Strong. Smart. Beautiful.

ASCENT TRAINER
SERVICE MANUAL

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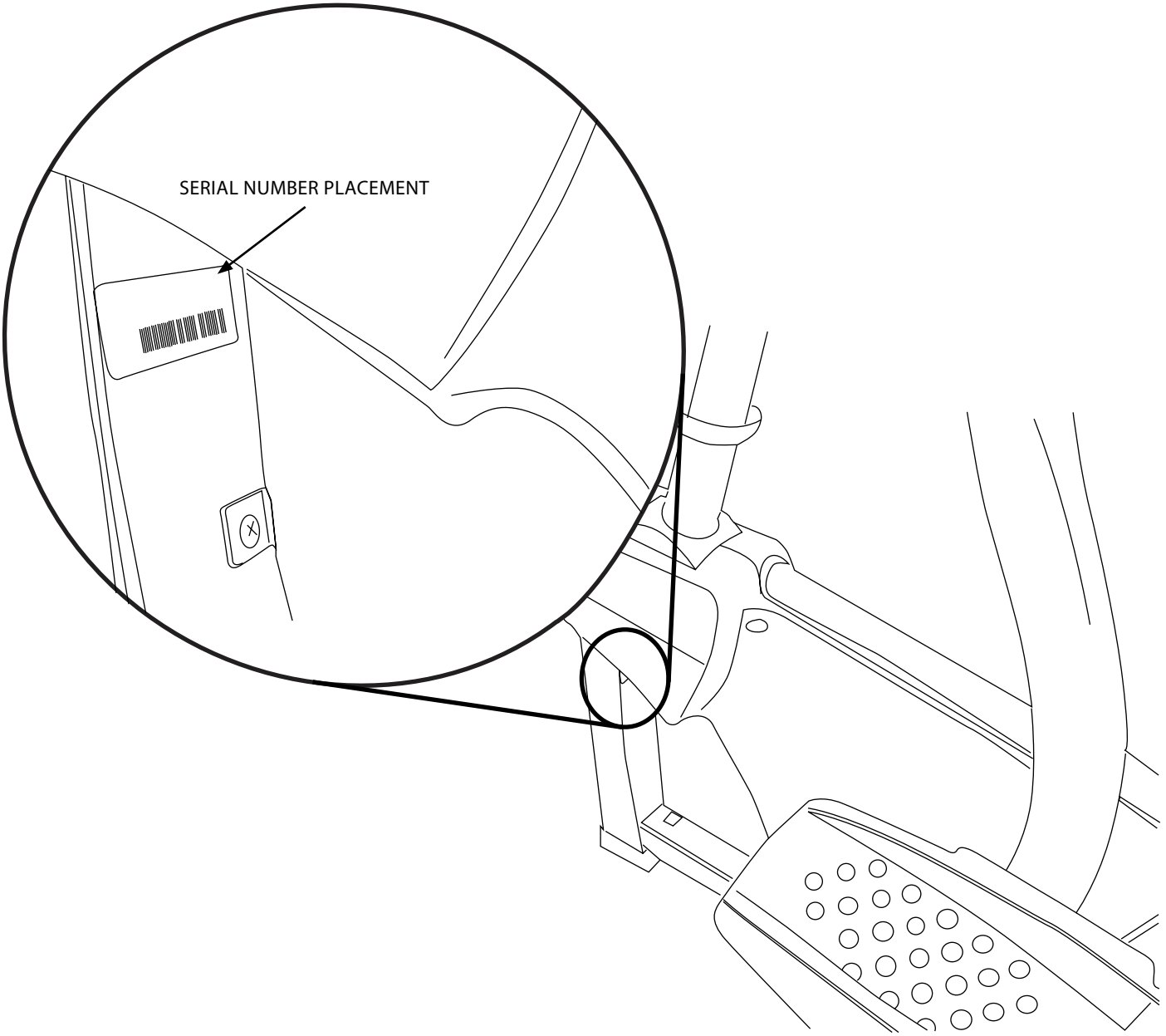
CHAPTER 1: SERIAL NUMBER LOCATION

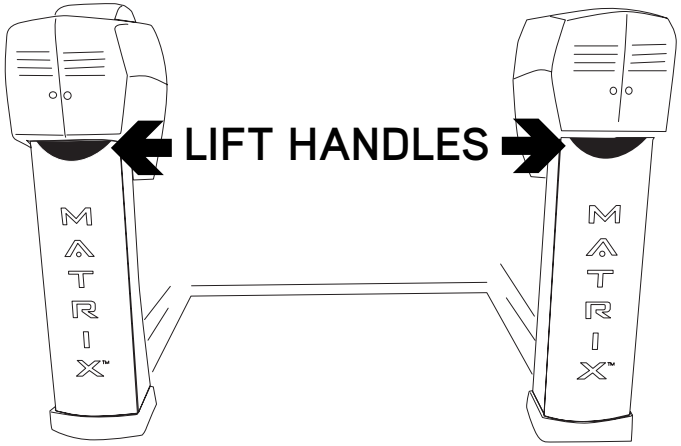
1.1 MX-A5x ASCENT TRAINER SERIAL NUMBER LOCATION



2.1 MOVING THE UNIT

Two hand holds are located just above the MATRIX logo on the rear legs.

The A5x weighs 390lbs. To avoid injury to the user and the unit, be sure to have proper assistance to move the unit.



CHAPTER 3: IMPORTANT SAFETY INSTRUCTIONS

3.1 LEGAL DISCLAIMER

3.2 TRAINING NOTICE

3.3 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:

DANGER: To reduce the risk of electric shock: Always unplug this equipment from the electrical outlet immediately after using and before cleaning.

WARNING: To reduce the risk of burns, fire, electrical shock or injury to persons that may be associated with using this product.

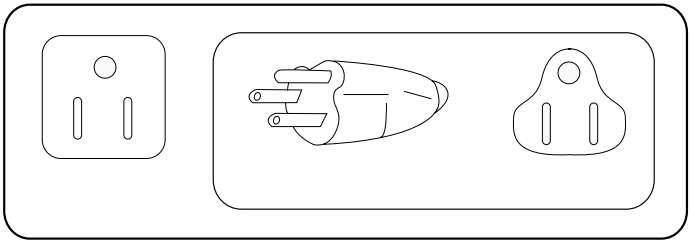
- An appliance should never be left unattended when plugged in. Unplug from outlet when not in use and before putting on or taking off parts.
- This product must be used for its intended purpose described in this service manual. Do not use other attachments that are not recommend by the manufacturer. 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.
- Never operate product if it has a damaged cord or plug, if it is working properly, if it has been damaged, or immersed in water. Return the unit to a service center for examination and repair.
- Do not carry this unit by it's supply cord or use the cord as a handle.
- Keep any power cord away from heated surfaces.
- Close supervision is necessary when 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 plug from outlet.
- Connect this elliptical to a properly grounded outlet only.

CAUTION: If you experience chest pain, nausea, dizziness or shortness of breath, STOP exercising immediately and consult a physician before continuing.

- 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 equipment.
- Do not wear loose clothing while on equipment.

3.4 ELECTRICAL REQUIREMENTS

For your safety and Ascent 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 of 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.)



MATRIX DEDICATED CIRCUIT/ELECTRICAL REQUIREMENT INFO

All Matrix Ascent Trainer units 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 or Incline 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/Incline 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.

CHAPTER 4: PREVENTATIVE MAINTENANCE

4.1 RECOMMENDED CLEANING TIPS

Preventative maintenance and daily cleaning will prolong the life and look of your MATRIX Ascent Trainer.

Please read and follow these tips.

- Position the equipment away from direct sunlight. The intense UV light can cause discoloration on plastics.
- Locate your equipment in an area with cool temperatures and low humidity.
- Clean with a soft 100% cotton cloth.
- Clean with soap and water or other non-ammonia based all purpose cleaners.
- Wipe foot pads, handles, heart rate grips, and handlebars clean after each use.
- Do not pour liquids directly onto your equipment. This can cause damage to the equipment and in some cases electrocution.
- Check pedal motion and stability.
- Adjust leveling feet when equipment wobbles or rocks.
- Maintain a clean area around equipment, free from dust and dirt.

4.2 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.

4.3 CARE AND MAINTENANCE INSTRUCTIONS

In order to maximize life span, and minimize down time, all MATRIX equipment requires regular cleaning, and maintenance items performed on a scheduled basis. This section contains detailed instructions on how to perform these items, the frequency of which they should be done, and a check list to sign off each time service is completed for a specific machine. 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)
Lint free cleaning cloths
Teflon based spray lubricant
Mild, water soluble, detergent – such as "Simple Green", or other Matrix approved product
Teflon based spray lubricant such as "Super Lube", or other Matrix approved product
Vacuum cleaner w/extendable hose and crevasse tool attachment

Please find the worksheet sample for our equipment provided in this manual and make copies as needed, keeping them up to date as the required service/maintenance items are performed. It is critical that you also log the accumulated (total) amount of miles or running hours on the equipment each time service or maintenance is performed.

You may periodically see addendums 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) Clean entire machine use water and mild detergent such as "Simple Green", or other Matrix approved solution (cleaning agents should be alcohol and ammonia free).

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 ball joint where the Link Arm and Handlebar join together. A grease gun, with a needle fitting adapter is required for this (Matrix recommends using Superlube brand grease with PTFE {Teflon} additive).

4) Remove plastic covers, and lubricate Acme screw on left and right incline motors (Matrix recommends using Superlube brand grease with PTFE {Teflon} additive). See section 9.11 for incline motor access instructions.

4.4 PREVENTATIVE MAINTENANCE CHECKLIST

Facility: _____

MAKE:	MODEL:	S/N
LOCATION:	TECHNICIAN:	DATE:

Inspect power cords	____	Check resistance system	____	Clean/lube guide rods	____
Check E-stop cord/button	____	Lubricate pivot points	____	Inspect belt/cable assy.	____
Vacuum/clean under cover	____	Check connecting joints	____	Check locking pins	____
Check motor drive belt	____	Remove covers, check belts	____	Check pulleys	____
Check running belt	____	Check pedal & crank	____	Inspect upholstery	____
Flip/replace deck	____	Check/lube seat adjustment	____	Check/tighten hardware	____
De-wax rollers	____	Verify electronics operation	____	Lubricate Acme screw	____

Notes/comments _____

MAKE:	MODEL:	S/N
LOCATION:	TECHNICIAN:	DATE:

Inspect power cords	____	Check resistance system	____	Clean/lube guide rods	____
Check E-stop cord/button	____	Lubricate pivot points	____	Inspect belt/cable assy.	____
Vacuum/clean under cover	____	Check connecting joints	____	Check locking pins	____
Check motor drive belt	____	Remove covers, check belts	____	Check pulleys	____
Check running belt	____	Check pedal & crank	____	Inspect upholstery	____
Flip/replace deck	____	Check/lube seat adjustment	____	Check/tighten hardware	____
De-wax rollers	____	Verify electronics operation	____	Lubricate Acme screw	____

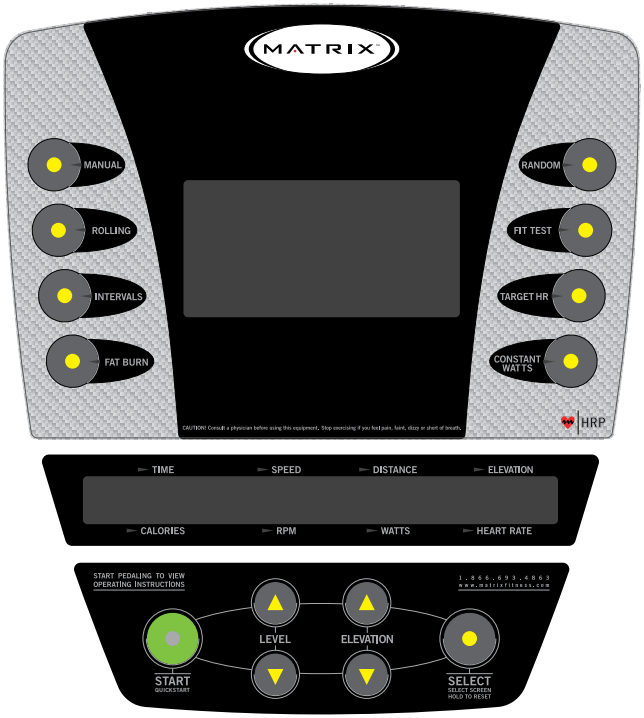
Notes/comments _____

CHAPTER 5: USING THE CONSOLE AND PROGRAM DESCRIPTION

5.1 CONSOLE DESCRIPTION

All programs follow the same basic steps.

