Troubleshooting No UB Movement / Actuator Movement

No Upper Body Arm Movement Flowchart

SOLUTIONS:

A1
Recalibrate UB Arms

Note: If problem still exist refer to **"A7"** solution

A2
Replace Replace Actuator

A3
Replace Battery

A4
Replace Battery Cable

A5
Replace UB Board

Note: S2 switch commands the actuator to move in upward direction. S1 directs the actuator to move in downward direction.

Note: If DS3 or DS4 LED light up only for a brief second when holding the switch (S1/S2) the UB board is sensing voltage, so the UB Board do not need to be replaced. Possible the actuator is already maximized in it's position your are directing it to move to or something is causing UB system to bind.
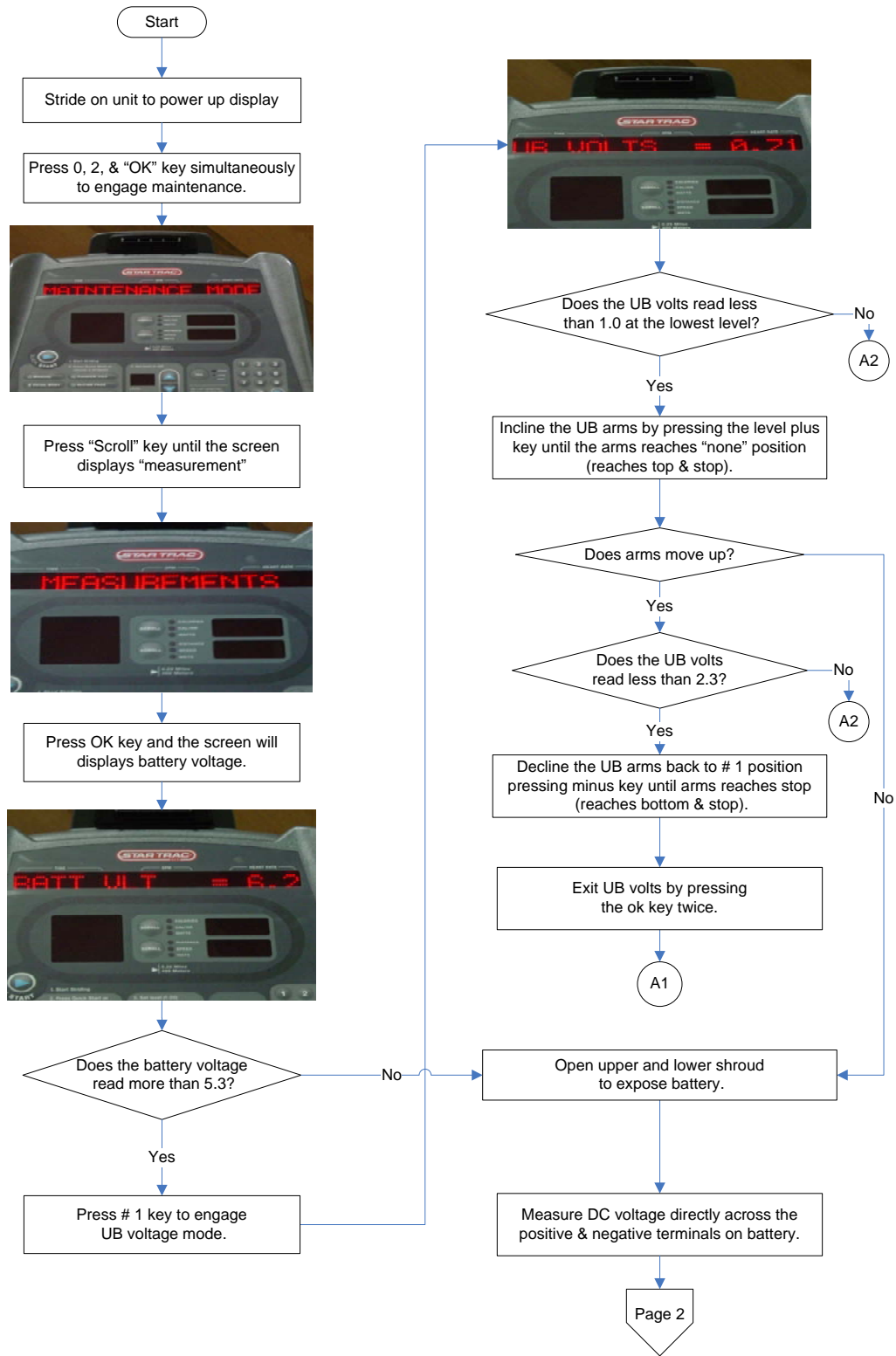
A6
Replace Fuse
(7amp 2AG fast blow)

A7
Replace actuator if it's not rotating smoothly or the speed moves much slower than normal.

Note: Compare speed and actuator rotation with another unit to check normality.

A8
Check female pins on dada cable for too much space (See Photo Below)

Note: Make sure the female pins that connects to the display electronics and the LCB are completely closed before performing next step.

A9
Replace LCB

Note: Must Recalibrate UB arms after replacing LCB.

A10
Problem Resolved

Note: Recalibrate UB arms for best results.

Start

Stride on unit to power up display

Press 0, 2, & "OK" key simultaneously to engage maintenance.

Press "Scroll" key until the screen displays "measurement"

Press OK key and the screen will displays battery voltage.

Does the battery voltage read more than 5.3? — No → Open upper and lower shroud to expose battery.

Yes

Press # 1 key to engage UB voltage mode.

Does the UB volts read less than 1.0 at the lowest level? — No → A2

Yes

Incline the UB arms by pressing the level plus key until the arms reaches "none" position (reaches top & stop).

Does arms move up?

Yes

Does the UB volts read less than 2.3? — No → A2

Yes

Decline the UB arms back to # 1 position pressing minus key until arms reaches stop (reaches bottom & stop).

Exit UB volts by pressing the ok key twice.

A1

No

Open upper and lower shroud to expose battery.

Measure DC voltage directly across the positive & negative terminals on battery.

Page 2

No Upper Body Arm Movement Flowchart

SOLUTIONS:

A1
Recalibrate UB Arms

A2
Replace Replace Actuator

A3
Replace Battery

A4
Replace Battery Cable

A5
Replace UB Board

Note: S2 switch commands the actuator to move in upward direction. S1 directs the actuator to move in downward direction.

Note: If DS3 or DS4 LED light up only for a brief second when holding the switch (S1/S2) the UB board is sensing voltage, so the UB Board do not need to be replaced. Possible the actuator is already maximized in it's position your are directing it to move to or something is causing UB system to bind.

A6
Replace Fuse
(7amp 2AG fast blow)

A7
Replace actuator if it's not rotating smoothly or the speed moves much slower than normal.

Note: Compare speed and actuator rotation with another unit to check normality.

A8
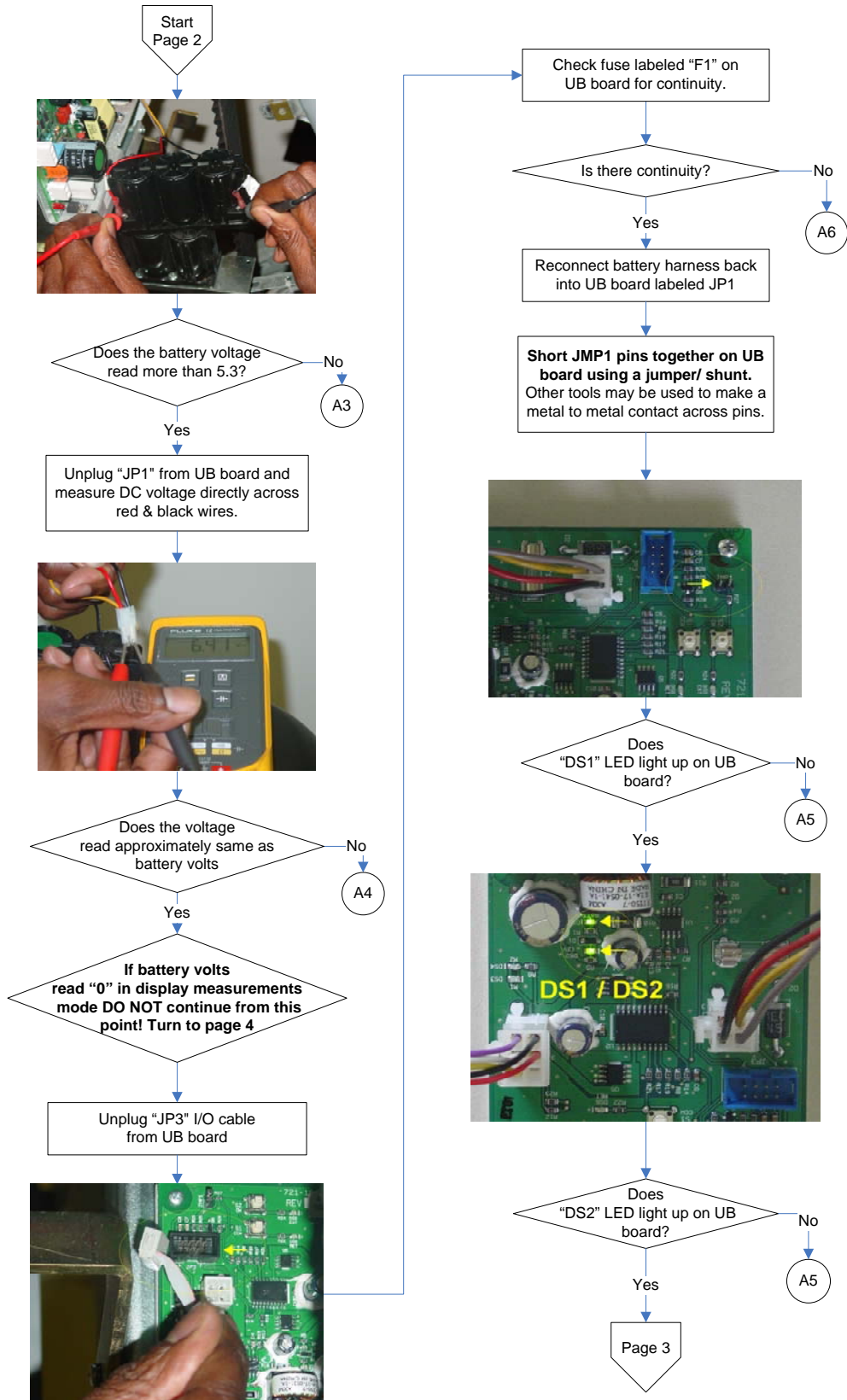**Check female pins on dada cable for too much space (See Photo Below)**

