

Inspection of N20313

for Ron Snider
Crescent City CA Airport (CEC)
Date Inspected: 6/8/19

On a breezy day in Crescent City we find this '77 Cardinal FG in a clean, dry but uninsulated hangar. The owner tells us it has lived most recently in an insulated hangar with a dehumidifier.

The paint looks good as we approach the aircraft although a few areas of filiform corrosion start to become evident as we look closer. The owner tells us these have gotten worse since the aircraft has been in this hangar and a few were cleaned and painted at the last annual.

There are only a couple of dents on top of the stabilator and a small cluster of dents on the bottom of the stab. Otherwise the airframe appears straight and dent free.



Wing and fuselage skins look very clean. A few of the stringers in the wings are showing some early signs of corrosion, suggesting that an anticorrosion treatment would be appropriate to freeze it at this level. The spar carry-through appears to be in excellent condition without wear or corrosion from the overhead CAT tubing.

While there is still CAT tubing installed in the fresh air system it all appears to be in excellent condition, both inside the cabin overhead and the wing air inlet vents.

The interior is clean and mostly intact other than a rip on the co-pilot's seat back. Plastic panels are in good condition, just a few cracks around the baggage bulkhead. The panel looks good and radio displays have all digits working.

The engine is clean and dry, without significant oil leaks, and cam lobe lift appears normal. The cylinders are steel and all show signs of pitting from past rusting. It does not appear to be deep enough for current concern, but this does increase the risk that the cylinders may need to be honed or replaced before the engine reaches TBO.

The following specific items were found during the inspection:

Airworthiness issues:

- The transponder certification is not complete.

Resolve before purchase (Value impacting)

- There are a number of areas of filiform corrosion which should be cleaned and painted to protect the skins.
- The cylinders have some signs of rust pitting which increases the chance that a top overhaul may be required. The first clue will be increased or excessive oil burn.

Resolved during the inspection

- The left yoke was loose and was tightened.
- The door handles were lubricated to free them up.
- The vent window cranks were lubricated to stop them from squeaking and wearing.
- The articulating seat pivots were lubricated to free them up.

Issues for near future

- There are some missing screws in the baggage door inside cover.
- The magneto cover housing is corroding, this is especially critical due to the material this cover is made from. It should be cleaned and painted very soon.
- An anti-corrosion treatment should be applied to stop the small areas of corrosion starting in the wing stringers.
- The rear-most holes in the under-wing gap seals is too long and is impacting the flaps.
- The bottom of the top cowl should be protected with aluminum duct tape or even better painted with epoxy paint to seal it and stop the wear.
- At least one and perhaps more of the cowl edge Southco receivers is worn and should be replaced to avoid wear of the cowl mounting holes.

Issues for next Annual

- There is a slight looseness in the stab which should be addressed.
- The baggage bulkhead insert is cracked around the edges and should either be repaired with Fiberglas now, before it cracks further, or replaced once it cracks enough to be an issue.
- There is a little acid corrosion on the belly behind the battery drain, might be good to clean this up and protect this area with some paint.
- The left cowl flap hinge is very worn and is likely ready to be replaced.
- One of the engine cowl close bumpers is missing.
- The co-pilot vent window crank is very worn and might benefit from repair before it gets worse.
- There is slight wear on both door frames, the flanges could be shortened slightly to reduce the wear between door and frame. It would also be good to paint the frames so any future wear will be visible.
- The fuel shut-off pull knob on the left side of the lower console, by the pilot's right knee, should be safety wired with a soft frangible wire.
- The shimmy dampener should have a placard applied which specifies the required volume of fluid which should be used to service this item, to avoid future mistakes.
- It might be useful to adjust the overhead air tubing to keep the CAT tubing further away from the spar carrythrough. One side in particular is tightly strapped to the carrythrough.
- The internal wire is deteriorating and moving inside the small SCAT tubing which cools the gascolator, the SCAT should be replaced.

Resolve Over Time

- The door and baggage door seals appear to be the proper type (although the pilot door seal is installed upside down) but are showing some early wear.
- There are small cracks in the bottom of the nose gear pant, these could be reinforced with Fiberglas before they grow further.
- The stock Cessna over voltage switch is installed, this has a high risk of causing alternator failures of a potentially random nature in the future.
- The pilot's door hinge is starting to wear, it might be helped with new pins or a trip to Kenosha to repair the hinges might be worth considering in the future.
- One of the door handles, I think on the pilot's side, had a rather loose bushing. This might be the four screws which hold that bushing to the door or may be a worn bushing.
- Most of the fuel vent tubes in the overhead are in good condition but there is one spot which look like it could be corrosion. If you are up in there it would be good to check that tube possibly clean and protect it.

Items of Interest

- The left seat rail has been replaced twice and there are quite a range of rivets used to install this rail. They all appear to be within specs currently.
- The magneto gears appear to be well short of the yellow which leads to concern.
- There are several other small items of note which will be addressed in the photo report.
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The images below reinforce many of the line items above and provide examples of other details. Click on any image to load a larger version.

