MODEL AFFECTED:	PS-28 Cruiser (and SportCruiser / PiperSport aircraft operating under EASA rules)
SUBJECT:	Installation of new cooling exhaust in the engine lower cowling
AIRCRAFT AFFECTED:	All aircraft: (i) equipped with the latest variant of the engine lower cowling with oval air intake (SE0554N) and (ii) equipped with the dual thermostat Hektik F1107.
COMPLIANCE:	According to the respective aircraft owner's decision.

DESCRIPTION:
This Service Bulletin contains instructions for installation of the new cooling exhaust SE0563N into the engine lower cowling SE0554N (the label can be found on the inner side of the cowling), see Fig.1. This bulletin is valid only for aircraft already equipped with dual thermostat Hektik F1107 installed and for lower cowling equipped with oval air intake, This Service Bulletin is not valid for the older variant with angular air intake (see Fig. 2).

AUTHORISATION TO PERFORM:
EASA: Certifying staff according to EU 1321/2014.

REASON:
This solution provides better cooling of the engine in hot ambient conditions.

MANPOWER:
Approximately 8 workman hours + hardening / curing time (24 hrs. of bonding) according to the used adhesive and cement specifications.

SPECIAL TOOLS:
- Direct drilling machine (chuck up to a diameter of 10 mm)
- Tools for cutting and machining fiberglass
- Pliers for cleco fastener
- Cleco fasteners, diameter of 2.4 mm (16 pcs)
- Drill bit, dia. 2.4 mm (.094 inch)
- Portable vacuum cleaner

PROTECTIVE AIDS:
- Surgical mask
- Rubber gloves
- Safety Glasses (Goggles)

WEIGHT AND BALANCE:
Insignificant effect.

PUBLICATIONS AFFECTED:
Supplement No. 6, doc. CR-MM-1-0-00-S-06 to CR-MM-1-0-00

MATERIAL USED:

- New cooling exhaust SE0563N, 1 pc
- Epoxy laminating substance, approx. 0,2 kg
  Note:
  It is recommended to use „LETOXIT PR 220" resin hardened by „LETOXIT EM 315" hardener or 3M Marine Adhesive Sealant 5200
- Two-component epoxy adhesive, approx. 0,06 kg
  Note:
  It is recommended to use „LETOXIT PR 220" resin hardened by „LETOXIT EM 315" hardener or 3M Marine Adhesive Sealant 5200
- Two-component polyurethane sealant, approx. 0,1 kg
  Note:
  It is recommended to use a sealant with glass fiber binder "GLASS".
- Glass fabric layers, weight approx. 280 g/m2, size approx. 400 mm x 600 mm
  Note:
  It is recommended to use the glass fabric „AEROGLASS 280 g/m2, kepr".
- Isopropyl Alcohol, approx. 0,2 l
- Masking tape, width = 35 mm

Note: Material can be ordered from the airplane OEM

COSTS:

To be covered by the aircraft owner.

ACCOMPLISHMENT INSTRUCTIONS:

Initial information:

a) It is necessary to use protective gloves and mask during processing the fiberglass and when working with the adhesives (see the section "Protective aids").

b) Any markings (i.e. markings of symmetry axis, hole positions, etc.) to be carried out on the outer surface of the engine lower cowling, new exhaust and nose landing gear according to this Service Bulletin should be performed by such means that can be cleaned by alcohol.

c) All measured dimensions are in mm unless otherwise stated.

Work procedure:

1. Move the aircraft to a suitable place to perform the work.
2. Remove the engine upper cowling (see CR-MM-1-0-00, latest revision).
3. Disconnect all hoses from the engine lower cowling, remove the engine lower cowling (see CR-MM-1-0-00, latest revision).

4. Remove the holder of CAMLOCK locker from the airplane. Install the disassembled washers and nuts (that fastened the holder to the fuselage) back to the fuselage (see Fig. 5, 6).

5. Cut off the original cooling exhaust from the engine lower cowling in such a way, that only that part of the original cooling exhaust exceeding the engine lower cowling profile is removed (see Fig. 7). Mark the symmetry axis on the outer surface of the cowling and on the nose landing gear (see Fig. 7, 8, 9). The work should be performed by two persons in order to secure that the engine lower cowling is not damaged due to its reduced stiffness after removal of the original cooling exhaust.