Note: Make sure the female pins that connects to the display electronics and the LCB are completely closed before performing next step.

A9
Replace LCB

Note: Must Recalibrate UB arms after replacing LCB.

A10
Problem Resolved

Note: Recalibrate UB arms for best results.

Start
Page 2

Does the battery voltage read more than 5.3? — No → A3

Yes

Unplug "JP1" from UB board and measure DC voltage directly across red & black wires.

Does the voltage read approximately same as battery volts — No → A4

Yes

If battery volts read "0" in display measurements mode DO NOT continue from this point! Turn to page 4

Unplug "JP3" I/O cable from UB board

Check fuse labeled "F1" on UB board for continuity.

Is there continuity? — No → A6

Yes

Reconnect battery harness back into UB board labeled JP1

Short JMP1 pins together on UB board using a jumper/ shunt. Other tools may be used to make a metal to metal contact across pins.

Does "DS1" LED light up on UB board? — No → A5

Yes

DS1 / DS2

Does "DS2" LED light up on UB board? — No → A5

Yes

Page 3

No Upper Body Arm Movement Flowchart

SOLUTIONS:

A1
Recalibrate UB Arms

A2
Replace Replace Actuator

A3
Replace Battery

A4
Replace Battery Cable

A5
Replace UB Board

Note: S2 switch commands the actuator to move in upward direction. S1 directs the actuator to move in downward direction.

Note: If DS3 or DS4 LED light up only for a brief second when holding the switch (S1/S2) the UB board is sensing voltage, so the UB Board do not need to be replaced. Possible the actuator is already maximized in it's position your are directing it to move to or something is causing UB system to bind.

A6
Replace Fuse
(7amp 2AG fast blow)

A7
Replace actuator if it's not rotating smoothly or the speed moves much slower than normal.

Note: Compare speed and actuator rotation with another unit to check normality.

A8
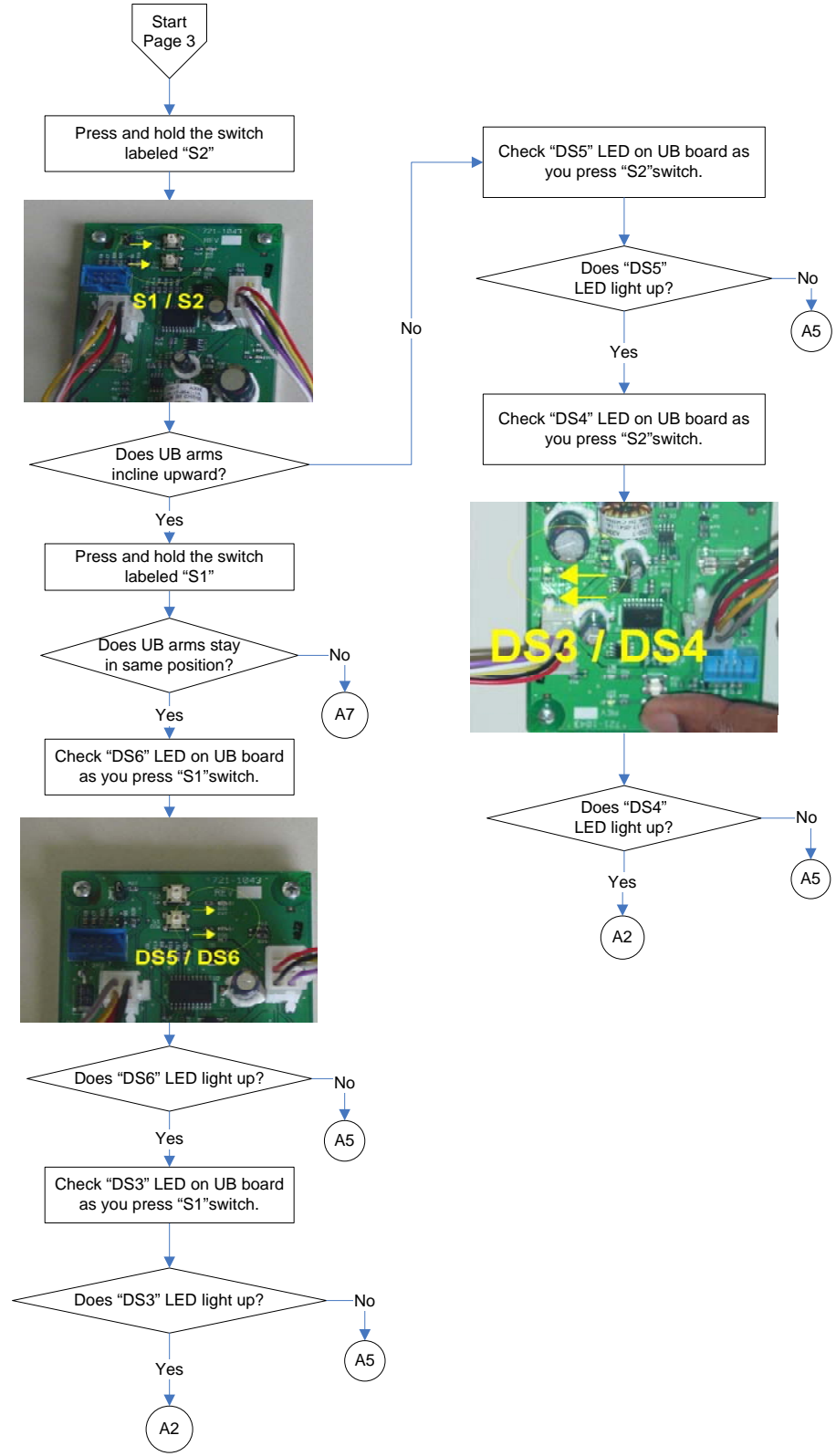Check female pins on dada cable for too much space (See Photo Below)

Note: Make sure the female pins that connects to the display electronics and the LCB are completely closed before performing next step.

A9
Replace LCB

Note: Must Recalibrate UB arms after replacing LCB.

A10
Problem Resolved

Note: Recalibrate UB arms for best results.

Start Page 3

Press and hold the switch labeled "S2"

Does UB arms incline upward? — No →

Yes ↓

Press and hold the switch labeled "S1"

Does UB arms stay in same position? — No → A7

Yes ↓

Check "DS6" LED on UB board as you press "S1"switch.

Does "DS6" LED light up? — No → A5

Yes ↓

Check "DS3" LED on UB board as you press "S1"switch.

Does "DS3" LED light up? — No → A5

Yes ↓ A2

Check "DS5" LED on UB board as you press "S2"switch.

Does "DS5" LED light up? — No → A5

Yes ↓

Check "DS4" LED on UB board as you press "S2"switch.

Does "DS4" LED light up? — No → A5

Yes ↓ A2

No Upper Body Arm Movement Flowchart

SOLUTIONS:

A1
Recalibrate UB Arms

A2
Replace Replace Actuator

A3
Replace Battery

A4
Replace Battery Cable

A5
Replace UB Board

Note: S2 switch commands the actuator to move in upward direction. S1 directs the actuator to move in downward direction.

