. Never use solvents on plastic parts.

Cleanliness of your elliptical and its operating environment will keep maintenance problems and service calls to a minimum. For this reason, Horizon Fitness recommends that the following preventive maintenance schedule be followed.

AFTER EACH USE (DAILY)
Turn off the elliptical by unplugging the power cord from the wall outlet

- *Wipe down the elliptical with a damp cloth. Never use solvents, as they can cause damage to the elliptical.*
- *Inspect the power cord. If the power cord is damaged, contact Horizon Fitness.*
- *Make sure the power cord is not underneath the elliptical or in any other area where it can become pinched or cut.*

To remove power from the elliptical, the power cord must be disconnected from the wall outlet.

WEEKLY
Clean underneath the elliptical, following these steps:

- *Turn off the elliptical*
- *Move the elliptical to a remote location.*
- *Wipe or vacuum any dust particles or other objects that may have accumulated underneath the elliptical.*
- *Return the elliptical to its previous position.*

EVERY MONTH

- *Inspect all assembly bolts and pedals on the machine for proper tightness.*
- *Clean any debris off of the pedal arm wheels and guide rails.*

Tensioning the Drive Belt
(EX-22, EX-33, EX-44, CSE 3.5, 4.5, EG5)

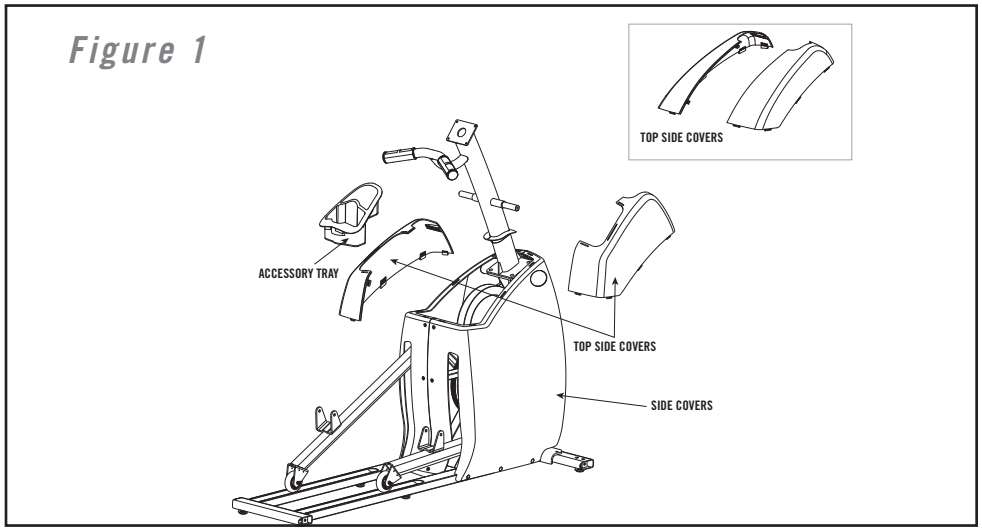
Tools Required:

- *Phillips Screwdriver*
- *11mm, 19mm Socket and Combination Wrenches*

Procedure:

1. Remove top cap or top side covers.

Figure 1

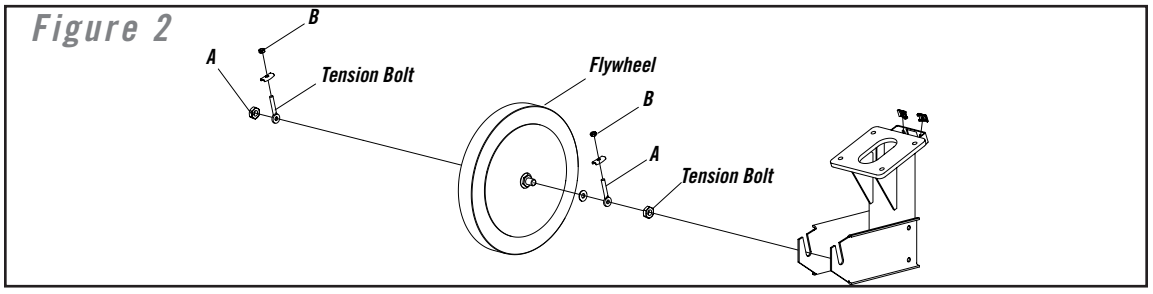


2. Check the tension of the drive belt

IMPORTANT

The correct belt tension tolerance is 120-140 lbs. If a belt tension gauge is not available, the drive belt should have about 0.25" deflection when pressing down firmly on the drive belt.

Figure 2



3. Loosen both nuts (A), which hold the flywheel to frame.

4. Tighten or loosen the nuts (B) holding the tensioning bolts into position on both sides of the flywheel to adjust the tension of the drive belt.

IMPORTANT

**Important Note* - Make sure that both bolts are tightened equally so that flywheel sits straight in frame and both the fly wheel and crank pulley are properly aligned.*

5. Once the belt tension is set properly, tighten the nuts (A) on both sides of the flywheel.

Tensioning the Drive Belt (1.2-4.2E)

Tools Required:

- *Phillips Screwdriver*
- *11mm, 13mm, 15mm, 17mm, 19mm Socket and Combination Wrenches*
- *5mm Allen Wrench*
- *Crank Puller*

Procedure:

1. Remove crank disk and side covers. (Reference Crank Disk/Side Cover/Crank Arm Replacement -1.2E & 2.2E or 3.2E & 4.2E on pp.)

2. Check the tension of the drive belt.

IMPORTANT *The correct belt tension tolerance is 120-140 lbs. If a belt tension gauge is not available, the drive belt should have about 0.25" deflection when pressing down firmly on the drive belt.*

3. Loosen both nuts (A), which hold the flywheel to frame.

Figure 3

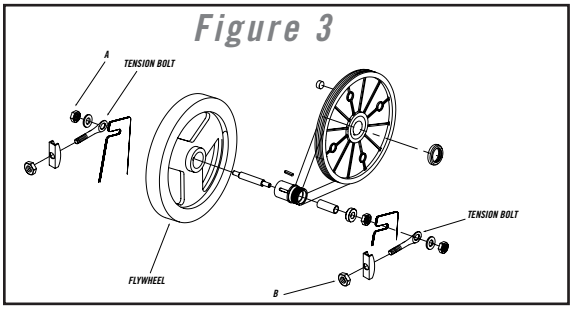
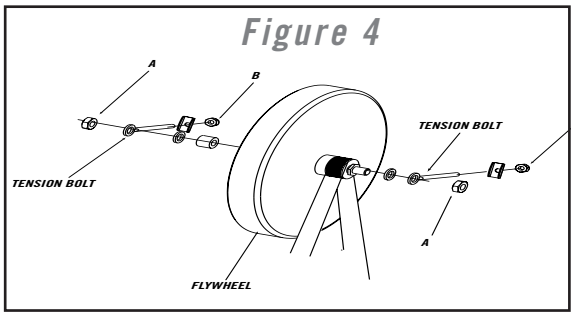


Figure 4



4. Tighten or loosen the nuts (B) holding the tensioning bolts into position on both sides of the flywheel to adjust the tension of the drive belt.

IMPORTANT *Make sure that both bolts are tightened equally so that flywheel sits straight in frame and both the fly wheel and crank pulley are properly aligned.*

5. Once the belt tension is set properly, tighten the nuts (A) on both sides of the flywheel.

Adjusting the Magnetic Brake
(EX-22, EX-33, EX-44, CSE 3.5, 4.5, EG5, 1.2E, 3.2E, 4.2E)

Tools Required:

- *Phillips Screwdriver*
- *8mm, 13mm, 17mm Socket and Combination Wrenches*
- *5mm Allen Wrench*
- *Crank Puller*

Procedure:

1. 1.2E only-Adjust tension knob to highest setting.

2. Turn on unit and Press start.

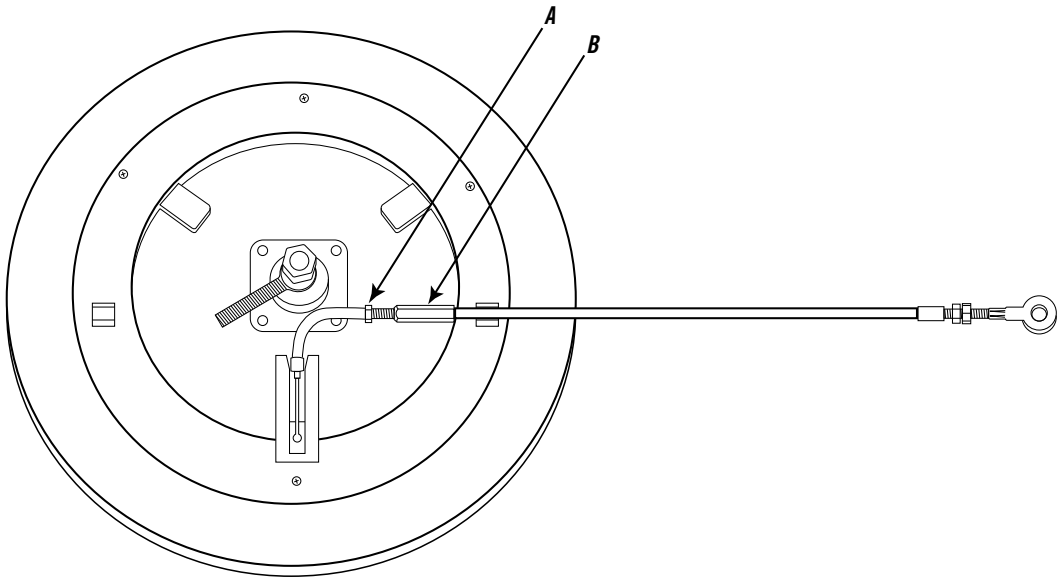
3. Set resistance highest level and power off unit.

4. Remove side covers. (Reference side cover replacement in Parts Replacement section.)

4. Loosen the short nut (A), and adjust the long nut (B) clockwise to reduce the brake resistance and counterclockwise to increase the brake resistance.

IMPORTANT *The correct position for the flywheel/brake assembly is 1 -2mm from the flywheel at the highest resistance level.*

Figure 5



Adjusting the Magnetic Brake (2.2E)

Tools Required:

- *Phillips Screwdriver*
- *12mm, 13mm, 14mm, 17mm Socket and Combination Wrenches*
- *5mm Allen Wrench*
- *Crank Puller*

Procedure:

1. Turn on unit and Press start.

2. Set resistance highest level and power off unit.

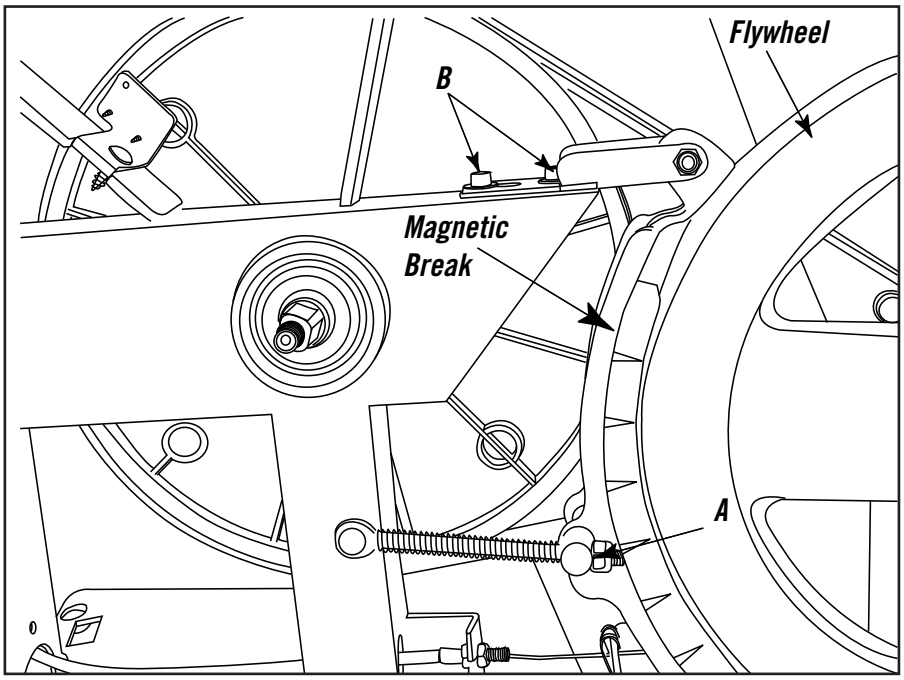
3. Remove crank disk and side covers. (Reference Crank Disk/Side Cover/Crank Arm Replacement in Parts Replacement section.)

4. Adjust the nut on the magnetic brake spring clockwise to reduce the brake resistance and counter-clockwise to increase the brake resistance.

IMPORTANT *The correct position for the flywheel/brake assembly is 2-3mm from the flywheel at the highest resistance level.*

5. It may be necessary to also adjust the top half of the magnetic brake. To do this, loosen the two 5mm bolts that attach the magnetic brake to the frame. Adjust the position of the magnetic brake closer or further from the flywheel.

Figure 6



Switching the Console from MPH to KM

All Models Except 1.2E

The back of the console features a switch to convert the speed readout from mph to km. To convert from mph to km, simply flip the switch. Please note that the console needs to be reset before the change will be detected.

IMPORTANT ***T****o verify speed setting, upon powering up console, look for Miles or KM to flash briefly on display.*

Figure 7
2.1E Only

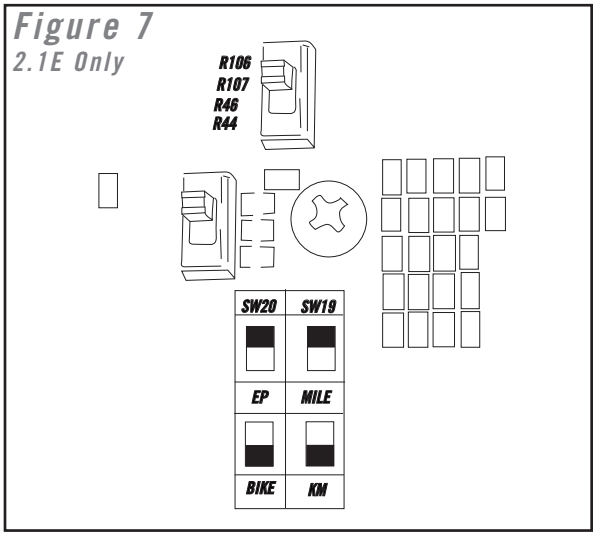
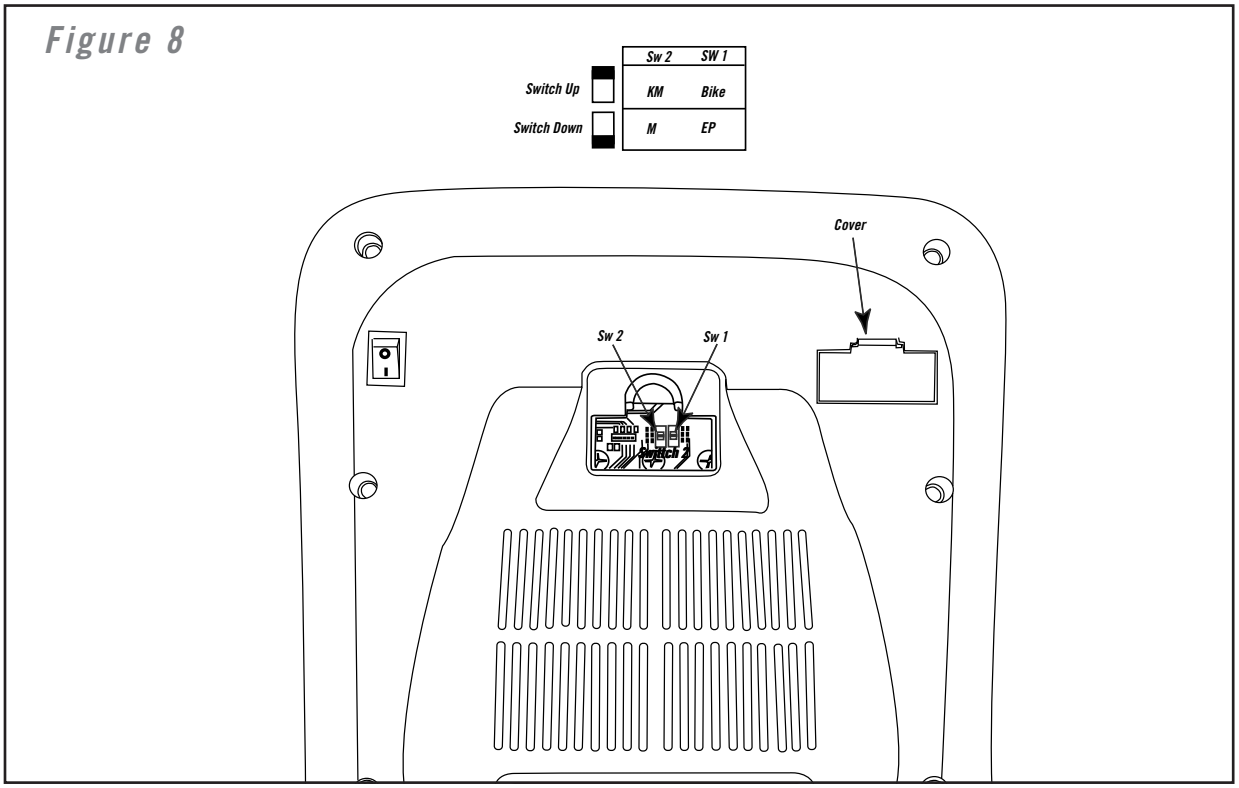


Figure 8



Engineering Mode

Using Engineering Mode

- *Power on the elliptical.*
- *Press and hold the resistance "^" and resistance "v"for 3- 5 seconds to enter the Engineering Mode Menu.*

IMPORTANT ***Press and hold resistance #2 and resistance #20 for the 2.2E***

- *The console will beep 2-3 times and HARDWARE TEST will be displayed.*
- *Press "Enter" to move through the different menus in engineering mode.*
- *Press "Start" to enter desired menu.*
- *Press and hold "Start/Stop" to exit all specific engineering menu.*
- *Press and hold "Start/Stop" again to completely exit engineering mode and return to standard operating mode.*

Hardware Test

- *Indicates software version.*
- *Indicates whether console is set for Miles or KM.*
- *Indicates whether console is set for an elliptical or a stationary bike*
- *Displays RPM's and heart rate similar to standard operating mode.*
- *Displays resistance as the number of turns the resistance motor has made.*

LCD Test

- *Displays all LCD's at once or individually by pressing individual buttons.*

Information

IMPORTANT ***2.2E does not have this menu.***

- *Displays the number of hours and mile the machine has logged.*

IMPORTANT ***If the console is ever changed this information will reset to 0.***

Heart Rate Troubleshooting

Problem: There is no heart rate reading.
Solution: Remove the console and verify that the heart rate cables are attached properly, making sure that the cables are securely inserted into the console.