Value Affecting issues:



Filiform corrosion.



Filiform corrosion.



Filiform corrosion.



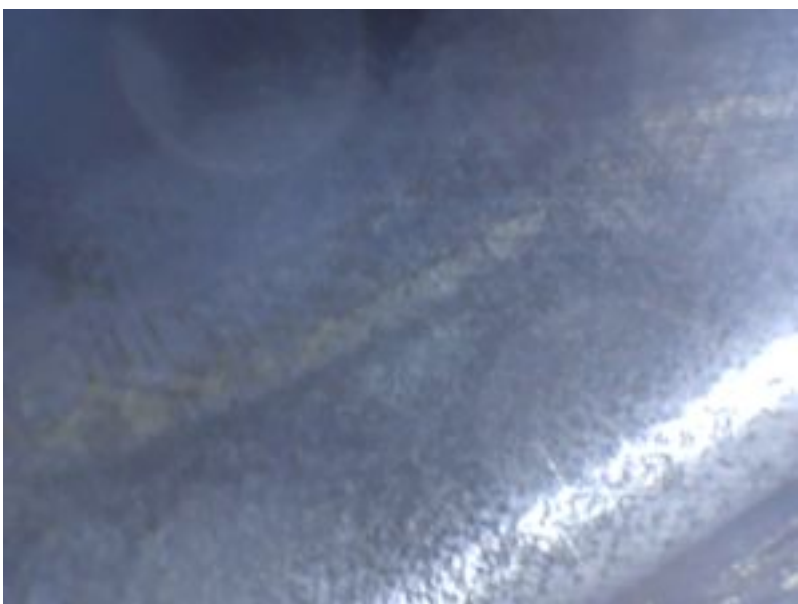
Filiform corrosion.



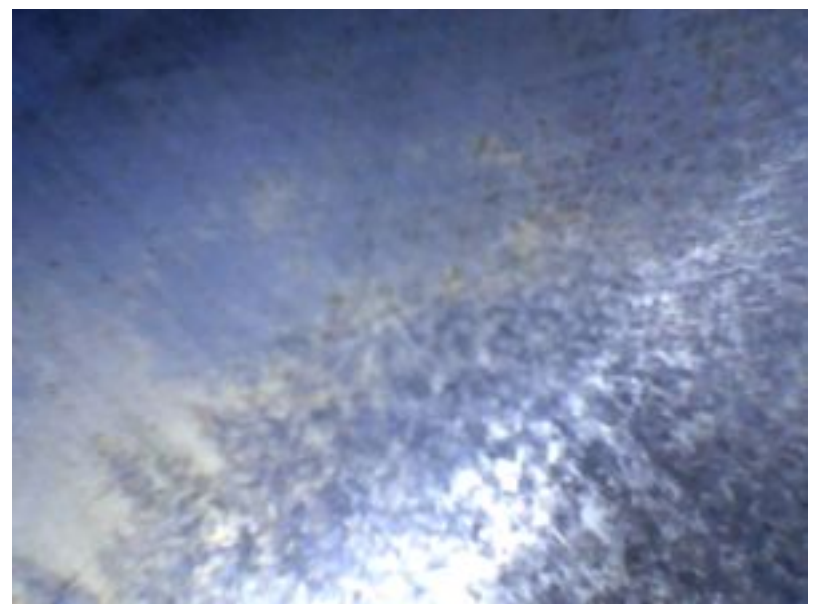
Filiform corrosion.



Filiform corrosion.



Slight rust pitting in cylinders.



Slight rust pitting in cylinders.

Resolved during the inspection:



Pilot's yoke was loose.



Wing vents needed lubrication



Seat pivots were bound, needed lubrication.



One roll pin was sticking out, tapped back in.

Resolve in near future



Two repairs on the baggage door chain, could be improved a bit.



Poor picture of this... long screws in the under-wing gap seal are making dents on the flaps.



Corrosion on the mag case is very concerning, should be cleaned and painted.



Engine baffle seals are wearing into the cowl, should be protected with aluminum duct tape or epoxy paint.



Some cowl screws are 'pulling through' as they are worn out.

Issues for next annual:



Stab is slightly loose.



Cracking on baggage bulkhead could be reinforced with Fiberglas.



Bulkhead cracks... Fiberglas will make it last, or get a new one.



Battery acid is eating the paint behind the battery drain, best to clean it up and protect it.



Very worn cowl flap hinge.



