

## SERVICE BULLETIN

### No. SB-NG-1-23

#### COMPLIANCE RECOMMENDED

**Subject:** Improvement of main landing gear attachment

**Aircraft affected:** EXTRA NG: S/N NG002 through NG044, except for NG023, NG037, NG042 & NG043.

**Purpose:** Improved means of attachment of the main landing gear brackets.  
In few cases the current design of the main landing gear attachment has settled, resulting in minimal gaps between the bracket and the adjacent structure.  
As a precautionary measure, the carbon fibre support for the main landing gear leg shall be improved and strengthened by addition of a steel bushing.

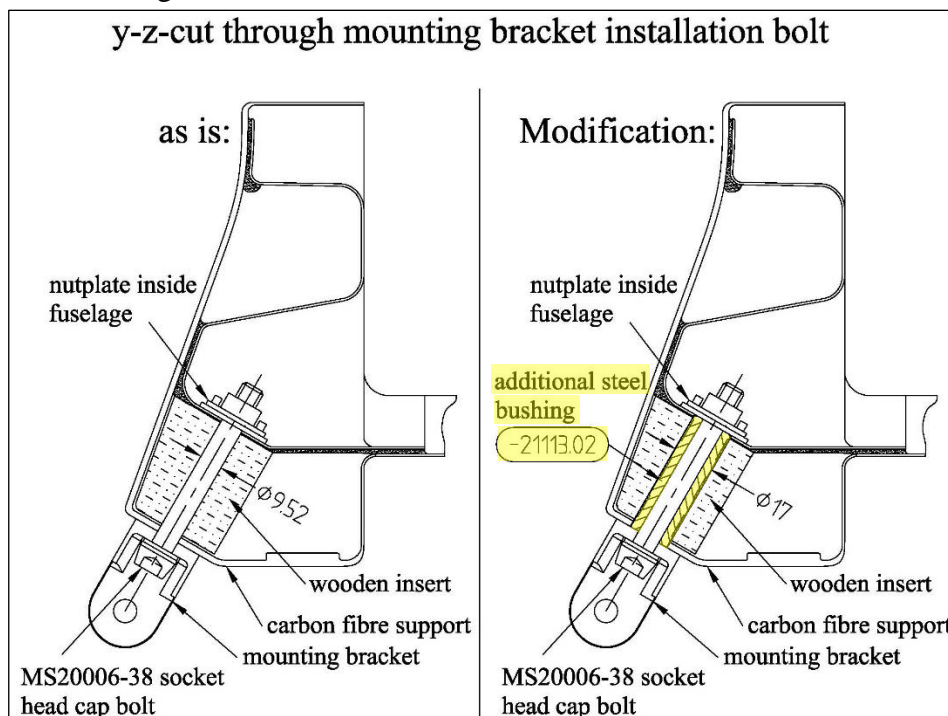


Fig. 1 – Intended modification

**Approval:** The technical content of this document is approved under the authority of the DOA ref. EASA.21J.593.

## **COMPLIANCE TIME**

No required compliance time. The retrofit of the carbon fibre support described in this Service Bulletin should be accomplished at customer's discretion.

## INSTRUCTIONS

### NOTE

Alterations or repair of the aircraft must be accomplished by licensed personnel only.

### ⚠ WARNING

Always properly secure aircraft when working underneath with the main landing gear removed.

1. Prepare materials and tools needed, refer to Table 1.
2. Remove upper engine cowling as per Aircraft Maintenance Manual (AMM) chapter 71-10, belly fairing as per chapter 53-30-01, wheel pants as per chapter 32-40-02 and side panels in front cockpit as per chapter 25-10-30.
3. Crane the aircraft at the engine as per AMM chapter 07-10-02. Support the wings on both sides to secure aircraft.
4. Remove main landing gear **contrary to** chapter 32-10-01 by cutting the safety wire and removing the two AN6-15A and the two AN6H24A bolts connecting the mounting clamps of the main landing gear leg to the mounting bracket at the fuselage. The entire mounting clamps remain attached to the landing gear leg.

