Vision Fitness S60 (EP615) Service Manual

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CHAPTER 1: MAINTENANCE PROCEDURE

1.1 Preventative Maintenance Schedule

PREVENTIVE MAINTENANCE SCHEDULE

Item	Daily	Weekly	Monthly	Quarterly	Biannual	Annual
Console Mounting Bolts					Inspect	
Frame					Inspect	
Display Console	Clean		Inspect			
Handlebar	Clean				Inspect	
Handrail & Handlebar	Clean			Inspect		
Belt Grooves			Inspect			
V Belt				Clean	Inspect	

CHAPTER 1: MAINTENANCE PROCEDURE

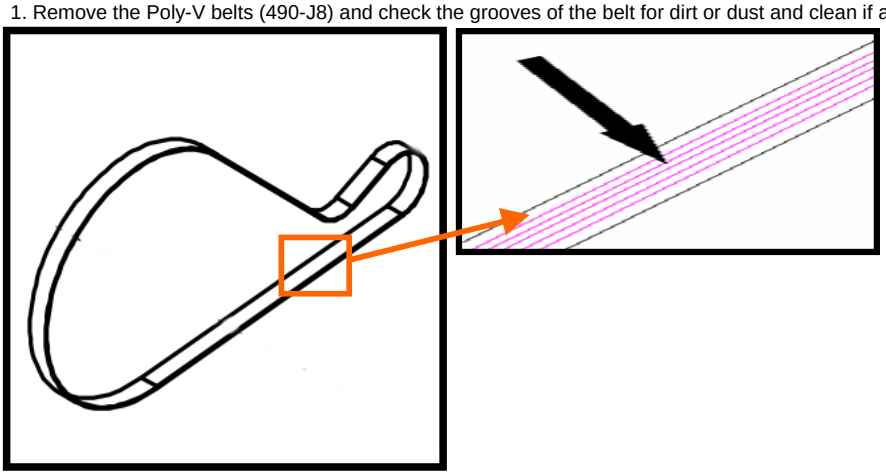
1.2 Cleaning the Grooves

If there is any dust in the grooves of the Poly-V belts and pulleys, noises will be generated during operation.

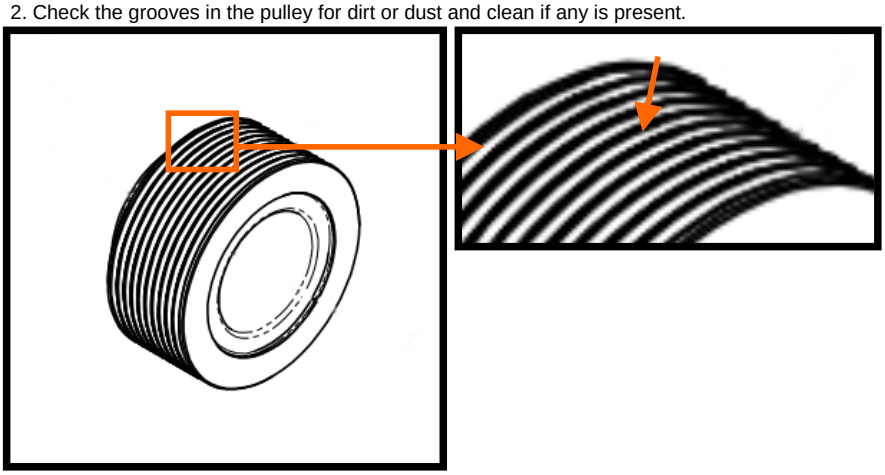
Frequency: Every 3 to 4 months.

[Procedure]:

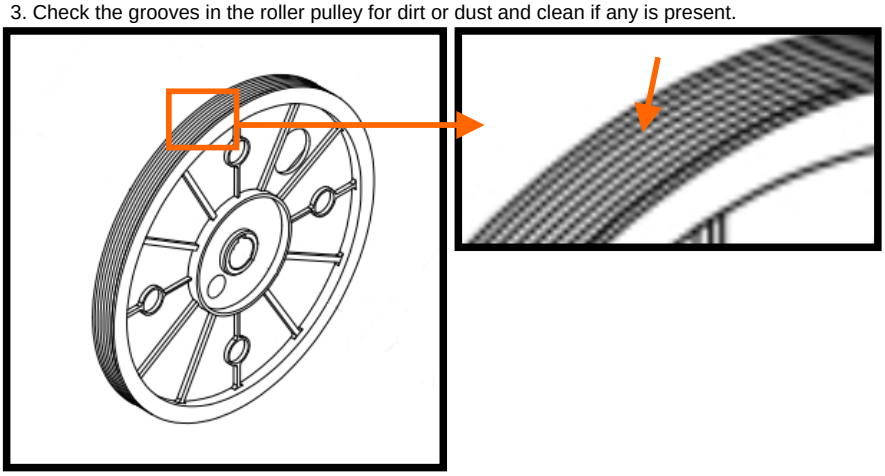
1. Remove the Poly-V belts (490-J8) and check the grooves of the belt for dirt or dust and clean if any is present.



