



Service Bulletin SB-0003

Technical Portions FAA Approved

Epic Aircraft, LLC ♦ 22590 Nelson Road ♦ Bend OR 97701
Phone: 541-318-8849 ♦ Fax: 541-382-5125 ♦ Web: www.epicaircraft.com

Subject: Main Landing Gear Up-lock Contact

ATA-Code: 32-10

Labor: 16 hours (K003-K008)
12 hours (K009)

Effectivity: K003-K008 (All Steps)
K009 (Steps 6[D]-6[F])

Affected Model(s): E1000

Due: The next scheduled service interval.

Compliance: Mandatory

Recurrence: No

1 **BACKGROUND AND PURPOSE:**

On aircraft K003 – K008, it has been found that the up-lock hook can make contact with the MLG fork during landing gear extension. If the up-lock hook has an excessive amount of pre-load it can contact the MLG fork when the landing gear extend.

On aircraft K003 – K009, it has been found that the up-stops may not be properly safetied and need to be modified to prevent excess deflection with the landing gear retracted.

This Service Bulletin provides instructions to inspect for and repair damage caused by this condition, adjust the up-lock actuators to minimize further contact, modify and adjust the up-stops, and install protective plates.

2 **REFERENCES:**

Epic E1000 Airframe Maintenance Manual, PN SK05000000

3 **WARRANTY:**

For aircraft under warranty, parts and labor will be covered by Epic Aircraft, LLC if the work is performed within the compliance period and at an Authorized E1000 Service Center.

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4 TOOLS:

No.	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	Common hand tools.	A/R	☐	☒
2.	Hydraulic Aircraft Jacks, 10,000lb capacity.	3	☐	☒
3.	Lifting Pins, PN FK07100001	3	☐	☒
4.	Hydraulic Service Cart, (MIL-PRF-83282 or MIL-PRF-87257) 2500 psi, 3.5 gpm capacity.	1	☐	☒
5.	Spanner wrench set.	A/R	☐	☒
6.	Hinged spanner wrench, P/N AMF 52761	1	☐	☒
7.	Feeler gauge set, 0.002" - 0.062".	1	☐	☒

5 PARTS/MATERIALS:

No.	Part Number	Description	Qty	Epic Aircraft Supplied	Customer Supplied
1.	-	Chemical conversion coating conforming to MIL-DTL-5541.	A/R	☐	☒
2.	-	Type I, Class C1 or C2 epoxy primer conforming to MIL-PRF-23377	A/R	☐	☒
3.	MIL-PRF-83282 or MIL-PRF-87257	Hydraulic fluid.	A/R	☐	☒
4.	PK32100001	Protective Plate, Fork, MLG	2	☐	☒
5.	5915	3M VHB Tape, double-sided foam, .016 thick	A/R	☒	☐
6.	AN5H10A	Bolt, 5/16-24 x 1-3/32" Undrilled	2	☒	☐
7.	MS20995C32	Safety Wire, .032 Dia.	A/R	☒	☐
8.	AN970-4	Washer, Flat 1/4 x .063	2	☒	☐
9.	4 C5OX-SS	Parker: Fitting, Elbow, SAE-ORB / 37 DEG Flare	4	☒	☐

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6 INSTRUCTIONS:

A) Visually inspect the aft face of the left and right inboard MLG fork tabs for signs of contact from the up-lock hook (Refer to Figure 1).

B) If no damage is found, proceed to step (C)(6).

C) If damage is found proceed as follows:

1) Damage to paint and protective coatings only, proceed to step (3).

2) Damage to the aluminum, contact Epic Aircraft for disposition.

3) Apply a conversion coating to the repair as follows:

Caution: Abrasives containing iron such as steel wool, iron oxide, rouge, or steel wire are prohibited for all cleaning operations. Treated parts that have become soiled shall be cleaned with materials that will remove the soil without damaging the base metal, the part, or the conversion coating.

a) Prior to coating, the base metal shall be mechanically or chemically cleaned using 225S (phosphoric acid) cleaner diluted with 2 parts water, such that a water break-free surface is obtained after rinsing. While the aluminum surface is still wet, rinse thoroughly with clear water or wipe with a clean damp cloth. Allow surface to air dry or wipe dry with a clean cloth.

b) Apply chemical conversion coating conforming to MIL-DTL-5541 to cleaned aluminum non-electrolytically by spray, brush, or immersion for two to five minutes. Apply only an amount that can be coated and rinsed before the solution dries. Flush surface with cold water, or mop with a damp synthetic sponge rinsed occasionally in clean water. Allow surface to dry before painting.