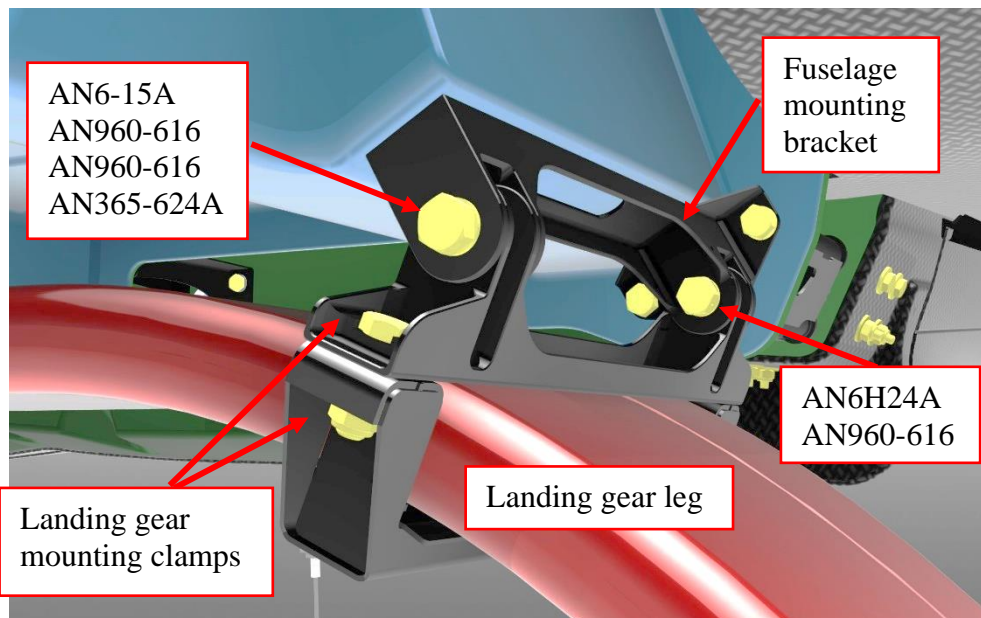


Fig. 2 – Landing gear attachment brackets

### NOTE

It is not necessary to remove the brake lines from the wheels, the landing gear leg can be placed directly under the aircraft for this modification (see Fig. 3).

### NOTICE

Damage to centering pin and fuel drains possible.



Fig. 3 – Aircraft prepared for modification

5. Remove AN5-52A bolts, AN365-524 stop nuts and AN960-516 washers connecting the fuselage mounting bracket through the spar bridge to the fuselage, refer to Fig. 4 below and to Figures 4 and 5 in chapter 57-00-01 of the AMM.

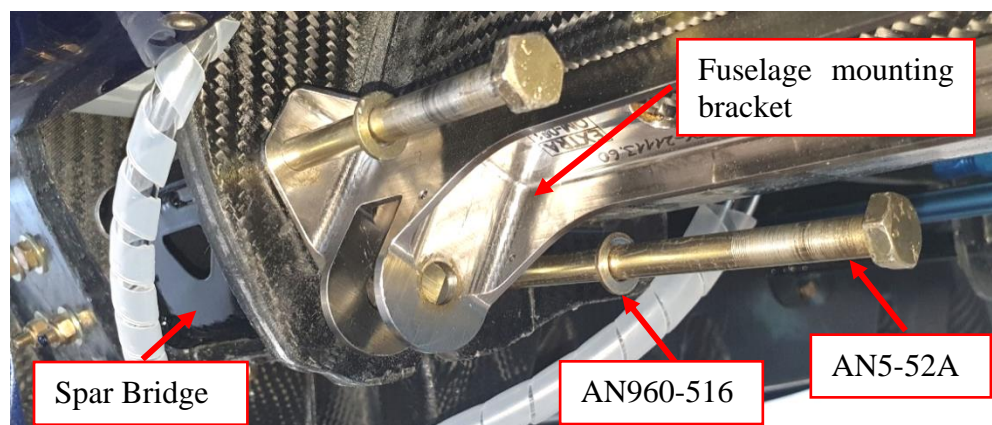


Fig. 4 – Spar bridge bolts

6. Remove main landing gear brackets from fuselage by removing the two MS20006-38 socket head cap bolts and AN960-616 washers.