2. Check the grooves in the pulley for dirt or dust and clean if any is present.

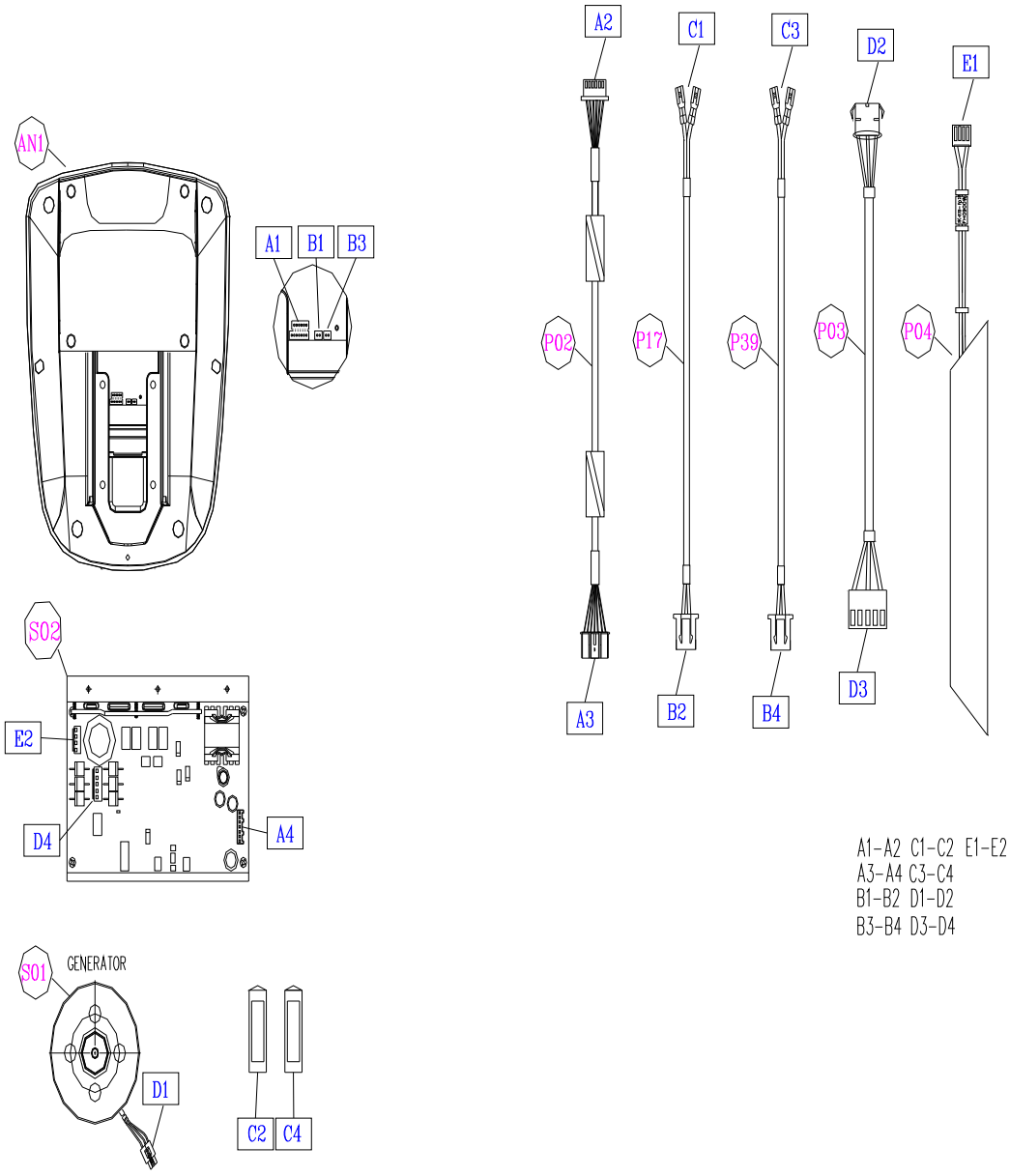


3. Check the grooves in the roller pulley for dirt or dust and clean if any is present.



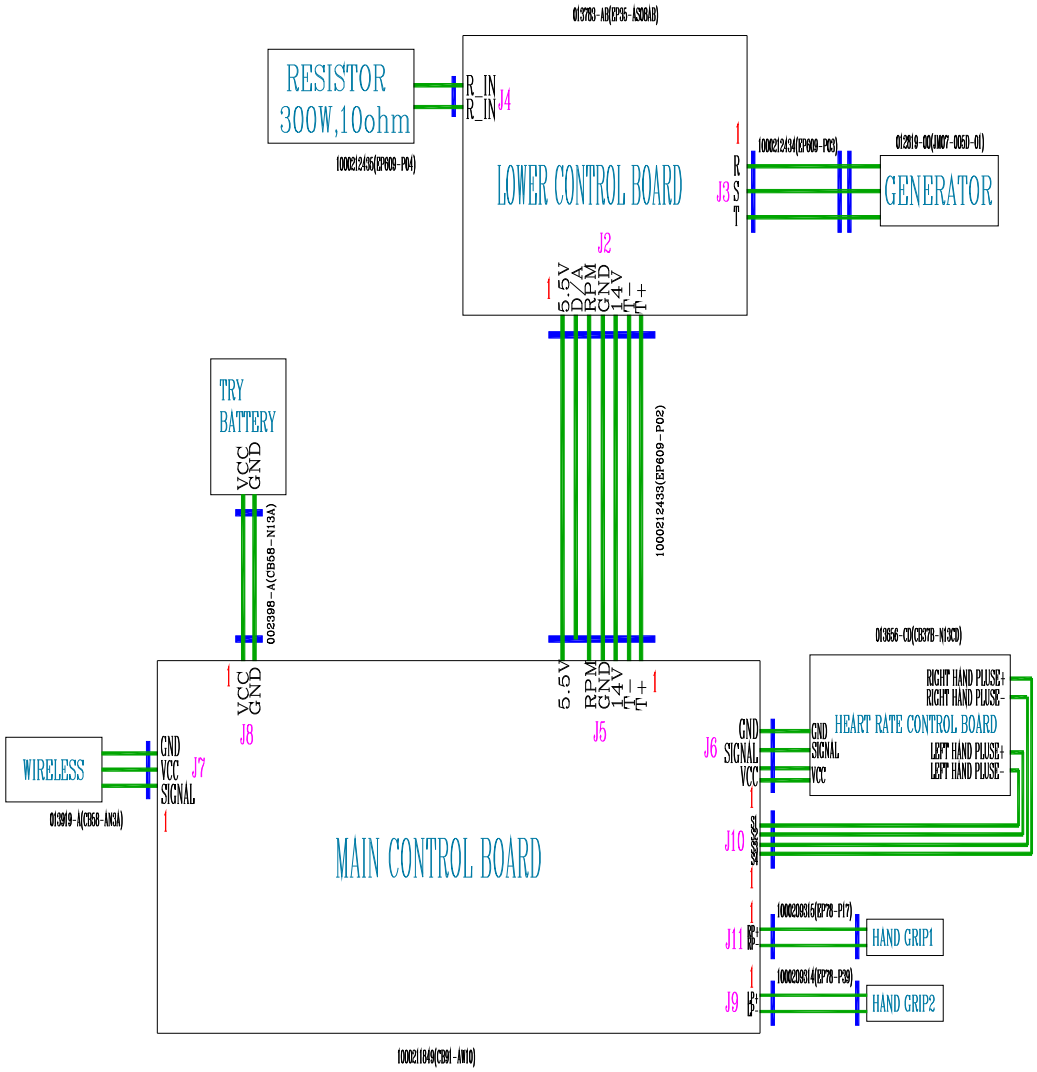
CHAPTER 2: WIRING DIAGRAM INSTRUCTION

2.1 Electrical Installation



CHAPTER 2: WIRING DIAGRAM INSTRUCTION

2.2 Electrical Diagram



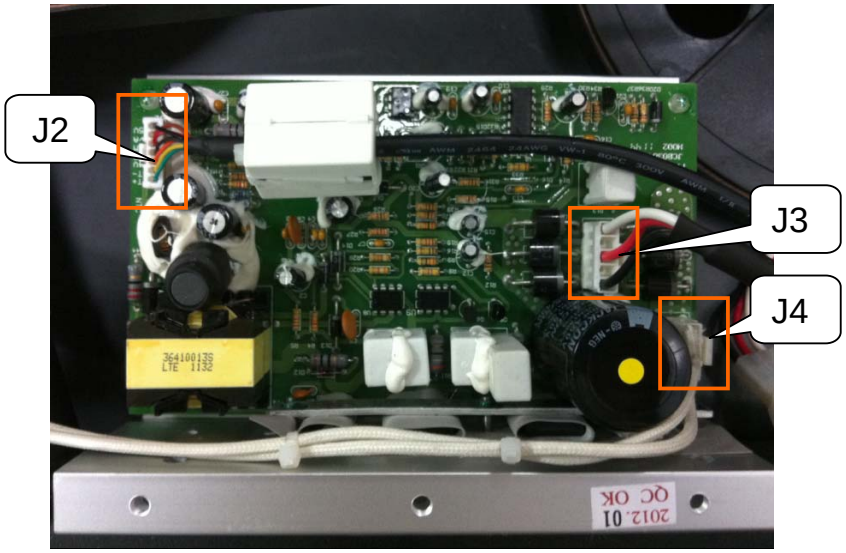
CHAPTER 2: WIRING DIAGRAM INSTRUCTION

2.3 Wiring Diagram

P01- CONSOLE WIRE

A.HOLE	B.HOLE	FUNCTION
1	1	5.5V
2	2	D/A
3	3	RPM
4	4	GND
5	5	14V
6		T-
7	6	T+

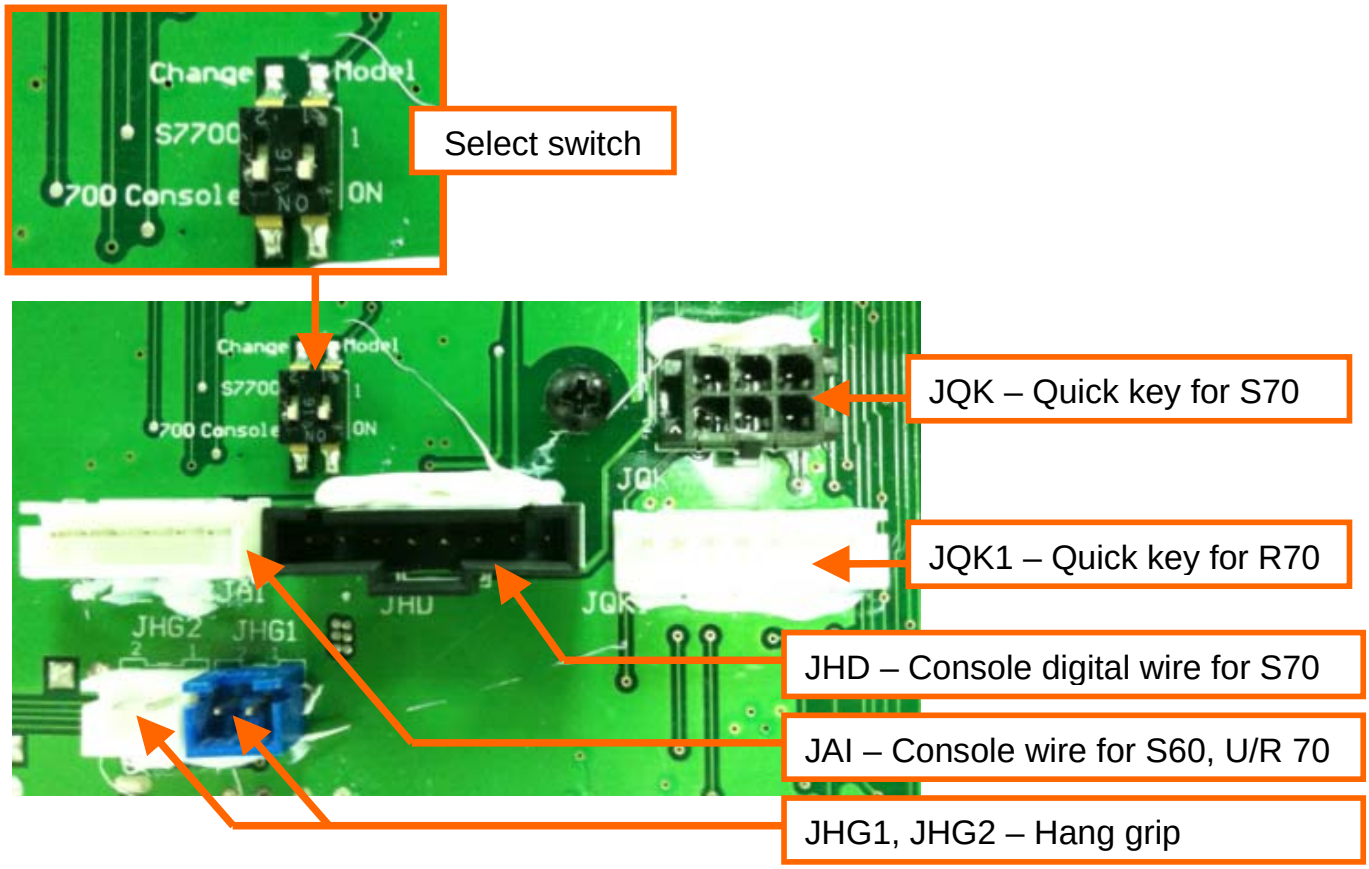
2.4 Lower Control Board Wiring Diagram



J2	**7 pin terminal to the console**
J3	**3 pin terminal to the generator**
J4	**2 pin terminal to the power resistor**

CHAPTER 2: WIRING DIAGRAM INSTRUCTION

2.5 Console Wiring Diagram



Port	Function
JQK	Quick key cable for S70
JQK1	Quick key cable for R70
JHD	Console wire for S70
JAI	Console wire for S60, U70, R70
JHG1/JHG2	Hand grip cable for all models
Select switch	Select current model by hand

CHAPTER 3: ENGINEERING MODE

3.1 Using Engineering Mode

1. Press & Hold both UP and DOWN RESISTANCE keys at the same time for 3-5 second to enter Engineering Mode as shown in Figure A. The display will show “P1 MAX TIME” as shown in Figure B.

2. To scroll through the list of options in Engineering Mode, use the UP and DOWN RESISTANCE keys.

3. Press the ENTER key to see the value of the function.

4. To change the value of the setting, use the UP and DOWN RESISTANCE keys.

5. To confirm and save the value of the setting, press the ENTER key.

6. Press and hold the START key for 3-5 seconds to return to normal operation.

FIGURE A **FIGURE B**

KEY NAME	FUNCTION
UP	Select function or adjust value
DOWN	Select function or adjust value
GO	Enter the function item
STOP	Save value or quit mode
Hold “ STOP” key 3’s	System reset
Hold “ UP&DOWN” key 3’s	Enter engineering mode

CHAPTER 3: ENGINEERING MODE

3.1 Using Engineering Mode – Continued

CUSTOMSETTING	DEFAULT	MINIMUM	MAXIMUM	DESCRIPTION
MAX TIME	99 min	20 min	99 min	Sets the total run time of any program.
USER TIME	30 min	10 min	Max Time (99 min)	Workout time when GO is pressed or when no time is selected during program set up.
DF AGE	40	10	100	Starting age when GO is pressed or when no age is selected during program set up.
RESISTANCE LEVEL	1	1	20	Starting resistance when GO is pressed or when no resistance is selected during program set up.
WATTS	40	40	250	Constant watts for watts program mode.
UNIT	MILE	KM	MILE	Set the unit to miles or kilometers.
MACHINE	ELLIPTICAL	BIKE	ELLIPTICAL	Set machine to elliptical mode.
Accumulated TIME	N/A	N/A	N/A	Total distance for all programs.
Accumulated DISTANCE	N/A	N/A	N/A	Total time for all programs displayed in hours.
DISPLAY TEST	N/A	N/A	N/A	Press the UP&DOWN key repeatedly to check each set of LEDs on the display sequentially.
MACHINE TEST	N/A	N/A	N/A	The function is needed using tools in test. Test 1: RPM, Test 2: HR, Test 3: Resistance level.
SOFTWARE VERSION	N/A	N/A	N/A	Display current software version.
LANGUAGE	ENGLISH	–	–	Sets the language for the console. Select between English, Italian, French, Espanol and Portuguese.

CHAPTER 4: TROUBLESHOOTING

4.1 Console Error Codes

Error Messages on the Console

Code	Class	Description	Solution
0x0441	B	When UCB implements a command, LCB has not received this command.	Check the console cable connection, replace the LCB.
0x01AC	C	Power resistor is short circuited (over 4A), or the current is over 3.7A for 1 second.	Check the connection of power resistor or replace power resistor
0x02AB	C	Machine Type Error	Set the Machine Type to the correct type of LCB
0x02B3	C	Resistance Type Error	Set the Machine Type to the correct type of LCB
0x04A0	C	The LCB has no message returned to the UCB for over 3 seconds.	Check the console cable connections, replace the LCB / UCB as needed.
0x0201	A	LCB Battery Low Voltage	Check battery recharge function or replace new battery
0x0248	B	Battery disconnection or fail.	Check the connection of battery or replace new battery

CHAPTER 4: TROUBLESHOOTING

4.2 Troubleshooting – No Display on the Console or the Display is Dim

NO DISPLAY ON THE CONSOLE OR THE DISPLAY IS DIM

POSSIBLE CAUSES:

1. The console is damaged or the console cable is not connected properly.
2. Poor connection to all the terminals on the lower control board.
3. The lower control board is damaged.
4. The generator is damaged.

SOLUTION:

1. Check the connection of the console cable at the UCB.
2. Remove the console cable from the J5 socket on the console. Pedal the machine and set your multi-meter to DC voltage and place both terminals on pins 1 & 4 of the console cable. There should be a reading of more than 5.5VDC (Figure A).
   - If voltage is more than 5.5VDC, replace the console.
   - If voltage is less than 5.5VDC, or the new console does not resolve the issue, replace the console cable.
3. Open the shrouds then check if all the wire harnesses are connected properly to the terminals of the LCB.
4. Unplug the generator cable from the control board, pedal the machine and set your multi-meter to AC voltage and place both terminals on pins 1 & 2, pins 2 & 3, and pins 3 & 1 of the console cable to check if the voltage is variable (Figure B).
   - If the voltage reading shown is variable (varies based on RPM), replace the LCB.
   - If the voltage reading shown is not variable, replace the generator.

