Section 4

Structures – Wings and Empennage

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4.1 Wings

4.1.1 Description

Each all composite wing is a monocoque type, made from carbon fiber sandwich components. Each wing contains one main spar and suitalbe ribs for the attachment of the skin. The outer skin consistes of a carbon fiber sandwich construction all over. Each wing assembly provides full composite ailerons and flaps constructed from carbon fiber sandwich materials. A colored navigation light is installed to each removable carbon fiber wing tip. The right wing is containing a landing light system installed to the mean section of the leading edge.
Both wings provide a special mechansim to fold them back for storing or transportation of the aircraft. Refer to the REMOS GX Pilot Operating Handbook, Section 8, for instructions about folding and re-installing wings.

4.1.2 Removal

Required Tools: 10/12/13/14 mm wrench, screwdriver and phillips head screwdriver, needle-nosed pliers. REMOS Bolt-Removal-Tool.
Parts required: None
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

Wing removal is most easily accomplished if three men are available to handle the wing. Otherwise, the wing should be supported with a sling when the fastenings are loosened. When using a sling, great care has to be taken not to damage the wing´s surface. If too much pressure is applied to the surface due to unsuitable slings, dents may result. Details of the strut connections are given in figure 4-1. and figure 4-2.

a. Disconnect aileron connection inside the cabin (quick release connector).
b. Remove support strut from wing and main strut.
c. Support wing at outboard end and disconnect strut at wing fitting.
d. Disconnect strut at fuselage connection and remove.
e. Remove cowl pin and withdraw wing main bolt.
f. Withdraw the wing from the fuselage as much as possible, it may be required to lower the wing outboard end for a small amount (1-2 inches).
g. Spin the wing 90° so that the leading edge is pointing downward while moving the outboard end backwards till the wing is aligned with the fuselage tail cone.
h. Support wing at the root.
i. Disconnect the wing from the fuselage at the ball and socket joint (remove white plastic ball from the pivot on the fuselage).
j. Disconnect navigation light terminal at wing root.
k. Disconnect pitot line at fuselage (only on left wing).
l. Remove wing and lay on padded stand.

Note

Remember position of the plastic ball for re-installation of the wing. Plastic balls of right and left wing are different, a marking on the balls and brackets indicates the correct position.

4.1.3 Repair

A damaged wing panel may be repaired in accordance with instructions outlined in Section 18. If main spar is damaged or alignment of the wing panel is concerned we recommend to replace the whole wing panel or return it for repair to the factory.

4.1.4 Installation

Required Tools: Similar to removal.
Parts required: 4 x cotter pin (2 x 25 mm), 4 x self-locking nut (M6).
Level of Maintenance: Heavy
Certification required: A&P Mechanic or LSA Repairman Maintenance

Wing installation in general has to be carried out in reverse order to removal but we strongly recommend to read the following instructions prior to start installation:

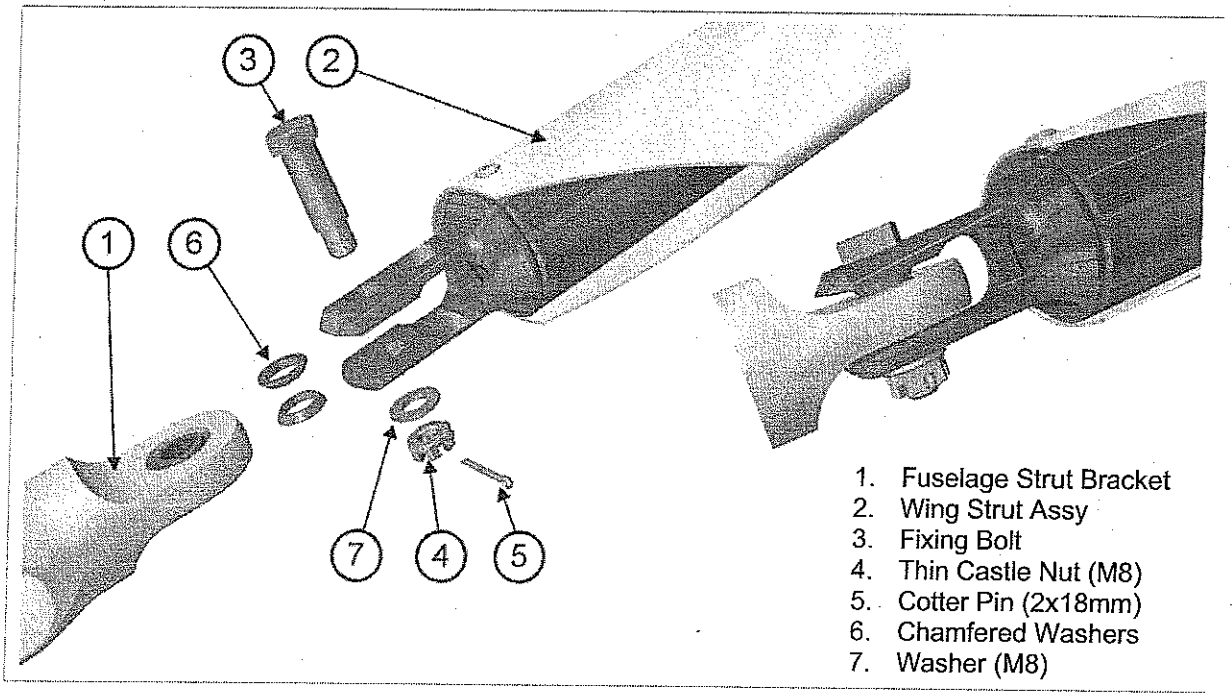
4.1.4.1 Installing Strut to Fuselage

Note

All struts are providing a "Top" marking, which has to point upward when installed, while leading edge (rounded edge) has to point forward.

Connect wing strut first to the fuselage and support as suitable, so that no damage occures to the attachment and strut bearing. In figure 4-1. the correct installation of the strut-fuselage conncection is given. Take care that leading edge of the profiled wing strut is pointing forward. It may be helpful to apply a small amount of grease to both chamfered washer prior to installation. Take also care for the right orientation of those washers, otherwise the folding mechanism of the wings will not operate properly and damage to the strut could be caused.

Figure 4-1.



Caution

Watch for the correct installation of the chamfered washers (6) as shown in illustration 4-1. Damage to the struts may occure and folding of the wings will not be possible if those washers are installed in a wrong way! Thighten castle nut (4) to max. torque of 24 Nm / 212 inlb and secure with a new cotter pin.

4.1.4.2 Installing Wing to Fuselage

To install the wing to the fuselage at least two persons are required!

a. Insert the plastic ball into the guide cage at the wing root (left and right ball joints are different, each plastic ball provides a marking matching with the appropriate bracket at the fuselage).

b. Hold wing in a position to be aligned with the fuselage, leading edge pointing to the ground (wing root pointing forward), so that ball bearing guide cage and ball bracket at the fuselage are side by side.

c. Apply the plastic ball into the guide cage at the wing root, so that it is possible to push it over the bracket at the fuselage and insert it´s fixation screw. Do not overtighten this screw. While doing so a second person has to support the wing at the outboard end, so that no part of the wing skin will touch the fuselage.

d. Now the wing outboard end can be moved forward slowly, make sure that the wing will not spin arround its axis. If the wing has reached its forward position one person at the wing root has to spin it till the connection latches have aligned with the fuselage latches.
Great care has to be taken, that no damage will occur to the wing surfaces during spinning of the wing!

e. Take care that flap drive engages to the fuselage and apply pressure to the wing tip, so that the latches on the wing root and fuselage engage and the wing mainbolt could be pushed through it´s guide tube. Ensure that the wing mainbolt has engaged completely and secure its with a cowl pin.