- Select program key.
- Enter user information (age, weight).
- Choose workout time.
- Choose resistance level.
- Select START.



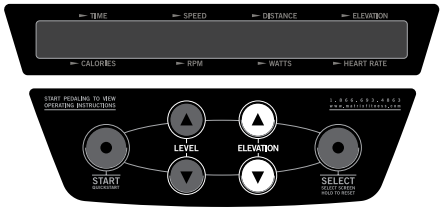
Program selection can be changed at any time during a workout. This means that the user can switch between RANDOM, MANUAL or several programs without losing accumulated workout time or data.

- However, the console must be reset before starting FIT TEST, TARGET HR, AND CONSTANT WATTS programs.

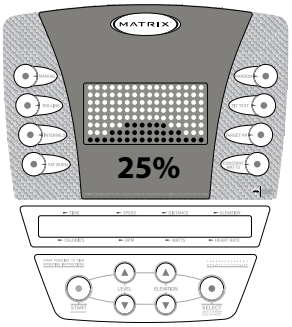
5.2 INCLINE FUNCTION

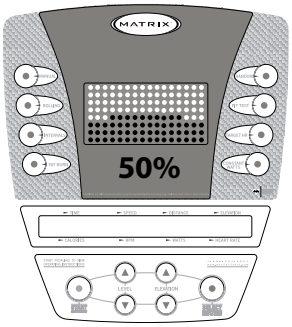
Changing the incline will produce a wide variety of challenging workouts. At 0 incline, you can expect a smooth, easy and low-impact pedal motion. At higher incline levels, longer stride and higher step-up challenge the user with a more focused glute workout.

- How the incline works A5x - by pressing the UP elevation arrow key both incline arms pivot towards the rear of the machine. This increases both stride length and step-on height.



- Incline settings - There are 20 incline levels. One key press will change the incline in 5% increments. The console will display 0-100, which represents total percentage of incline. LED display 25 is 25% of total incline, 50 is 50% of the total incline and so on. Upper LED changes on each key press, showing incline changes.





CHAPTER 5: USING THE CONSOLE AND PROGRAM DESCRIPTION

5.3 QUICK START

Press to immediately begin workout. Workout, resistance level and incline level will automatically go to default settings (see manager mode for default settings). QUICK START will not prompt the user for age, weight or level settings.

5.4 MANUAL

Manual allows the user to imput more information while defining their own workout. Calorie expenditure will be more accurate when inputting information in MANUAL than using QUICK START.

STEP 1: Select the MANUAL button.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 2: Select TIME by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 3: Select LEVEL by using the UP or DOWN arrow keys.
You can change the level at any time during workout.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 4: Select weight by using the UP or DOWN arrow keys.
Press START or SELECT to begin workout.
Display, Starting 3, Starting 2, Starting 1.

5.5 USER DEFINED PROGRAMS - ROLLING, INTERVAL, FATBURN & RANDOM

RANDOM - there are 20 workout profiles in RANDOM mode. Profile will change each time RANDOM key is pressed. Select a workout profile, follow user information prompts or press QUICK START key to begin.

STEP 1: Select the PROGRAM button.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 2: Select TIME by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 3: Select LEVEL by using the UP or DOWN arrow keys.
You can change the level at any time during workout.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 4: Select weight by using the UP or DOWN arrow keys.
Press START or SELECT to begin workout.
Display, Starting 3, Starting 2, Starting 1.

5.6 FIT TEST

FIT TEST program allows you to measure your fitness.

Follow these easy steps to enter the Fit Test Program.

STEP 1: Select the FIT TEST button.
Select TEST 1 by using the UP or DOWN arrow keys.

STEP 2: Select AGE by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.

STEP 3: Select GENDER by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.

STEP 4: Select WEIGHT by using the UP or DOWN arrow keys.
Press START or SELECT to begin workout.
Display, Starting 3, Starting 2, Starting 1.

STEP 5: Display will read results of FIT TEST.

STEP 6: Display will read 2:00 MINUTE COOL DOWN.
Display will show totals for time, distance, calories, speed, RPM, watts.

MEN'S OUTPUT TABLE FOR TEST #1

AGE	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR
13-14	>2700m	2400-2700m	2200-2399M	2100-2199M	<2100M
15-16	>2800m	2500-2800m	2300-2499M	2200-2299M	<2200M
17-20	>3000m	2700-3000m	2500-2699M	2300-2499M	<2300M
20-29	>2800m	2400-2800m	2200-2399M	1600-2199M	<1600M
30-39	>2700m	2300-2700m	1900-2299M	1500-1999M	<1500M
40-49	>2500m	2100-2500m	1700-2099M	1400-1699M	<1400M
50 +	>2400m	2000-2400m	1600-1999M	1300-1599M	<1300M

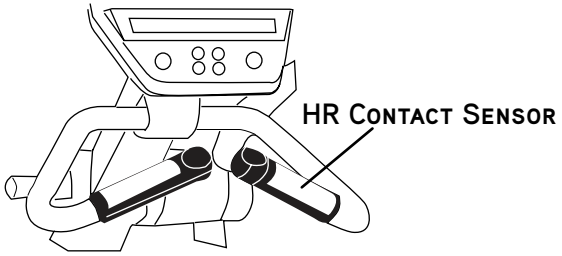
WOMEN'S OUTPUT TABLE FOR TEST #1

AGE	EXCELLENT	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR
13-14	>2000m	1900-2000m	1600-1899M	1500-1599M	<1500M
15-16	>2100m	2000-2100m	1700-1999M	1600-1699M	<1600M
17-20	>2300m	2100-2300m	1800-2099M	1700-1799M	<1700M
20-29	>2700m	2200-2700m	1800-2199M	1500-1799M	<1500M
30-39	>2500m	2000-2500m	1700-1999M	1400-1699M	<1400M
40-49	>2300m	1900-2300m	1500-1899M	1200-1499M	<1200M
50 +	>2200m	1700-2200m	1400-1699M	100-1399M	<1100M

5.7 TARGET HR

A5x and I5x have digital contact and wireless heart rate monitoring capabilities as standard equipment.

- To use heart rate monitor, locate the metal sensors located on the fixed handlebars.



Hold the grips for a minimum of 10 seconds. Your heart rate (or HR) will display in the lower right hand corner of the alphanumeric LED.

Follow these easy steps to enter into the Heart Rate Program.

STEP 1: Select the TARGET HR button.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 2: Select AGE by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 3: Select PERCENT by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 4: Select TIME by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 5: Select WEIGHT by using the UP or DOWN arrow keys.
Press START or SELECT to begin workout.
Display, Starting 3, Starting 2, Starting 1.

Heart rate protocols.

- HR is within 10 BPM (beats per minute) of target, upper LED display will show a heart.
- HR is a greater or less than 10 BPM of target, resistance level will increase or decrease every 10 seconds.
- HR is greater than 14 BPM of target, resistance level will drop to 30%.
- HR is greater than 10 BPM of target, lower LED will display: "WARNING HR ABOVE TARGET"
- HR is greater than 20 BPM, program immediately ends.

5.8 CONSTANT WATTS

Resistance level is set by the user and constantly changes to reflect stride speed. As stride speed (SPM) increases, resistance decreases while output wattage stays the same. In turn, if stride speed decreases then resistance increases.

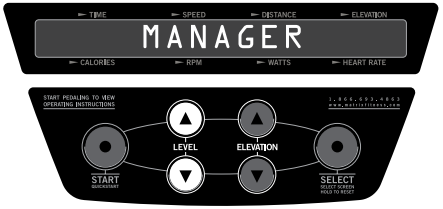
STEP 1: Select WATTS by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 2: Select TIME by using the UP or DOWN arrow keys.
Press SELECT or wait 5 seconds.
Selecting START will start program.

STEP 3: Select WEIGHT by using the UP or DOWN arrow keys.
Press START or SELECT to begin workout.
Display, Starting 3, Starting 2, Starting 1.

6.1 USING MANAGER MODE

- To enter manager mode, hold the UP and DOWN level keys (highlighted in white below) for three seconds until "MANAGER" appears on the middle LED display.



- Press the UP and DOWN elevation keys to scroll between program screens.
- Press SELECT to modify program setting.
- Press UP or DOWN level keys to change value.
- Press QUICK START to save setting.
- Press QUICK START again to exit manager mode.
vv

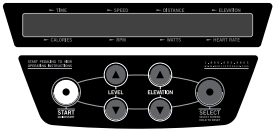
Example changing default time from 20:00 - 30:00 minutes

STEP 1 Hold **LEVEL** keys.

STEP 2 Press **SELECT** key.

STEP 3 Press up **LEVEL** key.

STEP 4 Press **QUICKSTART** key 3 times.



6.2 MANAGER SCREEN DESCRIPTIONS

- P0: Maximum progam time - Sets the total run time of any program.
- P1: Default workout time - Workout time when QUICK START is pressed or when no time is selected during program set up.
- P2: Default resistance level - Starting resistance when QUICK START is pressed or no resistance level is selected during program set up.
- P3: Default user weight - Weight used for program calorie expenditure calculations.
- P4: Speed Units - Display value in miles or kilometers.
- P5: Machine Type - Console is shared between the A5x and I5xi. A5x default setting is "SWING" and I5xi default setting is "RAMP".
- P6: Console beep on / off - Confirmation beeps can be turned on or off.
- P7: Accumulated distance - Total distance of all programs.
- P8: Accumulated time - Total accumulated program time displayed in hours.
- P9: Display language - Select between English, Spanish, French Italian, Dutch and German.
- P10: Software version - Current version of software. Refer to this when calling Matrix Technical Service.
- P11: Incline calibration - Default display is OFF. Selecting ON will automatically calibrate the incline motor (s) to factory settings. Use this feature when actual elevation does not match console display.
- P12: Incline Reset - 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. Display will scroll "HOLD SELECT TO RESUME". To resume reset to 0 degrees, hold "SELECT"key for three seconds.
- P13: Default incline level - Starting incline level at each program start except FIT TEST. Factory setting is 10%. In FIT TEST, elevation is set to 0%.
- P14: Error Code - Console will record up to three errors. Error codes are stored permanently unless reset by a technician. To reset error codes, hold MANUAL and RANDOM keys for three seconds. Refer to these error codes when calling Matrix technical service for assistance.
- P15: LCB Version - Display will show LCB.VER XX YYY.
  XX is machine type.
  YYY is version number.

CODE: INFORMATION	DEFAULT	MIN	MAX
P0: Maximum progam time -	95 min	10	95
P1: Default workout time -	20 min	10	MAX
P2: Default resistance level -	1	1	25
P3: Default user weight -	150 lbs. /75 kg	80	400
P4: Speed units -	mi		
P5: Machine Type -		Swing	Ramp
P6: Console beep on / off -	on		
P7: Accumulated distance -			
P8: Accumulated time -			
P9: Display language -	English		
P10: Software version -			
P11: Incline calibration -			
P12: Incline reset -	on		
P13: Default incline level -	10	0	100
P14: Error Code -			

NOTE: DEFAULT TIME will update to the same as MAX TIME if MAX TIME is less than DEFAULT TIME.

