MATRIX

A5X-05 SINGLE INCLINE MOTOR ASCENT TRAINER SERVICE MANUAL

TABLE OF CONTENTS

CHAPTER 1: SERIAL NUMBER LOCATION 1

CHAPTER 2: IMPORTANT SAFETY INSTRUCTIONS

2.1 Read and Save These Instructions 3
2.2 Electrical Requirements 4

CHAPTER 3: PREVENTATIVE MAINTENANCE

3.1 Recommended Cleaning Tips 5
3.2 Check for Damaged Parts 5
3.3 Care and Maintenance Instructions 6

CHAPTER 4: CONSOLE OVERLAY AND WORKOUT DESCRIPTION

4.1 Console Description 7
4.2 Workout Setup Steps - Manual 8
4.3 Workout Setup Steps - Fat Burn 8
4.4 Workout Setup Steps - Level Based 8
4.5 Workout Setup Steps - Fitness Test 9
4.6 Workout Setup Steps - Target Heart Rate 10
4.7 Workout Setup Steps - Constant Watts 10
4.8 Auto Calibration Instructions 11

CHAPTER 5: MANAGER MODE

5.1 Using Manager Mode 12
5.2 Manager Mode Overview 13

CHAPTER 6: ENGINEERING MODE

6.1 Using Engineering Mode 14

CHAPTER 7: SERVICE MODE

7.1 Using Service Mode 15

CHAPTER 8: TROUBLESHOOTING

8.1 Electrical Diagrams 16
8.2 LCB Error Indicators 19
8.3 LCB2_ErP wiring connection 22
8.4 Troubleshooting - Error 04A0 23
8.5 Troubleshooting - Error 04B0 24
8.6 Troubleshooting - Error 0140 / 014D 25
8.7 Troubleshooting - Error 01A1 26
8.8 Troubleshooting - Error 0147 27
8.9 Troubleshooting - Error 0148 28
8.10 Troubleshooting - Error 0149 29
8.11 Troubleshooting - Error 01B4 30
8.12 Troubleshooting - Error 02AB 31
8.13 Troubleshooting - Error 02B4 32
8.14 Troubleshooting - Error 0248 33
8.15 Troubleshooting - Error 014A / 0247 34
8.16 Troubleshooting - No Resistance Issues 35
8.17 Troubleshooting - No Power to the Console 36
8.18 Troubleshooting - Heart Rate Issues 37

CHAPTER 9: PART REPLACEMENT GUIDE

9.1 Front Disk Replacement 38
9.2 Front Shroud Replacement 39
9.3 Lower Control Board (LCB) Replacement 42
9.4 Generator Replacement 43

TABLE OF CONTENTS

9.5 Generator Belt Replacement 45
9.6 Drive Belt Replacement 46
9.7 Pulley Axle Set Replacement 47
9.8 Drive Axle Set Replacement 48
9.9 Crank Replacement 52
9.10 Console Replacement 53
9.11 Overlay & Keypad Replacement 54
9.12 Console Mast Handlebar Replacement 56
9.13 Incline Motor Replacement 57
9.14 Dual Action Handlebar Replacement 60
9.15 Foot Pedals Replacement 61
9.16 Pedal Arm Replacement 62
9.17 Link Arm Replacement 63
9.18 Swing Arm Replacement 64
9.19 Vertical Stabilizer Arm Replacement 65
9.20 Incline Arm Cover Replacement 66
9.21 Handlebar Service 67
9.22 Testing the Ascent Trainer 68

CHAPTER 10: EXPLODED DIAGRAMS

10.1 Ascent Trainer Specifications 69
10.2 Assembly Hardware 70
10.3 Ascent Trainer Assembly Steps 71
10.4 Stabilizing the Ascent Trainer 83
10.5 TV Bracket Installation Instructions 84

CHAPTER 11: SOFTWARE UPGRADE PROCEDURE

11.1 Software Upgrade Procedure 89

CHAPTER 1: SERIAL NUMBER LOCATION

1.1 SERIAL NUMBER LOCATION



SERIAL NUMBER LOCATION

1.1 SERIAL NUMBER LOCATION - CONTINUED

CONSOLE SERIAL NUMBER LOCATION



CHAPTER 2: IMPORTANT SAFETY INSTRUCTIONS

2.1 READ AND SAVE THESE INSTRUCTIONS

This Ascent Trainer is intended for commercial use. To ensure your safety and protect the equipment, read all instructions before operating the MATRIX Ascent Trainer.

When using an electrical product, basic precautions should always be followed including the following:

- ***An appliance should never be left unattended when plugged in. Unplug the unit from the outlet when not in use and before putting on or taking off any parts.***
- ***This product must be used for its intended purpose described in this service manual. Do not use other attachments that are not recommend by the manufacturer. Attachments may cause injury.***
- ***To prevent electrical shock, never drop or insert any object into any opening.***
- ***Do not remove the console covers. Service should only be done by an authorized service technician.***
- ***Never operate the Ascent Trainer with the air opening blocked. Keep the air opening clean, free of lint and hair.***
- ***Do not carry this unit by it's supply cord or use the cord as a handle.***
- ***Close supervision is necessary when the Ascent Trainer is used by or near children or disable persons.***
- ***Do not use outdoors.***
- ***Do not operate where aerosol (spray) products are being used or when oxygen is being administered.***
- ***To disconnect, turn all controls to the off position, then remove the plug from the outlet.***
- ***Connect this Ascent Trainer to a properly grounded outlet only.***
- ***Do not use the equipment in any way other than designed or intended by the manufacturer. It is imperative that all Matrix Fitness Systems equipment is used properly to avoid injury.***
- ***Keep hands and feet clear of moving parts at all times to avoid injury.***
- ***Unsupervised children must be kept away from this equip ment.***
- ***Do not wear loose clothing while on the equipment.***

CAUTION! ***If you experience chest pains, nausea, dizziness, or shortness of breath, stop exercising immediately and consult your physician before continuing.***

CAUTION! ***Any changes or modifications to this equipment could void the product warranty.***

CHAPTER 2: IMPORTANT SAFETY INSTRUCTIONS

2.2 ELECTRICAL REQUIREMENTS

The Matrix Ascent Trainer is designed to be self powered. ***NOTE:*** If an add on TV (using a bracket) is added to the unit, it must be plugged in, or the TV will not operate correctly. If the Ascent Trainer will be plugged in, follow the requirements below.

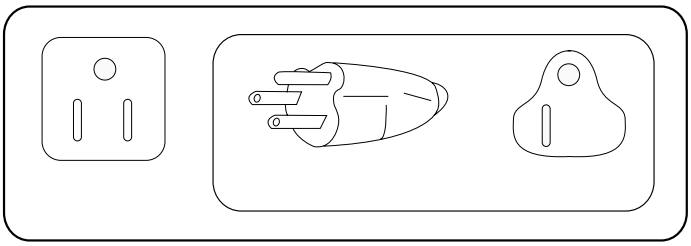
MATRIX DEDICATED CIRCUIT/ELECTRICAL REQUIREMENT INFO

All Matrix Ascent Trainers require the use of a 15 amp or 20 amp "dedicated circuit," with a non-looped (isolated) neutral/ground, for the power requirement. Quite simply this means that each outlet you plug Ascent Trainers into should not have anything else running on that same circuit besides other Ascent Trainers (up to 3 per 15 amp circuit and 4 per 20 amp circuit). The easiest way to verify this is to locate the main circuit breaker box, and turn off the breaker(s) one at a time. Once a breaker has been turned off, the only thing that should not have power to it are the Ascent Trainers in question. No lamps, vending machines, fans, sound systems, or any other item should lose power when you perform this test.

Non-looped (isolated) neutral/grounding means that each circuit must have an individual neutral/ground connection coming from it, and terminating at an approved earth ground. You cannot "jumper" a single neutral/ground from one circuit to the next.

In addition to the dedicated circuit requirement, the proper gauge wire must be used from the circuit breaker box, to each outlet that will have the maximum number of units running off of it. If the distance from the circuit breaker box, to each outlet, is 100 ft or less, then 12 gauge wire may be used. For any distance greater than 100 ft from the circuit breaker box to the outlet, 10 gauge wire must be used.

For your safety and Ascent Trainer performance, the ground on this circuit must be non-looped. Please refer to NEC article 210-21 and 210-23. Your Ascent Trainer is provided with a power cord with a plug listed below and requires the listed outlet. Any alterations of this power cord could void all warranties for this product. Multiple Ascent Trainers can be powered on one dedicated circuit. (3 units per 15 Amp and 4 units per 20 Amp dedicated circuit.)



GROUNDING INSTRUCTIONS:

The Matrix Ascent Trainer must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The Ascent Trainer is equipped with a cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances. If the user does not follow these grounding instructions, the user could void the Matrix limited warranty.

DANGER: Improper connection of the equipment grounding conductor can result in the risk of electric shock. Check with a qualified electrician if the user is in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product if it will not fit the outlet, have a proper outlet installed by an electrician.

CHAPTER 3: PREVENTATIVE MAINTENANCE

3.1 RECOMMENDED CLEANING TIPS

In order to maximize life span, and minimize down time, all Matrix Fitness Equipment requires regularly scheduled cleaning.

YOU WILL NEED:

- Mild dish soap and water mixture in a spray bottle (10:1 water to soap ratio).
- Lint free 100% cotton cleaning cloths or Micro fiber cleaning cloths.
- Vacuum / Shop Vac with extendable hose and soft brush attachment.
- Corrosion Block (available from Matrix - part # ZMS4001374).

DAILY:

1. Wipe down the unit after each use with a mild dish soap and water mixture. ***NOTE:*** Spray the soap / water mixture onto the cloth. NEVER spray directly onto the equipment. We recommend that you do NOT allow customers to use spray bottles to clean the equipment. If the cleaner is sprayed directly on the equipment or over spray is present, it may cause your equipment to rust and / or cause damage to console overlays.

WEEKLY:

1. With a clean dry 100% lint free cloth and water / soap mixture, wipe down the entire frame so it is free of dust, dirt, and sweat.
2. With a clean dry 100% lint free cloth and water / soap mixture, wipe down the entire console area including the hand grips and hand rails.

MONTHLY:

1. Vacuum under and around the Ascent Trainer. If you need to move it, unplug the unit first.
2. Vacuum debris out of the foot pedals. Remove the rubber foot pad and clean under it (Figure A).
3. Apply Corrosion Block to the metal part of the iPod connector.



FIGURE A

3.2 CHECK FOR DAMAGED PARTS

DO NOT use any equipment that is damaged or has worn or broken parts. Use only replacement parts supplied by Matrix Fitness Systems.

MAINTAIN LABELS AND NAMEPLATES. Do not remove labels for any reason. They contain important information. If unreadable or missing, contact Matrix Fitness Systems for a replacement. 1-866-693-4863, www.matrixfitness.com

MAINTAIN ALL EQUIPMENT Preventative maintenance is the key to smooth operating equipment. Equipment needs to be inspected at regular intervals. Defective components must be replaced immediately. Improperly working equipment must be kept out of use until it is repaired. Ensure that any person(s) making adjustments or performing maintenance or repair of any kind is qualified to do so. Matrix Fitness Systems will provide service and maintenance training at our corporate facility upon request or in the field if proper arrangements are made.

CHAPTER 3: PREVENTATIVE MAINTENANCE

3.3 CARE AND MAINTENANCE INSTRUCTIONS

In order to maximize life span, and minimize down time, all MATRIX equipment requires regular maintenance items performed on a scheduled basis. This section contains detailed instructions on how to perform these items and the frequency of which they should be done. Some basic tools and supplies will be necessary to perform these tasks which include (but may not be limited to):

* Metric Allen wrenches
* #2 Phillips head screwdriver
* Adjustable wrench
* Torque wrench (capability to read foot lbs, and inch lbs)
* Teflon based spray lubricant such as “Super Lube”, or other Matrix approved product

You may periodically see an addendum to this document, as the Matrix Technical Support Team identifies items that require specific attention, the latest version will always be available on the Matrix website, www.matrixfitness.com

DAILY MAINTENANCE ITEMS

1. Attempt to wobble the unit back and forth, level if needed (see Section 10.4).

QUARTERLY MAINTENANCE ITEMS

1. Check all connecting joint areas for tightness of bolt assemblies.
2. Ensure that there is little, or no free play at all joint assemblies once bolts have been tightened. Installation of washer kits may be required if free play does not come out from tightening bolts.
3. Remove plastic covers, and lubricate the ball joint where the Link Arm and Handlebar join together. Use your finger to apply grease to the ball bearing. Matrix recommends using Superlube brand grease with PTFE {Teflon} additive.
4. Lubricate the Acme screw on the incline motor (Matrix recommends using Superlube brand grease with PTFE {Teflon} additive).
5. Check the pedal foot pad for damage or wear. Replace as needed.

YEARLY MAINTENANCE ITEMS

1. Remove the front round covers and check the belts for damage, alignment, and proper tension.

CHAPTER 4: CONSOLE OVERLAY AND WORKOUT DESCRIPTION

4.1 CONSOLE DESCRIPTION



A) WORKOUT KEYS: Simple program view and selection buttons.

B) GO: One Touch Start.

C) ENTER: To confirm each program setting.

D) UP/DOWN INCLIN: Easy information and incline selection.

E) UP/DOWN LEVEL: Easy information and level selection.

F) UP/DOWN TIME: Easy information and time adjustment.

G) STOP: Ends workout and shows workout summary data.

H) NUMBER KEYPAD: Workout data input for workout setup. Level adjustment during workout.

I) COOL DOWN: Puts the Ascent into Cool Down mode.

J) LANGUAGE: Select Language.

K) FAN: Allows for fan speed selection (fan has three operating speeds.)

4.2 WORKOUT SETUP STEPS - MANUAL

GO - Press to immediately begin a workout. Workout, resistance level, and time will automatically go to default settings. Pressing GO will not prompt user for age, weight, or level settings.

1) Start pedaling and press the GO key to begin your workout. 2) The display will read 3, 2, 1, Begin and then the program will start.

MANUAL - Manual allows the user to input more information while defining their own workout. Calorie expenditure will be more accurate when inputting information in Manual than by pressing GO.

1) Start pedaling, press the MANUAL key. Then press ENTER.
2) Select Level by using the UP or DOWN LEVEL keys and press ENTER.
3) Select Time by using the UP or DOWN LEVEL keys and press ENTER.
4) Select Weight by using the UP or DOWN LEVEL keys and press ENTER.
5) Press GO, then the display will read 3, 2, 1, Begin and then the program will start.

4.3 WORKOUT SETUP STEPS - FAT BURN

FAT BURN - Fat burn is a level based program that is designed to help users burn fat through various resistance level changes.

1) Start pedaling and press the FAT BURN key. Then press ENTER.
2) Select Level by using the UP or DOWN LEVEL keys and press ENTER.
3) Select Time by using the UP or DOWN LEVEL keys and press ENTER.
4) Select Weight by using the UP or DOWN LEVEL keys and press ENTER.
5) Press GO, then the display will read 3, 2, 1, Begin and then the program will start.

4.4 WORKOUT SETUP STEPS - LEVEL BASED

ROLLING HILLS - The Rolling Hills program is a level based program that automatically adjusts the resistance level to simulate real terrain.

1) Start pedaling and press the ROLLING HILLS key. Then press ENTER.
2) Select Level by using the UP or DOWN LEVEL keys and press ENTER.
3) Select Time by using the UP or DOWN LEVEL keys and press ENTER.
4) Select Weight by using the UP or DOWN LEVEL keys and press ENTER.
5) Press GO, then the display will read 3, 2, 1, Begin and the program will start.

INTERVAL TRAINING - The Intervals Training program is a level based program that automatically adjusts the resistance of the machine from low to high intensity settings at regular intervals.

1) Start pedaling and press the INTERVAL TRAINING key. Then press ENTER.
2) Select Level by using the UP or DOWN LEVEL keys and press ENTER.
3) Select Time by using the UP or DOWN LEVEL keys and press ENTER.
4) Select Weight by using the UP or DOWN LEVEL keys and press ENTER.
5) Press GO, then the display will read 3, 2, 1, Begin and the program will start.

GLUTE TRAINING WORKOUT - This program was designed to increase your range of motion and target the thighs and glutes. By varying a high incline throughout the workout you can engage significant glute recruitment and enjoy a great workout. You will be asked to enter in a minimum resistance level and a maximum resistance level. The maximum resistance is applied at your peaks and the minimum resistance is applied in the valleys. Choose levels that are appropriate for you. A great recommended starting point is a Minimum Resistance Level of 1 and a Maximum Resistance Level of 8. After you are comfortable with this setting, try higher levels for both. Incline levels cannot be adjusted during this workout as it is an incline based workout.

1) Start pedaling, press the GLUTE TRAINING key. Then press ENTER.
2) Select Time by using the UP or DOWN LEVEL keys and press ENTER.
3) Select Weight by using the UP or DOWN LEVEL keys and press ENTER.
4) Select Maximum Resistance by using the UP or DOWN LEVEL keys and press ENTER.
5) Select Minimum Resistance by using the UP or DOWN LEVEL keys and press ENTER.
6) Press GO, then the display will read 3, 2, 1, Begin and the program will start.

4.5 WORKOUT SETUP STEPS - COOPER FITNESS TEST

FIT TEST -The Cooper Fitness Test measures cardiovascular fitness and proves an estimated sub-maximal VO2 result. It is based on power output according to ACSM standards and was developed by the Cooper Institute© (www.cooperinstitute.org). User RPMs must remain between 60-80 RPM during the test. The test will end when the user can no longer maintain this speed. Use of a heart rate strap is optional but provides more data.

The test starts at a low intensity level and gradually increases in intensity (difficulty) every 2 minutes. As it increases, the user must maintain 60-80 RPM to advance to the next level. The test could take upwards of 30+ minutes for very fit individuals. Once the test ends a recovery period (cool down) will begin and the user's results are calculated and displayed. Results are based on the number of stages completed. Incline will not be adjustable during the test.

1) Start pedaling and press the FITNESS TEST key. Then press ENTER.
2) Select Age by using the UP or DOWN LEVEL keys and press ENTER.
3) Select Gender by using the UP or DOWN LEVEL keys and press ENTER.
4) Select Weight by using the UP or DOWN LEVEL keys and press ENTER.
5) Press GO, then the display will read 3, 2, 1, Begin and then the program will start.
6) Once the workout is complete, the display will read the results of the Fitness Test.

STAGE COMPLETE:

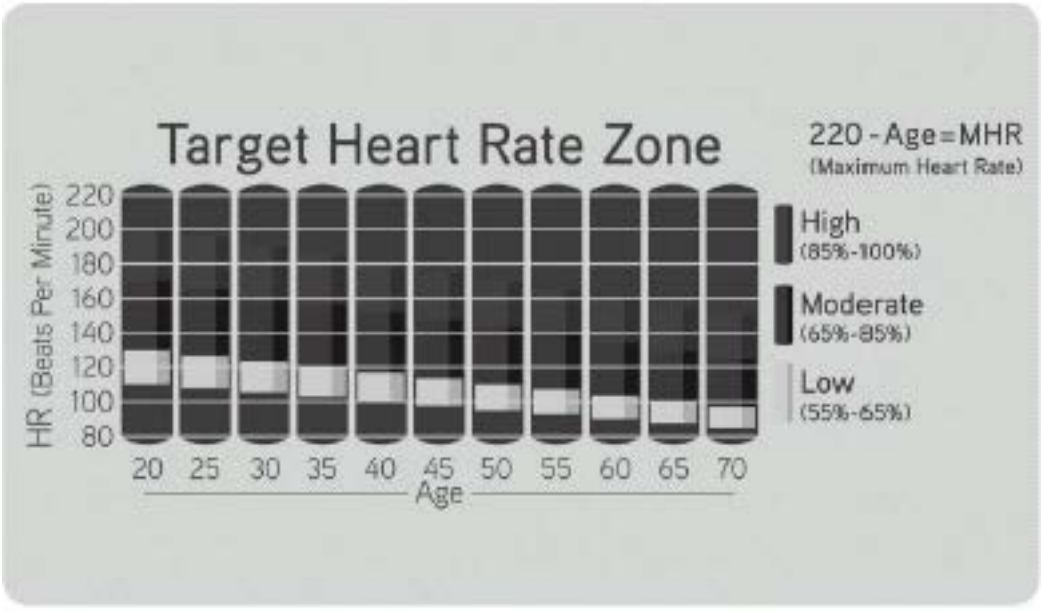
1	Well Below Average
2	Well Below Average
3	Below Average
4	Below Average
5	Average
6	Average
7	Above Average
8	Above Average
9+	Well Above Average

4.6 WORKOUT SETUP STEPS - TARGET HEART RATE

TARGET HEART RATE - The Matrix Ascent Trainer comes with standard digital contact heart rate sensors and are POLAR telemetry compatible. The heart rate control workout mode allows the user to program their desired heart rate zone, and the Ascent Trainer will automatically adjust the level based upon the user's heart rate. The heart rate zone is calculated using the following equation: (220-Age)8%=target heart rate zone. The user must wear a POLAR telemetric strap or continually hold onto the contact heart rate grips for this workout.

Locate the metal sensors on the handlebars of the Ascent Trainer. Notice that there are two separate pieces of metal on each grip. You must be making contact with both pieces of each grip to get an accurate heart rate reading. You can grab these sensors in any program to view your current heart rate.

1) Start pedaling and press the HEART RATE key. Then press ENTER.
2) Select Age by using the UP or DOWN LEVEL keys and press SELECT.
3) Select Target HR Percentage by using the UP or DOWN LEVEL keys and press SELECT.
4) Select Time by using the UP or DOWN LEVEL keys and press SELECT.
5) Select Weight by using the UP or DOWN LEVEL keys and press SELECT.
6) Press GO, then the display will read 3, 2, 1, Begin and the program will start.



4.7 WORKOUT SETUP STEPS - CONSTANT WATTS

CONSTANT WATTS - Constant Watts is a unique program that allows you to vary your cadence or RPM and the Ascent Trainer's resistance level will adjust accordingly to your selected goal. The quicker you pedal, the less resistance for the goal selected.

1) Start pedaling and press the CONSTANT WATTS key. Then press ENTER.
2) Select Watts by using the UP or DOWN LEVEL keys and press SELECT.
3) Select Time by using the UP or DOWN LEVEL keys and press SELECT.
4) Select Weight by using the UP or DOWN LEVEL keys and press SELECT.
5) Press GO, then the display will read 3, 2, 1, Begin and the program will start.

4.8 AUTO CALIBRATION INSTRUCTIONS

AUTO CALIBRATION PROCEDURE

After initial installation or replacement of the incline motor, auto calibration should be run.

1) Press and hold both LEVEL keys for 3-5 seconds. Manager Mode should appear on the display.
2) Press the LEVEL UP or DOWN key until the display reads Service Mode. Press ENTER.
3) Press the LEVEL UP or DOWN key until the display reads Service 6 (Auto Calibration). Press ENTER.
4) This will run the Auto Calibration. If the calibration passes, it will say complete, or it will automatically cycle to the normal startup screen (depending on software version). Press and hold the STOP key to return to the normal start screen if necessary.
5) If the calibration does not pass, contact Matrix Customer Technical Support at 866-693-4863 ext 3.

CHAPTER 5: MANAGER MODE

5.1 USING MANAGER MODE

The Manager's Custom Mode allows the club owner to customize the Ascent Trainer for the club.

1) To enter Manager Mode, press and hold down the LEVEL UP and DOWN keys. Continue to hold down these two keys until the display reads Manager Mode (Figure A) and hit ENTER.

2) To scroll through the list of options in Manager Mode, use the LEVEL UP and DOWN keys. Each of the custom settings will show on the display.

3) To select a custom setting, press the ENTER key when the desired setting is shown.

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

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

6) To exit the setting without saving, press the BACK key.

7) Press and hold the STOP key for 3-5 seconds to return to normal operation.



