



SERVICE BULLETIN RCA 2019-08-07

Date: 7 August 2019

Subject: Reprint of Dynon Avionics SB 080219

Affected Aircraft: RV10 aircraft constructed after 13 December 2011 fitted with a Dynon Avionics autopilot system or any RV10 aircraft retrofitted with a Dynon Avionics autopilot system that includes an SV42T servo shipped from Dynon after 13 December 2011. Note: The SV42T servo is not used on any other model RV constructed by Robin Coss Aviation.

The following aircraft constructed by Robin Coss Aviation are affected by this service bulletin and are fitted with an SV42T pitch servo shipped after 13 December 2011.

| | | |
|--------|------|-----------|
| ZU-TEN | RV10 | s/n 40217 |
| ZU-WOW | RV10 | s/n 40718 |
| ZU-MRV | RV10 | s/n 40614 |
| ZU-PJL | RV10 | s/n 41148 |
| ZU-MAR | RV10 | s/n 41033 |
| ZU-SAX | RV10 | s/n 41143 |
| Z-PMZ | RV10 | s/n 41163 |
| ZU-IAB | RV10 | s/n 41402 |
| ZU-JOC | RV10 | s/n 41088 |
| ZU-WRV | RV10 | s/n 41415 |
| V5-UDP | RV10 | s/n 41585 |
| V5-UKM | RV10 | s/n 41596 |

Required Action: Removal of affected servos linear actuator sub-assembly for replacement of the pulley.

Time of Compliance: Inspect before next flight.

Synopsis: Dynon Avionics has received reports of cracked pulleys in the SV42T linear actuator servo. This can cause poor autopilot performance and presents a risk of interfering with the elevator flight control. The SV42T servo is used for pitch control of the RV10 aircraft. The roll servo fitted to the RV10 is not an SV42T and is not affected by this SB.

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Accomplishing Instructions:

Gain access to the aircraft's autopilot pitch servo by removing the baggage area close-out panels (fig 1)
 Inspect the pitch servo per instructions contained in the "Solution" section of Dynon SB 080219 (attached)

Note: The pulley shear screw head may be covered with a small round silver sticker – this needs to be removed to carry out a proper inspection.

Note: The cotter pin, castellated nut, wave washer and nylon washer should be removed from the servo shaft for proper inspection of the area between the centre pulley hole and the shear screw bore (fig 2 & 3)

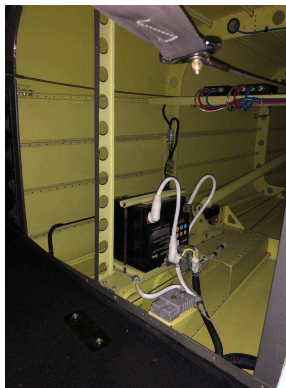


Figure 1



Figure 2



Figure 3

Unaffected Pulley that is not cracked:

Should inspection reveal that the pulley is not cracked and has an unaffected finish as noted in the Dynon SB 080219 no further action is required.

1. Refit the nylon washer, wave washer and castellated nut to the servo shaft, torque and lock with a new cotter pin.(refer Dynon Servo Arm/Capstan Removal and Replacement Instructions attached).
2. Carry out a full and free check of the aircraft's elevator control system.
3. Carry out a duplicate inspection of the work done.
4. Refit the baggage area close out panels
5. Make a logbook entry in the airframe logbook confirming compliance with this service bulletin.

Cracked Pulley

Should inspection reveal a cracked servo pulley, before further flight:

1. Remove the linear actuator sub-assembly from the aircraft and replace with a subassembly that is in compliance with Dynon SB 080219. (see Linear actuator subassembly removal/installation) Contact Robin Coss Aviation to arrange for replacement of the affected part.
2. Make a logbook entry in the airframe logbook confirming compliance with this service bulletin.