CHAPTER 7: ENGINEERING MODE

7.1 ENGINEERING MODE

To enter Engineering mode, hold the UP and DOWN level keys for three seconds until "MANAGER" appears on the middle LED display. Press the DOWN arrow key and "ERROR CONTROL" will appear on middle LED display.

Error Control, Do not use this mode unless you are a qualified technician. Error control will determine if a machine is disabled once Class A or Class B errors are registered by the software.

Incline Record, log of incline motor and total program activity. This record holds the total number of hours for each program (MANUAL, ROLLING, INTERVAL, etc.) as well as incline motor activity in hours. This can be a useful tool for the club manager of trainer when reviewing machine usage.

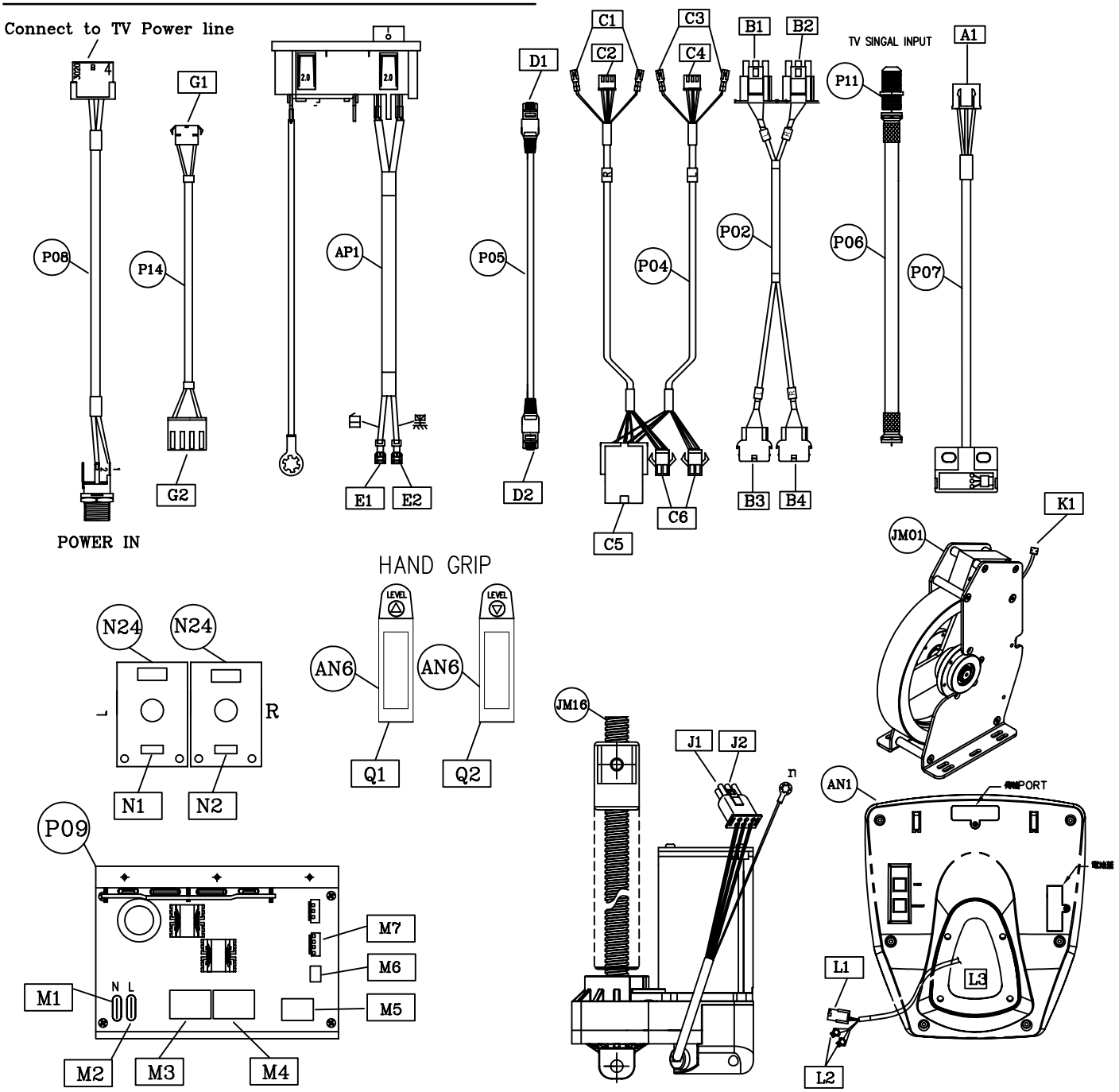
- To enter INCLINE RECORD, press SELECT when INCLINE RECORD is displayed.
- Totals are stored permanently unless reset by a technician. To reset error codes, hold MANUAL and RANDOM keys for three seconds. Refer to accumulated hours when calling Matrix technical service for assistance. (Insert chart)

Incline Tuner, Do not use this mode unless you are qualified technician. Incline Tuner allows calibration and resetting of the incline motor range of motion.

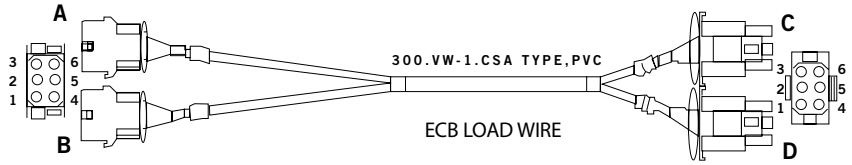
Service 1,2,3,4 are described in the Matrix Technical Service Guide.

7.2 SOFTWARE DIAGNOSTIC FLOW CHART

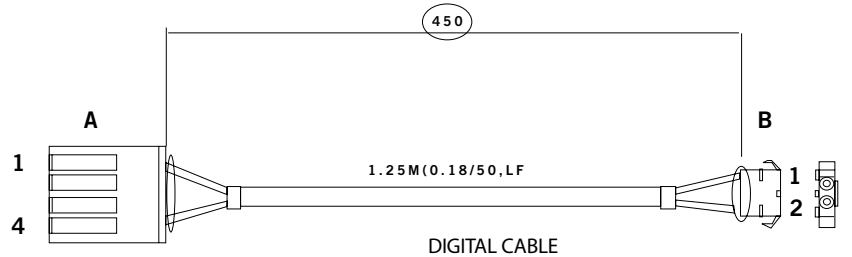
8.1 ELECTRICAL DIAGRAM



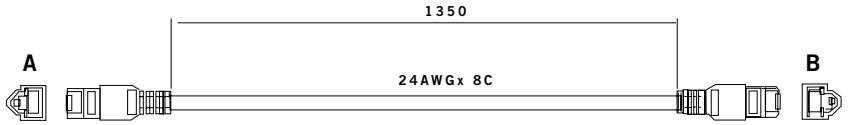
ELEVATOR WIRE



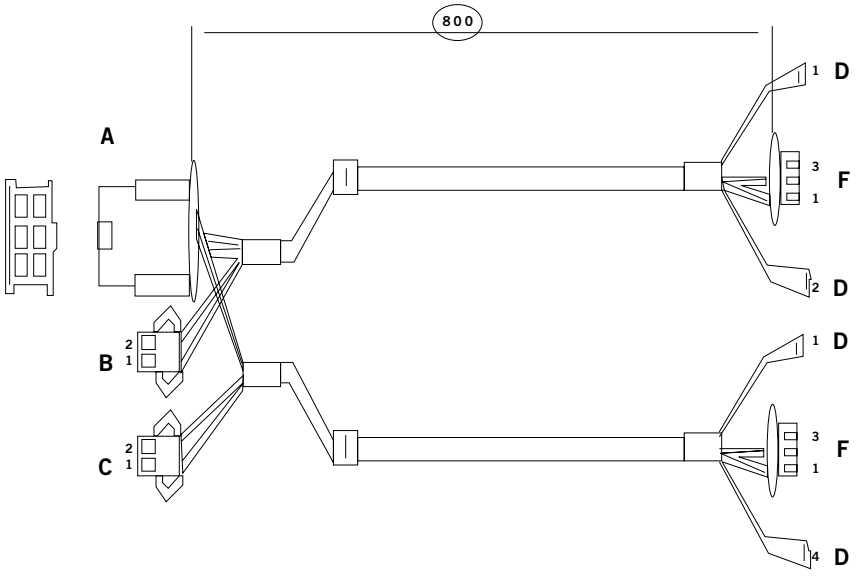
ECB LOAD WIRE



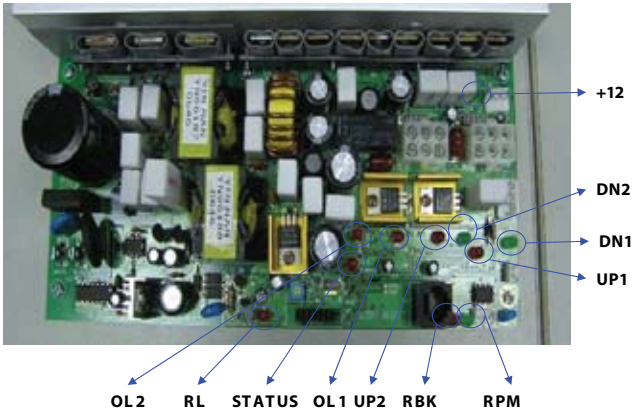
DIGITAL CABLE
(console cable)



PULSE SENSOR WIRE



8.2 A5x(EP72) LCB3 LED PLACE AND DEFINITION



+12 - LCB Power indicator light

DN1 - Indicates if the upper console is commanding Elevation 1 DOWN.

DN2 - Indicates if the upper console is commanding Elevation 2 DOWN.

UP1 - Indicates if the upper console is commanding Elevation 1 UP.

UP2 - Indicates if the upper console is commanding Elevation 2 UP.

RPM - Rotation rate for speed.

BRK - Resistance indicator light.

RL - Relay indicator light.

STATUS - Digital communication state indicator light.

OL1 - Elevation 1 error indicator light.

OL2 - Elevation 2 error indicator light.

8.3 SOFTWARE SETTINGS

Unit does not record distance or RPM

If unit resets after 30 seconds despite pedaling verify "incline reset" is ON in manager mode (P12). Perform console LED segment test to verify console can display RPM (service 1 in engineering mode) Select another program and begin pedaling. Look for RPM in lower display If no RPM displays Remove RH disk (refer to 9.1) Green LED labeled "RPM" on lower control board should flash when main drive pulley is turned (image x)

If the speed and distance seem low, verify that there are 4 magnets on the secondary pulley.

If LED does not flash, verify sensor cable is plugged in to lower control board (image 0093) If sensor cable is plugged in to board, the remove sensor and perform continuity check. Replace sensor if required. Verify gap between sensor and drive pulley. If a - e have been performed and RPM does not display on console, replace lower control board

8.4 CONSOLE/SOFTWARE

Unit does not power up:
Verify unit is plugged in and there is power at the outlet – 120v AC 5A. Verify green LED on power converter "brick" is lit. Verify power switch on e-port plate is in the on position. If there is power at the power converter and the switch is in the on position with no power to the unit:
remove e-port plate (refer to image 0096)
check main power switch continuity – image 0417
replace switch if necessary

If steps 1-3 are all "yes" then:
Remove RH disk (refer to instructions in section 9.1). Check power LED on lower control board labeled RL. If LED is not lit, check for power at lower control board power cable. Replace cable if necessary. Check that console communication cable is plugged into board.

