



SERVICE INSTRUCTION **XK-SI001** Rev NC Page 1 of 7

EFFECTIVE DATE: This Service Instruction is effective **11-4-2020**

SUBJECT: *COWL FITMENT WEAR PREVENTION*

MODELS AFFECTED: *CCX-2300 S/N 0001 THROUGH 0015*

THIS SERVICE INSTRUCTION IS OPTIONAL BUT RECOMMENDED AND IS NOT REQUIRED FOR CONTINUED SAFE OPERATION. COMPLIANCE WITH THIS SERVICE INSTRUCTION IS SUGGESTED AND IS AT THE SOLE DISCRETION OF THE OWNER/OPERATOR/BUILDER OF THE EXPERIMENTAL AMATEUR-BUILT AIRCRAFT.

PURPOSE: *This document provides instructions for the inspection and modification of the engine cowling and baffling to prevent excessive wear and improve fastener and/or component clearance.*

PARTS LIST:

<u>PART</u>	<u>DESCRIPTION</u>	<u>QTY</u>
RM1072-001	Tape, UHMW Polyethylene	3 FT
HDW-09-18900	Poly-Fiber 1/8" Rivet	25
AN960-6L	Washer, Flat, Thin	25

WARRANTY: *Aircraft under warranty will be provided parts at no cost and receive up to 1 hour of labor, if work is performed at a Cub Crafters Authorized Service Center. Please contact Cub Crafters Customer Support for assistance.*

INSTRUCTIONS:

1. Read all instructions before beginning any work.
2. Remove the engine cowling:
 - a. Apply masking tape to upper and lower cowl behind propeller spinner and backing plate to prevent scratches during removal
 - b. Remove upper cowl fasteners and gently lift off. It may be easier to remove in a rocking motion by lifting one side slowly before lifting entire cowl away
 - c. Disconnect cabin heat duct for heat exchanger inlet [first remove inlet duct panels (#1) and screws on Nose Gear equipped aircraft only]. See Figure 1 below, labeling ducts #3 and #4

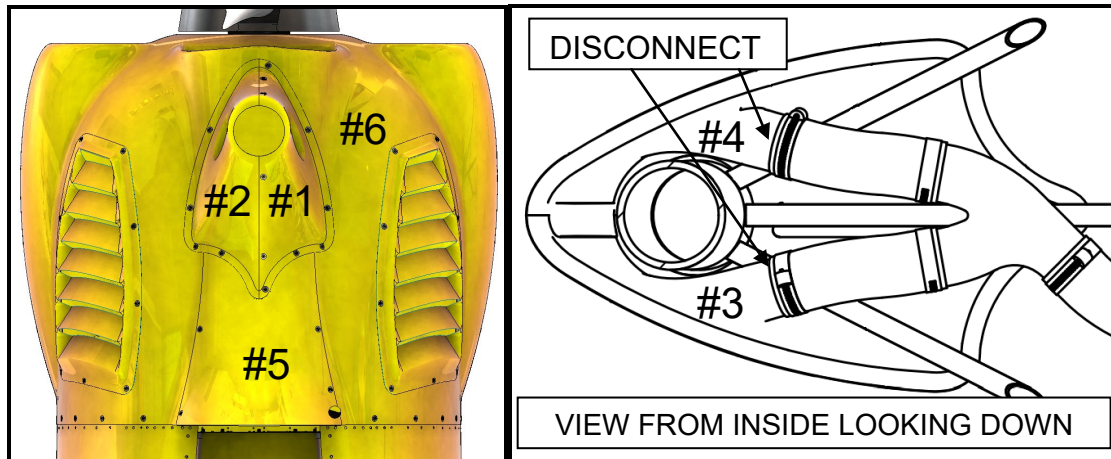


Figure 1 - Nose Gear Lower Cowl Panel Removal Order (#1 Thru #6)

- d. Remove lower cowl access panel #5 (Nose Gear equipped aircraft only). See Figure 1 above.
 - e. Remove lower cowl fasteners
 - f. Remove lower cowl #6. It may be easier to remove in a rocking motion by lowering one side before the other, rotating approximately around the propeller axis before lowering entire cowl half.
3. Inspect upper and lower cowl for any sign of chaffing beyond normal wear. Zones of excessive wear are characterized by locations where paint has been completely worn away and underlying carbon is exposed. See Figure 2 below. Corresponding zones of sheen or worn down edges will be in evidence on the components. Probable locations are:
- Where the inlet baffles contact the lower engine cowl
 - Baffle seal attach rivets for inlet baffle against lower cowl
 - Uppermost corners of FWD center crossover baffle on upper cowl
 - Around induction filter box seal