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Affected Pulley that is NOT cracked

Should inspection reveal that the pulley is not cracked but is affected by the finish of the pulley comply with either A or B below:

A.

1. Remove the linear actuator sub-assembly from the aircraft and replace with a subassembly that is in compliance with Dynon SB 080219. (see Linear actuator subassembly removal/installation) Contact Robin Coss Aviation to arrange for replacement of the affected part.
2. Make a logbook entry in the airframe logbook confirming compliance with this service bulletin.

or

B.

1. Refit the nylon washer, wave washer and castellated nut to the servo shaft, torque and lock with a new cotter pin. (Refer Dynon Servo Arm/Capstan Removal and Replacement Instructions attached).
2. Carry out a full and free check of the aircrafts elevator control system.
3. Carry out a duplicate inspection of the work done.
4. Refit the baggage area close out panels.
5. Make a logbook entry in the airframe logbook confirming compliance with the recurring section of this service bulletin.
6. Contact Robin Coss Aviation to arrange for replacement of the affected part.
7. Reinspect pulley every 25 flight hours until pulley is replaced with an unaffected part. Part should be replaced not later than next 100hrs time in service or next annual whichever comes first.

Linear actuator subassembly removal/installation:

1. Remove the linear actuator subassembly by removing the bolt, nut, spacer, penny washer and washer (fig. 4) attaching the actuator rod end to the elevator bellcrank
2. Remove cotter pin from actuator nut and remove nut, wave washer and nylon washer from the servo shaft (fig. 5).
3. Gently pull linear actuator subassembly off the servo shaft (fig. 6).
4. Replace the linear actuator subassembly by sliding the new assembly over the servo shaft ensuring that the shear screw head engages fully into its bore hole and that the retainer assembly bearings are riding on the top surface of the actuator rail.
5. Refit the nylon washer, wave washer and castellated nut to the servo shaft, torque and lock with a new cotter pin (refer Dynon Servo Arm/Capstan Removal and Replacement Instructions).
6. Attach the actuator rod end to the elevator bellcrank using the hardware removed during removal (fig. 8) and torque.
7. Carry out a full and free check of the aircrafts elevator control system.
8. A new servo calibration will be required after installation of new linear actuator subassembly. Refer to the EFIS installation manual for instructions on how to perform this task.
9. Carry out a duplicate inspection of the work done.
10. Refit the baggage area close out panels.

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If the aircraft is going to continue operating without the linear actuator subassembly installed, do the following:

1. Secure the retainer assembly assembly with a cable tie as noted in fig. 7.
2. Remove and retain all linear actuator attaching hardware.
3. Carry out a full and free check of the aircrafts elevator control system.
4. Refit the baggage area close out panels.
5. Disable the autopilot servos by switch off the autopilot servo power switch and place a placard on the instrument panel in full view of the pilot noting that the autopilot is inoperative and that the autopilot servo power switch is to remain in the off position.