If #4 is "yes" then:
Remove console
Unplug RJ45 console communication cable (refer to section 9.9).
On RJ45 plug, measure voltage at white and blue wires. The measurement should be 12v. Replace console communication cable if necessary.

If #5 is yes, then replace upper console control board.
Plug in unit and check for power.

8.5 ENTERTAINMENT

Figure A

Figure B

1. This chapter will help with diagnosing problems with TV and entertainment related equipment that is produced by Matrix fitness.

2. Verify that your TV equipment is Matrix brand equipment. Compare your TV to the TV in Figure A. Compare your controller to Figure B. If your equipment looks different contact Matrix or the manufacturer of your TV equipment if known.

3. Verify how your TV is mounted, compare your machine to Figure C which shows TV directly mounted to the Machine. Figure D shows a TV mounted using a TV stand separate from the machine.

4. For Matrix produced and mounted equipment you can use the information outlined in this chapter to help with any connection and power issues you may have. If you have questions that are specific to the TV alone (settings, programming, menu options etc) please see the entertainment owner's manual.

Figure C

Figure D

8.5.1 ENTERTAINMENT – PICTURE FUZZY OR UNCLEAR

Figure E

Figure F

1. Using a verified piece of coax cable, hook directly from the TV to the jack that feeds your equipment. (This bypasses internal connections for your machine or TV stand.)

2. If this clears your picture move to step 3. If not, connect the cable to a known good cable jack. If this clears your picture your first cable jack needs to be repaired.

3. Check your internal cables and fittings (inside your machine (see section 9.6 for how to access internal wiring) or TV stand) to make sure you have no damage (kinks, cuts etc) and no stray wires or poor fittings on the ends of the cables. Fittings should look like Figure E, with a clean flush connector and no stray aluminum strands touching the center conductor. Replace or repair any suspect cables.

4. If no damage can be found on cables or end fittings check each connection (Figure F). (see entertainment owners manual for connections are part of the entertainment kit). If nothing is visibly wrong with any of the cables, fittings, or connectors begin replacing cables and connectors with known good parts until the damaged part is found.

8.5.2 ENTERTAINMENT – TV WILL NOT TURN ON

Figure A

Figure B

Figure C

1. If you have no picture at all check to see if you have any status lights on your controller or TV. (TV light is after the x in the "Matrix" logo, controller light is next to power button). Status lights should be red when off or in standby mode, and green when the TV is powered on. If you have lights of any color skip to section 8.5.3.

2. Check all electrical connections associated with the TV - connections at theTV, outlet, adapter, machine and controller. After you have verified all connections are secure and problem still exists verify power at the outlet. (Figure A)

3. If outlet passes check power supply for the TV to make sure it is outputting 12 volts, if not replace power supply. (Figure B)

4. If power supply passes detach TV mounting bracket from the mast and seperate the connection for the power. (Figure C) Verify 12 Volts coming from the wires inside the mast, if not replace the wires/connections inside the machine. Reconnect if 12 Volts present.

5. If internal wiring passed, verify 12 Volts at the TV connection plug. Replace the wire inside the TV mounting tube if there is no power at the TV connection point. If 12 Volts present at the TV plug it is likely a TV problem - contact Matrix Fitness.

8.5.3 TV CONTROLLER NOT FUNCTIONING

1.If you have status lights on both the controller and the TV but On/Off button gives no response, disconnect and then reconnect the power from the wall. Attempt to turn on the TV again using the On/Off button. If TV powers on contact Matrix for parts to resolve the "TV lockup problem".

2. If TV does not power on check controller and cable by swapping them from a known working unit if possible. If controller and/or the cable from the controller to the TV test bad, contact Matrix for a replacement.

3. If TV does not power on, attempt to power on TV using the small handheld remote that came with the TV. (Used for changing menu and other settings) If TV will not function with handheld remote it is likely a TV problem, contact Matrix fitness.

8.6 RESISTANCE FUNCTION

8.7 HEART RATE FAILURE/INTERMITTENT

Note – Contact (hand grip) heart rate takes approximately 15 seconds to acquire. Due to variations in physiology, some people take longer and there is a small percentage of the population that will not be able to register a heart rate. Contact heart rate grips work better when the users hands are warm and slightly damp.

8.7.1 Test Contact Grips

If no signal within 30 seconds then: Remove fixed handlebar assembly at console mast (image 260 - 263). Check continuity at LH harness plug. If reading is 0: disassemble grip, check upper and lower contact plate leads. If all connections are good then replace harness and re-inspect repeat for RH grip. If 1-3 are good, then remove console and disassemble front and back console halves. Verify HR power harness is securely plugged in at position J6 – also labeled HR2. Check voltage at female plug – reading should be 12v dc. If no power at plug, then replace wiring harness. If step 5 tests good, then replace HR board. Reassemble and test.

8.8 INCLINE FAILURE

8.9 LEVELING THE A5X

Figure 1

Figure 2

Figure 3

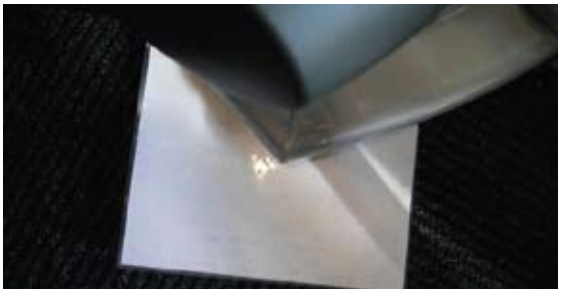


Figure 4

On a new A5x Ascent Trainer, the rubber foot on the underside of the center of the frame should be flush against the frame itself.

1. As pictured in Fig. 1, it has a washer that eliminates pressure againt the nut that is inside the frame.
2. This rubber foot needs to be screwed in all the way, as shown in Fig. 2, and is not used for adjustments
3. All adjustments are made using the front stabilizer leveling feet, as pictured in Fig. 3
4. Most of the time you will be raising the front of the machine instead of lowering it. Raise the front of the unit until you can fit a piece of paper underneath the rubber foot as pictured in Fig. 4.
5. Once you have both feet set to a level position, use a 14mm or 17mm wrench (depending on which stabilizing feet you have) to tighten the jam nut and secure the feet, as shown in figure Fig. 5.
6. Test for stability by using the machine and adjusting either foot appropriately for balance.

Figure 5

9.1 FRONT DISK REMOVAL

Figure A

Figure B

Figure C

Use caution when detaching pedal arm and link arm. Assemblies are heavy and can cause injury.

1. Remove link arm/pedal arm plastic caps (Figures A and B)
   Note: Round dual-action end cap requires a short phillips screwdriver to reach and remove inner screw.

2. Detach dual-action handlebar at link arm. (Figure C)

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

4. Rest pedal arm padded surface on front stabilizer. (Figure E)

Figure D

Figure E

9.1 FRONT DISK REMOVAL – CONTINUED

Figure F

Figure G

Figure H

Figure I

5. Press and turn counter clockwise to remove plastic center cap. (Figure F)
   Note: There is a compression spring behind cap.

6. Remove 24mm locking nut and washer by turning counter clockwise. (Figure G)

7. Thread Matrix disk removal tool into center hub. (Figures H and I)
   Note: There are two different removal tools. If you have 3 tapped holes on your center hub see Fig I, if the inside of the hub is tapped (no holes) see Fig H.

8. Turn the center bolt of the removal tool clockwise until the main disk can be removed. (Figures J and K) Repeat if necessary for the opposite side disk.

Use Caution when removing the front disk. It is heavy and can cause injury.

Figure J

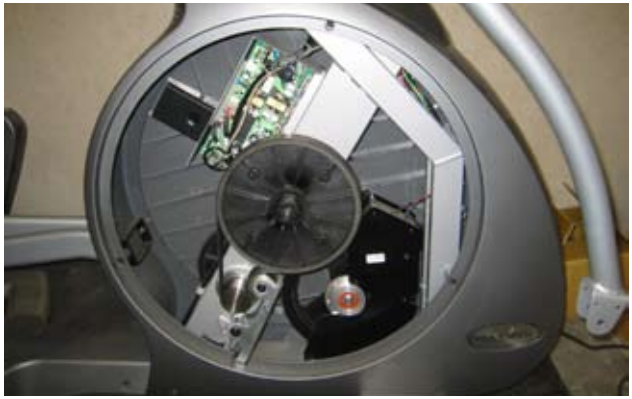


Figure K

9.1 FRONT DISK REMOVAL – CONTINUED

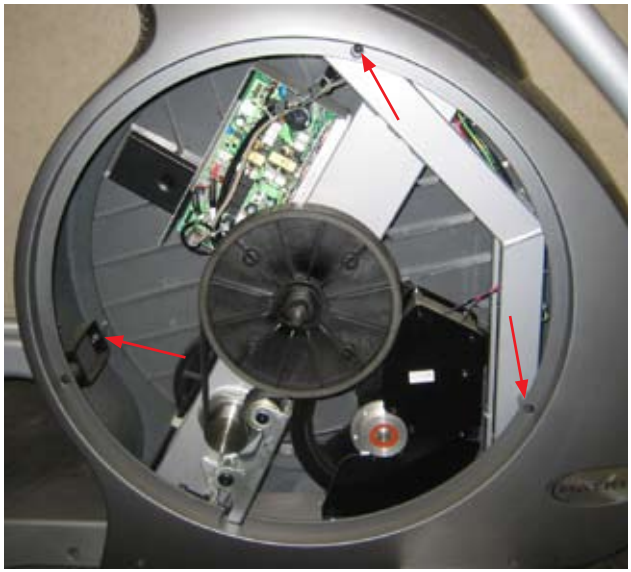


Figure L

Figure M

9. Remove the 12 screws that hold the front shrouds in place. (Figure L)

10. Remove the front shrouds for frame access. (Figure M)

11. Reverse steps 1-10 to reassemble machine, securing all connections and fasteners as needed. 24mm nut should be tightened to 196 N-m Torque. Once reassembled, test machine as outlined in section 9.99.

9.2 LCB (LOWER CONTROL BOARD) REMOVAL AND INSTALLATION

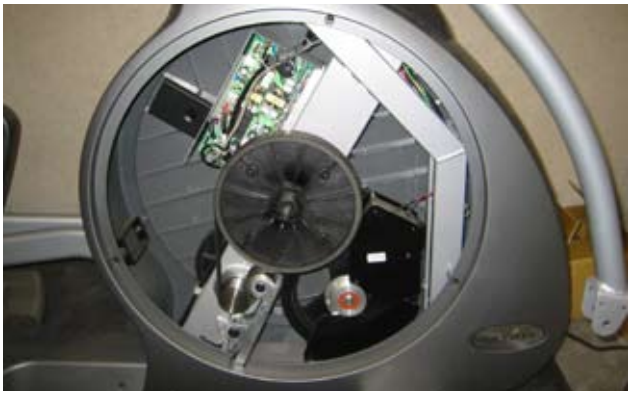


Figure A

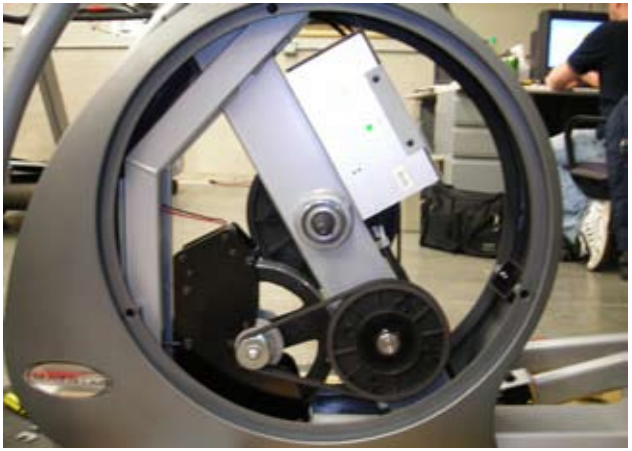


Figure B

Figure C

1. Turn off power and disconnect the cord from the machine.
2. Remove both front disks from machine as outlined in section 9.1. (Figures A and B).
3. Remove LCB cover (2 screws) to allow wiring access. (Figure C)
4. Disconnect all wires from the LCB (7 connections). (Figure D)
5. Remove the LCB (2 screws) from the frame. (Figure E)
6. Reverse steps 1-5, securing all connections and fasteners. Once reassembled, test machine as outlined in section 9.99.