FIGURE A

5.2 MANAGER MODE OVERVIEW

CUSTOM SETTING	DEFAULT	MINIMUM	MAXIMUM	DESCRIPTION
Maximum Time	60 min	10 min	99 min	Sets the total run time of any program.
Default Time	30 min	10 min	Maximum Time Setting	Workout time when GO is pressed or when no time is selected during program set up.
Default Level	1	1	20	Starting resistance when GO is pressed or when no resistance is selected during program set up.
Default Age	30	10	100	Starting age when GO is pressed or when no age is selected during program set up.
Default User Weight	150 lbs / 68 kg	60 lbs / 27 kg	400 lbs / 180 kg	Weight used for program calorie expenditure calculations.
Accumulated Distance	N/A	0	99,999 Miles	Total distance for all programs.
Accumulated Time	N/A	0	999,999 hours	Total time for all programs displayed in hours.
Software Version	N/A	N/A	N/A	Current version of console software.
Timer Mode	Up	Up	Down	Determines whether the timer counts up or down.
Out of Order	Off	On	Off	Locks the machine when out of order.
Gender	Male	Male	Female	Determines the gender of the user when not selected during program set up.
Language	English	English	English	Sets the language for the console. Select between English, Spanish, German, French, Italian, Portuguese, Finnish, Japanese, Swedish, and Dutch.
Speed / Distance Mode	Mile	Mile	Kilometer	Displays distance in miles or kilometers.
Default Incline	10	0	100	Starting incline level at each program start.
Sound Mode	On	On	Off	Turns the chime on / off when a button is pressed.
Incline Reset	On	On	Off	This is a software feature that resets machine elevation to 0 degrees after 30 seconds of user inactivity. During incline reset, movement can be stopped by pressing any console key. The display will scroll "HOLD SELECT TO RESUME." To resume reset to 0 degrees, hold the SELECT key for 3 seconds.

CHAPTER 6: ENGINEERING MODE

6.1 USING ENGINEERING MODE

To enter Engineering Mode, hold the LEVEL UP and DOWN keys for 3-5 seconds until Manager Mode appears on the middle LED display. Press the LEVEL UP or DOWN key to scroll to Engineering Mode. Press ENTER to go into Engineering Mode.

CODE	DEFAULT	OPTIONS	DESCRIPTION
Disable Errors	No	Yes or No	No - Shows A-C class error codes. Yes - Shows only C class error codes.
Speed Units	Mile	Mile or Kilometer	Set for Mile or Kilometer.
Machine Type	A5x-04	A5x-02, A5x-03, or A5x-04	A5x-02 - Double incline motor, non self power frame. A5x-03 - Double incline motor, self powered framed. A5x-04 - Single incline motor, self powered frame.
Power Save Time	30 Seconds	30-60 Seconds	Power saving time for the self powered frame.
Pause Time	30 Seconds	15 - 120 Seconds	For non self powered frames only. Not used on this model.
Serial Number	N/A	N/A	Serial Number input is available for both the Console and Frame. Use the number keys and UP / DOWN LEVEL keys to enter Engineering Mode. Due to the limited LED characters, 2 layers are used to enter the serial number. First Layer: - PPPPP V - PPPPP is the product name. - V is the version. If the version is A, just leave this blank. Second Layer - YY MM nnnnn. - YY is the year (11, 12). - MM is the month (e.g. 08, 09, 10). - nnnnn is the actual serial number. Use the UP / DOWN LEVEL keys to navigate the layers and the number keys to input the serial number. The product name is dependent on the Machine Type setting. For example, the console is EP93 with ver. A and the manufactured date is 2011.08 with 98765. The frame is EP308 with ver. A and the manufactured date is 2011.06 with 12345. Their serial numbers are: Console SN: EP93 1st layer, 110898765 2nd layer. Frame SN: EP308 1st layer, 110612345 2nd layer.
Club ID	N/A	N/A	This sets the club ID for clubs using Asset Management.
Incline Tuner	Top 98 Bottom 2	Top 74.5-99.9 Bottom 0.1-25.5	Adjusts the min / max ends of the incline. DO NOT USE THIS SETTING UNLESS YOU ARE A QUALIFIED TECHNICIAN.
Sleep Time	Off	Off or On (1-30 Minutes)	If there is no use of the machine over a period of time, the console LEDs will turn off (go into sleep mode).
Audio Source	Off	Off / TV / PC TV / External TV	Manual setting that sets which outside TV will have audio through the console audio ports.
Volume Control	TV/ PCTV: Output:13	1~ 32	Controls the default TV volume for entertainment wired through the C-Safe port. a. Input Default (DF : 15 / Range : 1 ~ 15) b. Max Default (DF : 32 / Range : 1 ~ 32) c. Output Default (DF : 13 / Range : 1 ~ Max) Remote TV support a / b / c item. TV and PCTV only support c item.
	REMOTE TV Output:13	1~ 32	
	REMOTE TV Input:15	1~ 15	
AM System	RF Radio	WIFI/RF Radio	To select AM output device by WIFI or RF.

CHAPTER 7: SERVICE MODE

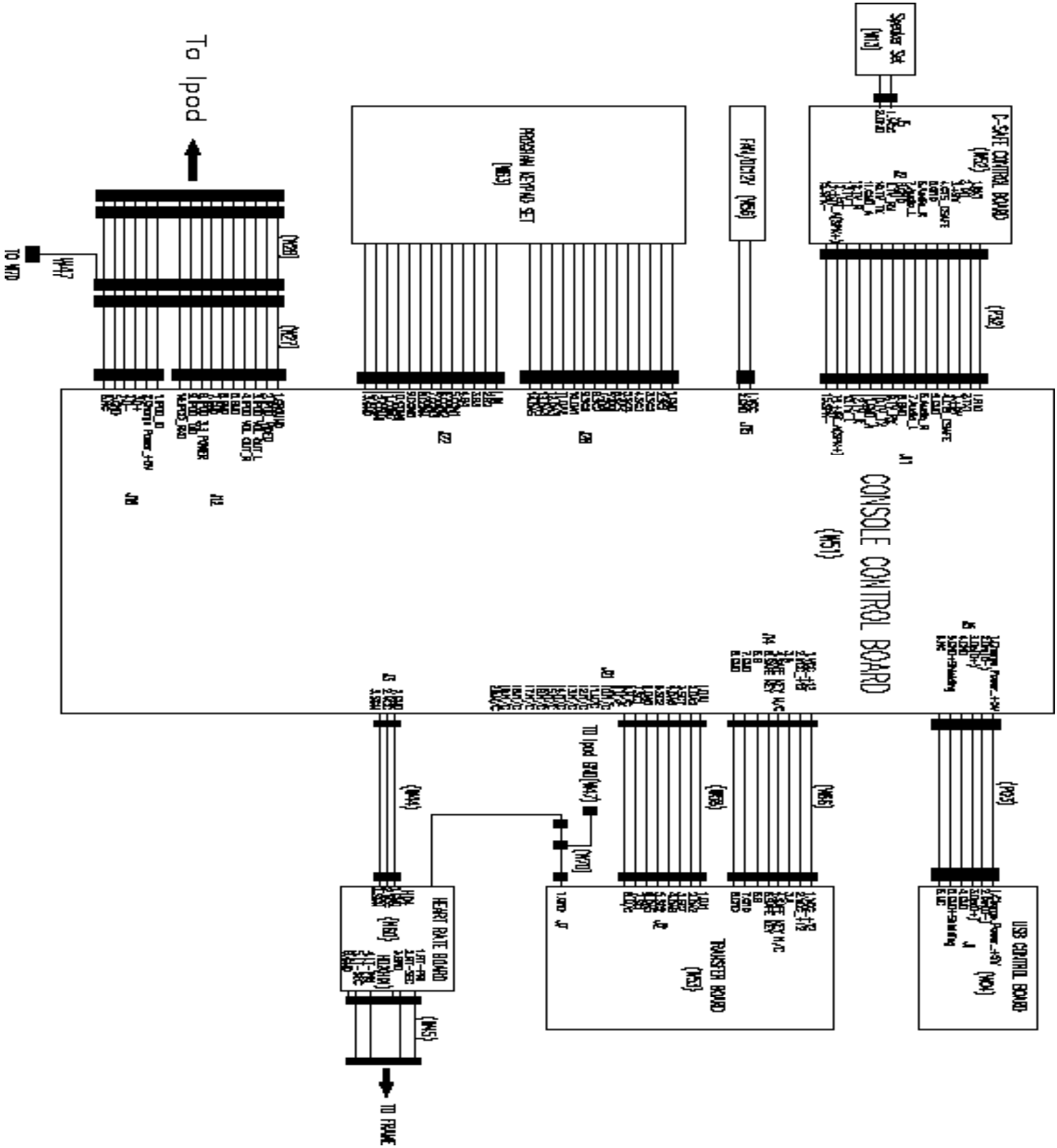
7.1 USING SERVICE MODE

To enter Service Mode, hold the LEVEL UP and DOWN keys for 3-5 seconds until Manager Mode appears on the middle LED display. Press the LEVEL UP or DOWN key to scroll to Service Mode. Press ENTER to go into Service Mode.

CODE	DEFAULT	OPTIONS	DESCRIPTION
Service 1	Display Test		Press the ENTER key repeatedly to check each set of LEDs on the display sequentially.
Service 2	Keypad Test		Press any key and the display should show the corresponding message.
Service 3	Distance / Time	Distance: Mile 0 - 99999 Kilometer 0 - 160898 Time: 0 - 999999	Manually sets the Accumulated Distance and Time.
Service 4	CSafe / RF Test		Press the ENTER key to test CSAFE. Press the ENTER key again to test the RF.
Service 5	Error Log		Shows the last 10 errors. Press and LEVEL UP and DOWN for 3 seconds to clear the errors.
Service 6	Auto Calibration		Press the ENTER key to implement Auto Calibration.
Service 7	Current Time Display		Displays the current time
Service 8	Export and Import Parameter		Export Parameter - Export the engineer parameters to a USB device (the file name will be Premium A5x.backup). Import Parameter 1 - Imports the engineer parameters to a USB device except serial number, accumulated distance and time. Import Parameter 2 - Imports the engineer parameters to a USB device.
Service 9	WiFi Function		Automatically detects the available IP address and displays it.

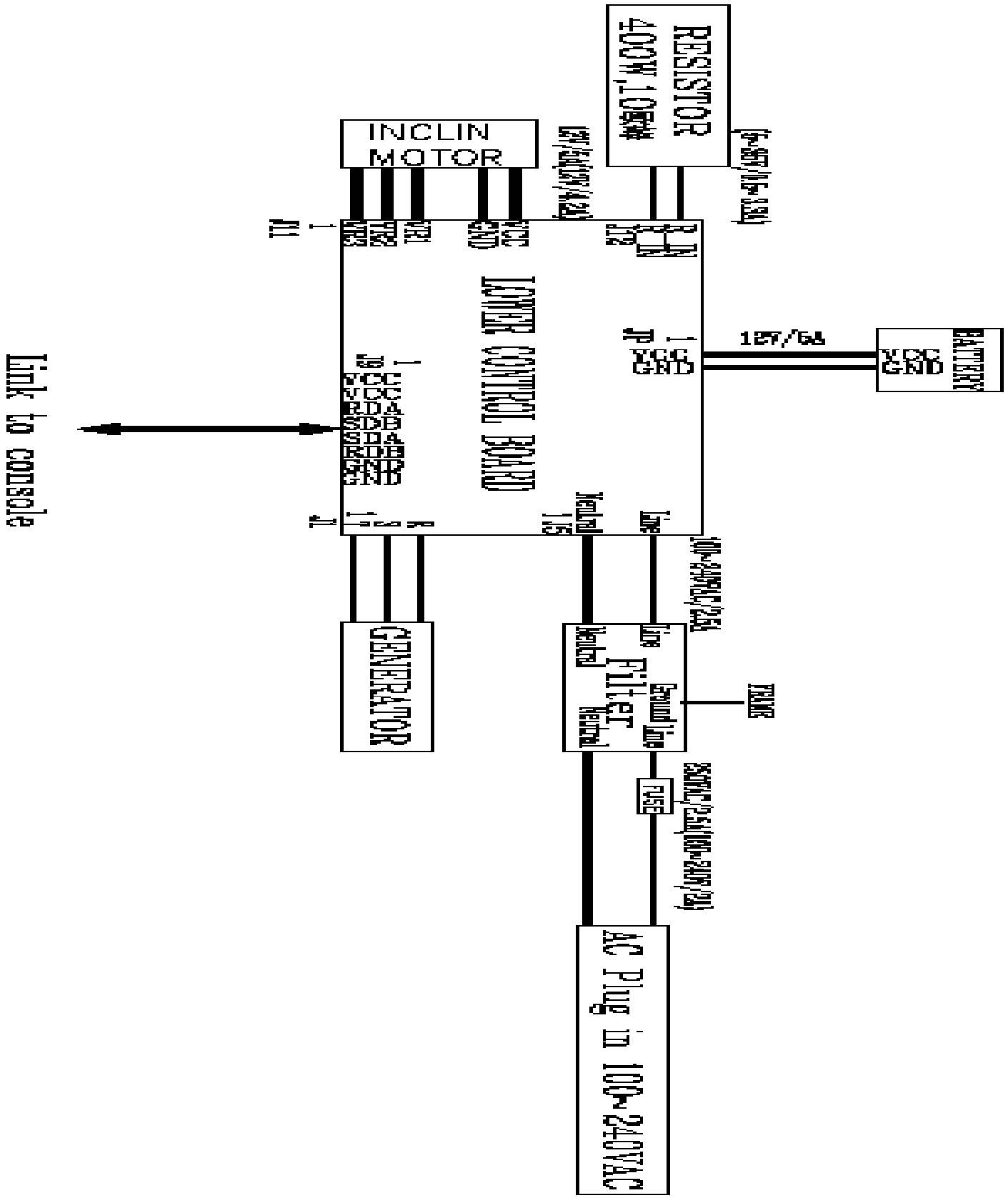
8.1 ELECTRICAL DIAGRAMS

A5X-C ELECTRICAL BLOCK DIAGRAM



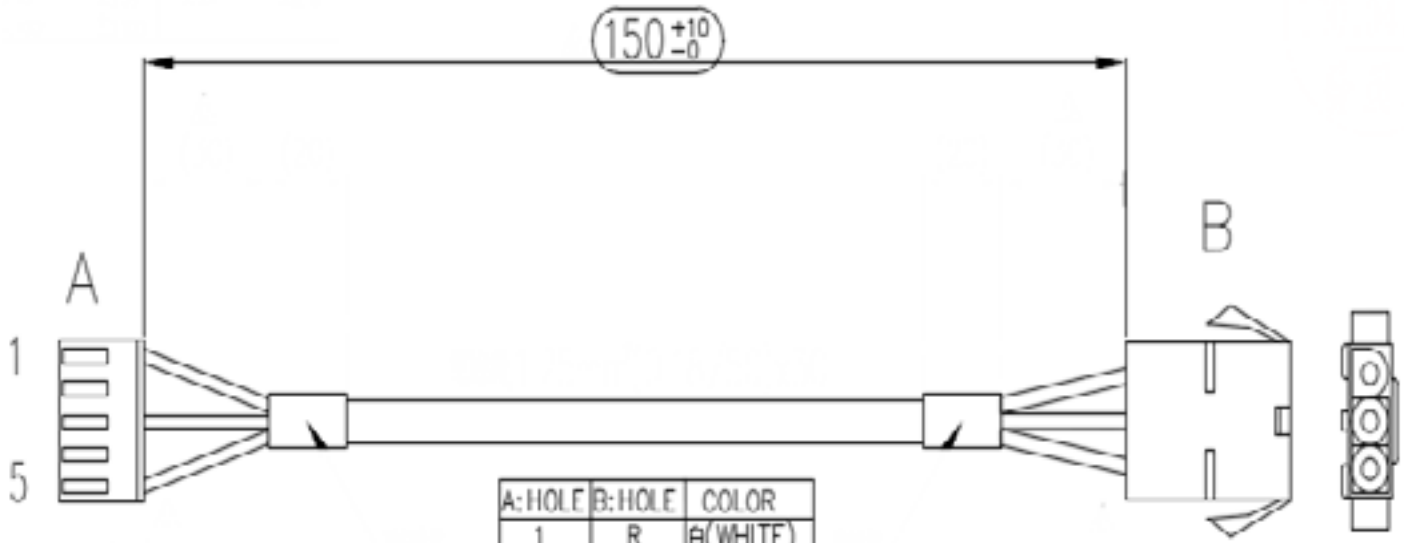
8.1 ELECTRICAL DIAGRAM - CONTINUED

A5X-F ELECTRICAL BLOCK DIAGRAM



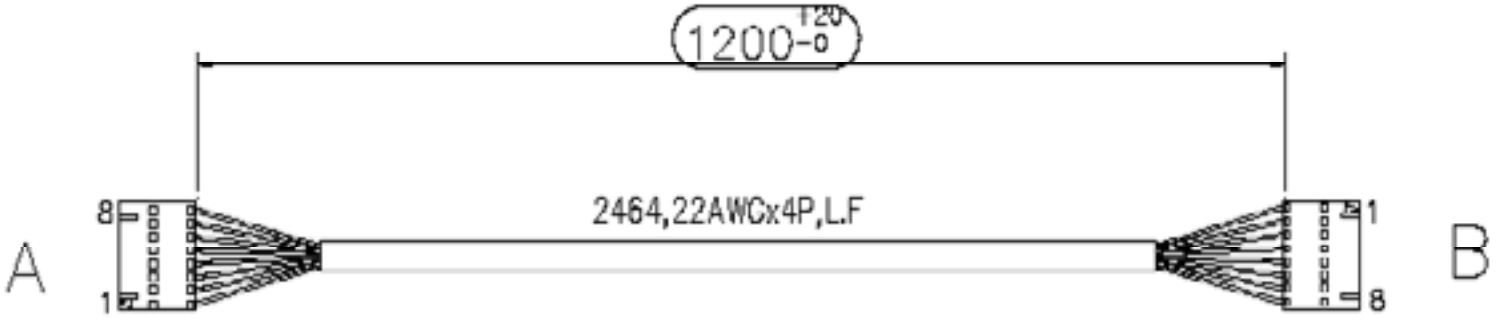
8.1 ELECTRICAL DIAGRAMS - CONTINUED

ECB WIRE



A: HOLE	B: HOLE	COLOR
1	R	白(WHITE)
2		
3	S	紅(RED)
4		
5	T	黑(BLACK)

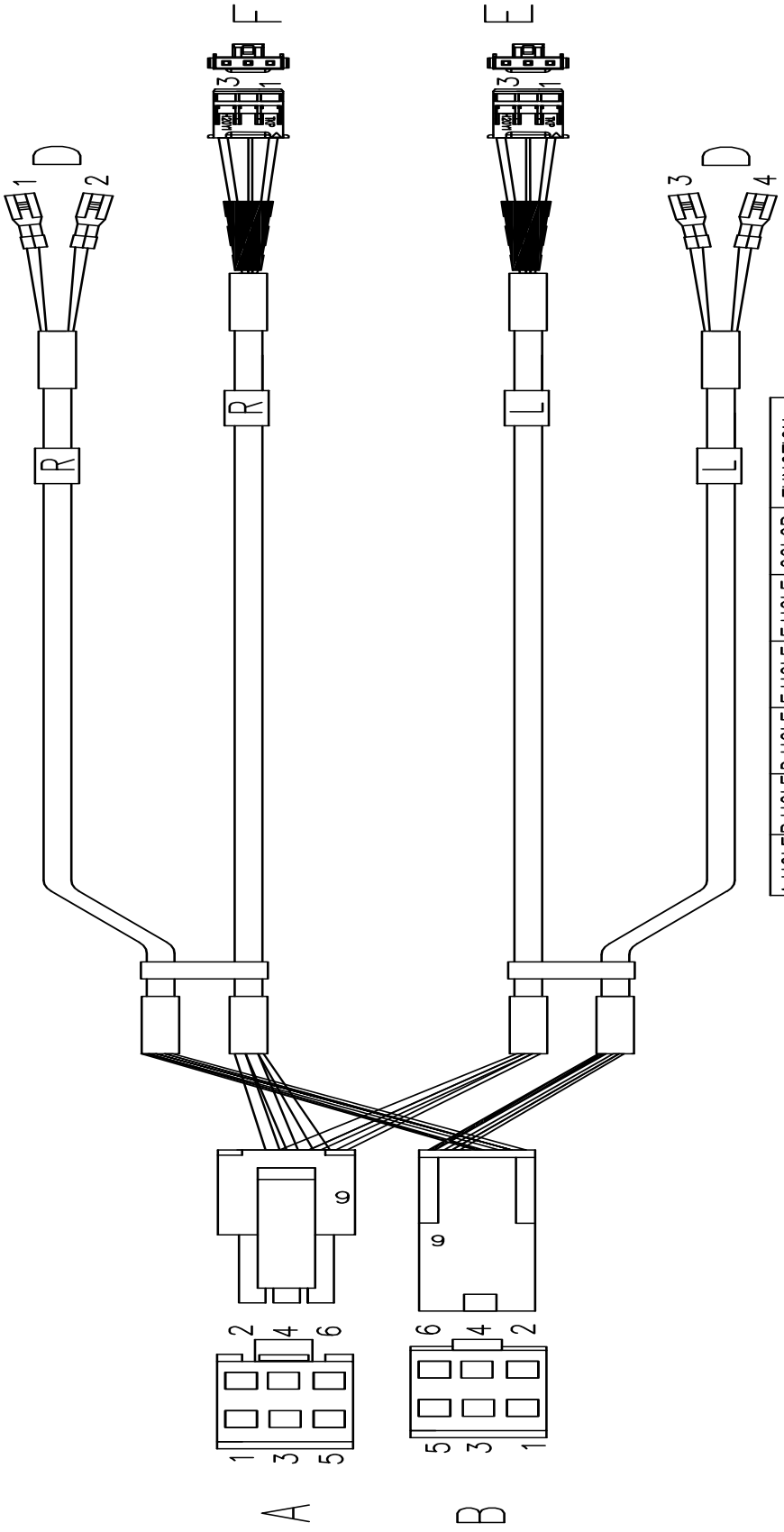
DIGITAL COMMUNICATION WIRE



A.HOLE	B.HOLE	FUNCTION	COLOR
1	1	12V	red
2	2	12V	
3	3	RDA	
4	4	NA	
5	5	NA	
6	6	RDB	
7	7	GND	black
8	8	GND	

8.1 ELECTRICAL DIAGRAMS - CONTINUED

HAND PULSE CONNECTING WIRE



A.HOLE	B.HOLE	D.HOLE	E.HOLE	F.HOLE	COLOR	FUNCTION
				3		DA2(R–down)
2			3			DA2(I–down)
6				1		SC2
4	1	1			Red	Right Hand Pulse+
	2	2			White	Right Hand Pulse–
	3	3				Shield
3			2			DA1(I–UP)
				2		DA1(R–UP)
1			1			
5						SC1
	4	3			Red	Left Hand Pulse+
	5	4			White	Left Hand Pulse–
	6	5				Shield