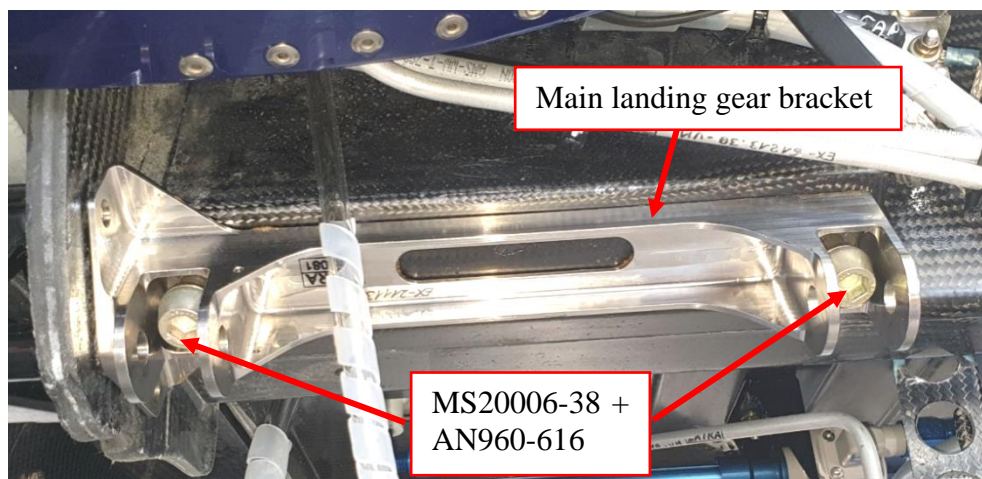


Fig. 5 – Fuselage bracket installation

7. Reinstall the MS20006-38 bolts without the landing gear brackets hand-tight to align the nutplates inside the fuselage, then retighten the four MS24694-C83 flat countersunk bolts to 2,3 – 2,9 Nm / 20 – 25 lb inch according to chapter 20-10-03 of the AMM.

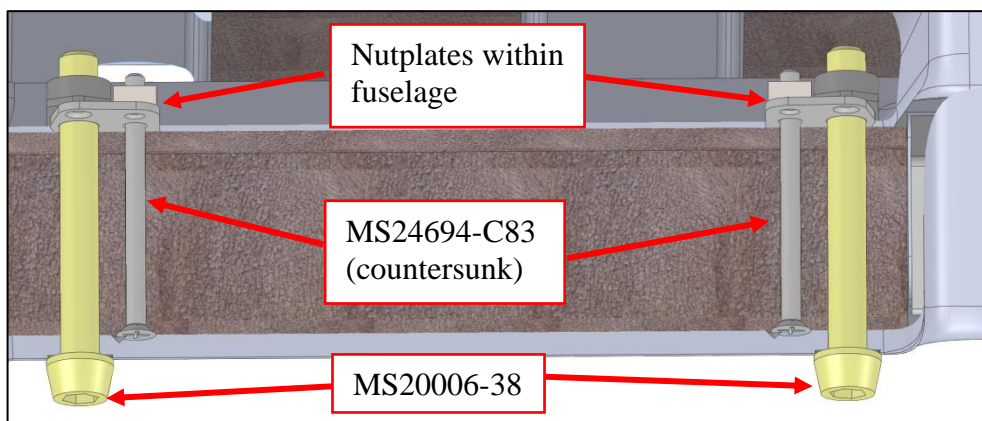


Fig. 6 – Nutplates and bolts – schematic view (without landing gear bracket)

8. Remove the MS20006-38 bolts again and apply release agent to the nutplates inside the fuselage by using a small brush.
9. Use piloted counterbore including brass guiding sleeve first to carefully increase the diameter of the existing holes in the carbon fibre support from 9,52 mm ( $\frac{3}{8}$  in.) to 17 mm until first contact to the nutplate. Pause multiple times to allow the counterbore and structure to cool down. Use the drill bit extension for the rear holes to stay clear from surrounding structure.

**NOTE**

**Do not damage or drill into the nutplate. Always use low rpm and high torque for enlarging the holes. Make sure not to overheat structure or tools.**

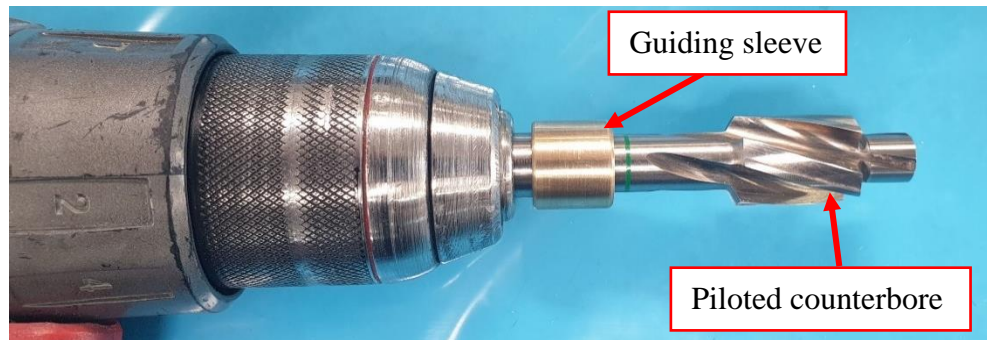


Fig. 7 – Power drill with piloted counterbore and brass guide sleeve



Fig. 8 – Increasing forward hole diameter to 17 mm (w/o extension)

