

ALERT SERVICE BULLETIN



Diamond
AIRCRAFT

Service Bulletin No.: DA20-27-06A, Rev.0

Date Issued: April 17, 1997

Title: Hinges, Flight Controls

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1. ATA Code: 2700

PLANNING INFORMATION:

2. Effectivity: DA20-A1 aircraft S/N 10002 up to and including S/N 10300.

3. General: This service bulletin addresses the possibility of control surface hinge failure due to corrosion. A detailed inspection is required immediately to determine if any corrosion is present. In addition, hinge play is checked to determine if the hinges are worn beyond limits.

4. Compliance: **Prior to the next flight.**

5. Approval: Engineering data referenced or contained in this bulletin is approved as part of the type design.

6. Labor: 5 man hours estimated will be required to complete this service bulletin. Additional aircraft downtime will be required for cure times, see 10.11.

7. Material:	Description	P/N	Qty
	Loctite	222	as required
	Cotter Pins	MS24665-172	20
	Cotter Pins	MS24665-151	5
	Polyurethane Paint		as required

The material listed above should be procured locally before beginning work on this service bulletin.

8. Special Tools: None

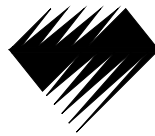
9. References: DA20 Maintenance Manual Doc. # DA201.

10. Accomplishment Instructions:

10.1 Remove all of the flight control surfaces from the aircraft.

10.2 Using a suitable flashlight and 10x magnifying glass, inspect **all** hinge components on the flap, aileron and elevator for visible signs of corrosion. Check for grey oxide, blistering of the metal or paint and exfoliation of the metal. See figure 1 and 2 for areas where corrosion can be more easily detected.

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10. Accomplishment Instructions :(Continued)

- 10.3** Examine the bore on each hinge attached to the aircraft. Shine the flashlight from the opposite end of the bore and check for white or grey powder (corrosion). Do not confuse areas of the bore that may have had the anodizing removed (bare aluminum areas) with corrosion.

WARNING!

If any of the corrosion described above is present on any of the hinges, suspect hidden intergranular corrosion of other hinge parts which appear normal.

DO NOT OPERATE THE AIRCRAFT.

BLISTERING OF PAINT OR METAL

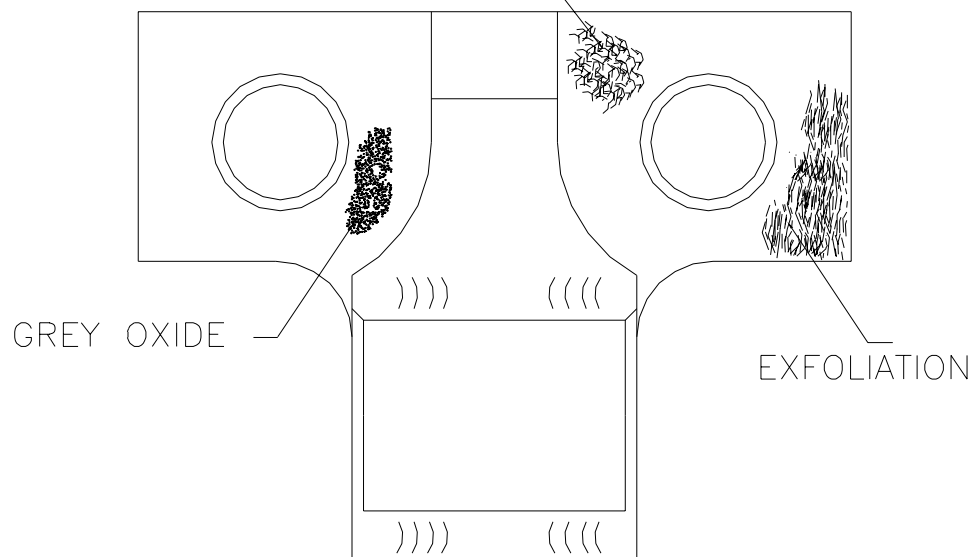
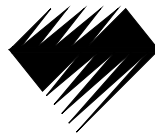


Figure 1

- 10.4** Contact the Diamond Aircraft Customer Support Department for further instructions if corrosion is present.
- 10.5** Check for play between the fixed hinge and pin. Insert the pins which were removed from the hinge. Using a wire feeler gauge check that there is 0.020" (0.50mm) total play or less as shown in figure 3.