6. Install the engine lower cowling back onto the aircraft. Do not connect the disconnected hoses. The work should be performed by two or three persons in order to secure that the engine lower cowling is not damaged due to its reduced stiffness.

7. Install the engine upper cowling and connect the upper and engine lower cowling together, including closing the CAMLOCK lockers.

8. Draw the longitudinal axis of symmetry on the outside of the new cooling exhaust SE0563N (see Fig. 4) and draw the line of the NACA intake bottom edge (see Fig. 3, 9, 10, 11).

   Caution:
   The cut-out for the NACA intake made in the supplied new cooling exhaust is purposely made with the addition for matching. Therefore, the bottom edge of the cut-out in the supplied new cooling exhaust is not in line with the bottom edge of the NACA intake shown in Figure 3 (see also the note in Fig. 3).

9. Set the new cooling exhaust on the outer surface of the engine lower cowling and on the line of the NACA intake lower edge (see the symmetry axis marked according to the article 5), fix the position by the paper tape. Drill six holes Ø 2,4 mm (use cleco fasteners) in the engine lower cowling according to the holes made in the new cooling exhaust and deburr the holes. Mark the area for the NACA intake on the new cooling exhaust (see Fig. 3, 9, 10).

   Caution:
   The holes to be drilled under this section 9 (i.e. 2 + 2 side holes and 1 + 1 central holes) in the engine lower cowling have to be drilled according to the holes made in the edge of the new cooling exhaust. The central holes have to be aligned and drilled in such a way that they are positioned in the same line.

10. Remove the upper and engine lower cowling from the aircraft.

11. Mark and then make the cut-out in the engine lower cowling intended for installation of the new cooling exhaust SE0563N, make the cut-out for the NACA intake in the new cooling exhaust (see Fig. 3, 9, 11). Fit the new cooling exhaust with the engine lower cowling in such a way that the new cooling exhaust can be inserted from the inner side of the lower cowling. Insert the new cooling exhaust into the lower cowling and fix it by cleco fasteners. Drill the remaining 10 holes Ø 2,4 mm (use cleco fasteners) in the lower cowling according to the holes made in the new cooling exhaust. Remove the new cooling exhaust from the cowling, deburr the holes and grind the contact surfaces for gluing (see Fig. 3, 9).

    Caution:
    It is necessary to draw the cut-out contour in the engine lower cowling for the new cooling exhaust installation according to the position of the exhaust set and attached to the engine lower cowling by cleco fasteners. Dimensions and shape of the cut-out must comply both according to the Fig. 9 as well as according to the dimensions and shape of the new cooling exhaust without the edges that will be glued to the inside of the engine lower cowling.

12. Set, fix (by using cleco fasteners) and glue the new cooling exhaust into the engine lower cowling in such a way that edges of the exhaust lie on the inner surface of the lower cowling (see Pos. 1, 2 in Fig. 9 and see Fig. 12, 13, 14). Apply a vaseline on cleco fasteners for separation before using them. Immediately after gluing and fixing the new cooling exhaust to the engine lower cowling install the lower and engine upper cowling onto the aircraft, including locking the CAMLOCK lockers. Do not connect the disconnected hoses. Let the glued connection harden. Time for hardening should be set according to technical sheet of the adhesive used.

    Caution:
    Gluing of the new coolant exhaust to the engine lower cowling should be performed by a two component epoxy adhesive (see section "Material used"). Required amount of the adhesive has to be prepared and mixed before use, according to the instructions given in the technical data sheet of the adhesive used.

13. Remove the upper and engine lower cowling from the aircraft after the glued connection gets hardened.

14. Remove the cleco fasteners, grind the connection area between the engine lower cowling and the new new cooling exhaust in the inner part of the cowling. Laminate the grinded connection area by three layers of glass fabric supplied together with the new cooling exhaust (see Fig. 15). Install the upper and engine lower cowling on the aircraft immediately after laminating the connection, including locking the CAMLOCK lockers between the upper and lower cowling. Do not connect the disconnected hoses. Allow the laminated connection to harden.

    Caution:
    For laminating the connection between the new exhaust and the lower cowling use the glass fabric layers supplied together with the new cooling exhaust and an epoxy laminating substance with the minimum processing time of 60 minutes. Required amount of the laminating substance has to be prepared and mixed before use, according to the instructions given in the technical data sheet of the substance used.

