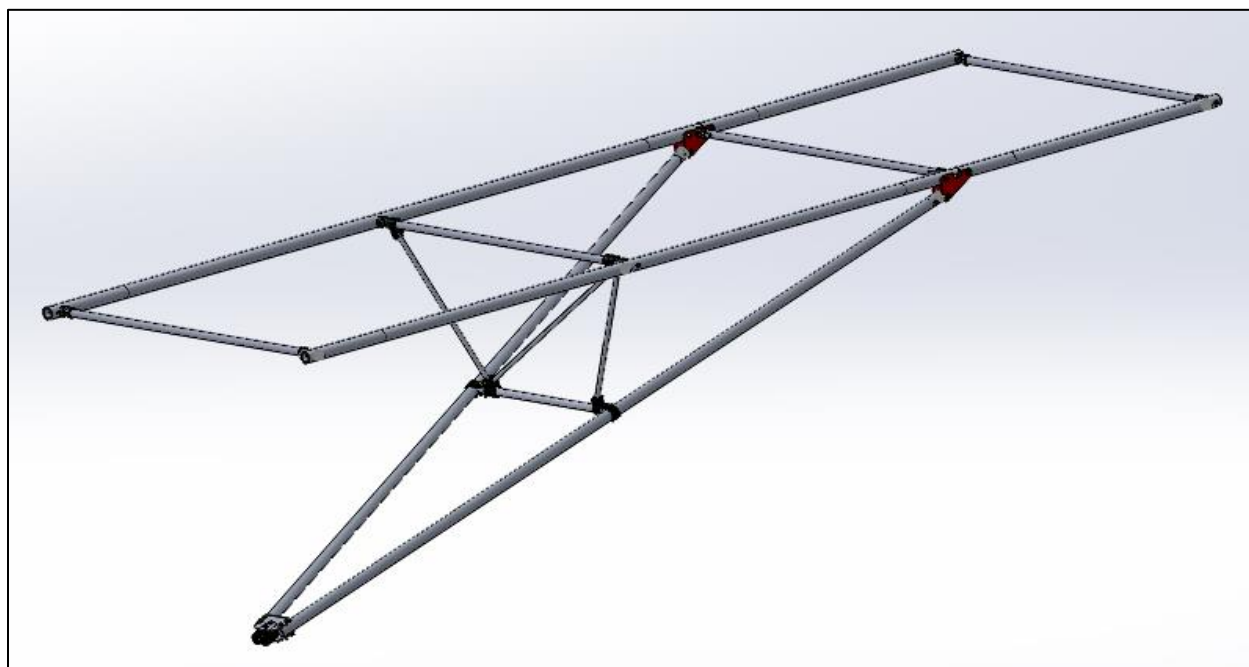




STRUT BRACED WING MANUAL



Phantom Aeronautics LLC

Three Rivers, MI 49093

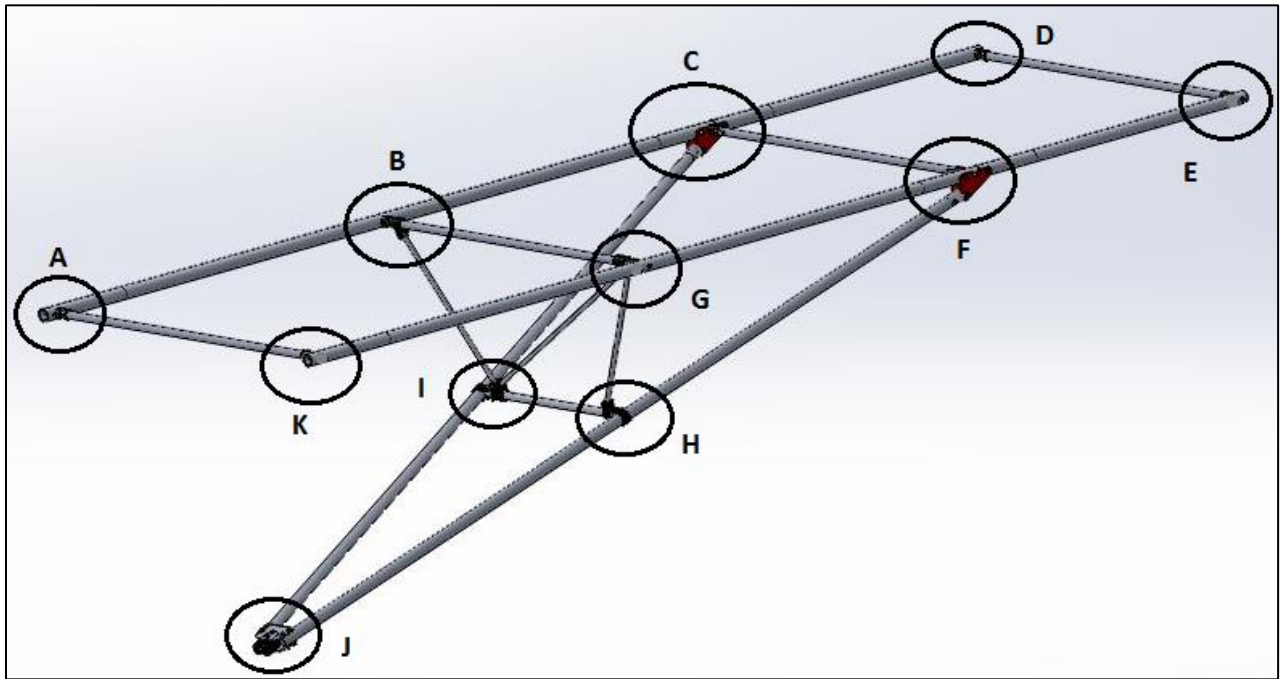
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Section Overview