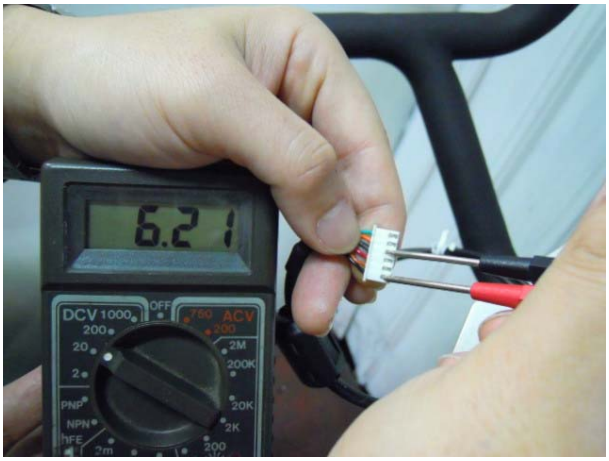


FIGURE A

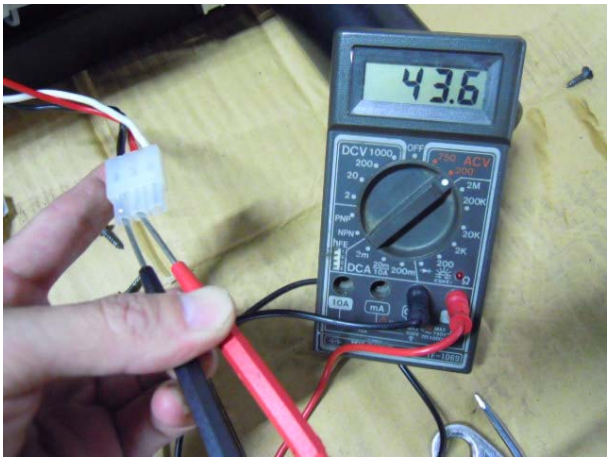


FIGURE B

CHAPTER 4: TROUBLESHOOTING

4.3 Troubleshooting – No RPM is Displayed During the Exercise

NO RPM IS DISPLAYED DURING THE EXERCISE

POSSIBLE CAUSES:

1. The console is damaged or the console cable is not connected properly.
2. Poor connection to all the terminals on the lower control board.
3. The lower control board is damaged.
4. The generator is damaged.

SOLUTION:

1. Check the connection of the console cable at the UCB.
2. Remove the console cable from the J5 socket on the console. Pedal the machine and set your multi-meter to resistance and place a terminal on pin 3 of the console cable at both the LCB and UCB. There should be a resistance (ohm) reading (Figures A & B).
   - If a resistance reading is shown, replace the console.
   - If the there is no resistance reading, or a new console does not resolve the issue, replace the console cable.
3. Open the shrouds and check if all the wire harnesses are connected properly to the terminals of the LCB.
4. Unplug the generator cable from the LCB and pedal the machine to check if the voltage is variable.
   - If a variable voltage reading is shown (varies based on RPM), replace the LCB.
   - If the voltage reading shown is not variable, replace the generator.

FIGURE A

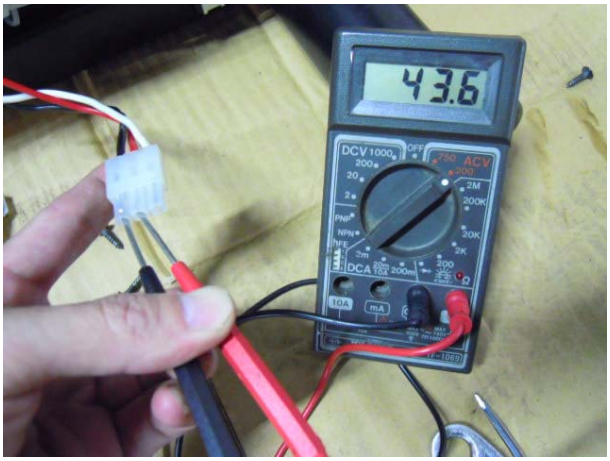


FIGURE B

CHAPTER 4: TROUBLESHOOTING

4.4 Troubleshooting – All or Some of the Function Keys Do Not Respond

ALL OR SOME OF THE FUNCTION KEYS DO NOT RESPOND

POSSIBLE CAUSES:

1) The keypad connection ribbon cable has not been plugged in correctly.

2) The keypad is damaged.

3) The UCB is damaged.

SOLUTION:

1) Check the connections of the keypad at the UCB.

   a. Remove the console from the console mast.

   b. Remove the 4 screws holding the back of the console to the front (Figure A).

   c. Inspect the keypad ribbon cable connection at the UCB (Figure B).

   d. Even if the keypad ribbon cable appears to be connected correctly, unplug and reseat the cable, then retest.

2) Replace the affected keypad.

3) Replace the UCB.

FIGURE A

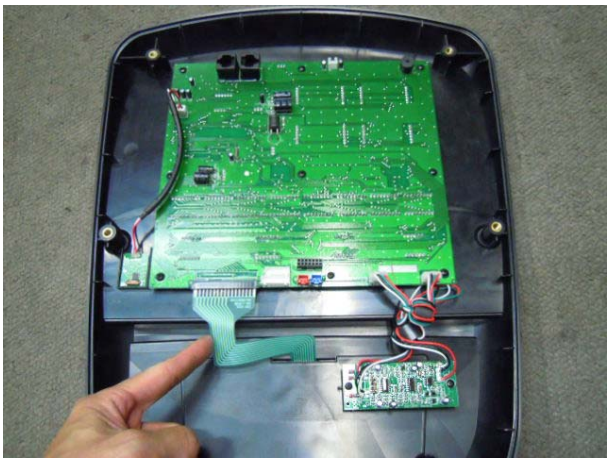


FIGURE B

CHAPTER 4: TROUBLESHOOTING

4.5 Troubleshooting – High or No Resistance

HIGH OR NO RESISTANCE

POSSIBLE CAUSES:

1) The console is damaged or the console cable is not connected properly.

2) The console cable is damaged.

3) The power resistor is damaged.

4) The LCB is damaged.

5) The generator is damaged.

SOLUTION:

1) Check the console cable connections at the UCB.

2) Remove the rear shrouds and check if the console cable is connected properly to the LCB.

3) Set your multi-meter to resistance (ohms) and place both terminals on the power resistor wires .Check the power resistor wires for resistance (Figure A).

-If the power resistor wire does not have resistance, replace the power resistor.

4) Unplug the generator cable from the LCB. Pedal the machine and set your multi-meter to AC voltage and place both terminals on pins 1 & 2, pins 2 & 3, and pins 3 & 1 of the console cable to check if the voltage is variable (Figure B).

- If a variable voltage reading is shown (varies based on RPM), replace the LCB.

- If the voltage reading shown is not variable, replace the generator.

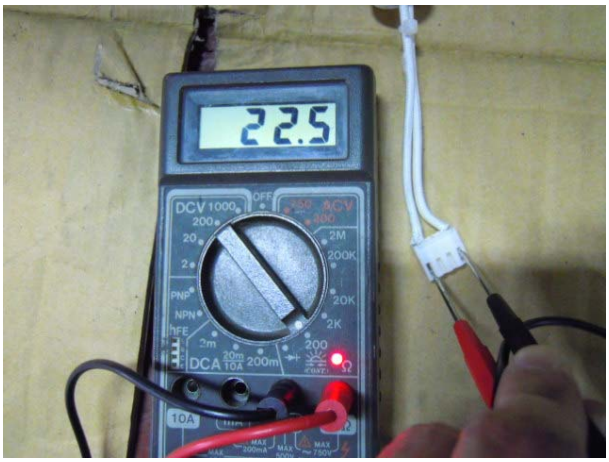


FIGURE A

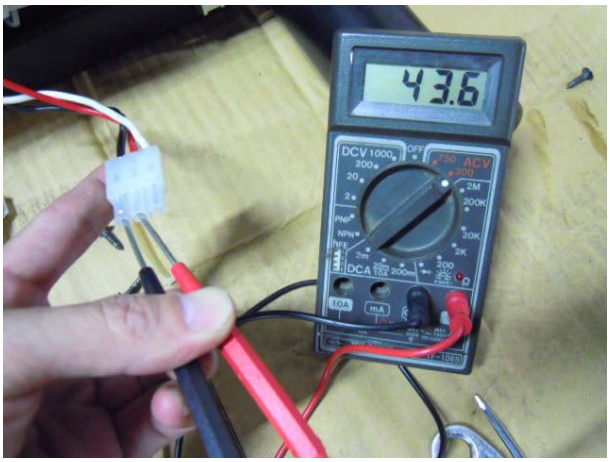


FIGURE B

CHAPTER 4: TROUBLESHOOTING

4.6 Troubleshooting – Pedals Slipping

PEDALS SLIPPING

POSSIBLE CAUSES:

1) The belt tension is not high enough.

2) The one way bearing is damaged.

SOLUTION:

1) Remove the shrouds and check the belt tension.

   a. Tighten the drive belt tension if needed by moving the spring tension clip to another hole.

   b. The generator belt should be tightened to 85 ft / lbs.

2) If the belts are tensioned correctly, the one way bearing is damaged, replace the drive assembly.

4.7 Troubleshooting – Knocking or Creaking Noise

KNOCKING OR CREAKING NOISE

POSSIBLE CAUSES:

1) There is hardware that is not tight or is missing.

2) The noise is related to the incline.

3) The belt tension is not high enough, or the belts are too dirty.

SOLUTION:

1) Inspect the unit and check for any loose hardware. Pay special attention to areas where arms meet. Tighten hardware where found.

2) If the noise is present only during incline, check to make sure the Teflon washers are installed at the incline motor connection point (Figure A).

   a. Lubricate the gear shaft of the incline motor with grease (Vision recommends Super Lube brand Lithium Grease where available).

3) Remove the covers and check the belt tension.

   a. Tighten the drive belt tension if needed by moving the spring tension clip to another hole (see Section 5.17). It should be set to 180 ft / lbs of tension.

   b. The generator belt should be tightened to 90 ft / lbs.

4) Clean the belts. If they are worn or will not clean, replace the belts.

FIGURE A

CHAPTER 4: TROUBLESHOOTING

4.8 Troubleshooting – Heart Rate Function Does Not Work or is Reading Incorrectly

HEART RATE FUNCTION DOES NOT WORK OR IS READING INCORRECTLY

POSSIBLE CAUSES:

1) The heart rate grips are not connected properly or are defective.

2) The heart rate grip wiring is damaged or not connected correctly.

3) The HR board is damaged.

4) The UCB is damaged.

SOLUTION:

1) With a multi-meter set for DC voltage, place one terminal on each of the HR grip plates. The HR grip should give a voltage reading of between 0.5 and 2.0VDC.

    a. If the voltage is not between 0.5 and 2.0VDC, remove the 3 screws holding the HR grip together and check the connection of the HR grip wiring.

2) Check continuity of the HR grip wiring.

    a. Place one terminal of a multi-meter set for resistance on the HR grip wiring at the HR grip, and the other terminal on the HR grip wiring at the console. An ohm reading of around 1 should be expected. If the reading is higher than 1, replace the HR grip wiring.

3) Remove the console. Remove the 6 screws holding the front of the console to the rear. Check the connection of the HR board wiring to the UCB.

    a. If all the wiring is intact and has good contact, replace the HR board.

4) If the HR board, HR grips, and HR grip wiring do not solve the issue, replace the UCB.

CHAPTER 5: PART REPLACEMENT GUIDE

5.1 Shroud Replacement

1) Remove the link arm plastic caps (Figures A).

2) Detach the link arm (Figure B).

FIGURE A

FIGURE B

3) Remove the 6 screws at both sides that hold the back cover to the shrouds and remove the back cover (Figures C & D).

FIGURE C

FIGURE D

CHAPTER 5: PART REPLACEMENT GUIDE

5.1 Shroud Replacement - Continued

4) Remove the 5 screws on right side holding the side covers in place (Figures E).

5) Remove the 5 screws on left side holding the side covers in place (Figures F).

FIGURE E

FIGURE F

6) Remove the shroud for frame access (Figure G).

