

# Trouble Shooting Tail Rotor Pitch Change Problems

Usually problems with the pitch change mechanism are indicated when the pilot complains that the TR pedals seem to be sticking. As the pilot continues to push on the pedals, suddenly they will break loose and then go too far.

There several things to look for before looking at the tail rotor grip bearings.

1. Check the tail rotor cables, especially where they pass through pulleys and bulkheads. Inspect the cables closely where they pass over the pulleys in the aft section of the tail cone. Check that the tension is set correctly.



2. Using the tail rotor retention plates operate the slider mechanism in and out.

If the bronze bushing gets worn, it can wear a step in the chrome output shaft. Then as the slider mechanism wobbles back and forth, it can catch on the wear ridge.

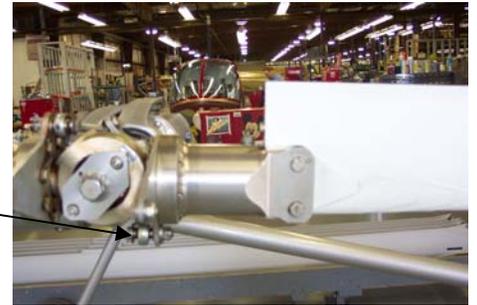
If this is determined to be the problem, the bronze bushing and the chrome output shaft will need replacement.

3. The most common reason for this problem is wear in the tail rotor grip bearings. There are two types of bearings in the tail rotor grip. The bearing closest to the hub is a roller bearing and it handles the thrust loads of the tail rotor. The tail rotor is pulling the tail of the aircraft towards the co-pilot side of the aircraft, to the right, and the roller bearings handle these loads.

The outer two bearings are a set of “matched angular contact bearings”. These two bearings have specially ground races so that both bearings share the centrifugal loads from the spinning tail rotor blades equally. This why they must be replaced as a set.

When trouble shooting the 'dead spot', it is necessary to determine which of the bearing sets is the problem.

4. To make this determination disconnect the pitch link at the blade retention plate.



Then, pushing on tip of the blade with one hand, use your other hand to rotate the blade, feeling for roughness in the bearing. This test side-loads the roller bearings and checks their condition.



Next, pull out on the blade in the direction of centrifugal force while rotating the blade, feeling for roughness in the nested ball bearings.

These tests should isolate what is causing the 'dead spot' in the tail rotor and assist the mechanic in determining what parts need to be replaced without needlessly replacing airworthy parts.