

Technical Note TN.JS-006

15 April 2013

2.0

TITLE

Replacement of Water System Wing Root_Bush#v3.0

REASON

Improved sealing of water between the wing main rib and torsion tube.

DESCRIPTION

This Technical Note explains how to replace the water system wing root bush in the event of leaking.

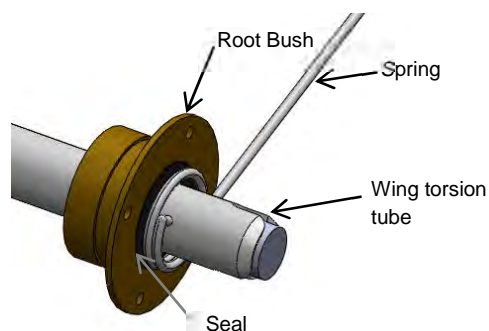


Figure 1: Water system parts at root rib with Nylon bush

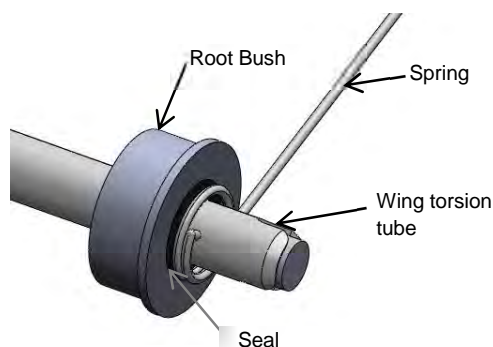
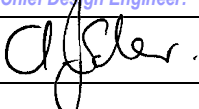
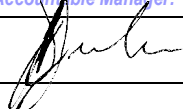


Figure 2: Water system parts at root rib with Aluminium

INSTRUCTIONS

1. De-rig the glider according to instructions given in the flight manual and ensure most of the water is drained.
2. Lay the wing on stands with the tip side to the bottom, allowing the excess water to flow to the tip side.
3. Remove the spring from the wing torsion tube.
4. Remove the seal from the bush. (A number 2 screw driver sharpened to a point could be used).
5. Removing the Rootbush depends on the type of bush installed:

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5.1. For Nylon Root Bushes:

- 5.1.1. A hole-saw (OD 25mm) will be used to cut out the bush. (Determine the saw size by measuring a sample hole cut with the hole-saw in a 10mm chip board or some other type of manufactured wood as measuring the hole-saw itself does not give a good indication as to the size hole it will cut.)
- 5.1.2. Remove the centre pilot drill from the hole-saw in order to fit around the tube.
- 5.1.3. Insert the drill sleeve over the wing torsion tube and use it as a centre guide to keep the hole-saw centred as the bush is cut out, as illustrated in Figure 1.

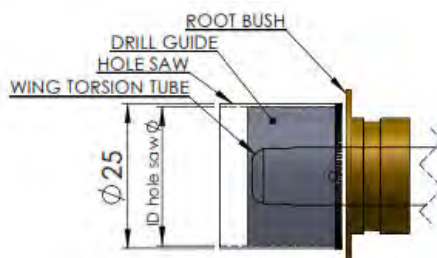


Figure 3: Removal of Nylon bush with a drill and drill sleeve

- 5.1.4. Once the centre of the bush is removed with the hole-saw the top hat section can be removed with a sharp wood chisel.

5.2. For the Aluminium or Stainless Steel bushes:

- 5.2.1. Cover the main beam with a blanket to create a heat barrier.
- 5.2.2. A heat gun and a chisel will be required to remove these bushes.
- 5.2.3. Use the Concentrated heat element to apply heat locally to the root bush area until the bush slightly moves. In Case a heatgun is used, rotate the heatgun regularly, as illustrated in Figure 4. (NOTE: The Tg of the ribs are 85°C.)

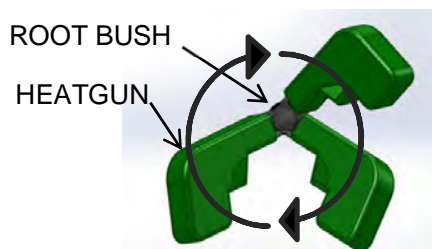

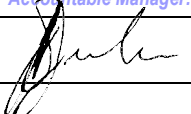


Figure 4: Heatgun locally heating area around bush

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5.2.4. Insert the chisel under the bush flange and use the rubber hammer to tap the bush free. Care should be taken not to damage the rib. (The area could be heated again if the bush does not want to release.)