Note: If DS3 or DS4 LED light up only for a brief second when holding the switch (S1/S2) the UB board is sensing voltage, so the UB Board do not need to be replaced. Possible the actuator is already maximized in it's position your are directing it to move to or something is causing UB system to bind.

A6
Replace Fuse
(7amp 2AG fast blow)

A7
Replace actuator if it's not rotating smoothly or the speed moves much slower than normal.

Note: Compare speed and actuator rotation with another unit to check normality.

A8
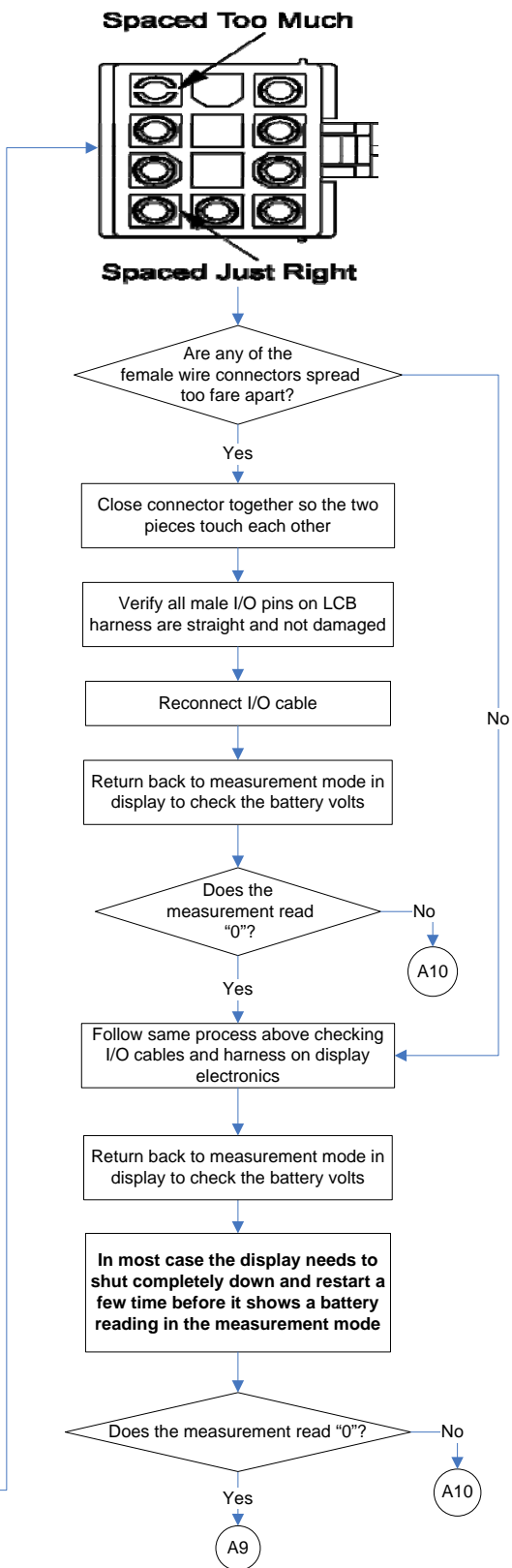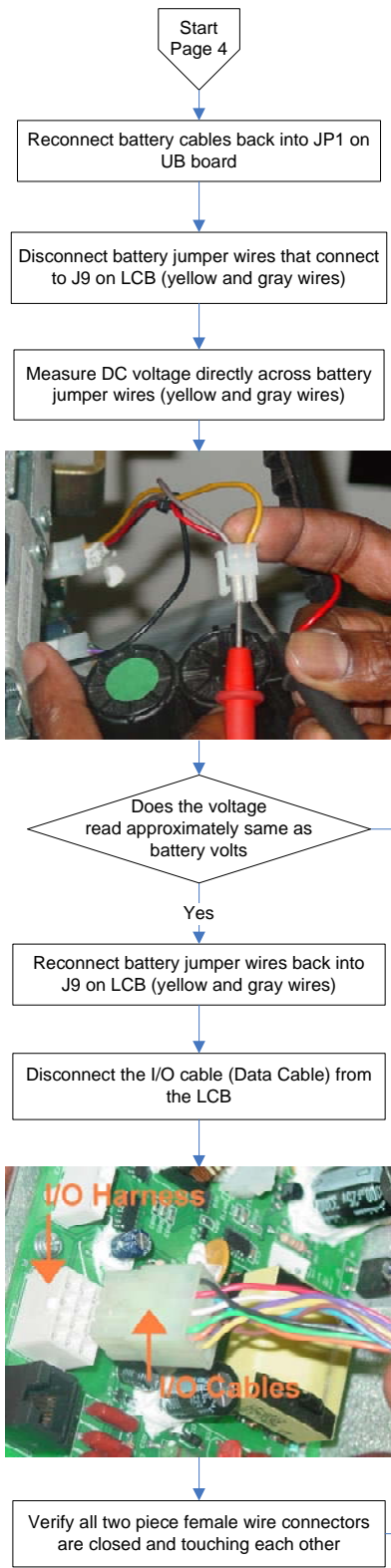**Check female pins on dada cable for too much space (See Photo Below)**

Note: Make sure the female pins that connects to the display electronics and the LCB are completely closed before performing next step.

A9
Replace LCB

Note: Must Recalibrate UB arms after replacing LCB.

A10
Problem Resolved

Note: Recalibrate UB arms for best results.

Start Page 4

Reconnect battery cables back into JP1 on UB board

Disconnect battery jumper wires that connect to J9 on LCB (yellow and gray wires)

Measure DC voltage directly across battery jumper wires (yellow and gray wires)

Does the voltage read approximately same as battery volts — No → A4

Yes

Reconnect battery jumper wires back into J9 on LCB (yellow and gray wires)

Disconnect the I/O cable (Data Cable) from the LCB

I/O Harness
I/O Cables

Verify all two piece female wire connectors are closed and touching each other

Spaced Too Much

Spaced Just Right

Are any of the female wire connectors spread too fare apart? — No →

Yes

Close connector together so the two pieces touch each other

Verify all male I/O pins on LCB harness are straight and not damaged

Reconnect I/O cable

Return back to measurement mode in display to check the battery volts

Does the measurement read "0"? — No → A10

Yes

Follow same process above checking I/O cables and harness on display electronics

Return back to measurement mode in display to check the battery volts

In most case the display needs to shut completely down and restart a few time before it shows a battery reading in the measurement mode

Does the measurement read "0"? — No → A10
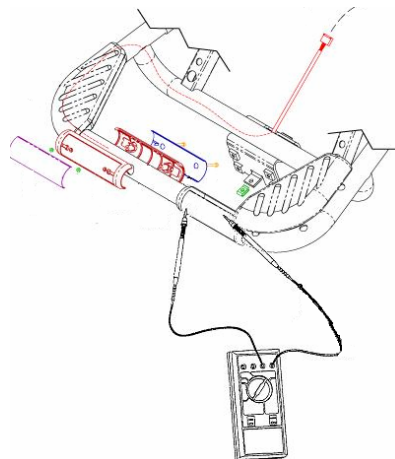
Yes