15. Remove the upper and engine lower cowling from the aircraft after the laminated connection gets hardened.

16. Seal up the joints between the engine lower cowling and the new cooling exhaust on the outer surface of the engine lower cowling. Seal up also the technological holes made in the cowling and in the new exhaust. Grind the sealant after it gets hardened in order to match with the outer surface of the engine lower cowling (see Pos. 1, 2 in Fig. 9, see Fig. 12, 16).

    Caution:
    For sealing up the outer joints between the new exhaust and the lower cowling and for sealing up the technological holes use a two-component polyurethane sealant with glass fiber (see the section “Material used”). Required amount of the sealant has to be prepared and mixed before use, according to the instructions given in the technical data sheet of the sealant used.

17. Use Isopropyl Alcohol to remove all remained markings made on the outer surface of the engine cowling (see para b) in section „Initial information“) and perform minimum necessary corrections of the external paint of the engine lower cowling (see Fig. 17).

18. Install the engine lower cowling onto the aircraft and connect all the hoses disconnected according to section 3 of this SB (see CR-MM-1-0-00, latest revision).

19. Install the engine upper cowling (see CR-MM-1-0-00, latest revision).

20. Complete the aircraft records (log book) to reflect compliance with this Service Bulletin.
21. Thereby, the performance of this Service Bulletin is duly completed.

Figures relating to the text above:

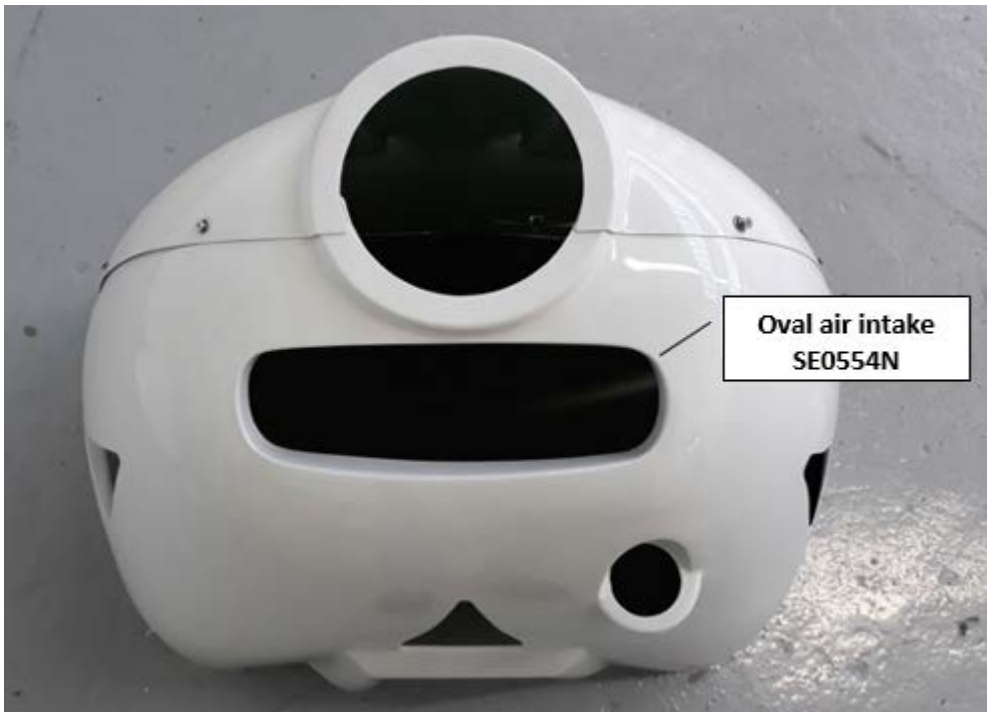

Figure 1: Oval air intake SE0554N

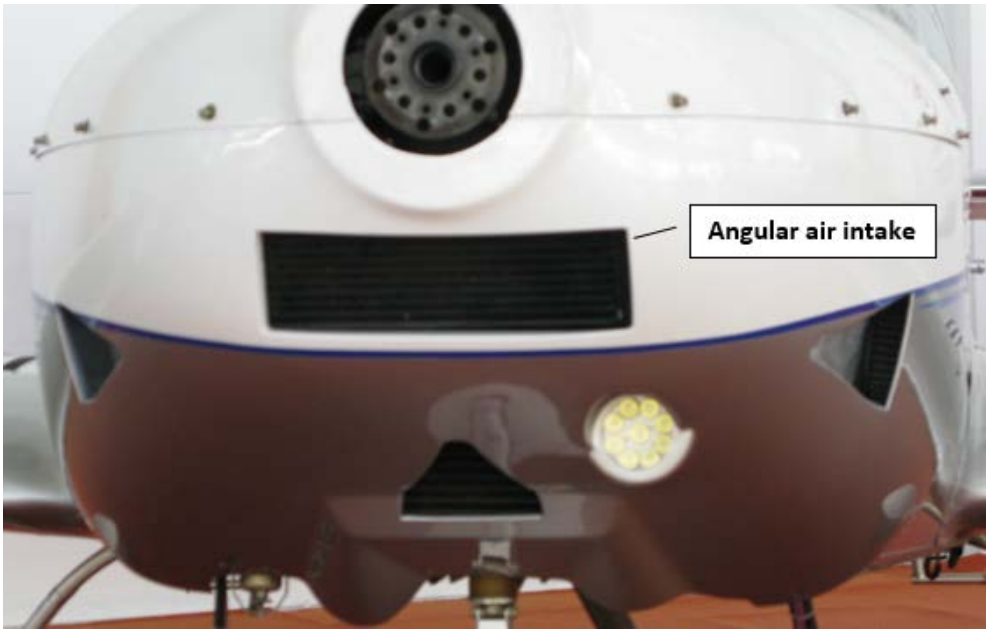

Figure 2: Angular air intake

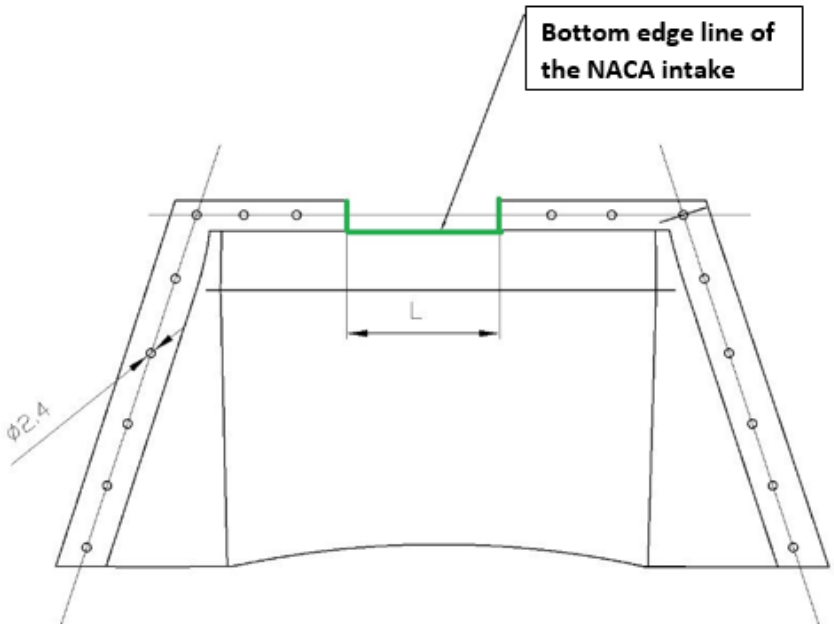

Figure 3: Top view of the new cooling exhaust SE0563N – sketch

Note:

The cut-out for the NACA intake bottom edge marked in green (see "Bottom edge line of the NACA intake") is to be finished according to sections 8, 10. The NACA intake is a part of the engine lower cowling.