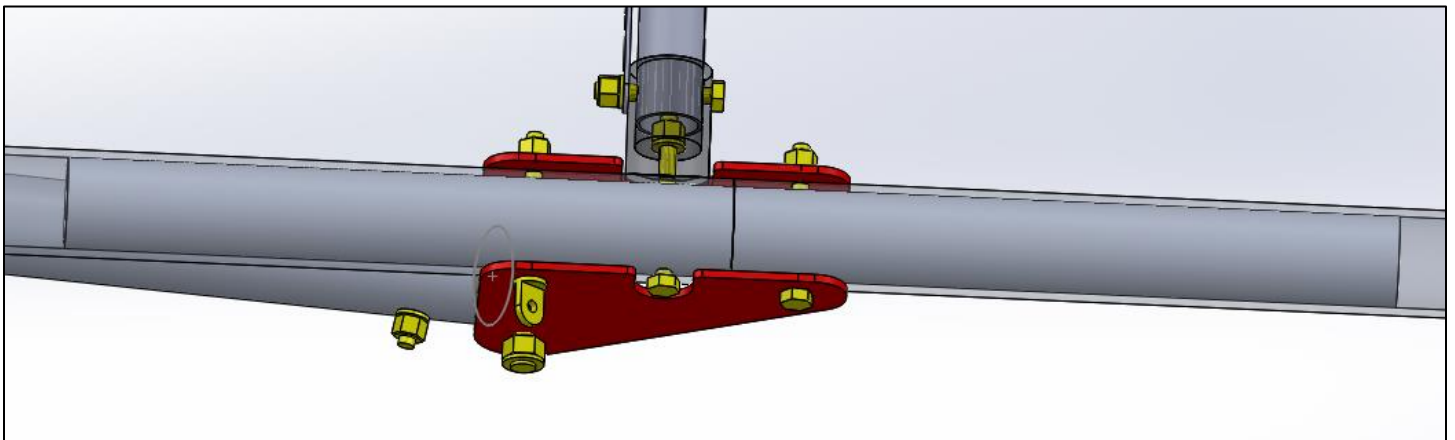
This structure shown in the above image should be fully assembled and attached to the airframe prior to putting the wing coverings on. It is easier to adjust the bolts and connections without the wing coverings. Assemble the spar and compression tube assembly (A,B,C,D,E,F,G &K) to the aircraft before attaching the wing struts. Leave nuts and bolts loose until the assembly is complete. Once the spar and compression tube assembly is in place, attach the main wing struts. Adjust the wing dihedral prior to assembling the smaller jury struts.

The wing should have a minimum dihedral of "1" degree. The tip of the spars should be a minimum of 2.5" higher than the root of the spar. Use the rod end adjustment to change the angle. The rod end assembly is discussed later in this document.

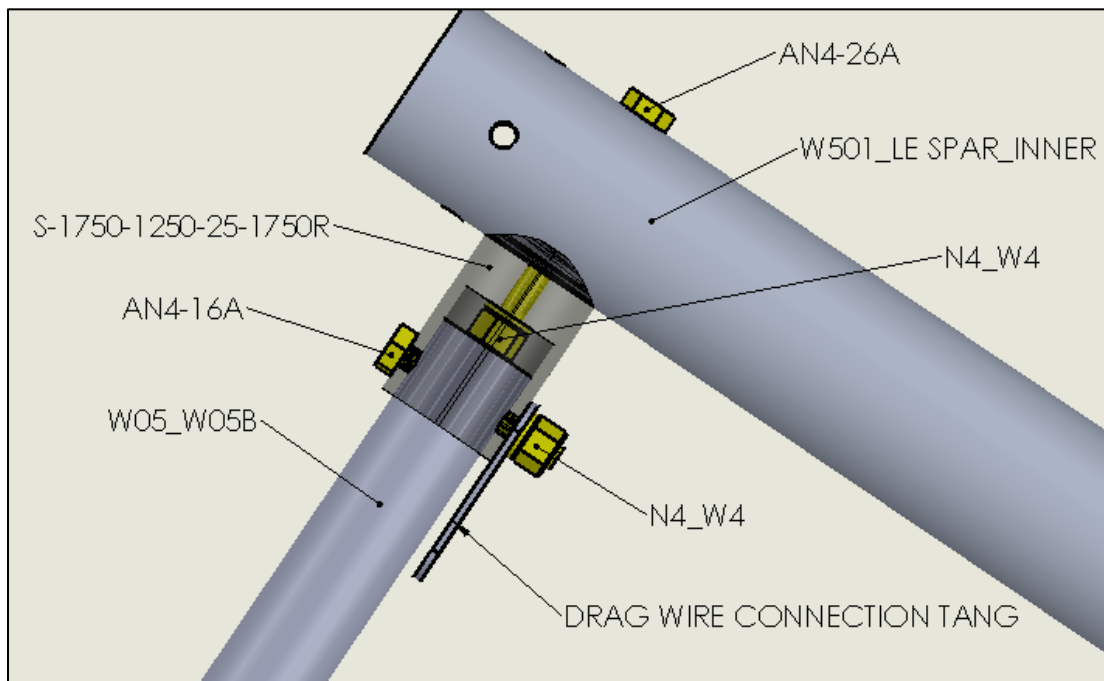
At the "A" and "K" sections there are sleeves that insert into the root of the wing spars. W503 and W507. Make sure these are in place.

At the "C" and "F" sections there are sleeves / splices that connect the inner and outer spars, W508 and W504. Make sure these are in place before bolting everything together. The shorter section of the sleeve should be inboard.

In all cases it is acceptable to run a 1/4" drill bit through the holes to aid in alignment.