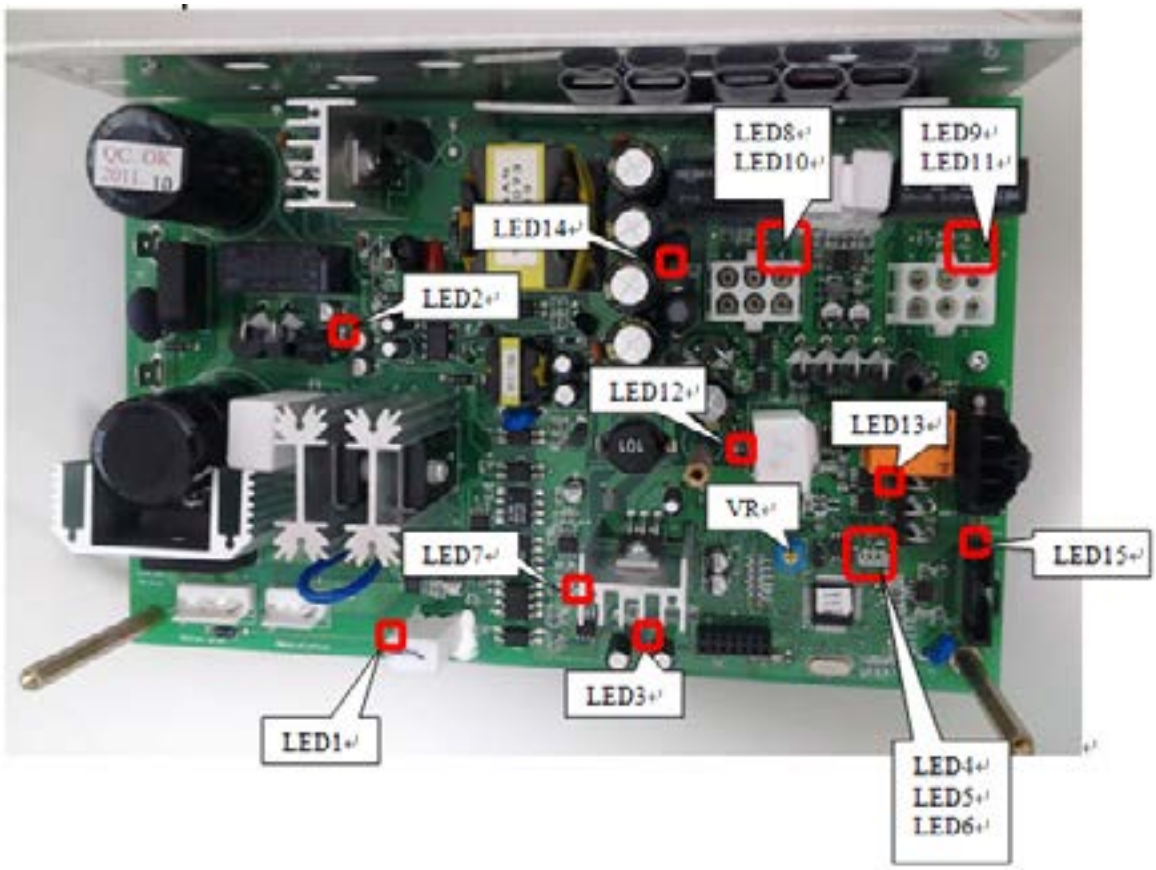
8.1 ELECTRICAL DIAGRAMS - CONTINUED

POWER RESISTANCE WIRE



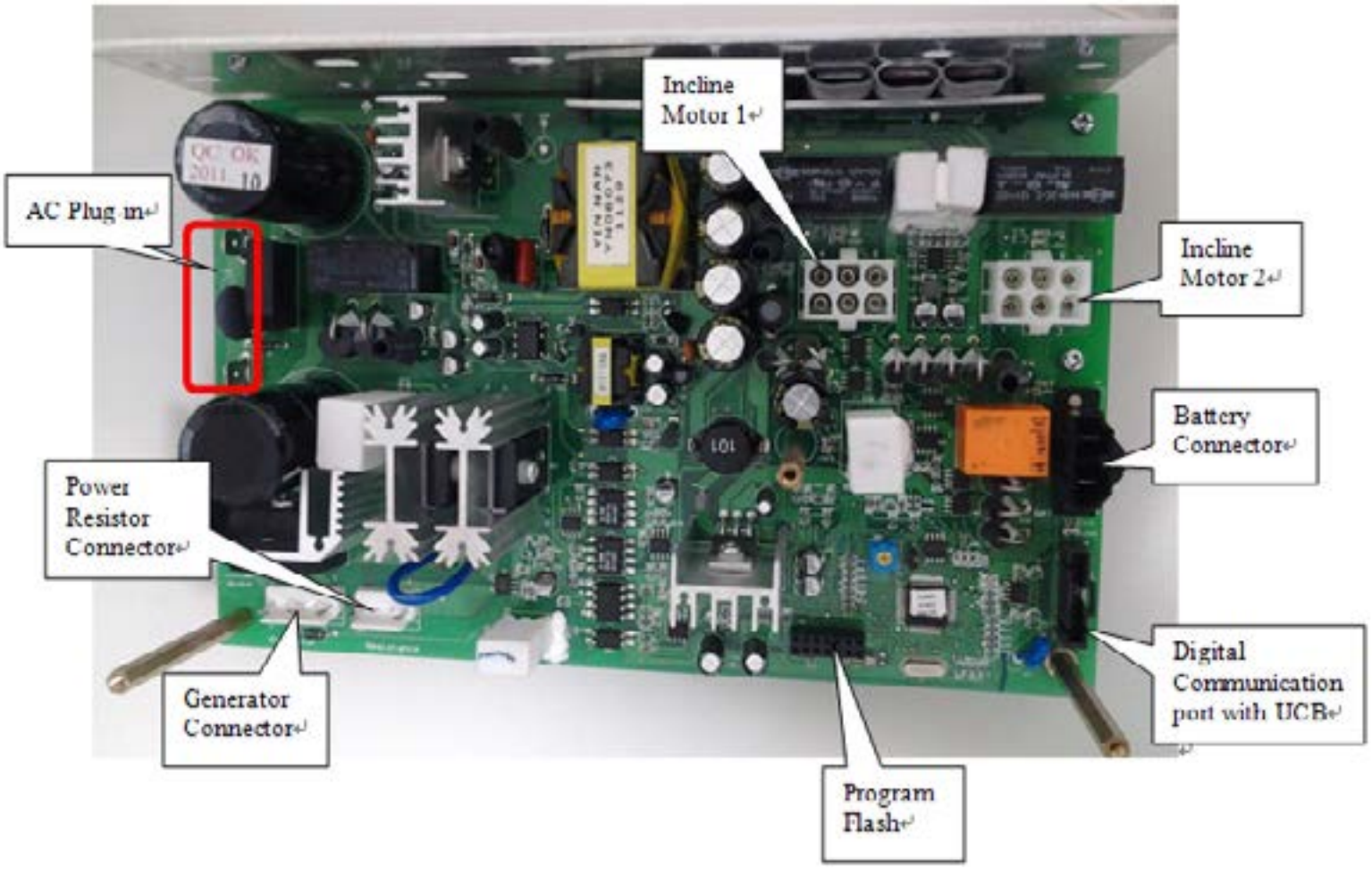
A-HOLE	COLOR	FUNCTION
1	WHITE	R_IN
2		
3		
4	WHITE	R_IN

8.2 LCB LED INDICATORS



LED #	Description
1	Generator RPM
2	AC Plug-in
3	Vcc(5V)
4	System Status
5	Error Status
6	Error Status
7	Resistance
8	Incline 1 Forward
9	Incline 2 Forward
10	Incline 1 Rearward
11	Incline 2 Rearward
12	Charge
13	Discharge
14	12V/6A(main power)
15	Console Power

8.3 LCB WIRING CONNECTION



ERROR CODE 04A0

1) SYMPTOM:

04A0 – PCB communication disconnected.

2) SOLUTION:

1) Check the console cable connection at the UCB and LCB (Figures A & B).
2) Replace the console cable.
3) Replace the console.

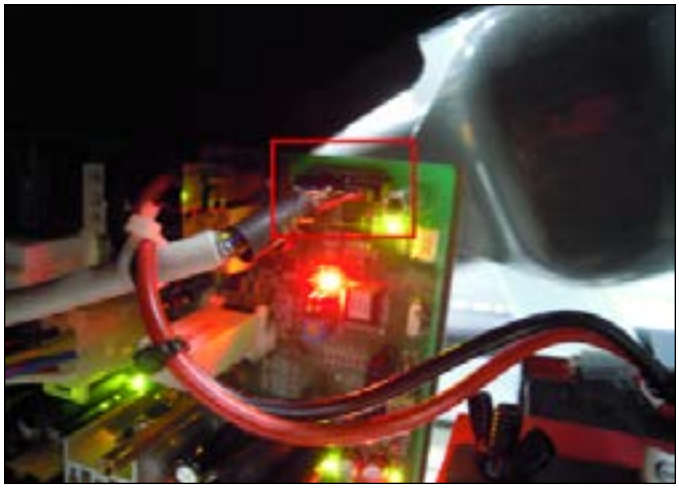


FIGURE A

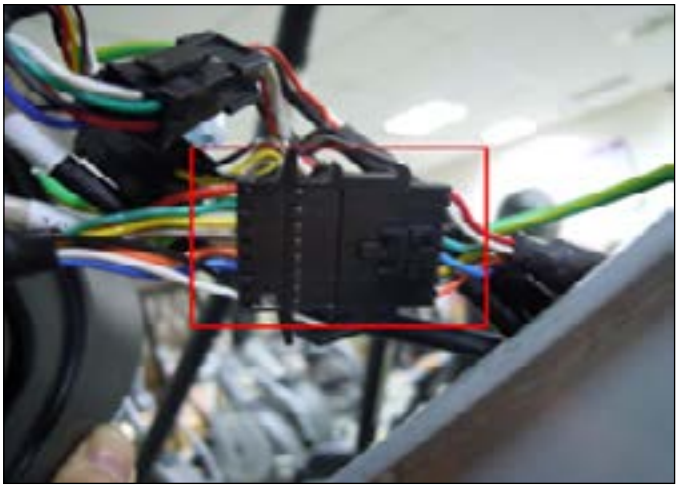


FIGURE B

ERROR CODE 04B0

1) SYMPTOM:
04B0 – LCB communication disconnected.

2) SOLUTION:
1) Check the console cable connection between the UCB and LCB (Figures A & B).
2) Replace the console cable.
3) Replace the LCB.

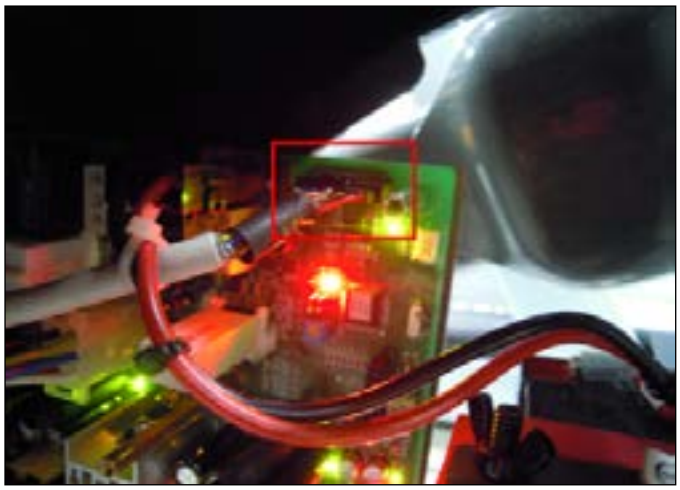


FIGURE A

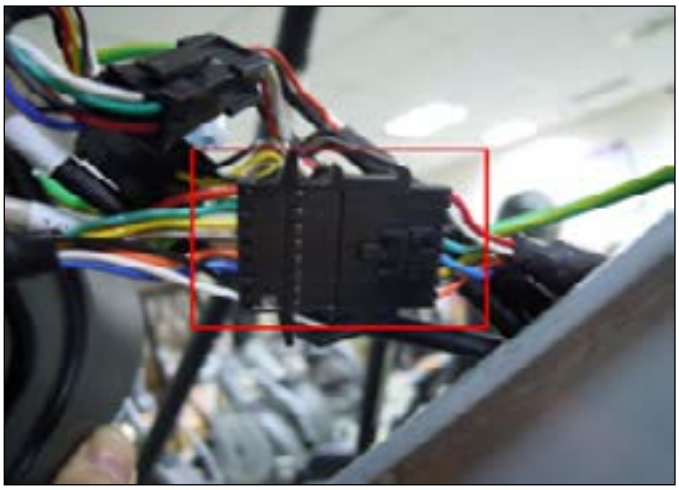


FIGURE B

ERROR CODE 0140 / 01AD

1) SYMPTOM:

0140 – PCB communication disconnected.
014D – Incline no action & Incline no current

2) SOLUTION:

1) Follow the instructions in Section 4.8 to run Auto Calibration (Figure A).
2) If the error code happens during Auto Calibration, the machine will still work, no need to do anything.
3) If the error code happens during a workout, replace the incline motor.



FIGURE A

8.7 TROUBLESHOOTING - ERROR 01A1

ERROR CODE 01A1

1) SYMPTOM:

01A1 – Incline calibration error. It occurs when the calibration time is too long or the calibration distance is too short.

2) SOLUTION:

1) Follow the instructions in Section 4.8 to run Auto Calibration (Figure A).
2) Disconnect the incline tube from the incline frame, then turn on the power.
   - If the console still shows 01A1, replace the incline motor.
   - If the console does not show 01A1, follow incline motor installation procedure in Section 9.13 to re-attach the incline motor.
3) Replace the LCB.

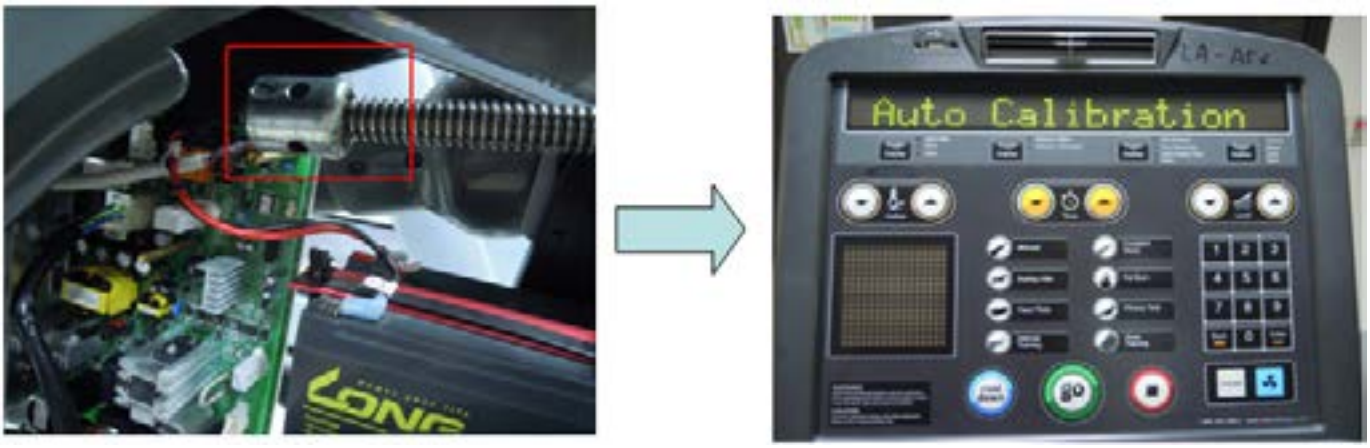


FIGURE A

ERROR CODE 0147

1) SYMPTOM:

0147 – Incline Motor is disconnected for 3 seconds.

2) SOLUTION:

1) Check the incline motor wire connection at the LCB (Figure A).
2) Check to see if the incline value changes on the display when INCLINE UP or DOWN keys are pressed (Figure B).
   - If there's no change, replace the incline motor.
   - If there's a change, replace the LCB.

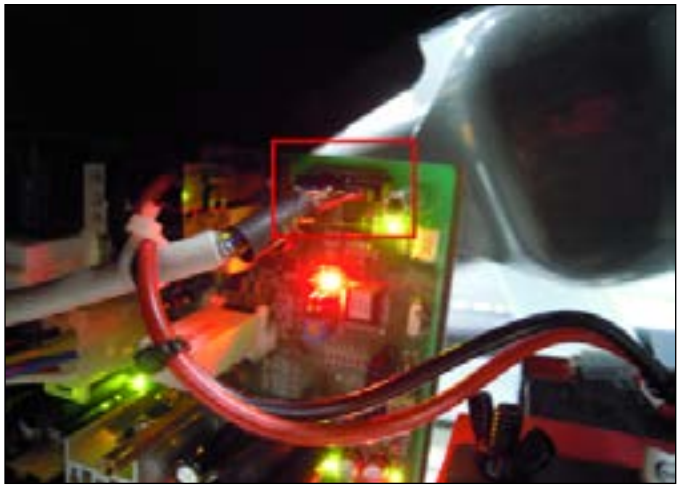


FIGURE A

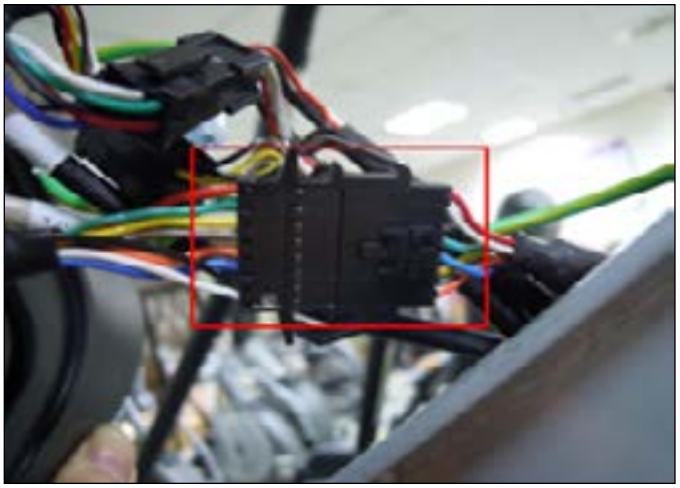


FIGURE B

ERROR CODE 0148

1) SYMPTOM:

0148 – Incline motor over current.

2) SOLUTION:

1) Follow the instructions in Section 4.8 to run Auto Calibration (Figure A).
2) Disconnect the incline tube from the incline frame, then turn on the power.
   - If the console still shows 0148, replace the incline motor.
   - If the console does not show 0148, follow the incline motor installation procedure in Section 9.13 to re-attach the incline motor.
3) Replace the LCB.

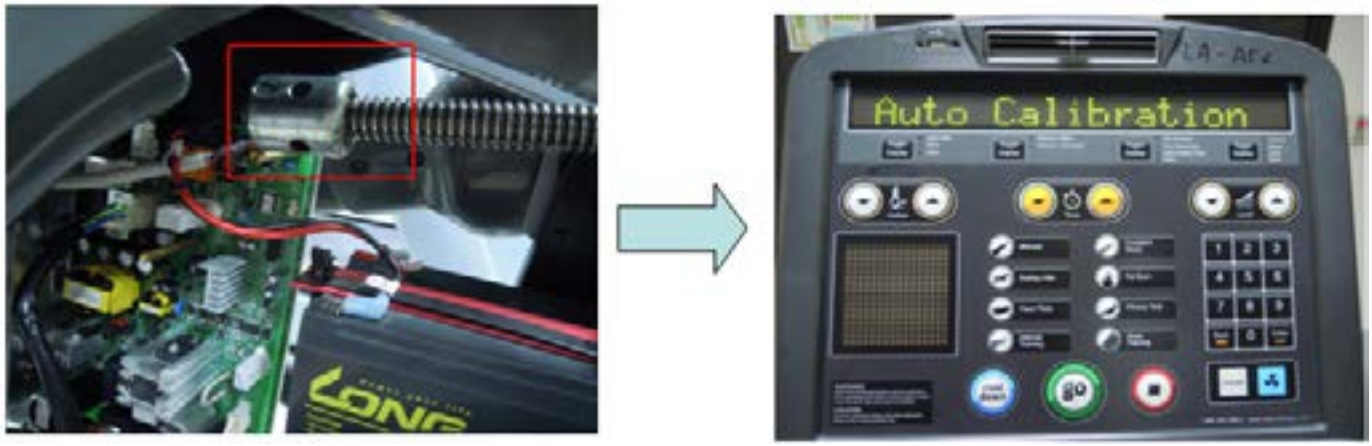


FIGURE A

ERROR CODE 0149

1) SYMPTOM:

0149 – The resistance current is over 3.7A for 1 second.

2) SOLUTION:

1) Check if the resistance is short circuited by measuring amperage through the generator cable (Figure A).
   - If the resistance value is under 10 ohms, replace the generator.
   - If the resistance value is over 10 ohms, replace the LCB.



FIGURE A

ERROR CODE 01B4

1) SYMPTOM:

01B4 – Battery terminals reversed or check circuit error.

2) SOLUTION:

1) Check the connection of the wiring on the terminals of the battery. They should be black to black and red to red (Figure A).
2) Replace the LCB.



FIGURE A

ERROR CODE 02AB

1) SYMPTOM:

0AB – Machine Type Error.

2) SOLUTION:

1) Check if the console machine type is matched with the correct frame (Figure A).

Remarks: There are two types of A5x-F as shown below, each with a different machine type setting.

Machine type is A5x-03



FIGURE A

Machine type is A5x-04



FIGURE B

ERROR CODE 02B4

1) SYMPTOM:

02B4 – Resistance type error.

2) SOLUTION:

1) Check if the machine is matched with the correct resistance system (resistor or ECB) (Figures A & B).
2) Check if the console is matched with the correct frame.
3) Replace the LCB.
4)..Replace the console.

Resistor use on HUREA5x frame

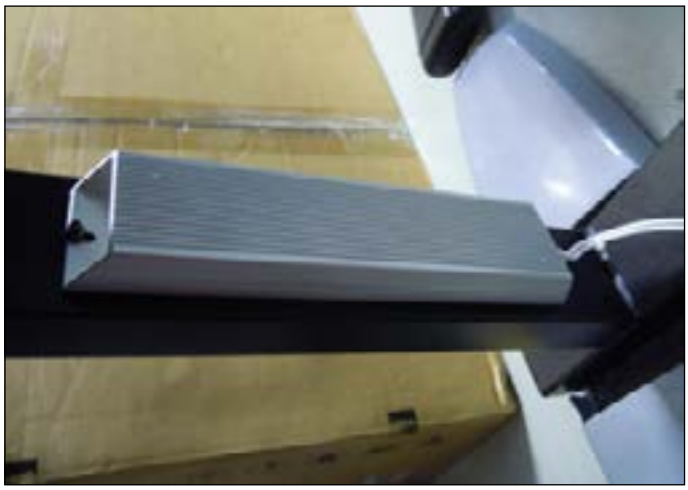


FIGURE A

ECB use on SC5x frame and EP84 (ECB system E5x).



FIGURE B

ERROR CODE 0248

1) SYMPTOM:

0248 –Battery disconnection or fail. (When power is on, LCB battery voltage is less than 6 VAC)

2) SOLUTION:

1) Check the battery wire connection between the battery and LCB (Figure A).
2) Check to see if the battery voltage is less than 6 VAC (Figure B).
3) If not, replace the battery.
4) If yes, replace the LCB.



FIGURE A



FIGURE B

ERROR CODE 014A / 0247

1) SYMPTOM:

014A – LCB charge circuit is abnormal.
0247 – LCB fail.

2) SOLUTION:

1) Replace the LCB.

8.16 TROUBLESHOOTING - NO RESISTANCE ISSUE

NO RESISTANCE TROUBLESHOOTING

1) SYMPTOM:
No resistance

2) SOLUTION:
1) Check the power resistance wire connection between the power resistor and LCB (Figure A).
2) Check to see if the resistor wire has resistance (Figure B).
   - If there is no resistance (ohms) reading, replace the power resistor.
   - If there is resistance, replace the LCB.

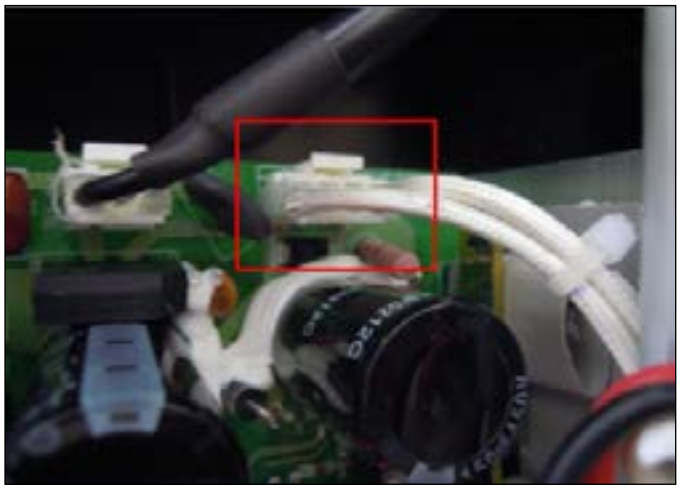


FIGURE A



FIGURE B

8.17 TROUBLESHOOTING - NO POWER TO THE CONSOLE

NO POWER TO THE CONSOLE

1) SYMPTOM:

a. The unit is not getting power from the outlet.
b. The LCB is not getting power from the power receptacle.
c & d. The LCB LEDs are lit, but there is no power to the console.

2) SOLUTION:

a. Remove the front disk and check to see if LED15 is lit on the LCB. If it is not, verify power at the outlet. If the outlet is not outputting 120V, check the fitness room power.
- If LED 15 is still not lit after verifying the fitness room power, replace the power cord.

b. Check to see if LED 15 is lit on the LCB (Figure A).
- If LED 15 is not lit, check for incoming AC voltage at the LCB. Replace the power components as needed if the voltage is not present.
- Replace the LCB if all power components are ok and there is AC voltage to the LCB.

c. Check to see if LED 2 is lit on the upper control board (Figure B).
- If LED 2 is not lit, check the console cable for connection at the LCB and console.

d. If LED 2 is still not lit after checking the console cable connections, use a multi-meter to check pins 1 and 3 on the console cable. There should be approximately 12V present. If necessary, replace the console cable.
- If LED 2 is lit on the console, but there is still no power, replace the console.



