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## Sensor Fusion test rig servo screw replacement & servo arm inspection

### Summary

A guide for replacing/inspecting servo arm and center screws in the sensor\_fusion test rig.

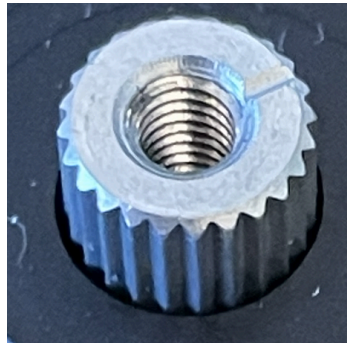
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**Date:** 09/29/2025

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### Servo motor hardware



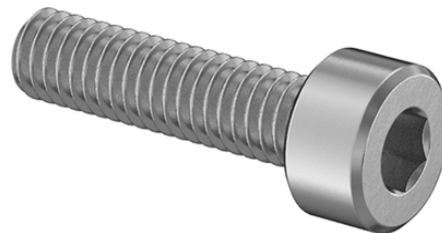
*Servo motor (HS-755MG)*



*Servo shaft with splines (magnified)*

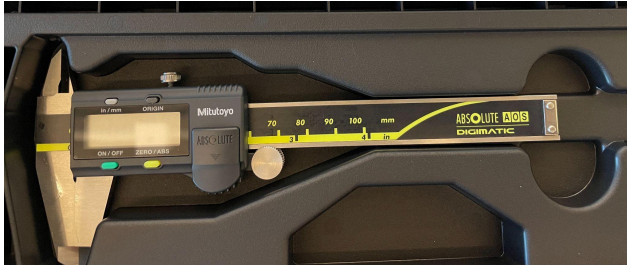


*Servo arm*

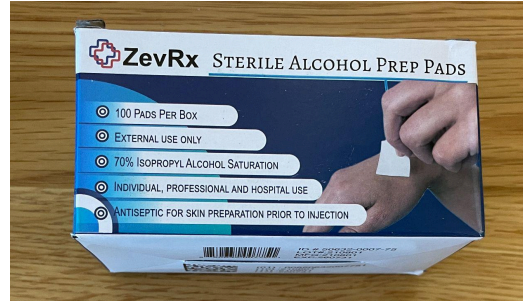


*Recommended center screw  
M2.5 x 0.45 thread, L=10mm*

## Other parts



**Mitutoyo caliper**



**Wipes**

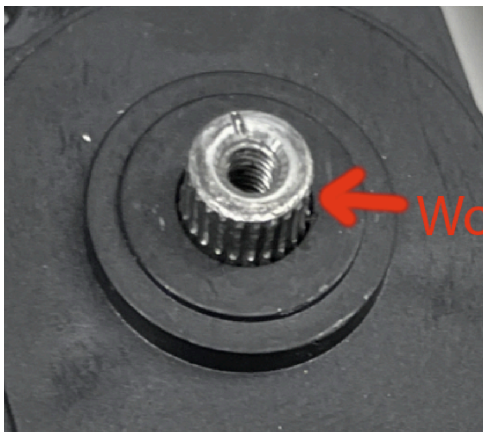
## Servo shaft/arm damage (with pictures)

JIS center screws for sensor\_fusion rig servo motors can reduce rig longevity due to:

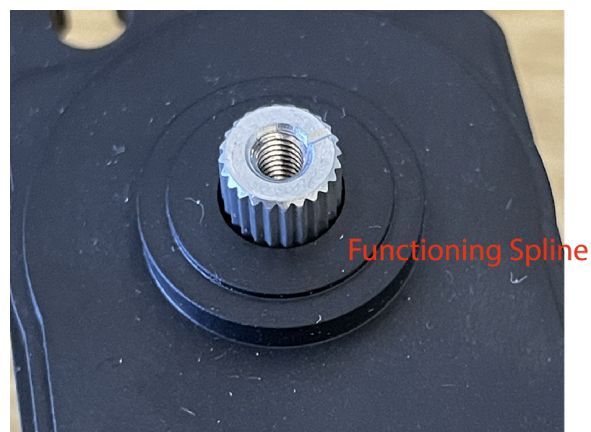
1. Head easily stripped due to JIS/Phillips screwdriver confusion.
2. There is a similar, inappropriate, JIS screw for Karbonite-gear motors that can easily be confused for metal gear motor screw.
3. Low torque ceiling leads to screws getting loose quicker than higher torque hex screws.
4. Once the screw becomes loose, wear on the servo hub and arm accelerates.

These can cause the phone plate mount to have excessive movement when turned by the servo motor, damaging the servo arm and/or the servo motor's splines.

Some images are shown below for worn/functional servo shafts and servo arms.



**Worn out servo splines**



**Functional splines**



***Worn out servo arm***



***Functional arm with well defined splines***

## Procedure

1. Remove the front sliding door.
2. Clear any metal powder from the rig with vacuum and wipes.
3. Detach the phone mounting plate from the servo arm by removing the screws that fixed the phone mount plate to the servo arm. These are the two screws located between two phones, not the center screw.
4. After the plate is detached from the servo arm, gently place the plate inside the rig without pulling excessively on the USB cables for phones.
5. Proceed to remove the center screw connecting the servo arm to the servo shaft with a JIS screwdriver or hex key as appropriate.
6. Remove the servo arm and use a wipe to clean the motor shaft splines.
7. Measure the shaft diameter with the caliper.
  - a. Ensure the reading is 0 when the caliper is fully closed.
  - b. If the shaft diameter is less than or equal to 5.6 mm, replace the motor.



**Ensure reading is 0 when fully closed**

**Reading above 5.6mm is functional**

8. With motor inspection complete, install a new servo arm on the phone mount plate.

Note: The servo arm has been a discontinued item by the original manufacturer. New servo arms can be acquired through the sensor\_fusion rig manufacturers(see photo below). Please contact [its.sales@jfttec.com](mailto:its.sales@jfttec.com).



### ***Design of New Servo Arm***

9. Mount the phone plate back on the motor vertically, and use the M2.5 x 0.45 thread, L=10mm hex screw to fix the plate to the motor.
10. Make sure the screw is tight and the plate has no free play.