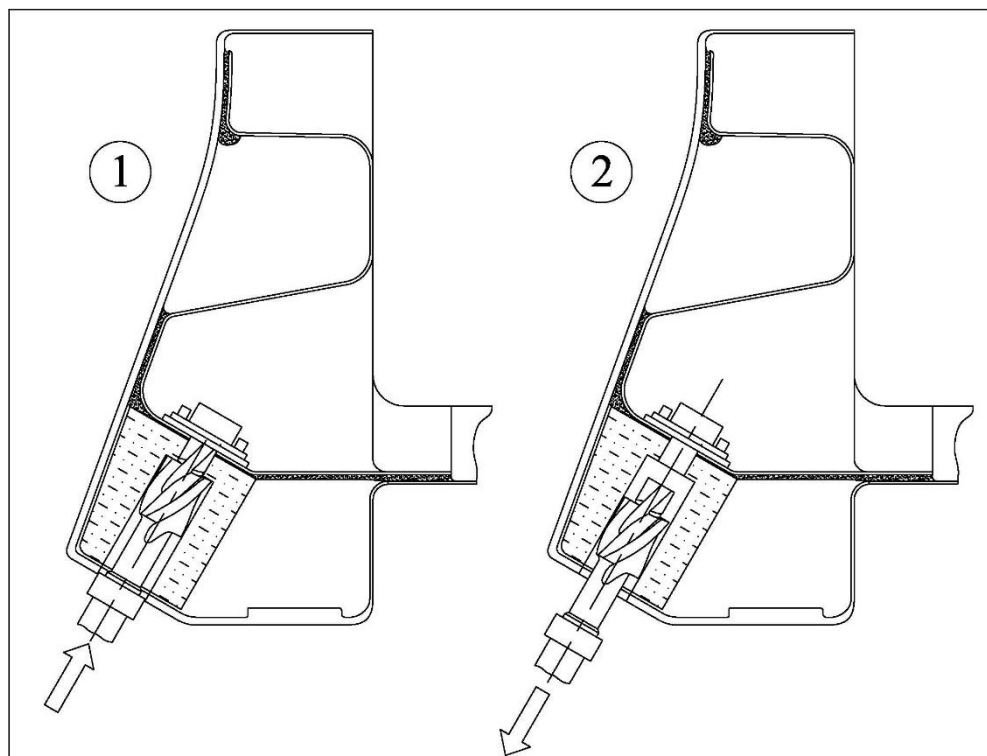


Fig. 9 – Increasing hole diameter with piloted counterbore (schematic)

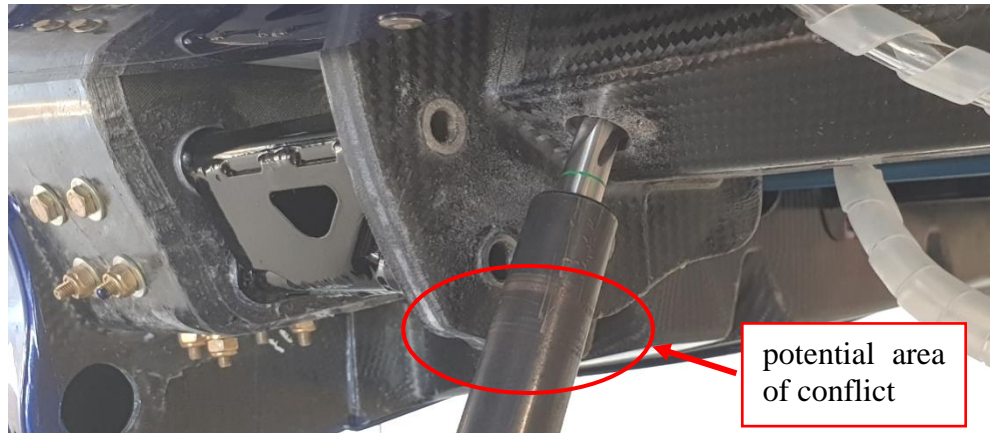


Fig. 10 – Increasing rear hole diameter to 17 mm with extension installed



Fig. 11 – Limit for the piloted counterbore

10. Clean holes with vacuum cleaner, then very carefully further deepen the hole with the non-piloted counterbore up to the metal bracket with the nutplate inside the fuselage. Only turn the non-piloted counterbore by hand for the last mm of distance to the nutplate.