A9

Key Not Responding or Key Down

- Engage Maintenance Mode
- Perform Display Test
- Perform Keypad Test

    – Determine which keypad is
      damaged
        - Keypad overlay

    – UB Keypad (only on CT
      Elite) – Key Down 22-25
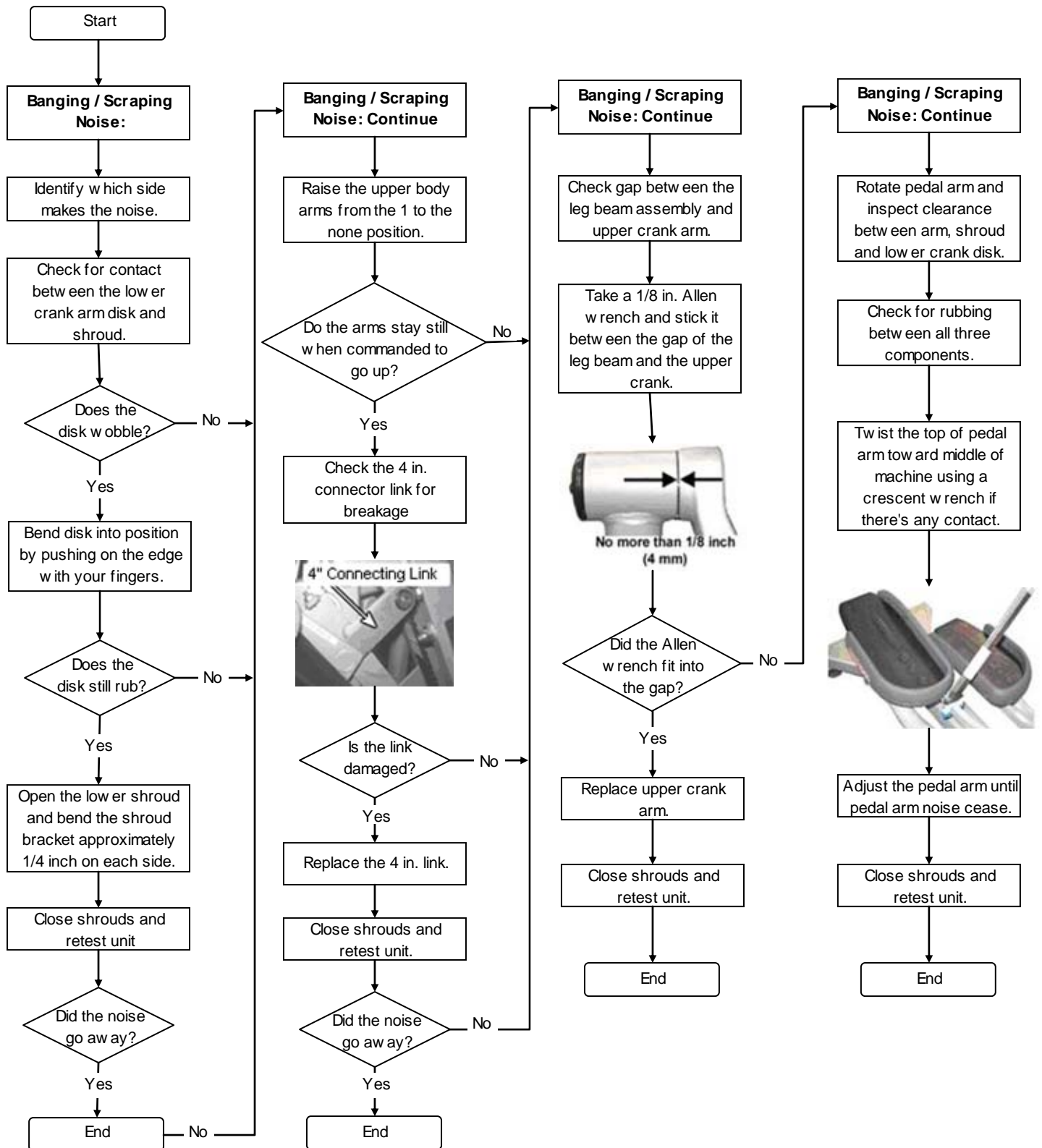   error

Troubleshooting Heart Rate

- Perform Heart Rate Test
    – As illustrated earlier

- If Heart Rate Test Fails
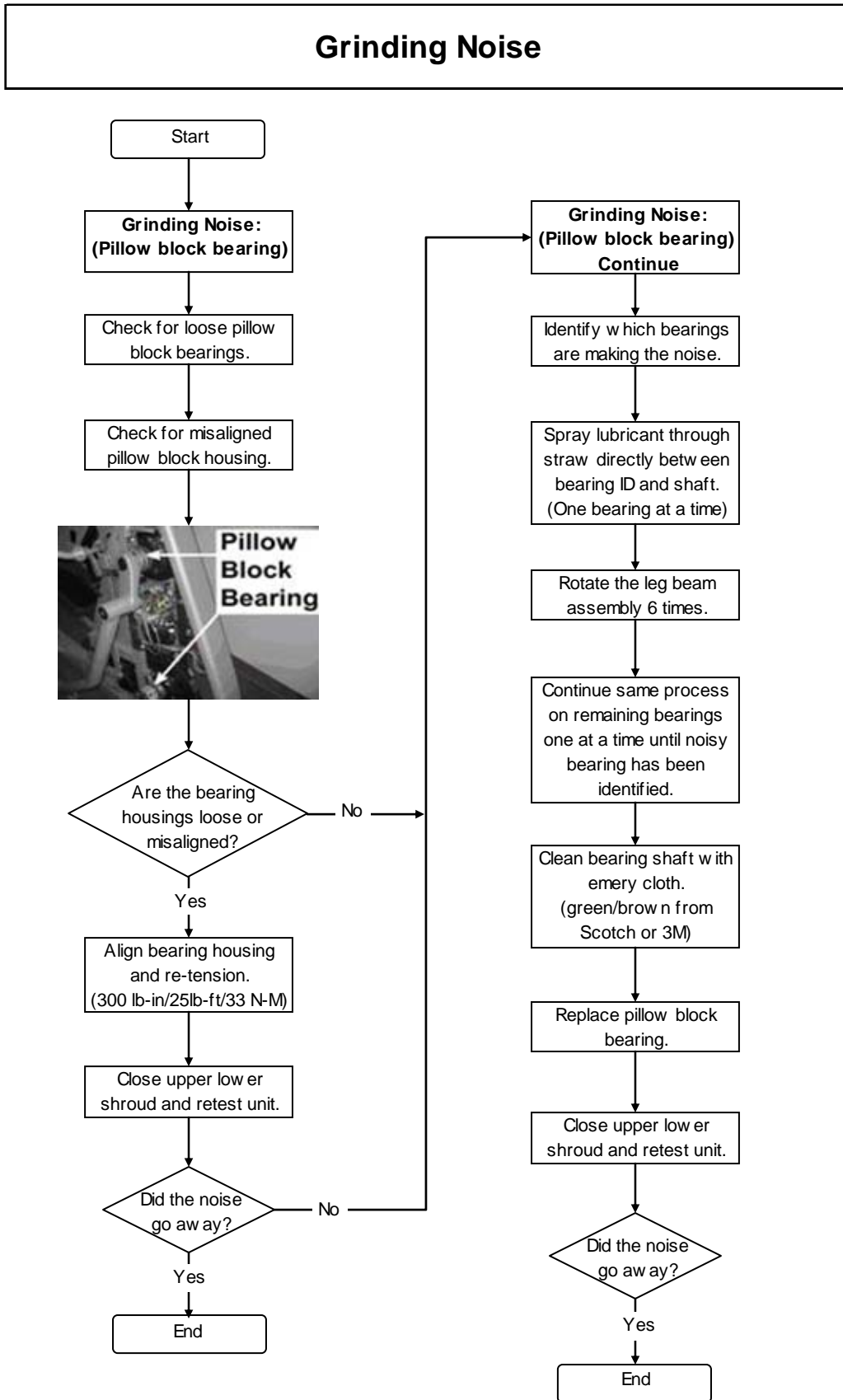   – Take continuity on the contact grips