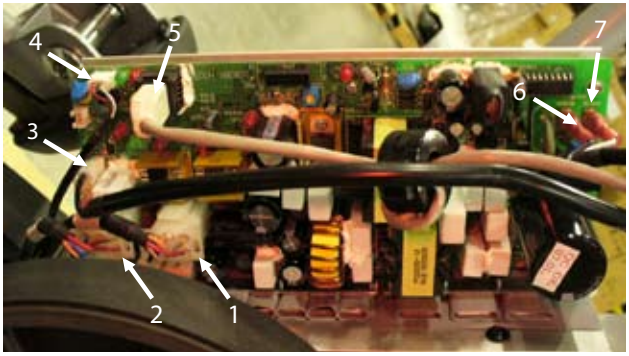


Figure D

Figure E

9.3 ECB (ELECTROMAGNETIC BRAKE) REMOVAL AND INSTALLATION

Figure A

Figure B

Figure C

1. Turn off power and disconnect the cord from the machine.
2. Remove both front disks and plastic shrouds from machine as outlined in section 9.1. (Figure A).
3. Unplug ECB (under mast connection point) from wire harness. (Figure B)
4. Loosen 11mm nut on tension loop bolt. (Figure C)
5. Remove tension loop bolt from ECB bracket. (Figure D)
6. Remove the 6 bolts holding the ECB to the frame & remove the belt once loose. (Figure E)

Figure D

Figure E

9.3 ECB REMOVAL AND INSTALLATION – CONTINUED

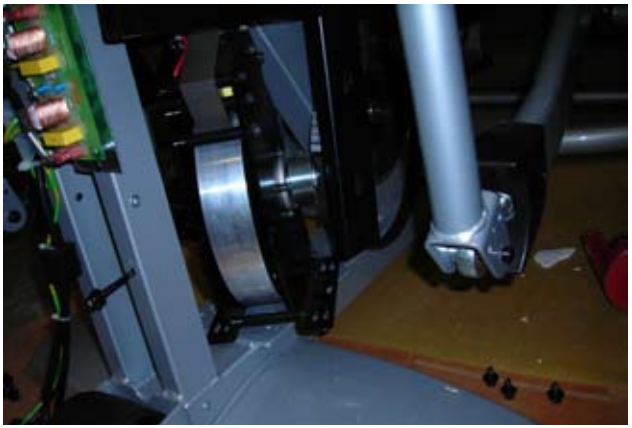


Figure F

Figure G

Figure H

1. Remove the old ECB and install the new ECB from the user's left side of the frame. (Figure F)
2. Install the 6 frame mounting bolts loosely & attach belt. (Figure G)
3. Attach the tension loop bolt to ECB bracket and tension belt to 120 lbs. using 11mm nut. (Figure H)
4. Tighten the 6 frame mounting bolts to 12 N-m torque. (Figure G)
5. Reconnect the ECB wires, reassemble front disks and shrouds, and test machine as outlined in section 9.99.

9.41 BELTS REMOVAL AND INSTALLATION - SHORT BELT RUN

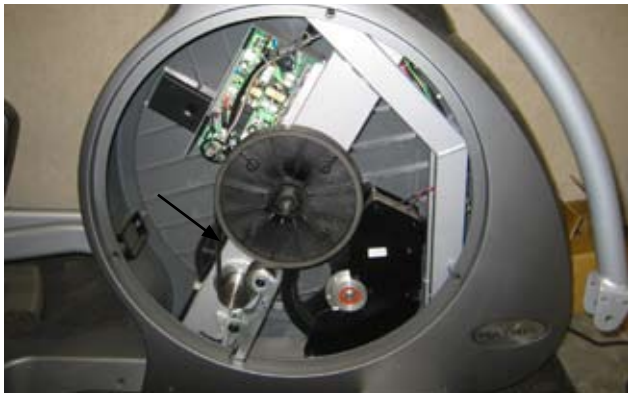


Figure A

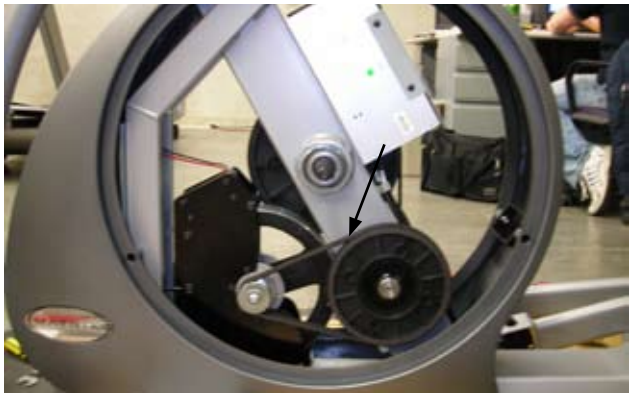


Figure B

Figure C

1. Turn off power and disconnect the cord from the machine.
2. Remove front disks from machine as needed. Outlined in Section 9.1 (Figures A (drive belt) and B (ECB Belt)).
3. Check the unit to see whether you have a short or long belt run. If you have the long belt run, continue to Section 9.42 (for picture of long belt run, see Page 31). .
4. To remove the drive belt loosen the belt tension bolt on the right side of the machine until there is enough slack in the belt to remove it. (Figure C)
5. To start removing the ECB belt loosen the 6 bolts holding the ECB to the frame. (Figure D)
6. Loosen the 11mm nut on tension loop bolt until there is enough slack in the belt to remove it. (Figure E)
7. Install replacement belt(s) and reverse necessary steps to secure the assembly until the belt is tight. Tighten 6 ECB bolts to 12 N-m torque. Tighten drive belt to 180 lbs. for new belt, 150 lbs. for used belt. Tighten ECB belt to 120 lbs. Reassemble and test machine as outlined in section 9.99.

Figure D

Figure E

9.42 BELTS REMOVAL AND INSTALLATION - LONG BELT RUN

4 . (options 1-3 on page 30) - To remove the drive belt, 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 B &C).

5. To remove the ECB belt, loosen the 6 bolts holding the ECB to the frame (Figure D).

6. Loosen the 11 mm nut on the tension loop bolt until there is enough slack in the belt to remove it (Figure E).

7. Install replacement belt(s) and reverse necessary steps to secure the assembly until the belt is tight. Tighten 6 ECB bolts to 12 N-m torque. Tighten drive belt to 180 lbs. for new belt, 150 lbs. for used belt. Tighten ECB belt to 120 lbs. Reassemble and test machine.

FIGURE A

FIGURE B

FIGURE C

FIGURE D

FIGURE E

9.5 BEARING PULLEY ASSEMBLY REMOVAL AND INSTALLATION

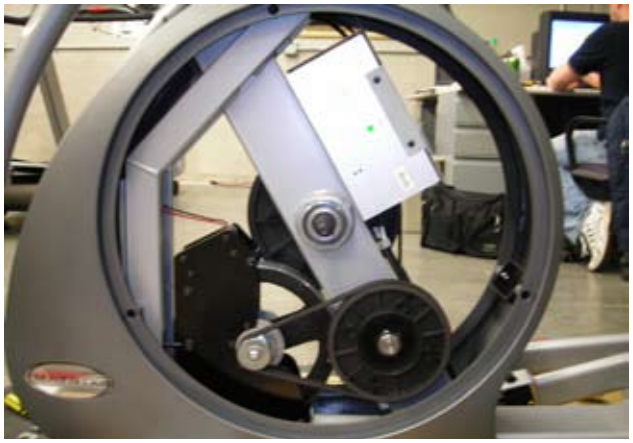


Figure A

Figure B

Figure C

1. Turn off power and disconnect the cord from the machine.
2. Remove both front disks from machine as outlined in section 9.1 (Figure A).
3. Loosen belt tension bolts as outlined in section 9.4. If removing the lower assembly, remove the drive belt tensioner. (Figure B)
4. Release any bent tabs from locking washer around nut. Remove the 75mm nut from the assembly being serviced. Matrix fitness service tool required. (Figure C)
5. Remove the tapered split ring that is held in place by the nut. (Figure D)
6. Remove the bearing assembly, and clean any debris from the frame. (Figure E)
7. Reverse steps 1-6 to install new assembly, making sure to tighten 75mm nut to 100 N-m torque and rebend lockwasher tab to secure nut. (See section 9.4 to install belts.) Test machine as outlined in 9.99.

Figure D

Figure E

9.6 FIXED HANDLEBAR REMOVAL AND INSTALLATION

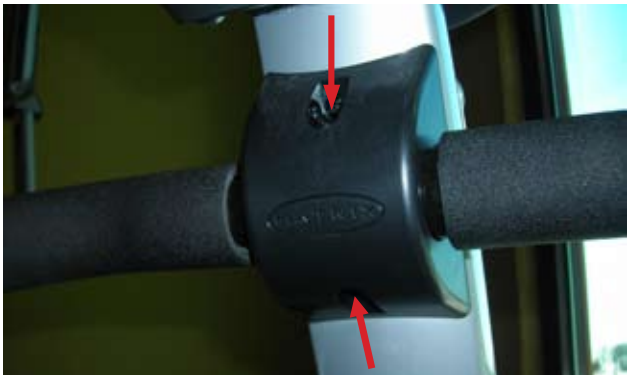


Figure A

Figure B

Figure C

1. Turn off power and disconnect the cord from the machine.
2. Remove the console and disconnect the heart rate wires as outlined in section 9.9.
3. Remove the two screws holding the plastic handlebar cover in place and remove the cover. (Figure A)
4. Remove the 4 bolts that hold the handlebar to the mast being careful to support the handlebar. (Figures B and C)
5. Carefully remove the wires from inside the mast until the connectors on the ends come free and disconnect. (Figure D)
6. To install, carefully push the heart rate wires into the mast and pull them out to reach the console. Reverse steps 1-4 to reassemble and test machine as outlined in section 9.99.

Figure D

9.7 DUAL ACTION HANDLEBAR REMOVAL AND INSTALLATION

Figure A

Figure B

Figure C

1. The dual action handlebar (Figure A) is attached to the link arm at the bottom bracket and at the mast pivot. See section 9.1 for plastic cover removal.
2. Remove the bolt and bushings at the bottom.
3. Remove the two bolts holding it to the mast pivot. (Figure C) (When reassembling tighten to 34 N-m torque). (Figure B)
4. Remove the pivot cap and handlebar. (Figure D)
5. Repeat steps 1-4 to remove the opposite side.
6. Reverse steps 2-5 to replace handlebars.

Figure D

9.8 CONSOLE REMOVAL AND INSTALLATION

Figure A

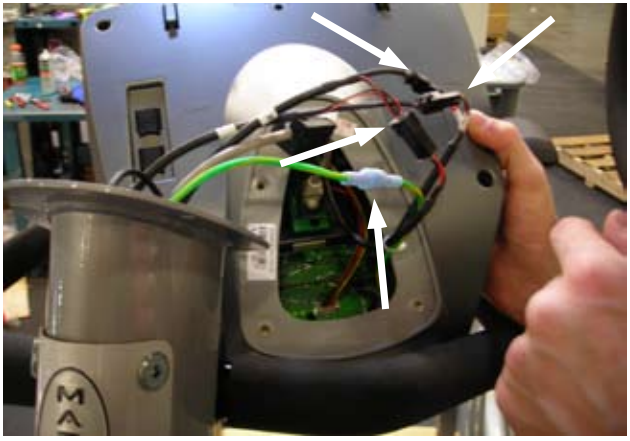


Figure B

1. Turn off power and disconnect the cord from the machine.
2. Remove the 4 screws that hold the console to the top of the mast. (Figure A)
3. Disconnect the data cable, heart rate, and ground wires. (Figure B)
4. Attach the wires to the new console, heart rate wires are labeled R and L.
5. 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.
6. Plug in and test the machine as outlined in section 9.99.