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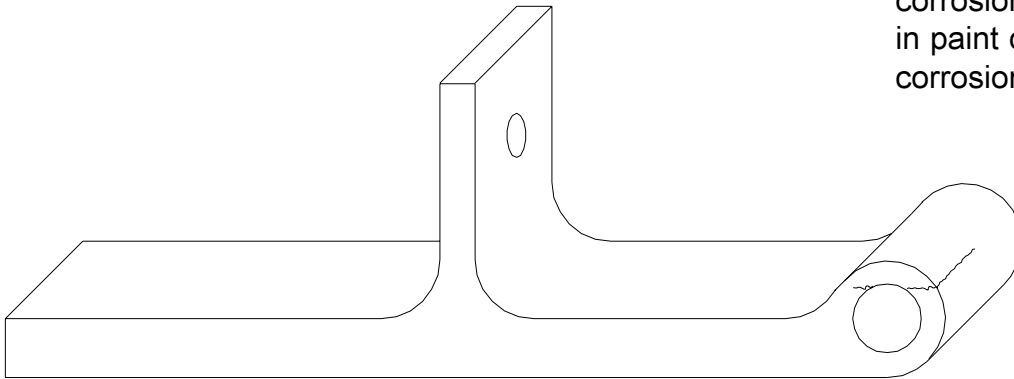
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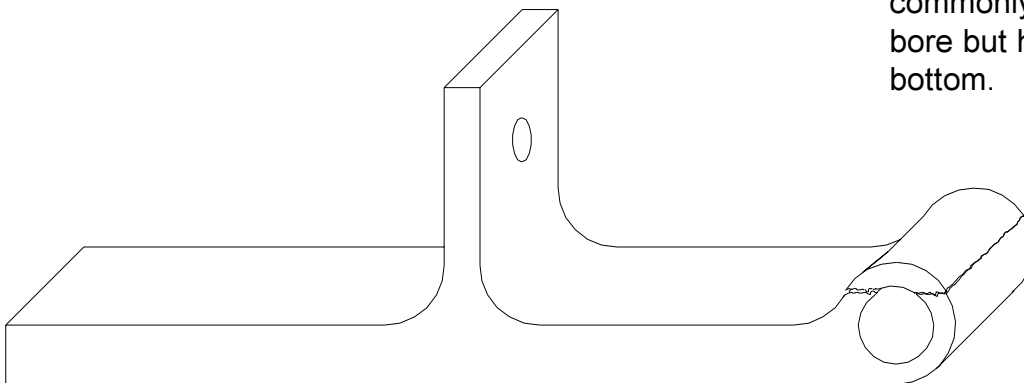
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10. Accomplishment Instructions :(Continued)

Advanced intergranular corrosion showing as cracks in paint or a thin line of corrosion in the bore.



Cracking and beginning of separation. Corrosion is more commonly located at top of bore but has been found at bottom.



Failure of hinge.

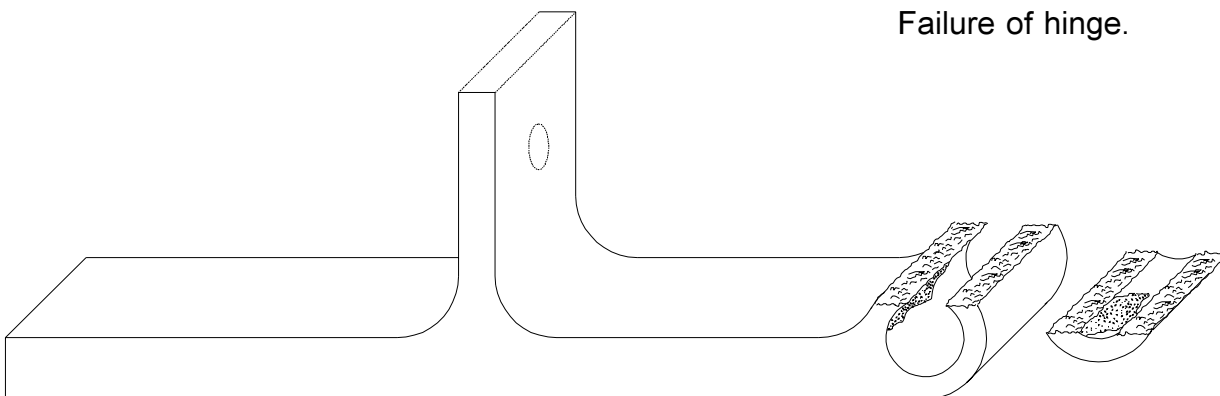


Figure 2

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10. Accomplishment Instructions :(Continued)

MEASURE PLAY ON CONTROL
SURFACE SIDE OF HINGE

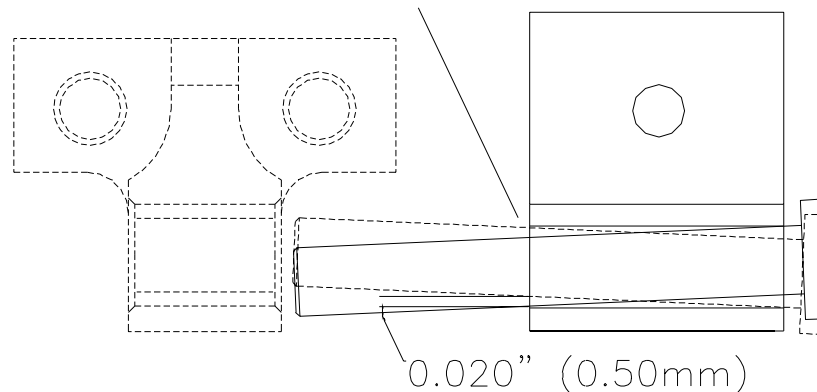
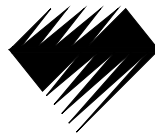