Note: Chemical conversion coating (chromic acid) per MIL-DTL-5541 is amber in color and is not to be diluted.

4) Prime with Type I, Class C1 or C2 epoxy primer conforming to MIL-PRF-23377.

5) Paint the repaired area (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 51-20).

6) Install the left and right Protective Plates as follows:

Note: The procedure for installing the protective plate is the same for the left and right sides.

a) Clean the surface of the aft face of the left and right inboard MLG fork tabs with solvent (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 20-20).

b) Install the Protective Plate using 3M VHB Tape, P/N 5915 (Refer to Figure 3).

Note: Make sure the surface temperature of the MLG fork tab is at least 70 degrees F.

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D) Modify the up-stops as follows:

Note: The procedure for modifying the up-stops is the same for the left and right sides.

- 1) Remove the up-stop assembly by loosening the upper jam nut and unthreading the bolt from the up-stop bracket (Refer to Figure 5).
- 2) Replace the forward AN510A bolt that attaches the up-stop bracket to the up-lock bracket with an AN5H10A bolt (Refer to Figure 6). Torque the bolt (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 20-60).
- 3) Disassemble the up-stop assembly.
- 4) Replace the NAS1149F0432P washer on top of the bumper with the AN970-4 washer and reassemble the up-stop assembly.
- 5) Torque the lower jam nut to 12-15 in-lbs.
- 6) Install the up-stop assembly in the up-stop bracket as close to the up-stop bracket as possible. Do not tighten the upper jam nut.

Note: Up-stops will be adjusted in step (F).

E) Make sure the MLG and NLG up-lock rollers rotate freely (Refer to Figure 4):

- 1) If the roller rotates freely, no further action is required.
- 2) If the roller does not rotate freely, remove the cotter pin and loosen the nut.
- 3) Torque the nut (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 20-60).
- 4) Back the nut off two castellations and install the cotter pin.
- 5) Make sure the roller rotates freely.

F) Adjust the up-lock actuators as follows:

Note: The procedure for adjusting the up-lock actuators is the same for the left and right sides.

- 1) Raise the airplane using aircraft jacks. Ensure there is sufficient clearance from the ground to retract and extend the landing gear (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 7-10).
- 2) Remove the main landing gear doors (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 32-10.2[D][1]).

Note: Mark the position of the landing gear doors for reinstallation.

- 3) Connect a ground power unit to the airplane (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 24-40).
- 4) Connect the hydraulic service cart to the airplane.
- 5) Set the BATT 1 and BATT 2 switches to ON.

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6) Turn on the hydraulic service cart.

7) Retract the landing gear.

8) Measure the gap between the up-lock actuator and the up-lock hook on both main landing gear (refer to Figure 2).

Warning: Make sure to perform steps (10) through (12) before opening the system. The system must be fully depressurized before it is opened for maintenance.

9) If the gap is 0.002" - 0.0625", proceed to step (22). If the gap is less than 0.002" or greater than 0.0625", proceed to the next step.

10) Turn off the hydraulic service cart.

Warning: Stay clear of the landing gear until all hydraulic pressure has been bleed off. If there is not adequate system pressure remaining to move the main landing gear off the up-lock hooks, use the hydraulic cart to move the landing gear to the down and locked position to begin the pressure bleeding procedure.

11) Put the landing gear handle in the DN position.

Note: The landing gear may not fully extend to the down and locked position. Selecting DN or UP with hydraulic power off will move the main landing gear and begin bleeding off the pressure in the hydraulic system but may not extend the gear fully up or down.

12) Continue to cycle the landing gear handle DN and UP to bleed off all remaining hydraulic pressure. Make sure the MLG do not return to the down and locked position.

Warning: The hydraulic system can contain high pressures after engine shutdown. The sudden release of hydraulic fluid under pressure could cause serious injury or death. The system must be fully depressurized before it is opened for maintenance.

13) Disconnect the hydraulic lines and remove the elbow fittings from the up-lock actuator.

14) Manually press the up-lock actuator piston in to make sure it is fully retracted.

15) Cap and plug the open lines and ports.

16) Remove the safety wire from the up-lock actuator jam nuts.

Caution: The up-lock actuator body must be adjusted in 360° increments to keep the hydraulic connections in the correct positions.

17) Adjust the up-lock actuator so the piston is 0.002" - 0.0625" from the up-lock hook by loosening the outboard jam nut and rotating the body of the up-lock actuator in 360° increments (Refer to Figure 2).

18) Manually raise the landing gear onto the uplock hook and remeasure. Make sure the correct adjustment of the up-lock actuator is achieved.