- Check heart rate board
    – Make sure wires are plugged in

- Clean Grips
- Disable telemetry board

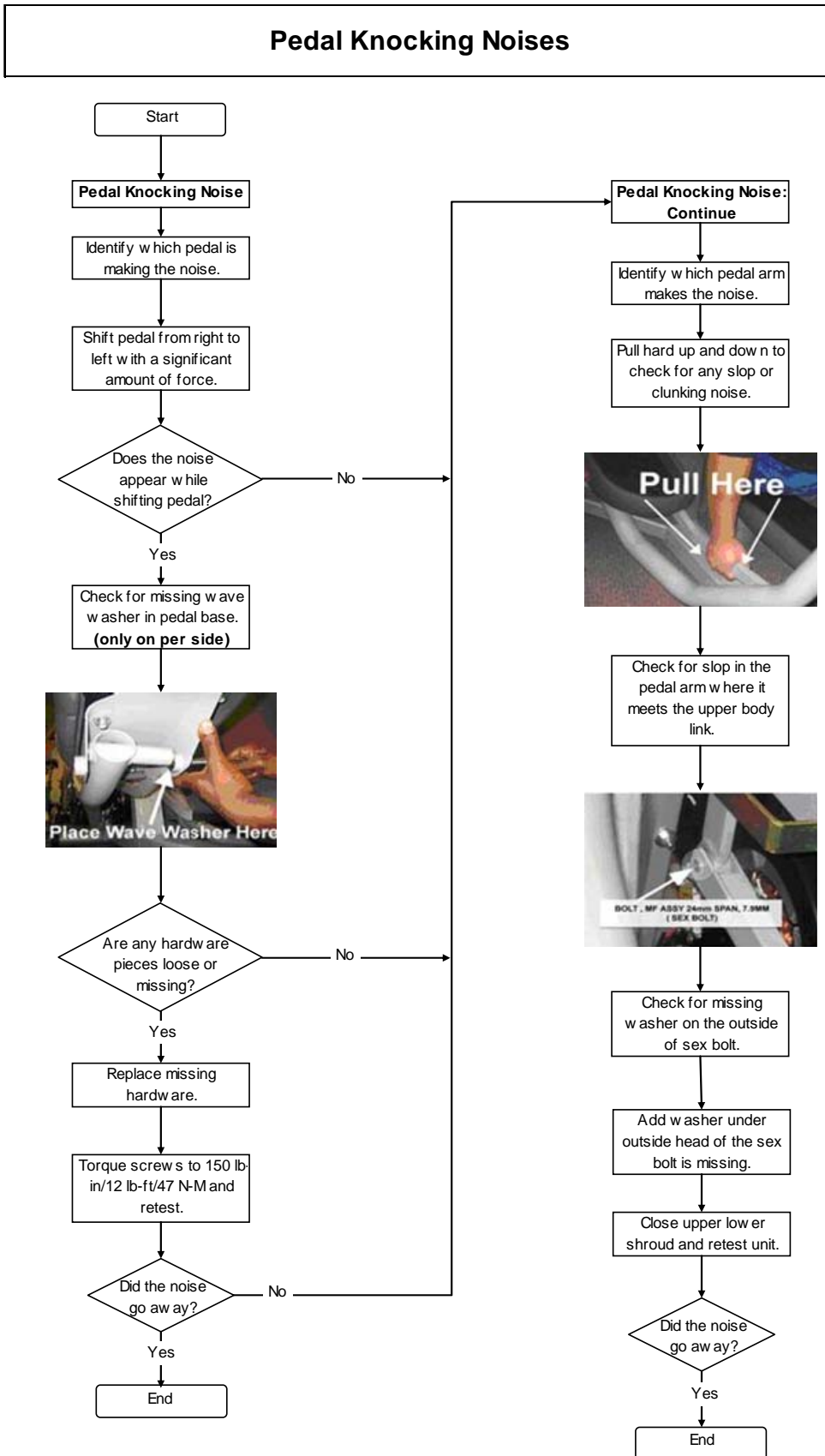# Troubleshooting Banging and/or Scraping Metallic Noise
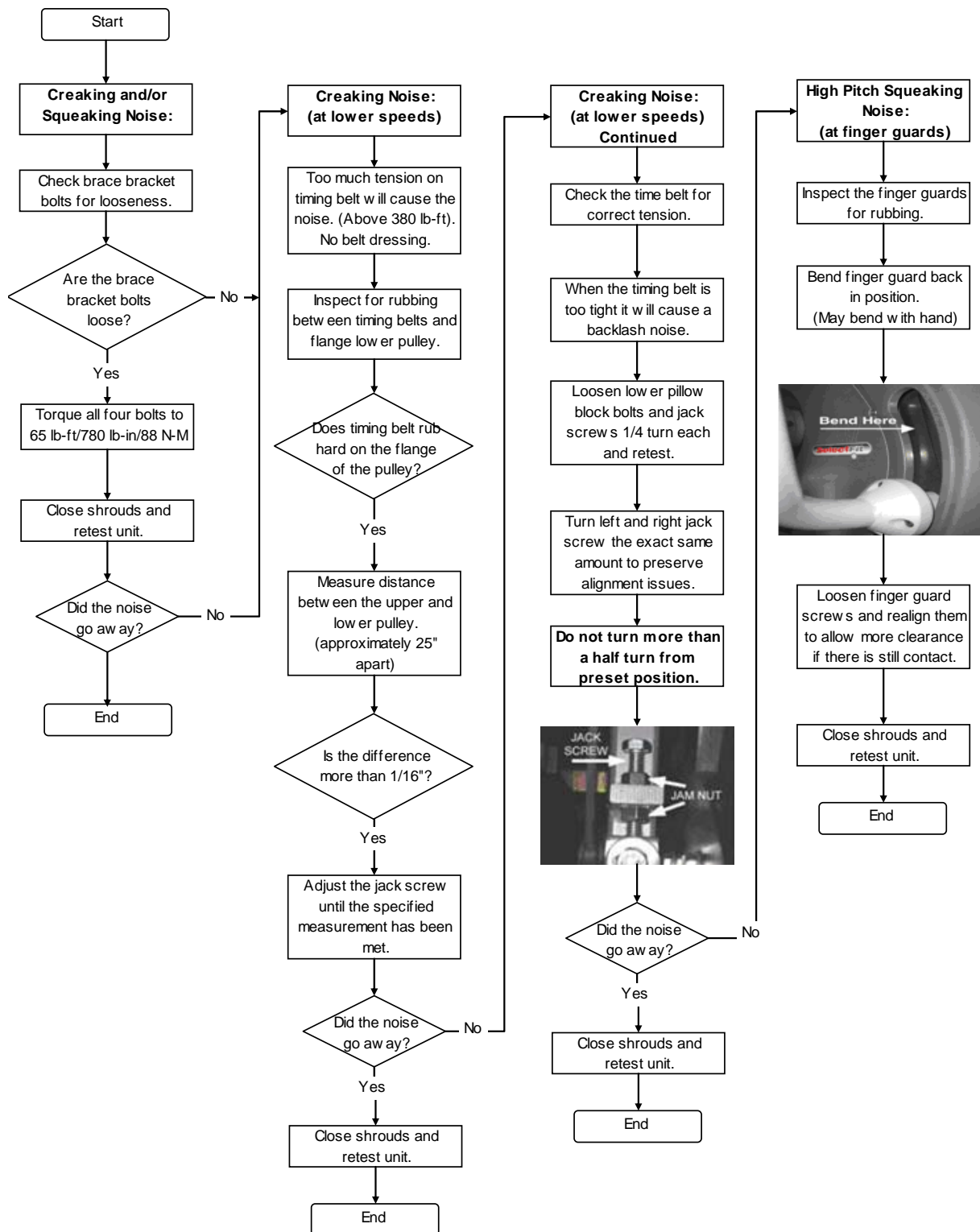
Banging and/or Scraping Metallic Noise

Start

Column 1:

Banging / Scraping Noise:

Identify which side makes the noise.

Check for contact between the lower crank arm disk and shroud.

Does the disk wobble? — No →

Yes ↓

Bend disk into position by pushing on the edge with your fingers.

Does the disk still rub? — No →

Yes ↓

Open the lower shroud and bend the shroud bracket approximately 1/4 inch on each side.

Close shrouds and retest unit

Did the noise go away? — No →

Yes ↓

End

Column 2:

Banging / Scraping Noise: Continue

Raise the upper body arms from the 1 to the none position.

Do the arms stay still when commanded to go up? — No →

Yes ↓

Check the 4 in. connector link for breakage

4" Connecting Link

Is the link damaged? — No →

Yes ↓

Replace the 4 in. link.

Close shrouds and retest unit.

Did the noise go away? — No →

Yes ↓

End

Column 3:

Banging / Scraping Noise: Continue

Check gap between the leg beam assembly and upper crank arm.

Take a 1/8 in. Allen wrench and stick it between the gap of the leg beam and the upper crank.

No more than 1/8 inch (4 mm)

Did the Allen wrench fit into the gap? — No →

Yes ↓

Replace upper crank arm.

Close shrouds and retest unit.

End

Column 4:

Banging / Scraping Noise: Continue

Rotate pedal arm and inspect clearance between arm, shroud and lower crank disk.

Check for rubbing between all three components.

Twist the top of pedal arm toward middle of machine using a crescent wrench if there's any contact.

Adjust the pedal arm until pedal arm noise cease.

Close shrouds and retest unit.

End

Troubleshooting Grinding Noise

Grinding Noise

```
Start
```
↓

Grinding Noise:
(Pillow block bearing)
↓

Check for loose pillow block bearings.
↓

Check for misaligned pillow block housing.
↓

Pillow Block Bearing

↓

Are the bearing housings loose or misaligned? —— No ——→

Yes
↓

Align bearing housing and re-tension.
(300 lb-in/25lb-ft/33 N-M)
↓

Close upper lower shroud and retest unit.
↓

Did the noise go away? —— No ——

Yes
↓

```
End
```

Grinding Noise:
(Pillow block bearing)
Continue
↓

Identify which bearings are making the noise.
↓

Spray lubricant through straw directly between bearing ID and shaft.
(One bearing at a time)
↓

Rotate the leg beam assembly 6 times.
↓

Continue same process on remaining bearings one at a time until noisy bearing has been identified.
↓

Clean bearing shaft with emery cloth.
(green/brown from Scotch or 3M)
↓

Replace pillow block bearing.
↓

Close upper lower shroud and retest unit.
↓

Did the noise go away?