Check your exercise environment for sources of interference such as high power lines, large motors, etc.

You may experience an erratic Heart Rate readout under the following conditions:

- *Gripping the heart rate handlebars too tight. Try to maintain moderate pressure while holding onto the heart rate handlebars.*
- *Constant movement and vibration due to constantly holding the heart rate grips while exercising.*
- *When you are breathing heavily during a workout.*
- *When your hands are constricted by wearing a ring.*
- *When your hands are dry or cold. Try moistening your palms or rubbing them together to warm.*
- *Anyone with heavy arrhythmia.*
- *Anyone with arteriosclerosis or peripheral circulation disorder.*
- *Anyone whose skin on the measuring palms is especially thick.*

NOTE: Outside interference sources such as computers, motors and fluorescent lights may cause the heart rate reading to be erratic.

Handlebars
Place the palm of your hands directly on the grip pulse handlebars. Both hands must grip the bars for your heart rate to register. It takes 5 consecutive heart beats (15-20 seconds) for your heart rate to register. When gripping the pulse handlebars, do not grip tightly. Holding the grips tightly may elevate your blood pressure. Keep a loose, cupping hold. You may experience an erratic readout if consistently holding the grip pulse handlebars. Make sure to clean the pulse sensors to ensure proper contact can be maintained.

Heart Rate Troubleshooting

Figure 11

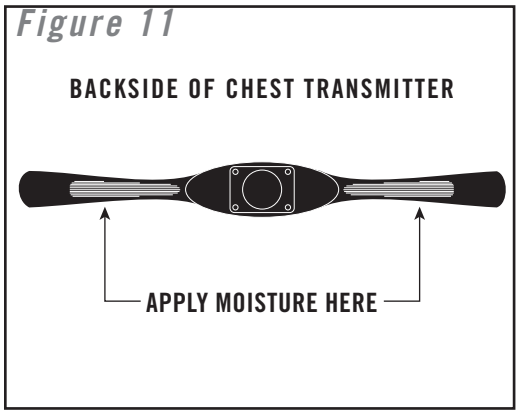
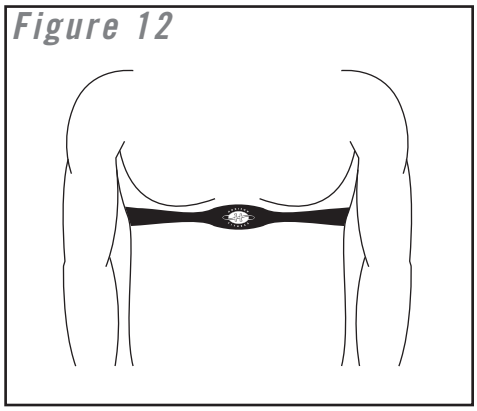


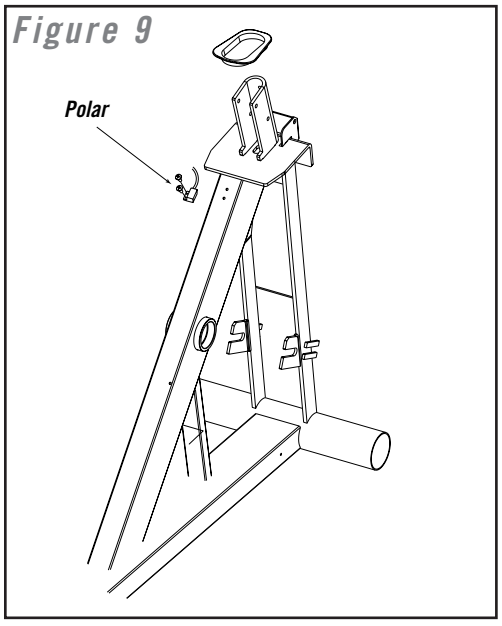
Figure 12



WIRELESS CHEST TRANSMITTER (CSE4.5, EX44, 4.2E SOLD SEPARATELY)
Prior to wearing the wireless chest transmitter on your chest, moisten the two rubber electrodes with water. Center the chest strap just below the breast or pectoral muscles, directly over your sternum, with the logo facing out. NOTE: The chest strap must be tight and properly placed to receive an accurate and consistent readout. If the chest strap is too loose, or positioned improperly, you may receive an erratic or inconsistent heart rate readout. WARNING! The heart rate function is not a medical device. Various factors may affect the accuracy of your heart rate reading. The heart rate reading is intended only as an exercise aid.

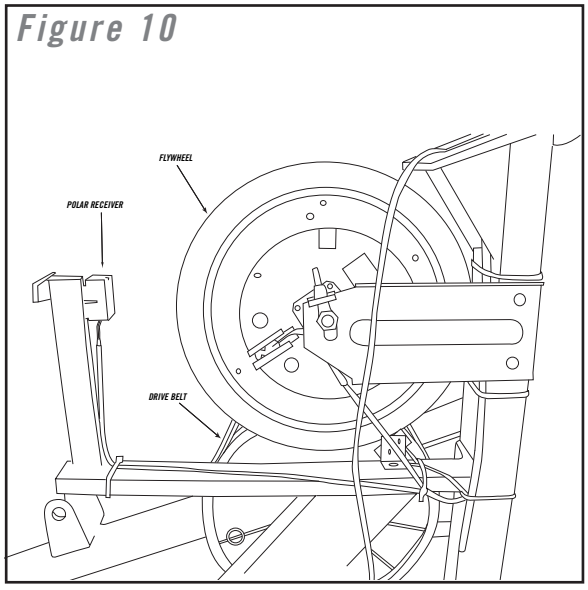
4.2E

Figure 9



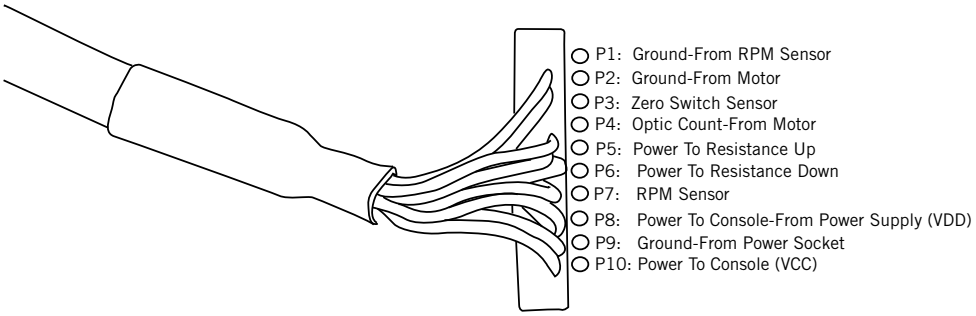
CSE4.5,EX44

Figure 10



Console Cable Voltage Check
(All Models Except 1.2E)

Figure 13



CORRECT VOLTAGE FOR WIRE HARNESS

P1: Purple n/a ground
P2: Black n/a ground
Voltage changes with each change in incline.
P3: Orange If zero switch engaged (lowest resistance level): +5.0vdc, open. Any other resistance position: 0.0 vdc, short.
P4: Brown +5.0 vdc. If slot in optic disk aligned with sensor 0.0 vdc
P5: Green +0.0 to 0.4 vdc if motor idle. +8.5 vdc if resistance increasing. +0.6 to 2.0 vdc if resistance decreasing
P6: White +0.0 to 0.46 vdc if motor idle.+8.5 vdc if resistance decreasing +0.6 to 2.0 vdc if resistance increasing.
P7: Yellow If magnet aligned with rpm sensor: 0.0 vdc, short If magnt not aligned with rpm sensor: 5.0 vdc, open
P8: Grey Dependant upon power supply
P9: Blue n/a Ground
P10: Red +5.0 vdc

Note 1: All voltages measured loaded, with functioning console and resistance motor.
Note 2: All grounds same point once plugged into console with or without power on.
Note 3: If measured White (+) to Green (-) when resistance increasing = -7.7vdc, if decreasing = +7.7 vdc.

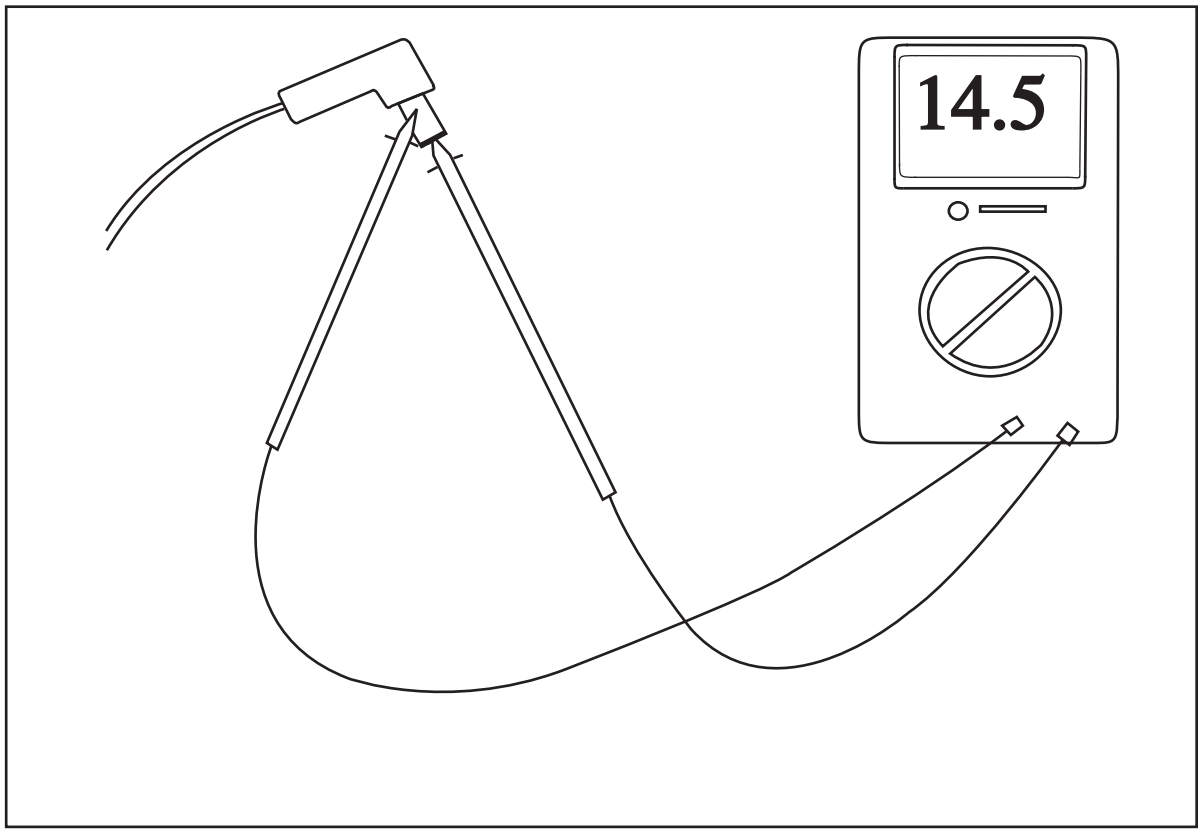
IMPORTANT ***The above measurements for the Orange and Brown wires were using the original serve motor. (2.2E, 3.2E, 4.2E)***

The new style servo motor voltage measurements are: (Ex22-Ex44/CSE3.5 & 4.5/EG5)

Orange =3.0 vdc if resistance at lowest,0.2 vdc if resistance at any position other than lowest.
Brown +3.0 vdc if optic sensor open. 0.2 vdc as wheel passes through optic sensor.

Power Supply Voltage Check (All Models Except 1.2E)

Figure 14



With the power supply plugged in to the wall, place the positive lead of your multi-meter into the power supply jack and the negative lead on the outside of the power supply jack. The voltage of the power supply should be as follows:

IMPORTANT ***Unloaded voltages may be higher***

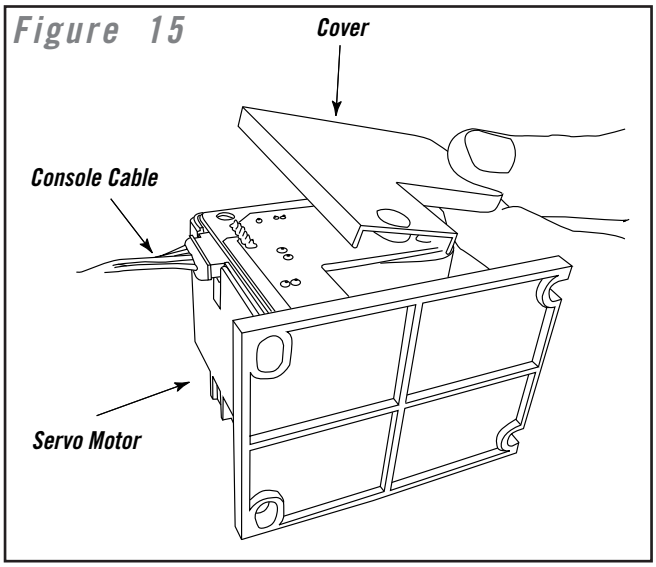
MODEL	Adapter DC Voltage	Unloaded VDC	Loaded VDC
EX22, EG5	6	10.9	8.8
EX33 & 44/CSE 3.5 & 4.5/3.2E & 4.2E	12	12.2	12
2.2E	14.5	17.8	14-16

Servomotor Voltage Check (All Models Except 1.2E)

1) For Models EX-22 - EX-44/CSE 3.5 & 4.5/EG5/2.2E Only – Remove plastic housing to access IC board pins.

EX-22 - EX-44/CSE 3.5 & 4.5/EG5/2.2E

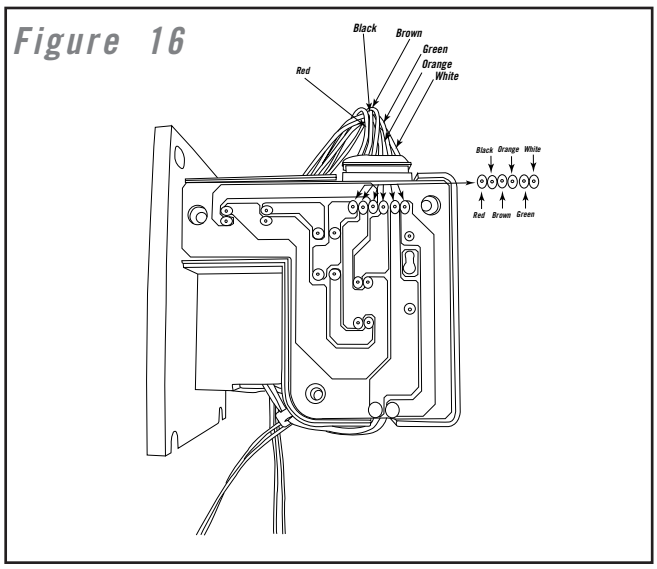
Figure 15



2) Place the positive lead of your multi-meter on the top soldered pin on the backside of the IC board.