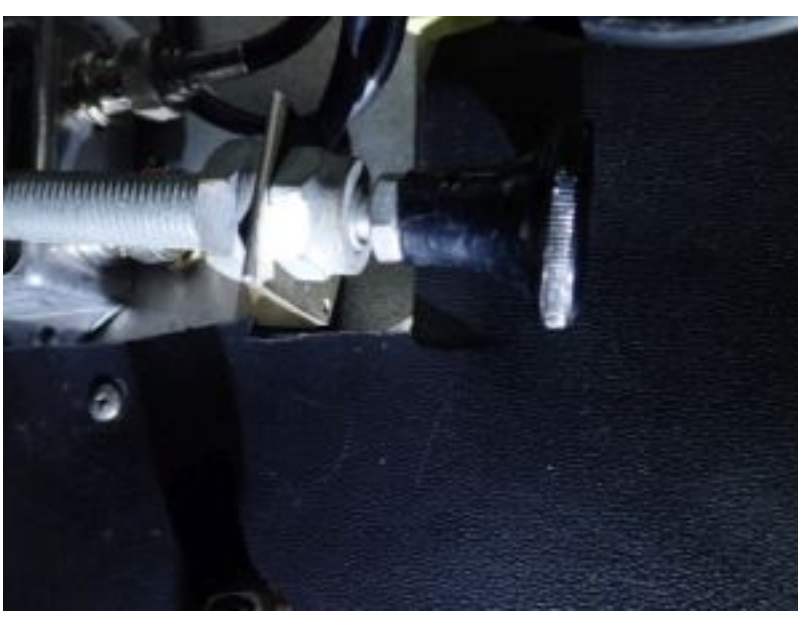
Missing cowl flap bumper.



Vent window crank was very worn, ideally find a way to repair or replace it.



Wear on door frame, adjust the door flange so this no longer wears to avoid future problems.



Frangible safety wire missing on fuel shutoff handle.



Another wear point on the door frame.



This is the part of the door which needs to be shortened to stop the wear on the frame.

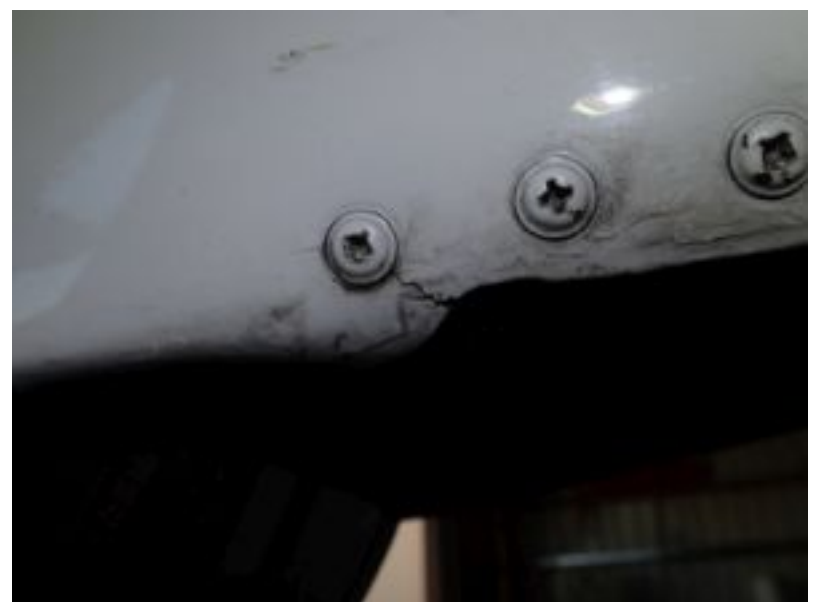


Shimmy dampener should have a placard to help avoid future problems.

Resolve over time:



Door seals are a soft but wearing.



Small cracks on the nose wheel pant, perhaps could be strengthened with Fiberglas?



Over Voltage switch is installed, could cause trouble later. Just remember it is there so you'll know where to look when trouble comes.



Some early looseness on the door hinge.



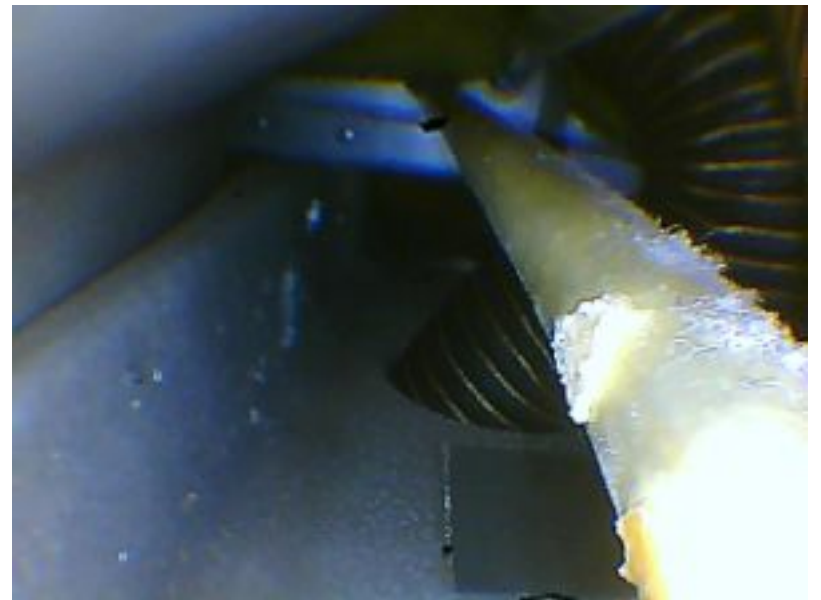
One of the door seals was installed with wrong edge glued down.