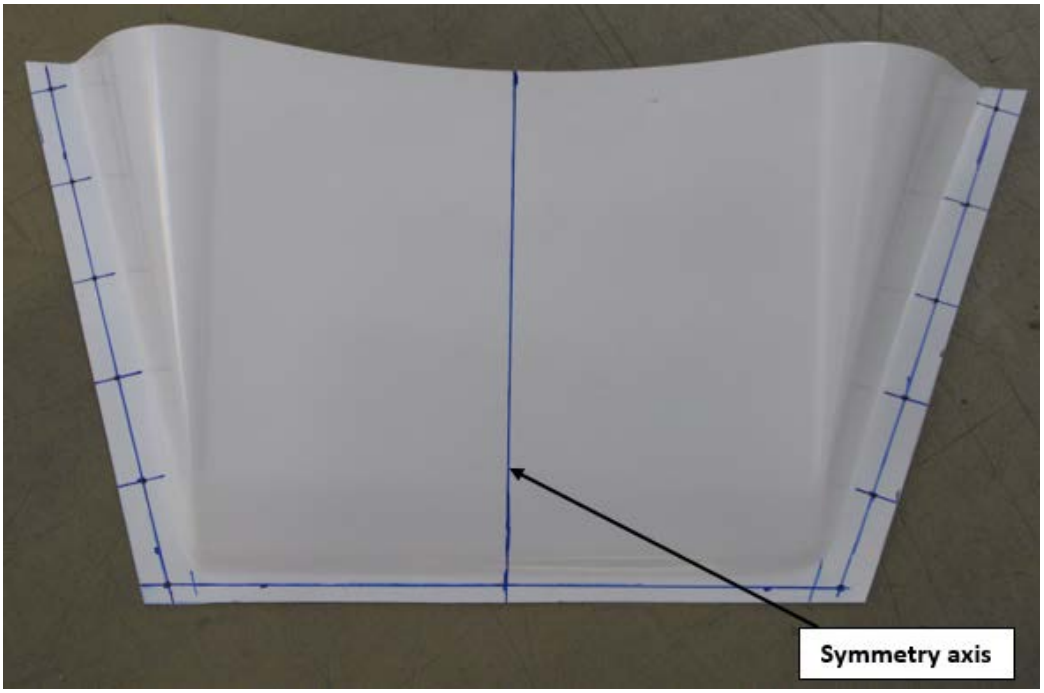

Figure 4: New cooling exhaust SE0563N

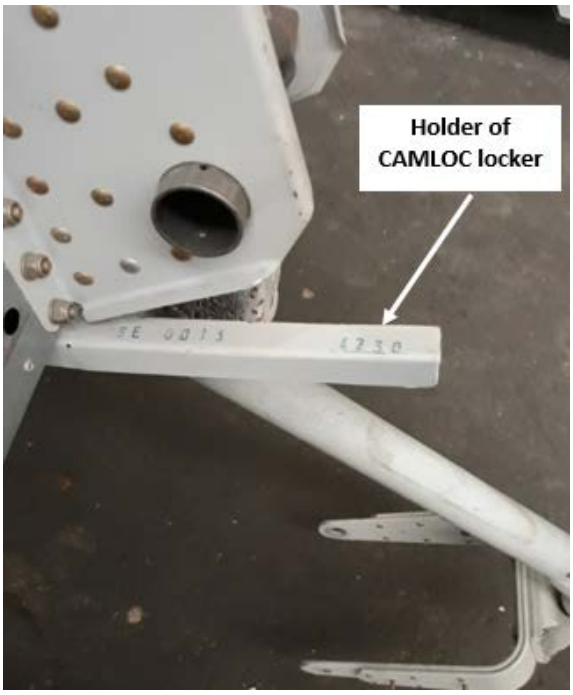

Figure 5: Holder of CAMLOC locker

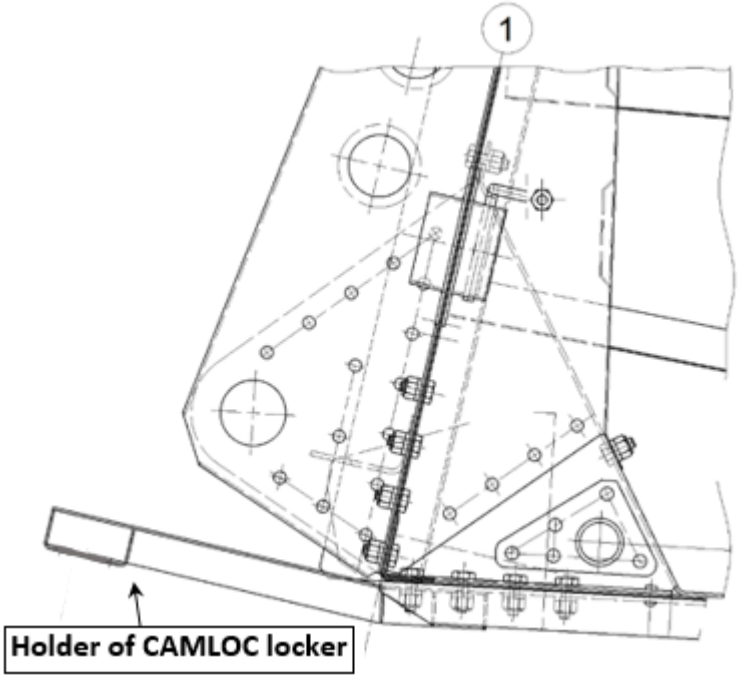

Figure 6: Holder of CAMLOC locker

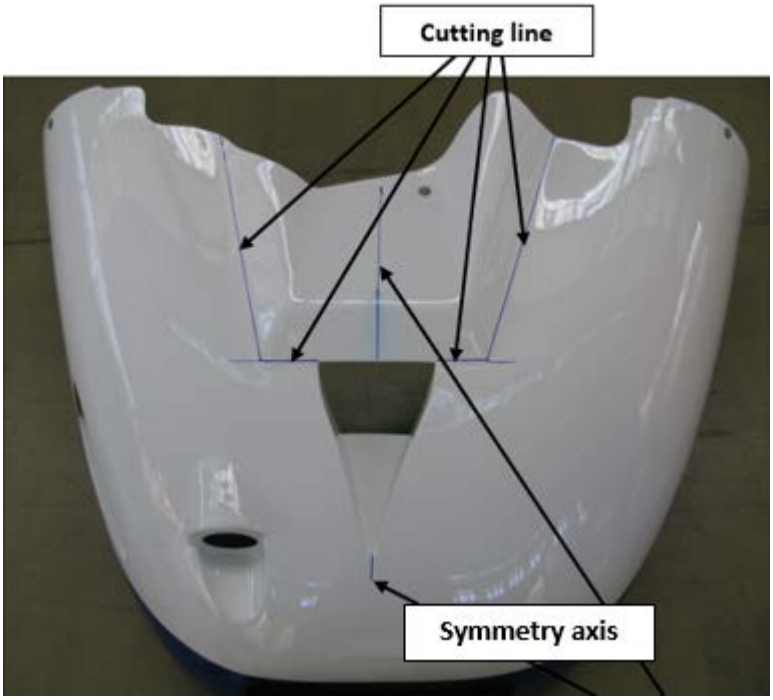

Figure 7: Engine lower cowling with the original cooling exhaust