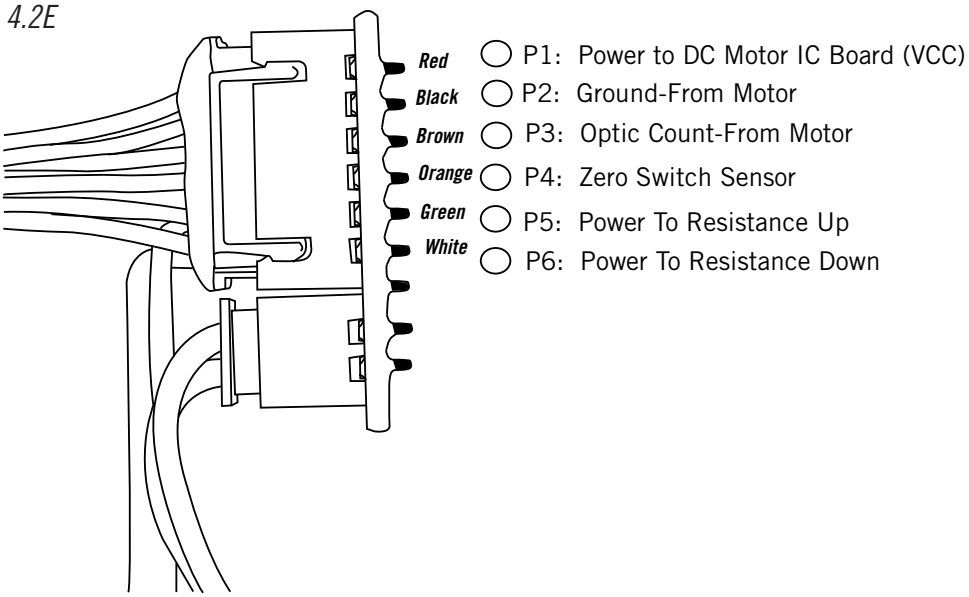
3) Place negative lead on the second soldered pin on the backside of the IC board.

Figure 16



Servomotor Voltage Check (All Models Except 1.2E)

Figure 17
2.2E, 3.2E, 4.2E



CORRECT VOLTAGE FOR WIRE HARNESS

P1: Red +5.0 VDC
P2: Black n/a Ground
P3: Brown +5.0 VDC. if Slot in Optic Disk aligned with sensor 0.0 VDC

P4: Orange If zero switch engaged +5.0 VDC Any other resistance 0.0 VDC Short
P5: Green +0.0 to 0.4 VDC if motor idle. +8.5 VDC if resistance increasing. +0.6 to 2.0 VDC if resistance decreasing.
P5: White +0.0 to 0.46 VDC if motor idle. +8.5 VDC if resistance decreasing +0.6 to 2.0 VDC if resistance increasing

Note 1: All voltages measured loaded, with functioning console and resistance motor.
Note 2: All grounds same point once plugged into console with or without power on.
Note 3: If measured White (+) to Green (-) when resistance increasing = -7.7vdc, if decreasing = +7.7 vdc.

IMPORTANT

The above measurements for the Orange and Brown wires were using the original serve motor. (2.2E, 3.2E, 4.2E)

The new style servo motor voltage measurements are: (Ex22-Ex44/CSE3.5 & 4.5/EG5)

Orange =3.0 vdc if resistance at lowest,0.2 vdc if resistance at any position other than lowest.
Brown +3.0 vdc if optic sensor open. 0.2 vdc as wheel passes through optic sensor.

RPM Sensor Continuity Check

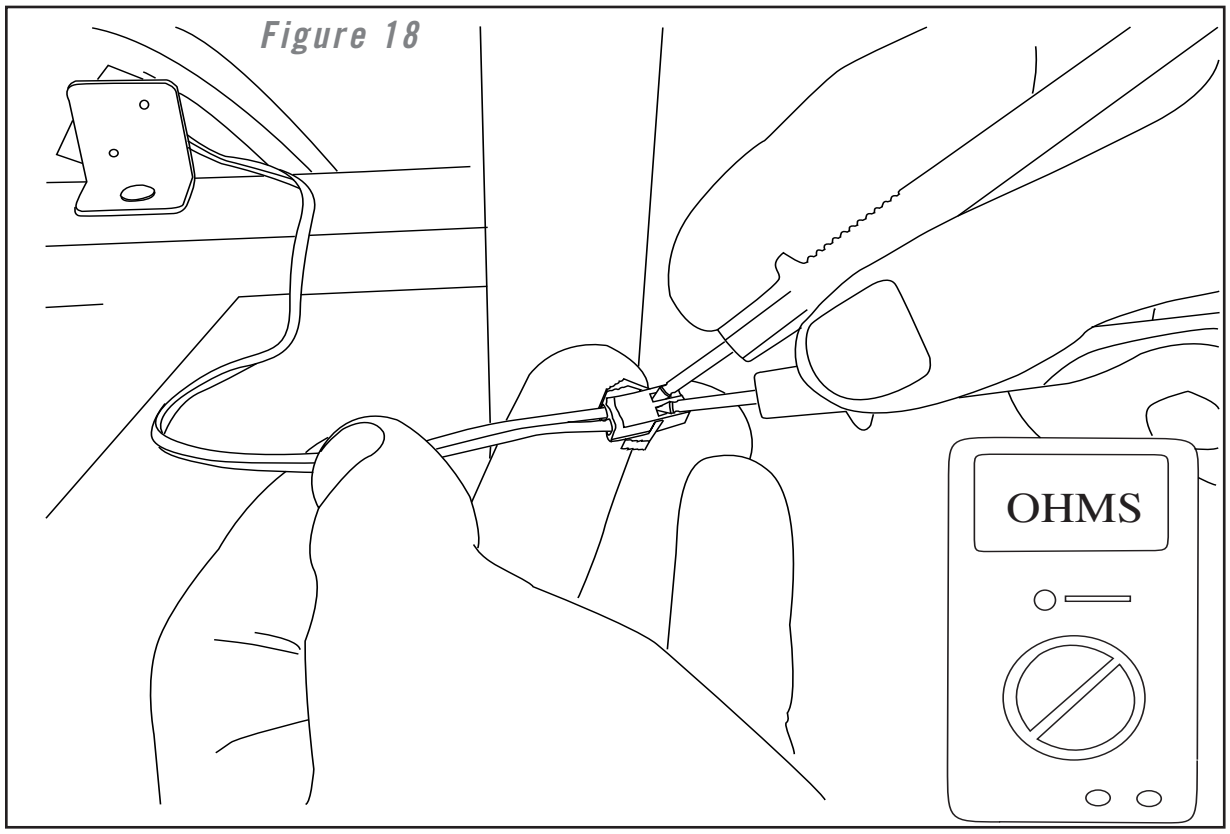


Figure 18

1.2E

1) Turn your multi-meter setting to Ohms.
2) Place the positive lead of your multi-meter on the tip of the sensor wire jack and the negative lead on the outside of the sensor wire jack.
3) Turn crank to produced an rpm in order to get continuity through the sensor wire.

All Models Except 1.2E

1) Turn your multi-meter setting to Ohms.
2) Remove console and disconnect console cable.
3) Put one lead into the purple pin (P1) and the other on the yellow pin (P7). (Please refer to the Console Cable Voltage Check on page 16)
Turn crank to produced an rpm in order to get continuity through the sensor wire.

Console Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
No display on console.	*Failed batteries.* ***(1.2E only)***		*Replace batteries.*
	Improper wiring.	*- Verify the connections between the power supply and the power jack.* *- Verify the connections between console cable and console.* *- Verify power supply is not pinched or damaged.*	*Connect wires correctly or replace parts as needed.*
	Failed or improper power supply.	*- Perform voltage check on power supply.* ***(Reference Power Supply Voltage Check in Voltage Checks section.)*** *- Verify the power supply and make sure the adapter is the correct voltage.* ***(Reference Power Supply Voltage Check in Voltage Checks section.)***	*Replace power supply.*
	Failed console cable.	*- Verify console cable is not pinched or damaged.* *- Perform voltage check on console cable.* ***(Reference Console cable Voltage Check in Voltage Checks section.)***	*Replace console cable.* ***(Reference Console Cable Replacement in Parts Replacement section.)***
	Failed console.		*Replace console.*
Partial LCD Display on Console.	*Failed batteries.* ***(1.2E only)***		*Replace batteries.*
	Console was subjected to cold temperatures.	*Verify proper connections between sensor wire and console by removing console and snapping console wire and sensor wires firmly together.* ***(1.2E only)***	*Allow machine to warm to room temperature. It may be necessary to gently massage the LCD crystal with your hand to allow for full display. *Important Note* - Pressing against the LCD crystal with excessive force may damage the crystal.*
	Failed console.		*Replace console.*

Console Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Console Resets Intermittently.	*Poor connection between console and sensor wire.* ***(1.2E only)***	*Verify proper connections between sensor wire and console by removing console and snapping console wire and sensor wires firmly together. (1.2E)*	
	Weak batteries in console. ***(1.2E only)***		*Replace batteries.*
	Poor connection between power supply and power jack.	*Verify that the power supply is securely inserted into the power jack.*	
	Failed power supply.	*-Perform voltage check on power supply.* ***(Reference Power Supply Voltage Check in Voltage Checks section.)***	*Replace power supply.*
	Failed console cable.	*- Verify console cable is not pinched or damaged.* *-Perform voltage check on console cable.* ***(Reference Console cable Voltage Check in Voltage Checks section.)***	*Replace console cable.* ***(Reference Console Cable Replacement in Parts Replacement section.)***
	Failed console.		*Replace console.*
Only Time Works on Console (No workload, distance, etc.)	*Poor connection between console and sensor wire.* ***(1.2E only)***	*Verify proper connections between sensor wire and console by removing console and snapping console wire and sensor wires firmly together.* ***(1.2E only)***	
	Failed sensor wire.	*Perform RPM continuity check.* ***(Reference RPM Sensor Continuity Check in Voltage Checks section.)***	*Replace sensor wire. (****Reference RPM Sensor Replacement in Parts Replacement section.)***
	Missing rpm magnet on crank assembly or misaligned RPM sensor.	*Visually verify presence or magnet and alignment of RPM sensor.*	*Replace magnet and/or reposition RPM sensor. (****Reference RPM Sensor Replacement in Parts Replacement section.)***
	Failed console.		*Replace console.*

Heart Rate Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Erratic or no heart rate. (Hand grips on or separate from console)	*User Error*	***(Reference Proper Heart Rate Usage section.)***	
	Failed heart rate grips.	***(Reference Proper Heart Rate Usage section.)***	*If there is absolutely no heart response, replace heart rate grips.*
	Failed console.	***(Reference Proper Heart Rate Usage section.)***	*If proper heart rate instructions are followed and heart rate continues to be erratic, replace console.*
Heart rate erratic or no heart rate function. (Telemetric chest strap)	*User error.*	***(Reference Proper Heart Rate Usage section.)***	
	Electromagnetic interference.	*Check immediate area for causes of interference (Fluorescent lighting, electric dog fences, large electric motors, etc.)*	
	Failed telemetric chest strap or polar receiver.	***(Reference Proper Heart Rate Usage section.)***	*Replace chest strap and/or polar receiver.* ***(Reference Proper Heart Rate Usage section.)***

Resistance Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
No resistance change or erratic or continuous resistance change.	*Tension cable is not connected to tension knob.* ***(1.2E Only)***	*Remove tension knob from the console mast. Verify that the copper cable from the tension knob is seated properly in the keyhole located on the tension knob.*	*Reattach cable.* ***(Reference Tension Cable Replacement in Parts Replacement section.)***
	Tension cable is not connected to the brake or has failed.	*Verify that the tension cable is connected to the break or has not failed.*	*Reattach cable. (****Reference Tension Cable Replacement for 1.2E and Servomotor Replacement in Parts Replacement section for all other models.)***
	Failed or improper power supply.	*-Perform voltage check on power supply.* ***(Reference Power Supply Voltage Check in Voltage Checks section.)*** *-Verify the power supply and make sure the adapter is the correct voltage.* ***(Reference Power Supply Voltage Check in Voltage Checks section.)***	*Replace power supply.*
	Failed console cable.	*- Verify console cable is not pinched or damaged -Perform voltage check on console cable.* ***(Reference Console cable Voltage Check in Voltage Checks section.)***	*Replace console cable.* ***(Reference Console Cable Replacement in Parts Replacement section.)***
	Failed servomotor.	*-Perform voltage check on servomotor.* ***(Reference Servomotor Voltage Check in Voltage Checks section.)***	*Replace servomotor. (****Reference Servomotor Replacement in Parts Replacement section.)***
	Failed console.		*Replace console.*

Resistance Troubleshooting Continued

Symptom	Possible Cause	Test Procedure	Repair
Resistance is Too Hard or Too Weak	*Tension cable is not connected to tension knob.* ***(1.2E Only)***	*Remove tension knob from the console mast. Verify that the copper cable from the tension knob is seated properly in the keyhole located on the tension knob.*	*Reattach cable.* ***(Reference Tension Cable Replacement in Parts Replacement section.)***
	Tension cable is not connected to the brake or has failed.	*Verify that the tension cable is connected to the break or has not failed.*	*Reattach cable.* ***(Reference Tension Cable Replacement for 1.2E or Servomotor Replacement in Parts Replacement section for all other models.)***
	Magnetic brake is positioned improperly.	*Verify the correct position of magnetic brake.* ***(Reference Adjusting the Magnetic Brake in Maintenance section.)***	*Reposition the magnetic brake.* ***(Reference Adjusting the Magnetic Brake in Maintenance section.)***

Noise and Drive Train Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Noise internally while pedaling at higher resistance levels only.	*Magnetic brake is rubbing against the flywheel.*	*Verify the correct position of magnetic brake.* ***(Reference Adjusting the Magnetic Brake in Maintenance section.)***	*Reposition the magnetic brake.* ***(Reference Adjusting the Magnetic Brake in Maintenance section.)***
Noise internally/externally while pedaling or rough feel while pedaling.	*Machine may not be on level surface.*	*Verify surface is level.*	*Adjust levelers on machine.*
	Improper assembly or loose assembly bolts.	*Verify assembly steps using owner's guide.*	*Tighten all bolts used for assembly.*
	Alignment issues with pedal arms due to improper assembly or improper welds.	*Reference Alignment Issues with Pedal Arms Troubleshooting.*	
	Access build up on or defective roller wheels.	*-Wipe off roller wheels and guide rails with damp cloth.* *- Check roller wheels for any abnormal wear. Roller wheels should have smooth texture.* *- If the rough feel seems to be on one side only, try switching suspect roller wheel to opposite pedal arm.*	*Replace roller wheels.*
	Loose crank arms.		*Tighten crank arms.* ***(Reference Pedal Axel Set Replacement in Parts Replacement section.)***
	Improper alignment of the drive belt or improper tension of the drive belt.		*Align drive belt and adjust to proper tension.* ***(Reference Tensioning the Drive Belt in Maintenance section.)***
	Defective flywheel or pedal axle set.		*Replace flywheel and/or pedal axle set.* ***(Reference Flywheel or Pedal Axel Set Replacement in Parts Replacement section.)***

Alignment Issues with Pedal Arms Troubleshooting

Symptom	Possible Cause	Test Procedure	Repair
Noise externally while pedaling, rough feel while pedaling, or pedal arm will jump off of guide rail.	*Improper assembly or loose assembly bolts.*	*Verify assembly steps using owner's guide.*	*Tighten all bolts used for assembly.*
	Loose crank arms.		*Tighten crank arms.* ***(Reference Pedal Axel Set Replacement in Parts Replacement section.)***
	Alignment issues with pedal arms due to improper welds.	*Disconnect appropriate link arm from lower handle bar assembly and pedal unit.*	*- If the noise ceases or pedal does not jump off guide rail replace lower link arm* *- If there is no change replace lower handle bar, pedal arm, and crank.*