Yes
↓

```
End
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Troubleshooting Pedal Knocking Noises

Pedal Knocking Noises

Start

Pedal Knocking Noise

Identify which pedal is making the noise.

Shift pedal from right to left with a significant amount of force.

Does the noise appear while shifting pedal? — No →

Yes

Check for missing wave washer in pedal base. **(only on per side)**

Place Wave Washer Here

Are any hardware pieces loose or missing? — No →

Yes

Replace missing hardware.

Torque screws to 150 lb-in/12 lb-ft/47 N-M and retest.

Did the noise go away? — No →

Yes

End

Pedal Knocking Noise: Continue

Identify which pedal arm makes the noise.

Pull hard up and down to check for any slop or clunking noise.

Pull Here

Check for slop in the pedal arm where it meets the upper body link.

BOLT , MF ASSY 24mm SPAN, 7.9MM (SEX BOLT)

Check for missing washer on the outside of sex bolt.

Add washer under outside head of the sex bolt is missing.

Close upper lower shroud and retest unit.

Did the noise go away?

Yes

End

Troubleshooting Creaking and/or Squeaking and/or High Pitch Squeaking Noises

Creaking and/or Squeaking and/or High Pitch Squeaking Noises

Start

Creaking and/or Squeaking Noise:

Check brace bracket bolts for looseness.

Are the brace bracket bolts loose? — No →

Yes

Torque all four bolts to 65 lb-ft/780 lb-in/88 N-M

Close shrouds and retest unit.

Did the noise go away? — No →

End

Creaking Noise: (at lower speeds)

Too much tension on timing belt will cause the noise. (Above 380 lb-ft). No belt dressing.

Inspect for rubbing between timing belts and flange lower pulley.

Does timing belt rub hard on the flange of the pulley?

Yes

Measure distance between the upper and lower pulley. (approximately 25" apart)

Is the difference more than 1/16"?

Yes

Adjust the jack screw until the specified measurement has been met.

Did the noise go away? — No →

Yes

Close shrouds and retest unit.

End

Creaking Noise: (at lower speeds) Continued

Check the time belt for correct tension.

When the timing belt is too tight it will cause a backlash noise.

Loosen lower pillow block bolts and jack screws 1/4 turn each and retest.

Turn left and right jack screw the exact same amount to preserve alignment issues.

Do not turn more than a half turn from preset position.

JACK SCREW — JAM NUT

Did the noise go away? — No →

Yes

Close shrouds and retest unit.

End

High Pitch Squeaking Noise: (at finger guards)

Inspect the finger guards for rubbing.

Bend finger guard back in position. (May bend with hand)

Bend Here

Loosen finger guard screws and realign them to allow more clearance if there is still contact.

Close shrouds and retest unit.

End

Troubleshooting Scraping and/or Popping and/or Rubbing and/or Plastic Scraping

Scraping and/or Popping and/or Rubbing and/or Plastic Scraping

Start

Scraping and/or Popping Noise:

Change the upper body position from #1 to none.

Does the noise occur only when changing the UB position?

No

Loosen finger guard screws and realign finger guard to allow more clearance.

May bend finger guard slightly with hands to create clearance.

Bend Here

Close shrouds and retest unit.

End

Plastic Scraping and/or Rubbing Noise:

Rotate pedal arm and inspect clearance between lower crank arm and shroud.

Check for rubbing between both components.

Is there any contact between both components?

No

Open the lower shroud and bend shroud bracket approximately 1/4 in on each side.

Did the noise go away?

Yes

Close shrouds and retest unit.

End

Plastic Scraping and/or Rubbing Noise: Continue

No

Check the lower crank disk for wobble.

Loosen disk screws and reposition disk for more clearance if the disk wobbles.

Bend the disk back into position by pushing on the edge of the highest point with hands.

Close shrouds and retest unit.

End

Troubleshooting Pinging Noises

Pinging Noises

Start

Pinging Noise:

Check the sex bolt for contact between it and the lower crank arm disk.

BOLT , MF ASSY 24mm SPAN, 7.9MM
(SEX BOLT)

Twist the top of pedal arm toward middle of machine using a crescent wrench if the sex bolt makes contact.

Retest unit.

End

Troubleshooting Grinding Brake

- Noise can come from bearings inside the brake
    - Inspect the pulley for brake dust
    - Inspect the pulley for looseness

Generator/Brake Assy
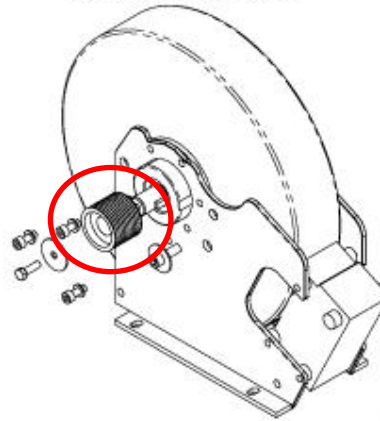
    - Spin the brake free of the belt for bearing noise
        - If any of the above is true, replace the brake

Notes:

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Troubleshooting Start Striding

START STRIDING PROMPT

Start

Start striding faster than 50 strides per minute

Does the display read up with "Start Striding"? — No → A1

Yes

Check DS1 LED on LCB to see if it's flashing