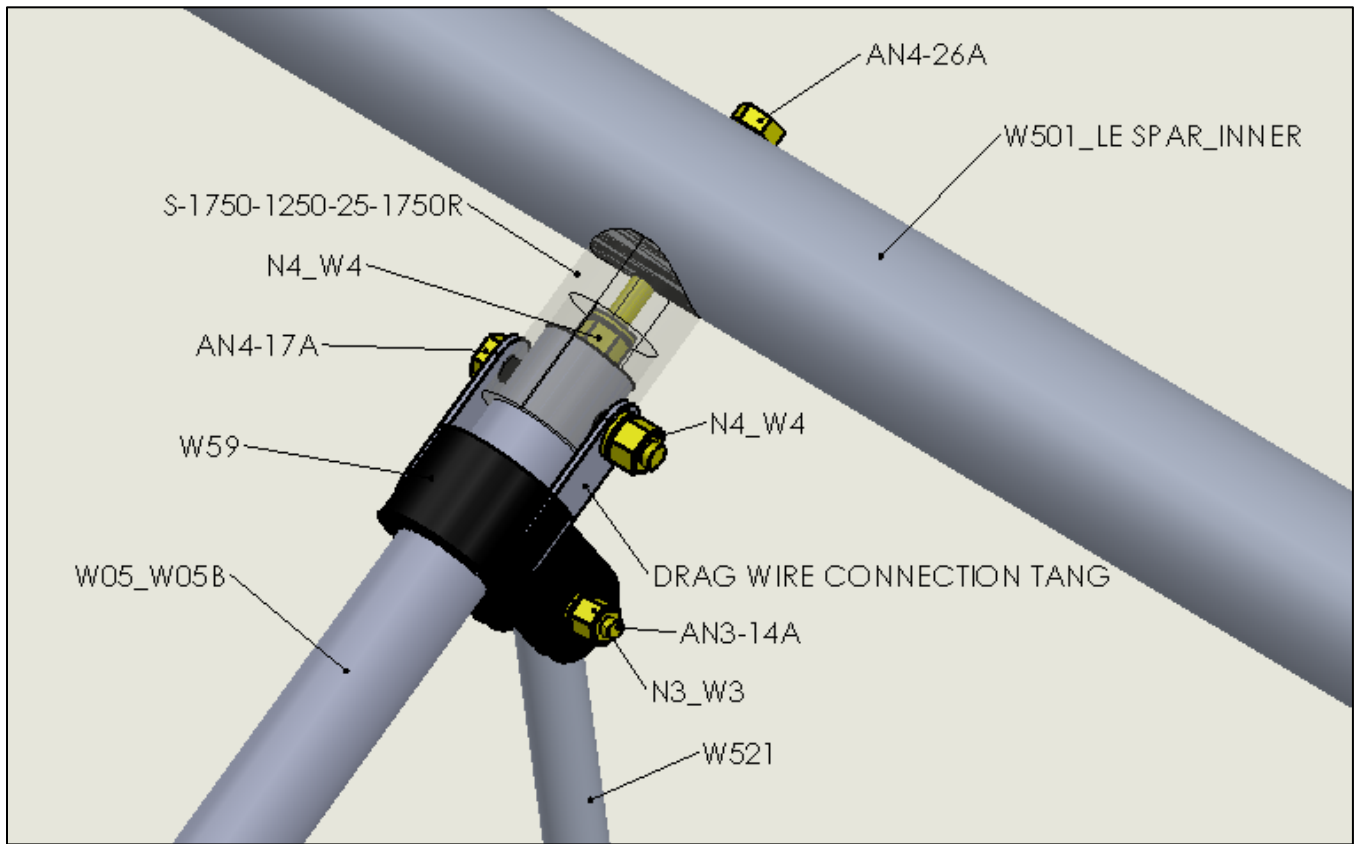


Section A

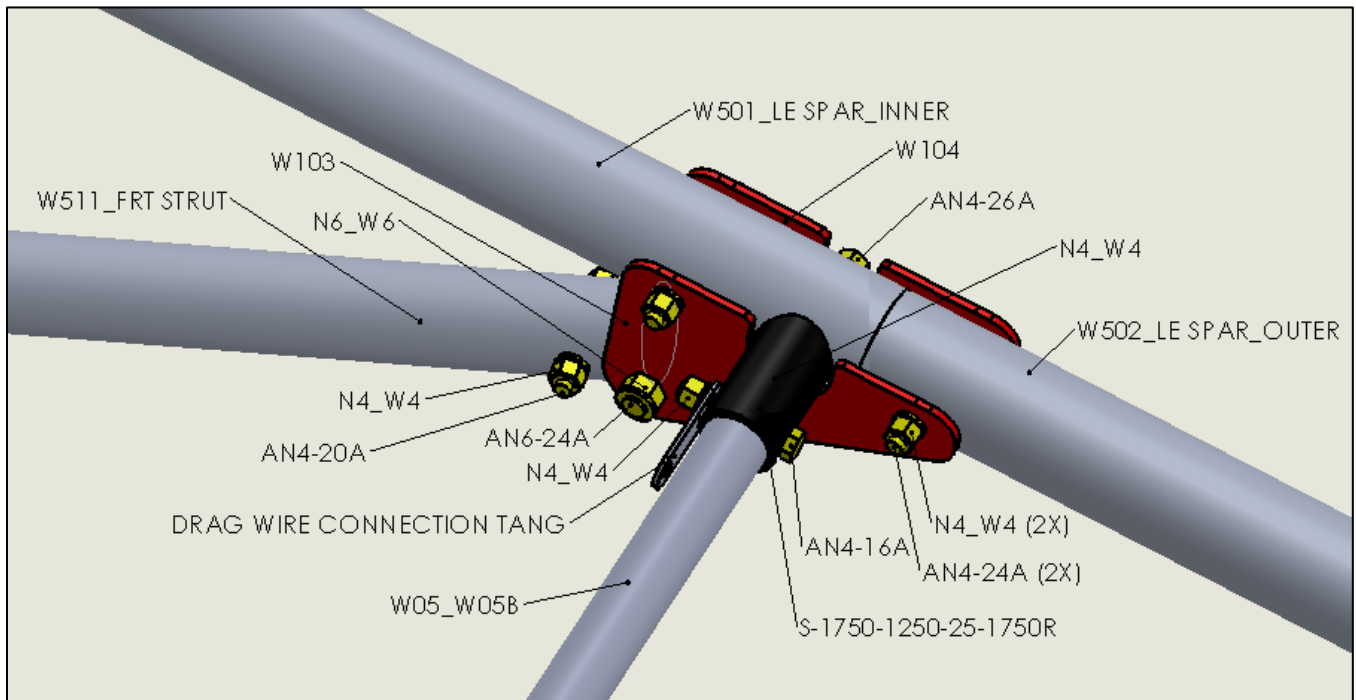


When installing all of the AN4-16A's in this section and all following sections make sure to install the drag / x-wires. These wires attach using the drag wire connection tang which is swedged to the drag wire itself. These wires will crisscross between "A" and "G", between "B" and "K", between "B" and "F" and between "C" and "G". If the wires are loose when the bolts are tightened down, you can twist them up to 3 times to shorten there length. Twist them in the direction of spiral seen on the cable wire themselves.