Side Cover Replacement
(EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

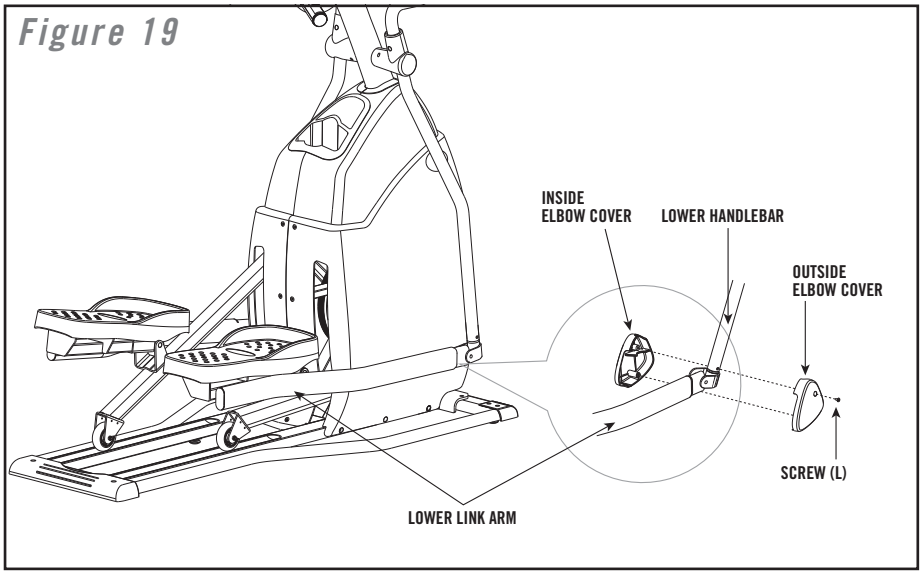
Tools Required:

- *Phillips Screwdriver*
- *13mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*

Procedure:

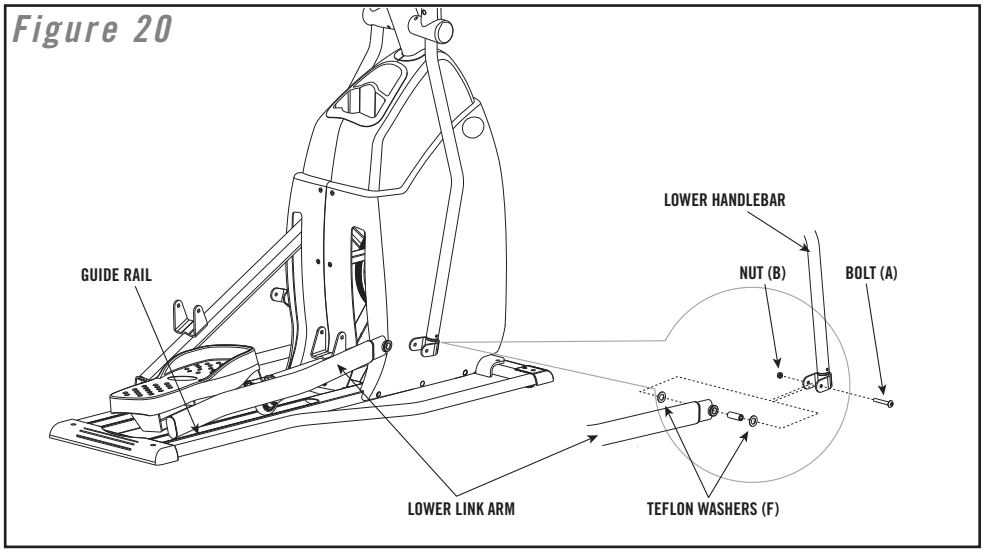
1) For Models EX-44/CSE 4.5 Only - Remove lower link arm elbow covers. (Figure 15)

Figure 19



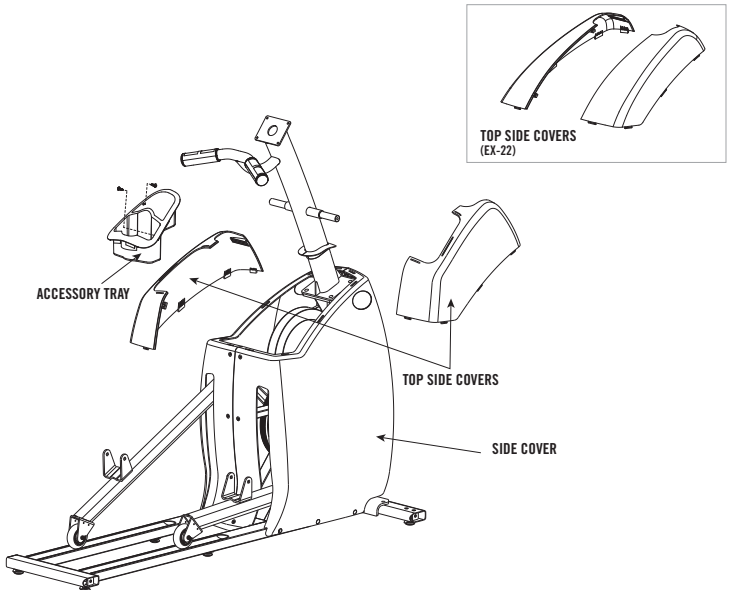
2) Remove bolt (A) and nut (B) holding link arm to lower handlebar. (Figure Below)

Figure 20



Side Cover Replacement Continued (EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

Figure 21



3) Remove accessory trays and top side covers. (Figure Above)
4) Remove AC Adaptor receptacle from side cover if applicable. (Figures Below)
5) Remove side covers.

Figure 22

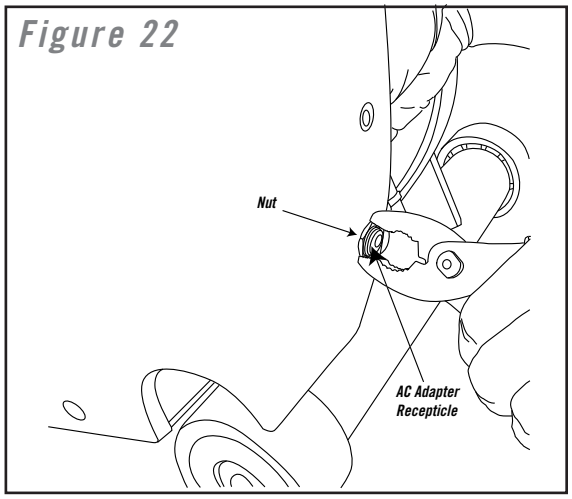
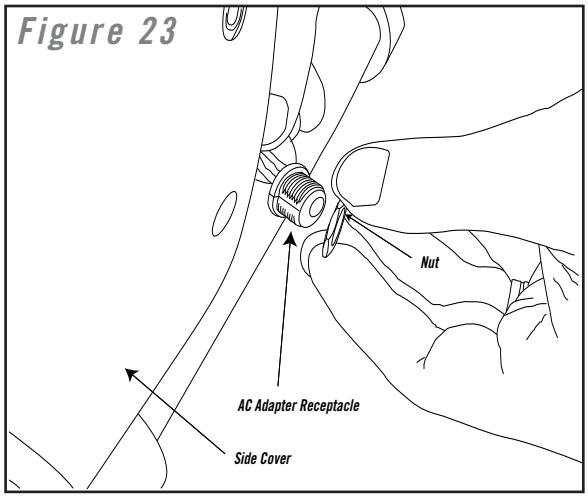


Figure 23



Sensor Wire Replacement
(EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

Tools Required:

- *Phillips Screwdriver*
- *Right Angle Screwdriver*
- *13mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*

Procedure:

1) Remove side covers ***(Reference Side Cover Replacement for this section.)***

2) Remove the sensor wire bracket.

Figure 24

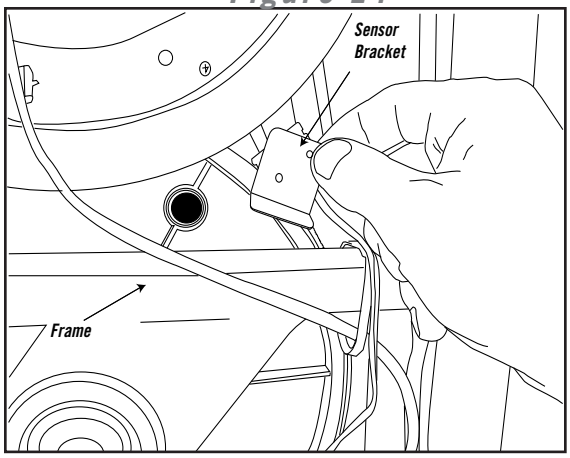
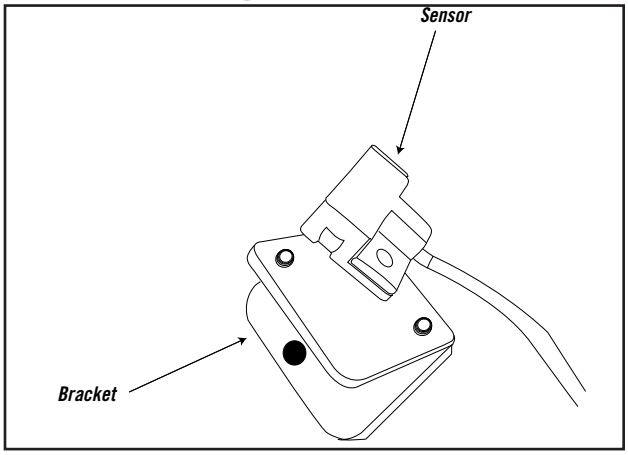


Figure 25



3) Remove the old sensor wire from the sensor wire bracket.

4) Disconnect sensor wire from console cable.

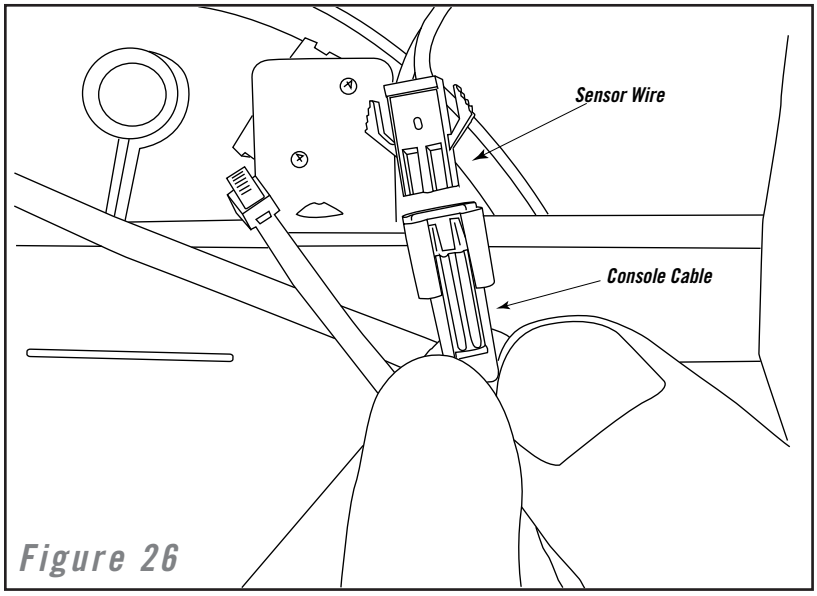


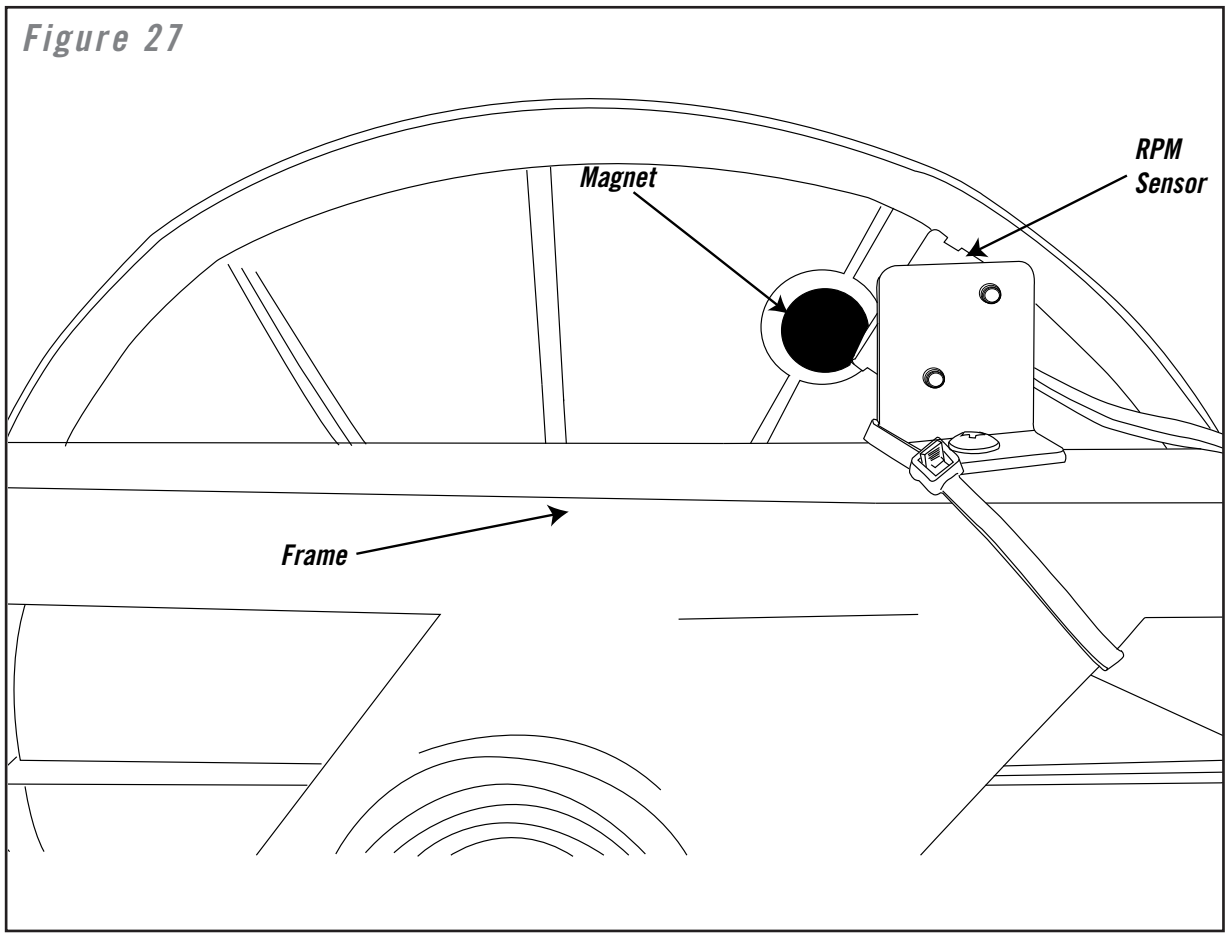
Figure 26

Sensor Wire Replacement Continued (EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

5) Attach the new sensor wire to the sensor wire bracket

6) Attach bracket to the frame and position correctly.

Figure 27



7) Turn crank by hand to make sure that there is a RPM reading on the console.

Console Cable Replacement
(EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

Tools Required:

- *Phillips Screwdriver*
- *13mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*

Procedure:

1) Unplug power supply from elliptical.

2) Remove side covers ***(Reference Side Cover Replacement in Parts Replacement)***

3) Disconnect console cable from the speed sensor and servomotor.