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19) Manually retract the up-lock hook and put the landing gear in the down and locked position.

20) Torque the up-lock actuator jam nuts to 45 ± 5 ft-lbs using the AMF 52761 spanner wrench, then install safety wire.

Caution: Make sure the hydraulic lines are connected to the correct connections on the up-lock actuator. Reversing the connections could cause damage to the aircraft.

21) Remove the caps and plugs, install new elbow fittings, and connect the hydraulic lines to the up-lock actuator.

22) Repeat steps (13) through (21) on the opposite side.

23) Do the operational check of the landing gear (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 32-30[F]).

24) With the landing gear retracted, pull the GEAR CTRL circuit breaker. This will allow the landing gear to hang on the up-lock hooks.

25) Adjust the up-stop bumpers to just make contact with the lower damper bolt heads and snug the upper jam nut. (Refer to Figure 7).

26) Reset the GEAR CTRL circuit breaker and extend and retract the landing gear again.

27) With the landing gear retracted, pull the GEAR CTRL circuit breaker. Make sure the landing gear stay on the up-lock hooks in the retracted position.

Note: If the main landing gear doesn't stay on the up-lock hook, adjust the up-stop incrementally up and repeat steps (26) and (27) until the correct adjustment is achieved.

28) Reset the GEAR CTRL circuit breaker and lower the landing gear.

29) Torque the upper jam nut (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 20-60).

30) Install safety wire between the lower jam nut, upper jam nut, and the forward AN5H10A bolt that attaches the up-stop bracket to the up-lock assembly (Refer to Figure 6).

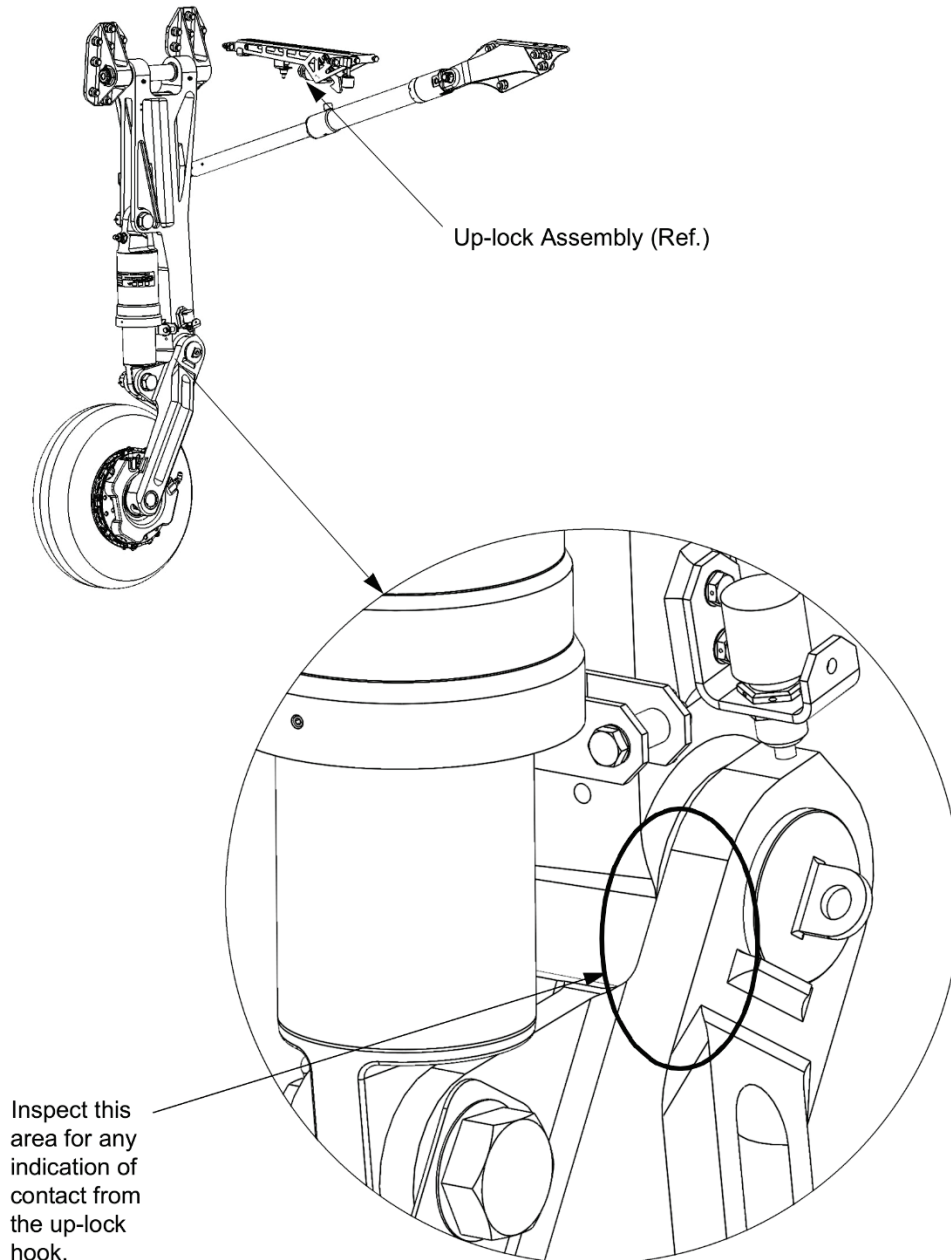
31) Install the main landing gear doors (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 32-10.2[D][2]).

