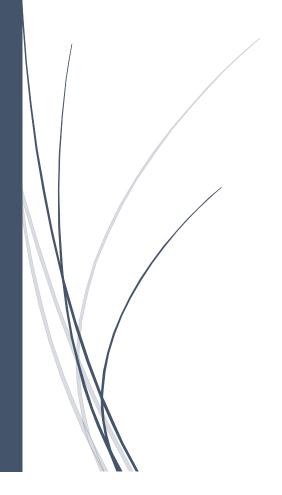
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Wavemaker Maintenance Guide

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Intro:

Overview and guide how to complete all necessary maintenance items. Broken into four categories: per-operation, weekly, monthly, and Pre-lab shutdown.

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Per-Operation Maintenance:

Perform prior to plugging in wavemaker

- 1. Check belt tension
 - a. Check belt is sufficiently taught (should deflect a maximum of ½" when pressed)
 - b. Ensure black idler is tight
 - c. Ensure White idler is tight

{insert media}

- 2. Check rotary encoder engagement
 - a. Check that rotary encoder pulley is contacting the belt
 - b. Manually move wedge up and down to check that the pulley tracks without skipping

{insert media}

- 3. Check wiring connections
 - a. Ensure no jumper wires have detached from Arduino
 - b. Check that all ribbon cables are firmly attached to breakout board
 - c. Check limit switch wiring

{insert media}

- 4. Check frame alignment to tank
 - a. Manually move wedge up and down within tank to check for collisions

{insert media}

- 5. Ensure switches are triggering
 - a. Manually move wedge to top limit
 - b. Listen for top switch to click crisply
 - c. Manually move wedge to bottom limit
 - d. Listen for bottom switch to click crisply

{insert media}

- 6. Check panic button is working
 - a. Plug in wavemaker
 - b. Twist panic button
 - c. Check that the wedge cannot be easily moved manually
 - d. Press panic button firmly
 - e. After brief delay ensure wedge can now move freely
 - f. If wedge remains firmly in place after panic switch is pressed <u>do</u> not operate wavemaker

{insert media}

Weekly Maintenance

Remove wavemaker from tank prior to maintenance

- 1. Recoating Wedge [TREAT WEDGE]:
 - a. Spray light coat of white lithium grease onto a paper towel
 - b. Wipe paper towel over wedge surface
 - c. Buff wedge surface with paper towel until grease splotches are no longer visible {insert media}
- 2. Cleaning test tank water [CLEAN WATER]:

Note: Only compete as needed

- a. Drain old water from tank
- b. Refill with new water
- c. Add treatment media
- 3. Lubricating linear rails and axels [LUBRICATE RAILS & AXLES]
 - a. Ensure wavemaker is powered off
 - b. Move wedge to bottom limit
 - c. Spray light coat of white lithium grease into rails above wedge
 - d. Moe wedge to top of movement
 - e. Spray <u>light</u> coat of white lithium grease into rails below wedge
 - f. Wipe away excess with paper towel
 - g. Use excess to gently lubricate top and bottom axle bearing points {insert media}
- 4. Ensure tight seal between wedge and sled [CHECK WEDGE SEAL]
 - a. Check that wingnuts inside wedge are finger-tight
 - b. Ensure O-rings are properly squished
 - c. Check for any cracks in wedge acrylic {insert media}

Monthly Maintenance:

Remove wavemaker from tank prior to maintenance

- 1. Check all fasteners are still tight [CHECK ALL FASTENERS]
 - a. Use 5/32 Allen to ensure all frame brackets are tight
 - b. Use 5/32 Allen to ensure axle bearings are right
 - c. Use fingers to gently ensure wedge fasteners are all tight
 - d. Use 7/16 socket to ensure electronics sled is tight
 - e. Use {GET MEASUREMENT} to ensure motor bracket is tight
 - f. Use Philips screwdriver to ensure limit brackets are tight
- 2. Check that linear rails are parallel [CHECK RAIL PARALLEL]
 - a. Use calipers to measure top rail spacing
 - b. Use calipers to measure bottom rail spacing
 - c. If necessary, loosen frame brace wingnuts and adjust top/bottom spacing
 - d. Repeat until rails are parallel {insert media}
- 3. Clean belt and idlers [CLEAN BELT & IDLERS]
 - a. Loosen black idler
 - b. Disengage belt from pulleys
 - c. Use damp towelette to wipe down pulley
 - d. Wipe down pulleys and idlers
 - e. Reengage belt
 - f. Tension Belt {insert media}
- 4. Check various points for excessive wear [CHECK PARTS FOR WEAR]
 - a. Check linear slides, rotary encoder pulley, lower limit trigger, and idlers
 {insert media}

Pre-Lab Shutdown Maintenance:

- 1. Remove tension from drive system [SLACKEN BELT]
 - a. Loosen black idler
 - b. Ensure belt is loose

{insert media}

- 2. Dry wavemaker and store it for future use [DRY & STORE]
 - a. Use paper towels to wide standing water from wavemaker surface
 - b. If available use pressurized air to dry thoroughly
 - c. Depress panic button
 - d. If necessary remove wedge
 - i. Loosen wingnuts inside wedge completely
 - ii. Pull wedge from sled
 - iii. Place all loose hardware inside a zip-lock inside the wedge
 - iv. Ensure no O-rings have been misplaced
 - e. Coil cord loosely around frame
 - f. Store in upright position do not store resting on wedge or power supply unit

{insert media}