Figure 4



Figure 5



Figure 6



Figure 7

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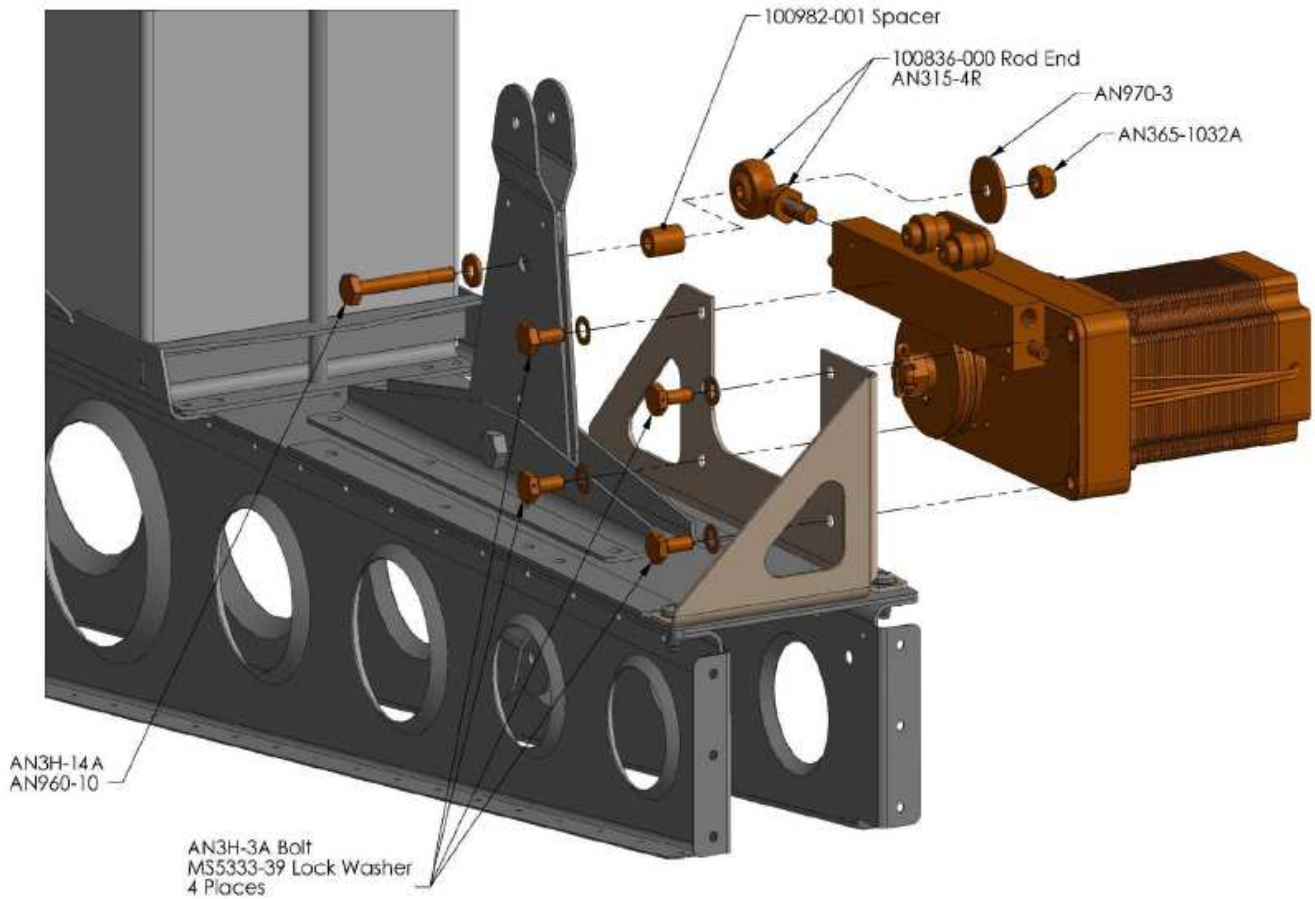


Figure 8

Warranty:

Dynon normally replaces affected parts free of charge but removal, installation and all freighting costs will be for the customer's account. Robin Coss Aviation is currently trying to obtain a number of service exchange linear actuator sub assemblies from Dynon. We shall keep you informed regarding this as well as any costs that may be involved, as soon as we have more information.

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TECHNICAL SERVICE BULLETIN: SV42T SERVO PULLEY

Original Bulletin: August 2, 2019

PLEASE READ THIS BULLETIN IN ITS ENTIRETY BEFORE CONTACTING DYNON AVIONICS

Description

Dynon Avionics has received reports of cracked pulleys in the SV42T linear actuator servo. This can cause poor autopilot performance and presents a risk of interfering with the flight controls.