FIGURE A

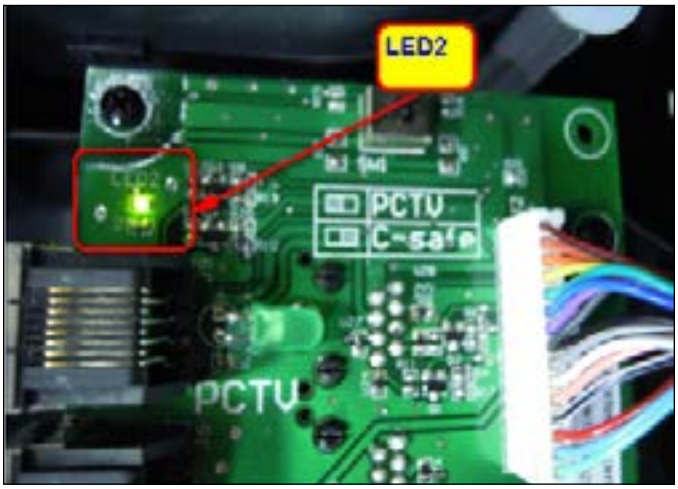


FIGURE B

8.18 TROUBLESHOOTING - HEART RATE ISSUES

HEART RATE FUNCTION DOES NOT WORK OR IS READING INCORRECTLY

POSSIBLE CAUSES:

1) The HR grips are not hooked up correctly.
2) The HR grip wiring is damaged.
3) The console or HR board is not properly grounded.
4) The console, HR board, or wiring between are bad.

SOLUTION:

1) Perform a DC Voltage test on the HR grips.
   a. With one prong of a multi meter on each of the plates on one side of the HR grip set (Figure A), a voltage reading of between .5 and 2.0 should be seen. If the reading is correct, the issue is not with the HR grips or grip wiring.
   b. If the reading is not correct, remove the screws holding the halves of the HR grip together and check the connection of the wiring to the grips (Figure B).

2) Remove the console from the unit and verify continuity of the HR grip wiring. With a multi meter set for ohms, place one prong on the HR grip wiring coming up the console mast (Figure C), and the other on the appropriate plate (match red with red and white with white).
   a. An ohm reading of less than 1 should be received. If it is higher, replace the HR grip wiring.

3) Perform a continuity check on the console (See Service Bulletin - Continuity Test on Matrix Elliptical Trainers).
   a. Once the console continuity is confirmed, perform a continuity check on the HR board ground wire. With a multi meter set for ohms, place one prong on the HR board ground wire (Figure D), and the other on the console ground wire. An ohm reading of less than 1 should be received. If it is higher, replace the HR board.

4) If all the troubleshooting listed above has been performed, and the unit still has HR issues, replace the HR board.
   a. If the HR board does not resolve the issue, replace the console.



FIGURE A



FIGURE B



FIGURE C



FIGURE D

9.1 FRONT DISK REPLACEMENT

1) Remove the center cover by turning it counter clockwise (Figures A & B).



FIGURE A



FIGURE B

2) Remove the 3 screws holding the disk to the axle (Figure C).
3) Remove the disk (Figure D).



FIGURE C

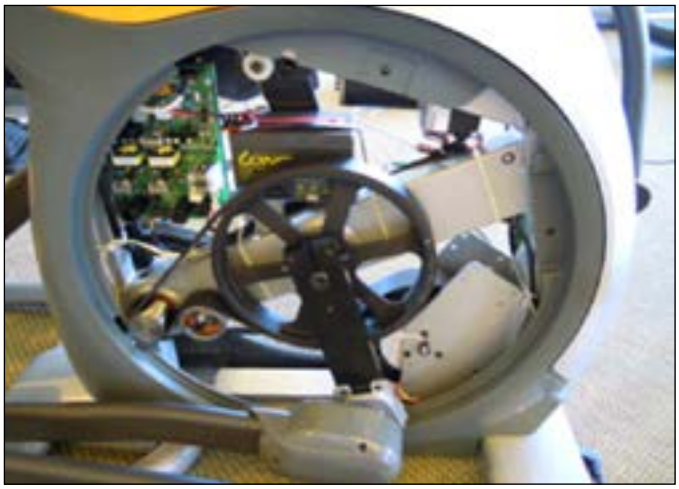


FIGURE D

4) Reverse Steps 1-3 to install a new disk. ***NOTE:*** There is a tab on the disk that should be lined up with a slot on the crank cover (Figure E). The 3 screws removed in Step 2 should be torqued to 25 N-m.



FIGURE E

9.2 FRONT SHROUD REPLACEMENT

1) Remove the link arm and pedal arm plastic caps (Figures A & B).

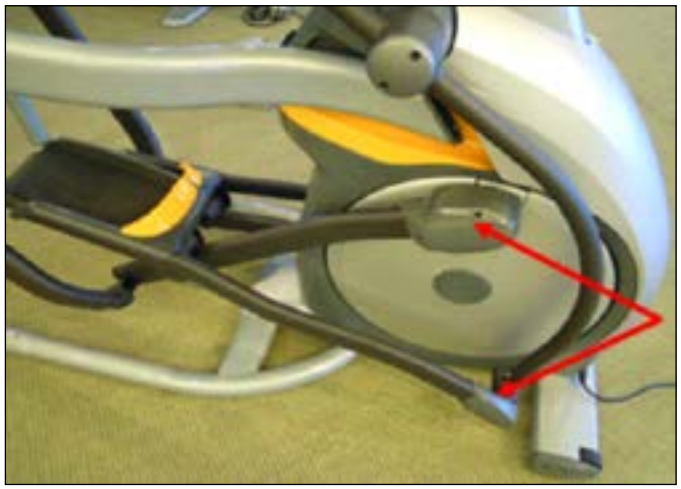


FIGURE A





FIGURE B

2) Detach the dual action handlebar from the link arm (Figure C).
3) Secure the handlebar so that it is out of the way (Figure D).

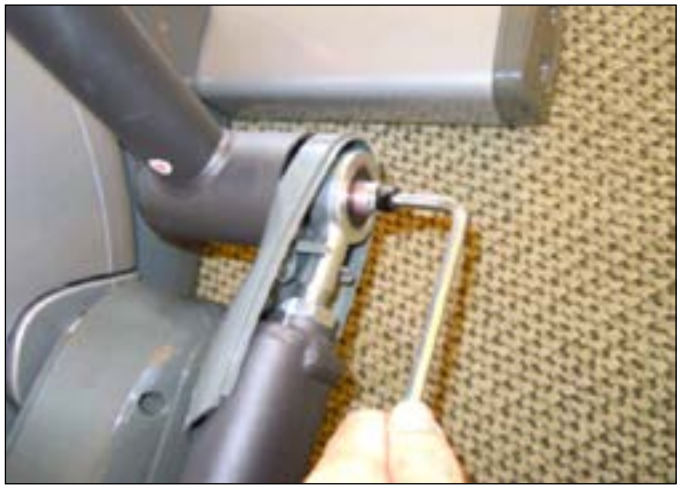


FIGURE C



FIGURE D

4) Remove the front disks as outlined in Section 9.1.
5) Detach the pedal arm from the crank bearing assembly (Figure E).
6) Remove the 2 screws that hold the front top cover to the frame and remove the top cover (Figure F).



FIGURE E



FIGURE F

9.2 FRONT SHROUD REPLACEMENT - CONTINUED

7) Pull out the rubber tray from the cup holder plastic (figure G).
8) Remove the 2 screws to disassemble the cup holder plastic and remove it from the unit (Figure H).



FIGURE G



FIGURE H

9) Remove the 2 screws to disassemble and remove the middle stabilizer sweat cover (Figures I & J).



FIGURE I



FIGURE J

10) Remove the 1 screw (exposed when the cup holder is removed) holding the orange slot cover to the frame and remove it (Figure K).
11) Remove all of the cables from the front shrouds (Figure L).



FIGURE K



FIGURE L

9.2 FRONT SHROUD REPLACEMENT - CONTINUED

12) Remove the 9 screws to detach the front shrouds from the frame (or each other) (Figure M).
13) Turn the crank to the slotted portion of the shroud (Figure N).

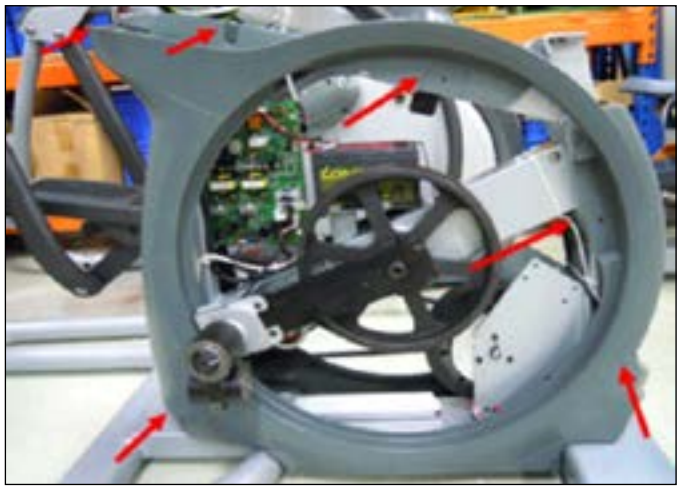


FIGURE M

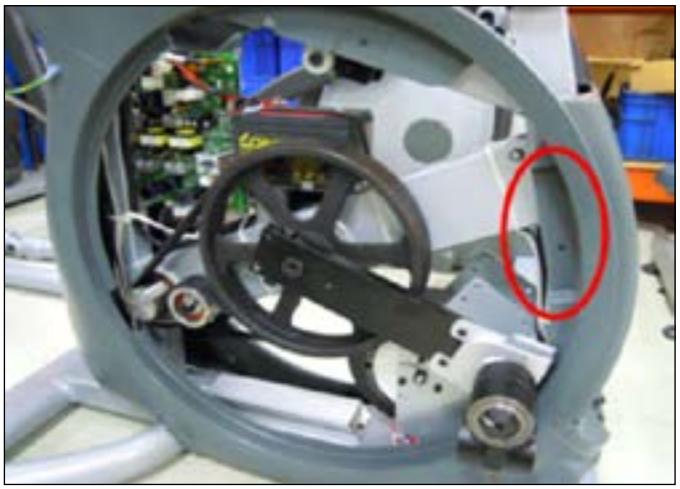


FIGURE N

14) Remove the front shrouds for frame access (Figures O & P).



FIGURE O



FIGURE P

15) Reverse Steps 1-14 to install new shrouds. ***NOTE:*** The bolt / nut removed in Step 5 should be torqued to 70 N-m.

9.3 LOWER CONTROL BOARD REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove both front disks from the machine as outlined in Section 9.1.
3) Disconnect all wires from the LCB (Figure A).

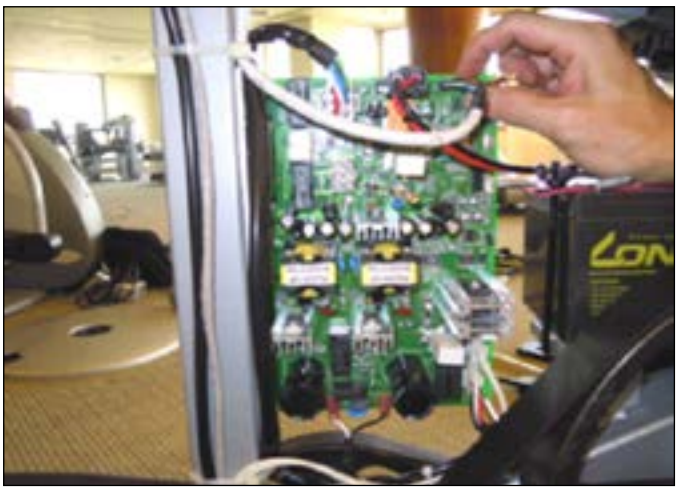


FIGURE A

4) Remove the 2 screws holding the LCB to the frame (Figure B).



FIGURE B

5) Reverse Steps 1-4 to install a new LCB.
6) Test the Ascent Trainer for function as outlined in Section 9.22.

9.4 GENERATOR REPLACEMENT

1) Turn off power and disconnect the cord from the machine.
2) Remove the front disks as outlined in Section 9.1.
3) Remove the front shrouds as outlined in Section 9.2.
4) Cut the cable tie holding the cable to the frame (Figure A).
5) Unplug the power cable connector of the generator (Figure B).



FIGURE A



FIGURE B

6) Loosen the nut holding the generator to the frame (Figure C).
7) Remove the three screws from the generator bracket (Figure D).



FIGURE C

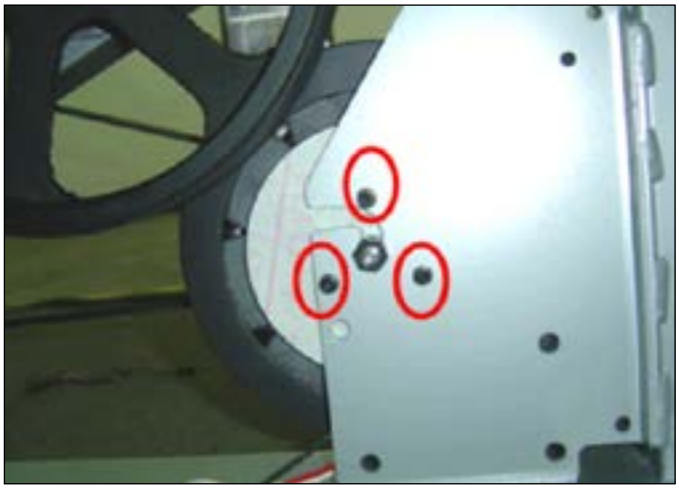


FIGURE D

9.4 GENERATOR REPLACEMENT – CONTINUED

8) Remove the nut from the other side of the generator bracket (Figure E).
9) Loosen and remove the generator belt (Figure F).



FIGURE E



FIGURE F

10) Remove the generator from the frame.
11) Reverse Steps 1-10 to install a new generator. Re-install the belts as outlined in Section 9.5. ***NOTE:*** The 3 screws removed in Step 7 should be torqued to 8 N-m and the nut from Step 8 to 40 N-m.
12) Test the Ascent Trainer for function as outlined in Section 9.22.

9.5 GENERATOR BELT REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove the front disks from the machine as outlined in Section 9.1.
3) Remove the front shrouds as outlined in Section 9.2.
4) Remove the generator as outlined in Section 9.4.
5) To install a new belt, first put the belt installation tool on the pulley (Figure A).

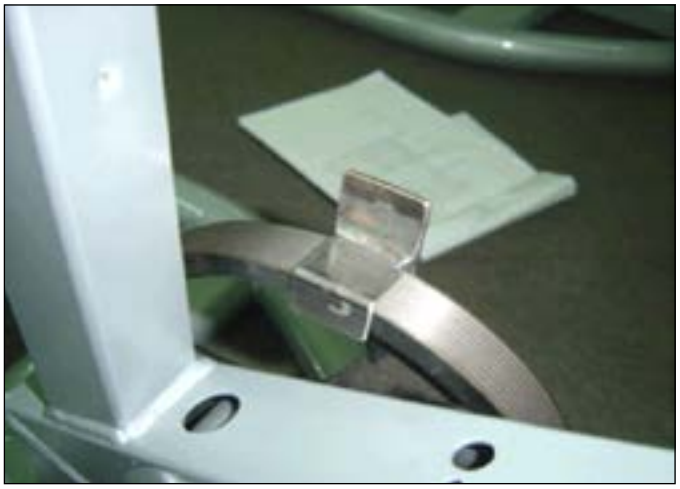


FIGURE A

6) Put the new belt on the installation tool (Figure B).
7) Turn the pulley until the belt is installed. Rotate the pulley at least 3 full rotations to insure that the belt is centered.



FIGURE B

8) Reverse Steps 1-4 to re-assemble the unit.
9) Test the Ascent Trainer for function as outlined in Section 9.22. .

9.6 DRIVE BELT REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove the front disks from the machine as outlined in Section 9.1.
3) Loosen the belt tension bolt on the left 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

4) Install the replacement belt and reverse necessary steps to secure the assembly until the belt is tight. ***NOTE***: Tighten the drive belt to 180 lbs. for a new belt, 150 lbs. for a used belt. The idler bolt should be torqued to 80 N-m.
5) Test the Ascent Trainer for function as outlined in Section 9.22.

9.7 PULLEY AXLE SET REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove both front disks from the machine as outlined in Section 9.1.
3) Loosen the belt tension bolt on the right side until there is enough slack to remove the drive belt (Figure A).
4) 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). ***NOTE:*** The axle bearings will normally be damaged during removal, and cannot be reused.



FIGURE C

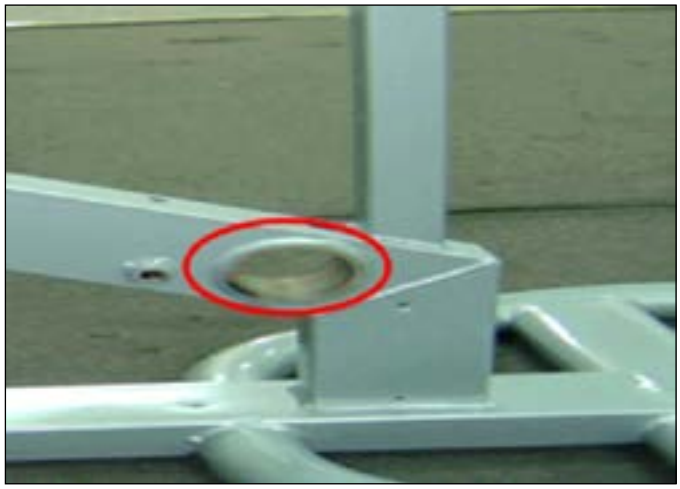


FIGURE D

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 9.5 and 9.6.
8) Test the Ascent Trainer for function as outlined in Section 9.22.

9.8 DRIVE AXLE SET REPLACEMENT

NOTE: A Matrix special tool is needed to correctly replace a drive axle. Order part # 1000368807

1) Turn off the power and disconnect the cord from the machine.
2) Remove the front disks from the machine as outlined in Section 9.1.
3) Remove both belts as outlined in Sections 9.5 & 9.6.
4) On the left side of the frame, remove the retainer clip that holds the drive axle bearings in the frame (Figure A).
5) Install an M10 screw into the drive axle (Figure B).



FIGURE A



FIGURE B

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

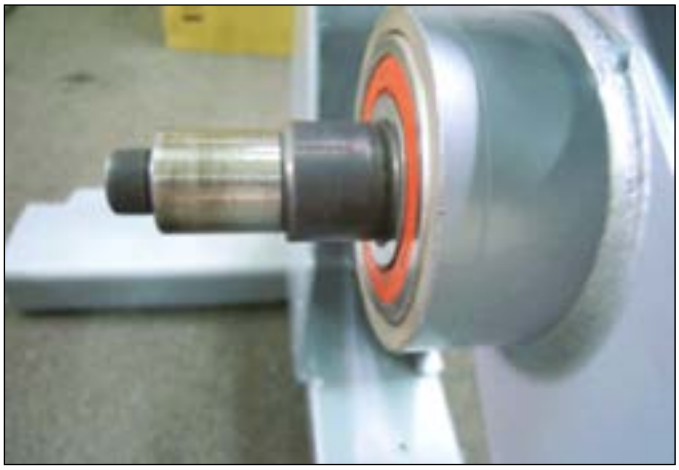


FIGURE C



FIGURE D

8) Install the tool into the hole in the frame (Figure E).
9) 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

9.8 DRIVE AXLE SET REPLACEMENT - CONTINUED

10) The drive axle should have come with an iron plate installed (Figure G).
11) Assemble the Matrix tool as shown in Figure H.



FIGURE G



FIGURE H

12) Slide the drive axle assembly into the frame from the right side. Install the bearing cap portion of the tool into the left side of the frame (Figure I).
13) Mount the other tool from Figure H behind the bearing cap portion of the tool. Use the M10 x 65L screw with a washer and a nut to attach the tool to the drive axle (Figure J).

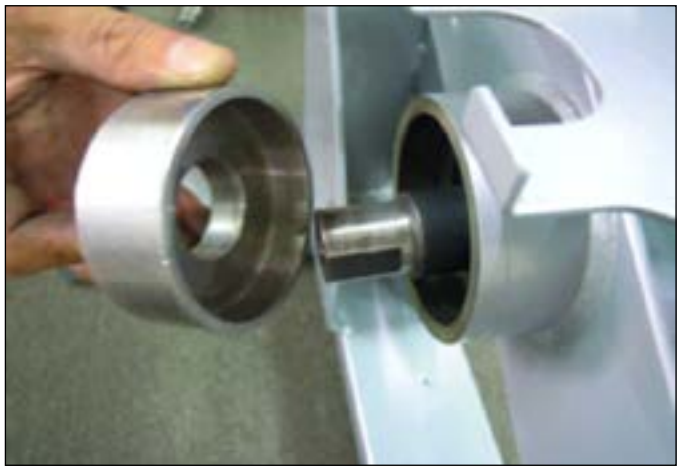


FIGURE I

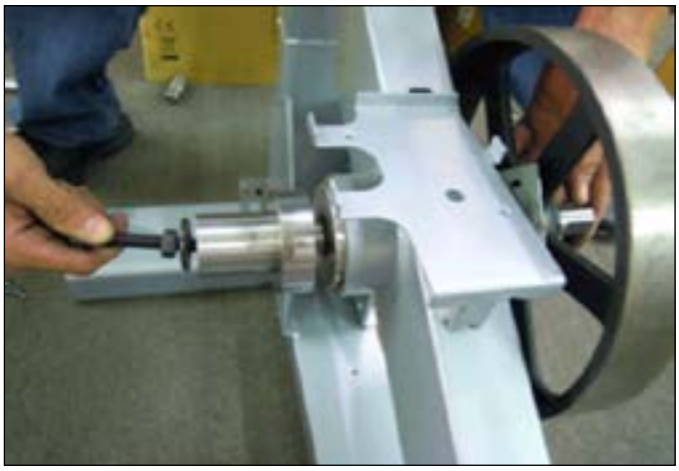


FIGURE J

14) 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 K).
15) 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

9.8 DRIVE AXLE SET REPLACEMENT - CONTINUED

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

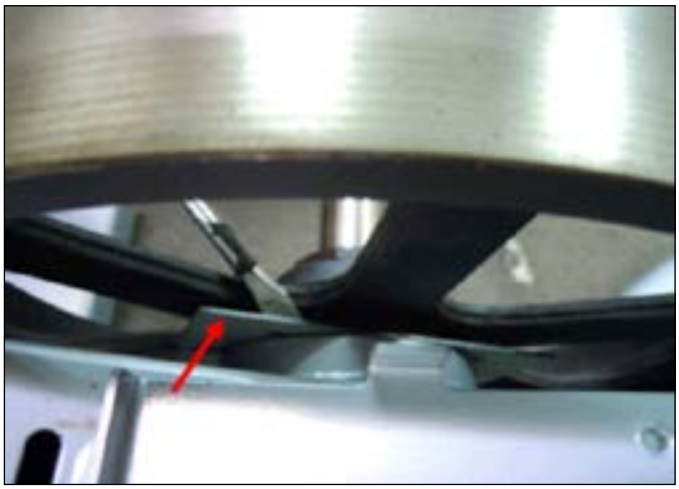


FIGURE M



FIGURE N

18) Again use the M10 x 65L screw with a washer and a nut to attach the tool to the drive axle (Figure O).
19) 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

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



FIGURE Q

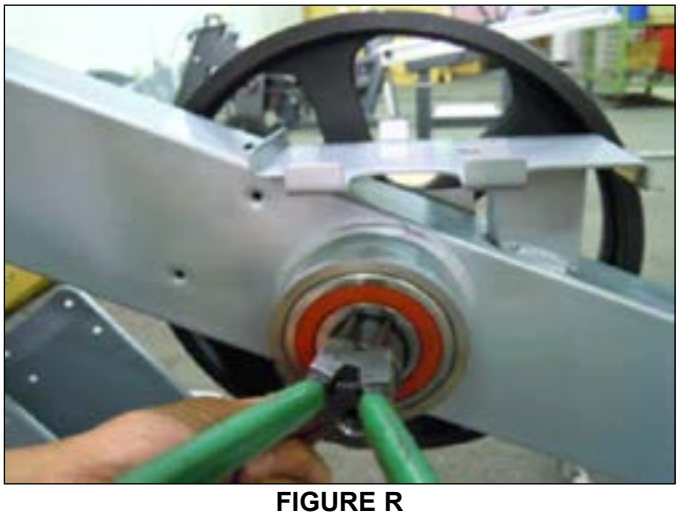


FIGURE R

9.8 DRIVE AXLE SET REPLACEMENT - CONTINUED

22) Use a screwdriver to remove the iron plate from the drive axle (Figures S & T).