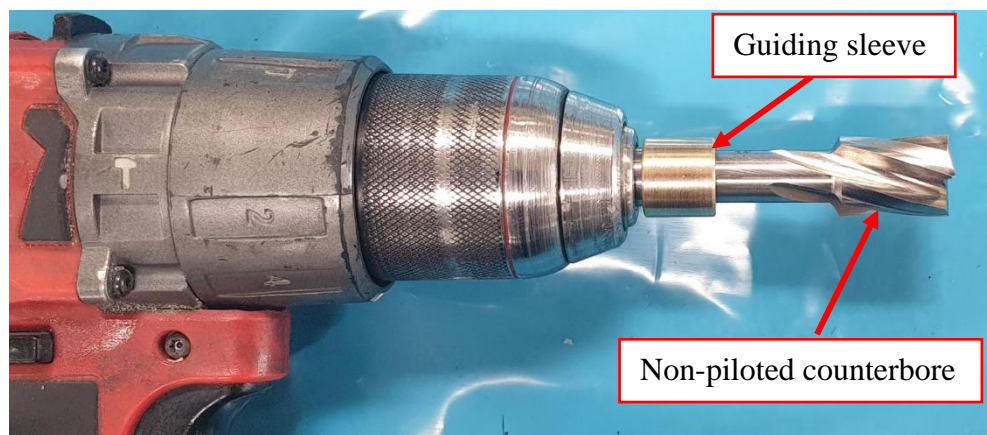


Fig. 12 – Power drill with non-piloted counterbore and brass guide sleeve

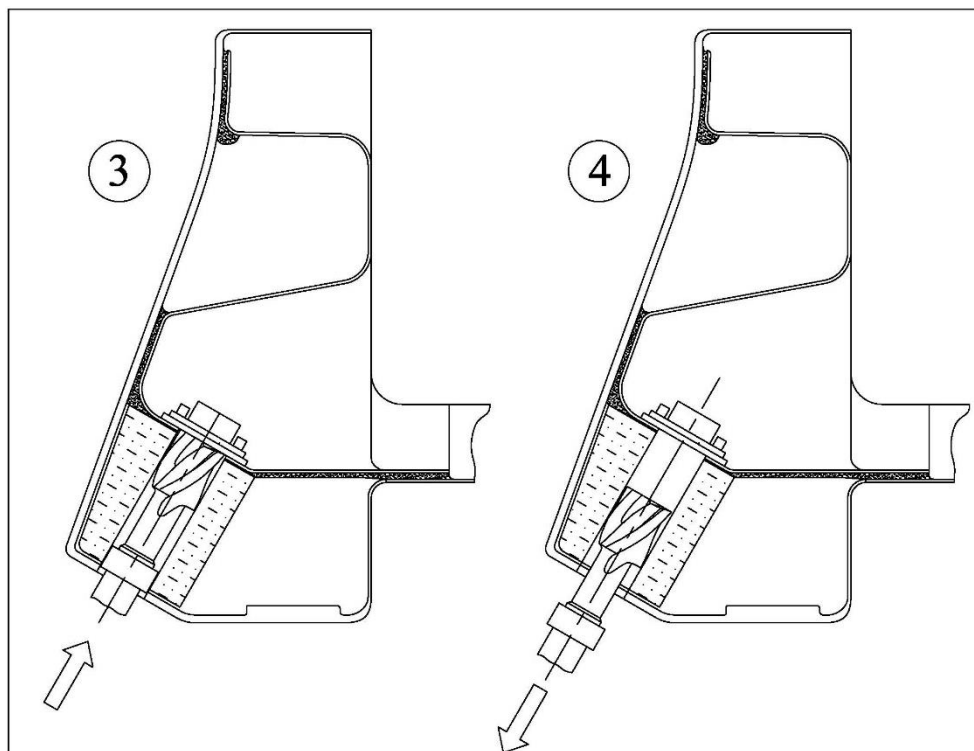


Fig. 13 – Further deepen hole with non-piloted counterbore (schematic)



Fig. 14 – Diameter of hole increased to 17 mm all the way up to the nutplate

11. Thoroughly clean the holes and surrounding area from dust and any residue with vacuum cleaner.
12. Carefully measure the depth of all four holes. Adapt the bushings in length accordingly by grinding or cutting as appropriate. They must be inserted completely flush with the fuselage later in the process.