Door handle on one side had a loose bushing/shaft.. may need a rebuilt one in time, or it could be loose mounting screws. We can hope!



Tear in the copilot seat back...

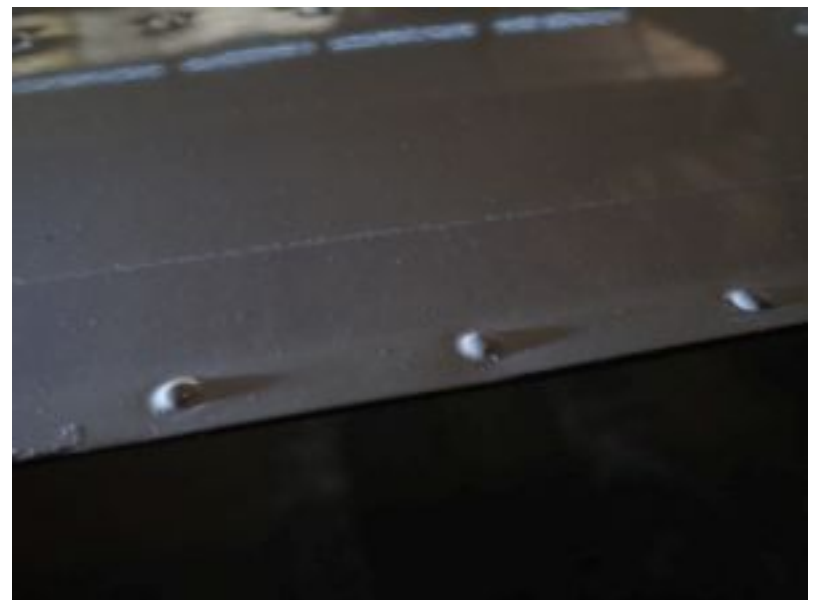


Just one area which could be corrosion on the fuel vent tube in the overhead, or it could be mud from a dauber's nest.

Items of interest:



Prior repairs of filiform.



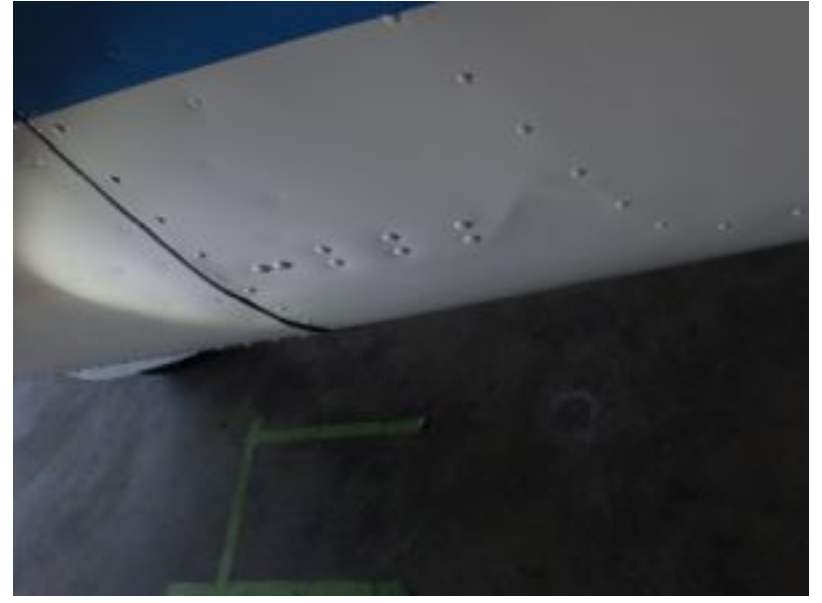
Prior repairs of filiform.



A couple of small dents under the stab.



Pulley brackets were green, unusual.



All looked good here.



No chips on the strut.

Very slight wrinkles by door hinge.



2 piece wheels is good news!



Interesting switches on the panel, one unlabelled.