Applicability and Affected Equipment

This bulletin affects the pulley on the Dynon linear actuator, which may be found on:

- Some Dynon Avionics SV42T Autopilot Servos (P/N 101008-003 / 101058-003)
- Some SV32 and SV42 servos retrofitted with the Dynon linear actuator

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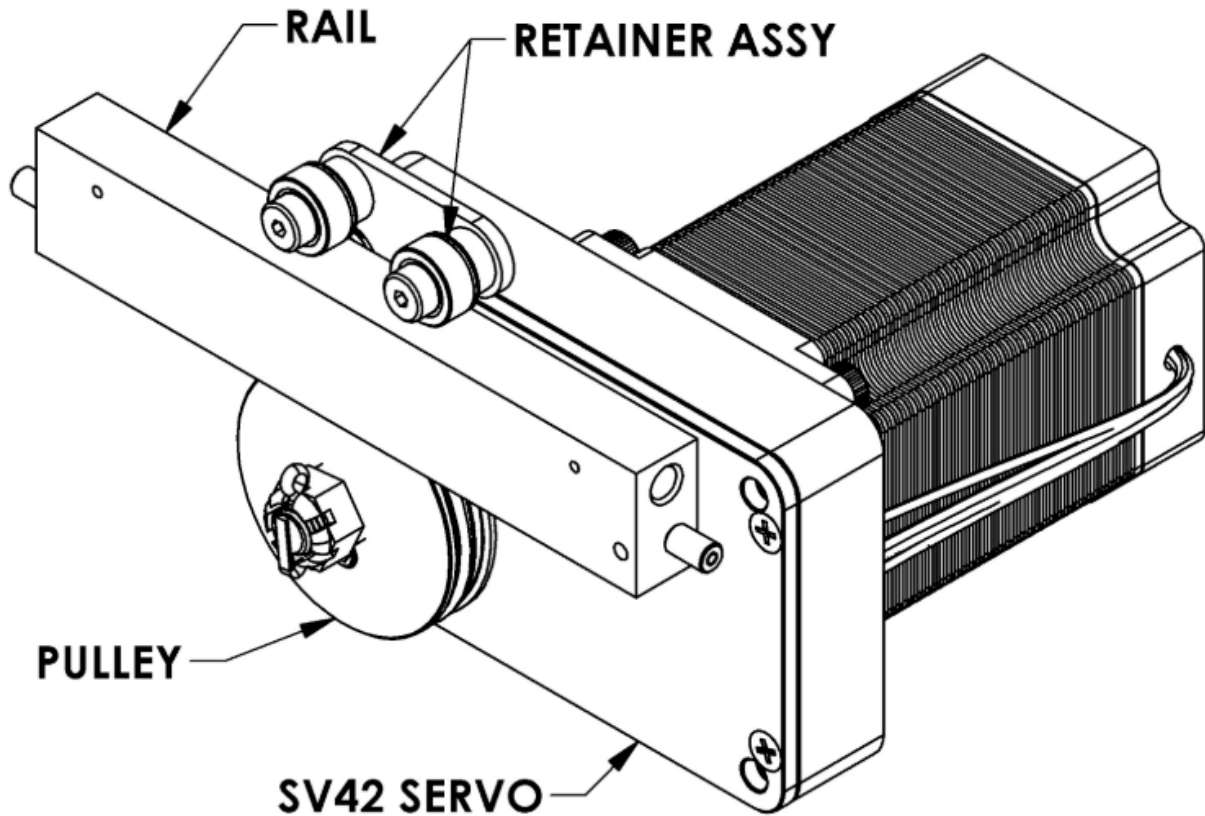


Fig 1: Dynon SV42T servo with linear actuator

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Unaffected Equipment

The following equipment is NOT affected by this service bulletin

1. SV32, SV32L, SV32C
2. SV42, SV42L, SV42EL, SV42C
3. SV52, SV52L, SV52C

Additionally, Dynon Certified installations are unaffected by this service bulletin.

Interim Operating Recommendations

Due to the nature of the issue, we recommend complying with this service bulletin before further flight. However, it is up to the owner/operator to determine the airworthiness of the aircraft for flight.