**IMPORTANT**

**Do not use the bushing for measuring! Once the bushing is inserted into the fuselage, it is difficult to remove again without potential damage to the bushing and/or surrounding structure!**

13. When cut to length, clean them with acetone, then apply pressure sensitive tape to both ends.



**NOTE**

**Only handle bushings with gloves from here on.**



*Fig. 15 – Prepared bushings (sandblasted)*

14. Apply release agent or grease to the contact surface of the fuselage mounting bracket as well as to the shaft of the MS20006-38 bolts. Do not apply grease to the thread of the bolts. Use release agent on the threads. Also apply release agent or grease to the 4 Phillips head screw heads adjacent to the drilled holes, see Fig. 17 and Fig. 18 below.



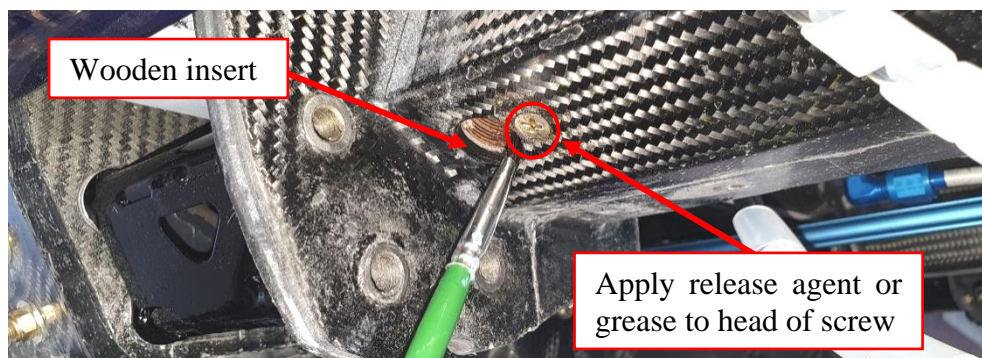
*Fig. 16 – Fuselage mounting bracket prepared with release agent / grease*

15. Prepare epoxy resin “Epikote Resin L20” with hardener “Epikure Curing Agent 111” (weight ratio 100:27). Alternatively, resin L285 with hardener H285, H286 or H287 is also acceptable (weight ratio 100:38-40). However, additional post-curing of 10h at 60°C is required in this case. Combine resin and hardener in the correct ratio and mix thoroughly.

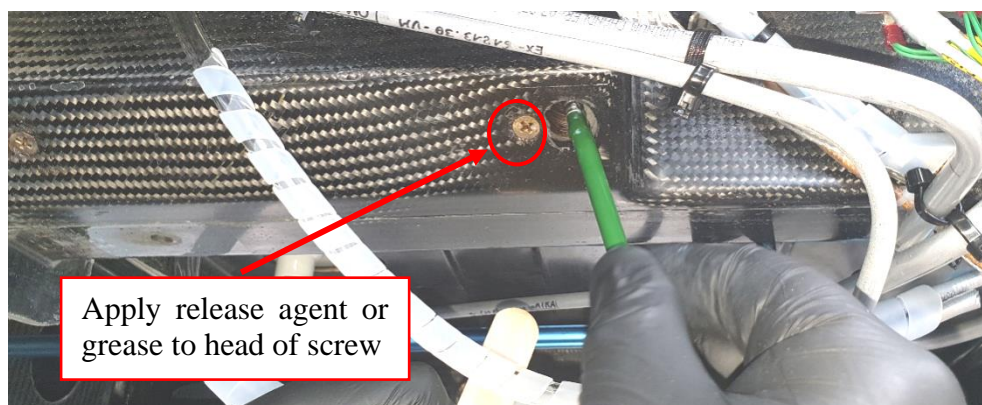
**NOTE**

**Once prepared, pot life is approx. 15 minutes! Prepare only small amount as necessary for one side to prevent dangerous heat build-up causing uncontrolled decomposition of mixed adhesive.**

16. Apply epoxy-resin to the bushings’ cylindrical surface. Also thoroughly apply epoxy-resin to the surface of the enlarged holes in the fuselage until the wooden insert and laminate are entirely soaked and properly sealed.