9.8.1 CONSOLE – OVERLAYS & KEYPADS REM0VAL AND INSTALLATION

Figure A

Figure B

Figure C

1. Turn off power and disconnect the cord from the machine.
2. Disconnect the console from the machine as outlined in section 9.9 and remove the back of the console. 6 screws (Figure A) Note: skip this step if not changing keypads.
3. Using a razor blade, carefully peel up one corner of the overlay (Figure B) and then remove the entire overlay. (Figure C) Remove excess adhesive from the plastic.
4. Remove the keypad(s) by disconnecting the ribbon(s) from the circuit board. (Figure D) Use a razor to peel up an edge of the keypad and remove from console. (Figure E)

Figure D

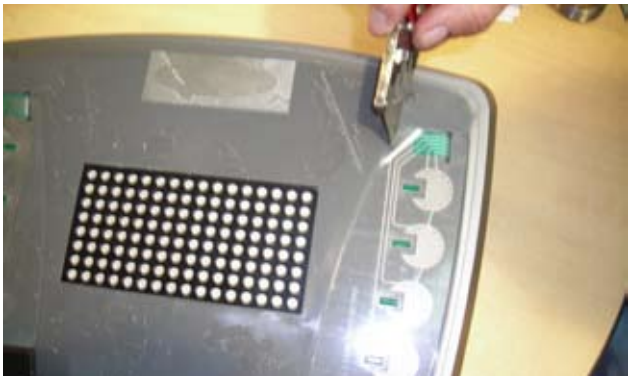


Figure E

9.8.1 CONSOLE – OVERLAYS & KEYPADS – REMOVAL AND INSTALLATION - CONTINUED

Figure F

Figure G

Figure H

5. Remove backing from new keypad. (Figure F) Install new keypad by sliding ribbon through console and aligning keypad with console house – press into place.

6. Attach keypad ribbon to console board by pressing carefully into place. (Figure G)

7. Remove the backing from new overlay(s). (Figure H) Align with console housing and press into place being careful to avoid air bubbles and misalignment.

8. Replace the back of the console 6 screws and re-install the console onto the mast of the machine (Figure I). Plug in and test the machine as outlined in section 9.99.

Figure I

9.8.2 CONSOLE – UCB (UPPER CONTROL BOARD) & HEART RATE BOARD REMOVAL AND INSTALLATION

Figure A

1. Turn off power and disconnect the cord from the machine.
2. Disconnect the console from the machine as outlined in Section 9.8 and remove the back of the console. 6 screws (Figure A)
3. Inside the back plastic of the console is the Heart Rate Board, with the wires disconnected pry it loose from the plastic – it is attached via adhesive pad. (Figures B and C)
4. Peel the adhesive backing off of the new Heart Rate Board and place it onto the back plastic of the console where the old board was located.
5. The UCB is held inside the console with 4 screws. (Figure D) Disconnect screws and all wires to remove from console.
6. Place new UCB into unit and reconnect. Replace the back of the console 6 screws and re-install the console onto the mast of the machine (Figure E). Plug in and test the machine as outlined in section 9.99.

Figure B

Figure D

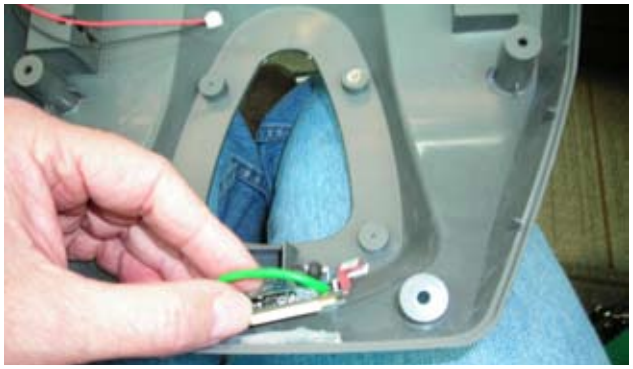


Figure C

Figure E

9.9 REAR PLASTIC REMOVAL AND INSTALLATION

Figure A

1. Turn off power and disconnect the cord from the machine.
2. To remove the rear plastic shrouds 8 screws must be removed. First remove 3 of the 4 on the outer perimeter, only 1 of the 2 on the rear of the machine need to be removed. (Figure A)
3. Remove the 5 screws from inside the embossments on the interior face of the plastic shroud assembly. (Figure B)
4. Remove the shrouds from the machine. (Figure C)
5. Repeat the same steps for the other side of the machine.
6. Reverse steps 1-4 to replace the shrouds. Test machine as outlined in section 9.99.

Figure B

Figure C

9.10 INCLINE MOTOR REMOVAL AND INSTALLATION

Figure A

1. Turn off power and disconnect the cord from the machine.
2. Remove the rear plastic shrouds, outlined in Section 9.10 and disconnect the motor ground wire from frame. (Figure A)
3. Carefully remove the two 8mm bolts that hold the swing arm to the motor assembly – make sure to secure the swing arm as you remove the bolts as it will fall. (Figures B and C)
4. Move the swing arm up to rest against the frame so it is clear of the motor. For safety purposes Matrix fitness suggests you secure the arm to the frame even though it will hold itself in place with its own weight. (Figure D)
5. Remove the motor by disassembling the pivot bolt and disconnecting the wire connection. (Figure E)

Figure B

Figure D

Figure C

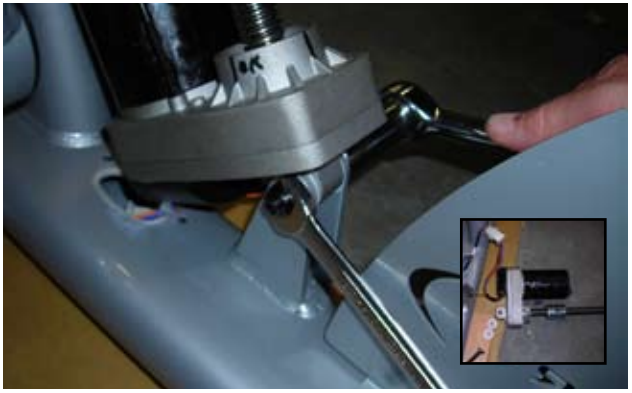


Figure E

9.10 INCLINE MOTOR REMOVAL AND INSTALLATION – CONTINUED

Figure F

Figure G

6. Prepare new motor for installation, new motor will have the nut placed at the end of the screw shaft – DO NOT move the nut. (Figure F)

7. Install the new motor using the plastic washers. (Figure G)

8. Reverse step 5 to secure the motor in place, then reconnect the ground wire from step 2. Do not over tighten the pivot bolt – motor must be able to swivel.

9. Reconnect power cord and turn machine on. Enter MANAGER mode by pressing and holding the "Level" UP/DOWN keys at the same time. MANAGER will appear on the display, press "Select". Using the "Elevation" UP key, toggle to P11 (Motor Calibration) and press "Select". After the calibration sequence is complete the motors will stop turning. Turn machine off and remove the power cord again.

10. Set the nut on the Acme screw to a distance of 67mm (Figure H), from the base of the motor casing, to the furthest end of the nut. Reattach swing arm to the nut with 8mm bolts by reversing step 3.

11. Reinstall plastic shroud covers. Test the machine as outlined in section 9.99.

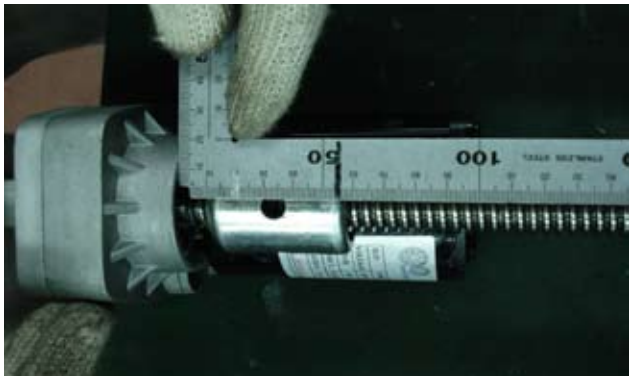


Figure H

9.11 FOOT PEDALS REMOVAL AND INSTALLATION

Figure A

Figure B

Figure C

1. Remove the 4 phillips screws that hold the plastic pedal to the foot plate. (Figure A)
2. Remove the plastic foot pedal. (Figure B)
3. Remove the rubber grip. (Figure C)
4. Clean the foot plate to remove any rubber or debris. (Figure D)
5. Reverse steps 1-3 to reassemble. Test unit as outlined in section 9.99.

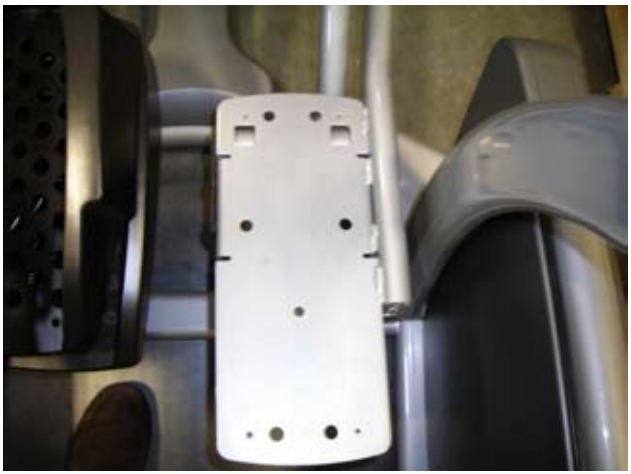


Figure D

9.12 LINK ARMS & PEDAL ARMS REMOVAL AND INSTALLATION

Figure A

Figure B

Figure C

1. To service or replace link arms and pedal arms they should be removed from the machine as an assembly. The pedal arm is noted so as it connects to the front disc assembly. The link arm contains the foot pedal and connects to the dual action arm in the front.

2. Disconnect the arms from the front of the machine as outlined in Section 9.1.

3. Disconnect the arms from the rear of the machine by separating the joint between the swing arm and the pedal arm. Remove the plastic cap from the swing arm bushing to reveal the bolt and washer that hold the joint together. Remove the bolt (tighten to 28 N-m torque during reassembly) and separate the link arm from the swing arm. (Figures A, B, C, D, and E)v

Figure D

Figure E

9.12 LINK ARMS & PEDAL ARMS REMOVAL
AND INSTALLATION – CONTINUED

Figure F

4. Remove the 3 bolts (Figure F) that hold on the mounting plate. (Figure G) Note the plastic washer that mounts at the end of the shaft. (Figure H)

5. Slide link arm shaft out of pedal arm housing to lube bearings inside of pedal arm housing.

6. Reassemble with new parts by reversing steps 1-5, noting the arrangement of washers on the link arm shaft. (Figure I)

7. Test the machine as outlined in section 9.99.

Figure G

Figure I

Figure H

9.13 SWING ARM REMOVAL AND INSTALLATION

Figure A

1. To service or replace a swing arm you should first disconnect the link arm from the dual action arm as outlined in the first part of Section 9.1. The link arm contains the foot pedal and connects to the dual action arm in the front.