32) Check the adjustment of the main landing gear doors (refer to the Epic E1000 Airframe Maintenance Manual, PN SK05000000, Chapter 32-10.2[D][3]).

33) Lower the airplane and remove the aircraft jacks (refer to the E1000 AMM PN SK05000000, chapter 7-10).

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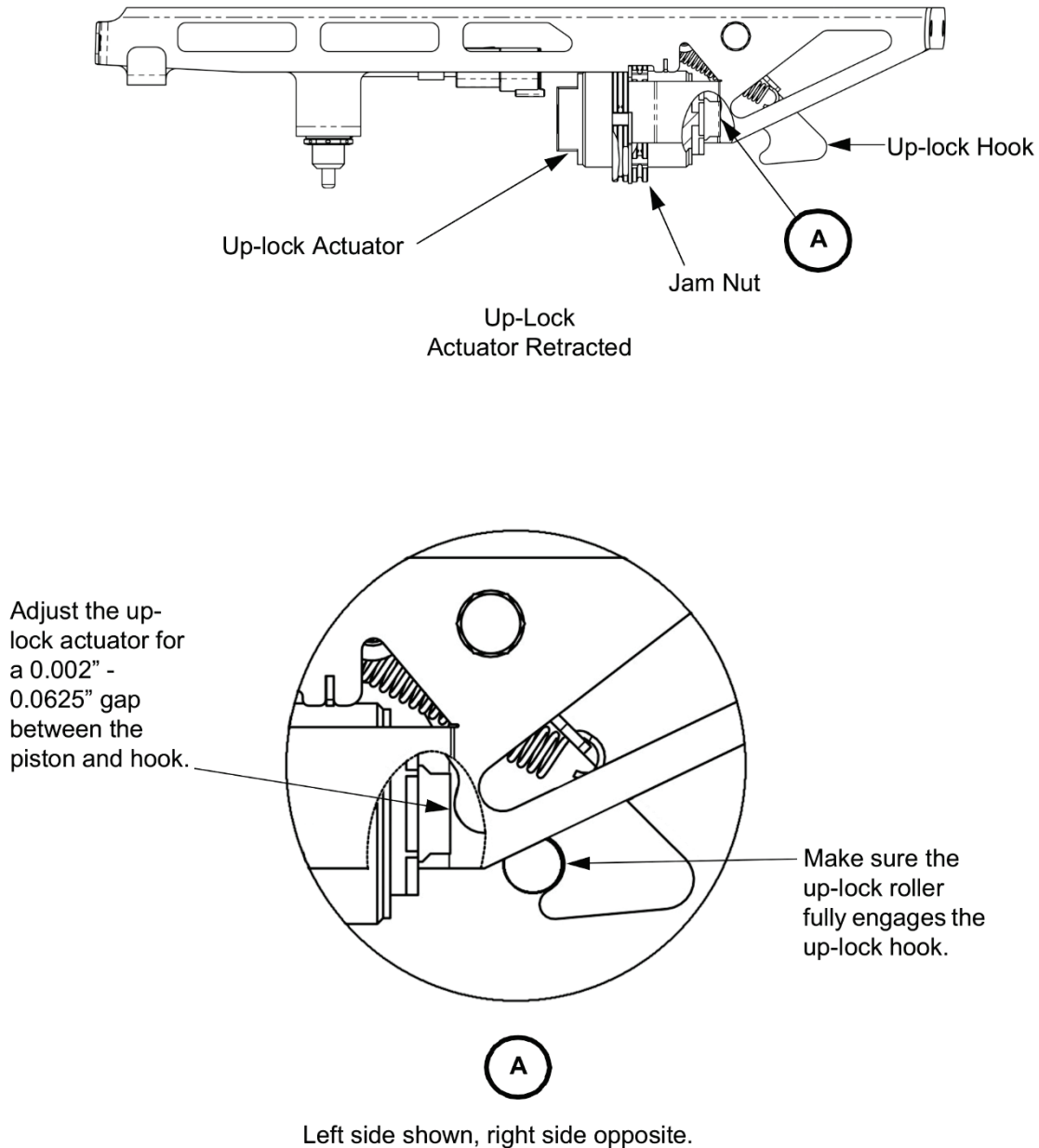
Figure 1: Main Landing Gear Up-lock Contact