*Fig. 17 – Application of epoxy-resin inside the aft hole*



*Fig. 18 – Application of epoxy-resin inside the front hole*



*Fig. 19 – Application of epoxy-resin to the cylindrical surface of the bushing*

17. Prepare epoxy-resin compound by mixing cotton flocks with the previously prepared resin-hardener mixture. The weight ratio should be 100% resin-hardener mixture and 20% cotton flocks, so called “HB20”.
18. Generously cover the entire cylindrical surface of the bushings with HB20.



*Fig. 20 – Applying HB20 to cylindrical surface of the bushing*

19. Also apply small amount of HB20 into the holes, then use handle of the brush (or similar tool) to distribute the HB20 on the surface. Take care not to push it into the nutplates on the top end of the holes. Remove any residue.



*Fig. 21 – Applying HB20 into holes*

20. Insert bushings flush into the drilled holes and remove excess HB20.



*Fig. 22 – Insert bushing*

21. Immediately reinstall fuselage mounting brackets using the prepared MS20006-38 bolts (referenced in step 14.) to verify installation of bushings is flush and threads within the fuselage are free from HB20; use rubber mallet as necessary.



Fig. 23 – Reinstallation of fuselage mounting bracket

22. Loosely insert AN5-52A bolts with AN960-516 washers connecting the main landing gear bracket through the spar bridge to the fuselage for alignment.

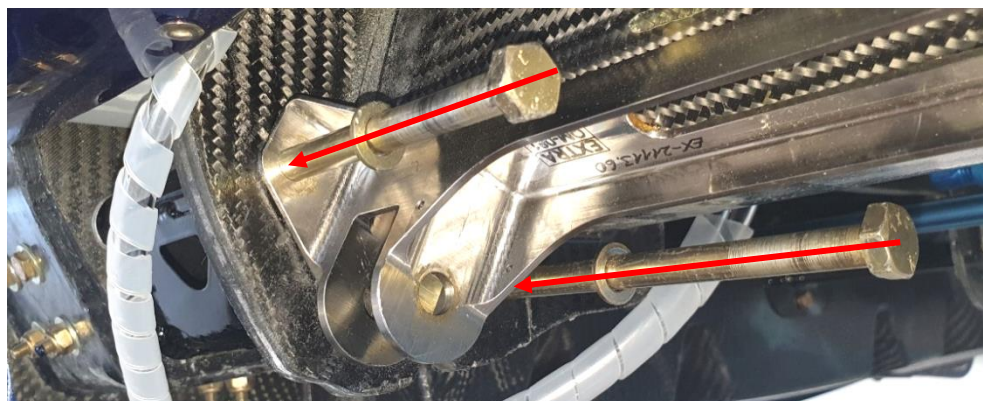


Fig. 24 – Spar bridge alignment

23. Torque landing gear bracket bolts (MS20006-38) as per chapter 20-10-03 of the AMM to 22,5 – 28 Nm / 200 – 250 lb inch.