2. Rotate the crank assembly forward so you can access and remove the black plastic cover on the lower swing arm joint. (Figures A and B)

3. Remove the bolt that holds the swing arm lower assembly together. (Figure C) (Tighten to 28 N-m torque during reassembly)

4. Carefully tap the crank arm inward until it can be pulled free of the bearing housing. (the pedal arm assembly is free to pivot so there is no need to remove it from the machine) (Figures D and E)

Figure B

Figure D

Figure C

Figure E

9.13 SWING ARM REMOVAL AND INSTALLATION - CONTINUED

Figure F

Figure G

Figure H

5. To remove the swing arm from the machine, loosen one of the bolts on either side of the upper pivot joint. (Figure F)

6. Holding onto the swing arm, push /pull the pivot shaft out of the bearing housing. (Figure G and H)

7. Transfer the rubber arm pad and plastic parts to the new swing arm. (Figure I)

8. Reverse steps 1-6 to reassemble unit, when reassembling be aware of the spacer between the bearings that the shaft passes through. (Figure J) Test machine as outlined in section 9.99.

Figure I

Figure J

9.14 REAR PIVOT ARM REMOVAL AND INSTALLATION

Figure A

Figure B

1. Turn off power and disconnect the cord from the machine.
2. Remove the rear plastic covers as outlined in Section 9.9.
3. Remove the bolts holding the rear pivot arm to the motor (Figure A).
4. Remove the 4 bolts that hold the upper arm assembly to the rear pivot arm (Figure B) and carefully swing the upper arm assembly forward and out of the way.
5. Remove the pivot shaft bolt and taper washer from the pivot assembly. (Figure C).
6. Remove the pivot shaft and rear pivot arm from the frame. (Figure D).
7. Reverse steps 2-6 to reassemble with new pivot arm components. Make sure to transfer the plastic covers and any necessary hardware from the original arm assembly. Tighten the pivot shaft bolt to 40 N-m torque. Test machine as outlined in section 9.99.

Figure C

Figure D

9.99 Unit Functionality Testing

Once the Ascent trainer is fully assembled and properly placed on the floor use the following instructions to test the machine:

1. Without hitting start or entering any exercise modes, stand on machine and hold handlebars while initiating movement to simulate exercising. While moving listen for any odd noises or squeaks.
2. After stopping movement, press the green Quickstart button and being using the machine.
3. Grasp the handgrips to check for proper heartrate response.
4. Press the level up and down buttons both on the hand grips and on the console to make sure resistance is fully functional.
5. Press the elevation up and down buttons (fully incline and decline the machine) to make sure the incline motor function is fully operational. (If "motor synchronization error" comes up, enter the "manager mode" by pressing the level up and down keys at the same time for 3 seconds. Press the select button to enter the manager mode menu and scroll through the screens - by pressing either elevation or level up and down buttons - to P11 (calibrate) and press select to calibrate the motors. Once the motors finish moving press the Quickstart button two times to exit manager mode. Press Quickstart again start the machine and recheck the elevation using the elevation up and down buttons to verify calibration worked).
6. If everything functions properly the machine will reset after 30 seconds and is ready for use.

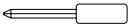
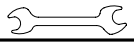
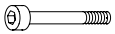
CHAPTER 10: EXPLODED DIAGRAMS

10.1 DRIVE ASSEMBLY

10.2 CONSOLE

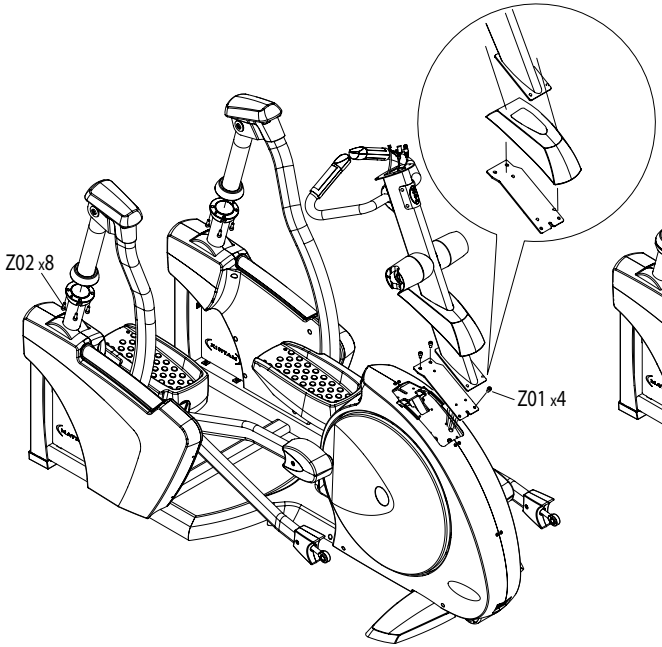
10.3 ASCENT TRAINER SWING ARM/ACTUATORS

10.4 FASTENERS & ASSEMBLY TOOLS

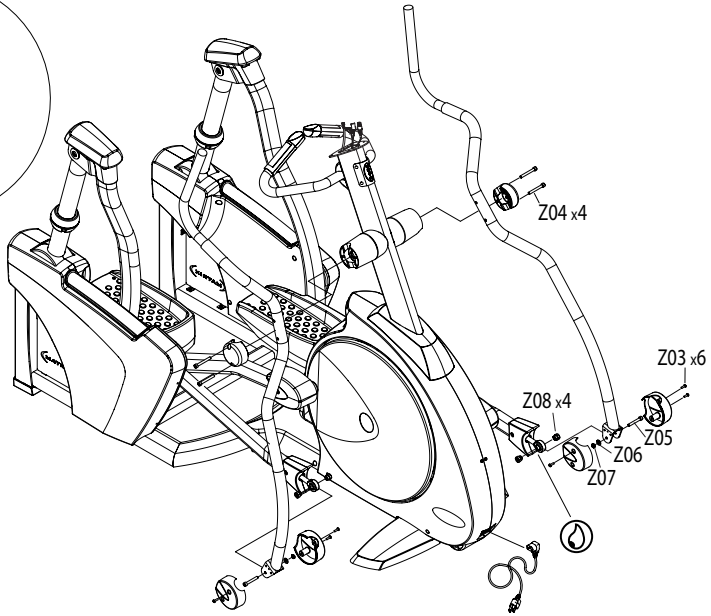
QTY	PART #	SKETCH	DESCRIPTION	NOTES
01			6mm ALLEN WRENCH	
01			PHILLIPS DRIVER	
01			OPEN WRENCH (#13)	
04	Z01		HEX SOCKET HEAD CAP (M8 x 15L)	
08	Z02		HEX SOCKET HEAD CAP (M8 x 20L)	
06	Z03		CROSS TRUSS HEAD (M5 x 10L)	
04	Z04		HEX SOCKET HEAD CAP (M8 x 65L)	
02	Z05		HEX SOCKET HEAD CAP (M8 x 55L)	
02	Z06		FLAT WASHER	
02	Z07		NYLON NUT	
04	Z08		AXLE	
04	N51		CROSS TRUSS HEAD (M5 x 12L)	

10.5 MX-A5x ASCENT TRAINER ASSEMBLY STEPS

STEP 1

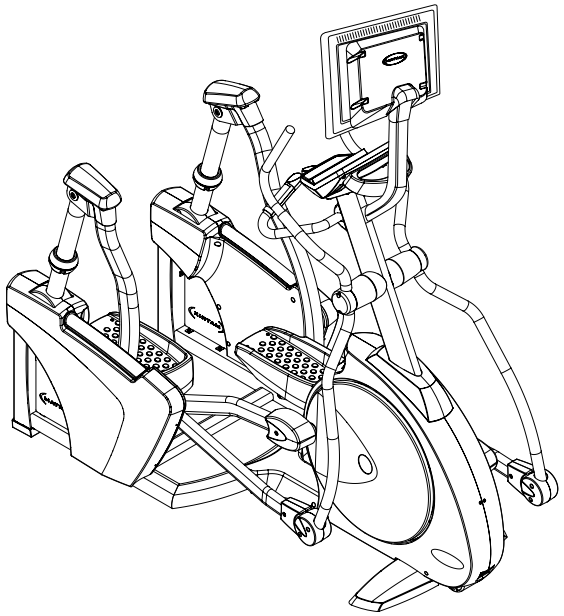


STEP 2



Lightly grease

10.6 MX-A5x OPTIONAL ENTERTAINMENT ACCESSORY



11.1 BELT TENSIONER BEARING REPLACEMENT

1. Bearing replacement procedure for A5x Ascent Trainer machines.

RE-WORK PARTS REQ.

1. Replacement bearing kit (SAP - 0000086250)

TOOLS AND EQUIPMENT REQ.

1. Replacement bearing kit (SAP - 0000086250)
2. (2) 5mm Allen Wrench
3. Philips head screwdriver
4. 24mm Socket Wrench
5. Matrix Disc Removal Tool

PROCEDURE

1. Refer to Ascent Trainer Service Manual and complete steps 1,2 and 3 in section 9.4
2. With the drive belt loosened, remove the tension wheel assembly from the unit using a 5mm Allen Wrench. (Fig. 1)
3. Remove the bearing and washers from the assembly housing with 5mm Allen Wrenches. (Fig. 2)
4. Check to see if the housing needs the washers included in the kit. Using the washers to fill any excess gap between the new bearing and bracket. If the bearing fits with minimal gap then discard the washers. DO NOT USE JUST ONE WASHER. This will cause a misalignment with the belt. When using both washers, it will be a snug fit. If you need help aligning the washers and bearing to the holes in the housing, use a screwdriver to nudge the bearing.
5. Secure the new bearing with the 2 hex screws. (Fig. 3)
6. Replace bearing assembly onto unit and reverse steps 1,2, and 3 in section 9.4 of the Ascent Trainer Service Manual.
7. Test machine for proper operation as described in Section 9.99 in the Ascent Trainer Service Manual.

Figure 1

Figure 2

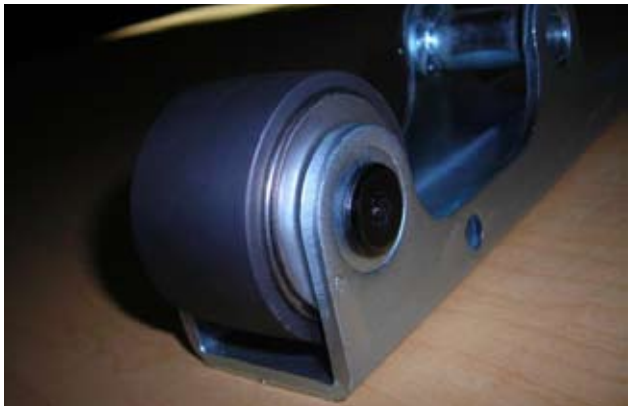


Figure 3

11.2 BEARING ASSEMBLY SHIMMING

1. Eliminate clunking noise by shimming bearing assembly with washers.

RE-WORK PARTS REQ.

1. Washer kit (SAP - ZMS3000335): Includes 4x .1mm (SAP - ZMS3000332) and 4x .2 flat washers (SAP - ZMS3000333), 2x. 5mm wavy washer (SAP 005219-00).

TOOLS AND EQUIPMENT REQ.

1. 1x Snap Ring Pliers
2. 1x Phillips Head Screwdriver
3. 1x 8mm Socket
4. 1x 17mm Open Wrench

PROCEDURE

1. Remove plastic guard cover with Phillips head screwdriver. (Fig. 1)
2. Separate bearing assembly from arm using 8mm socket and 17mm open wrench. (Fig. 2)
3. Remove snap ring from bearing rod using snap ring pliers. (Fig. 3)
4. Remove bearing assembly from rod.
5. Insert appropriate combination of washers onto rod. This number will vary, but using combinations of washers you may go up to 1mm in total shim distance. Typically you should start with .3mm (1x .1mm and 1x .2mm) and adjust from there.(Fig. 4)
6. Replace bearing assembly onto rod.
7. Replace snap ring onto rod. Snap ring should snap into groove. If not, remove washers in 1mm increments.
8. Stress test by trying to move bearing assembly back and forth along the rod. If the assembly still moves, add washers in .1mm increments.
9. Reconnect arm onto bearing assembly and reattach plastic guard cover.