Solution

Perform the following:

1. If you received your SV42T or linear actuator assembly before 12/13/2011, it is unaffected and can remain in service. If you received your servo, or linear actuator assembly after this date, inspect it as follows.
2. Inspect the pulley for a crack from the center of the pulley through shear screw bore. (Fig 2)
 - It may be necessary to engage the autopilot on the ground and apply force to the control surface in order to load the pulley to make the crack visible.
3. If a crack is found, remove the servo from service and return to Dynon for repair/replacement.
4. If no crack is found, inspect the pulley to determine whether it is affected:
 - Unaffected pulleys have a crosshatch weave pattern in their material weave and a plastic-like smooth texture. Inspect the pulley for texture and visually with a

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magnifier. If a crosshatch weave pattern is present (Fig 3), the pulley may remain in service.

- Affected pulleys have a unidirectional wood-like “grain”, and a finish that appears dull looks similar to wood. If your pulley matches this description, remove from service and **contact Dynon** for repair/replacement. To remove the servo from service, you may opt to remove the entire servo assembly, or if more convenient you may remove the entire linear actuator sub-assembly by following the “Servo Arm / Capstan Removal and Replacement Instructions” on the **Dynon Documentation Website**. Whether you remove the servo or linear actuator, ensure that any remaining linkages are secured and do not interfere with flight controls. If you choose to remove only the linear actuator, disable the servo circuit electrically to prevent misleading autopilot behavior. This can be accomplished by disconnecting the wiring to the servo and/or removing its fuse or turning off its circuit breaker.

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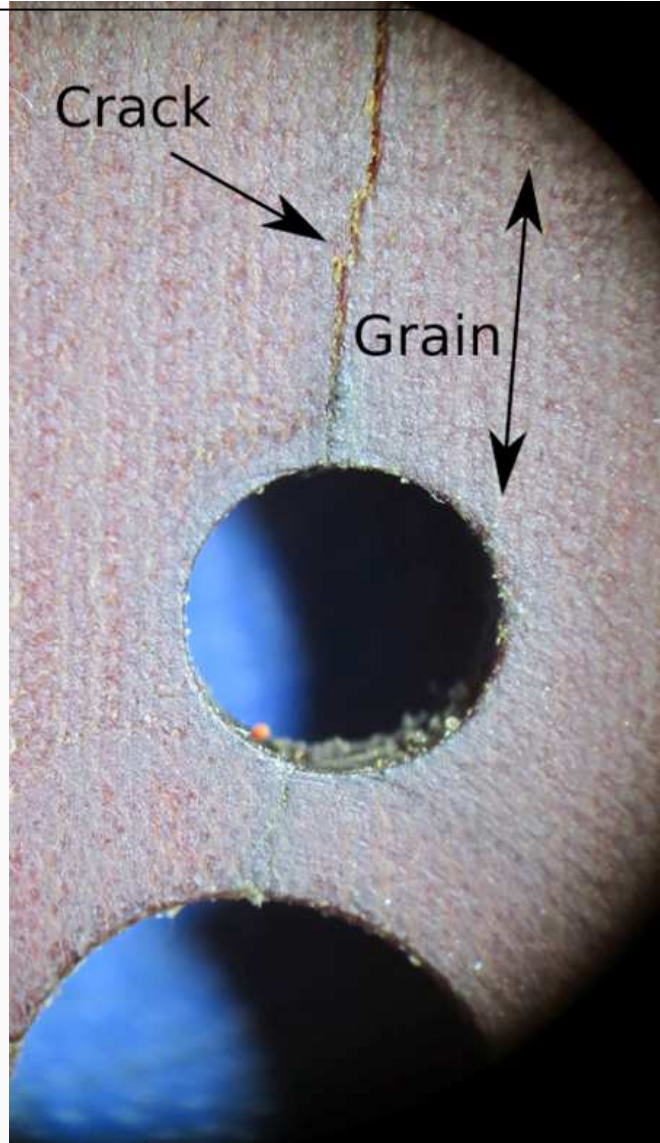