You must start striding faster than the minimum speed when checking LED status on LCB

Does the DS1 LED flash? — No → Page 2

Yes

Check DS8 LED on LCB to see if it's flashing

Does the DS8 LED stay off? → Page 2

Yes

Check three pin phase wired on brake assembly that connects to the extension wire for good connection

SOLUTIONS:

A1

Possible user error

Note: The user must stride faster than 50 strides per minute. If error is intermittent possible the data cable has loose connection to display electronics or LCB.

A2
Connect wires and retest

A3

Close Female

Note: using a fine pointed object close the female pins shut so the two sides touch each other.

A4

Replace LCB

Does the two honest connectors make a good connection? — No → A2

Yes

Check three pin phase extension wired on LCB for good connection

Are the pins making a good connection? — No → A2

Yes

Page 2
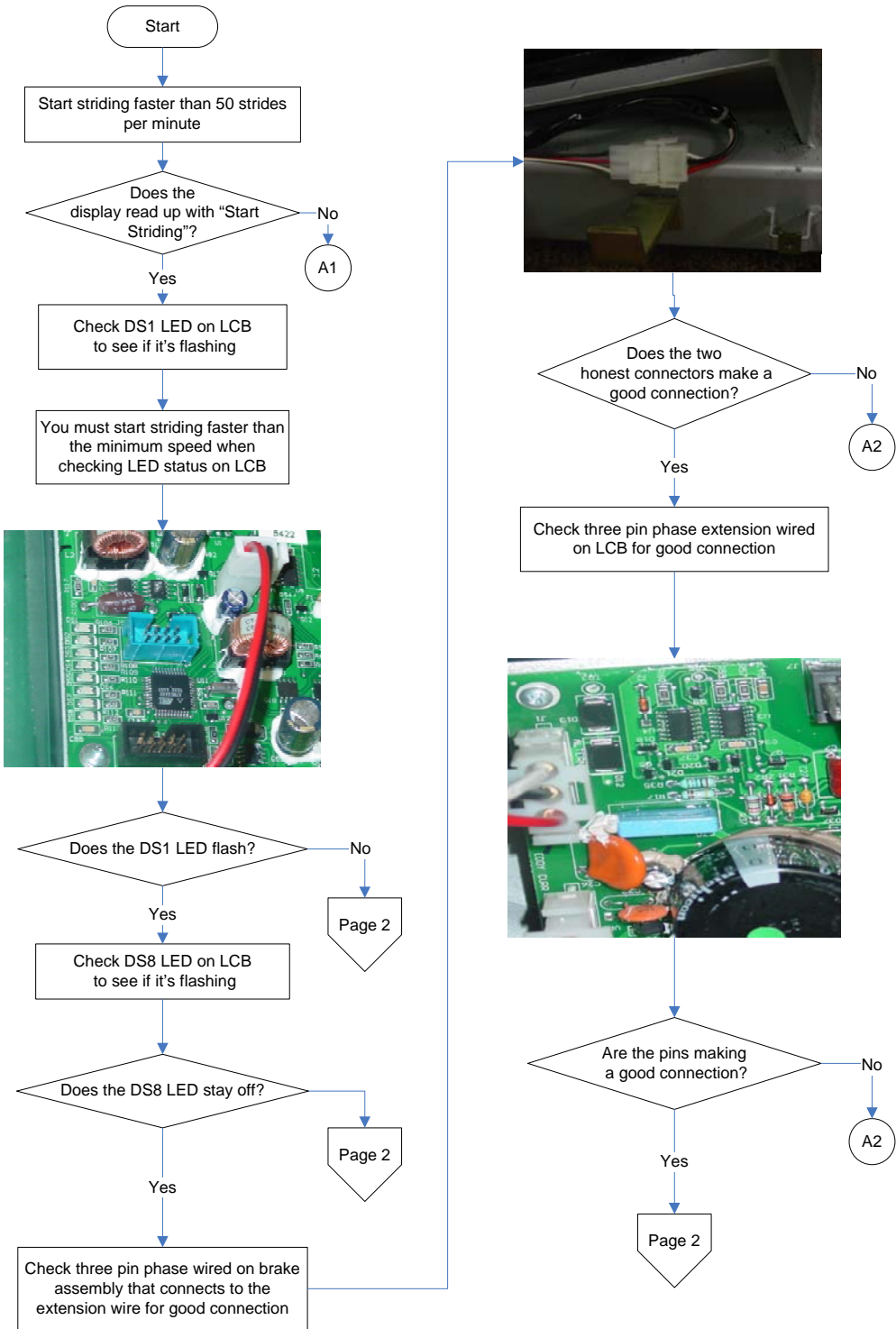
Troubleshooting Start Striding (cont)

START STRIDING PROMPT

Page 2

This problem will occur when the data cable female pins are too largely opened

Check data cable connections in LCB and display electronics

Spaced Too Much

Spaced Just Right

Are there any female pins on the data cable that's open too wide → No → A3

Yes

Avoid from shifting honest connector side to side when plugging connector back into the electronics

Start striding faster than 50 strides per minute

Does the "Start Striding" prompt still come back up? → No → Unit is back in operational condition

Yes

A4

End

SOLUTIONS:

A1

Possible user error

Note: The user must stride faster than 50 strides per minute. If error is intermittent possible the data cable has loose connection to display electronics or LCB.

A2
Connect wires and retest

A3

Close Female

Note: using a fine pointed object close the female pins shut so the two sides touch each other.

A4

Replace LCB
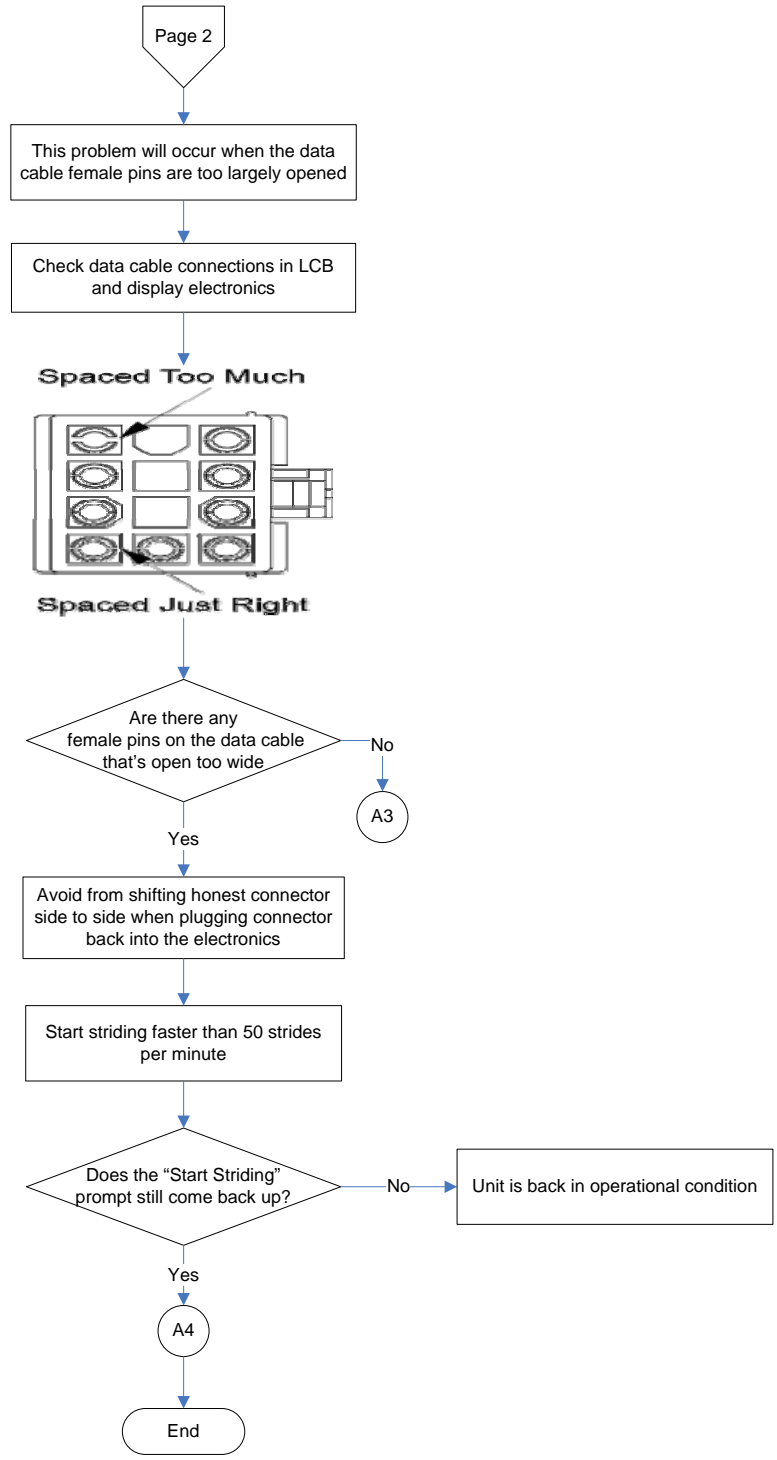
Troubleshooting Slipping

- Verify the belt tension
    - Drive belt
- Check the 3 idler pulley screws
    - Tighten down if necessary
- Check for wobble in the idler pulley
- Check for damaged or worn break belt

Troubleshooting Display Power Always On

- Power won't turn off
    - Turn wall voltage OFF if no AC Adapter is present

Notes:

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Notes:

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UPLOADING SOFTWARE

- Use this software to correct any of these issues:
  – Corrected fitlinxx issue that causes display to reset during workout
  – Added feature to turn fan on automatically after the first minute of use
  – Corrected Katakana Translation in one message
  – Added code to prevent false Key Down error in idle and workout modes
  – Added code to allow fast scroll using the "+" and "-" keys when entering workout parameters
- Hardware required
  – FISP Loader
  – FISP Ribbon Cable
  – FISP Battery Pack
  – Serial Cable
- Time
  – 10 mins
- Software Required
  – FISP Loader Program
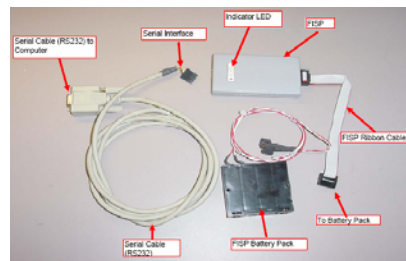
- Software Required
  – FISP Software
  – Software for CT
    - Disp. Ver. 2.40 / 1.76

- **Installing the FISP Loader Software into the Computer**
  – **Note**: Create a file folder on your computer
    - C:\AVRISP\
  – Unzip the FispLoader.zip
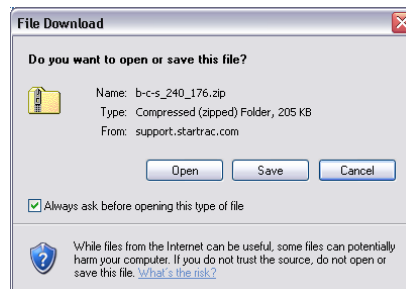
- **Loading Primary Software into FISP Loader**
  – Make sure the battery pack is providing 6 V DC
  – Connect Serial Cable to the computer and to the FISP
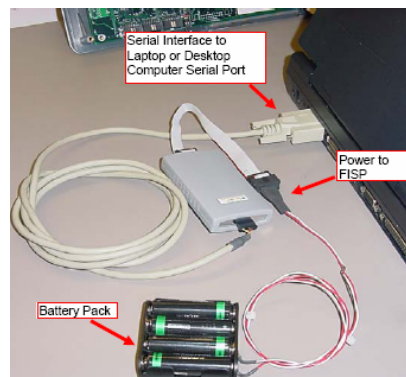
– Attach one end of the ribbon cable to the FISP device and the other end to the battery pack
– Verify that the FISP device is on
 ● Solid orange LED on the FISP device
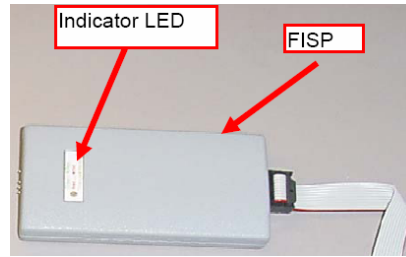
– Run the FISP.exe
– the **Load Fisp** buttons should now be enabled
  ● After about 30 seconds

● **Setting up the Uploaders**

– Under **Device** dropdown box (left side), find and select Mega128
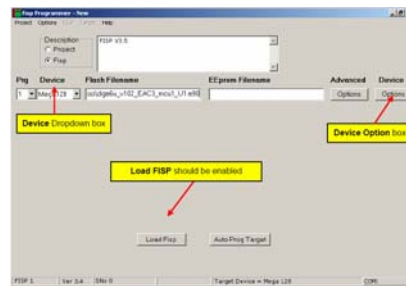
– Under **Flash FileName**, click on the white blank box
  ● Change the directory to location of the software file
  ● Select the **.a90** file for the Primary MCU
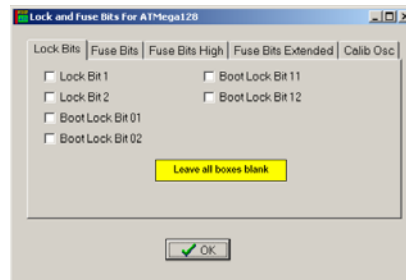
– Under **Device** click on **Options**:
– Verify that no lock bits are checked

Notes:

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– Click on the Fuse Bits Tab
  ● Verify that only the BODEN and
    BODLEVEL options are checked
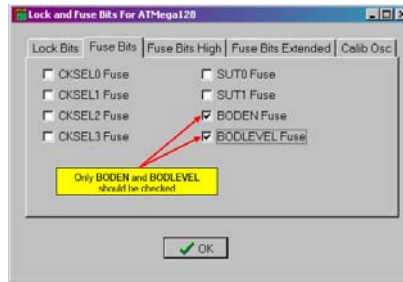
– Click on the Fuse Bits High Tab
  ● Verify that only CKOPT, JTAG, BOOTSZ0 and BOOTSZ1 Fuse options are checked
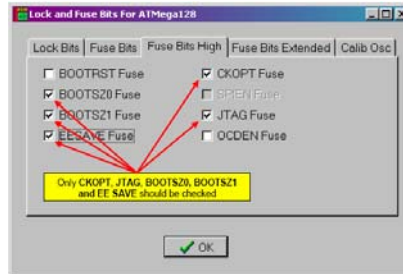
– Click on the **Load Fisp**
  ● Start loading the program from the computer to the FISP device
    – It takes approximately 90 seconds
– Click the **CLOSE** button on the pop-up window
  ● Remove power to the display