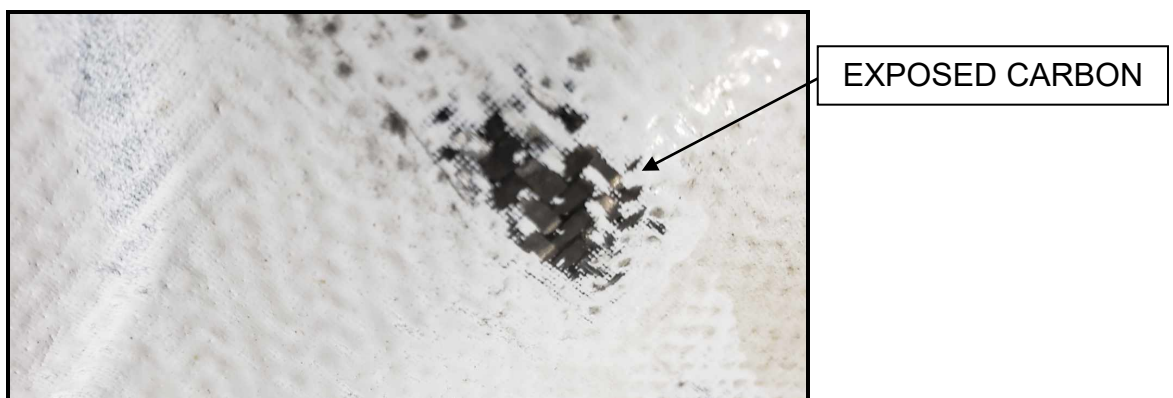


Figure 2 - Cowl Wear Example

4. *Steps 5-9 are each subject to inspection results and the discretion of the owner/operator. Some, all, or none of the zones described may exhibit wear from inadvertent component contact. If no signs of excess wear are present on any cowl panels, proceed directly to Step 10.*
5. Locate and mark all zones where direct composite to composite or fastener to composite contact is in evidence. Figure 3 depicts possible contact zones on underside of the upper cowl.