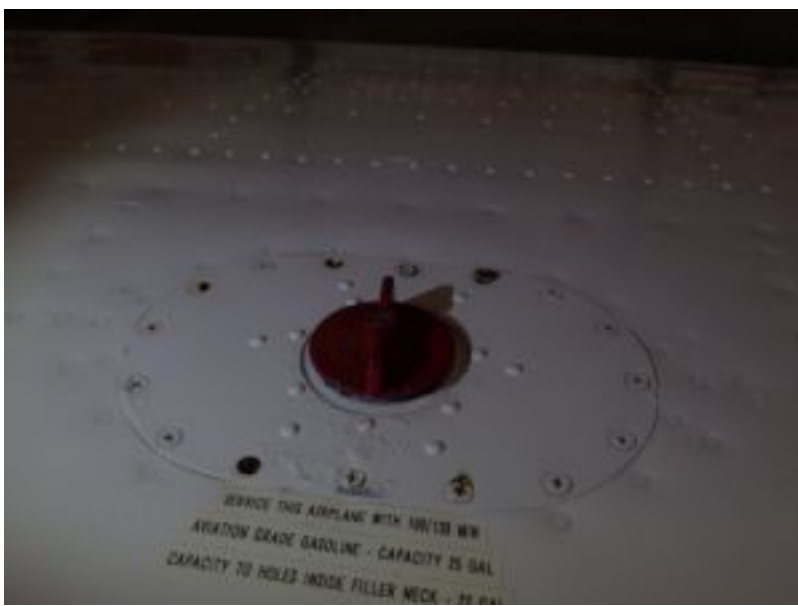
An odd assortment of rivets but they seem to be solid.



Wing tip crack.



The rubber edge protector is on the rudder, very good extra credit!



Umbrella caps... an upgrade.



General overview.



Machine screw where most have a sheet metal screw, but the proper receiver was installed so it is OK.



General overview.



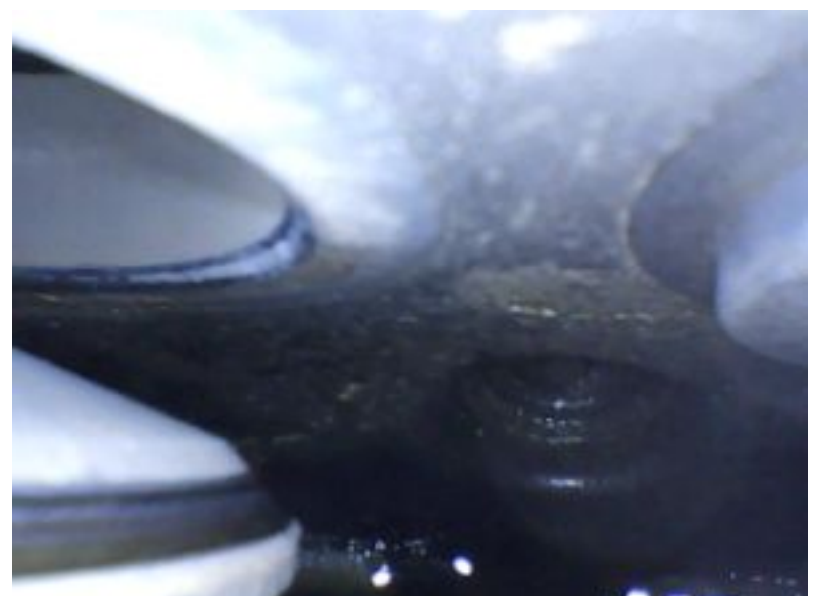
General overview.



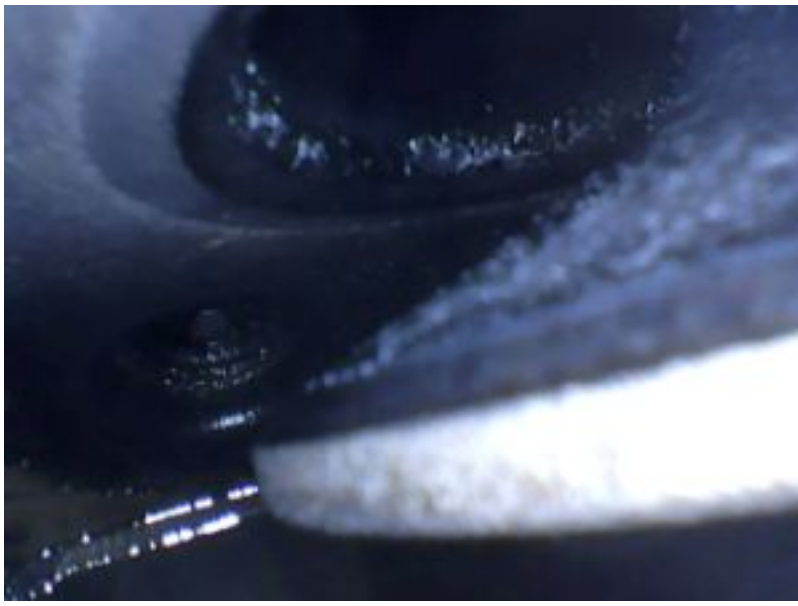
Here's that machine screw receiver mentioned above.