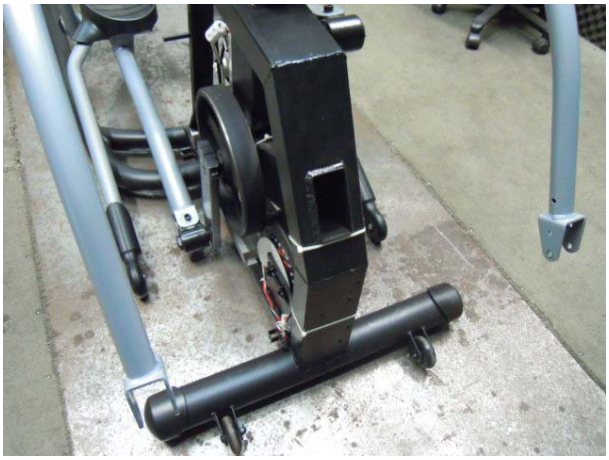


FIGURE G

7) Reverse Steps 1- 6 to install a new shroud.

CHAPTER 5: PART REPLACEMENT GUIDE

5.2 Lower Control Board Replacement

1) Remove the shrouds as outlined in Section 5.1.

2) Disconnect all wires from the LCB (Figure A).

FIGURE A

3) Remove the 2 screws holding the LCB to the frame (Figure B) and remove the LCB.

FIGURE B

4) Reverse Steps 1- 3 to install a new LCB.

5) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.3 Power Resistor Replacement

1) Remove the shrouds as outlined in Section 5.1.

2) Remove the 2 screws holding the power resistor to the frame (Figure A).

FIGURE A

3) Unplug the power resistor wire from the LCB and remove the resistor.

4) Reverse Steps 1-3 to install a new power resistor.

CHAPTER 5: PART REPLACEMENT GUIDE

5.4 Generator Replacement

1) Remove the shrouds as outlined in Section 5.1.

2) Remove the cable ties on the wire connector of the generator (Figure A).

3) Unplug the power cable connector of the generator (Figure B).

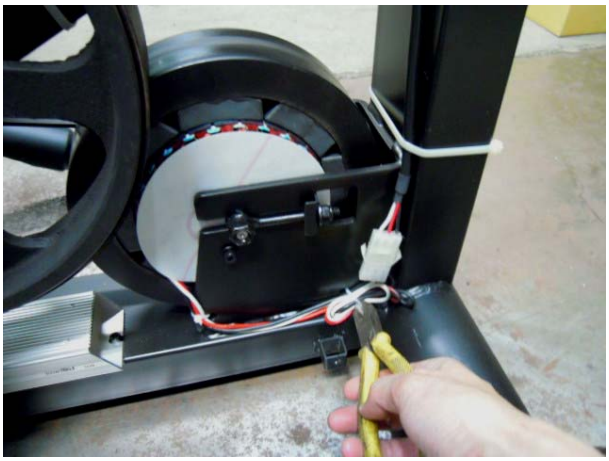


FIGURE A

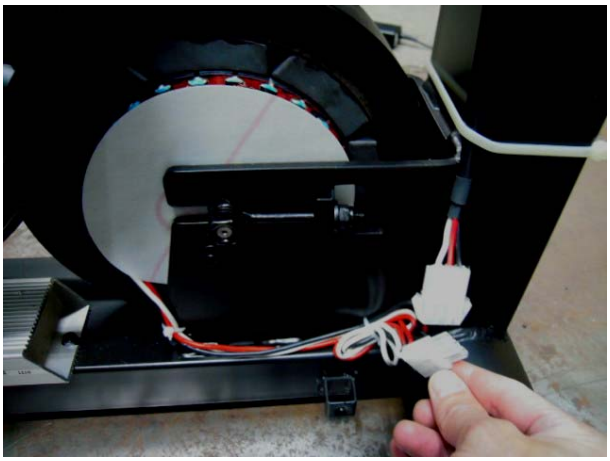


FIGURE B

4) Remove the screw and washer on the right side of the frame that keeps the generator from spinning freely (Figure C).

5) Remove the nuts and washers on the both sides holding the generator to the frame (Figure D).

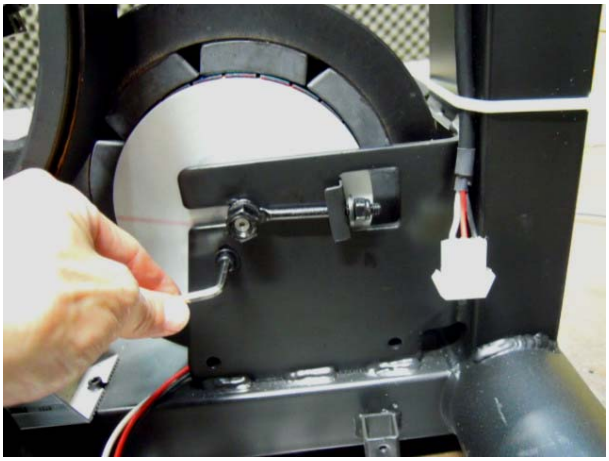


FIGURE C

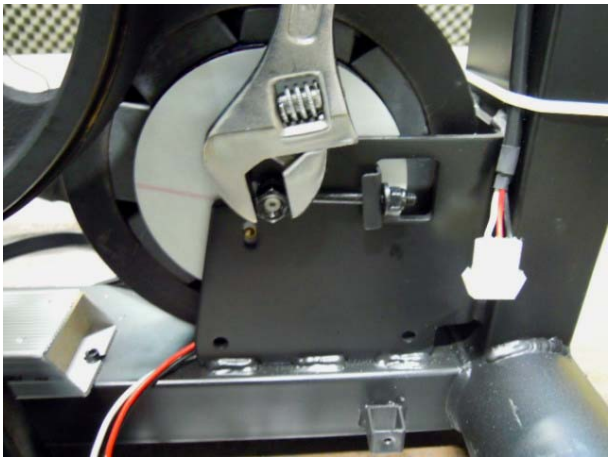


FIGURE D

5.4 Generator Replacement – Continued

6) Loosen the nuts putting tension on the generator belt (Figure E). Then remove the eye bolt with plate (Figure F).

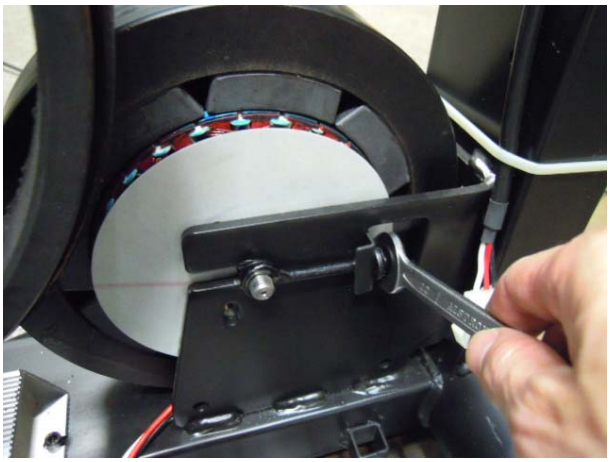


FIGURE E

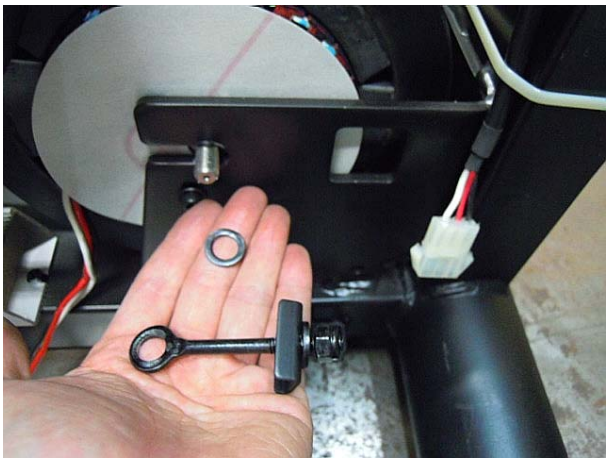


FIGURE F

7) Once the tension has been removed, the generator belt can be walked off of the secondary pulley (Figure G).

8) Pull the generator out of the frame towards the back of the unit and remove the generator belt (Figure H).

FIGURE G

FIGURE H

9) Reverse Steps 1- 8 to install a new generator. ***NOTE:*** Re-tension the new generator belt to 90 ft / lbs of torque. The nut removed in Step 5 should be torqued to 40 N-m.

10) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.5 Generator Belt Replacement

1) Remove the shrouds as outlined in Section 5.1.

2) Remove the cable ties on the wire connector of the generator (Figure A).

3) Unplug the power cable connector of the generator (Figure B).

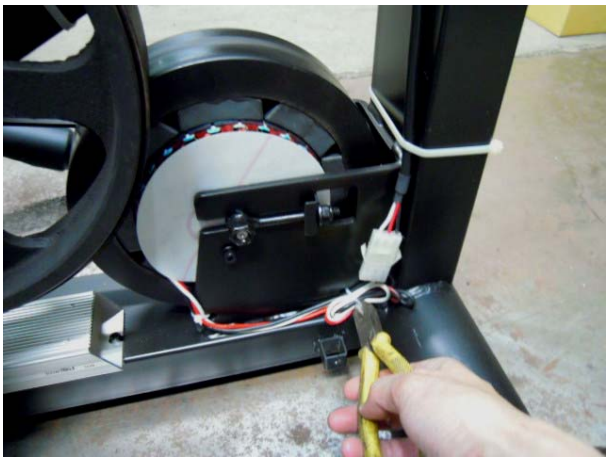


FIGURE A

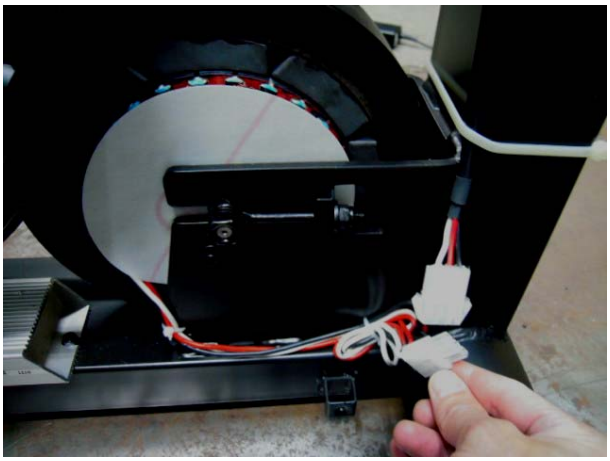


FIGURE B

4) Remove the screw and washer on the right side of the frame that keeps the generator from spinning freely (Figure C).

5) Remove the nuts and washers on the both sides holding the generator to the frame (Figure D).

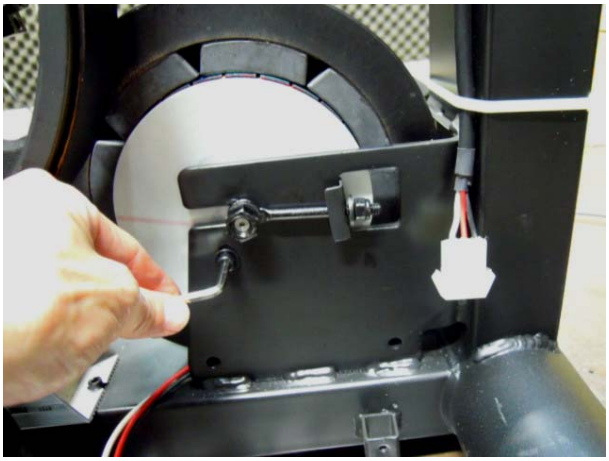


FIGURE C

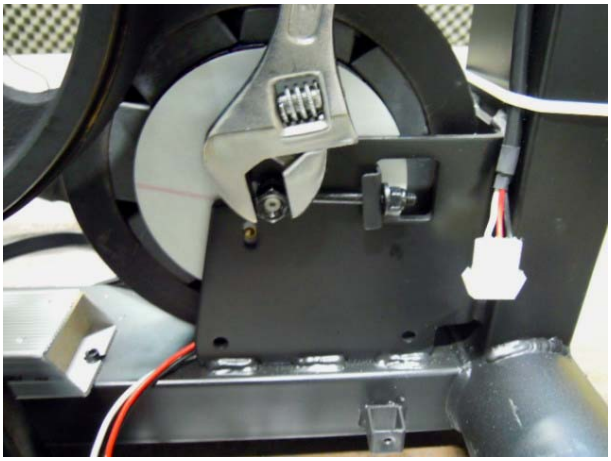


FIGURE D

5.5 Generator Belt Replacement – Continued

6) Loosen the nuts putting tension on the generator belt (Figure E). Then remove the eye bolt with plate (Figure F).