Figure 28

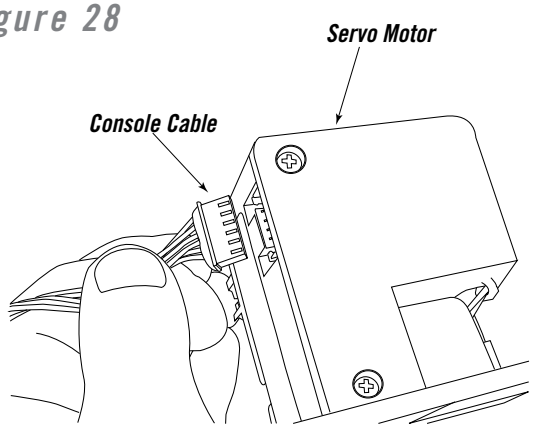
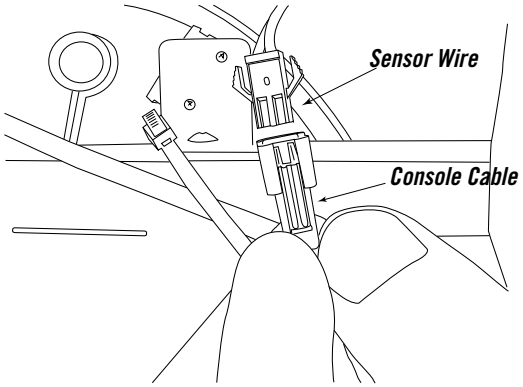


Figure 29



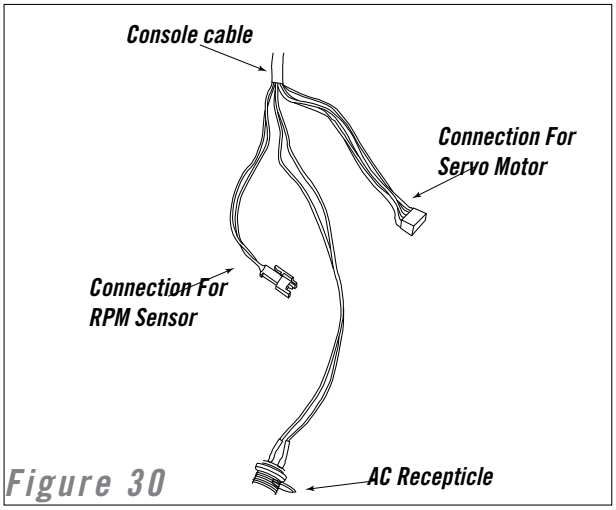


Figure 30

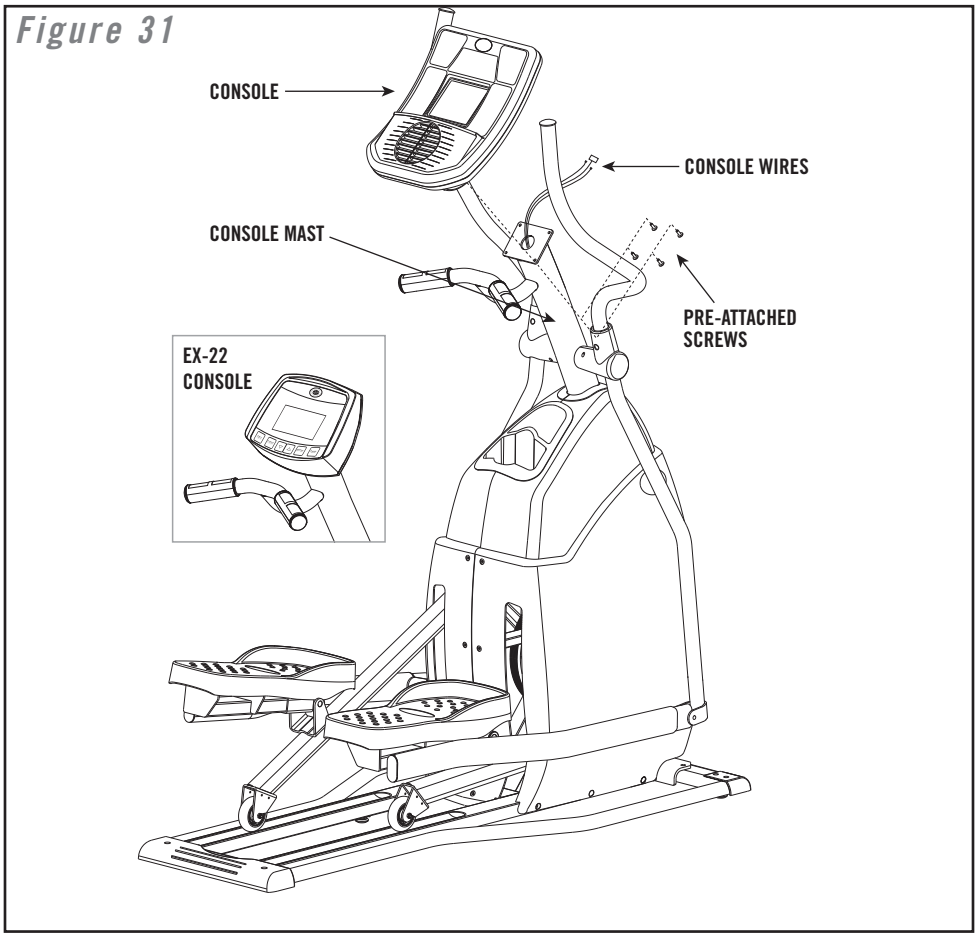
Console Cable Replacement Continued (EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

4) Remove the console from the console mast.

5) Unplug the console cable from the console and attach the new console cable to the old console cable, in order to fish the cable through the console mast.

IMPORTANT *You may need to unscrew the water bottle bracket screws in order to fish the console cable easily.*

Figure 31



6) Reconnect console cable to speed sensor and servomotor.

Servomotor Replacement
(EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

Tools Required:

- *Phillips Screwdriver*
- *13mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*

Procedure:

1) Turn power on and press start on console.

2) Set resistance level to highest position and turn off console.

3) Unplug power supply from elliptical.

4) Remove side covers ***(Reference Side Cover Replacement for this section.)***

5) Disconnect console cable from servomotor.

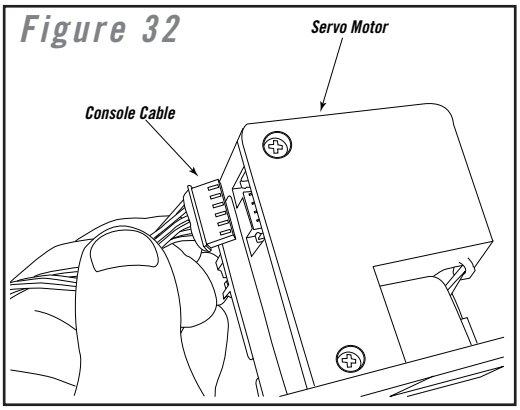


Figure 32

6) Remove the tension cable from the servomotor.

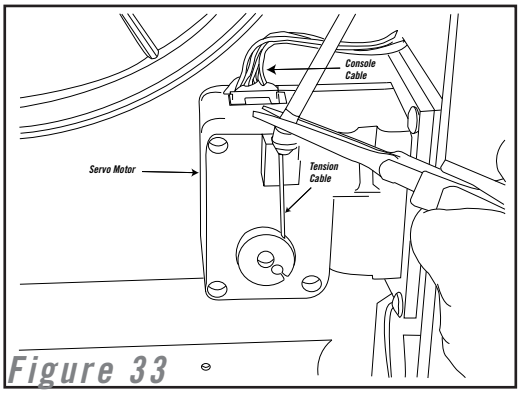


Figure 33

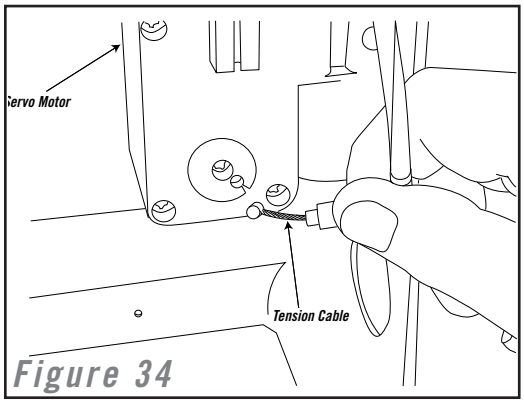


Figure 34

7) Remove Servomotor.

Pedal Axle Set Replacement (EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

Tools Required:

- *Phillips Screwdriver*
- *13mm, 14mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*
- *Snap-ring Pliers*
- *Rubber Mallet*
- *Thread Lock*

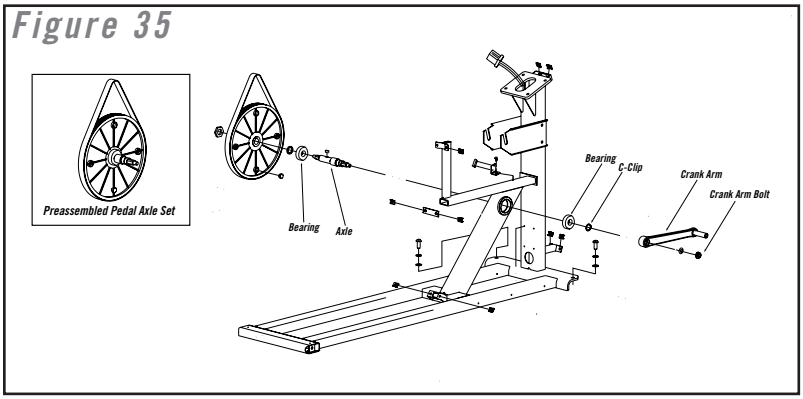
Procedure:

1) Remove side covers. ***(Reference Side Cover Replacement for this section)***

2) Remove the left and right crank arm bolts.

IMPORTANT *The crank arms are pressed in place, so it may be necessary to hit the ends of the crank arms with a rubber mallet.*

Figure 35



3) Remove the c-clip on the right-hand side of the pedal axle set

4) Tap the pedal axle set from the frame, pounding on the right-hand side towards the left.

5) Once the pedal axle set and the bearings are removed from the frame, make sure to remove all dirt or grease from the frame bearing housing.

6) Insert new pedal axle set and bearings.

IMPORTANT *Make sure there is thread lock applied to both the inner and outer diameters of the bearings before installing. It is recommended to allow the thread lock to adhere for 24 hours before using the machine.*

Flywheel/Drive Belt Replacement
(EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG 5)

Tools Required:

- *Phillips Screwdriver*
- *11mm, 13mm, 17mm, 19mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*

Procedure:

1) Turn power on and press start on console.

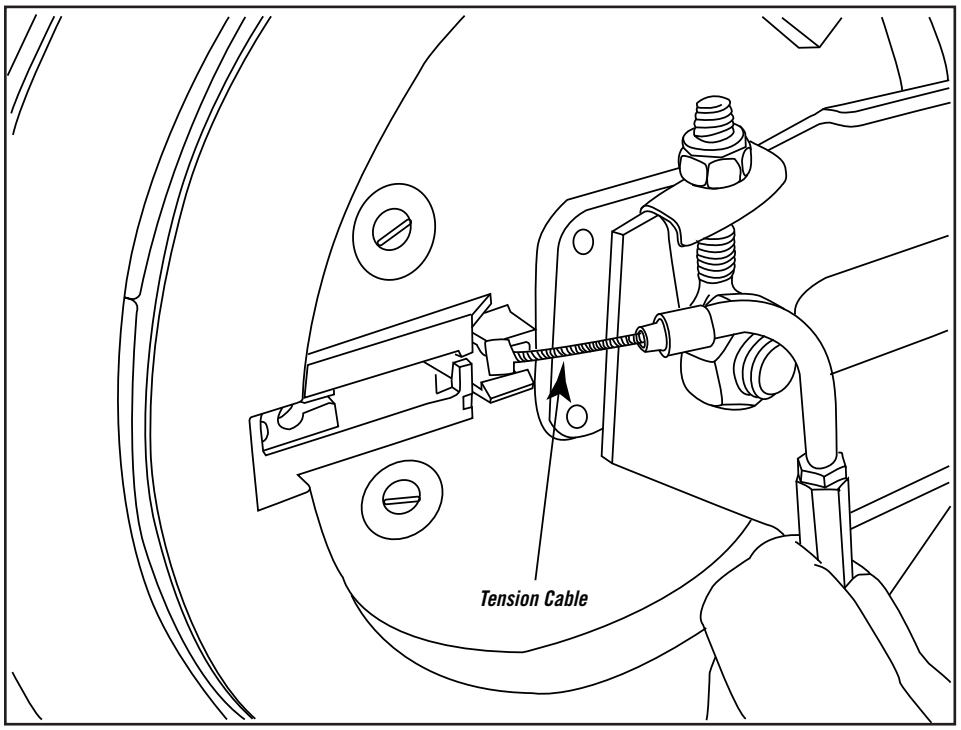
2) Set resistance level to highest position and turn off console.

3) Unplug power supply from elliptical.

4) Remove side covers. ***(Reference Side Cover Replacement for this section.)***

5) Remove tension cable from flywheel assembly.

Figure 36



Flywheel/Drive Belt Replacement Continued (EX-22, EX-33, EX-44, CSE 3.5, CSE 4.5, EG5)

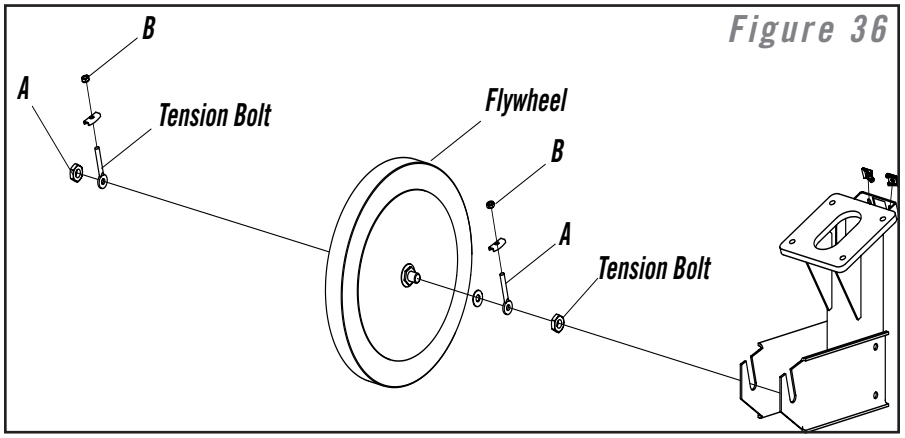


Figure 36

6) Remove both nuts (A), which hold the flywheel to frame.

7) Remove the nuts (B) holding the tensioning bolts into position on both sides of the flywheel and remove the belt-tensioning bolts.

8) Remove drive belt from crank pulley.

9) Place new flywheel into position and attach drive belt onto crank pulley.

10) Slide belt-tensioning bolts onto the flywheel axle.

11) Loosely thread bolts (A) onto the flywheel axle.

12) Tighten the nuts (B) to adjust the tension of the drive belt.

IMPORTANT *Make sure that both bolts are tightened equally so that flywheel sits straight in frame and both fly wheel and crank pulley are properly aligned.*

13) Check the tension of the drive belt

IMPORTANT *The correct belt tension tolerance is 120-140 lbs. If a belt tension gauge is not available, the drive belt should have about 0.25" deflection when pressing down firmly on the drive belt.*

14) Once the belt tension is set properly, tighten the nuts (A) on both sides of the flywheel.

Crank Disk/Side Cover/Crank Arm Replacement (1.2E & 2.2E)

Tools Required:

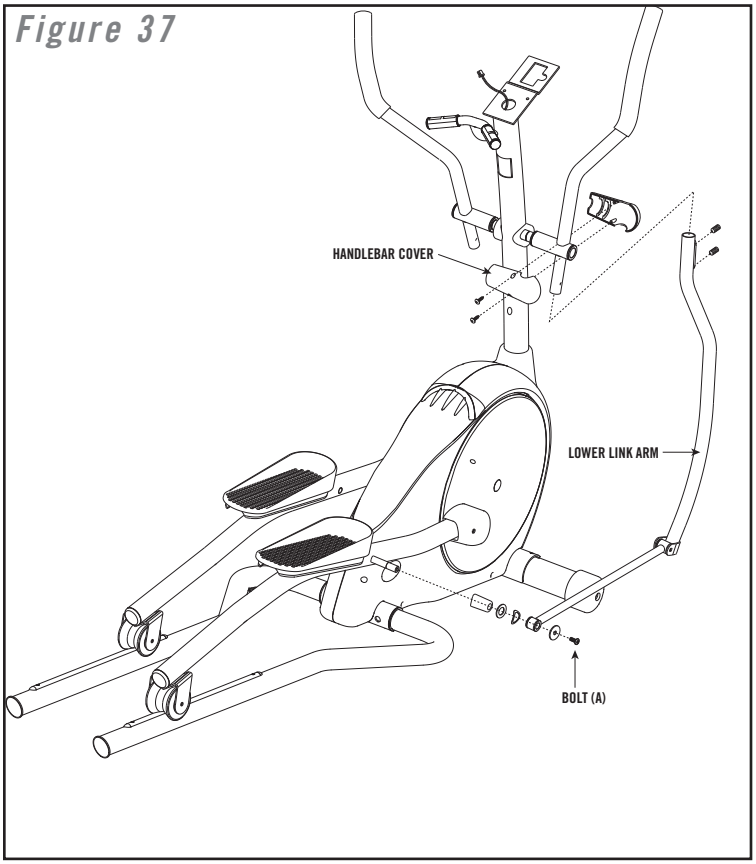
- *Phillips Screwdriver*
- *14mm, 15mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*
- *Crank Puller*

1)1.2E Only – Remove handle bar covers.

2) 1.2E Only – Remove set screws holding lower handle bar.

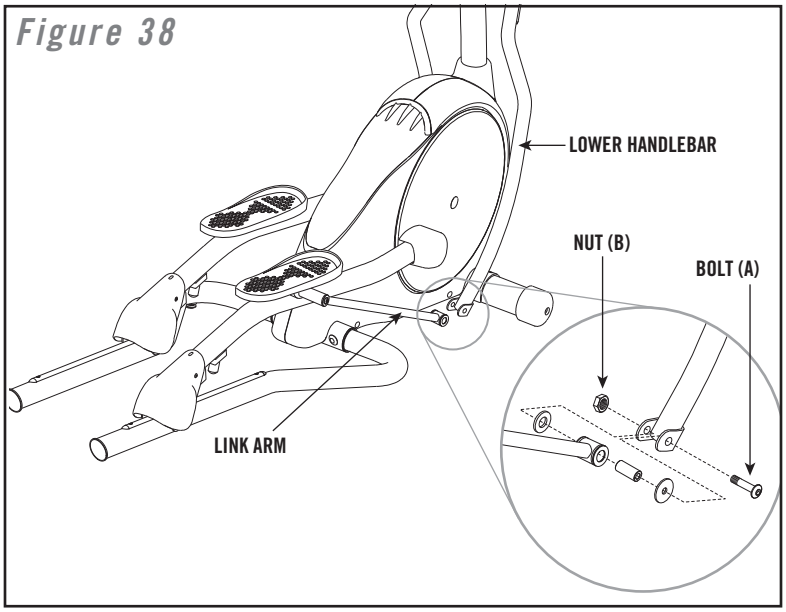
3) 1.2E Only - Remove bolt (A) holding link arm to pedal arm bracket.