Fig 2: Affected pulley design with crack

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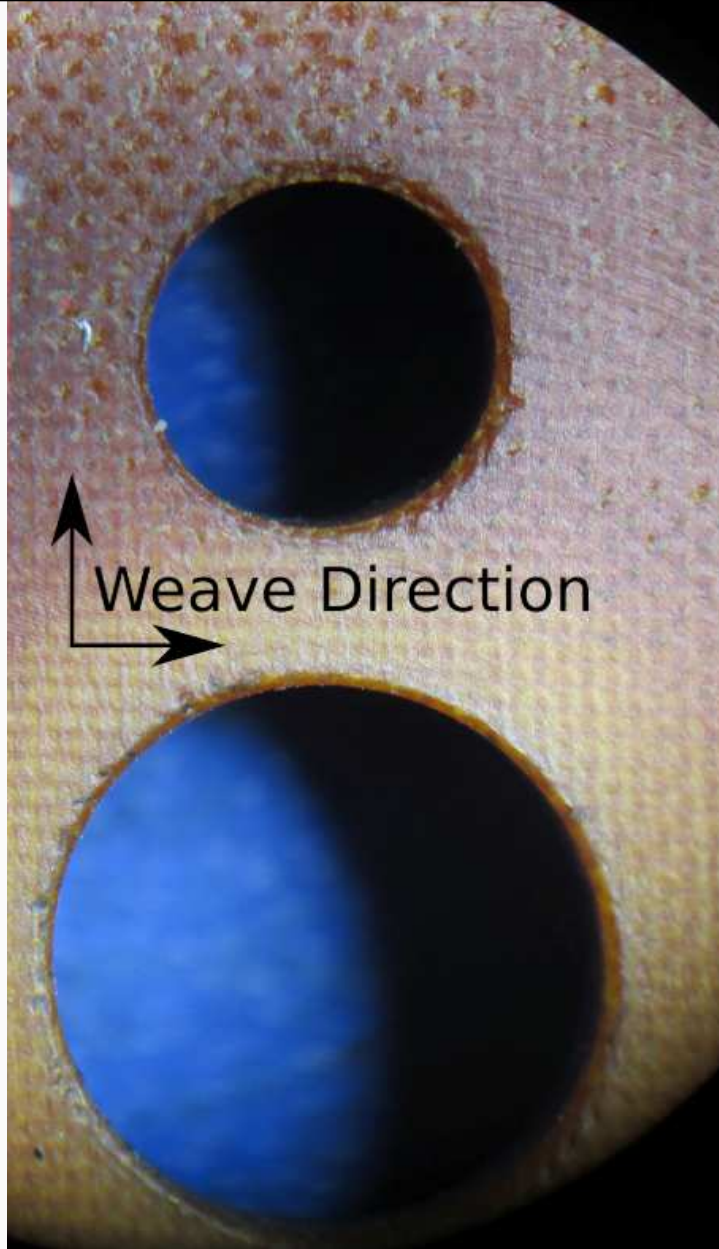


Fig 3: Serviceable pulley design

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Time in Effect

This technical service bulletin is in effect indefinitely or until superseded by a future bulletin.

Notice to Special Light Sport Aircraft (S-LSA), Dynon Certified, and other Non-experimental Customers

You are solely responsible for ensuring that your aircraft is airworthy. In the case of S-LSA aircraft, owners may need special authorization to service the aircraft if such operations are not permitted in the maintenance manual. Please refer to your aircraft maintenance manual or contact your aircraft manufacturer concerning this service bulletin.