6. Once the bush is removed, the end of the tube should measure 10mm, if not it should be sanded and polished down to size. (A 90 degree die-grinder, with a 120 grit sanding disk of 50 mm diameter, could be used to remove the first 0.1-0.3 mm of material. A strip of Emery cloth, 100 grit, 12-15 mm wide and about 1200 mm long, could be used to sand off the remaining metal until the shaft measures 10.0mm.)
7. The spring locating hole should be reamed and sanded, as it could damage the O-ring in the seal.
8. Feel the entire length of the rod perimeter with one's finger for any burs that might damage the seal. Polish the rod if possible.
9. The supplied bush can now be fitted to the rod. Ensure that the hole in the rib it is about 0.5 mm larger on the perimeter, than the OD of the bush, to allow the bush to move when the glider is rigged in the last step. Sand the rib until this clearance is achieved.
10. Sand and Clean up the surface of the rib where the flange section of the Root bush#v3 will fit.
11. Sand and Clean up the glass sleeve of the bush supplied.
12. Insert the bonding sleeve in the bush as illustrated in Figure 2 and carefully bottom the bush sleeve in the bush. (First ensure that the Bonding sleeve fits into both the fuselage torsion tube and the rib bush. If it does not fit tightly, sand it slightly until it fits.)
13. Mix the slow bonding epoxy according to datasheet.
14. Apply the slow bonding epoxy to the bush and press the bush into position into the hole made in the rib over the wing torsion tube. (Take care not to let the sleeves slip off.)

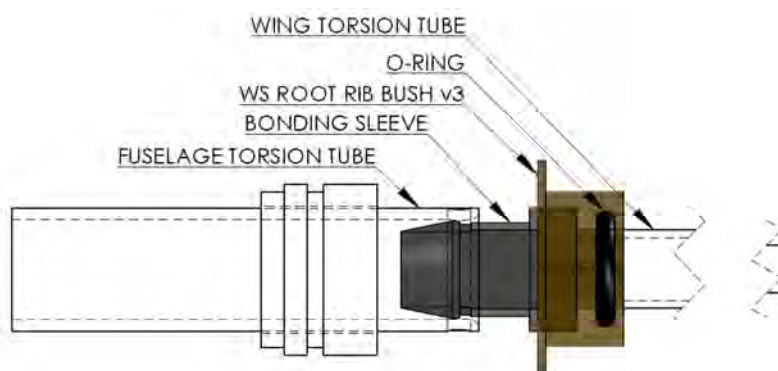
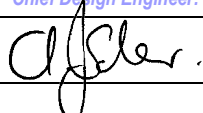
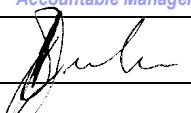


Figure 5: Bonding of Root bush#v3

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15. Check that the valve body and rubber seal are seated correctly on the valve body.
16. Scrape off any excess slow bonding epoxy.
17. Rig the glider while the slow bonding epoxy is still wet and allow curing in rigged position.
18. Ensure that the water system is in closed position in the cockpit.
19. When cured, de-rig and remove the bonding sleeve.
20. Install supplied seal and re-install spring.
21. Test for leakages as described with water filling procedure in the flight manual.

MATERIAL SUPPLIED

Root Bush#v3, 1C-2.21.11.8#v3, with fitted glass sleeve.
Seal, 1C-2.21.11.9
O-ring, 8.2.20
Drill sleeve
Bonding sleeve

MATERIAL REQUIRED

Slow bonding epoxy, e.g. SP Gurit Spabond 345 extra slow ($T_{g_{ultimate}}$ 106, apply without sag, suitable for metal/composite bonding.)

TOOLS REQUIRED

- Drill with hole-saw bit,
- number 2 screw driver,
- self-tapering screw,
- Relatively small long drill bit.
- 90 degree die-grinder, with a 120 grit sanding disk of 50 mm diameter.
- Emery cloth, 100 grit, 12-15 mm wide and about 1200 mm long.
- Concentrated heat element (Small Welding Torch, Heatgun, etc.)
- Chissel
- Rubber Hammer

MASS AND BALANCE

No change to mass or balance

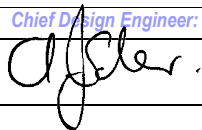
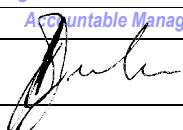
MANUALS

No change to Flight or Maintenance Manuals

NOTES

This technical note must be completed by an approved maintenance person.

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