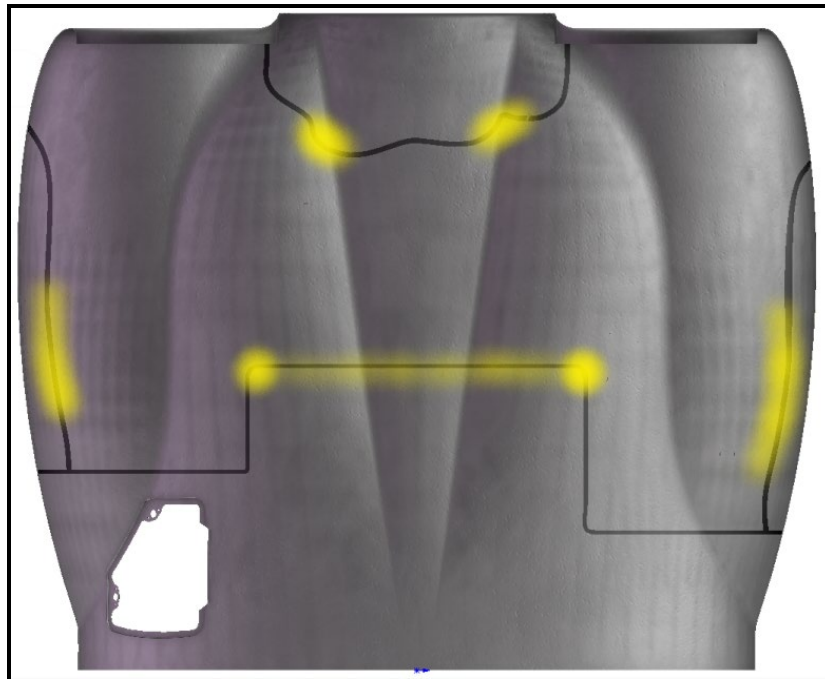


Figure 3 - Upper Cowl Possible Chafing Locations

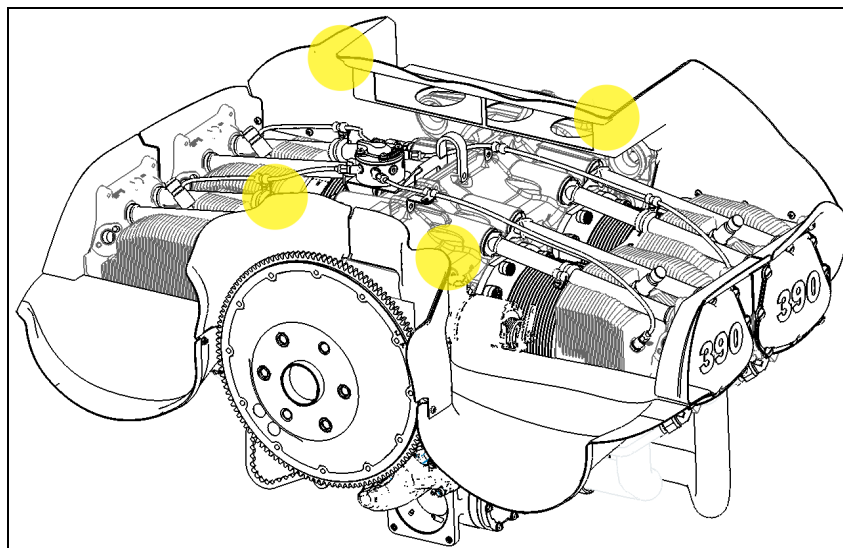


Figure 4 - Possible Baffle Zones in Contact with Upper Cowl



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6. Using upper and lower cowling marked zones as a guide, locate corresponding possible causes of wear on **composite** baffle components. See possible zones highlighted in Figure 4. Zones where baffle composite is in occasional contact with the engine cowling may be trimmed by filing, sanding, or using a rotary tool. Edges of baffles may be trimmed as long as 2D edge distance to all fasteners (1/4" from center of hole to nearest edge) is maintained and a minimum of 3/8" overlap is retained between composite engine baffles and the attached baffle seal. Excessive trimming will result in baffle seal leaks that will reduce powerplant cooling performance.

NOTE

ALWAYS WEAR APPROPRIATE P.P.E. WHEN WORKING WITH COMPOSITE MATERIALS. GLOVES, LONG SLEEVES, SAFETY GOGGLES, AND A RESPIRATOR OR DUST MASK ARE HIGHLY RECOMMENDED. WORK SHOULD BE CONDUCTED IN A WELL VENTILATED AREA.

7. Locate zones where excessive wear may be occurring from baffle silicone seal components. This can be characterized by zones where paint has been appreciably worn away – may correspond to evidence of paint wear against the rubber baffle seal as well.
 - a. Locate corresponding section of baffle seal. Zones where very tight corners are rounded with a single piece of baffle seal may create excessively stiff seal.
 - b. It is acceptable to add slits to baffle seal for improved flexibility
 - i. Mark zones to be slit
 - ii. Punch or drill a 1/8-3/16" hole through seal only approximately 1/4" above composite engine baffle overlap. Use a utility or razor knife to cut a linear slit from outer edge of punched hole to outer edge of baffle seal.
8. Inspect baffle seal attachment rivets on inlet baffles. Any that show signs of contact with the engine cowling should be replaced with new HDW-09-18900 large area pop rivets. Install an AN960-6L washer on the tail of each rivet opposite the factory head in order to prevent composite pull-through.
 - a. Remove and replace only one rivet at a time in order to maintain hole spacing and eliminate seal shift
 - b. Drill out existing rivets with 1/8" drill bit
 - c. Install and pull replacement rivets with the tail in the down/out direction.
9. Locate zones of lower cowl that have evidence of chafe from inlet baffles and apply protective film tape. See Figure 5 for possible location guidance.