Figure 3

- 10.6** It is recommended that the hinges be painted to enhance corrosion protection. Use soap and water to remove all dirt and grease. Plug the hinge pin holes. Using a small paint brush apply a polyurethane based paint to the hinge surfaces.
- 10.7** On two part hinges there are two different ways that the cotter pin, pin and hinge are assembled. Install the control surfaces. Refer to figure 4a and 4b. Reinstall all of the pins with the head of the pin against the aircraft side hinge part as shown in figure 4b. On three part hinges the pin can be installed as it was removed.
- 10.8** It is important that the Loctite **not** contact the pin or hinge area where the bushing is installed. Apply the loctite 222 to the pin after sliding it part way through the hinge as shown in figure 4b.
- NOTE:** Use only Loctite 222. Subsequent removal of pins may not be possible if any other type of Loctite is used.
- 10.9** Rotate the pin several times once it has been installed to evenly distribute the Loctite. Push the head of the pin up against the hinge.
- 10.10** Orient the cotter pin hole so that the cotter pins can easily be installed once the Loctite has cured.

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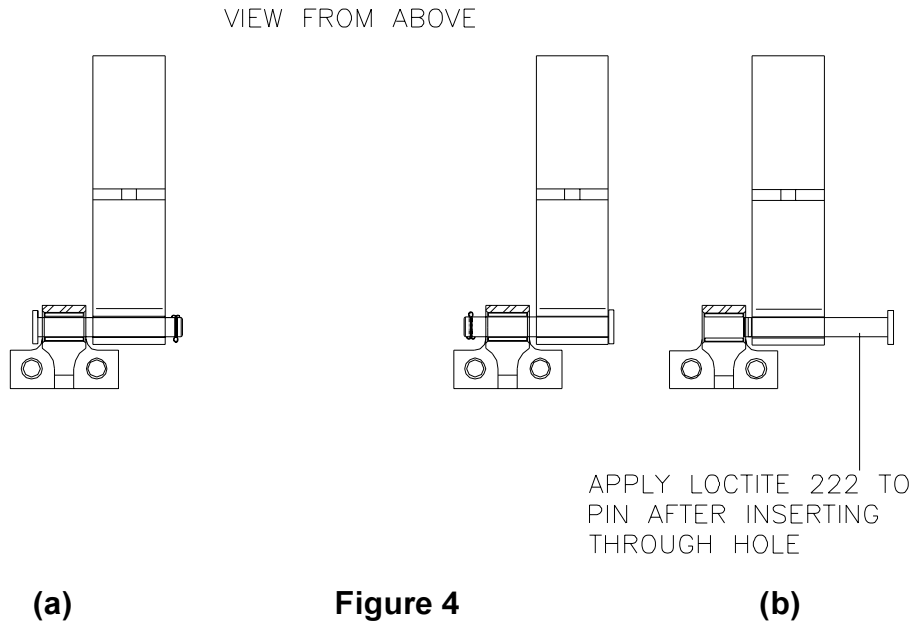
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10. Accomplishment Instructions: (Continued)



10.11 Allow 6 hours for the Loctite to cure at 22 degrees Celsius, 72 degrees Fahrenheit. Note that lower cure temperature will increase cure time.

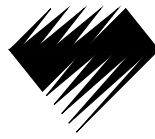
10.12 Check the radial play between the moving and fixed hinges. All hinge play must be within .010" (0.25mm). For any measurement outside of the .010" (0.25mm) range contact the Customer Support Department at Diamond Aircraft for detailed instructions concerning further maintenance action.

10.13 Install the cotter pins and reconnect the control surfaces in accordance with the maintenance manual.

To ease cotter pin installation, bend the cotter pin at a right angle about 1/3 of the way from the bottom. Use needle nose pliers to insert the pin into the hole. Use a 90 degree pick to hold the top of the cotter pin while grabbing the bottom of the pin (sticking out through the hole) with the needle nose pliers. Hold the bottom of the pin while applying pressure with the pick to straighten it. Pull the pin into the hole and bend the ends to secure it in place.

10.14 Ensure the appropriate log book entry is made.

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11. Weight and Balance: Not applicable.

12. Electrical Load Data: Not applicable.

13. Credit: A full labor credit of 5 hours will be issued upon receipt of a completed warranty claim form if received within 90 days from the issue date of this service bulletin.

To obtain satisfactory results, procedures specified in this service bulletin must be accomplished in accordance with accepted methods and current government regulations. Diamond Aircraft Industries Inc. cannot be responsible for the quality of work performed in accomplishing the requirements of this service bulletin.

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