FIGURE S



FIGURE T

23) Re-install the belts as outlined in Sections 9.5 and 9.6. Reverse Steps 1-2 to re-assemble the unit.
24) Test the Ascent Trainer as outlined in Section 9.22.

9.9 CRANK REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove the front disks from the machine as outlined in Section 9.1.
3) Remove the screw from the crank (Figure A).
4) Insert an M10 screw (should be at least 40 long) into the crank hole. Then turn the screw until the crank can be separated from the axle (Figure B).



FIGURE A



FIGURE B

5) Install the replacement crank. There should be a 4mm gap between the end of the drive axle shaft and the crank (Figure C).

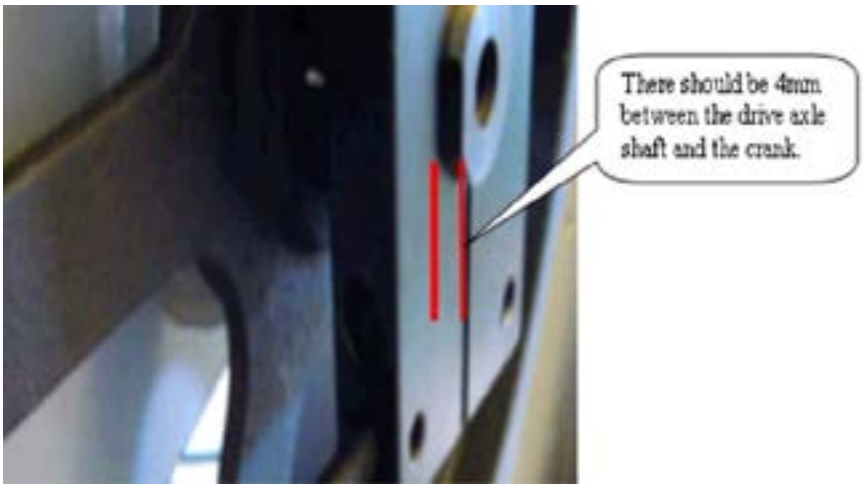


FIGURE C

6) Install the crank screw removed in Step 3. ***NOTE:*** This screw should be torqued to 80 N-m.
7) Reverse Steps 1-2 to re-assemble the unit.

9.10 CONSOLE REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove the 5 screws that hold the console to the top of the console mast (Figure A).
3) Disconnect the console cable and other wiring and remove the console (Figure B).



FIGURE A

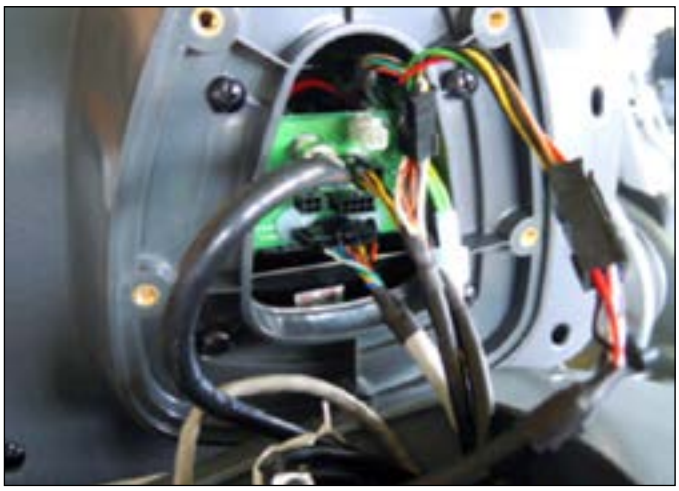


FIGURE B

4) Remove the 5 screws that hold the mounting plate to the console (Figure C).



FIGURE C

5) Attach the mounting plate to the new console.
6) Connect the wire connections to the new console.
7) 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 5 screws removed in Step 2.
8) Test the Ascent Trainer for function as outlined in Section 9.22.

9.11 OVERLAY & KEYPAD REPLACEMENT

NOTE: The instructions below are for console overlays / keypads replacement, but the procedure is the same regardless of where the overlay / keypad is.

1) Turn off power and disconnect the cord from the machine.
2) Remove the console as outlined in Section 9.10.
3) Remove the back cover of the console (Figure A).
4) Unplug and remove the faulty overlay (Figure B).



FIGURE A

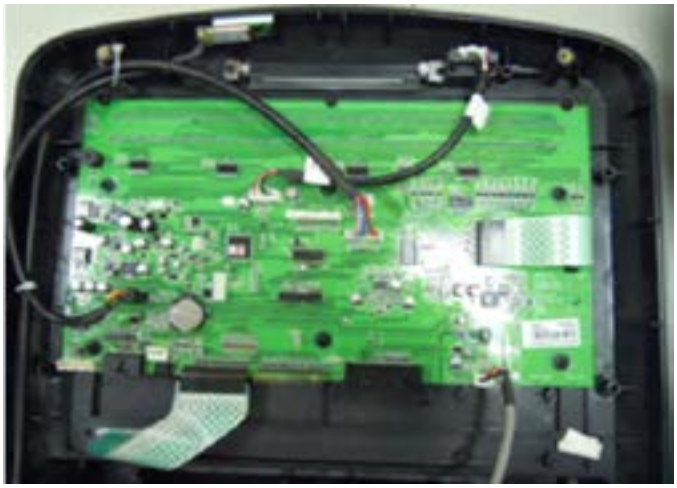


FIGURE B

5) Clean the console area with alcohol to remove any left over adhesive (Figure C).
6) Remove the protective film over the display window of the overlay (Figure D).



FIGURE C



FIGURE D

9.11 KEYPAD & OVERLAY REPLACEMENT - CONTINUED

7) Peel part of the protective film from the back of the overlay (Figure E).
8) Push the overlay ribbon cable through the hole in the console and plug it in (Figure F).



FIGURE E

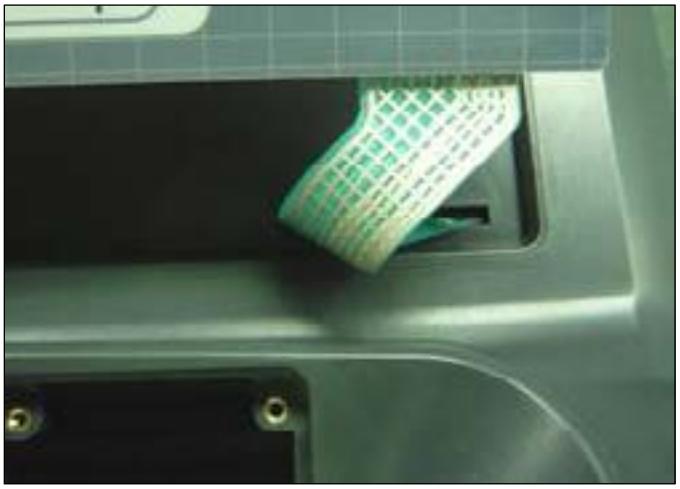


FIGURE F

9) Match the overlay to the cutout on the console (Figure G).
10) Press down on the corners of the overlay to keep it in place, then remove the protective film (Figure H & I).
11) Once the overlay is in the correct position, press down on the overlay with a cloth to adhere it to the console plastic (Figure J).



FIGURE G



FIGURE H



FIGURE I



FIGURE J

12) Use the same procedure to replace any additional faulty overlays. ***NOTE:*** Overlays can not be reused.
13) Test the Ascent Trainer for function as outlined in Section 9.22.

9.12 CONSOLE MAST HANDLEBAR REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove the 4 bolts that hold the handlebar to the console mast (Figure A).



FIGURE A

3) Pull the 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 handlebar assembly, connect the new handlebar and carefully push the heart rate wires into the console mast.
6) Attach the new handlebar assembly to the console mast using the 4 screws removed in Step 2.
7) Test the Ascent Trainer for function as outlined in Section 9.22.

9.13 INCLINE MOTOR REPLACEMENT

1) Turn off the power and disconnect the cord from the machine.
2) Remove the front disks as outlined in Section 9.1.
3) Complete Steps 6-8 and 10 from Section 9.2 to remove the cup holder and top shrouds from the unit (the main side shrouds do not need to be removed).
4) Disconnect the incline motor ground wire from the frame and disconnect the incline motor power wire (Figures A & B). If unsure if the incline motor is the issue, plug in the new incline motor at this time to see if it is energized. If it is not, the issue is likely with the LCB.



FIGURE A

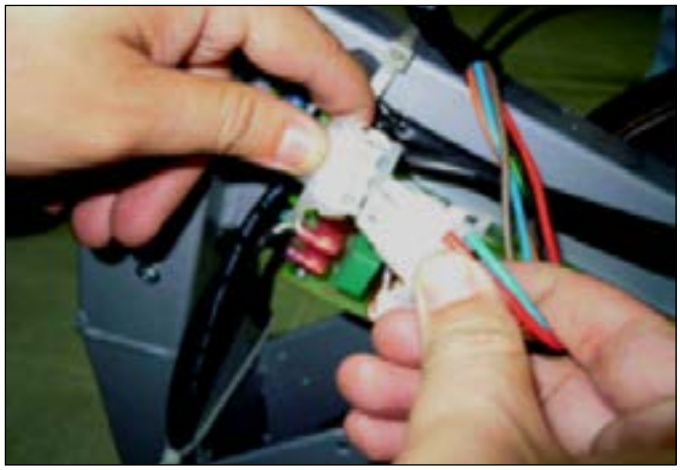


FIGURE B

5) Remove the spring clip to separate the incline motor from the frame (Figure C).
6) Remove the incline motor by loosening the pivot bolts on each side (Figure D - ***NOTE:*** Figure D shows the unit with the shrouds removed for clarity). ***NOTE: Prior to loosening the pivot bolts, secure the incline motor as it can fall once the pivot bolts are loosened.***



FIGURE C



FIGURE D

9.13 INCLINE MOTOR REPLACEMENT - CONTINUED

7) While the incline motor is out, the carriage rollers should be checked. Turn the rollers. The rollers should turn smoothly with only a small amount of friction (Figure E).
8) If the rollers need to be adjusted, loosen the horizontal bolts simultaneously first, then adjust the roller friction by adjusting the vertical screws simultaneously (Figure F).



FIGURE E



FIGURE F

9) Prepare the new incline motor for installation. The new incline motor should have the nut placed close to the end of the shaft (Figure G).



FIGURE G

9.13 INCLINE MOTOR REPLACEMENT - CONTINUED

10) Plug in the power wire of the new incline motor (with the motor still outside the unit). Plug in the unit. Press ENTER, 3, 0, 0, 1, ENTER to go to Service Mode. Scroll with the LEVEL UP or DOWN keys until Service 6 is displayed. Press ENTER to start Auto Calibration.
11) Turn off power immediately when the new motor has been driven to the limit switch at the TOP of the incline range during Auto Calibration.
NOTE: You are stopping power when the unit is 1/2 way through calibration.
12) Push the carriage towards the rear of the unit. There should be a gap of 8mm (+/- 2mm) between the carriage and the frame. Use an 8mm Allen wrench to maintain this spacing (Figure H - ***NOTE:*** Figure H shows a unit with the console mast removed for clarity).
13) Turn the nut on the incline motor until the screw holes in the nut line up with the screw holes on the carriage (Figure I). Tighten the screws loosened in Step 6 to attach the incline motor nut to the carriage. Torque these screws to 25 N-m.

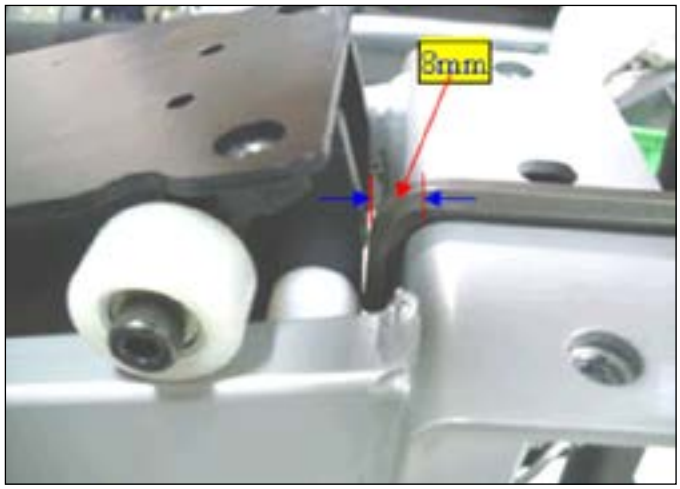


FIGURE H

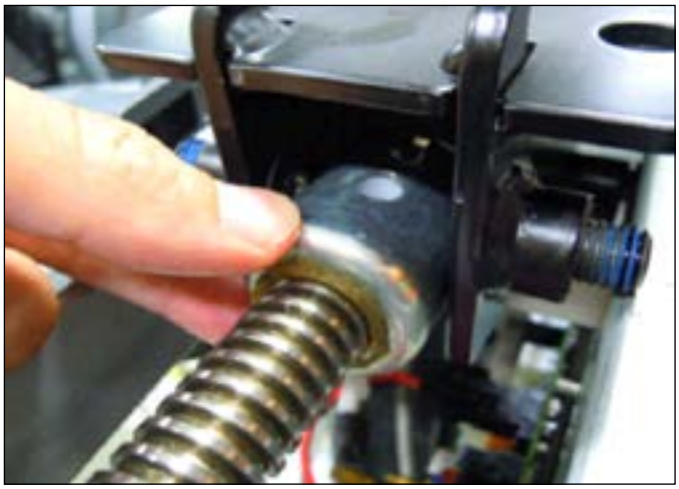


FIGURE I

14) Plug in the unit. Allow the incline to reset.
15) Press and hold the LEVEL UP and DOWN keys simultaneously for 3-5 seconds to go to Service Mode. Scroll with the LEVEL UP or DOWN keys until Service 6 is displayed. Press ENTER to start Auto Calibration. Allow Auto Calibration to completely run. Make sure that the incline motor carriage is not hitting the frame at the top or bottom of the movement. If any issues are seen, re-do Steps 10-13.
16) Reverse Steps 1-5 to re-assemble the unit.
17) Test the Ascent Trainer for function as outlined in Section 9.22.

9.14 DUAL ACTION HANDLEBAR REPLACEMENT

1) Remove the plastic cover where the dual action handlebar meets the link arm (Figure A).
2) Remove the bolt and bushings where the dual action handlebar and the link arm meet (Figure B).



FIGURE A



FIGURE B

3) Remove the two bolts that hold on the pivot cap and remove the cap (Figure C).
4) Unplug and separate the heart rate connector exposed once the pivot cap is removed. Then 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 Ascent Trainer for function as outlined in Section 9.22.

9.15 FOOT PEDALS REPLACEMENT

1) Pull up on and remove the rubber portion of the pedal (Figure A).
2) Remove the 4 screws that hold the plastic pedal to the foot plate (Figure B).



FIGURE A



FIGURE B

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



FIGURE C

4) Clean the foot plate to remove any rubber or debris.
5) Reverse Steps 1-4 to install a new foot pedal.
6) Test the Ascent Trainer as outlined in Section 9.22.

9.16 PEDAL ARM REPLACEMENT

1) Remove the plastic cover where the pedal arm attaches to the crank (Figure A).
2) Disconnect the pedal arm from the crank (Figure B).



FIGURE A



FIGURE B

3) Remove the plastic cap from the swing arm (Figure C).
4) Remove the bolt that holds the pedal and swing arms together (Figure D).



FIGURE C



FIGURE D

5) The swing arm can now be separate from the pedal arm (Figure E).
6) Remove the bolt that holds the link arm to the pedal arm and remove the pedal arm (Figure F).



FIGURE E



FIGURE F

7) Reverse Steps 1-5 to install a new pedal arm. ***NOTE:*** Torque the bolt removed in Step 4 to 80 N-m and the bolt / nut removed in Step 2 to 70 N-m. .
8) Test the Ascent Trainer for function as outlined in Section 9.22.

9.17 LINK ARM REPLACEMENT

1) Remove the plastic cover where the dual action handlebar meets the link arm (Figure A).
2) Remove the bolt and bushings where the dual action handlebar meets the link arm (Figure B).



FIGURE A



FIGURE B

3) Remove the bolt that holds the link arm to the pedal arm and remove the link arm (Figure C).



FIGURE C

4) Reverse Steps 1-3 to install a new link arm.
5) Test the Ascent Trainer for function as outlined in Section 9.22.

9.18 SWING ARM REPLACEMENT

1) Remove the bolt from the upper pivot joint on the swing arm (Figure A).
2) Remove the plastic cap from the swing arm (Figure B).



FIGURE A



FIGURE B

3) Remove the bolt that holds the swing arm to the pedal arm (Figure C).
4) Take the bolt removed in Step 1 and turn it into the shaft (Figure D).



FIGURE C



FIGURE D

5) Use a mallet to hit the head of the bolt until the swing arm can be separate from the pedal arm, and remove the pedal arm (Figures E & F).



FIGURE E



FIGURE F

6) Reverse Steps 1-5 to install a new swing arm. ***NOTE:*** Torque the bolts removed in Steps 1 & 3 to 80 N-m when installing a new swing arm.
7) Test the Ascent Trainer for function as outlined in Section 9.22.

9.19 VERTICAL STABILIZER ARM REPLACEMENT

1) Remove the bolt that holds the vertical stabilizer arm to the frame (Figures A & B).



FIGURE A



FIGURE B

2) Remove the bolt from the upper pivot joint of the vertical stabilizer arm (Figure C).
3) Remove the vertical stabilizer arm (Figure D).



FIGURE C



FIGURE D

4) Reverse Steps 1-3 to install a vertical stabilizer arm. ***NOTE:*** Tighten the bolt removed in Step 2 to 80 N-m torque.
5) Test the Ascent Trainer for function as outlined in Section 9.22.

9.20 INCLINE ARM COVER REPLACEMENT

1) Remove the screw that holds the plastic cover on the arm (Figures A & B).



FIGURE A



FIGURE B

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



FIGURE C

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

9.21 HANDLEBAR SERVICE

1) All items on the handlebar are removed using a Phillips screwdriver from the underside of the bar.
2) Once the screws are removed, lift the part carefully, then disconnect any wire connections to fully remove the part. This includes any resistance & elevation buttons and heart rate grip plates (Figures A - D).



FIGURE A



FIGURE B



FIGURE C



FIGURE D

9.22 TESTING THE ASCENT TRAINER

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) Enter Engineering Mode and input the serial number of the console. Also set the Machine Type and verify that the Date and Time are correct.

2) If the unit has an add on TV, perform a channel scan to tune the TV (see the TV Owner's Manual for procedure).

3) Without hitting start or entering any exercise modes, stand on the machine and hold the handlebars while initiating movement to simulate exercising. While moving listen for any odd noises or squeaks.

4) After stopping movement, press the green GO key and begin using the machine.

5) Grasp the hand grips to check for proper heart rate response.

6) Press the LEVEL UP and DOWN keys both on the hand grips and on the console to make sure resistance is fully functional.

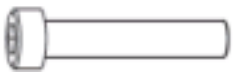
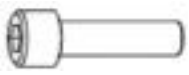
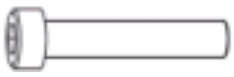
7) If everything functions properly, stop pedaling and the unit will reset to normal operation after 30 seconds.

CHAPTER 10: ASCENT TRAINER SPECIFICATIONS AND ASSEMBLY GUIDE

10.1 ASCENT TRAINER SPECIFICATIONS

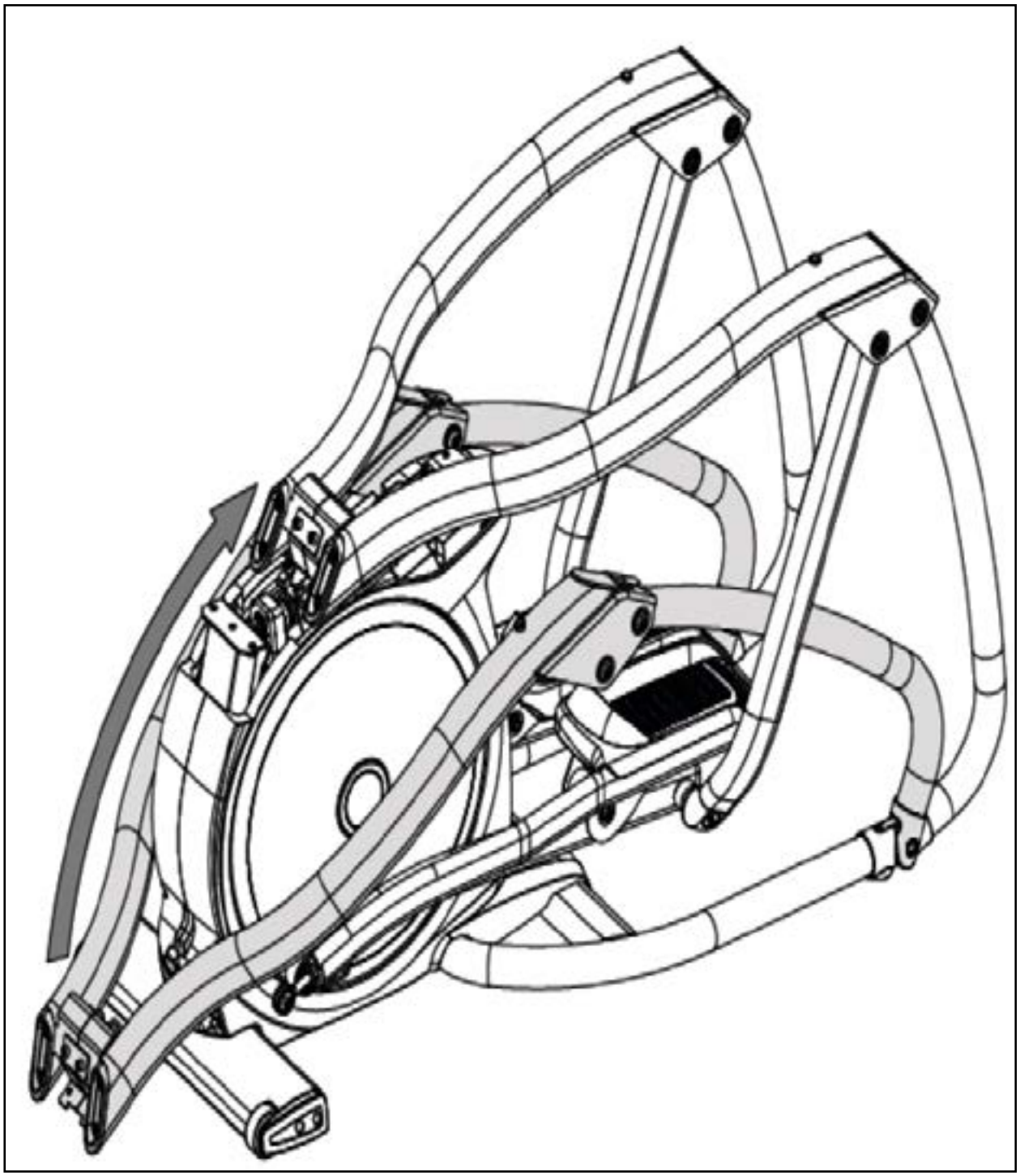
MODEL NAME	
MODEL TYPE	A5X ASCENT
FRAME PART #	A-5X/7X-04-F
CONSOLE PART #	A-5X-05-C
FEATURES	
STRIDE LENGTH (IN)	20 - 24” / 50.8 - 61.0 CM
INCLINE RANGE	24% - 54% (15° RANGE)
CONTACT & TELEMETRIC HR SENSORS	YES
CUSHIONED FOOTPADS	YES - PREMIUM
Q-FACTOR	2.5” / 6.4 CM
HANDLEBAR DESIGN	MULTI-POSITION DUAL ACTION AND PREIMUM ERGO-BEND STATIONARY
THUMB SWITCH CONTROLS	YES
RESISTANCE SYSTEM	
TECHNOLOGY	GENERATOR
POWER REQUIREMENTS	SELF POWERED - POWERED 100-125 V, 60 HZ OR 216-250 V, 50 HZ
MINIMUM WATTS	24 SELF-POWERED
MINIMUM RPM	25 POWERED / 25 SELF-POWERED
CONSOLE	
DISPLAY TYPE	DOT-MATRIX LED
DISPLAY FEEDBACK	TIME ELAPSED, TIME REMAINING, TOTAL PROGRAM TIME, CLOCK, DISTANCE (KILOMETERS OR MILES), CALORIES, SPEED, LEVEL, RPM, HEART RATE, INCLINE, METS, WATTS, STATIC PROFILE DISPLAY
USER DEFINED MULTI-LANGUAGE DISPLAY	YES - ENGLISH, GERMAN, FRENCH, ITALIAN, SPANISH, DUTCH, PORTUGUESE, SWEDISH, FINNISH, JAPANESE
RESISTANCE LEVELS	25
WORKOUTS	MANUAL, ROLLING HILLS, INTERVAL TRAINING, FAT BURN, GLUTE TRAINING, FITNESS TEST, HEART RATE, CONSTANT WATTS
CSAFE, FITLINXX READY	YES
NETPULSE READY	YES
FIT TOUCH TECHNOLOGY™	NO
ON-THE-FLY PROGRAM CHANGE	YES
INTEGRATED VISTA CLEAR™ DIGITAL READY TELEVISION	NO
FITCONNEXION™ READY	YES
WIFI	YES
ASSET MANAGEMENT COMPATIBLE	YES
IPOD COMPATIBLE	YES - CHARGING ONLY
NIKE + IPOD COMPATIBLE	NO
PERSONAL FAN	YES
VIRTUAL ACTIVE™ COMPATIBLE	NO
TECH SPECS	
OVERALL DIMENSIONS L X W X H	81X34X79" 1780X742X1740MM
MAXIMUM USER WEIGHT	400 LBS/182 KG
WEIGHT	442 LBS/201.0KG
SHIPPING WEIGHT	472 LBS/214.6KG