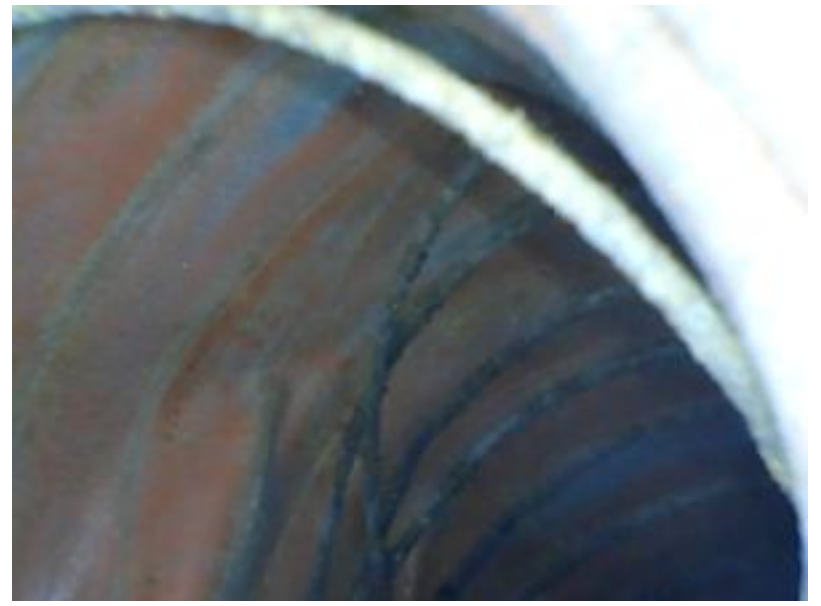
General overview.. seems like some salt collecting here, a good rinse would be a good idea once you get it home.



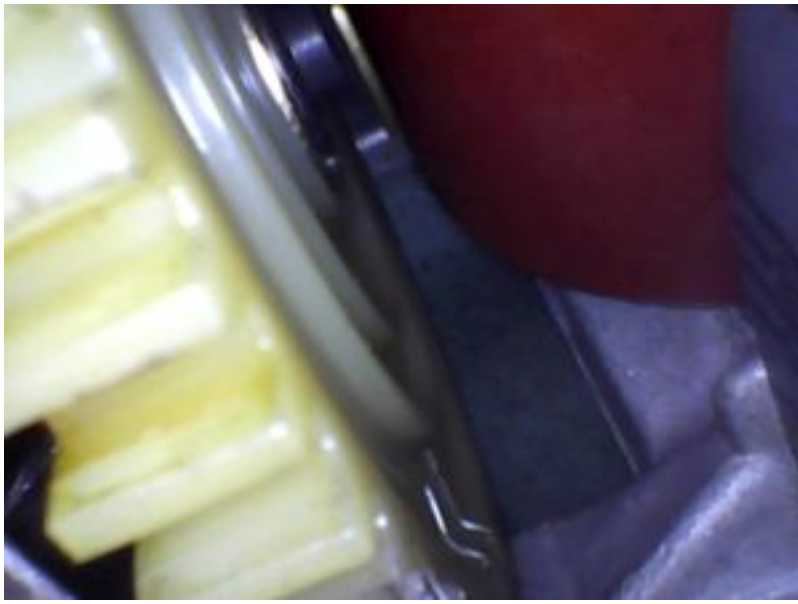
Valves look good.



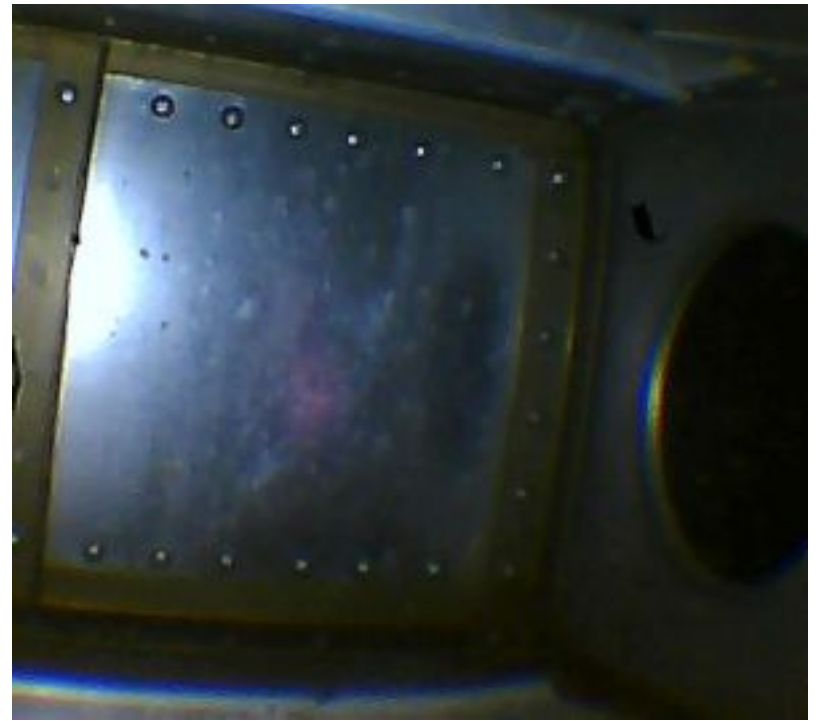
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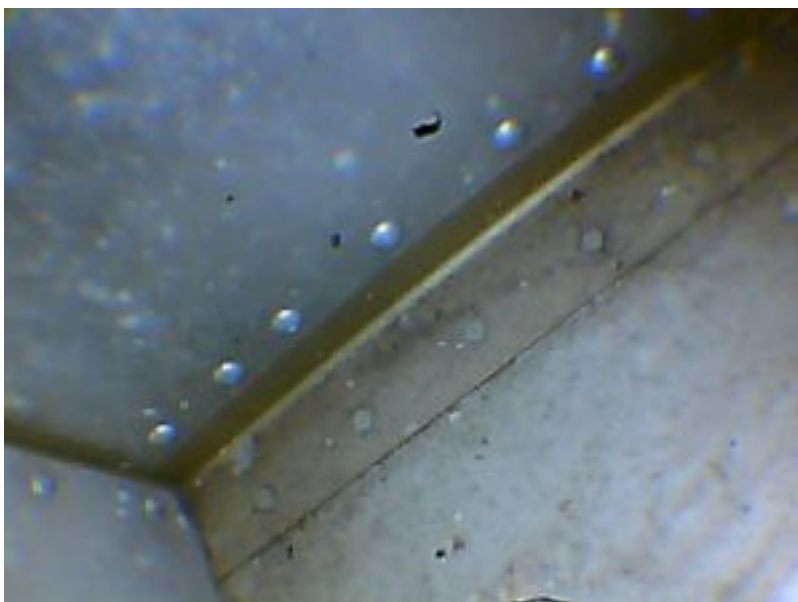
Loose spiral inside SCAT at back of engine baffle, should be replaced.