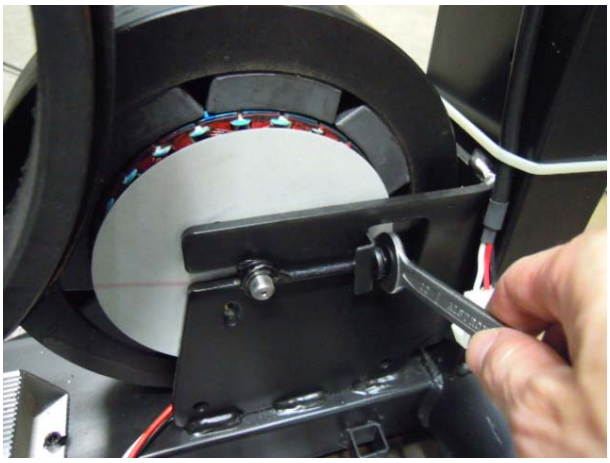


FIGURE E

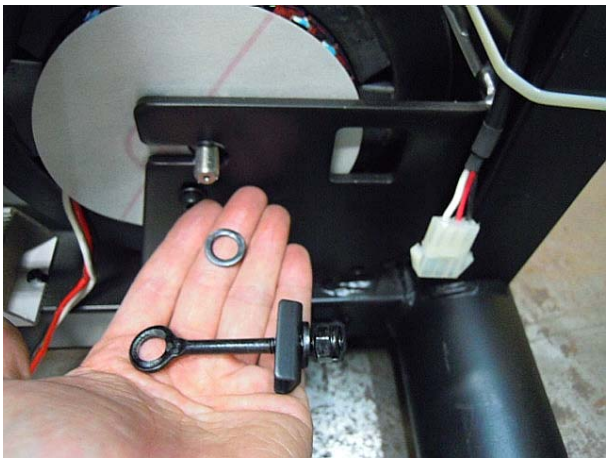


FIGURE F

7) Once the tension has been removed, the generator belt can be walked off of the secondary pulley (Figure G).

8) Pull the generator out of the frame towards the back of the unit and remove the generator belt (Figure H).

FIGURE G

FIGURE H

9) Reverse Steps 1- 8 to install a new generator belt. ***NOTE:*** Re-tension the new generator belt to 90 ft / lbs of torque. The nut removed in Step 5 should be torqued to 40 N-m.

10) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.6 Drive Belt Replacement

1) Remove the shrouds as outlined in Section 5.1.

2) Loosen the belt tension bolt on the right side of the tension pulley and rotate the pulley counter-clockwise until there is enough slack in the belt to remove it (Figures A & B).

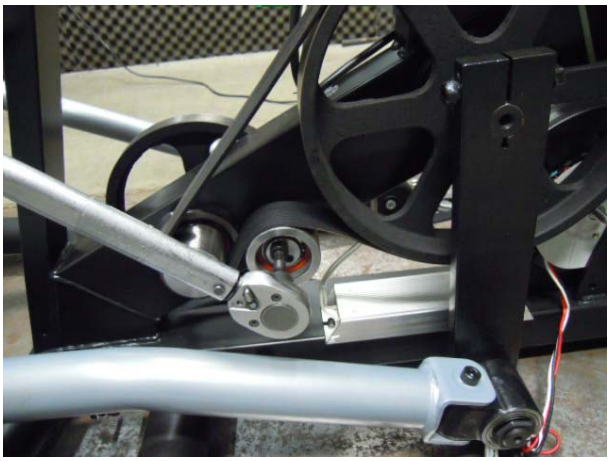


FIGURE A

FIGURE B

3) Install the replacement belt and reverse necessary steps to secure the assembly until the belt is tight. ***NOTE***: Tighten the drive belt to 180 ft / lbs. The idler bolt should be torqued to 80 N-m.

4) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.7 Pulley Axle Set Replacement

1) Remove the shrouds as outlined in Section 5.1.

2) Loosen the belt tension bolt on the right side until there is enough slack to remove the drive belt (Figure A).

3) On the right side of the frame, remove the retaining clip that holds the pulley axle bearing into the frame (Figure B).

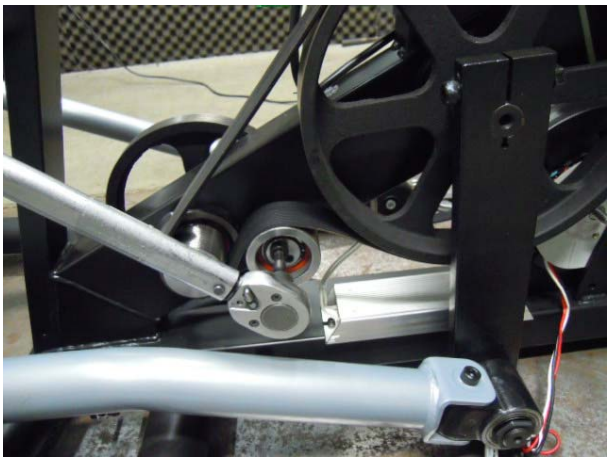


FIGURE A

FIGURE B

5) On the left side of the frame, remove the retaining ring that holds the pulley axle bearing into the frame (Figure C).

6) Remove the pulley axle set assembly from the frame. Clean any debris from the hole in the frame (Figure D).

FIGURE C

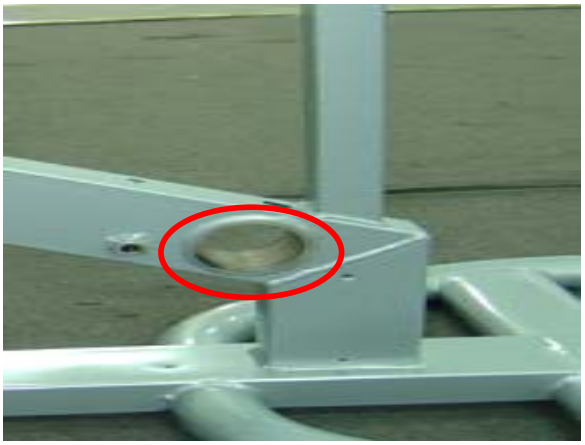


FIGURE D

7) Reverse Steps 1-6 to install a new pulley axle set. Rotate the pulley to make sure that the motion is smooth and that there is no wobbling to one side.

Re-install the belts as outlined in Sections 5.5 and 5.6. ***NOTE***: The idler bolt should be torqued to 80 N-m.

8) Test the Elliptical for function as outlined in Section 5.22.

5.8 Drive Axle Set Replacement

NOTE: A Vision Fitness special tool is needed to correctly replace a drive axle. Order part # 0000094817 from Vision Fitness CTS.

1) Remove the shrouds as outlined in Section 5.1.
2) Remove both belts as outlined in Sections 5.5 & 5.6.
3) On the left side of the frame, remove the retainer clip that holds the drive axle bearings in the frame (Figure A).
4) Install an M10 screw onto the drive axle (Figure B).

FIGURE A

FIGURE B

5) Turn the screw until the head is close to the drive axle (Figure C).
6) Use a mallet to hit the screw until the drive axle assembly is loose in the frame and remove it (Figure D).

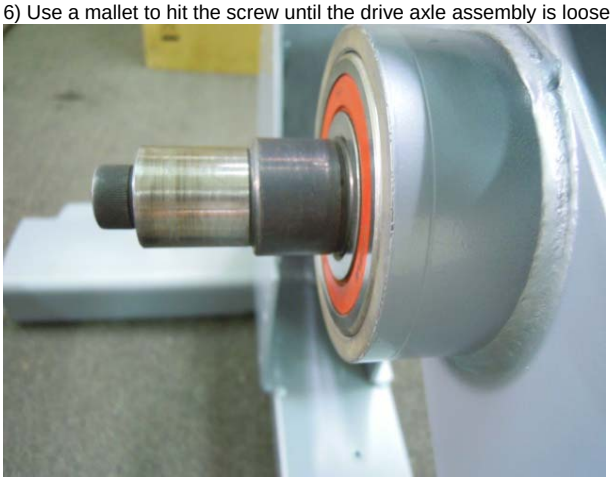


FIGURE C

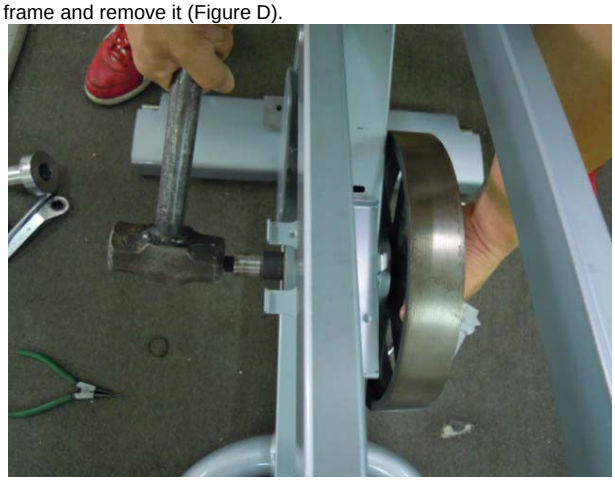


FIGURE D

7) Assemble the special tool as shown, and install the tool into the hole in the frame (Figure E).
8) Use a rubber mallet to hit the end of the tool until the bearing can be removed from the frame (Figure F).

FIGURE E

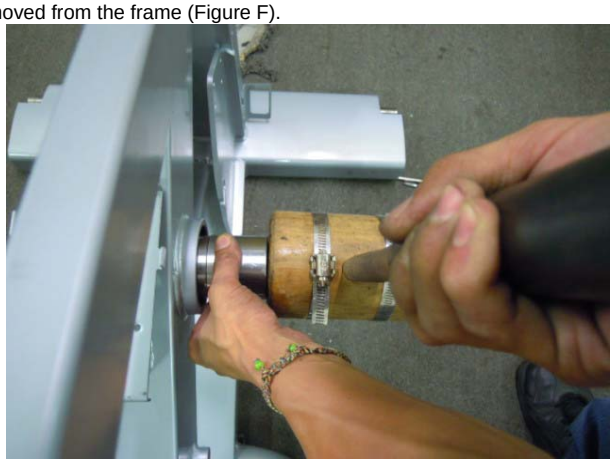


FIGURE F

5.8 Drive Axle Set Replacement – Continued

9) The drive axle should come with an iron plate installed (Figure G).
10) Assemble the Vision Fitness special tool as shown in Figure H.

FIGURE G

FIGURE H

11) Slide the drive axle into the hole in the frame. Install tool #2 from Figure H into the opposite side hole in the frame (Figure I).
12) Mount the #1 tool behind the #2 tool. Use the screw, washer and nut to attach tool #1 tool to the drive axle Figure J).