10.2 ASSEMBLY HARDWARE

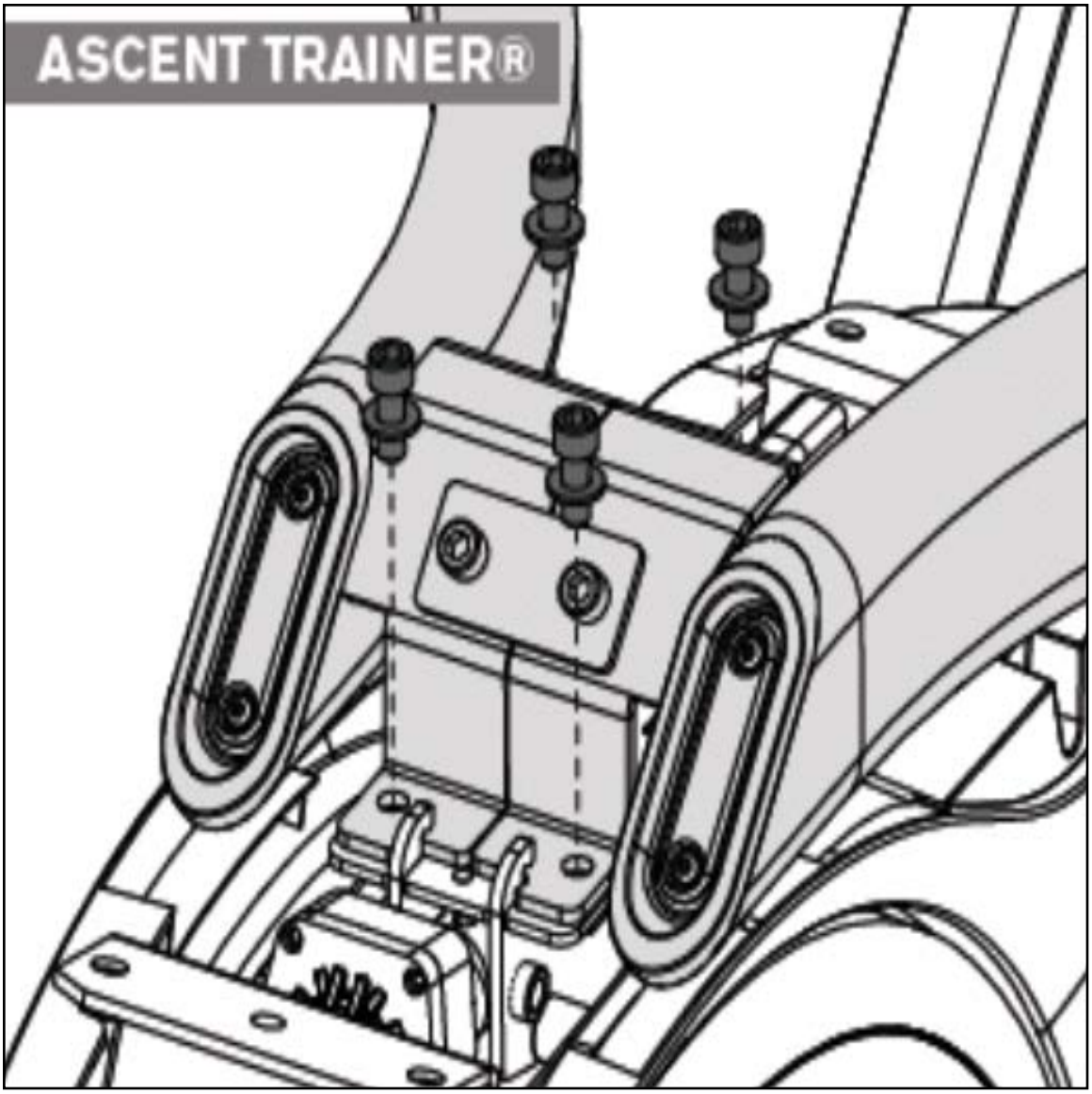
QUANTITY	SKETCH	DESCRIPTION	PACKAGE COLOR
4		SOCKET HEAD CAP SCREW (M10 X 1.5P X 25L) 10.9 GRADE MINIMUM	RED (2 BAGS)
4		FLAT WASHER (10.2 X 20 X 2.0T)	RED (2 BAGS)
1		SOCKET HEAD CAP SCREW (M10 X 1.5P X 100L) 12.9 GRADE MINIMUM	GREEN
2		FLAT WASHER (10.2 X 20 X 2.0T)	GREEN
1		HEX NUT (M10) 10.9 GRADE MINIMUM	GREEN
5		SCREW (M5 X 0.8P X 10L)	YELLOW
2		SCREW (M5 X 0.8 X 12L)	BLACK (2 BAGS)
4		SPRING WASHER (8.2 X 15.4 X 2.0T)	BLACK (2 BAGS)
4		SOCKET HEAD CAP SCREW (M8 X 1.25P X 20L) 10.9 GRADE MINIMUM	BLACK (2 BAGS)
1		SOCKET HEAD CAP SCREW (M8 X 1.25P X 45L) 10.9 GRADE MINIMUM	BLUE (2 BAGS)
3		SCREW (M5 X 0.8P X 16L)	BLUE (2 BAGS)
4		SOCKET HEAD CAP SCREW (M8 X 1.25P X 25L)	WHITE
4		SPRING WASHER (8.2 X 13.5 X 2.0T)	WHITE
12		SCREW (M5 X 0.8P X 16L)	PINK
1		ADAPTOR PLATE (ONLY USED ON PREMIUM AND LA CONSOLE INCLUDING A5X FRAME)	

10.3 ASCENT TRAINER ASSEMBLY STEPS

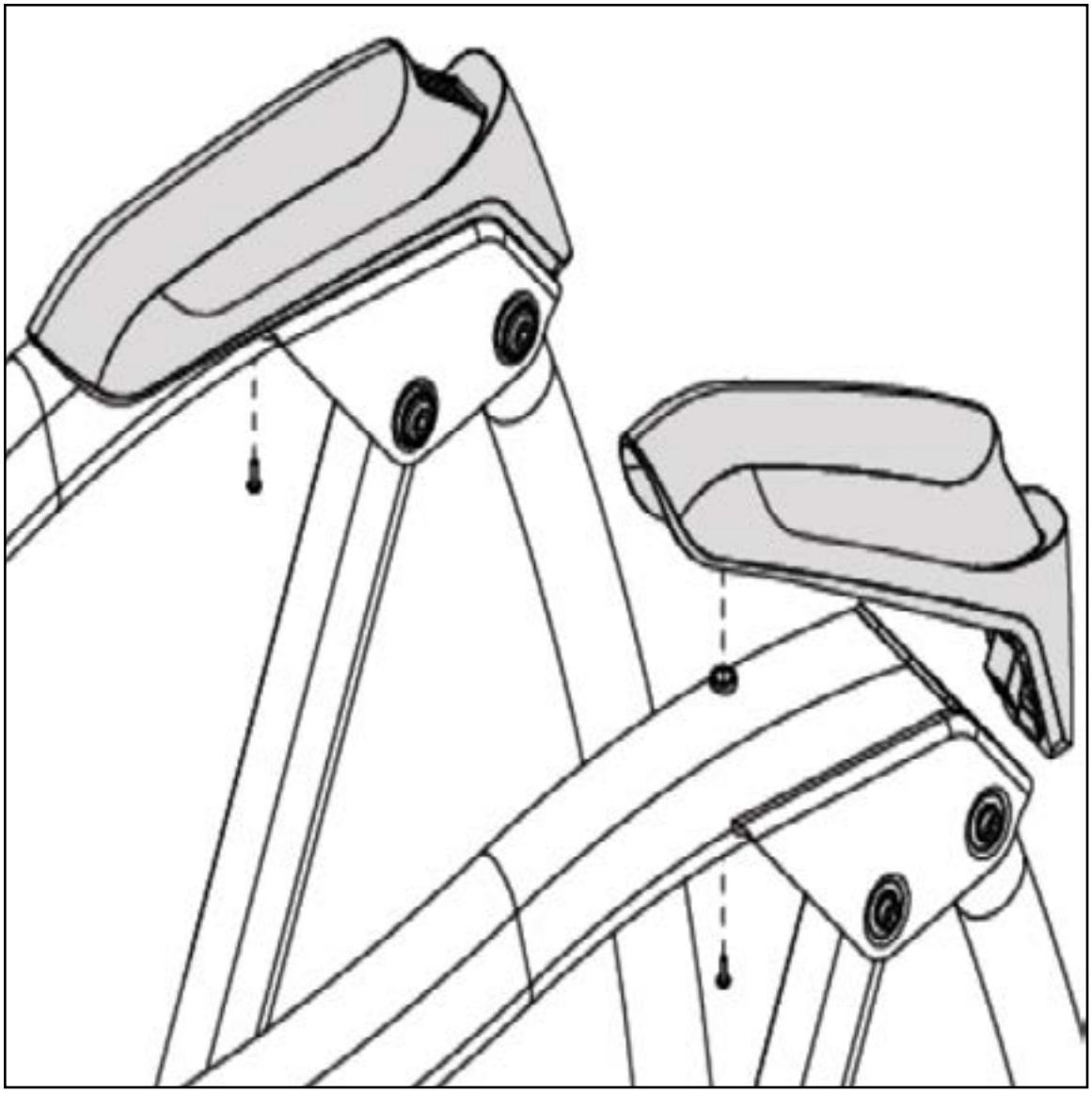
STEP 1



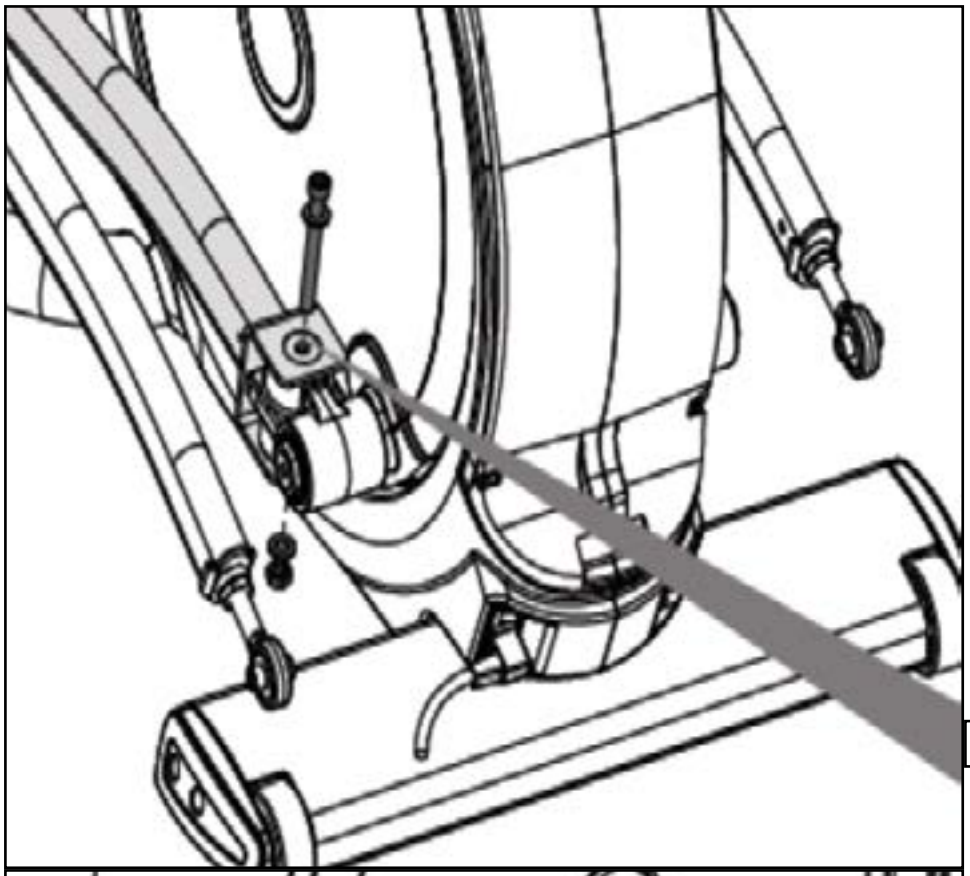
STEP 2 - RED HARDWARE BAG



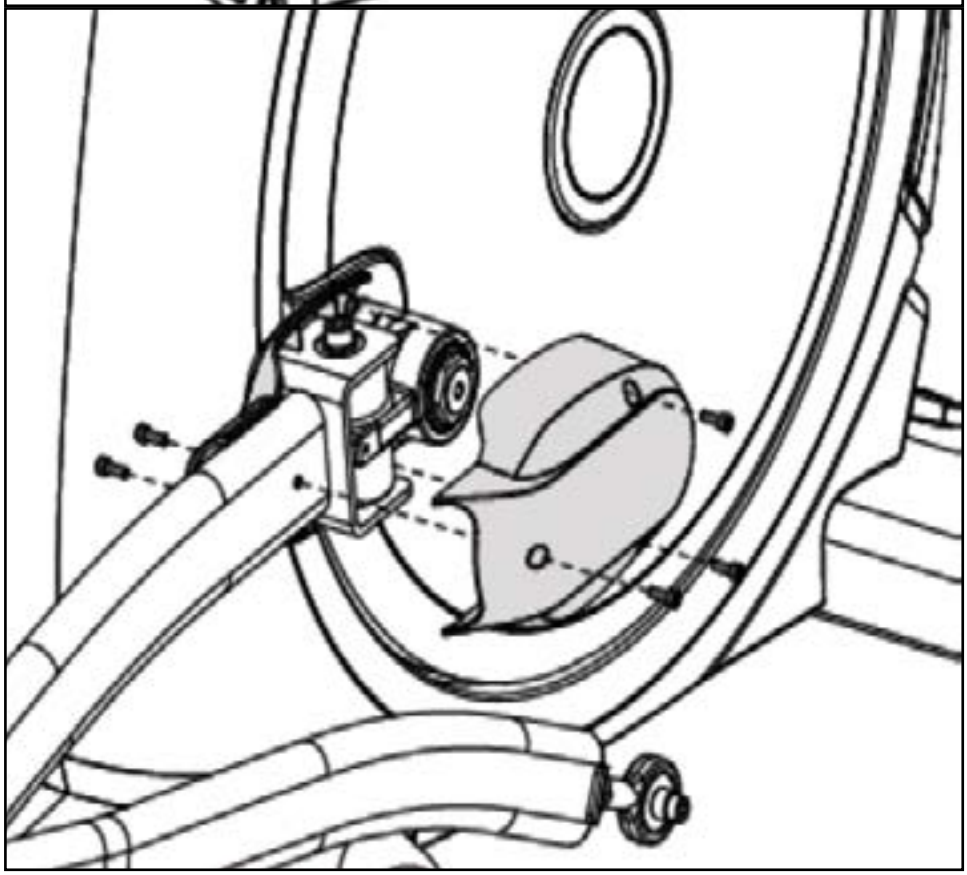
STEP 3 - PINK HARDWARE BAG



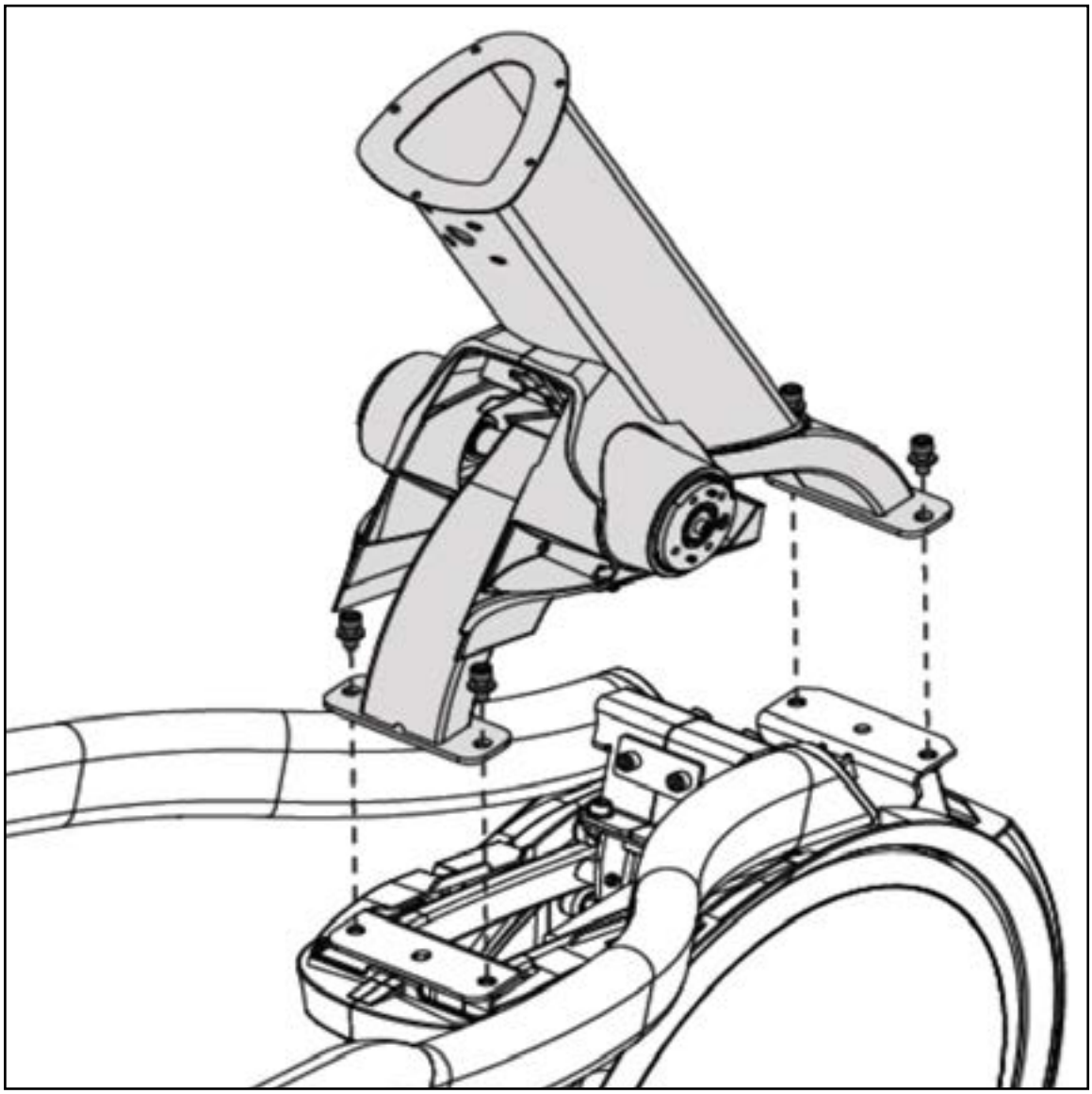
STEP 4 - GREEN / YELLOW HARDWARE BAG



Torque this bolt to 80 N-m.