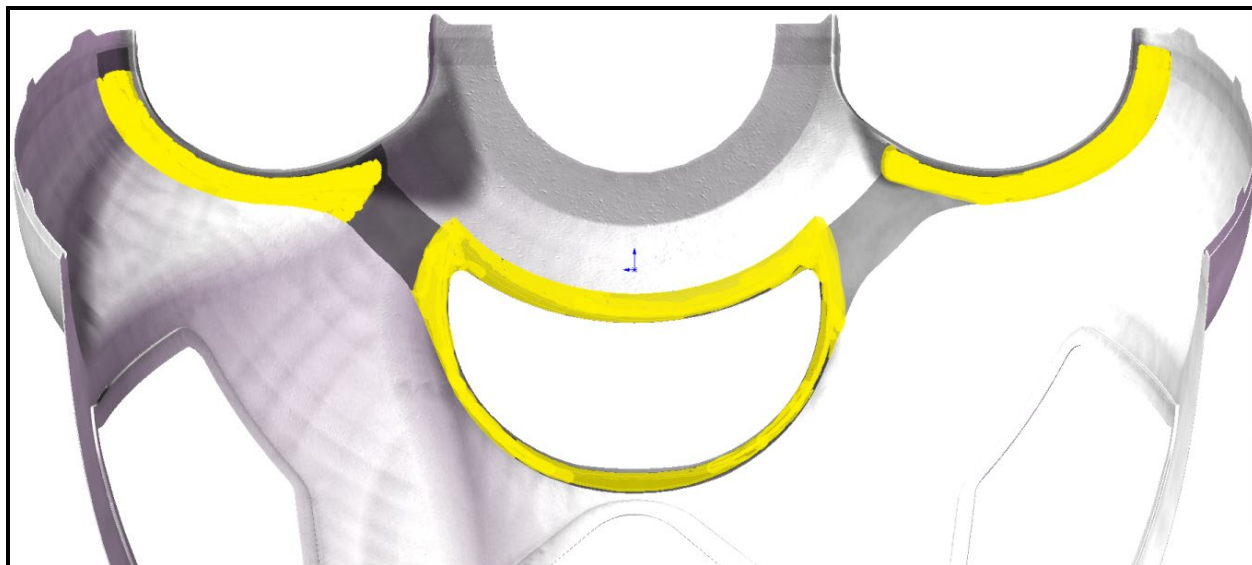


Figure 5 - Possible Lower Cowl Chafing Locations

- a. Carefully clean entire area with a solvent such as Acryli-Clean DX-330/SX-330, or rubbing alcohol.
- b. Apply 3M 111 Adhesive Promoter to entire area of tape application
- c. Apply RM1072-001 in 3-4" strips. Longer strips may be difficult to conform to cowl curvature and be more prone to peeling. See Figure 6. "Burnish" tape on with a rounded tool to achieve maximum adhesion.

