

Shear Screw Replacement Kit Installation Guide

This product is not approved for installation in type certificated aircraft without proper approvals

Document 103000-000, Revision A

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In the event that a servo's original shear screw loosens, becomes damaged or breaks, action must be taken to service the screw. When followed properly, these instructions enable the customer to perform this task in the field. If the customer does not feel comfortable performing these actions, Dynon Avionics can inspect and/or repair servos as necessary.

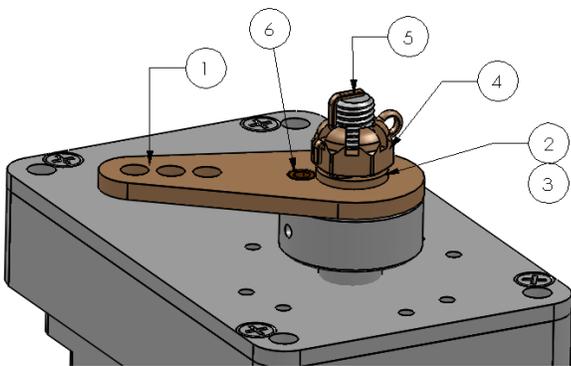


FIG 1

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

Shear Screw Replacement Kit Contents

Qty 1 Shear Screw
Qty 1 MS24665-210 Cotter Pin
Qty 1 Hex Wrench 5/64"
Qty 1 Red Loctite 271 Capsule



A shear screw is “loose” if the screw is no longer firmly seated in the threaded servo disc. This can be observed by holding the output shaft disc completely still and attempting to rotate the arm/capstan. No movement should be possible. If there is any movement at all between these two parts, your shear screw is loose and should be repaired per the following instructions. However, slight movement of the ENTIRE arm/capstan/disc/shaft relative to the internal gearing is expected. This is inherent to the design and due to designed-in drive gear lash and tolerance of the shaft captured in the servo housing. Small amounts of movement here are normal and should not be confused with a loose arm/capstan or shear screw.



Care should always be taken when reworking the safety mechanisms on the servos. These features were specifically designed to fail under certain conditions. Deviation from these instructions could result in property damage, injury, or death.

Removing Arm/Capstan

To fully access the shear screw the arm/capstan/pulley must be removed. To do this, the cotter pin must be removed from the castellated nut. Note that cotter pins should never be reused; **replace with the new pin provided**. Unthread the castellated nut, remove wave and nylon washers, and remove the arm, capstan or pulley. Put all these pieces aside - they will be reused.

Replacement of Broken or Loose Shear Screw

If the shear screw head has broken off, inspect the remaining threaded portion of the screw in the attachment disc. If the remaining threaded screw piece does not interfere with the arm - as is the case most of the time - it is not necessary to remove it as the threadlocker will keep it in place. However, if the broken neck tip of the screw protrudes past the face of the attachment disc hole or if the remaining screw portion seems loose, it must be removed. Clean the face of the attachment disc to remove any hardened threadlocker to prepare the area for the new hardware.

Preparing/Installing Replacement Shear Screw

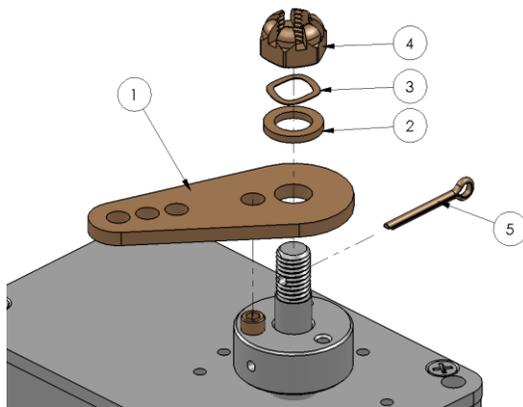


FIG 2

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

NOTE:

A new servo calibration will be required after installation of new shear screw. Refer to the EFIS installation manual for instructions on how to perform this task.

The servo attachment disc was designed with 3 threaded shear screw holes. This allows a new screw to be installed, in either of the two remaining threaded holes, even when the lower half of a previously sheared screw remains.

Apply provided red threadlocker to the threads of the replacement shear screw, ensuring that the liquid fully covers at least half of the threads by simply dipping the screw into the threadlock contained in the capsule. Using the provided 5/64" hex wrench install the new shear screw in any of the available servo disc holes. Tighten the shear screw to approximately **16 in-oz (1 in-lb)**. **This is a "finger tight" fit, do not over tighten the screw!** Applying too much force may fatigue or break the shear screw. Remember that in this application, it is the job of the threadlocker to keep the screw in place, not the stress of the screw's threads or head against the disc. Wipe excess threadlocker from around the head of the shear screw and allow it to cure for at least 15 minutes at room temperature (colder temperatures may take significantly longer) before the servo arm, capstan or pulley is reinstalled. Allow a minimum of 1 hour of cure time before flight.

- ⚠ **Never "re-torque" or "re-tighten" the shear screw while it is installed in the servo.** After the threadlocker has started to cure, it **MUST** be removed and reinstalled with fresh threadlocker per the above instructions.
- ⚠ If you are experiencing several shear screw breaks contact Dynon Avionics Technical Support immediately as this may be an indication of other installation issues.

Reassembling the Arm/Capstan Stack

Once the threadlocker has cured, reverse the disassembly steps to install the remaining hardware. See Figure 2. Assembly order is:

1. Servo Arm/Capstan/Pulley
2. Nylon Washer
3. Wave Washer
4. Castle Nut (AN310-5)
5. New Cotter Pin (MS24665-210) - Provided in kit

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

Install the provided new cotter pin, MS24665-210, following the standard method of trimming and bending the pin legs.

Servo arm/capstan rotation should be smooth. After the cure period, no movement should be observed between the arm/capstan and the attachment disc as described earlier.

A short video on shear screw replacement can be found on The Dynon Channel (YouTube):

<http://dynonavionics.com/videos>