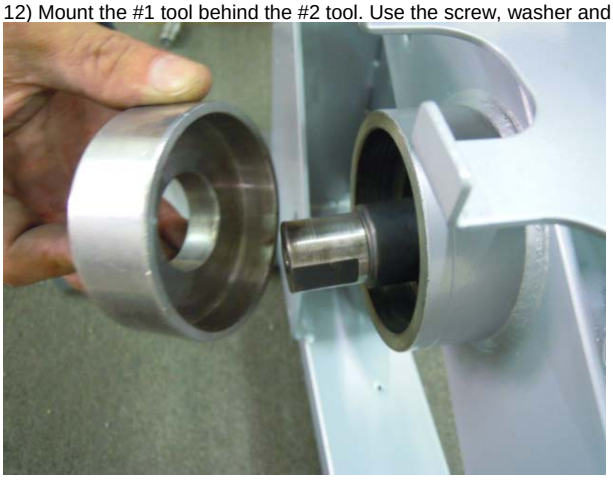


FIGURE I

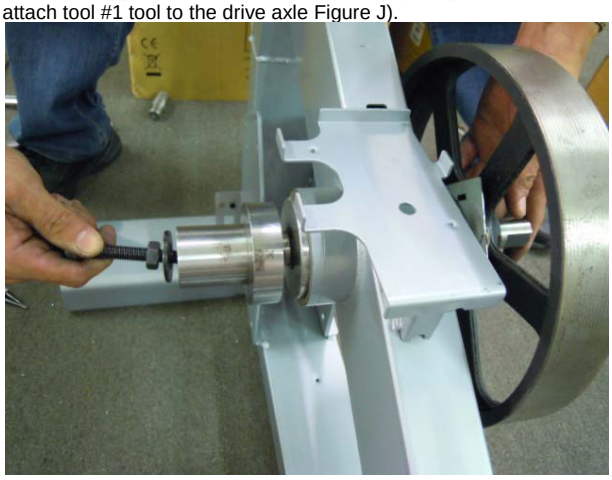


FIGURE J

13) Turn the screw at least 4 full revolutions into the drive axle. Then turn the nut until it is closed to the cup portion of the tool (Figure K).
14) Use a wrench to hold the screw. Then turn the nut to pull the drive axle into the frame (Figure L).

FIGURE K

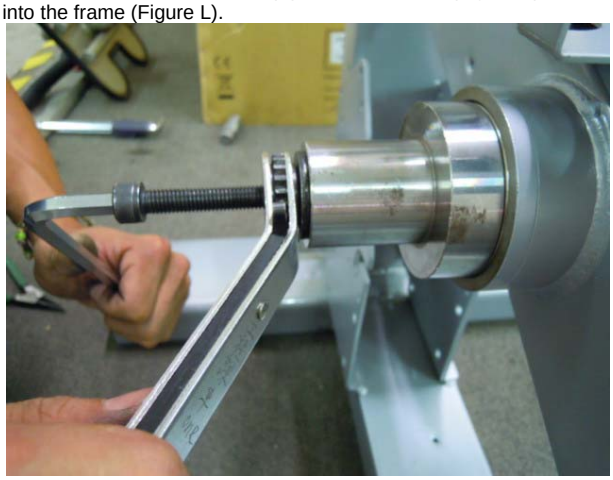


FIGURE L

5.8 Drive Axle Set Replacement – Continued

15) Turn the nut until the iron plate is close to the frame on the right side (Figure M).
16) Remove the tools. Then insert the bearing into the hole in the frame on the left side (Figure N).

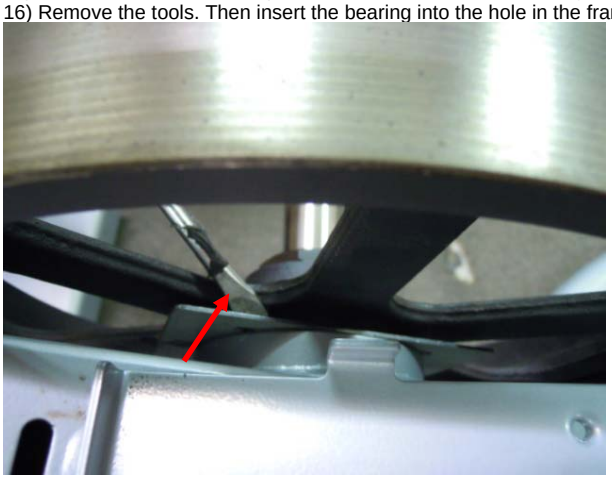


FIGURE M

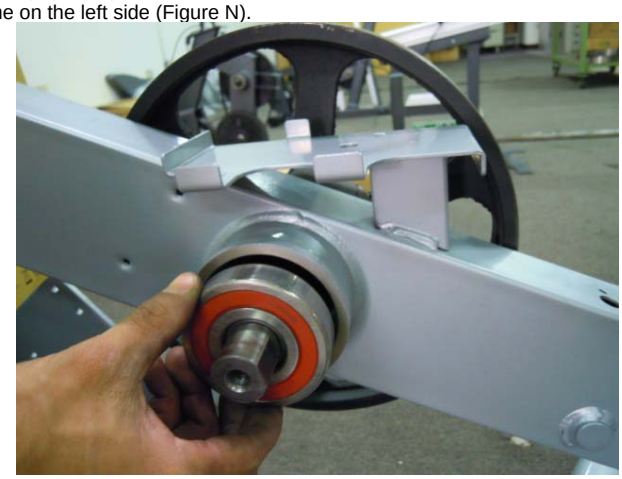


FIGURE N

17) Again use the screw, washer and nut to attach tool #1 to the drive axle (Figure O).
18) Turn the screw at least 4 full revolutions into the drive axle. Then turn the nut until it is close to the cup portion of the tool (Figure P).

FIGURE O

FIGURE P

19) Use a wrench to hold the screw. Then turn the nut to push the bearing into the hole in the frame (Figure Q).
20) Insert the retainer clip to hold the bearing in the frame (Figure R).

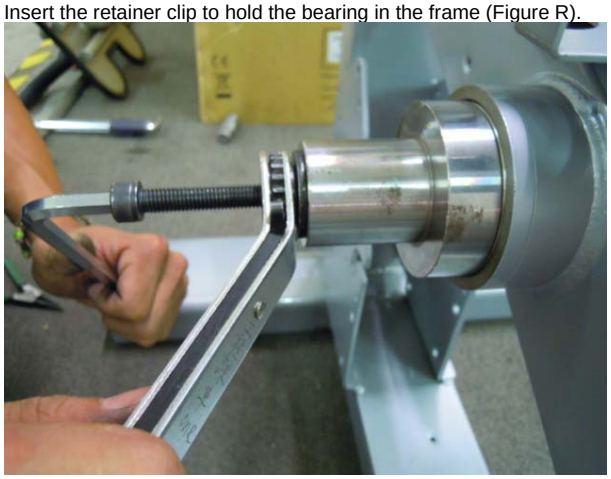


FIGURE Q

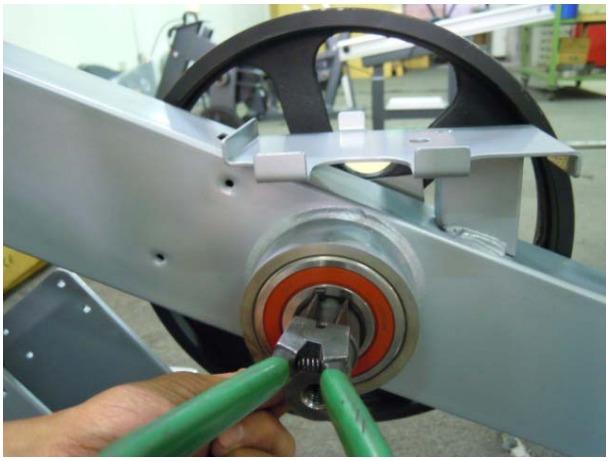


FIGURE R

5.8 Drive Axle Set Replacement – Continued

21) Use a screwdriver to take off the iron plate (Figures S & T).

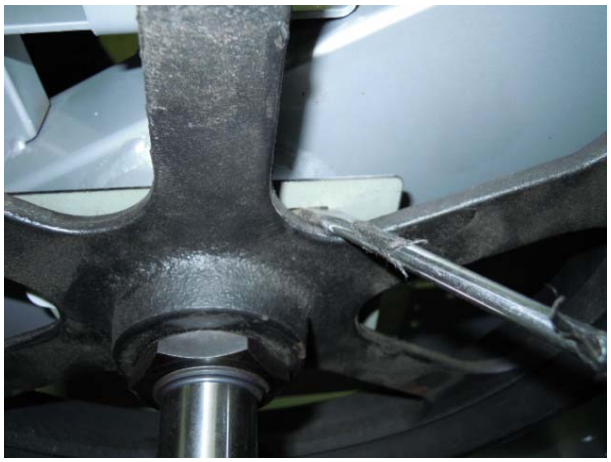


FIGURE S

FIGURE T

22) Reinstall the belts as outlined in Sections 5.5 and 5.6.

23) Test the Elliptical for function as outlined in Section 5.22.

5.9 Crank Replacement

1) Remove the shrouds as outlined in Section 5.1.

2) Detach the pedal arm from the crank bearing assembly (Figure A).

3) Remove the screw from the crank (Figure B).

FIGURE A

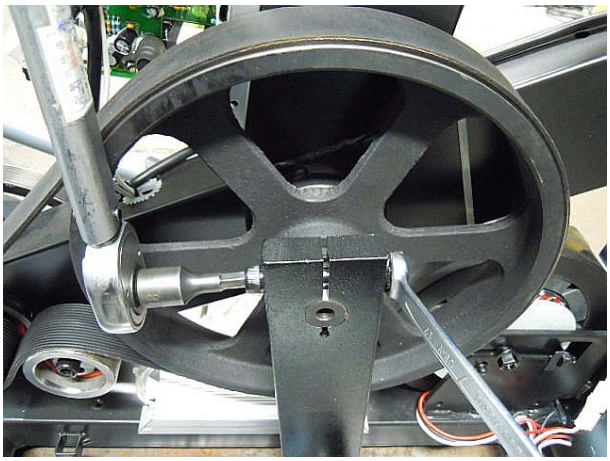


FIGURE B

4) Insert an M10 screw (should be at least 40mm long) into the crank hole. Then turn the screw until the crank can be separated from the axle (Figure C).

5) Install the replacement crank. There is a flat spot on the drive axle shaft and the crank that should correspond (Figure D).

FIGURE C

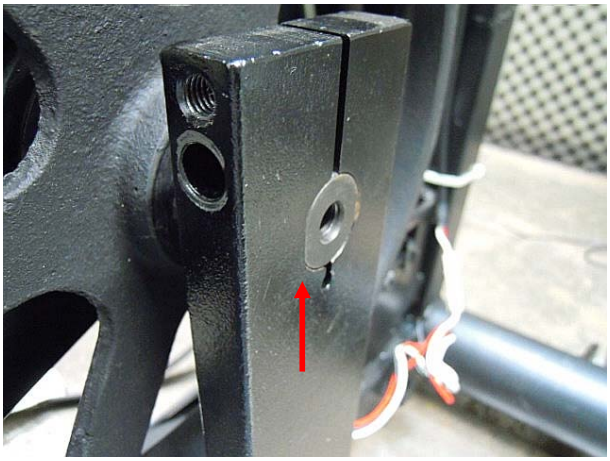


FIGURE D

6) Install the crank screw. ***NOTE:*** The screw removed in Step 2 should be torqued to 80 N-m.

7) Reverse Steps 1-2 to re-assemble the unit.

8) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.10 Console Replacement

1) Remove the 4 screws holding the console to the frame (Figure A).

FIGURE A

2) Disconnect the console cable and HR connections from the defective console and remove the console (Figure B).

FIGURE B

3) Reinstall the wire connections to the new console.

4) Carefully push the wires into the console and mast until they are clear of the console / mast connection and attach the console to the mast using the 4 screws.

5) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.11 Heart Rate Replacement

1) Remove the console as outlined in Section 5.10.

2) Remove the 4 screws holding the heart rate handlebar to the console mast being careful to support the handlebar (Figure A).

FIGURE A

3) Pull the heart rate handlebar away from the console mast to expose the HR grip wiring (Figure B).

4) Carefully remove the wires from inside the console mast until the connectors on the ends come free and disconnect (Figure C)

FIGURE B

FIGURE C

5) To install a new heart rate handlebar assembly, connect the new handlebar and carefully push the heart rate wires into the console mast.

6) Attach the new heart rate handlebar assembly to the console mast using the 4 screws removed in Step 2.

7) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.12 Dual Action Handlebar Replacement

1) Remove the plastic cover where the dual action handlebar meets the link arm (Figure A).