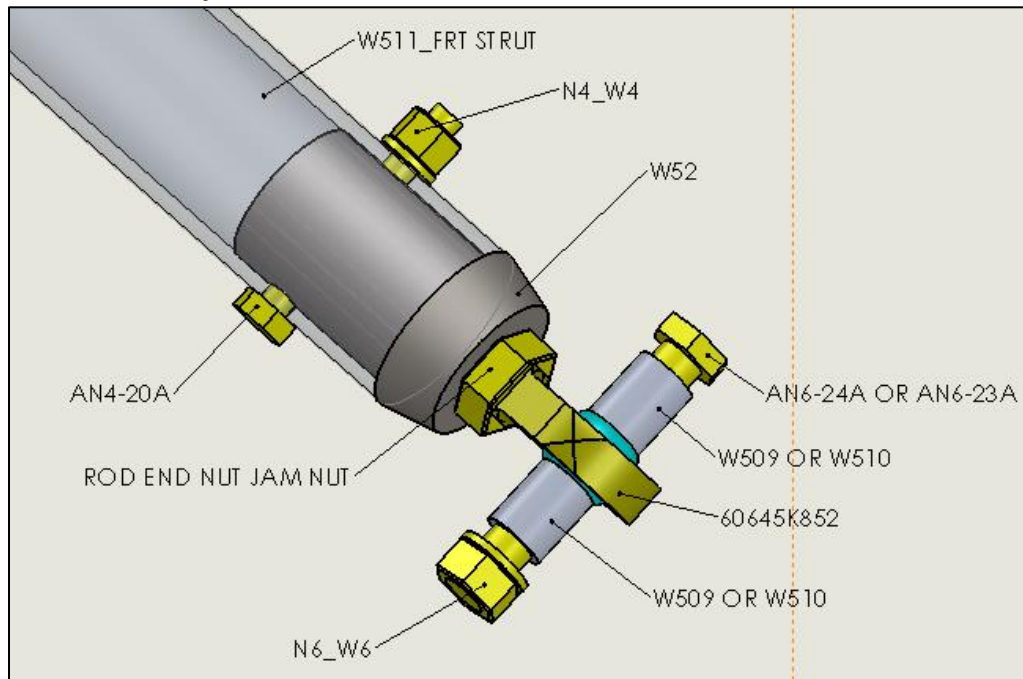
Section B



Section C



Wing Strut End Assembly



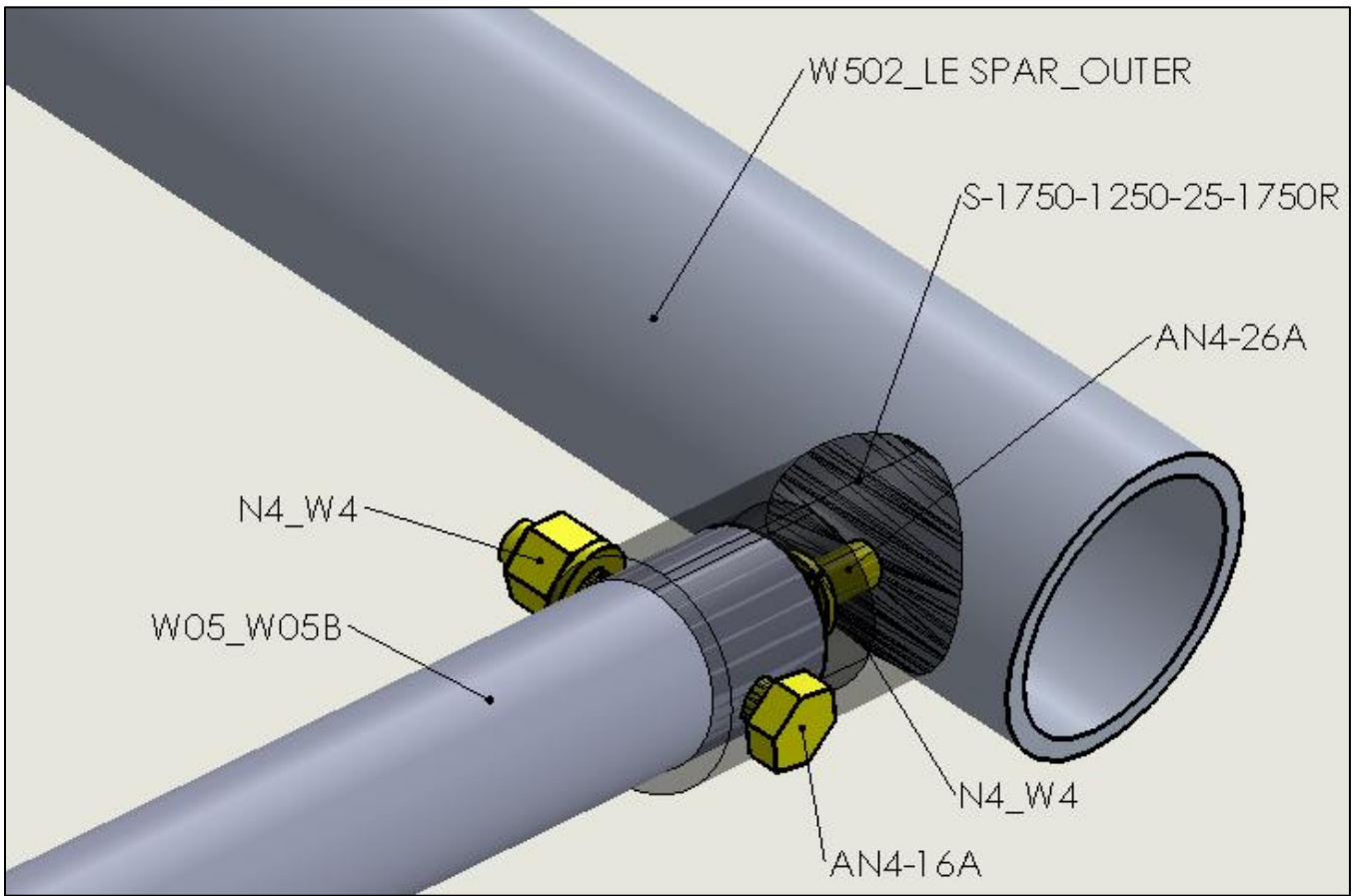
This subassembly shows the wing strut end assembly. W509 or W510 are used based on if the assembly is going into the front spar or rear spar attachment point. The longer of the two is used on the front strut in conjunction with the AN6-24A. The shorter of the two is used on the rear strut in conjunction with the AN6-23A.

To insert the W52 into the W511 will require some sanding, especially if the strut was powder coated. A drum sander on the end of drill will work best. Enlarge the inner diameter of the 511 until the W52 slides inside.