Figure 37

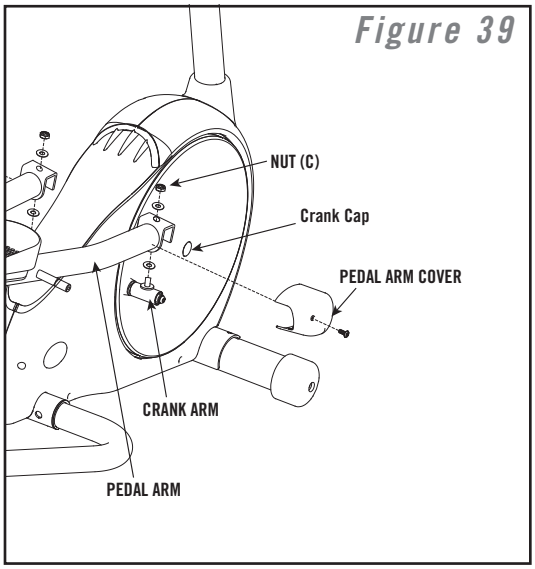


Crank Disk/Side Cover/Crank Arm Replacement Continued (1.2E & 2.2E)

4) 2.2E Only - Remove bolt (A) and nut (B) holding link arm to lower handlebar.



5) Remove pedal arm cover.



6) Remove nut (C) holding pedal arm to crank arm and remove pedal arm.

7) Remove the crank cap from the center of the crank disk.

Crank Disk/Side Cover/Crank Arm Replacement Continued (1.2E & 2.2E)

8) Remove the crank arm nut.

9) Thread the crank puller onto the crank axle and remove the crank arm and crank disk from the crank axle.

Figure 40

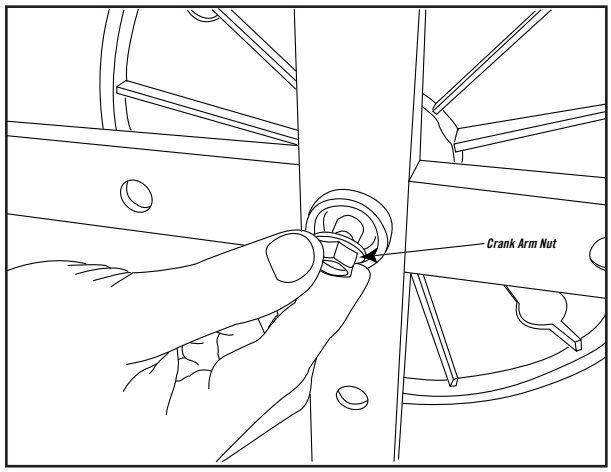
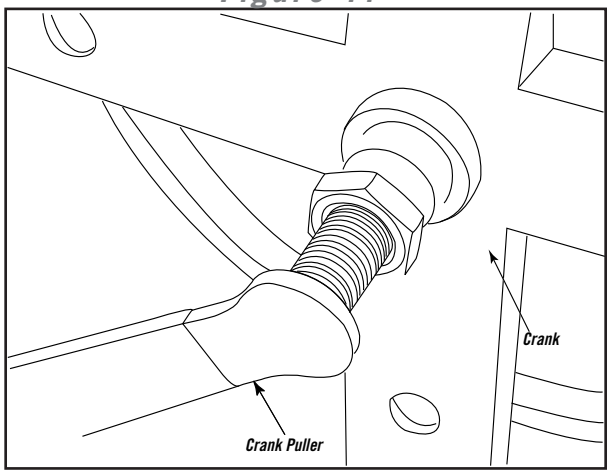
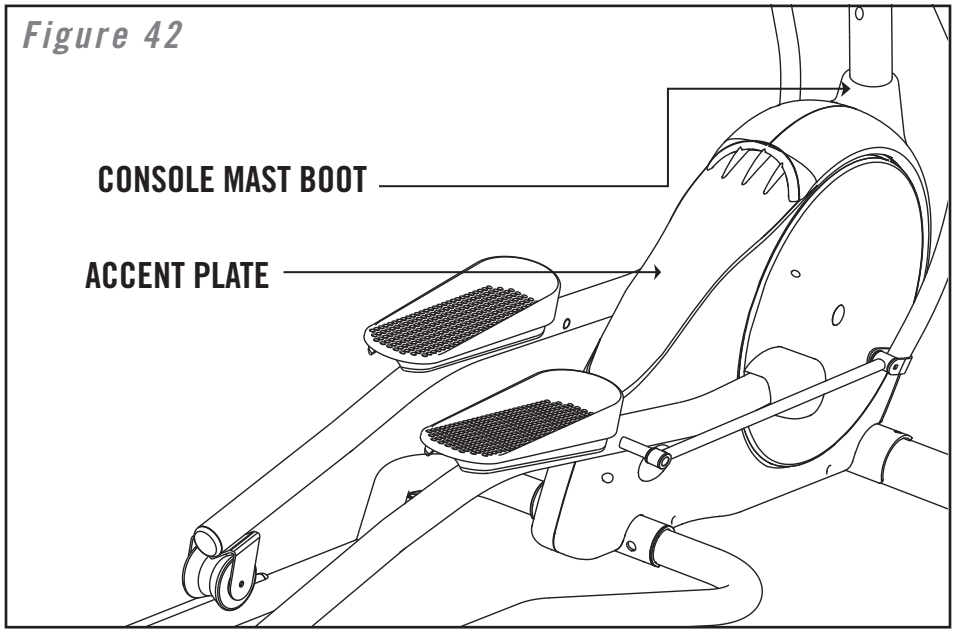


Figure 41



10) Lift console mast boot.

Figure 42



11) Remove the accent piece by gently lifting up at the bottom of the accent piece and lifting towards the front of the machine.

12) Remove side covers.

Crank Disk/Side Cover/Crank Arm Replacement (1.2E & 2.2E) Continued

Figure 43

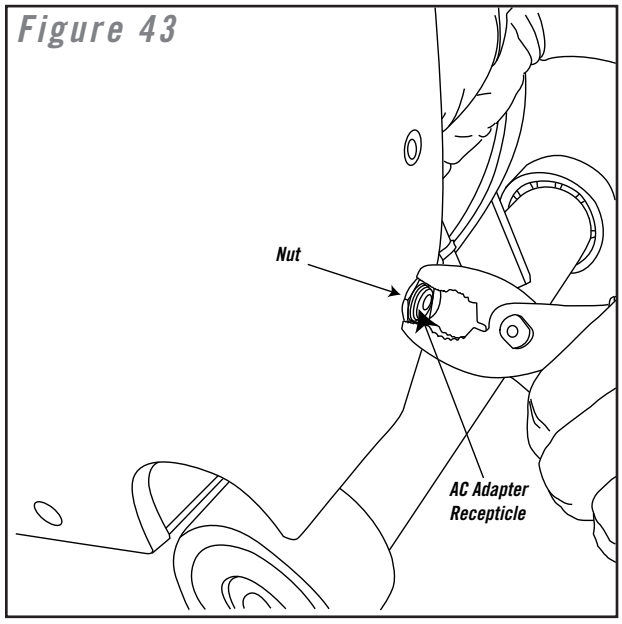
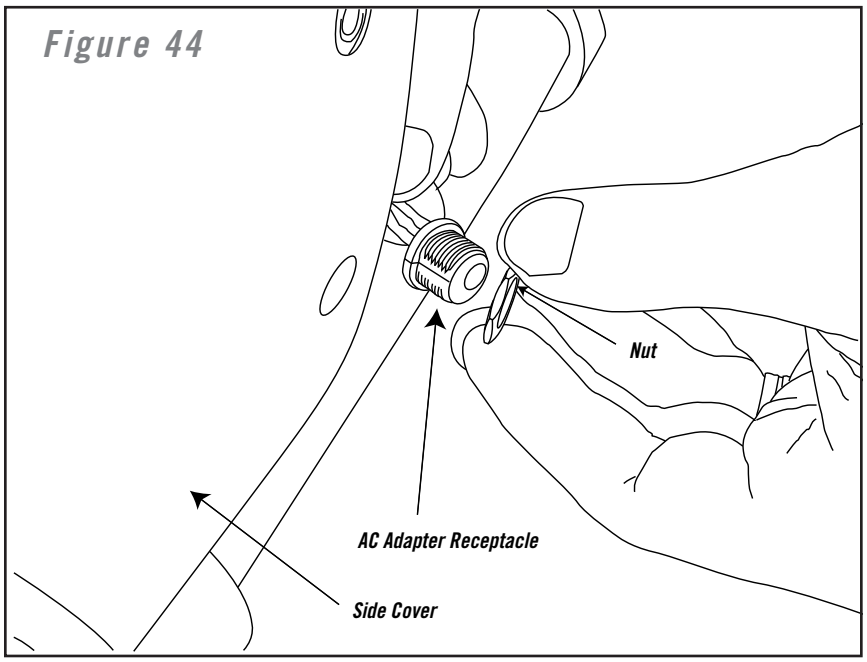


Figure 44



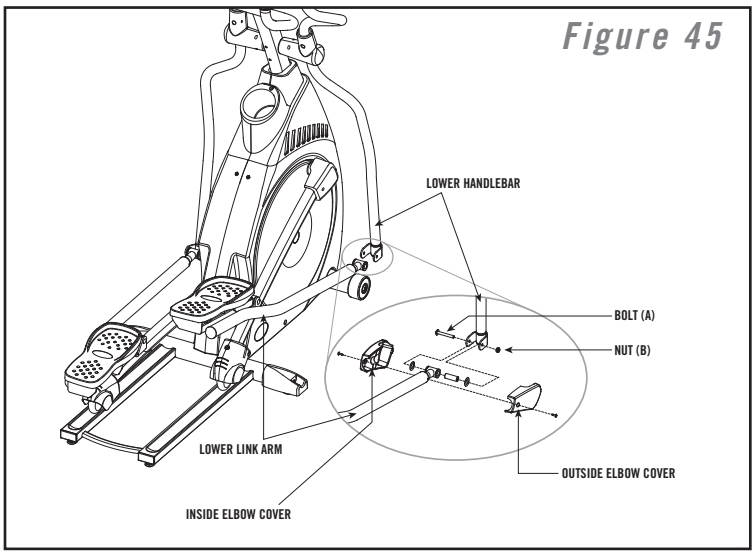
13) Remove crank arm from crank disk.

Crank Disk/Side Cover/Crank Arm Replacement (3.2E & 4.2E)

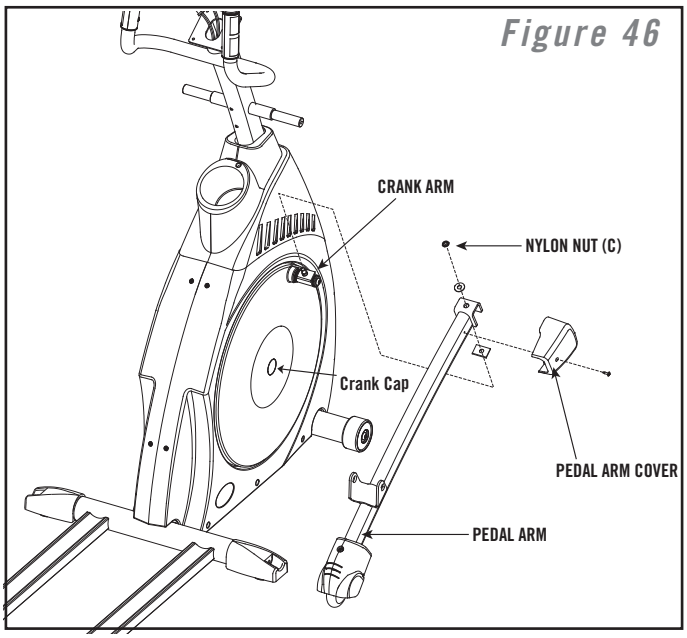
Tools Required:

- *Phillips Screwdriver*
- *14mm, 15mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*
- *Crank Puller*

1) Remove inside and outside elbow covers.



2) Remove bolt (A) and nut (B) holding link arm to lower handlebar.



3) Remove pedal arm cover.

Crank Disk/Side Cover/Crank Arm Replacement (3.2E & 4.2E) Continued

4) Remove nut (C) holding pedal arm to crank arm and remove pedal arm.

5) Remove the crank cap from the center of the crank disk.

Figure 47

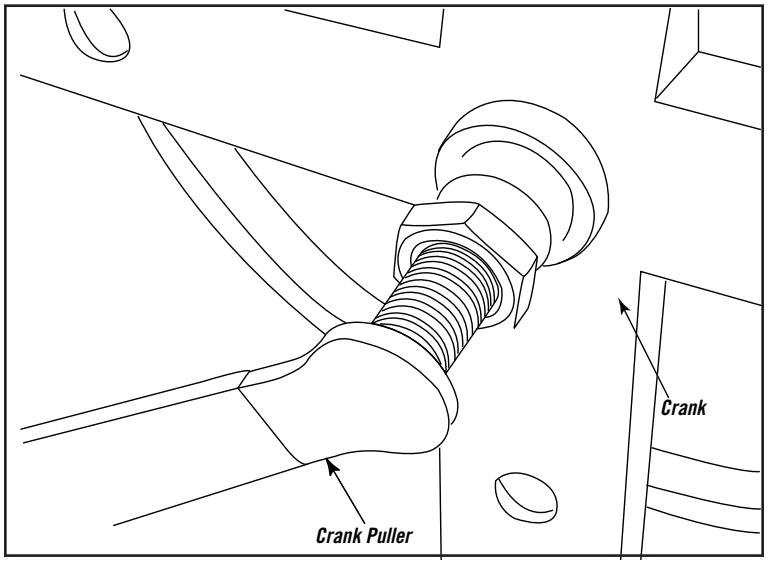
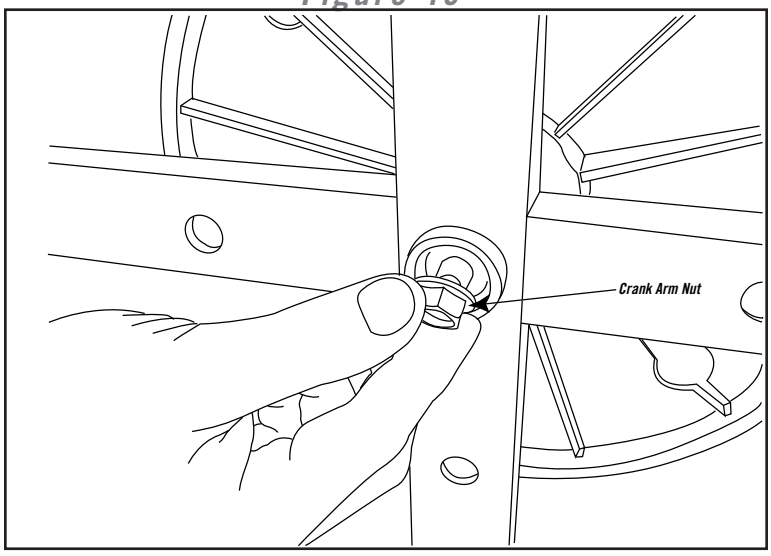


Figure 48



6) Remove the crank arm nut.

7) Thread the crank puller onto the crank axle and remove the crank arm and crank disk from the crank axle.

Crank Disk/Side Cover/Crank Arm Replacement (3.2E & 4.2E) Continued

8) Remove top cap or top side covers.