2) Remove the bolt where the dual action handlebar and the link arm meet (Figure B).

FIGURE A

FIGURE B

3) Remove the cap by hand (Figure C).

4) Remove the 4 screws that hold the dual action handlebar to the console mast (Figure D).

FIGURE C

FIGURE D

5) Reverse steps 1-4 to install a new dual action handlebar.

6) Test the Elliptical for function as outlined in Section 5.22.

5.13 Console Mast Replacement

1) Remove the console as outlined in Section 5.10.

2) Remove the HR handlebars as outlined in Section 5.11.

3) Remove the dual action handlebar as outlined in Section 5.12.

4) Lift up the rubber boot at the bottom of the console mast (Figure A) and remove the 4 screws holding the console mast to the frame (Figure B).

FIGURE A

FIGURE B

5) Pull the wires out the bottom of the console mast and remove the mast.

FIGURE C

6) When installing a new console mast, be sure to pull the console wires up through the new mast prior to installing the 4 screws into the frame.

7) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.14 Foot Pedals Replacement

1) Pull up and remove the rubber portion of the pedal (Figures A & B).

FIGURE A

FIGURE B

2) Remove the 4 screws that hold the plastic pedal to the foot plate (Figure C).

3) Remove the plastic foot pedal (Figure D).

FIGURE C

FIGURE D

4) Clean the foot plate to remove any rubber or debris.

5) Reverse Steps 1-3 to install a new foot pedal.

6) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.15 Pedal Arm Replacement

1) Remove the foot pedal as outlined in Section 5.14.

2) Remove the 6 screws at both sides that hold the back cover to the shrouds and remove the back cover (Figures A & B).

FIGURE A

FIGURE B

3) Detach the pedal arm from the crank bearing assembly (Figure C).

4) Remove the plastic cap from the swing arm (Figure D).

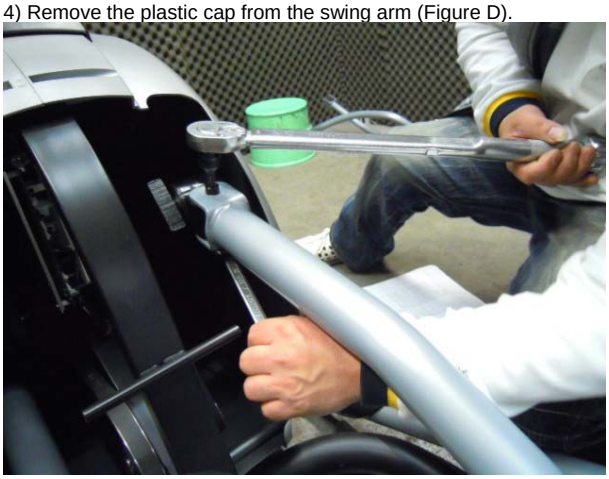


FIGURE C

FIGURE D

5) Remove the bolt that holds the pedal and swing arms together (Figure E).

6) Take the bolt removed in Step 2 and turn it into the shaft, then use a mallet to hit the head of the bolt until the swing arm can be separate from the pedal arm (Figures F & G).

FIGURE E

FIGURE F

5.15 Pedal Arm Replacement – Continued

7) Remove the three bolts that holding the link arm to the pedal arm (Figures H & I).

FIGURE G

FIGURE H

8) Remove the pedal arm (Figure J).

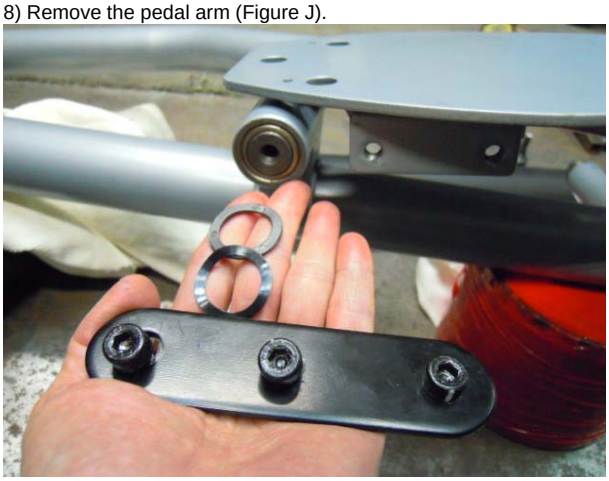


FIGURE I

FIGURE J

9) Reverse Steps 1-8 to install a new pedal arm. ***NOTE:*** Torque the bolts removed in Steps 3 & 5 to 80 N-m.

10) Test the Elliptical for function as outlined in Section 5.22.

5.16 Link Arm Replacement

1) Remove the foot pedal as outlined in Section 5.14.
2) Remove the plastic cover where the dual action handlebar meets the link arm (Figure A).
3) Remove the bolt and bushings where the dual action handlebar meets the link arm (Figure B).

FIGURE A

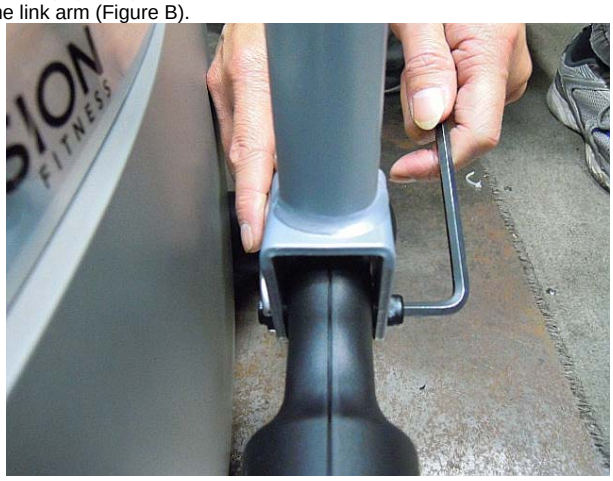


FIGURE B

4) Remove the 3 bolts that hold the link arm to the pedal arm (Figures C & D).

FIGURE C

FIGURE D

5) Detach the pedal arm from the crank bearing assembly (Figure E).
6) Remove the link arm (Figure F).

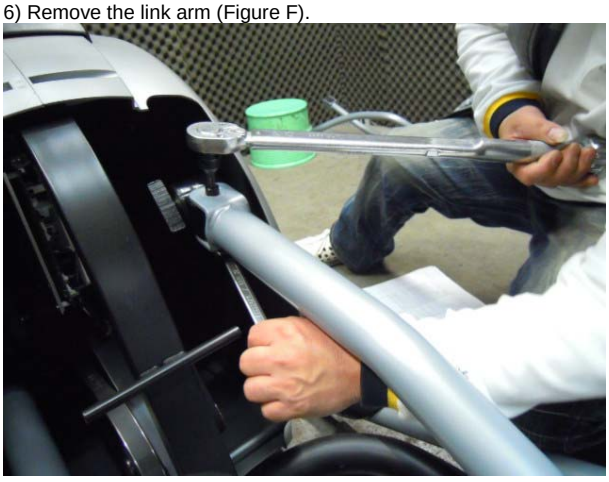


FIGURE E

FIGURE F

7) Reverse Steps 1-6 to install a new link arm.
8) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.17 Incline Arm Cover Replacement

1) Remove the 4 screws that hold the incline arm cover to the vertical stabilizer arm (Figure A).

FIGURE A

2) Remove the incline arm cover (Figure B).

FIGURE B

3) Reverse Steps 1-2 to install a new incline arm cover.

CHAPTER 5: PART REPLACEMENT GUIDE

5.18 Swing Arm Replacement

1) Remove the incline arm cover as outlined in Section 5.17.
2) Remove the bolt from the upper pivot joint of the vertical stabilizer arm (Figure A).
3) Remove the plastic cap from the swing arm (Figure B).

FIGURE A

FIGURE B

4) Remove the bolt that holds the pedal and swing arms together (Figure C).
5) Take the bolt removed in Step 2 and turn it into the shaft, then use a mallet to hit the head of the bolt until the swing arm can be separate from the pedal arm (Figures D & E).

FIGURE C

FIGURE D

6) Remove the swing arm (Figure F).

FIGURE E

FIGURE F

7) Reverse Steps 1-6 to install a new swing arm. ***NOTE:*** Torque the bolt removed in Step 4 to 80 N-m when installing a new swing arm.

8) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.19 Vertical Stabilizer Arm Replacement

1) Remove the incline arm cover as outlined in Section 5.17.

2) Remove the two bolts that hold the vertical stabilizer arm to the frame (Figures A & B).

FIGURE A

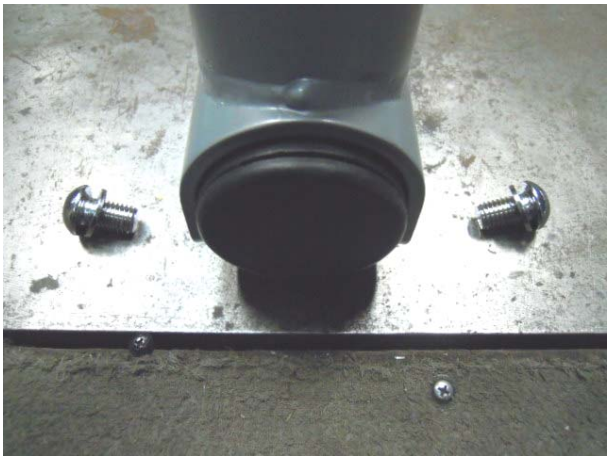


FIGURE B

3) Remove the two bolts that hold the incline arm to the vertical stabilizer arm (Figure C).

4) Remove the vertical stabilizer arm (Figure D).

FIGURE C

FIGURE D

5) Reverse Steps 1-4 to install a vertical stabilizer arm.

6) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.20 Incline Arm Replacement

1) Remove the two screws that hold the cover over the incline arm / console mast connection point, and remove the cover (Figure A).

2) Remove the 4 bolts that hold the incline arm to the console mast (Figure B).

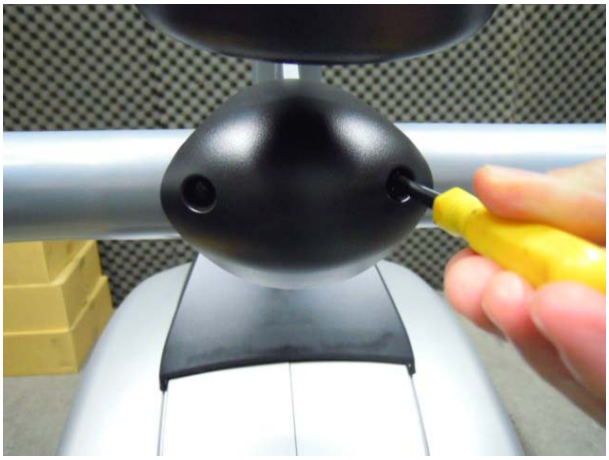


FIGURE A

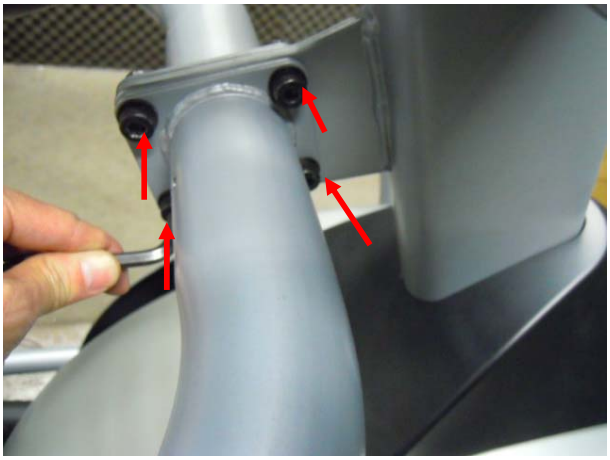


FIGURE B

3) Remove the two bolts that hold connection arm to vertical stabilizer arm (Figure C). Then remove the connection arm.

FIGURE C

4) Reverse Steps 1-3 to install a new connection arm.

5) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.21 Heart Rate Grip Replacement

1) Remove the 2 screws going upward into the top of the heart rate grip (Figure A).

2) Once the 2 screws are removed, pull apart the top and bottom portions of the heart rate grip (Figure B).

FIGURE A

FIGURE B

3) Disconnect the heart rate plate wiring and remove the old HR grip (Figure C).

4) Reverse Steps 1-3 to install a new HR grip. ***NOTE:*** The white wire should be plugged into the bottom heart rate plate, the red wire on the top. Also make sure that the end cap gets installed (Figure D).

FIGURE C

FIGURE D

5) Test the Elliptical for function as outlined in Section 5.22.

CHAPTER 5: PART REPLACEMENT GUIDE

5.22 Testing the Elliptical

ONCE THE UNIT OR REPLACEMENT PART IS FULLY INSTALLED AND ASSEMBLED AND PROPERLY PLACED ON THE FLOOR, USE THE FOLLOWING INSTRUCTIONS TO TEST THE MACHINE:

1) Without hitting start or entering any program modes, stand on the elliptical and hold the handlebars while pedaling to simulate exercising. While moving, listen for any odd noises or squeaks.

2) After stopping movement, press the START button and begin pedaling.

3) Grasp the hand grips to check for proper heart rate response. Check to make sure that the START and ENTER keys are functional.

4) Press the level up and down buttons on the console to make sure resistance is fully functional.

5) If everything functions properly, stop pedaling and the unit will reset to normal operation within 30 seconds.

CHAPTER 6: SOFTWARE UPGRADE PROCEDURE

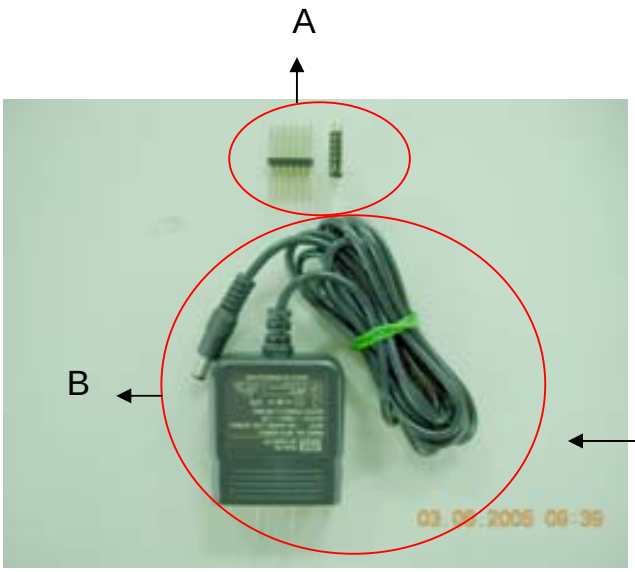
6.1 Software Upgrade Instructions

A. Service Tools & Accessories:

1. MSP-FET430 Gang Programmer

2. Parts number: MT00L-039

3. Software



A: 14 PIN

B: POWER SUPPLY SPECIFICATION: 8~15V 300MA

MSP-FET430 TOOLS

CHAPTER 6: SOFTWARE UPGRADE PROCEDURE

6.1 Software Upgrade Instructions – Continued

B. VISION S70 ELLIPTICAL SOFTWARE UPGRADE PROCEDURE

1. Connect the MSP-GANG430 hardware, PC, and console as shown in Figure A.

FIGURE A

2. Click on the GANG430 icon located in the program group specified during installation of the software (the default group is ADT430). The MSP430 FLASH Gang Programmer GUI is displayed on the screen as shown in Figure B.

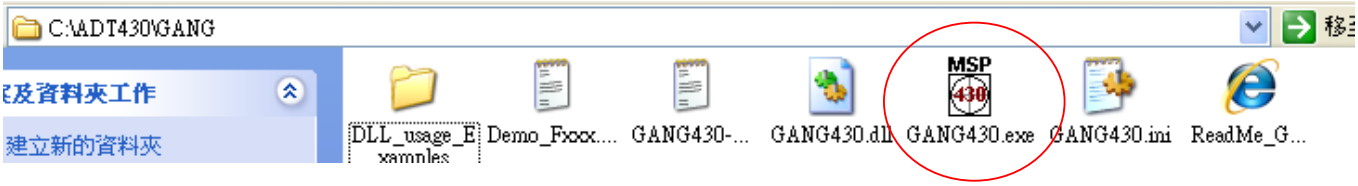


FIGURE B

The status message in the GUI displays the message "MSP-GANG430 Gang Programmer connected." If this message is not displayed, check the COM Port selection in the communication settings of PC and the MSP-GANG430 connections.

3. Follow sequence 3.1 - 3.8 to setup the parameter as shown in Figure C.

3.1 Select the H/W Self Test function on the maintenance menu.

3.2 Selects the PC serial port used to communicate with the MSP-GANG430.

CHAPTER 6: SOFTWARE UPGRADE PROCEDURE

6.1 Software Upgrade Instructions – Continued

3.3 Select the required device using the Device Type menu.

3.4 Select the console software file to be programmed into the MSP-GANG430 using the File Name menu. The format supported for the console software file is TI TXT (.txt).

3.5 Use the Load Image button to download the console software file to the MSP-GANG430 as shown in Figure A.

3.6 Select the supply voltage for the console from MSP-GANG430.

3.7 Select the options in Main Process as required.

3.8 When you install the first console, please connect MSP-GANG430 with computer. Click on the Start button in the Main Process section to start the console install. The progress and completion of the operation are displayed in the Status section.

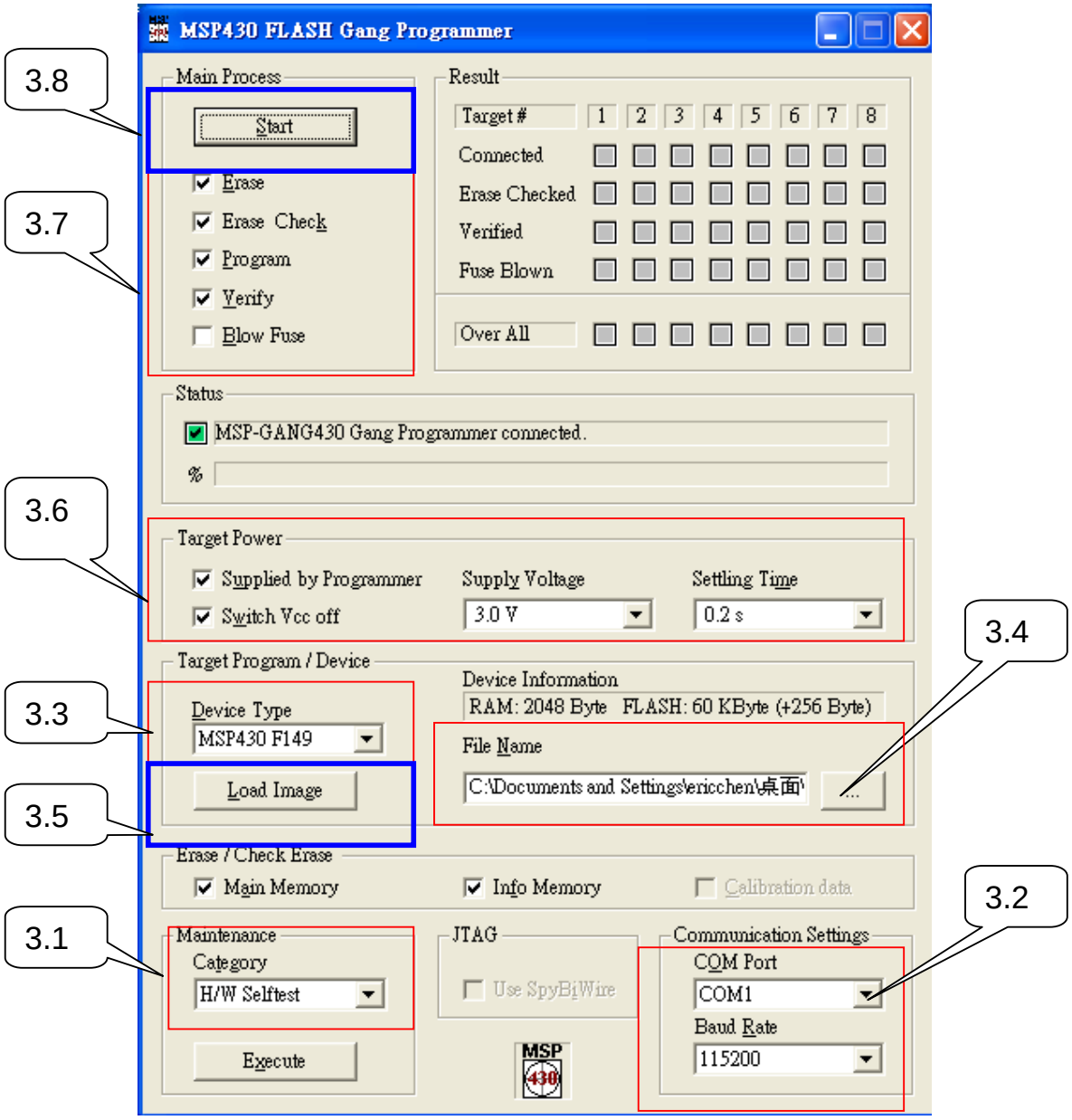


FIGURE C

CHAPTER 6: SOFTWARE UPGRADE PROCEDURE

6.1 Software Upgrade Instructions – Continued

4. After the first console is installed, you can remove the RS232 cable from PC to MSP-GANG430 as shown in Figure D.

Connect the other consoles being installed to MSP-GANG430 as shown in Figure E. Press the MSP430 “START” button, the “MODE” LED will to glitter about 10 sec, if the install passes, the OK green LED will light as shown in Figure F.

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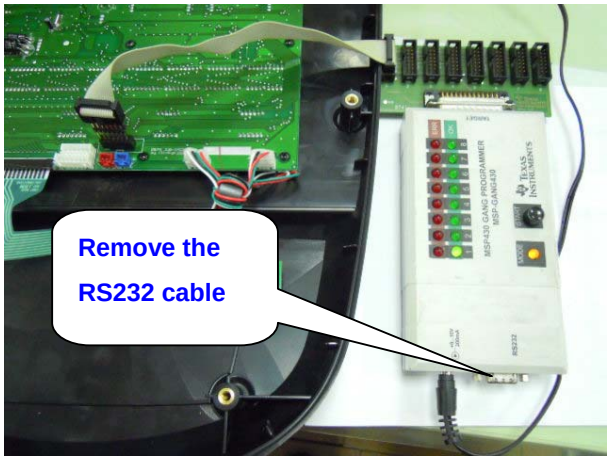

FIGURE D

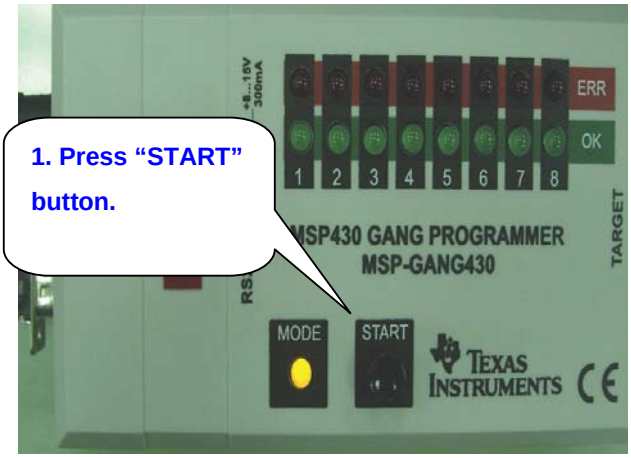

FIGURE E

FIGURE F

5. Install the console onto frame. Then pedal the machine to provide power for the console. Enter into Engineering Mode to confirm if the software has been installed / upgraded and confirm if the machine type is right.

6. Test the Elliptical for function as outlined in Section 5.22.