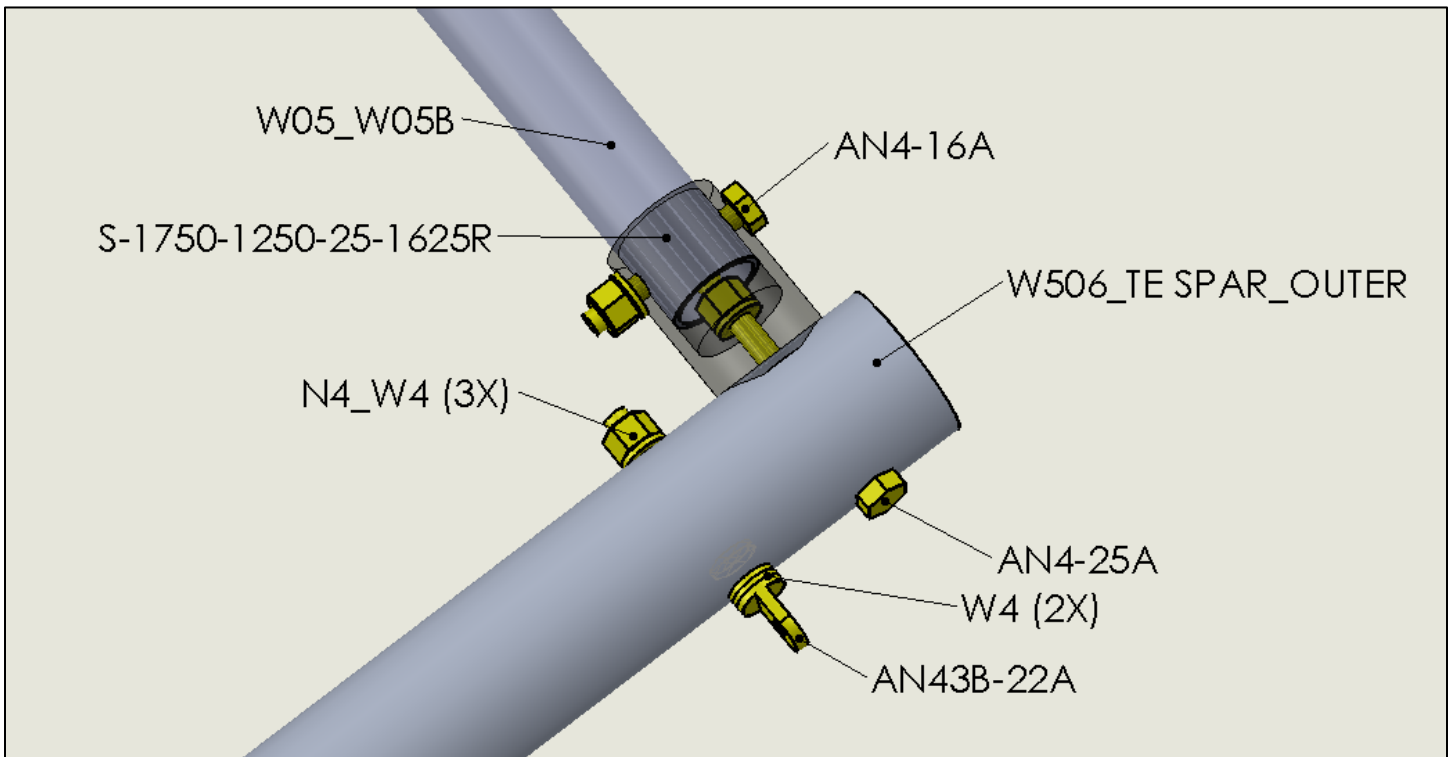
During initial assembly start with the jam nut all the way threaded on to the rod end. Thread the rod end all the way into the W52. You will back the rod end out to aid in setting the wing dihedral and matching the left wing dihedral angle to the right wing dihedral angle.

NOTE: THE MINIMUM THREAD ENGAGEMENT OF THE ROD END INTO THE W52 is 0.75"