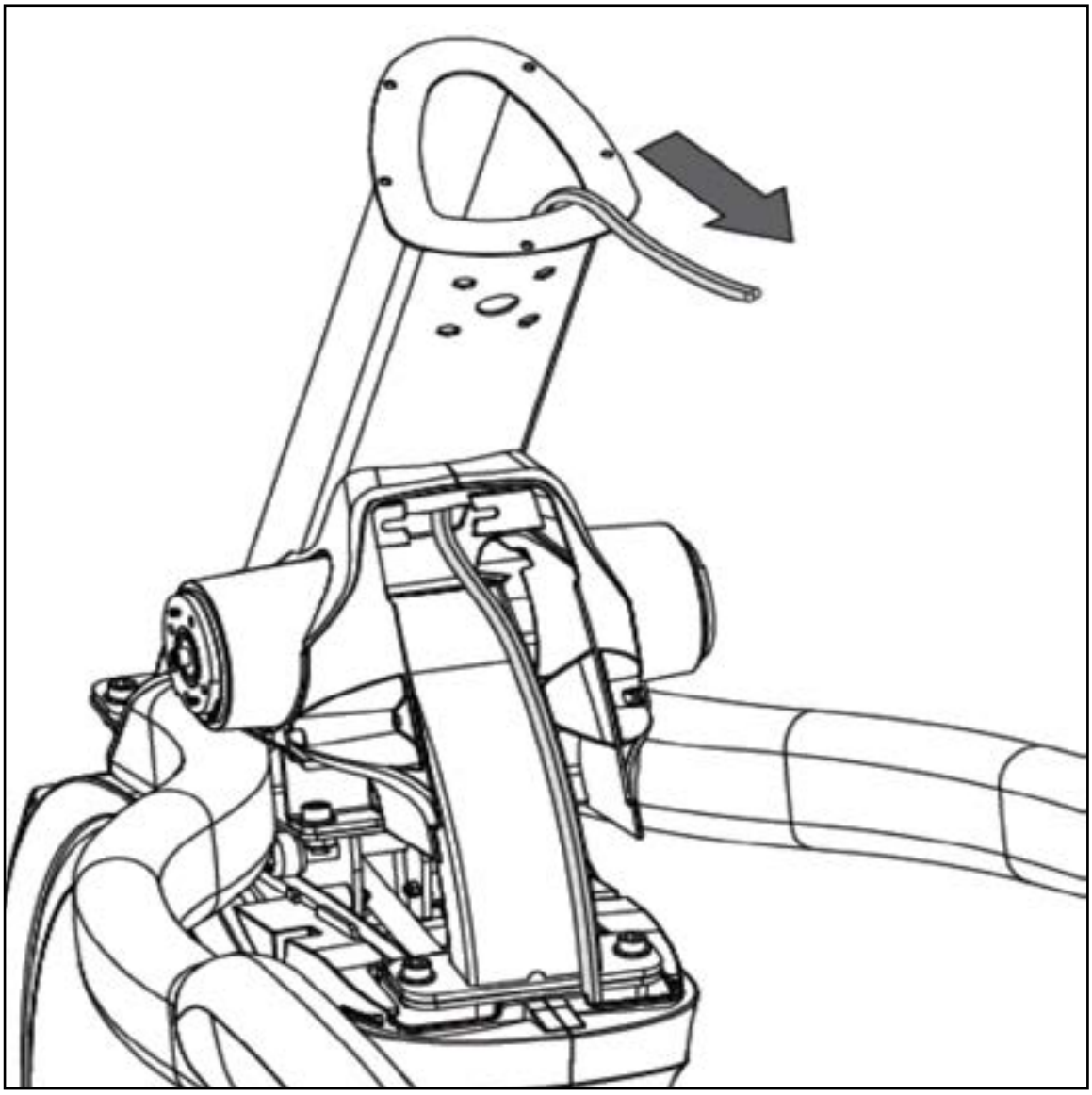


STEP 5 - RED HARDWARE BAG



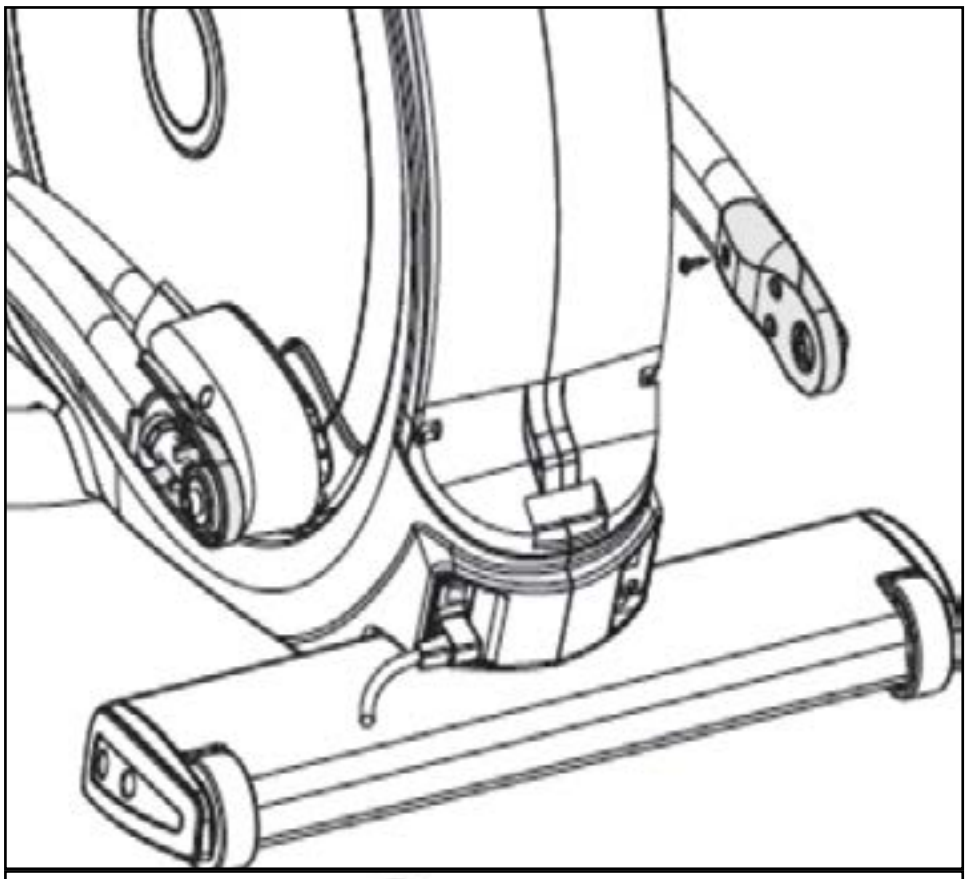
10.3 ASCENT TRAINER ASSEMBLY STEPS - CONTINUED

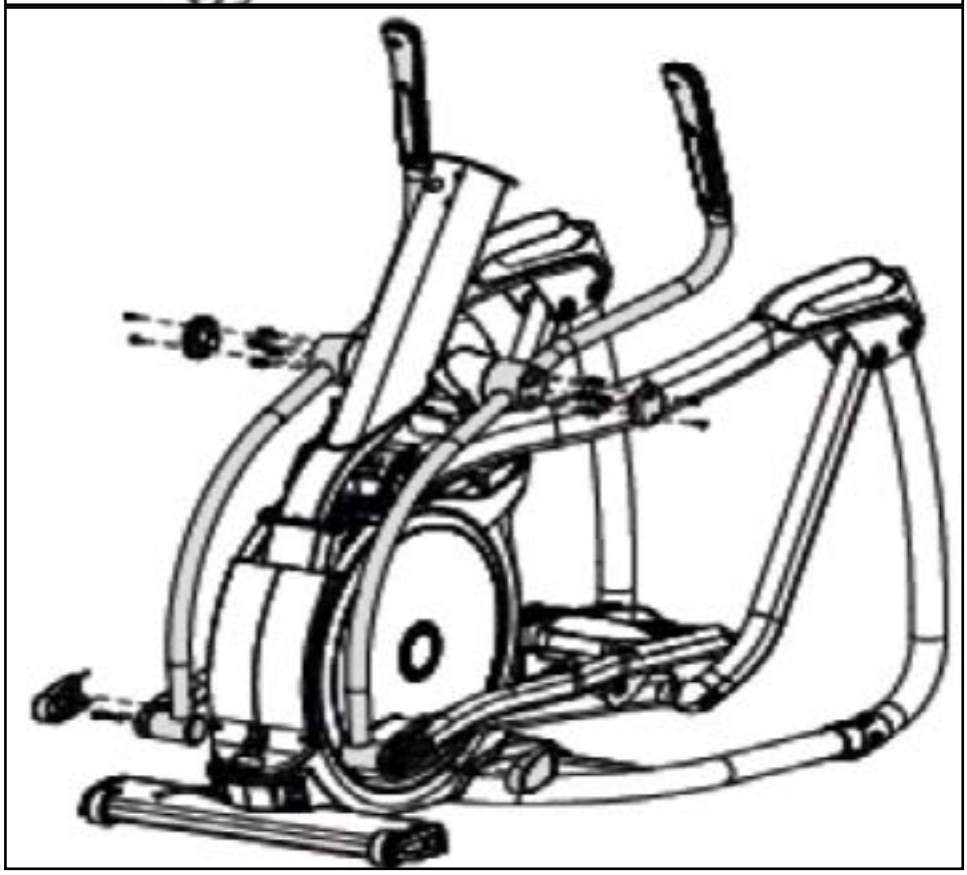
STEP 6



10.3 ASCENT TRAINER ASSEMBLY STEPS - CONTINUED

STEP 7 - BLUE / BLACK HARDWARE BAG



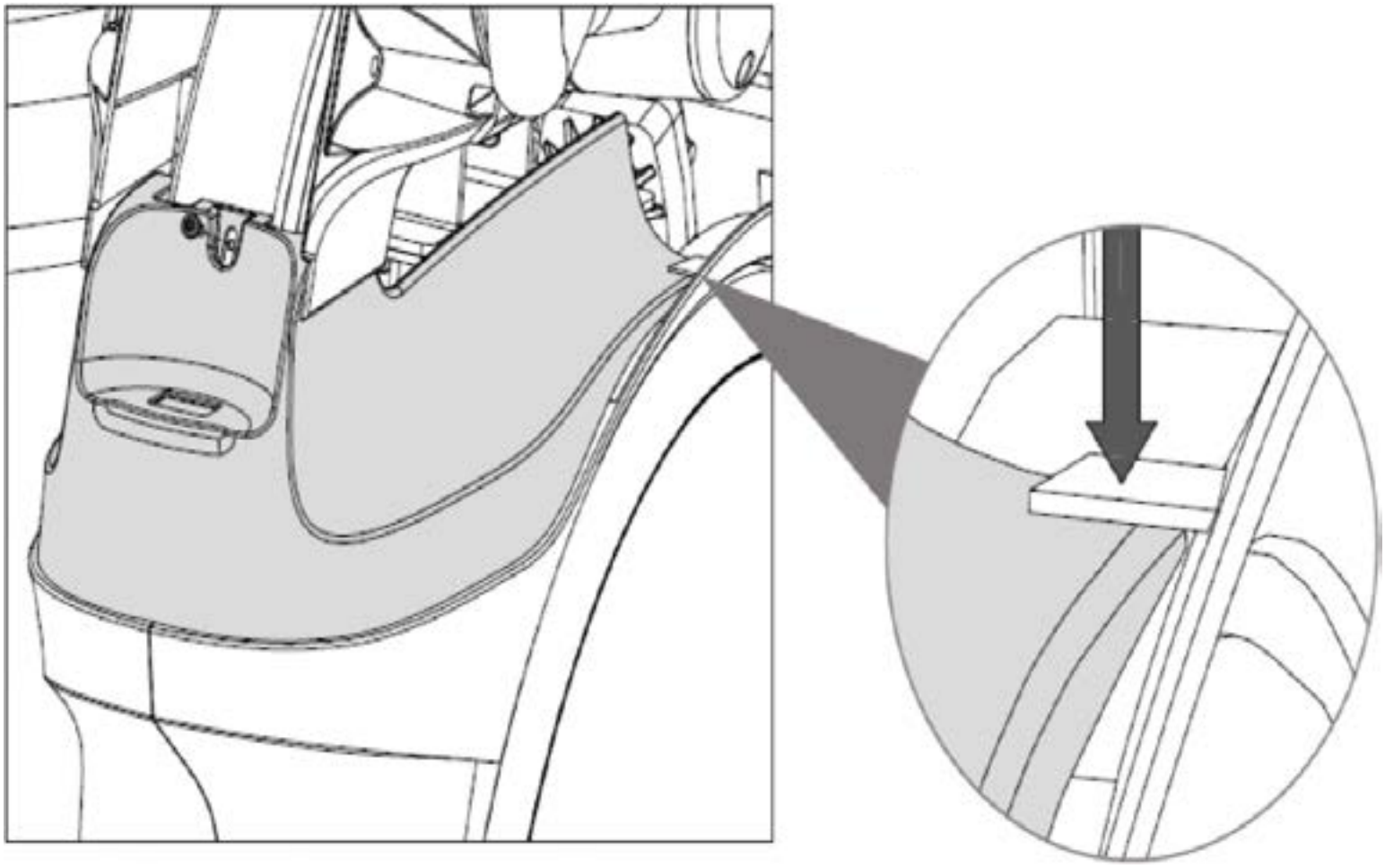


10.3 ASCENT TRAINER ASSEMBLY STEPS - CONTINUED

STEP 8 - WHITE HARDWARE BAG

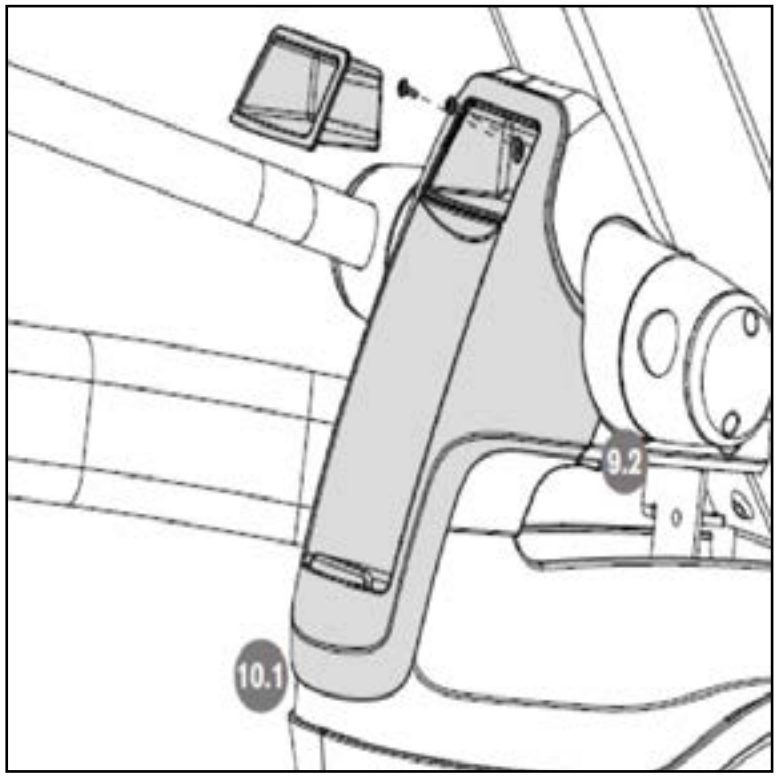


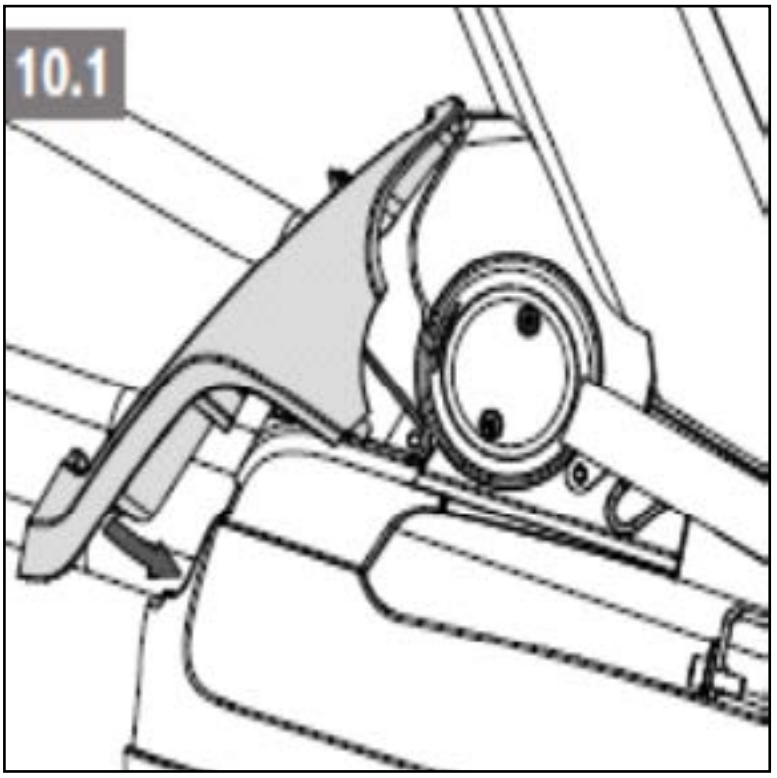
STEP 9 - PINK HARDWARE BAG

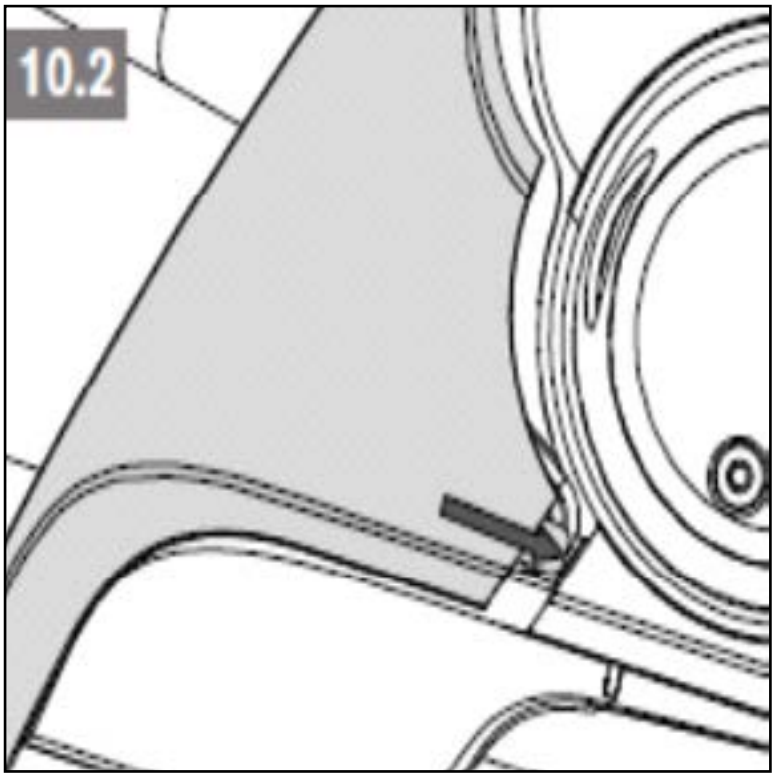


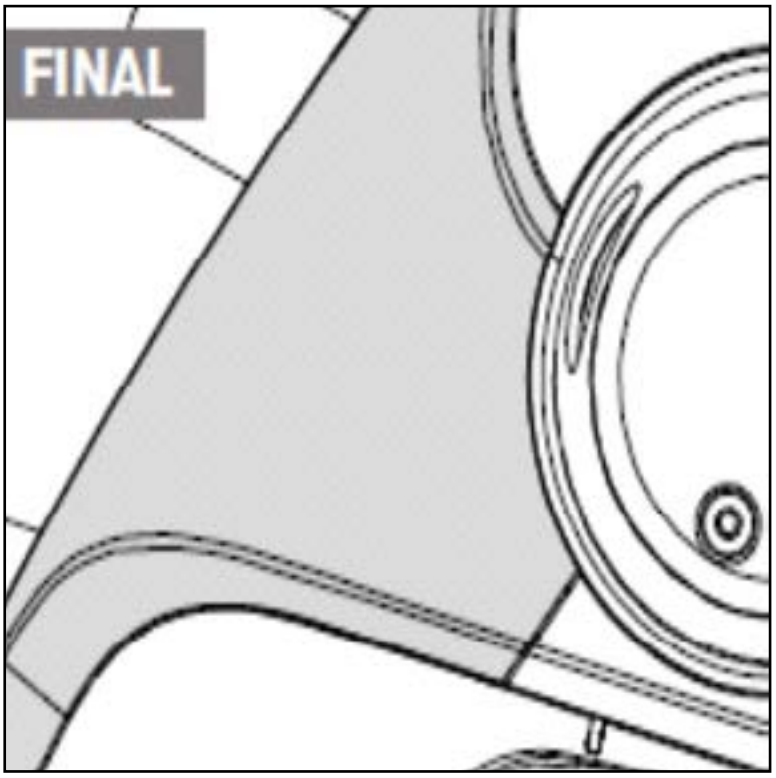
10.3 ASCENT TRAINER ASSEMBLY STEPS - CONTINUED

