🍃 Fresh Consulting
Bellevue, WA

Revision	01
Title	SW Update Moab Assembly and Test Procedure

Revision History:

Rev	Action	Date
01	Official Start to Document Tracking	8/20/20

Table of Contents

Necessary Tools

1. T10 for the top cover screws
2. T8 for the camera screw
3. SD card burner with master SD card inserted in the upper leftmost slot

Removing the Paragon SD Card

1. Select a bot from a stack labeled "W/O SNAPS"

2. Locate baggie of x3 10mm screws inside of box and set aside for reassembly
3. Remove the white top cover
4. Use a T8 to unscrew the camera, place the screw somewhere safe for reuse
5. Move camera off to side without unplugging ribbon cable
6. Remove the included SD card from the Raspberry Pi, note the orientation of the SD card

Updating the software on the SD Card

1. Locate the SD card burner, ensure there is an SD card with the most recent software in the upper leftmost slot.
2. Turn on SD card burner and select "copy and compare"
3. Insert cards to be updated into any remaining slot in the same orientation as the master SD card already in the machine, some friction as you insert the bot is to be expected
4. Ensure the green indicator light for each filled SD card slot is illuminated
5. Press start, indicator lights will flash and begin a %count up
6. Once complete confil display indicates SD cards passed comparison
7. Remove all cards besides the upper leftmost master SD card
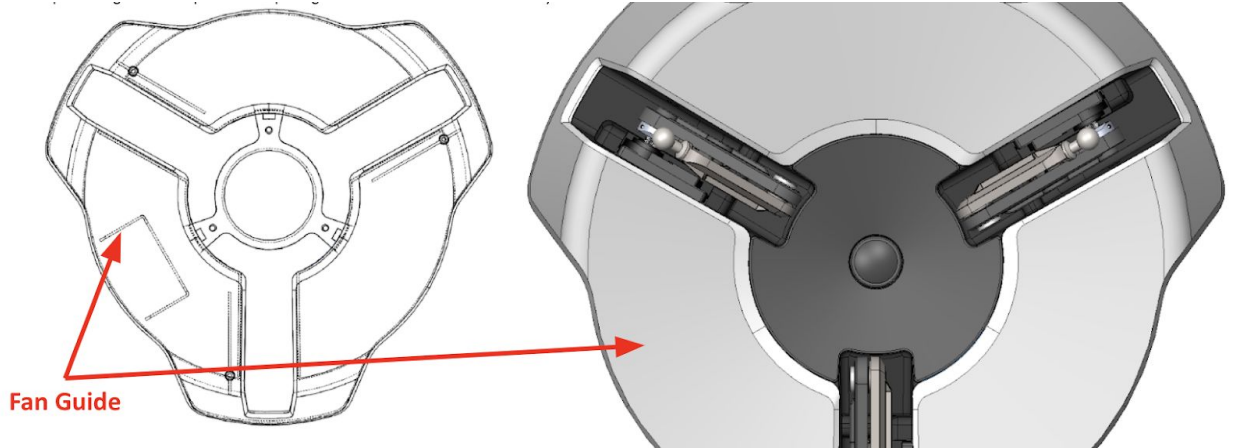8. Turn off burner

Reassembling the Bot

1. Insert the updated SD card into Raspberry Pi
2. Return the camera to its original place: on the 4 posts with connector facing the 7 o'clock position. Use the previously removed M2.5 x 8mm screw to fasten the camera . (Tightened to 4 in-lb)

