

Replacing the center wire in your ATOS

The center wire inside the nose of your ATOS that connects the two side/front wires apparently comes under a little too much stress around the small metal pulley right at the front end of the keel. If you notice that one of the strands of the wire has broken. If this is true this is an indication that other strands will soon be breaking and it is time to replace the wire.

AIR recommends changing the wire with a Dyneema cord that they provide and use on all their new ATOS's. When you replace the cable with the cord you'll want to be sure to wrap the loops at the ends of the cord around the pegs in the barrels at pictured here:



You'll also want to protect the cord with a piece of plastic:



Felix writes: "The plastic tube has to be in the metal tube as well in order to protect the dyneema rope for sharp edges at the steel tube. It must be impossible to bring the dyneema rope in contact with the steel tube."

Now you want to make sure that the tension on your side wires, which is determined by the length of this center cord and the lengths of the side wires, is quite tight. Felix writes: "Important: The complete wire must be between 1 and 2 cm shorter about (0.5 inch) than it has to be to fit to the quick pin. 1-2 cm tension!"

My particular Dyneema cord was 2" too long and this is what the side wire looked like when I first installed the new Dyneema cord:



It went way past the down tube pit pin. Bob Lane took 2" out of the cord for me resewing it. Then the side wires were very tight after this fix.

You want to be sure that the control frame is very tight so that it doesn't flop around as you are flying.

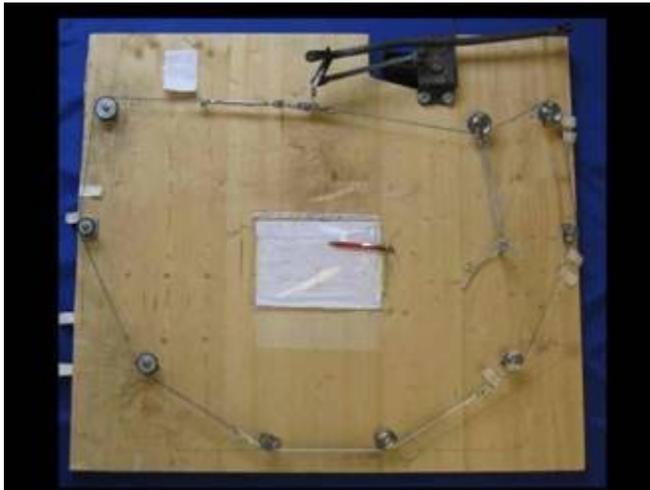
You'll want to check your spoilerons to determine when you move the control frame from side to side that the spoilerons rise the same amount of movement to each side of the control frame.

Jim Lamb <jlamb@inavia.net>, ATOS USA, writes:

Originally the ATOS models C, V, VX, and early VR, were shipped with a 2mm stainless wire. It was replaced with a 2.5mm zinc coated steel wire when premature wear was observed. The problem was work hardening of the wire across the nose pulley radius. The zinc coated steel was more flexible and has performed much better.

However, as of October of 2005, a Dyneema rope has been certified by DHV as replacement for the 2.5mm zinc coated steel wire. Testing has shown it not only to exceed the strength requirements, but it is also far superior in wear to steel while not exhibiting the sudden, undesirable failure modes.

The Dyneema was tested along with both other steel wires through hours of cycles on the test bed picture below.



Click picture above to see video.

It provided for normal max loads and allowed the plane of the wires/dyneema to be slightly offset to the pulley such as might occur with a glider that has it's nose angle set incorrectly. This causes excess wear in that the line will then ride the edge of the stainless pulley. After many hours of continual cycles, the 2mm showed significant wear and broken strands. The 2.5mm showed wear consistent with an approximate 200+hr season with one broken strand while the Dyneema displayed minimal wear. The Dyneema runs smooth while the slow accumulation of wear is easy to observe and is consistent the failure mode of a 'rope' as opposed to the sudden failure of a steel wire.

We currently recommend the 2.5mm wire be replaced every 100 hrs, every season,

or immediately if a broken wire is observed. This should be examined as part of the preflight on every flight. I should have the Dyneema replacements shortly and have 2.5mm wire sets in stock now. This is a good time to get a spring inspection done. Pilots can call their local Dealer or me direct for replacement parts.