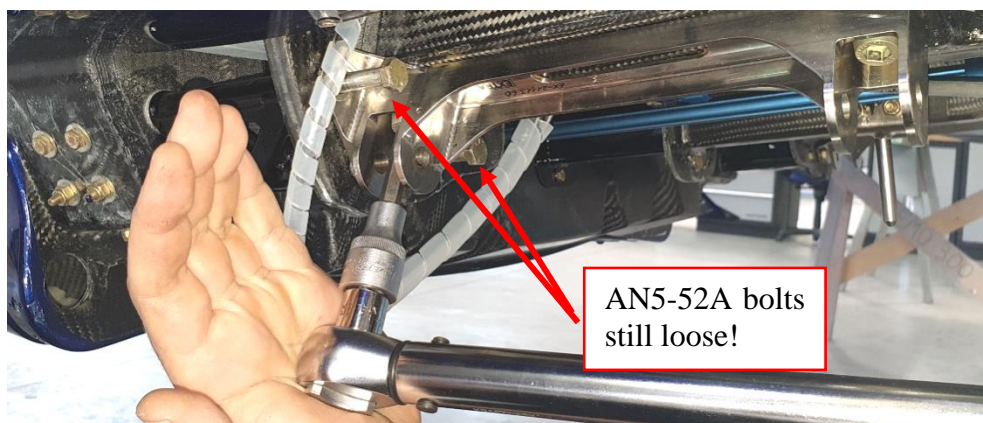


Fig. 25 – Torque

24. Fully install and tighten the AN5-52A bolts with AN960-516 washers and AN365-524 stop nuts and torque to 16 Nm / 140 lb inch. Refer to Figures 10 and 11 in chapter 57-00-01 (item 1) and to chapter 20-10-04 of the AMM (Figures 5 & 6).



*Fig. 26 – Bracket completely reinstalled and all bolts torqued*

25. Let cure for 24h at room temperature.  
In case the alternative L285/H28x resin-hardener mixture was used, additional post-curing of 10h at 60°C is necessary before returning the aircraft to service.
26. Reinstall main landing gear by connecting the mounting clamps to the mounting bracket at the fuselage with the AN6-15A and AN6H24A bolts. Torque bolts to specific values as given in chapter 20-10-04 of the AMM. Secure rear bolts (AN6H24A) with safety wire.
27. Apply locking varnish to all other bolt connections.
28. Release aircraft from crane (ref. step 3 and chapter 07-10-02 of the AMM).
29. Reinstall side panels in front cockpit as per AMM chapter 25-10-30, belly fairing as per chapter 53-30-01, wheel pants as per chapter 32-40-02 and upper engine cowling as per chapter 71-10.
30. Make appropriate Service Bulletin entry in the aircraft logbook.  
Please also report the completion of this Service Bulletin to EXTRA by returning the completed Form in Appendix A.

## MATERIAL

The required parts are listed in Table 1 below. They can to be ordered from:

EXTRA Flugzeugproduktions- und Vertriebs GmbH

Flugplatz Dinslaken

Schwarze Heide 21

46569 Hünxe / Germany

[parts@extraaircraft.com](mailto:parts@extraaircraft.com)

Table 1: Parts/Material required

EXTRA P/N	QTY	Description	
<b>Additional part:</b>			
EX-21113.02	4	Bushing (sandblasted)	
<b>SB Material kits:</b>			
SB-NG-1-23-TK	1	<u>Special Tool Kit</u> : includes Ø 17 mm piloted counterbore, Ø 17 mm non-piloted counterbore, and brass guiding sleeve (MS58, Ø 17 x 2,25 mm, l = 15 mm)	
SB-NG-1-23-HK	1	<u>Hardware Kit</u> : includes all standard hardware as listed below	
<b>Hardware – as necessary:</b>			
35204	4	MS20006-38	Bolt, socket head cap
35400	4	AN5-52A	Bolt
NA4220	2	AN6-15A	Bolt
35101	2	AN6H24A	Bolt
700014	8	AN960-516	Washer
31248	10	AN960-616	Washer
35134	4	AN365-524 / MS21045 – <sup>5</sup> / <sub>16</sub> -24	Locknut – Nylon
NA3000	2	AN365-624A / MS21045 – <sup>3</sup> / <sub>8</sub> -24	Locknut – Nylon
<b>Tools and other material required:</b>			
36459(*)	1	Ø 17 mm Counterbore (piloted Ø 3/8”) / Flachsenker mit Führung (Ø 9,52 mm)	
36460(*)	1	Ø 17 mm Counterbore (non-piloted) / Flachsenker ohne Führung	
36462(*)	1	Brass guiding sleeve (MS58, Ø 17 x 2,25 mm, l = 15 mm)	
---	1	Drill bit extension (Ø <sub>inner</sub> 12,5 mm / ½”, l = 125 mm / 5”)	
Torque wrench with Phillips, Allen and hex nuts, rubber mallet, scissors		Pressure sensitive tape (e.g. Flashbreaker tape or equivalent)	
Acetone, release agent and/or grease (AeroShell Grease 22 or equivalent)		Gloves, brush, mixing cups, spatula, plastic bag, safety wire, locking varnish	
Epoxy resin (Epikote Resin L20 or L285), hardener (Epikure Curing Agent 111 or H285/286/287), cotton flocks		Vacuum cleaner, power drill (low rpm & high torque)	
Crane, support jacks		(*) included in Special Tool Kit SB-NG-1-23-TK	