M2.5 x 8mm
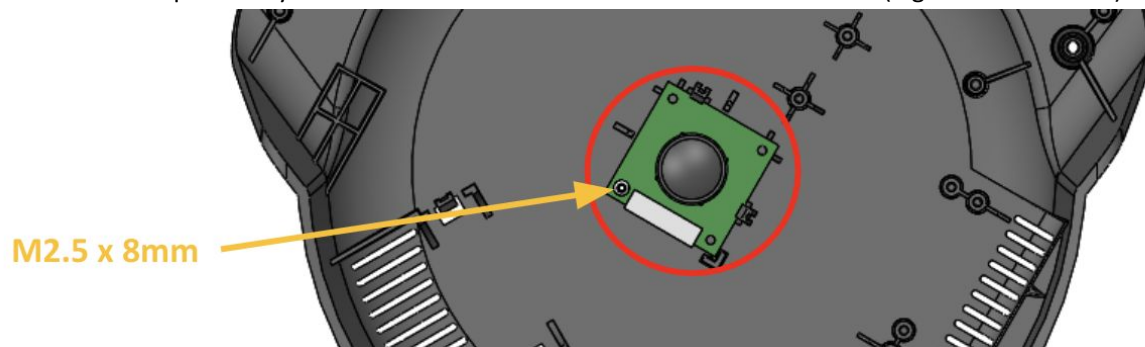
3. Place Top Cover Subassembly on Bottom Subassembly making sure to align fan guides to fan While holding Top Cover in place, fasten with QTY 3 M3 x 10mm Plastite screws (FC-HWA-00592). Tighten to 7 in-lb

Fan Guide

4. While holding Top Cover in place, fasten with QTY 3 M3 x 10mm Plastite screws from the baggie sent with the bot. Tighten to 7 in-lb
5. Remove plate from plastic bag, setting bag aside for reuse
6. Place plate onto pillow balls and ensure secure connection
7. Plug bot into a power source using included power supply
8. Turn on bot and run "Final Software Checkout" below
9. Once complete, return plate to plastic bag, place on top of bot
10. Ensure that all parts of bot are replace neatly back into the box
    a. Bot
    b. Plate in bag
    c. Calibration tool
    d. Ping Pong ball
    e. Power Supply

Final Software Checkout

Final Software Flow Check: Ensuring core functionality of the robot works as expected. Software checkout should take place in an approved lighting environment. Tester should avoid having orange objects in the vicinity or wearing orange color clothing.

Final Software Flow Check		
#	Test Step	Expected Results
1	Navigate with the thumbstick by flicking in the upward direction to "CALIBRATION" mode. Select with a press of the thumbstick.	Plate should raise and notify the user "Place the ball in center using a clear ball stand. Then click joystick to confirm".
2	Place the Orange ping pong ball in the white triangle on the plate using the calibration stand.	Ball will be in the center with the calibration stand's three corners aligning with the plate's

		three center etchings.
3	Press down on the thumbstick.	If a calibration is successful, the OLED screen will display a checkmark in a circle and/or the words "Success". Continue on to **step 4** If an X is displayed and/or the words "Failed" are displayed then something has gone wrong and attempt again from **step 1.** If a bot fails twice in a row, set aside and mark reason for failing.
4	Remove the ping pong ball and calibration stand then tap the Menu button. Move the joystick down once and press the thumbstick to select Manual Mode.	Plate should raise and OLED should display "MANUAL"
5	Rotate the thumbstick around the edges of its physical boundary in a full 360degree circle.	The plate should mimic thumbstick movement, ensuring the plate doesn't collide with any portion of the robot base. If bot does not mimic joystick direction or plate collides with housing, set aside and mark reason for failing.
6	Tap the Menu button. Navigate with the thumbstick by flicking in the downward direction to "CLASSIC" mode. Select with a press of the thumbstick.	Plate should raise and OLED should display "CLASSIC"
7	Hover the ball 2 inches above the center of the plate, and let go within 5 seconds of hovering.	The ball should successfully balance within 1 inch of the nearest center triangle plate etching In Brain mode, any successful sustained balancing is acceptable, i.e., does not have to be in center of plate

8	Pickup and move the ball to within one inch of the plate edge and release in a similar fashion to how **step 7** was conducted.	The ball should successfully balance within 1 inch of the nearest plate etching. Repeat this step (**step 8**) using a plate location on an opposing side of the plate. In Brain mode, any successful sustained balancing is acceptable, i.e., does not have to be in center of plate
9	Tap the Menu button. Navigate with the thumbstick by flicking in the downward direction to "BRAIN" mode. Select with a press of the thumbstick.	Plate should raise and OLED should display "BRAIN"
10	Perform **step 7 - step 8** while in Brain mode.	Follow the same steps pass/fail procedure. If the bot fails, ensure to mark it failed in Brain mode.
11	Test procedure complete. If none of the steps fail the bot has passed and the top can be screwed into place	