STEP 10 - PINK HARDWARE BAG



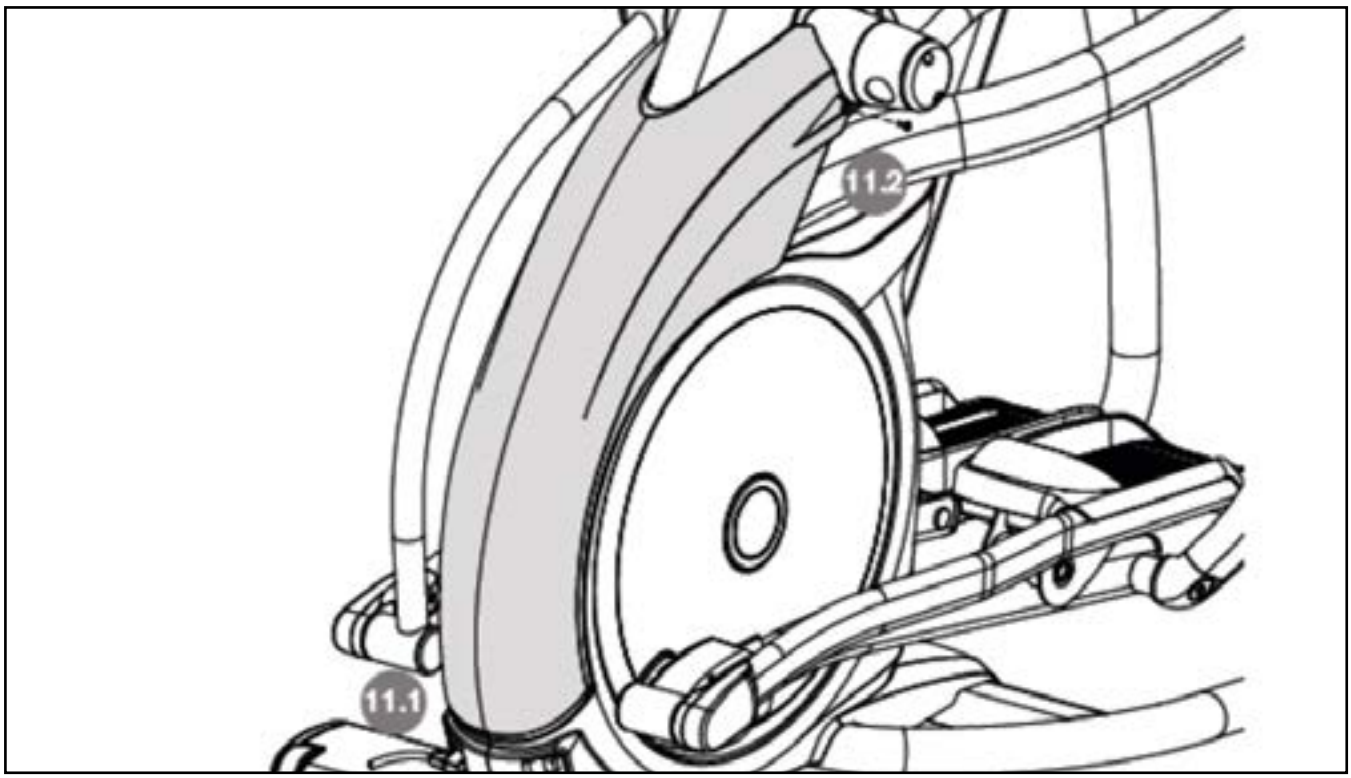


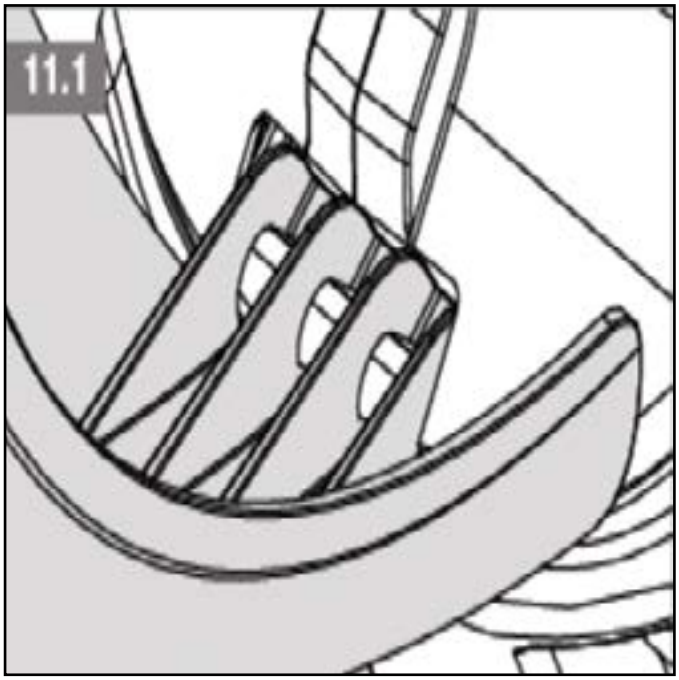


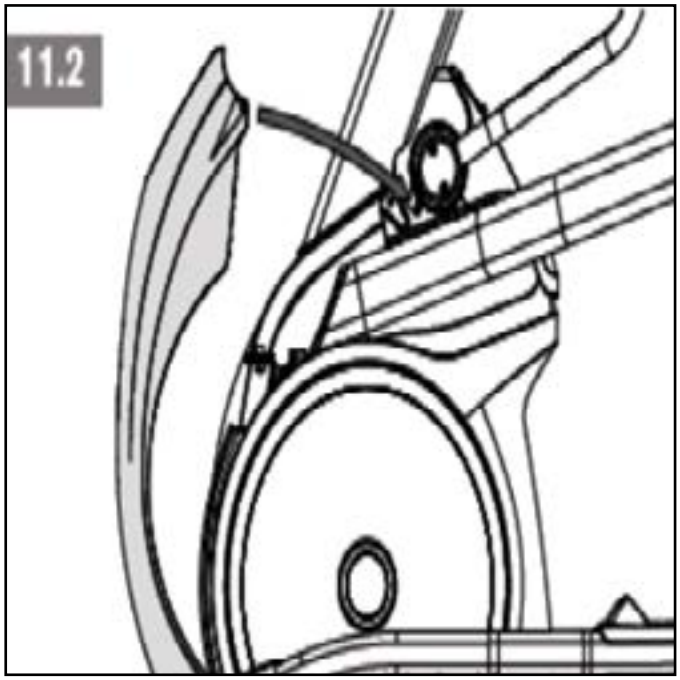


10.3 ASCENT TRAINER ASSEMBLY STEPS - CONTINUED

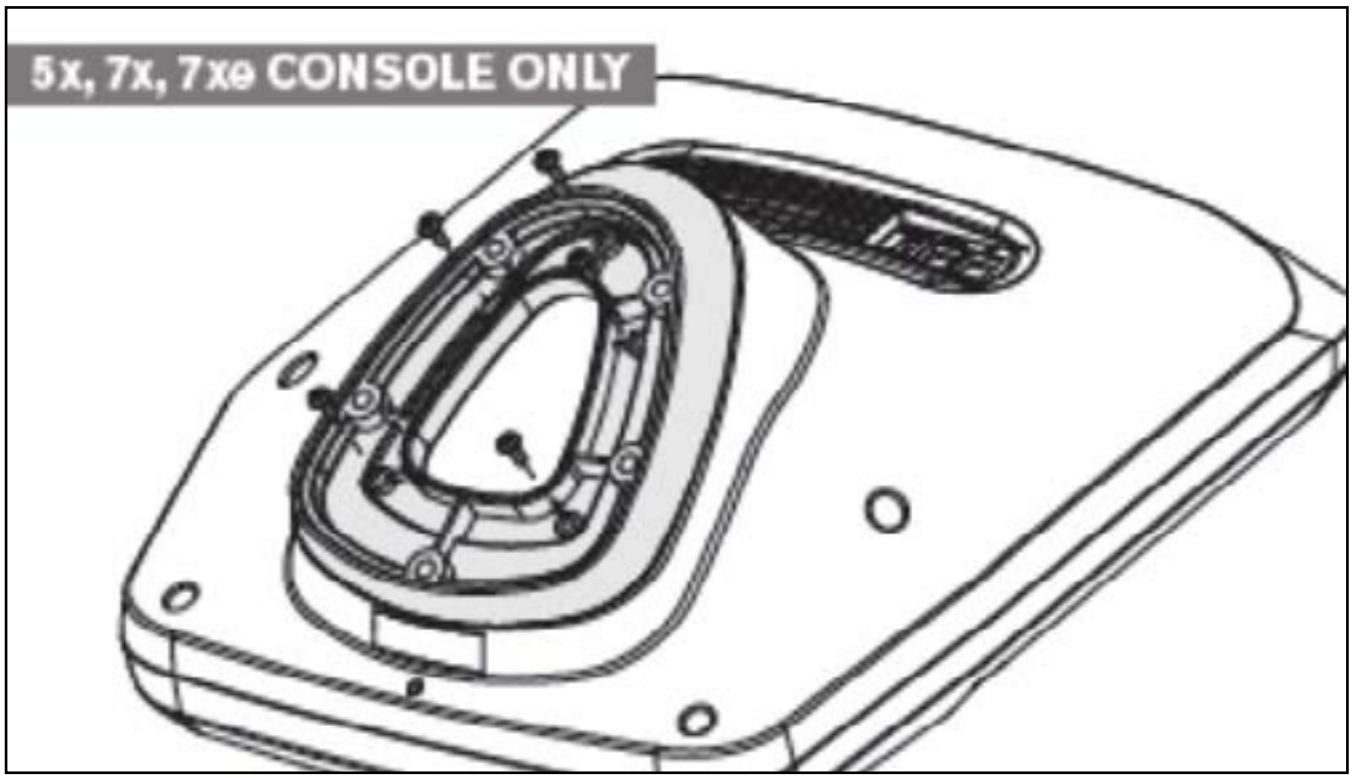
STEP 11 - PINK HARDWARE BAG

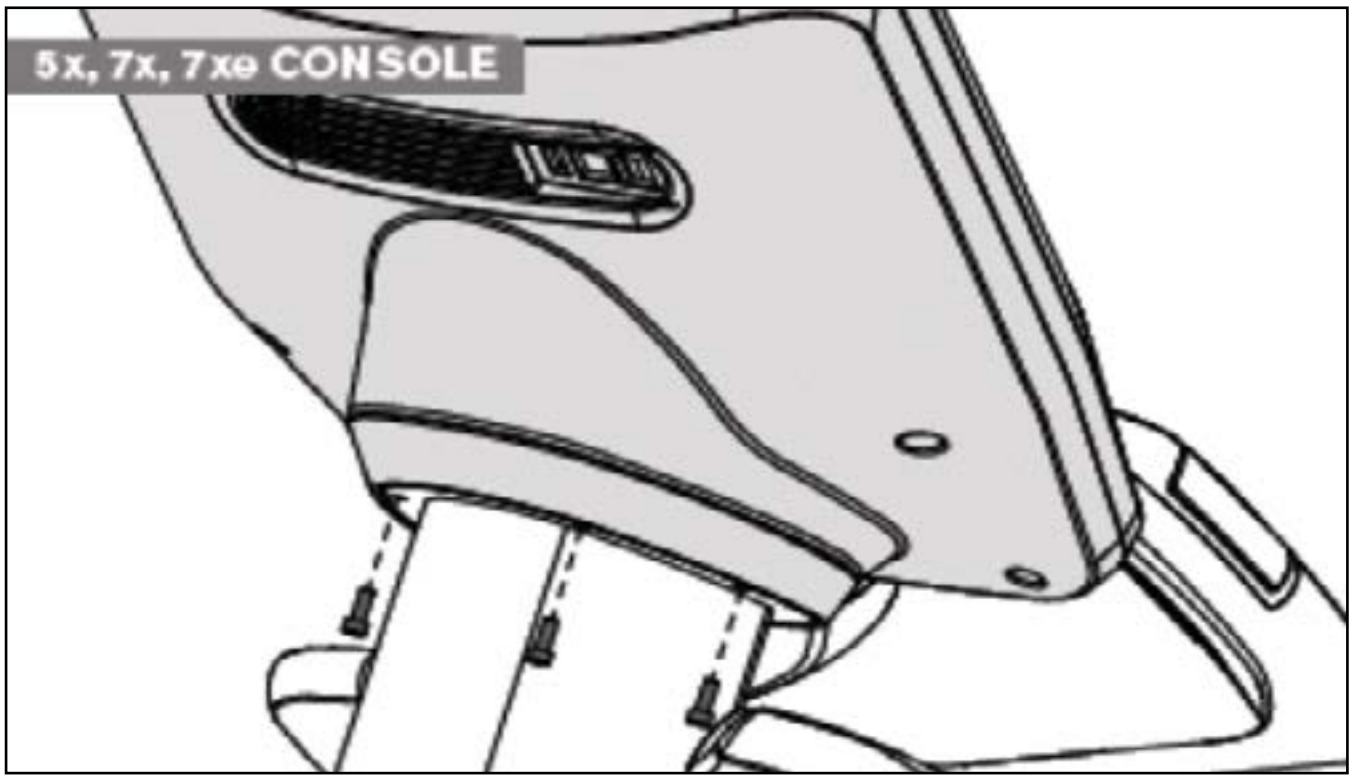






STEP 12 - PINK HARDWARE BAG





10.4 STABILIZING THE ASCENT TRAINER

STABILIZING THE MATRIX ASCENT TRAINER

The Matrix Ascent Trainer should be level for optimum use. Once you have placed your unit where you intend to use it, raise or lower one or both of the adjustable levelers located on the bottom of the frame. Use a 6mm Allen wrench through the access hole at the rear hinge joint on both sides (Figure A).

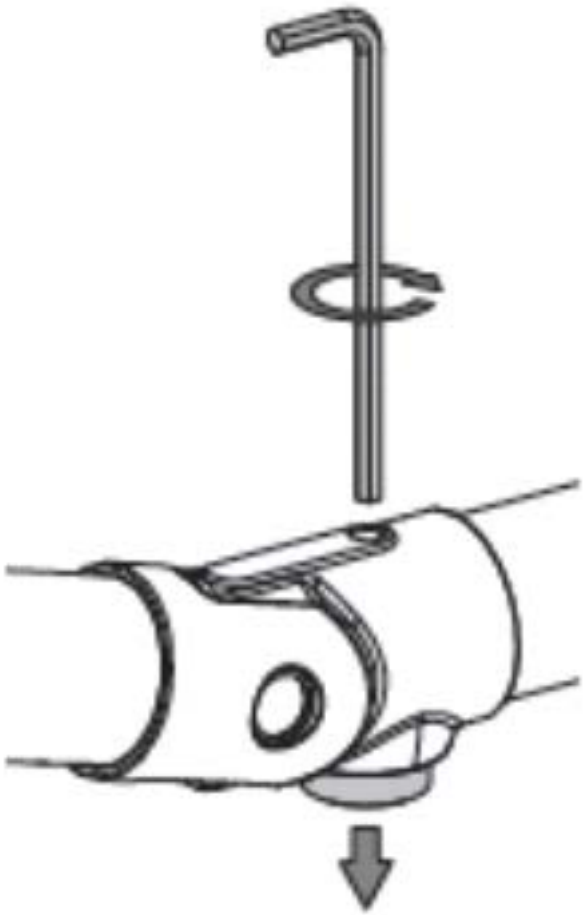


FIGURE A

10.5 TV BRACKET INSTALLATION INSTRUCTIONS

The Matrix Ascent Trainer is capable of having a MYE Entertainment or Web Ready (PCTV) television installed using an integrated bracket. Follow the instructions below to install the TV and TV bracket, and the instructions located in the TV owner's manual to program the TV.

1) Remove the console from the unit as outlined in Section 9.10.
2) Remove the 6 screws holding the console front to the back and split the console (Figures A & B).



FIGURE A



FIGURE B

3) Remove the 2 screws holding on the blank headphone jack plastic to the console, and remove the plastic (Figures C & D).



FIGURE C



FIGURE D

4) Remove the wire in the console that goes from the UCB to the board on the console back (Figure E).
5) Install the new Y cable sent with the TV bracket kit to replace the wire removed in Step 4 (Figure F).



FIGURE E

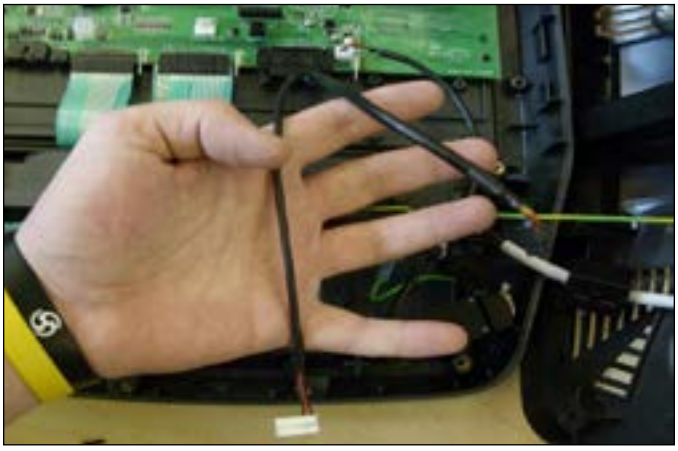


FIGURE F

10.5 TV BRACKET INSTALLATION INSTRUCTIONS - CONTINUED

6) Run the white end from the Y cable through the headphone jack hole in the console plastic, and plug it into the headphone jack sent with the TV bracket set (Figure G).
7) Mount the headphone jack into the console plastic using the 2 screws removed in Step 3 (Figure H).



FIGURE G



FIGURE H

NOTE: Steps 8 - 13 should only be done if installing a MYE TV (the PCTV does not use the entertainment overlay).
8) Remove the existing heart rate overlay from the lower portion of the console (Figure I).
9) Clean the console area with alcohol to remove any left over adhesive from the console plastic (Figure J).



FIGURE I



FIGURE J

10) Peel off the protective film from the back of the entertainment keypad / overlay (Figure K).
11) Push the ribbon cable end through the hole in the console plastic (Figure L).



FIGURE K



FIGURE L

10.5 TV BRACKET INSTALLATION INSTRUCTIONS - CONTINUED

12) Press the entertainment keypad / overlay into the cut out in the console plastic (Figure M).
13) Plug the ribbon cable into the pins on the UCB (Figure N). Make sure that the pins and ribbon cable are correctly aligned with no pins open on the UCB.



FIGURE M



FIGURE N

14) Mount the TV bracket to the console using 4 socket head screws sent with the TV bracket kit (Figure O).
15) **MYE TV -** Plug the 4 pin black connector side of the power wire into the UCB in the port marked TV Power for EP (Figure P). **PCTV -** Plug the 4 pin black connector to the power wire coming up the console mast from the base of the unit.



FIGURE O

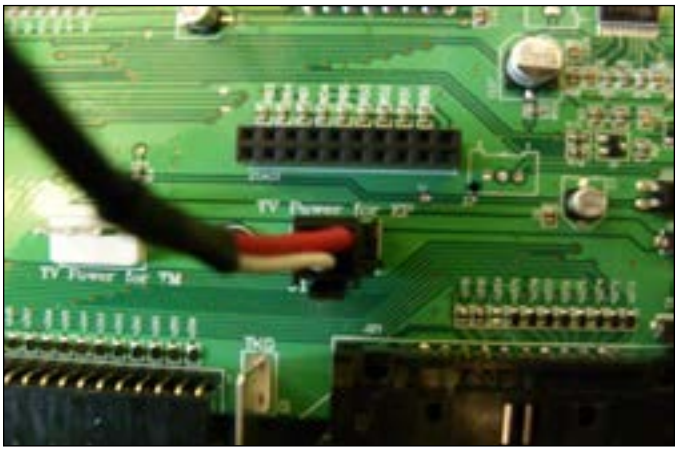


FIGURE P

16) Plug the side of the controller wire labeled To Console into the CSafe board mounted on the console back (Figure Q). The MYE TV should be plugged into the TV port, the PCTV should be plugged into the PCTV port. If installing a PCTV, also change switch SW1 to the top location.
17) Route the net cable through the console. This wire is not plugged into the UCB, but should be routed through the console to hide the wire. The 8 pin black connector on the net wire should stick out the bottom of the console along with the HR wiring (Figure R).
18) Connect one end of the coax cable to the board on the back cover using the adaptor sent with the TV kit (Figure S).

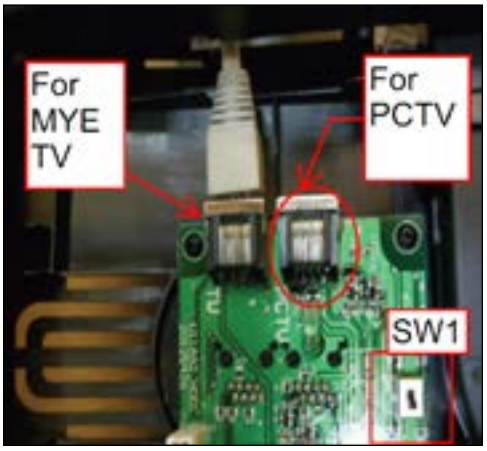


FIGURE Q



FIGURE R



FIGURE S

10.5 TV BRACKET INSTALLATION INSTRUCTIONS - CONTINUED

18) There should now be 4 wires sticking out the top of the console - TV power wire, net wire, coax cable, and controller wire (Figure T).
19) Re-attach the console back to the front using the bottom 6 screws removed in Step 2. ***NOTE:*** Be sure to route the wiring so that it is not pinched by the bracket or plastic when installing the top 2 screws (Figure U). The small cover with the Matrix logo that makes up the top of the rear console cover is no longer used with a TV bracket.
20) Mount the console back onto the unit making sure to make all the necessary wire connections including the coax cable.



FIGURE T



FIGURE U

21) Mount the plastic front plate to the TV (Figure V).
22) Plug the coax cable into the back of the TV (Figure W).



FIGURE V

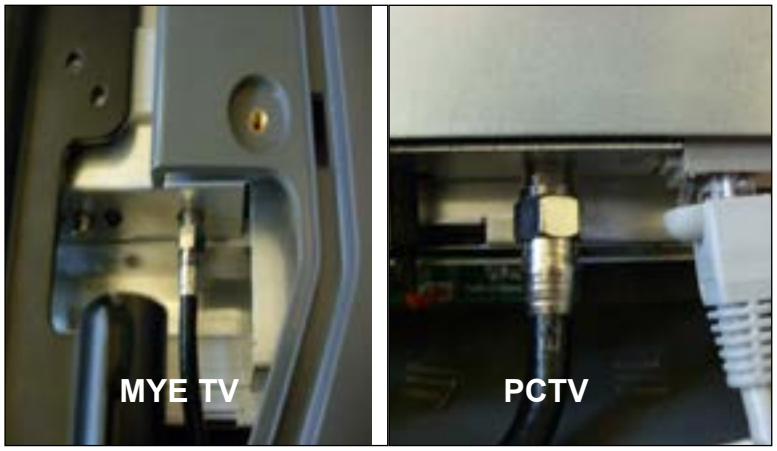


FIGURE W

23) Plug the power wire into the back of the TV (Figure X).
24) Plug the controller wire into the back of the TV (Figure Y). ***NOTE:*** The controller wire should be plugged into the PCTV port on the PCTV.

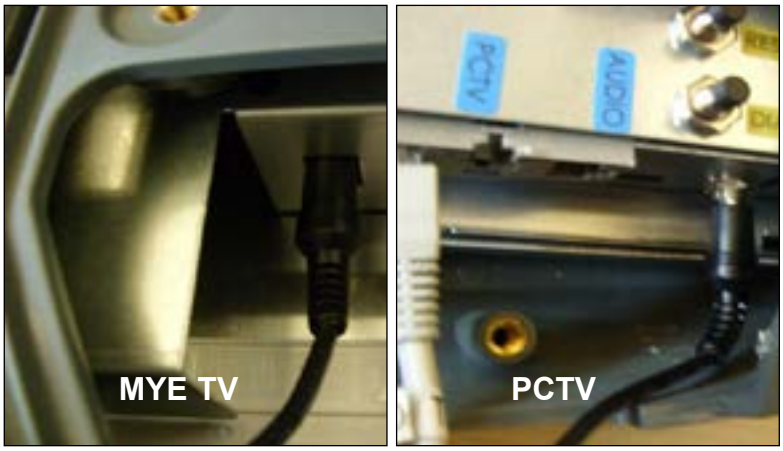


FIGURE X

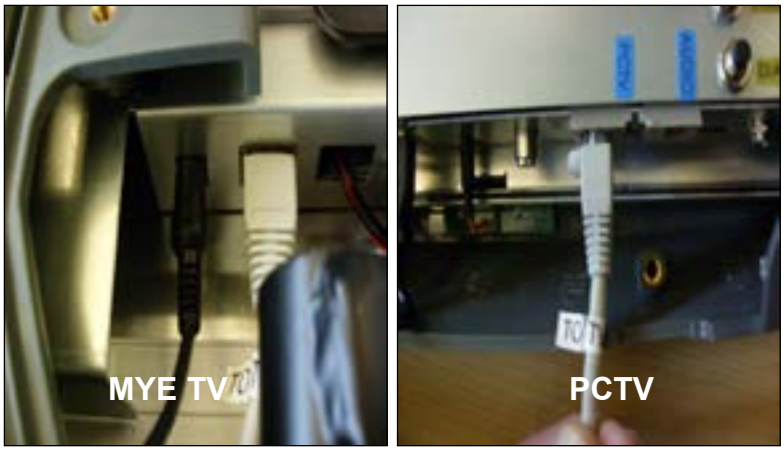


FIGURE Y

10.5 TV BRACKET INSTALLATION INSTRUCTIONS - CONTINUED

25) If installing a PCTV, plug the net wire into the back of the TV (Figure Z). ***NOTE:*** The net wire is not used if installing a MYE TV, and should be hidden by the plastic covers.
26) If the PCTV will be using a wireless signal, plug the dongle into the back of the TV and mount the USB flash drive to the console plastic using double sided foam tape (Figure AA).



FIGURE Z



FIGURE AA

27) Put the TV into place on the TV bracket being sure to tuck the tabs of the plate installed during Step 20 into the console plastic (Figure BB).
28) Mount the TV to the TV bracket using 4 screws sent with the TV (Figure CC).



FIGURE BB



FIGURE CC

29) Put the back cover onto the TV and secure with 4 screws (Figure DD).
30) Install the console back onto the unit making sure to connect the coax cable and net wire.
31) Plug a network wire (if using a PCTV with wired internet, power wire (PCTV only) and / or a coax cable to the port on the front of the unit (Figure EE).
32) Enter into Engineering Mode and set the Audio Source setting for TV or PCTV as needed.
33) Program the TV as shown in the TV owner's manual.



FIGURE DD



FIGURE EE

CHAPTER 11: SOFTWARE UPGRADE PROCEDURE

11.1 SOFTWARE UPGRADE PROCEDURE

1. Create a file on the USB flash drive which will be used. The folders should be MATRIX\FW\UCB (create a folder called MATRIX, then a folder in MATRIX called FW, then a folder in FW called UCB). Or you can put USB flash drive into the console and press ENTER, 9, 0, 0, 1, ENTER on the keypad and the USB will create the folders (Figure A)

2. Copy the software files into the UCB folder on the USB flash drive (the access should read \MATRIX\FW\UCB - Figure B).

3. Insert the USB flash drive into the USB port on the console (Figure C).

4. With the display is in standard operation mode, press ENTER, 9, 0, 0, 1, ENTER on the keypad. Press the LEVEL UP or DOWN keys to choose the correct software (if there are more than one version on the USB flash drive). Once the correct software is found, press ENTER and the upgrade procedure will start.

5. If the console beeps and display shows 04A0 (Figure D), please remove the USB drive, turn off & turn on the machine again, and the display will go back to standard operation.

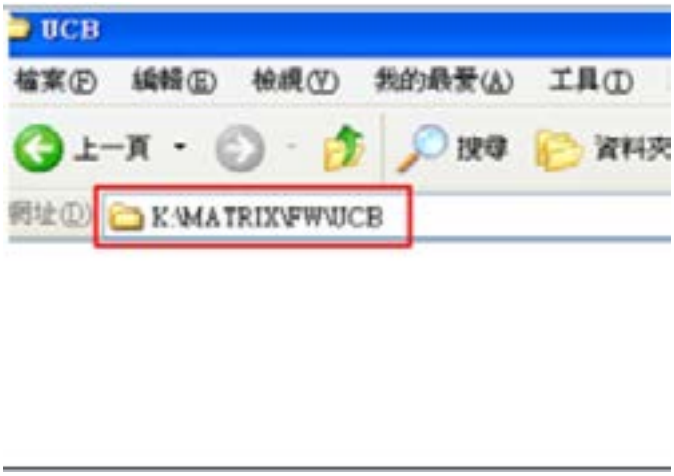


FIGURE A

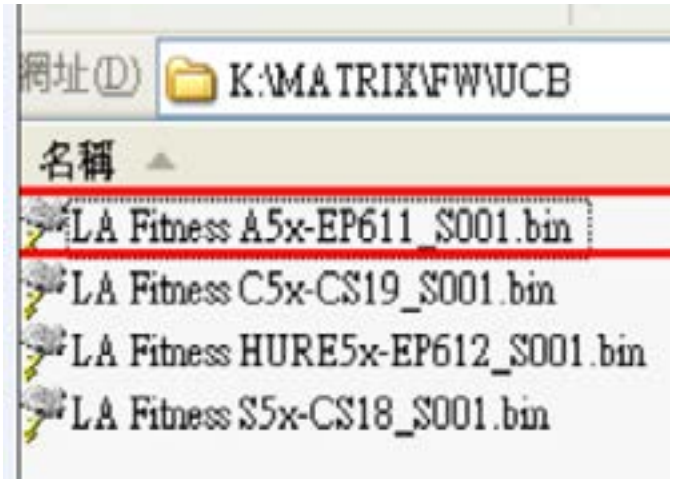


FIGURE B



FIGURE C



FIGURE D

NOTES



MATRIX FITNESS SYSTEMS CORP.
1610 LANDMARK DRIVE COTTAGE GROVE WI 53527 USA
TOLL FREE 866.693.4863 **www.matrixfitness.com** FAX 608.839.1717

REV. 01

KO