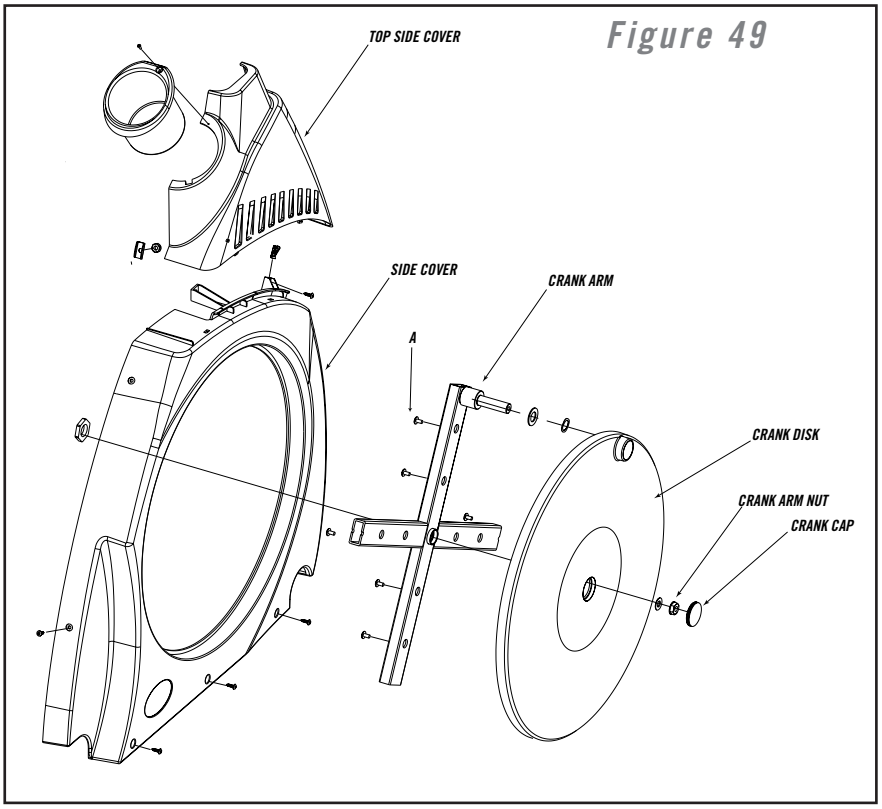


Figure 49

9) Remove side covers.

10) Remove bolts (A) and remove crank arm from crank disk

RPM Sensor Replacement (1.2E, 2.2E, 3.2E, 4.2E)

Tools Required:

- *Phillips Screwdriver*
- *Right Angle Screwdriver*
- *14mm, 15mm, 17mm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*
- *Crank Puller*

Procedure:

1) Remove crank disk and side covers. ***(Reference Crank Disk/Side Cover/Crank Arm Replacement -1.2E & 2.2E or 3.2E & 4.2E.)***

2) Remove sensor wire bracket.

Figure 50

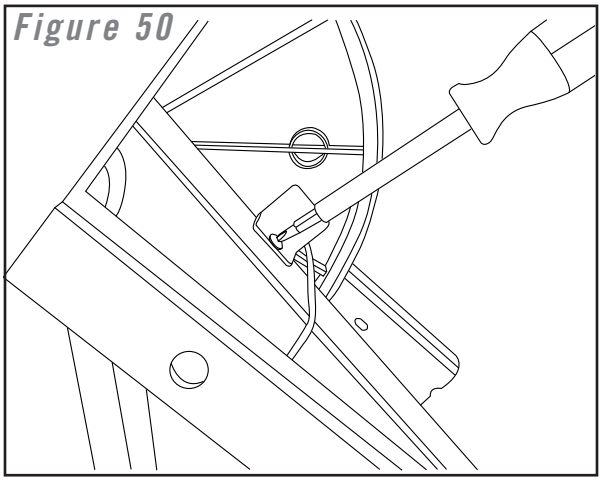
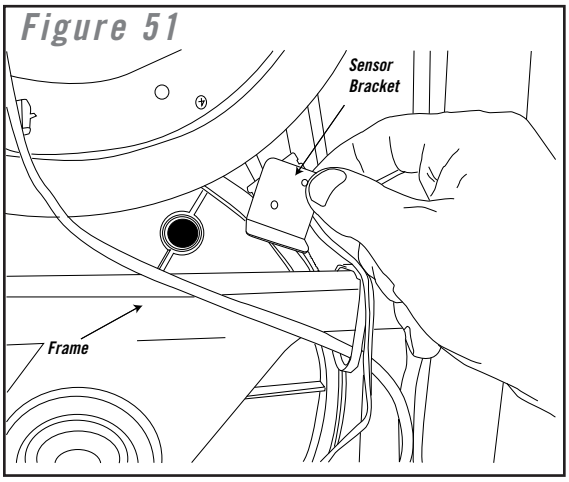


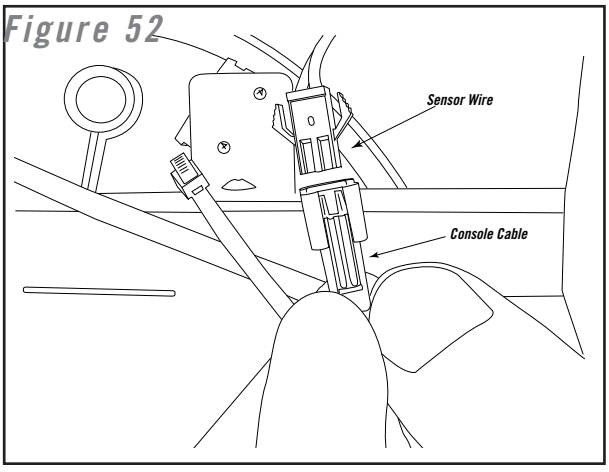
Figure 51



3)Remove the old sensor wire from the sensor wire bracket.

4) ***For Models 2.2E – 4.2E Only*** *- Disconnect sensor wire from console cable.*

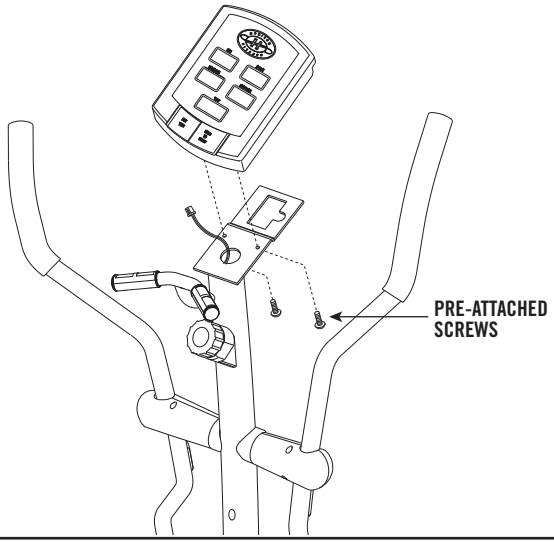
Figure 52



RPM Sensor Replacement (1.2E, 2.2E, 3.2E, 4.2E) Continued

*5) **1.2E Only** - Disconnect console from console mast.*

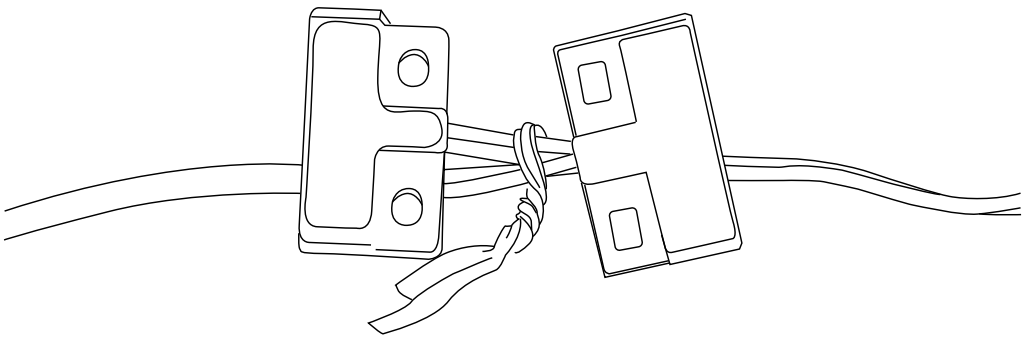
Figure 53



*6) **1.2E Only** - Unplug sensor from console.*

*7) **1.2E Only** - Attach the new sensor wire to the old sensor wire, in order to fish the sensor through the console mast.*

Figure 54



RPM Sensor Replacement (1.2E, 2.2E, 3.2E, 4.2E) Continued

8) Attach the new sensor wire to the sensor wire bracket.

9) Attach bracket to the frame and position correctly.

Figure 55

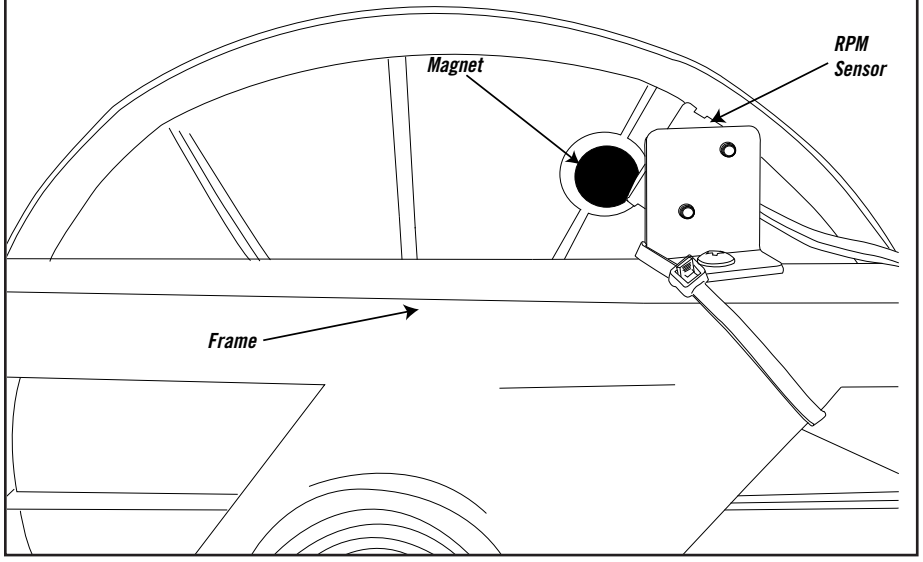
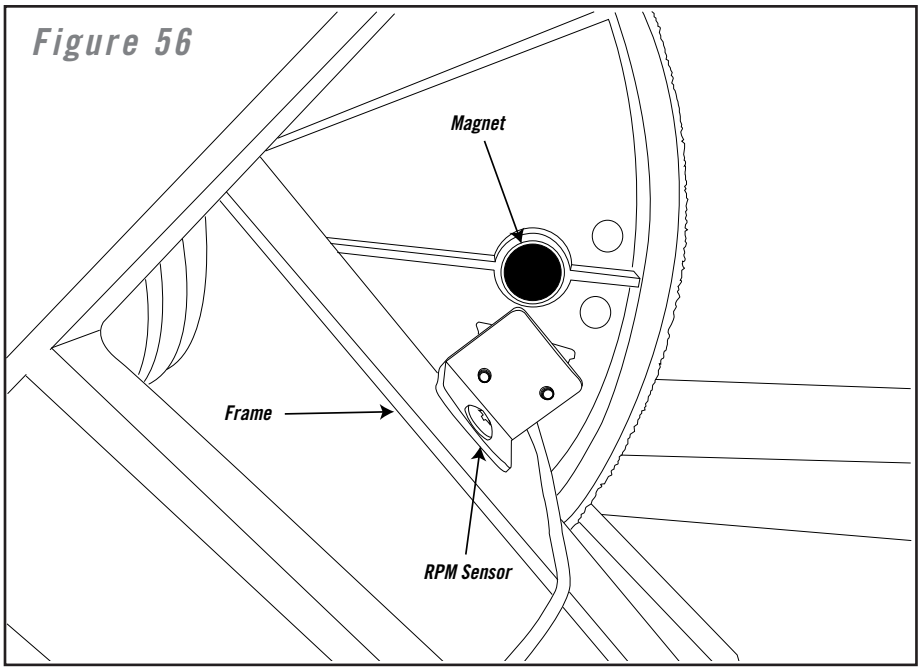


Figure 56



10) Turn crank by hand to make sure that there is a RPM reading on the console.

Console Cable Replacement (2.2E, 3.2E, 4.2E)

Tools Required:

- *Phillips Screwdriver*
- *14mm, 17mm Socket and Combination Wrenches*
- *5mm Allen Wrench*
- *Crank Puller*

Procedure:

1) Unplug power supply from elliptical.

*2) Remove crank disk and side covers. (**Reference Crank Disk/Side Cover/Crank Arm Replacement -1.2E & 2.2E or 3.2E & 4.2E.)***

3) Disconnect console cable from the speed sensor and servomotor.

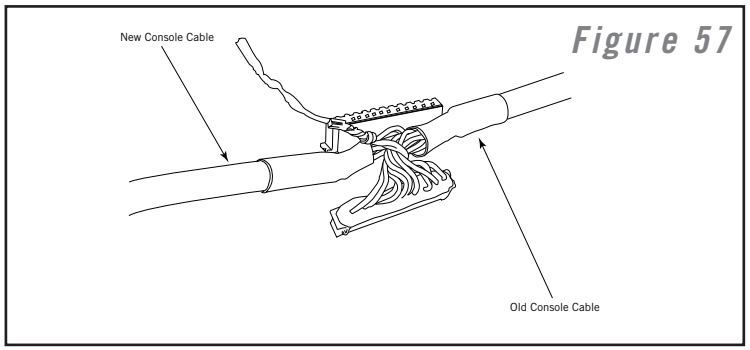


Figure 57

4) Remove the console from the console mast.

5) Unplug the console cable from the console and attach the new console cable to the old console cable, in order to fish the cable through the console mast.

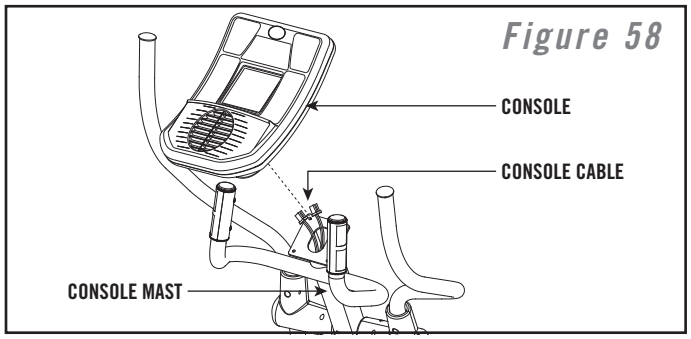


Figure 58

IMPORTANT *You may need to unscrew the water bottle bracket screws in order to fish the console cable easily.*

Servomotor Replacement (2.2E, 3.2E, 4.2E)

Tools Required:

- *Phillips Screwdriver*
- *14mm, 15mm, 17mm Socket and Combination Wrenches*
- *5mm Allen Wrench*
- *Crank Puller*

Procedure:

1) Turn power on and press start on console.

2) Set resistance level to highest position and turn off console.

3) Unplug power supply from elliptical.

4) Remove crank disk and side covers. ***(Reference Crank Disk/Side Cover/Crank Arm Replacement -1.2E & 2.2E or 3.2E & 4.2E.)***

5) Disconnect console cable from servomotor.

Figure 59

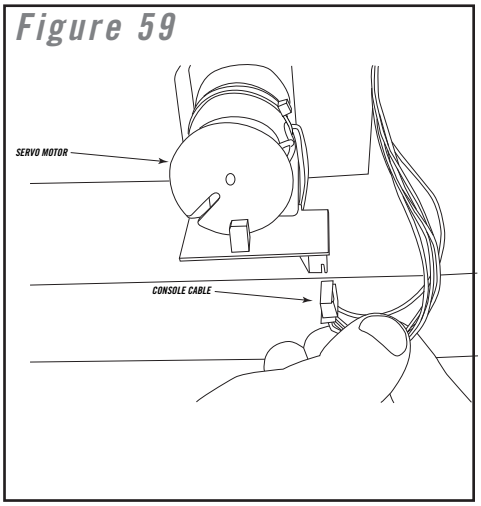
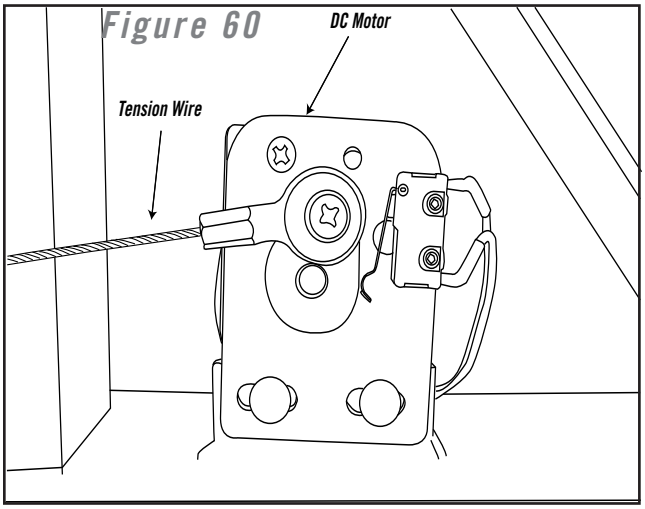
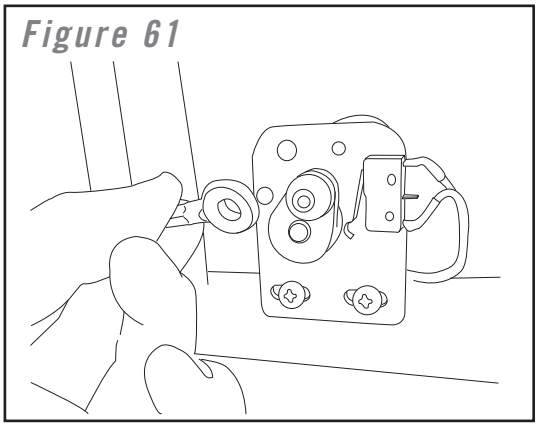


Figure 60



Servomotor Replacement (2.2E, 3.2E, 4.2E) Continued

Figure 61



6) Remove the brake cable from the servomotor.