– Remove the serial cable from the FISP

● **Loading Secondary Software into FISP Loader**

– Make sure the battery pack is providing 6 VDC
– Connect Serial Cable to the computer and to the FISP
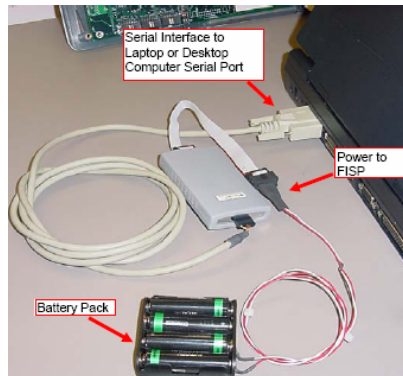
– Attach one end of the ribbon cable to the FISP device and the other end to the battery pack
– Verify that the FISP device is on
  ● Solid orange LED on the FISP device
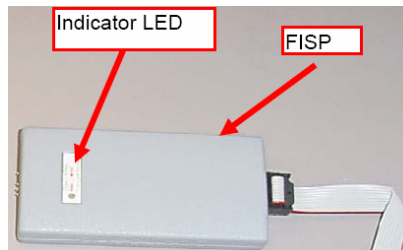
- Run the FISP.exe
- the **Load Fisp** buttons should now be enabled
  - After about 30 seconds
- Under **Device** dropdown box (left side), find and select Mega128
- Under **Flash FileName**, click on the white blank box
  - Change the directory to location of the software file
  - Select the **.a90** file for the Secondary MCU
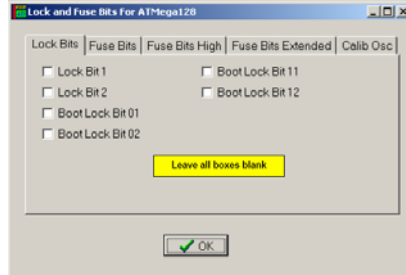
- Under **Device** click on **Options**:
  - Verify that no lock bits are checked
- Click on the Fuse Bits Tab
  - Verify that only the CKSEL0, CKSEL1, CKSEL2, CKSEL3, SUT0, BODEN and BODLEVEL options are checked
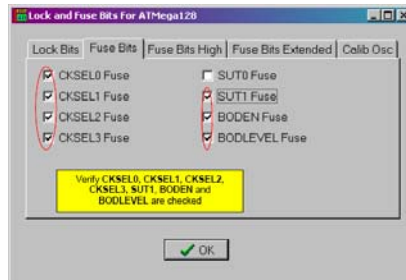
- Click on the Fuse Bits High Tab
  - Verify that only JTAG, BOOTSZ0 and BOOTSZ1 Fuse options are checked
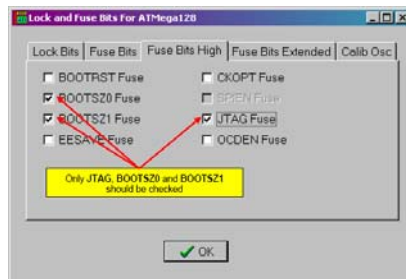
Notes:

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– Click on the **Load Fisp**
  - Start loading the program from the computer to the FISP device
    – It takes approximately 90 seconds
– Click the **CLOSE** button on the pop-up window
  - Remove power to the display
– Remove only the serial (RS-232) cable from the FISP device
  - The FISP device will now retain the MCU's program

- **Uploading Software**

- Tools required
  – Software Uploader boxes
  – Phillips head screwdriver

- Connecting the Primary Uploader
  – Remove the back cover of the display board
  – Using the Uploader labeled Primary
    - Connect the Uploader ribbon cable to Primary port J8
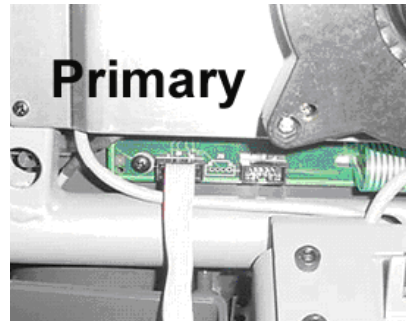
NOTE: IT IS VERY IMPORTANT TO ONLY CONNECT THE PRIMARY TO THE PRIMARY JACK. FAILURE TO THE DISPLAY WILL RESULT IF YOU CONNECT THE WRONG UPLOADER, UNPLUG IT IMMEDIATELY

Notes:

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- Programming the Primary Software
  - Stride on the CT to power up
    - The programming will commence automatically
    - **Do not stop striding or the programming will stop and the display will be damaged**
    - The Orange LED on the Uploader device should be blinking for approximately 2 minutes
    - After the Uploader device has programmed
      - Either change the LED color to Green or Red according to the result:
        - Red LED means programming failed – Retry
        - Green LED means programming was successful – Stop Pedaling
  - Remove Uploader cable from the Primary port

- Connecting the Secondary Uploader
  - Connect the Secondary Uploader ribbon cable to Secondary port J10
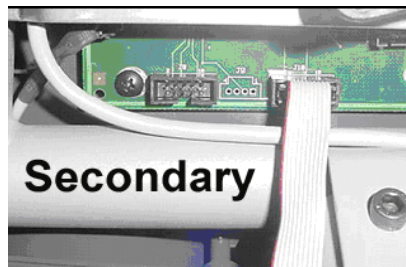
NOTE: IT IS VERY IMPORTANT TO ONLY CONNECT THE SECONDARY TO THE SECONDARY JACK. FAILURE TO THE DISPLAY WILL RESULT IF YOU CONNECT THE WRONG UPLOADER, UNPLUG IT IMMEDIATELY

- Programming the Secondary Software
  - Stride on the CT to power up
    - The programming will commence automatically
    - **Do not stop striding or the programming will stop and the display will be damaged**
    - The Orange LED on the Uploader device should be blinking for approximately 2 minutes
    - After the Uploader device has programmed
      - Either change the LED color to Green or Red according to the result:
        - Red LED means programming failed – Retry
        - Green LED means programming was successful – Stop Pedaling
  - Remove Uploader cable from the Secondary port

Notes:

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- Display Initialization
  - Power up the CT
  - Enter Maintenance Mode
  - Press '1', '4' and '7' at the same time to INIT
  - "INIT VARIABLES" should be displayed and all display parameters are reset

  - Press ⬤ to save and EXIT

- Verifying the software versions and Model Settings
  - Let it rest for a few seconds then power up again
  - Enter Maintenance Mode
  - Verify the DISP VERS1 and DISP VERS2 match the new versions uploaded

  - **Important**:
    - Scroll to Model to verify settings
      - PB-UB = Pro Bike, Upright
      - PB-RB = Pro Bike, recumbent
      - Pro CT = Pro CrossTrainer
      - Elite CT= Elite CrossTrainer
      - Stepper = Pro Stepper

- If the product is the CrossTrainer Elite the Upper body calibration should be performed

  – Press the SCROLL key to select UB Calibration
  – Press OK
  – Press 2 Auto Calibration
    - The upper body arms will move up then down to calibrate the positions
  – Press ☉ to save and EXIT

Notes:

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SERVICE MANUAL