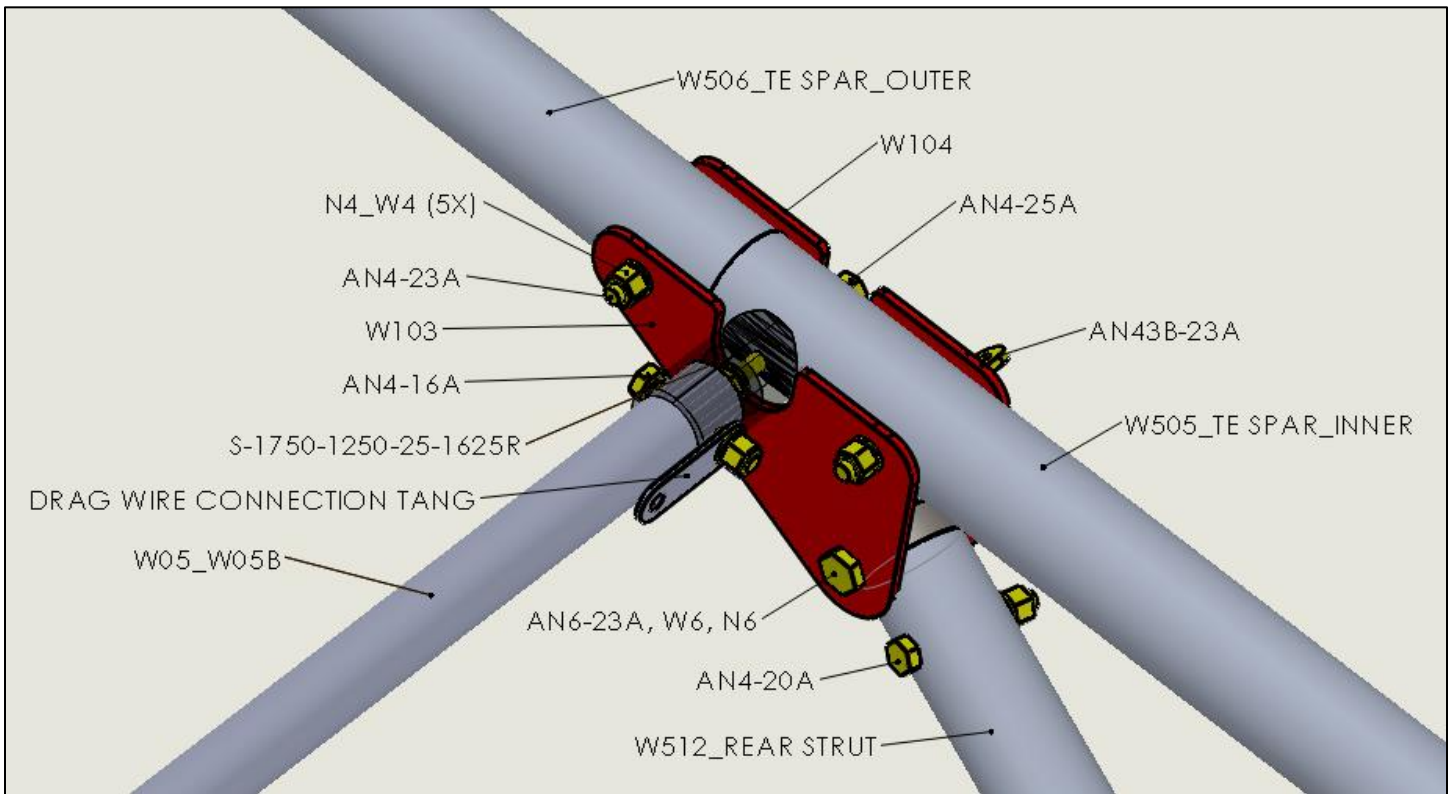
Section D



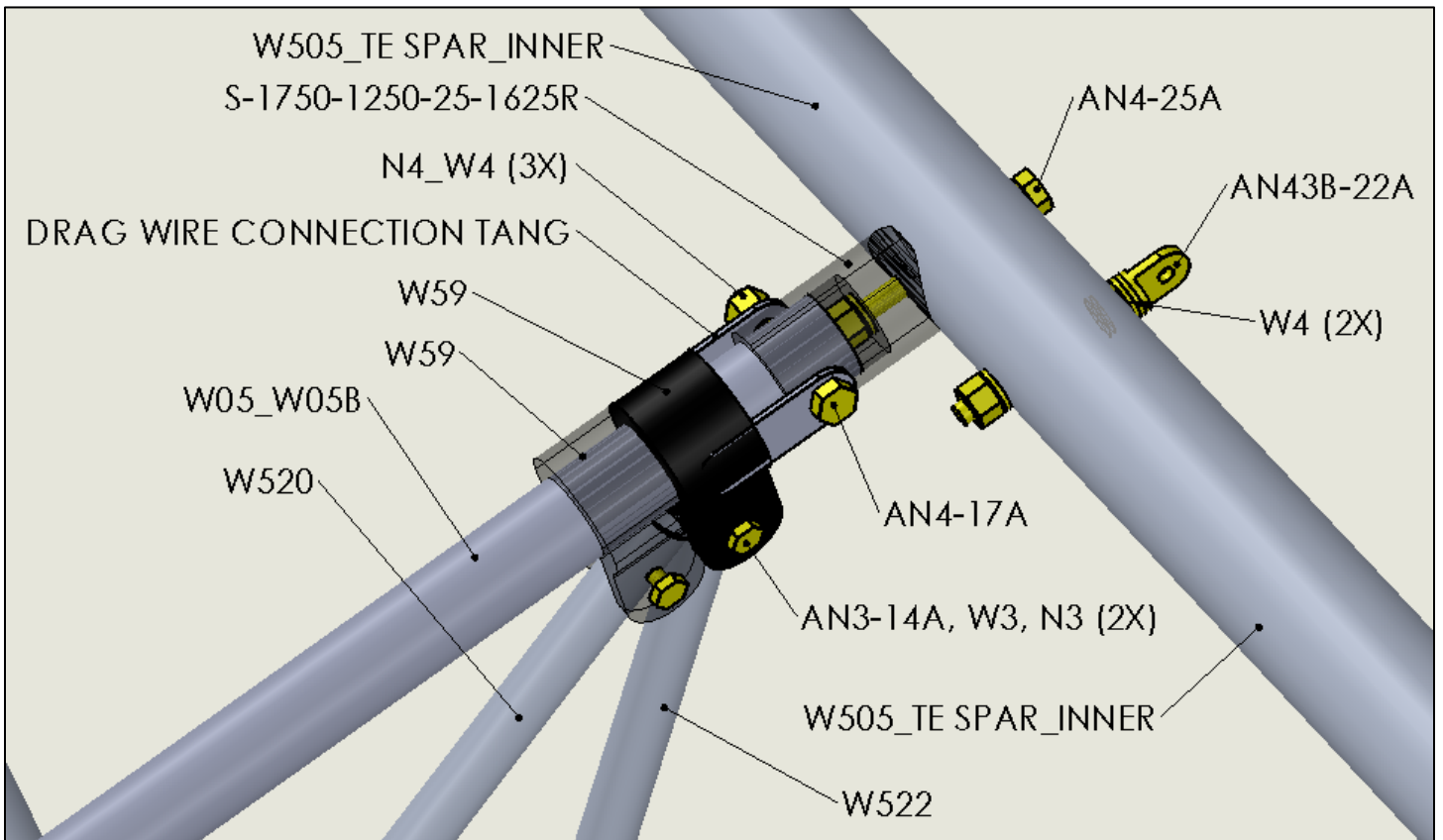
Section E



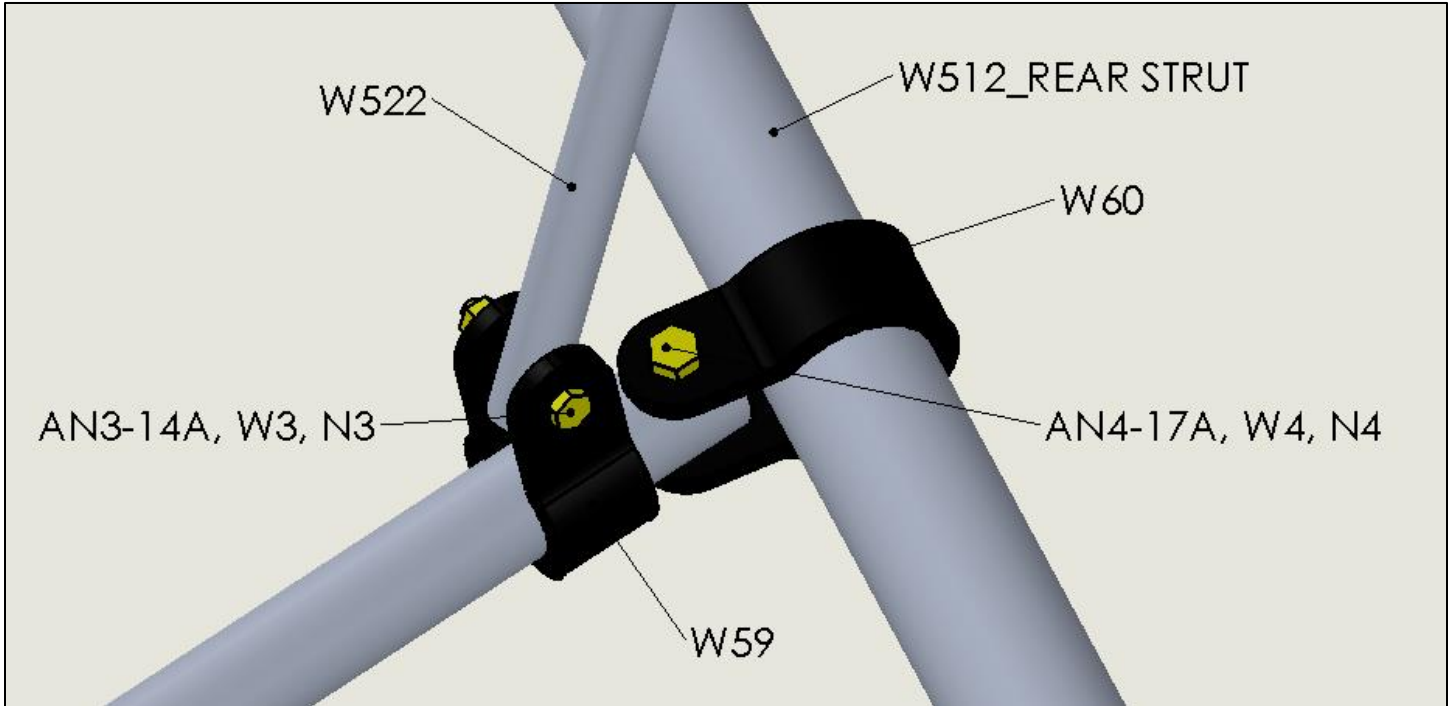
Section F



Section G

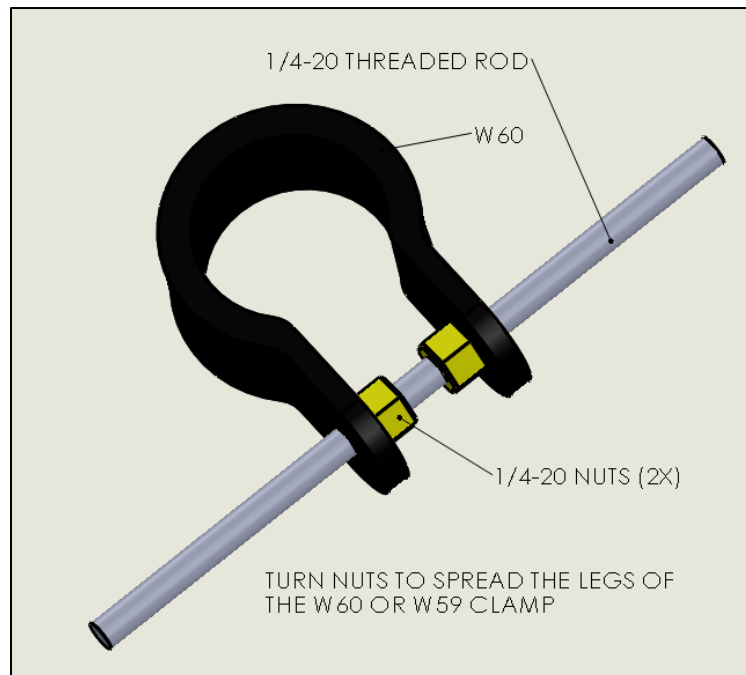


Section H

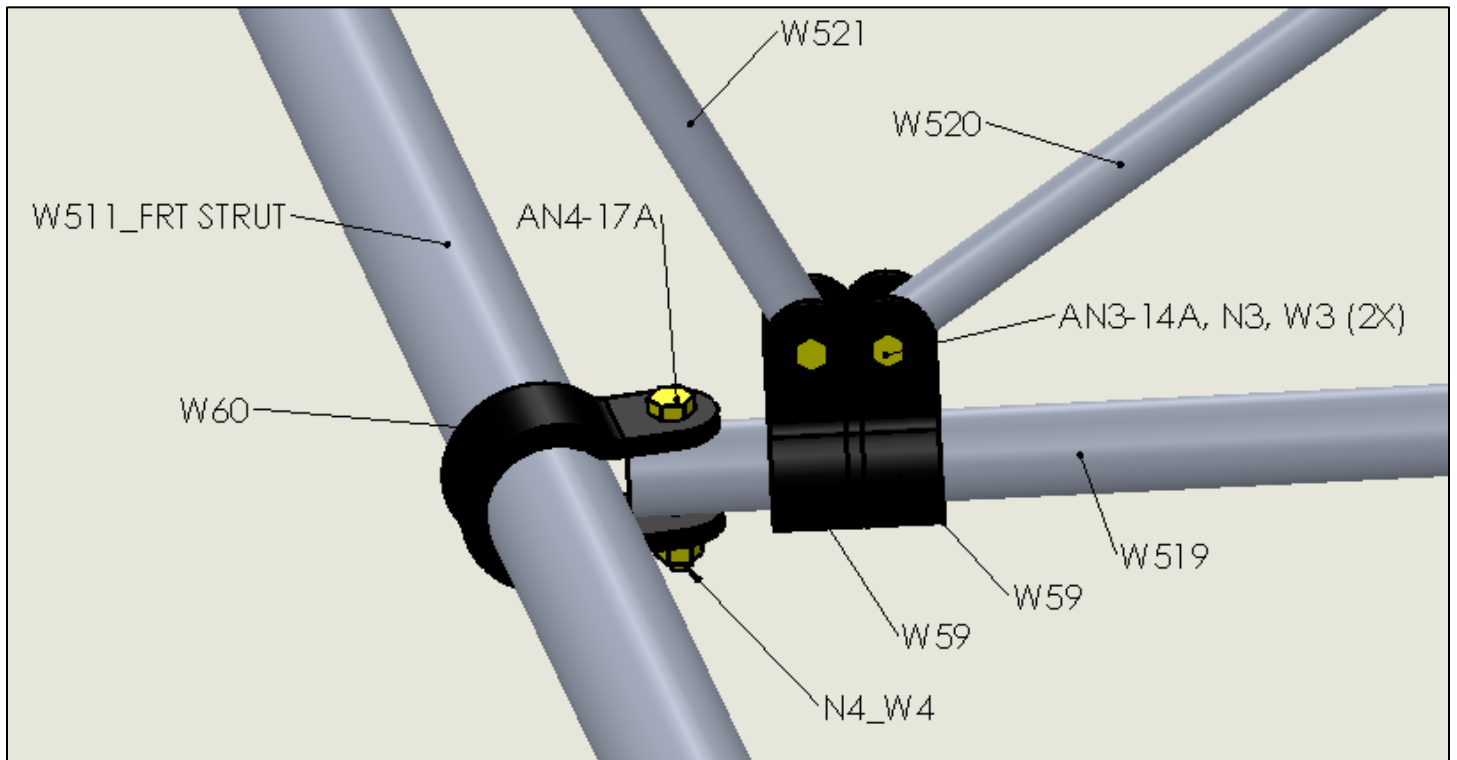


W59 and W60 Additional instructions

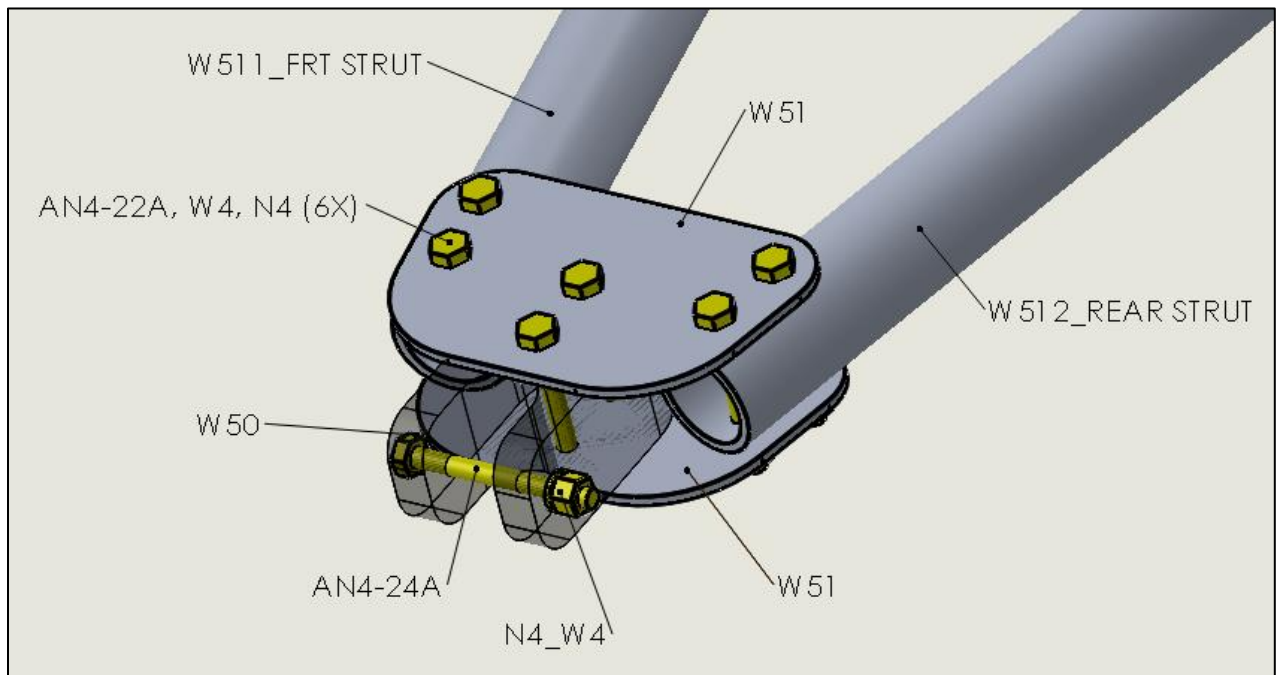
The W59 and W60 clamps are designed to slide over anodized tubing. If your tubing is powder coated the inner diameter of the clamp will need to be made larger. The inner diameter can be sanded so it will slide over the tubing. Use a drum sander on a drill or Dremel tool to accomplish this. Or the clamp can be spread apart as shown in the following image.



Section I

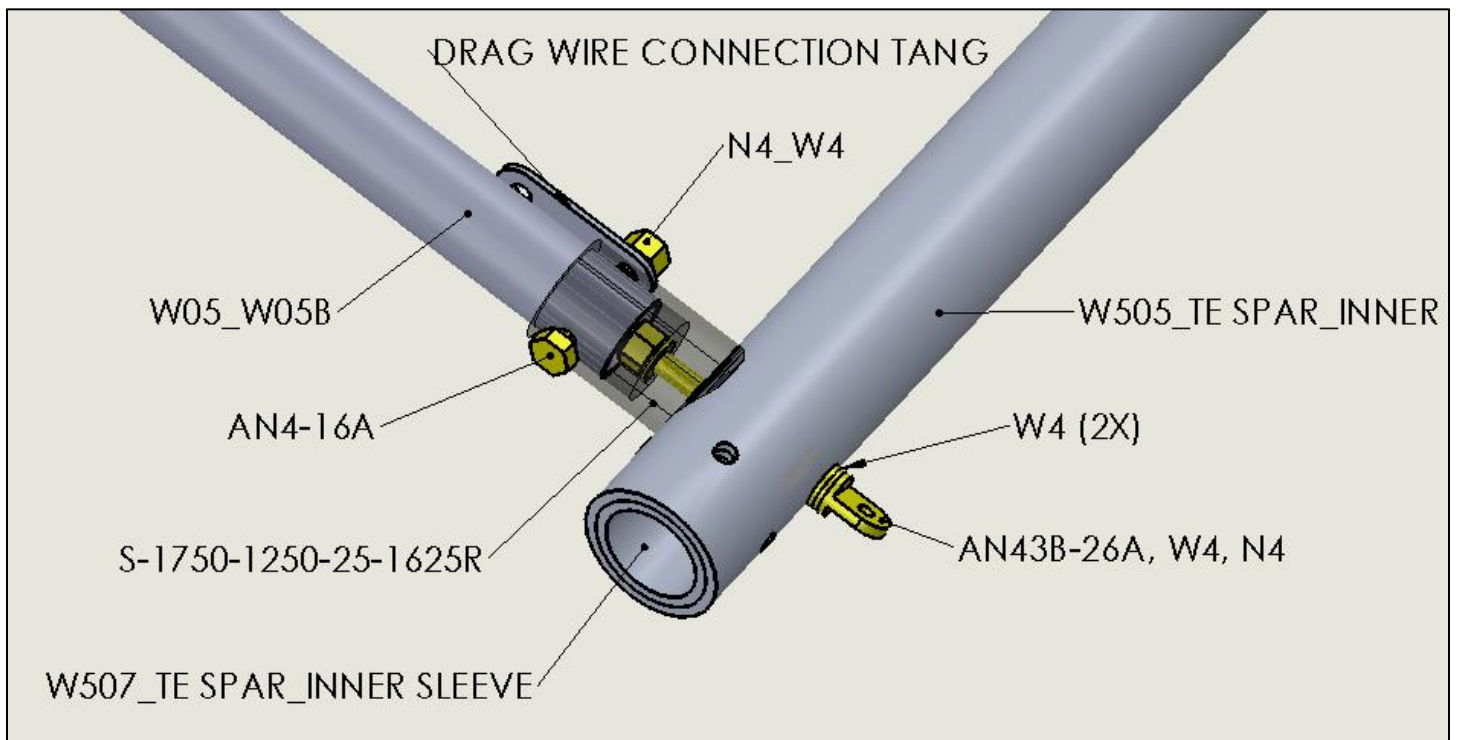


Section J



When assembling the struts to the fuselage connection point, insert only one of the AN4-22A bolts into the end of the 511 and 512 strut. The struts are only drilled at the end for one of the holes for the AN4-22A. Once the wing dihedral angle has been set and jury struts have been fitted and bolted into place you will need to drill the additional through holes for the AN4-22A bolts. Use the holes in the W51 plates as guides.

Section K



Wing Fabric Installation

Refer back to the main Phantom X-1 Manual for wing fabric installation instruction.

To prep the wing structure for fabric installation you will need to remove the following items and re-install them after fabric installation. Wing stands to support the tip of the wing will be useful while installing the fabric.

- Remove all eyebolts except for the wing root eyebolts
- Remove Wing Struts
- Remove Jury Struts
- Remove Wing Strut attachment plates

Once fabric installation is complete and the fabric is melted way from the holes, re-install these items. Eyebolts will just bolt back into place.

The outer wing strut attachment plates will bolt right over top of the fabric. To install the inner wing strut attachment plates a small slit will need to be burned into the fabric. Keep this slit as small as possible. Once the strut plates are bolted back in place attach the main struts.

Small slits will also need to be melted through the fabric to accommodate the jury strut attachment points as well. Keep the slits as small as possible.