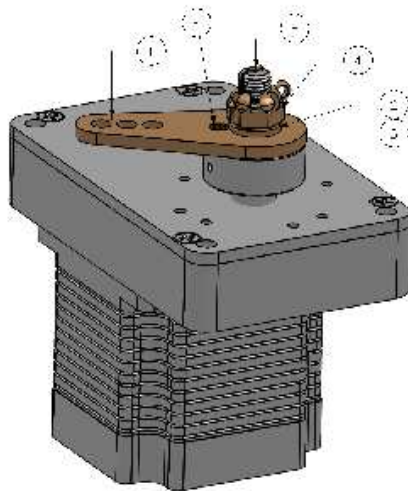
This service bulletin does not affect installations of SkyView HDX that are approved under Dynon's STC program.

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Dynon Servo Arm/Capstan Removal and Replacement Instructions

If it is necessary to change the arm or capstan on a Dynon autopilot servo, these instructions, when followed properly, enable the customer to perform this task in the field. If the customer does not feel comfortable performing these actions, Dynon will be happy to inspect and/or repair servos as necessary.



- | |
|--|
| <ol style="list-style-type: none"> 1. Servo Arm 2. Flat washer 3. Wave washer 4. Castle nut 5. Cotter pin 6. Shear screw |
|--|

- | |
|---|
| Required Tools <ol style="list-style-type: none"> 1. Needle nose Pliers 2. Torque Wrench (must be able to read 4.5 in-lb) 3. 1/2IN SAE Socket |
|---|

Fig 1

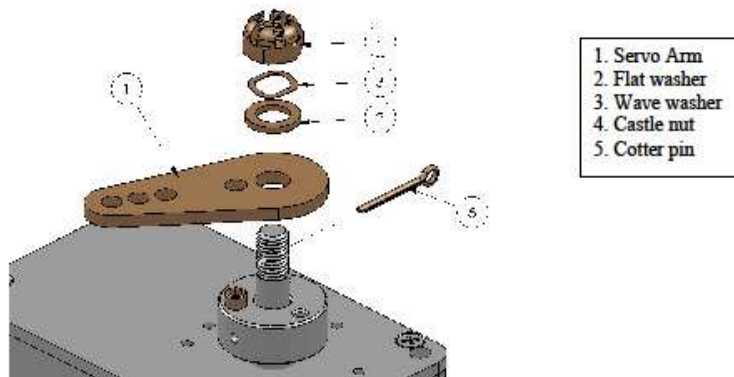
Removing Arm/Capstan

Remove the cotter pin from the castellated nut. Note that cotter pins should never be reused; replace with a new pin. Unthread the castellated nut, remove wave and nylon washers, and finally remove the arm or capstan. Put all these pieces aside - they will be reused. **DO NOT REMOVE** the socket head safety shear screw.

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The autopilot safety shear screw should **NEVER** be removed or adjusted during this procedure. If the shear screw has broken/damaged and needs replacement, there is specific documentation available for this purpose at <http://docs.dynonavionics.com>.



1. Servo Arm
2. Flat washer
3. Wave washer
4. Castle nut
5. Cotter pin

Fig 2

Reassembling the Arm/Capstan Stack

Reverse the disassembly steps to install the remaining hardware. See Figure 2. Assembly order is:

1. Servo Arm/Capstan
2. Nylon Washer
3. Wave Washer
4. Castle Nut (AN310-5)
5. Cotter Pin (M524665-210)

Tighten the castellated nut finger tight, and then using a Torque Wrench, tighten until a slot in the nut lines up with the hole in the shaft for the cotter pin. **DO NOT EXCEED 4.5 in-lb (72 in-oz) torque on castle nut.** Exceeding this torque specification will affect the yield torque of the safety shear screw, compromising the safety-enhancing intent of its design.

Install a new cotter pin, M524665-210, following the standard method of trimming and bending the pin legs.

Servo arm/capstan rotation should be smooth. No movement should be observed between the arm/capstan and the attachment disc as described earlier.

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