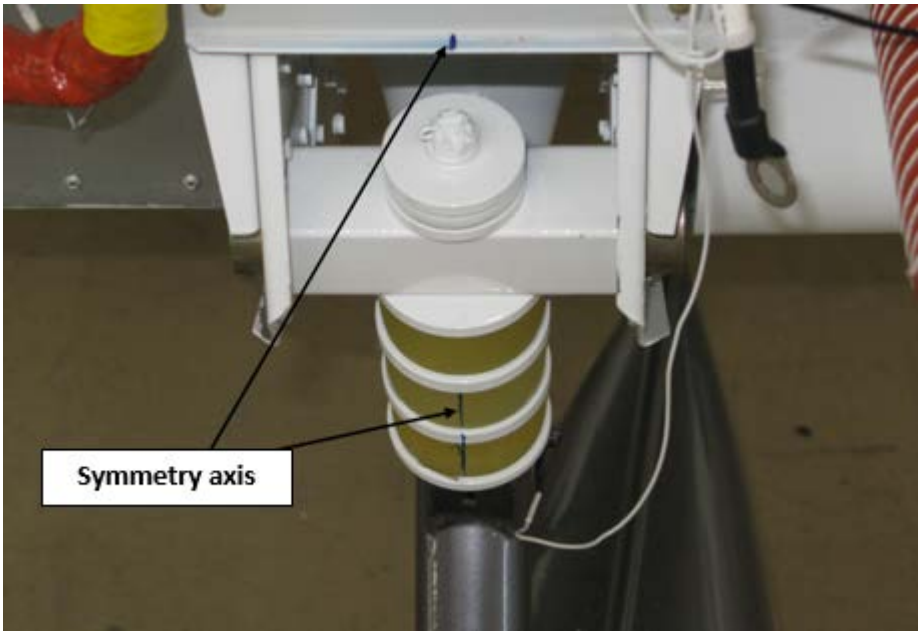

Figure 8: Symmetry axis marking on the airplane

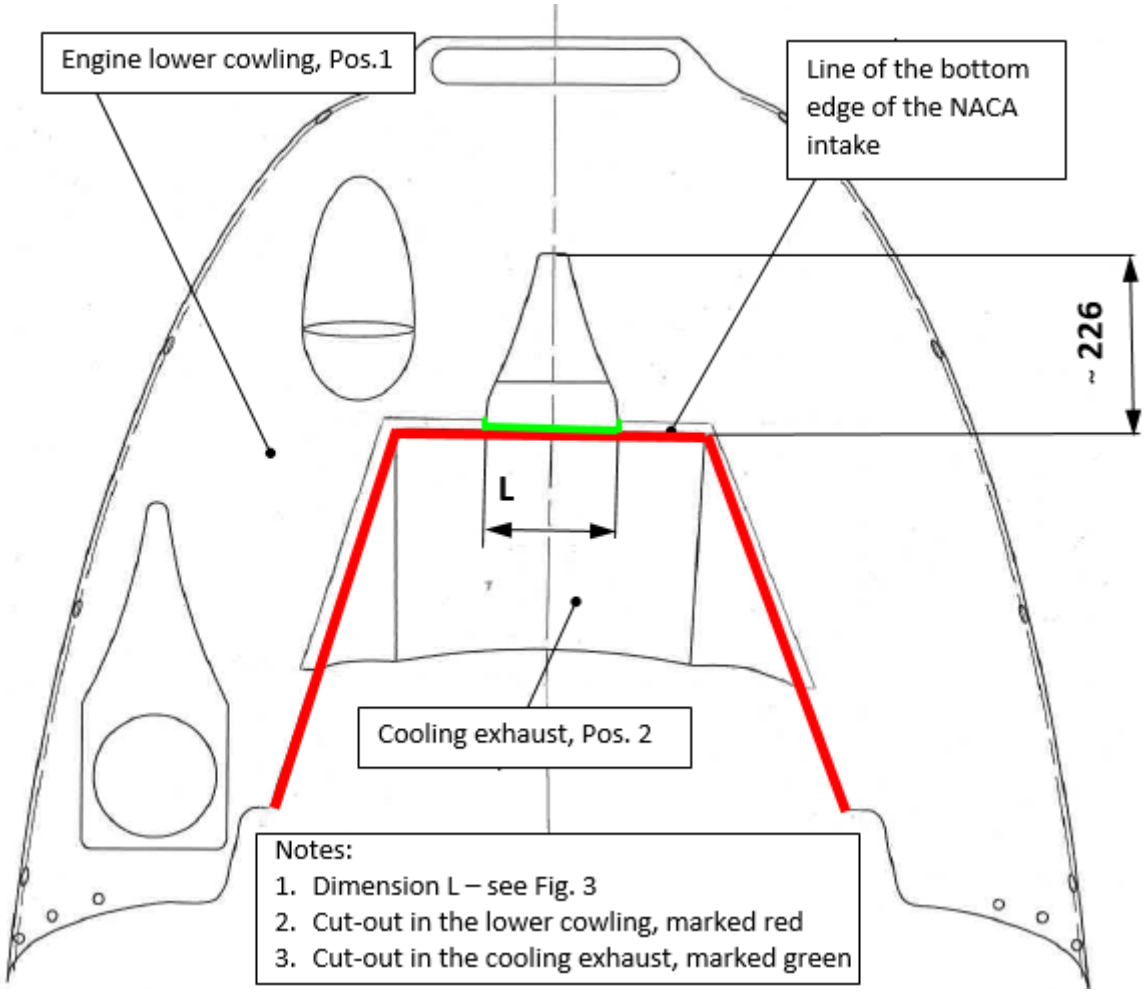

Figure 9: Cut-out in engine lower cowling position of the new cooling exhaust

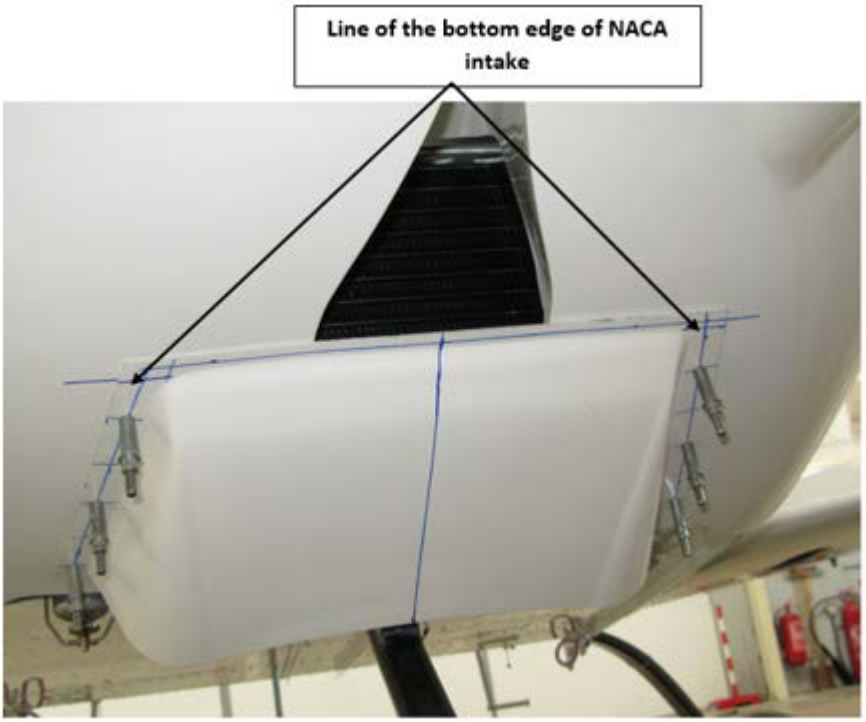

Figure 10: Fixing of the new cooling exhaust on the cowling with cleco fasteners