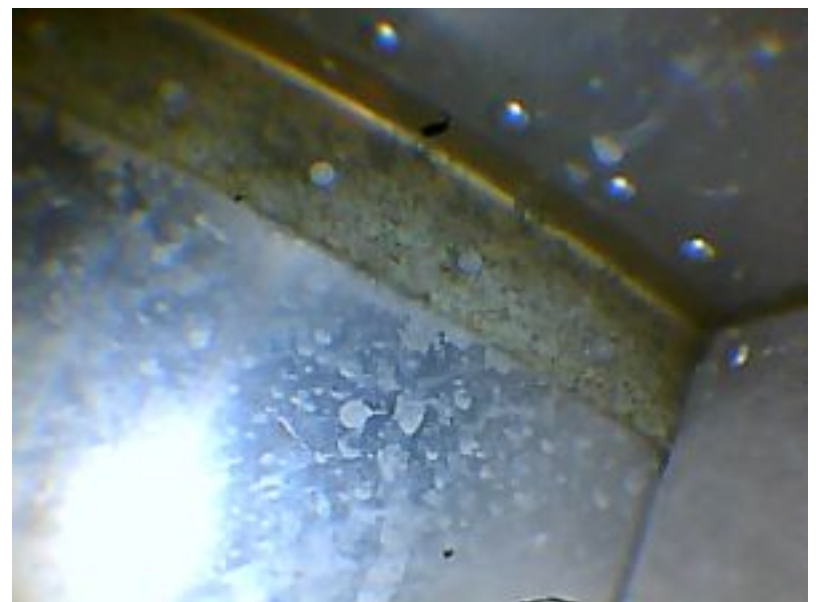
Mag gears look OK, not too yellow.



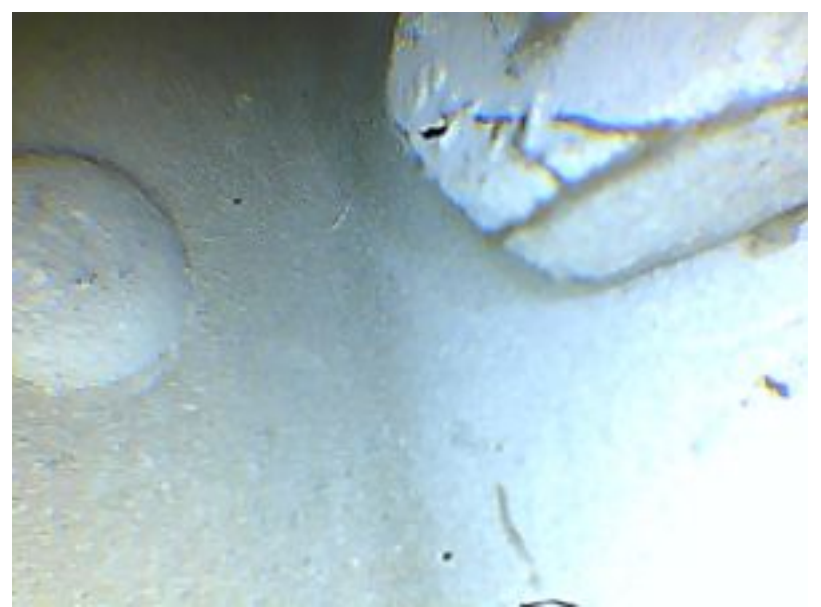
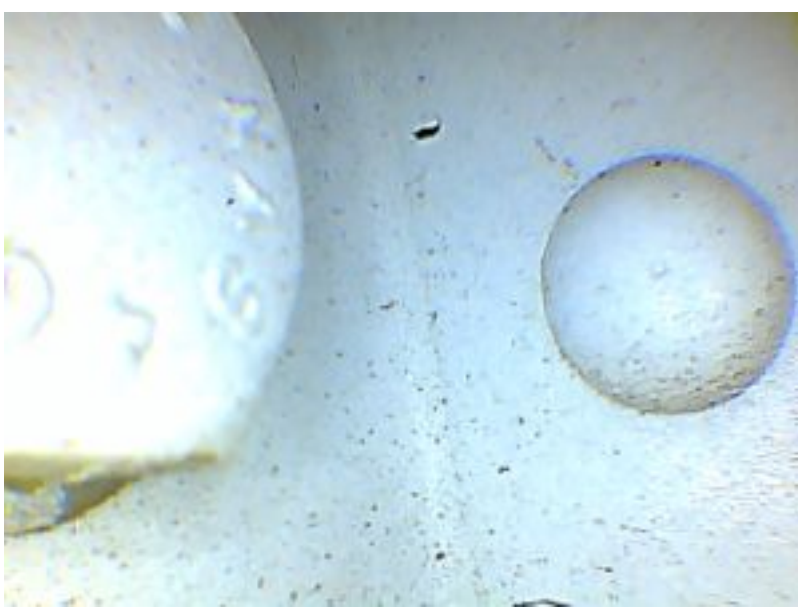
Most of the wing skins looked good.