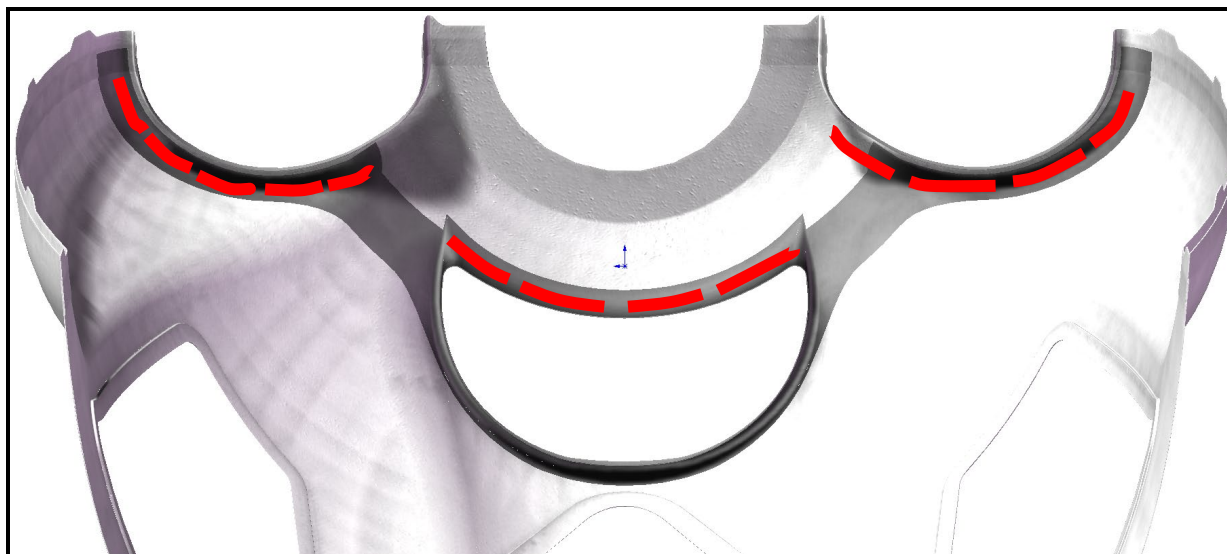


Figure 6 - RM1072-001 UHMW Application Zones

10. Reinstall engine cowling.

- a. Gently lift lower cowl into place. It may be easier to work one side at a time over inlet baffle seal before rotating approximately around propeller axis to work over opposite inlet baffle seal. Take extra precaution to avoid catching propeller spinner backing plate fasteners as chipping of the composite cowl may occur.
- b. Loosely install lower cowl fasteners
- c. Ensure that all baffle seals overlap in the appropriate direction. All seal should be flexed up and in toward the center of the upper air plenum. See Figure 7

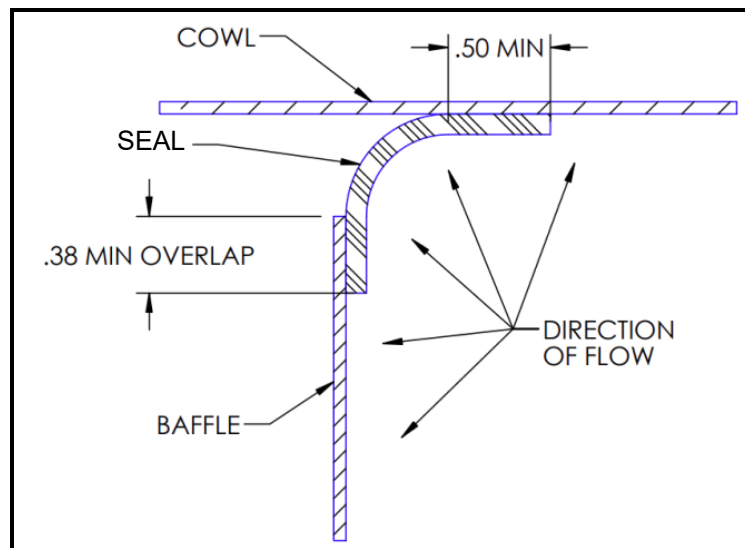


Figure 7 - Baffle-Seal-Cowl Interface

- d. Ensure that induction filter box seal fitment is correct. Filter box seal should surround and overlap inlet of lower cowl with no pre-load around perimeter. If necessary, loosen securing clamp and adjust position of filter box to achieve proper fitment. Once fitment is set, retighten hose clamp.
- e. Reconnect cabin heat ducting (all aircraft)and reinstall cabin heat inlet portion panel(s) of lower cowl (Nose Gear equipped aircraft only)
- f. Reinstall lower cowl access panel (nose gear equipped aircraft only)
- g. Reinstall upper cowl. Take extra precaution to avoid propeller spinner backing plate fasteners as chipping of the composite cowl may occur.
- h. Ensure all baffle seal overlaps are in the appropriate direction. All seal sections should be flexed up and in toward the center of the upper air plenum
- i. Tighten and cross-check that all cowl fasteners are installed and tight and the all ducting has been reconnected. Recommended order is to tighten all fasteners between the top and bottom cowl, then start at the top cowl center fastener and work downward around the boot cowl attachment.
- j. Remove masking tape from cowling behind propeller spinner and backing plate



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11. Make a logbook entry stating that the cowl fitment has been verified and/or repaired and that XK-SI001 Rev NC was complied with. This modification does not create any notable change to weight and balance of the aircraft.

If you are no longer in possession of this aircraft, please forward this information to the present owner/operator and notify Cub Crafters, Inc. Contact the customer service department at:

Cub Crafters, Inc.
1918 S. 16th Avenue
Yakima, WA 98903.
1-877-484-7865 or 1-509-248-9491
support@cubcrafters.com

Please include the aircraft registration number, serial number, current name, and address of the owner and/or operator.