7) Remove Servomotor.

Tension Cable Replacement (1.2E)

Tools Required:

- *Phillips Screwdriver*
- *13mm, 14mm, 17mm Socket and Combination Wrenches*
- *5mm Allen Wrench*
- *Needle Nose Pliers*
- *Crank Puller*

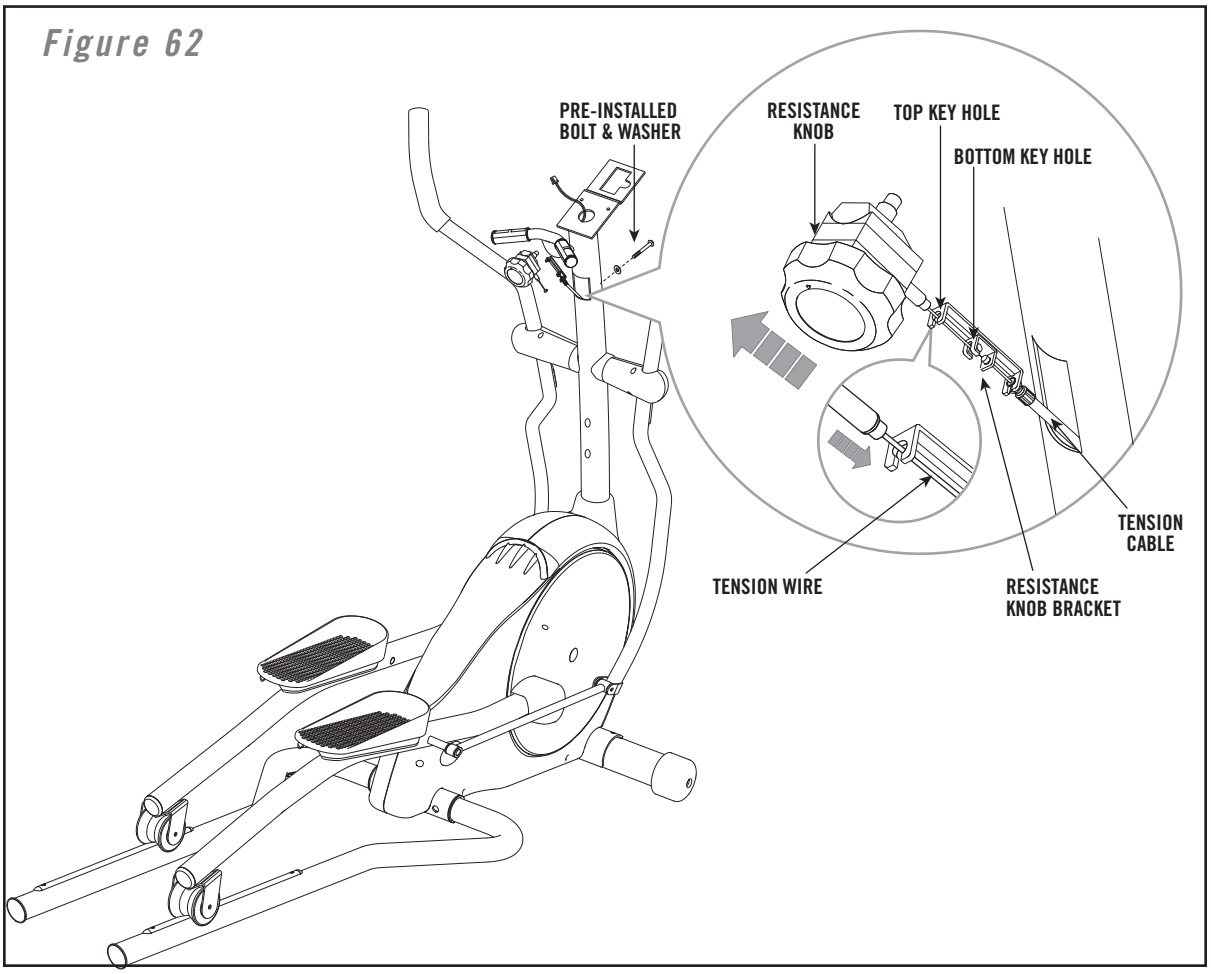
Procedure:

1. *Turn the tension knob to the highest resistance level.*

2. *Remove the bolt that attaches the tension knob to the console mast.*

3. *Remove the tension knob from the tension cable by pulling up on the tension knob.*

Figure 62

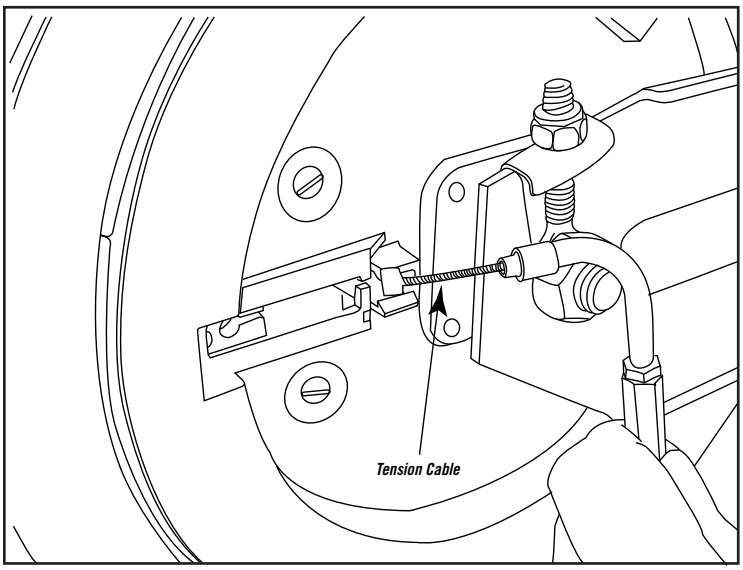


Tension Cable Replacement (1.2E) Continued

*4. Remove crank disk and side covers. (**Reference Crank Disk/Side Cover/Crank Arm Replacement -1.2E & 2.2E.)***

5. Disconnect the tension cable from the flywheel/brake assembly.

Figure 63



6. Disconnect the nut that attaches the tension cable to the main frame.

7. Fish the new tension cable through the console mast.

8. Make sure that the tension knob is still set to the highest resistance level and attach the tension knob to the tension cable and secure to the console mast with screw.

*9. Connect tension cable to the flywheel/brake assembly and adjust so that magnetic brake is position properly. **(Reference Adjusting the Magnetic Brake in Maintenance in section.)***

10. Adjust the tension knob from the lowest to highest resistance settings to ensure proper movement and position of the flywheel/brake assembly.

Pedal Axle Set Replacement (1.2E, 2.2E, 3.2E, 4.2E)

Tools Required:

- *Phillips Screwdriver*
- *13mm, 14mm, 17mmm Socket and Combination Wrenches*
- *4mm, 5mm Allen Wrenches*
- *Crank Puller*
- *Snap Ring Pliers*
- *Rubber Mallet*
- *Thread Lock*

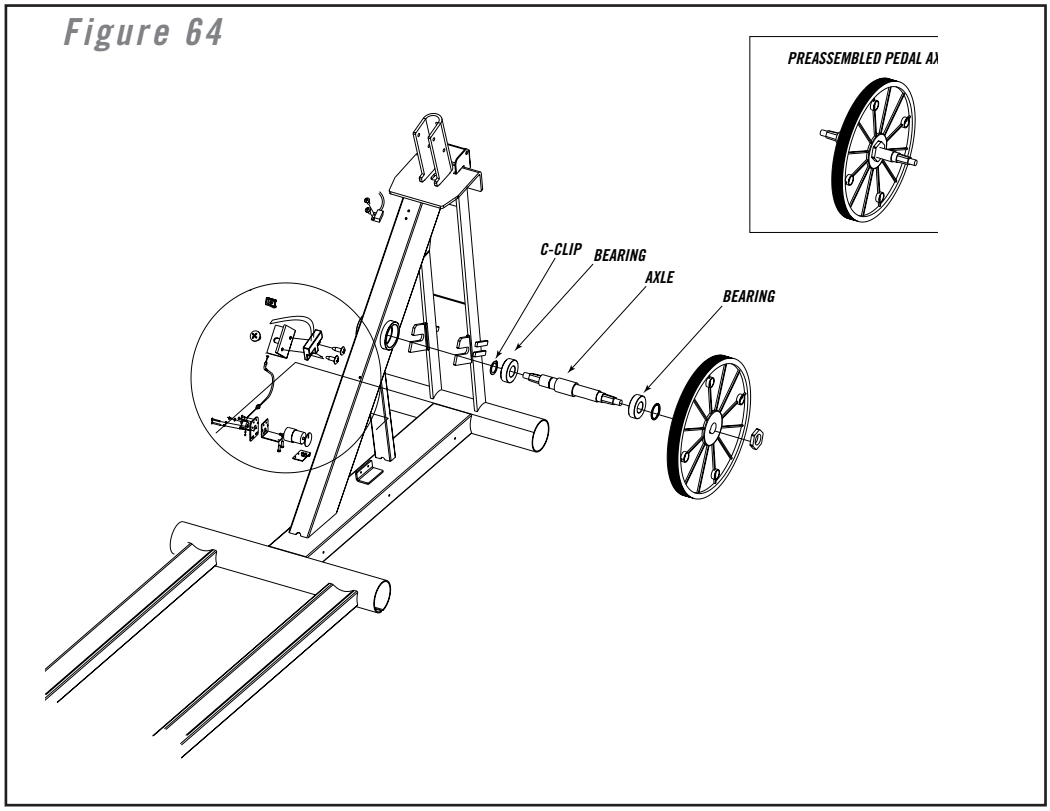
Procedure:

1) Remove crank disk and side covers. ***(Reference Crank Disk/Side Cover/Crank Arm Replacement -1.2E & 2.2E or 3.2E & 4.2E.)***

2) Remove the c-clip on the left-hand side of the pedal axle set.

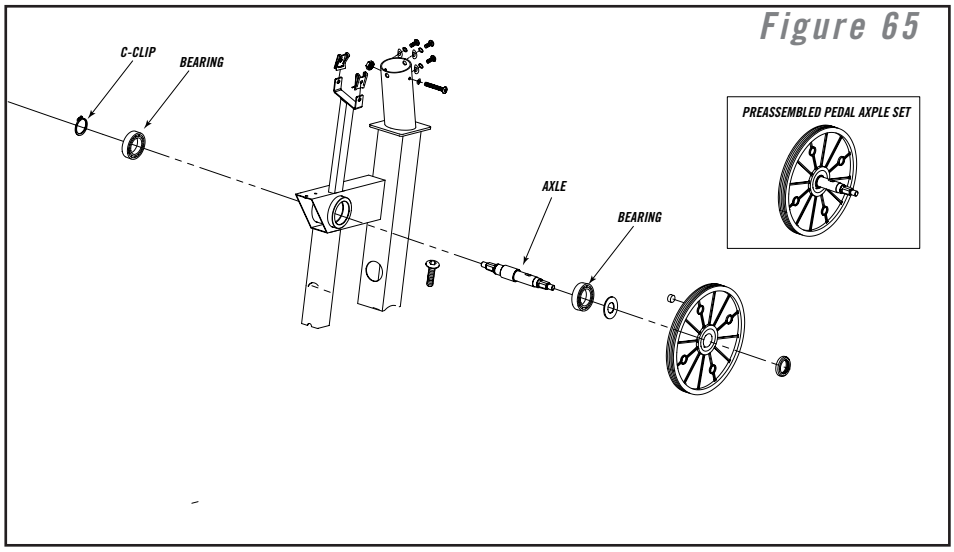
3) Tap the pedal axle set from the frame, pounding on the left-hand side towards the right.

Figure 64



Pedal Axle Set Replacement (1.2E, 2.2E, 3.2E, 4.2E) Continued

Figure 65



4) Once the pedal axle set and the bearings are removed from the frame, make sure to remove all dirt or grease from the frame bearing housing.

5) Insert new pedal axle set and bearings.

IMPORTANT

Make sure there is thread lock applied to both the inner and outer diameters of the bearings before installing. It is recommended to allow the thread lock to adhere for 24 hours before using the machine.

Flywheel/Drive Belt Replacement (1.2E, 2.2E, 3.2E, 4.2E)

Tools Required:

- *Phillips Screwdriver*
- *13mm, 14mm, 17mm Socket and Combination Wrenches*
- *5mm Allen Wrench*
- *Crank Puller*

Procedure:

1) Turn power on and press start on console.

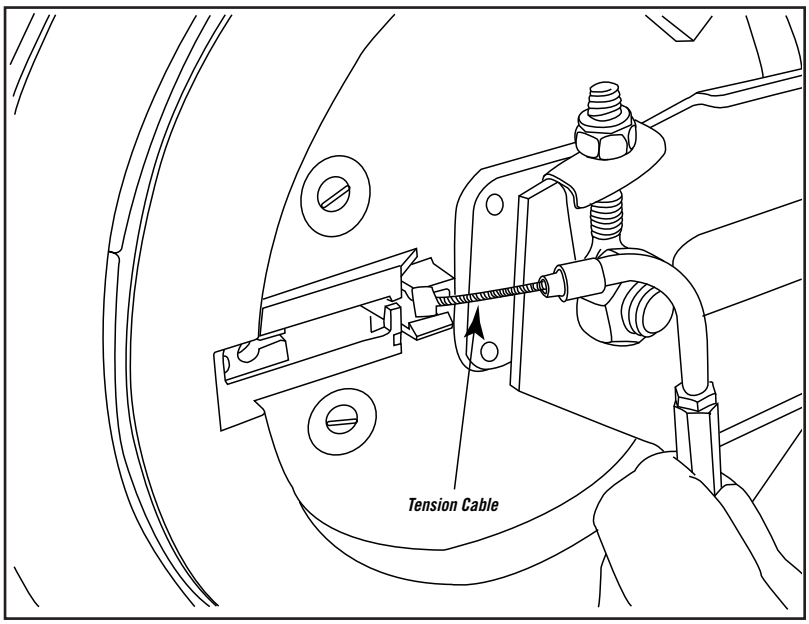
2) Set resistance level to highest position and turn off console.

3) Unplug power supply from elliptical.

4) Remove crank disk and side covers. ***(Reference Crank Disk/Side Cover/Crank Arm Replacement 1.2E & 2.2E or 3.2E & 4.2E.)***

5) ***For 1.2E, 3.2E, and 4.2E only*** *- Remove tension cable from flywheel assembly.*

Figure 66



Flywheel/Drive Belt Replacement (1.2E, 2.2E, 3.2E, 4.2E) Continued

Figure 67

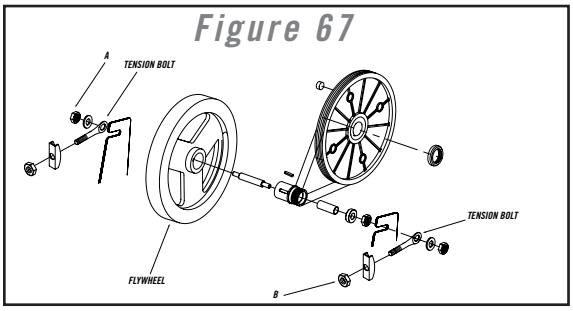
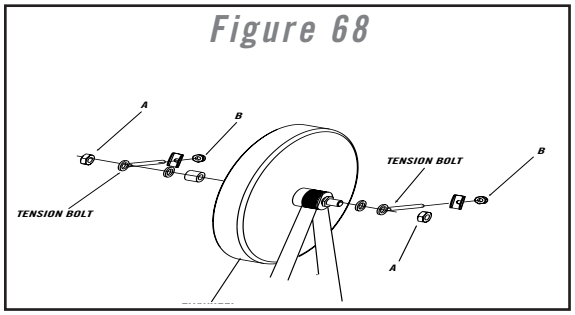


Figure 68



6) Remove both nuts (A), which hold the flywheel to frame.

7) Remove the nuts (B) holding the tensioning bolts into position on both sides of the flywheel and remove the belt-tensioning bolts.

8) Remove drive belt from crank pulley.

9) Place new flywheel into position and attach drive belt onto crank pulley.

10) Slide belt-tensioning bolts onto the flywheel axle.

11) Loosely thread bolts (A) onto the flywheel axle.

12) Tighten the nuts (B) to adjust the tension of the drive belt.

IMPORTANT

Make sure that both bolts are tightened equally so that flywheel sits straight in frame and both fly wheel and crank pulley are properly aligned.

CUSTOMER TECH SUPPORT

If you have any questions or comments, you may contact one of our trained customer technicians via phone, email or our website.

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