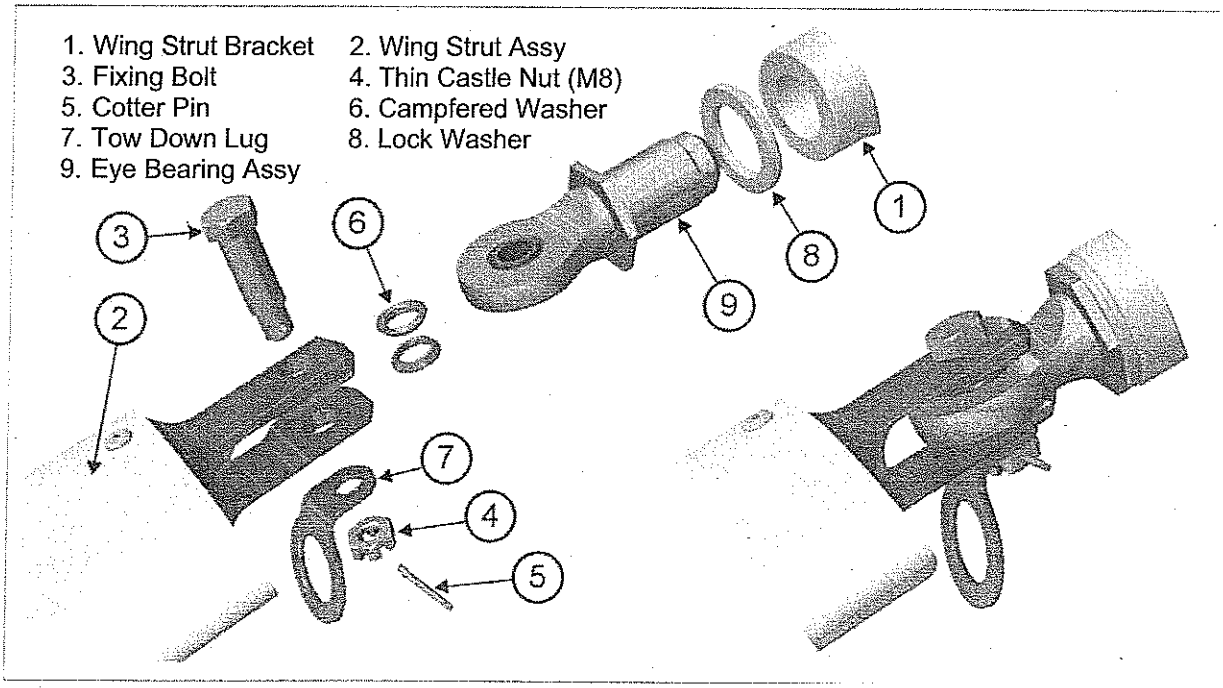
Note

Support of the wing ouboard end is required till the strut has been connected to the wing attachment.

4.1.4.3 Connecting Strut to Wing

Figure 4-2. is showing how to apply the connection bolts at the strut-wing attachment. It may be helpful for installation to apply grease to both chamfered washers prior to installation.

Figure 4-2.



Caution

Watch for the correct installation of the champfered washers (6) as shown in illustration 4-2. Damage to the struts may occur and folding of the wings will not be possible if those washers are installed in a wrong way! Tighten castle nut (4) to max. torque of 24 Nm / 212 inlb and secure with a new cotter pin (2x18mm).
When removing or reassembling of the Eye Bearing Assy (9) is required, use Loctite 243 (medium strenght) for installation and torque to 30 Nm / 265 inlb.

4.2 Wing Struts

4.2.1 Description

Each wing has a single lift strut. Each strut consists of streamlined composite tube riveted to a inner steel tube with welded end fittings for attachment to the fuselage and wing brackets.

4.2.2 Removal and Installation (Refer to paragraph 4.1.2 and 4.1.4)

4.2.3 Repair

Wing strut repair is not permitted. If the the wing strut is damaged, the complete strut assembly has to be replaced, except the exchange of the riveted composite cover tube.
Figure 4-3. is illustrating a general overview including fixing hardware.

Figure 4-3.