

Pre-Paint>Fuselage>Wheel alignment

Objectives of this task:

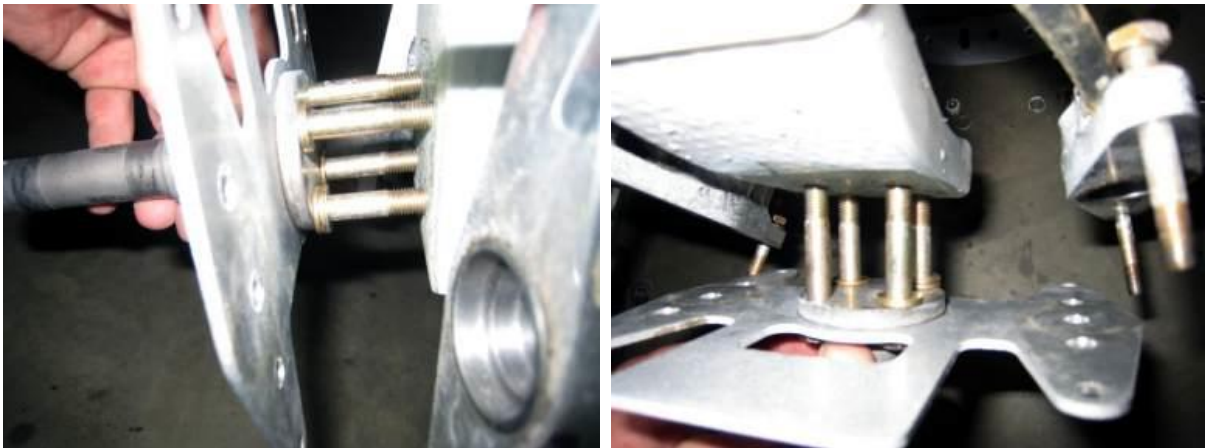
To ensure that the main wheels are correctly aligned.

Overview:

Some aircraft have reported shuddering through the undercarriage and airframe on rotation or landing. The amount of shuddering seems to be variable, depending on the all up weight of the aircraft. Investigations on factory built aircraft have revealed that this phenomenon is caused by a combination of two factors: toe-in or -out and the camber of the main wheels. This procedure outlines how to check the wheel alignment and make the necessary adjustments to correct the issue. It's a fairly basic technique, but we've had success with it.

Procedure:

Firstly, a reference point is required from centerline (longitudinal axis) of the fuselage. This can be achieved by dropping a plumb bob down from the tip of the spinner, and one from the ventral fin and then, using a string line, join the two points. As seen in the picture below, we have used the join line in the concrete slab as the reference line.





Place a straightedge (we've found a length of box section to be the best) along the outside wall of the tire, and eyeball from above to check that both the tire and the straight edge are parallel.

Mark the position of the straightedge in both forward and aft positions and join the two points, repeating the same procedure for the opposite side.

Take measurements from the straight edge positions to the centreline of the fuselage, repeat for the opposite side and compare the numbers to see if the wheels have toe-in or toe-out. The wheels will naturally want to rotate outwards when the aircraft is at gross weight, so it is recommended to have a slight amount of toe-in to allow for this.

If adjustments are required, washers are used as spacers between the stub axle and the undercarriage leg. Typically 2 washers are required on each of the lower stub axle mounting bolts to give the wheel slightly less camber, and usually only one half size washer installed on either the front or the back two stub axle bolts is sufficient to shift the toe in/out.

Pack with flock, reinstall and tighten and leave overnight to cure before using the aircraft.