TEST AND VERIFICATION

Run Ascent Trainer and test unit for functionality as in section 9.99 in the service manual. If noise persists more washers are needed.

Figure 1

Figure 2

Figure 3

Figure 4

11.3 UPGRADING HANDGRIPS WITH RESISTANCE BUTTONS

1. R eplacement/upgrade instructions for the resistance level buttons that are handle bar mounted to the Ascent Trainer.

RE-WORK PARTS REQ.

1. Each kit includes: Complete left and right hand grip components, replacement screws.

TOOLS AND EQUIPMENT REQ.

1. #2 Phillips Head Screwdriver
2. Straight Blade Screwdriver

PROCEDURE

BEFORE BEGINNING PLEASE NOTE THAT YOU REMOVE AND REPLACE KEYPADS WITH LIKE ARROW DIRECTIONS ON EACH SIDE DURING THE REPLACEMENT PROCESS.

1. Remove bottom, or back side grip plate using straight blade screwdriver. *NOTE - The grip plate will be damaged or destroyed in the removal process, as well as the plastic grip itself, these parts are all included in the upgrade kit.

2. Remove the three (3) Phillips head screws that hold the two halves of the plastic grip together.

3. Separate the two halves of the handgrip (Fig.1) and disconnect wires from grip plates, and uplug wire from the circuit board (Fig.2).

Figure 1

Figure 2

4. Connect wire to grip plate on top, or front half of plastic handles and install grip plate by pressing into place in the handle (be sure to remove all of the protective wrapping from new grip plate before installing, and expose adhesive tabs on plastick handle) see Fig 3 and Fig 4. Connect wire to circuit board of new handle, and set this half of the handle in place on the machine.

Figure 3

Figure 4

5. Using the screws provided in the updated kit, set the bottom or back half of the plastic handle in place and fasten the two halves together. Remove the liner covering the small adhesive tabs from the bottom plastic half of the handle. Remove the plastic protective wrap from the bottom grip plate, connect wire, and press into place.

TEST AND VERIFICATION

Run Ascent Trainer and test unit for functionality as in section 9.99 in the service manual. Make sure heart rate function and resistance level buttons are properly working on new handles.

11.4 INSTALLING ADJUSTABLE TENSIONER

1. To replace belt tensioner with an adjustable bracket assembly.

RE-WORK PARTS REQ

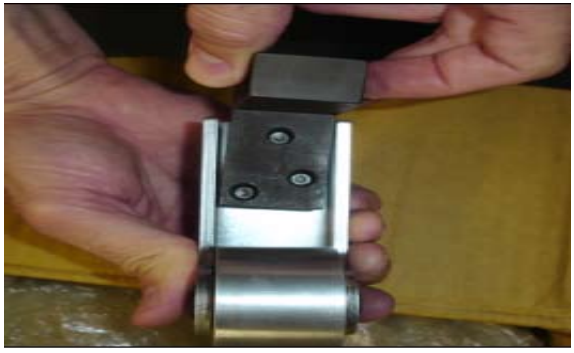
1. Part # 0000089133 (short - this is used on most units) or 0000089456 (long) - Replacement Tensioner Kit: contains tensioner assembly, zip ties, and shims.
2. Part # 0000089129 - Adjustment Block. Send one per technician (can be reused on multiple units).

TOOLS AND EQUIPMENT REQUIRED

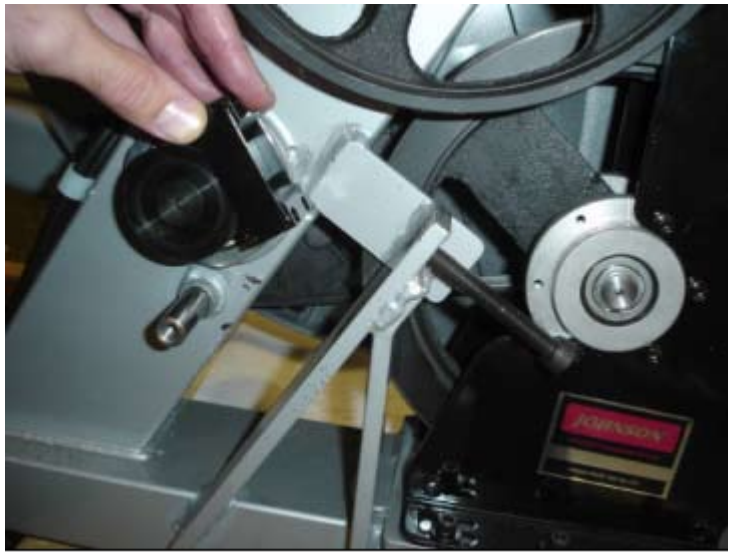
1. 24 mm Socket / Ratchet.
2. Matrix Wheel Puller.
3. Torque Wrench to 2000kgf*cm/196 N-m (145 ft*lbf).
4. #2 Phillips Head Screwdriver.
5. 5 mm, 6 mm, and 8 mm Allen / Hex.
6. 13 mm / 17 mm Open End Wrench.
7. Pliers.
8. Side Cutter.

PROCEDURE

1. Read these directions all the way through before proceeding.
2. Follow procedure as outlined in Section 9..1 of the Ascent Trainer Service Manual to remove the right side disc from the machine.
3. Loosen the belt tension lock nut with 17mm wrench, and back off the screw so that the drive belt can be removed from the unit. (see section 9.4 of the Ascent Trainer Service Manual). Remove the locking nut to allow more room to fit the parts in later steps.
4. Use a 5 mm Allen wrench to remove the tensioner from the machine. *Note that several of the Phillips screws will need to be removed so the plastic covers can be spread far enough to remove tensioner completely from mounting post.
5. If required, remove the non-crowned tension roller from the old assembly and move it to the new assembly. Rollers that have a crowned face or rollers consisting of two bare ball bearings are to be replaced with the new roller kit.
6. Check the 5 screws on the tensioner assembly. They should be only lightly finger tight and the three pieces should all slide freely against each other without excessive slop.



7. Place the alignment block over the small pulley and then place the new tensioner onto the frame.



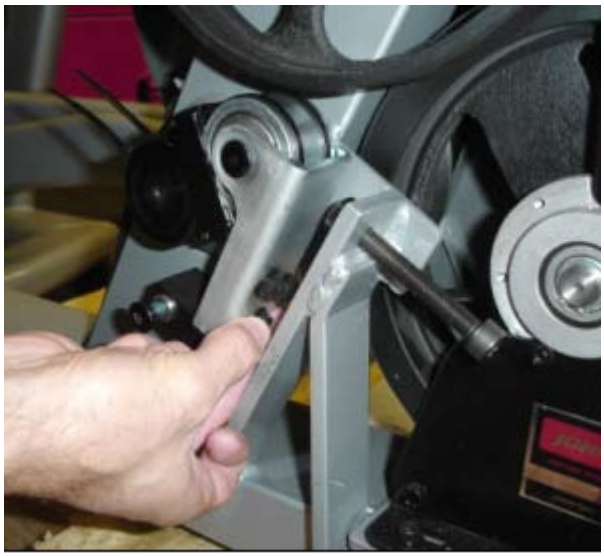
8. Apply pressure across the small pulley and the roller to bring the two parts into contact with the alignment block.

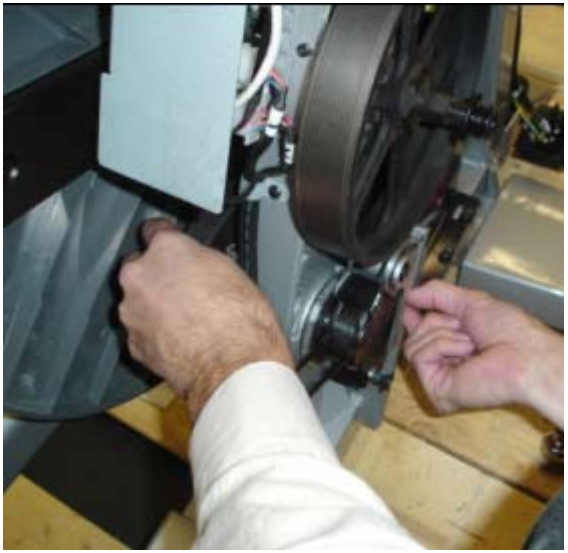
9. Thread the two cable ties through the bottom holes in the alignment block and around all of the components.

10. Grab the tail end of each cable tie and pull the cable tie VERY tight, stretching it around the componenets. As the cable tie is held tight, push the zipper portion toward the roller to lock the tension in.

11. Grasp the pulley on the opposite side of the machine from the small pulley and rotate it back and forth slightly to confirm that the components are all seated tightly against each other.

12. Grasp the pulley on the opposite side of the machine from the small pulley and rotate this back and forth slightly and gently as you make these bolts finger-tight. Finger-tighten the 2 bolts on the bottom of the bracket assembly and then the three bolts on the side.



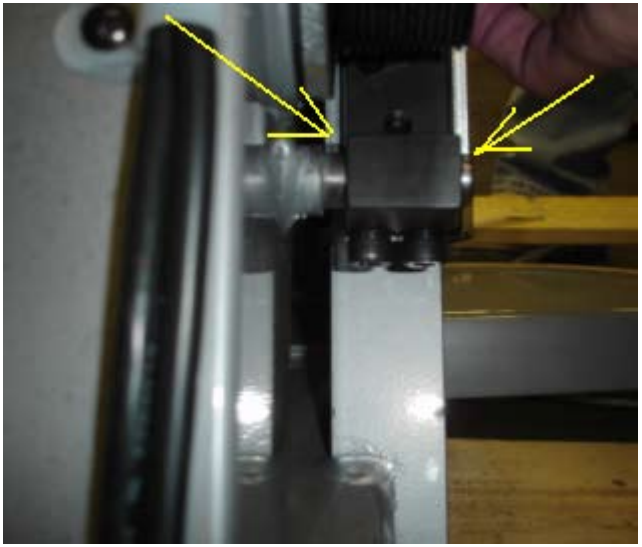


13. Start at the bottom and tighten the Cap Screws (6 mm Hex).,

14. Next, tighten the three hex head screws (13 mm wrench).

15. Cut the cable ties and remove the alignment block from the machine. Keep the alignment block for the next step.

16. Install the drive belt and move the tensioner assembly on the mounting post until it is centered on the belt. Make a judgement or measurement of the space between the tensioner mounting block and the mounting post on each side.



17. Choose shims from the kit to go behind and in front of the bracket and do a test installation of the tensioner bracket. If the bracket is not centered choose different shims - repeat as necessary.

18. Adjust the drive belt tension to 180 lbs. for new belt, 150 lbs. for used belt.

19. While observing the distance between the belt edge and tension roller edge, spin the drive in the forward direction several revolutions. Stop the machine, spin the drive in the reverse direction and make sure the belt does not change its contact position on the tensioner wheel as the crank direction is reveresed. It is possible to achieve 0 mm change in many cases but up to 0.5 mm is acceptable.

20. Any significant travel or variance observed when the drive direction is changed indicates that the tensioner is not properly aligned and this procedure should be repeated from step 2 until there is 0 mm to 0.5 mm belt travel observed when the drive direction is changed back and forth.

Machine with 1 mm or greater shift in position of the belt on the back side tensioner would experience shortened belt life and noise.

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