Figure 11: Helping lines for making cut-out in the engine lower cowling

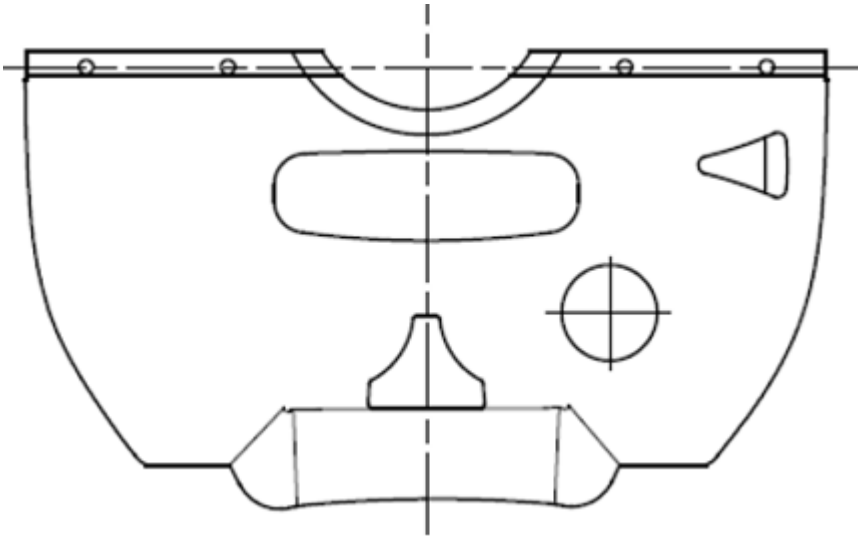

Figure 12: Front view of the lower cowling with the new cooling exhaust

Figure 13: Fixing and gluing of the new cooling exhaust on the cowling

Figure 14: New cooling exhaust glued in the cowling – view of inner side

Figure 15: Laminated and grinded connection area with three layers of fabric

Figure 16: Sealed and grinded connection area

Figure 17: Completed lower cowling with the new air exhaust

APPROVAL:

This SB was approved by:

Title	Head of the Design Organisation	Airworthiness Manager
Name	Jiří Sklenář	Miroslav Koukal
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