Just a little something growing here...



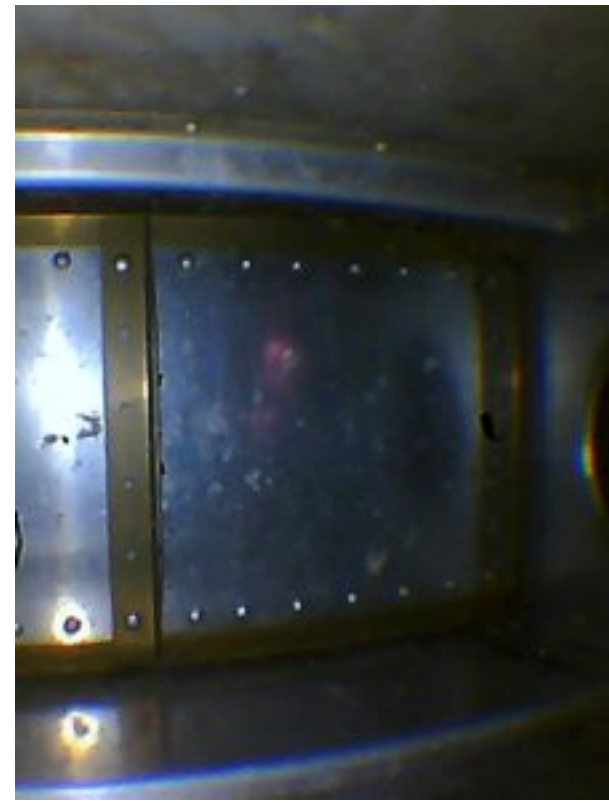
would be good to corrosion proof it to stop this.



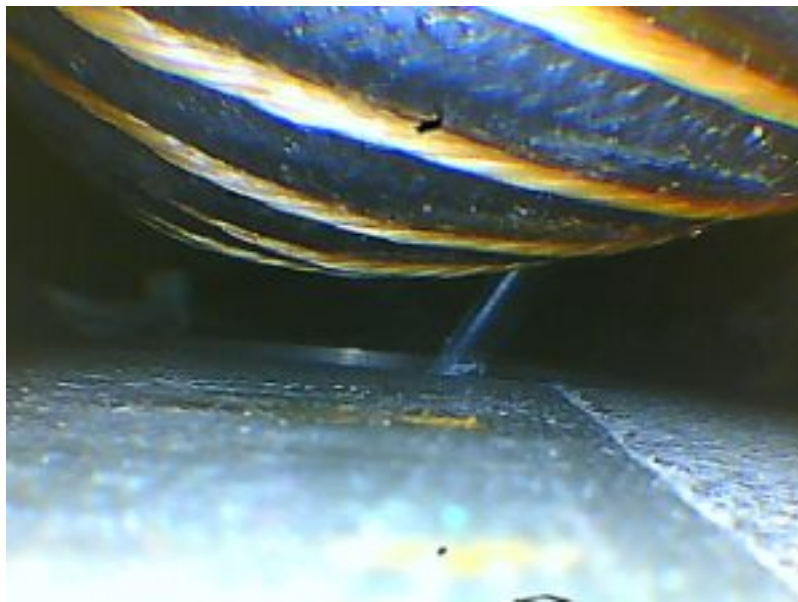
Stab brackets are good.



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Limited contact between CAT and spar.

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General shot down the spar carrythrough.



and the other direction...