Left side shown, right side opposite.

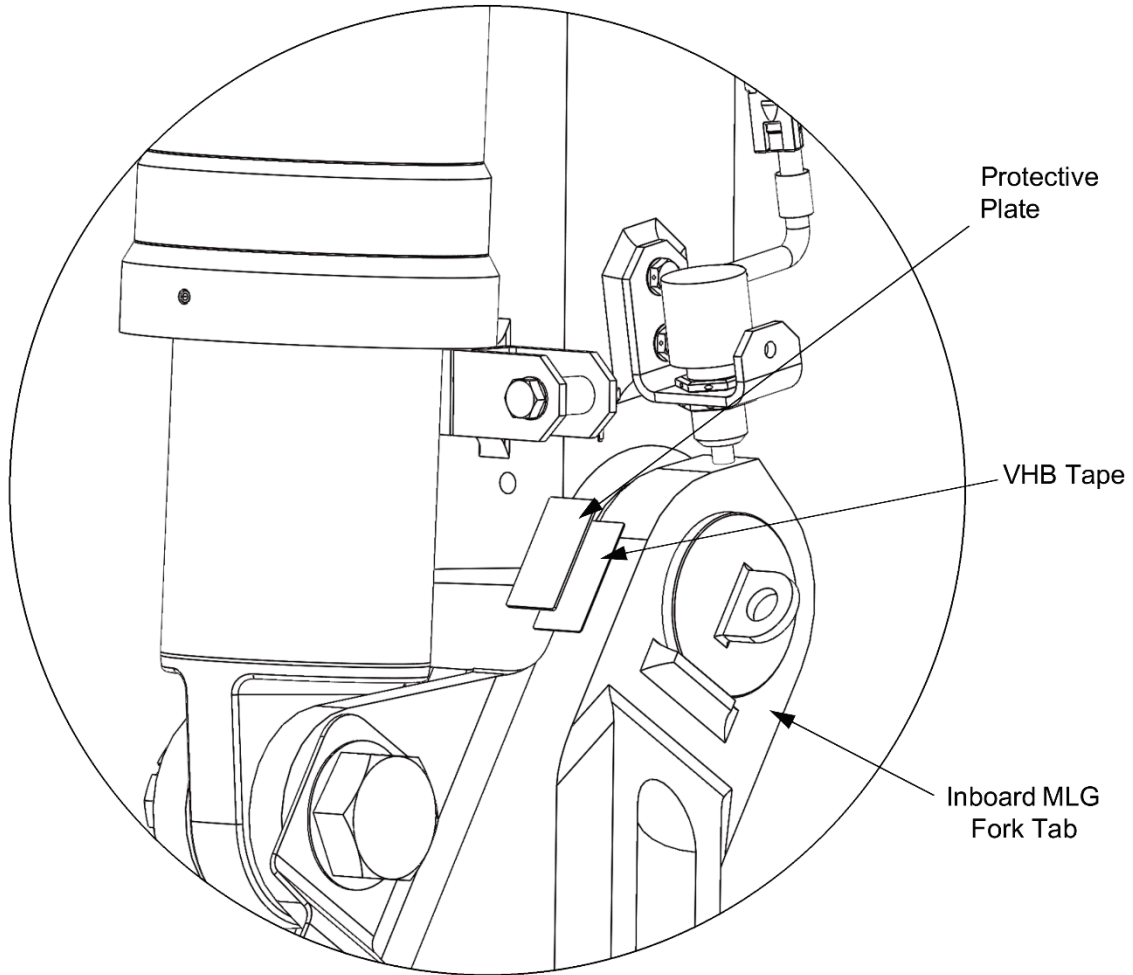
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Figure 2: Main Landing Gear Up-lock Contact



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Figure 3: Main Landing Gear Up-lock Contact



Left side shown, right side opposite.

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Figure 4: Main Landing Gear Up-lock Contact

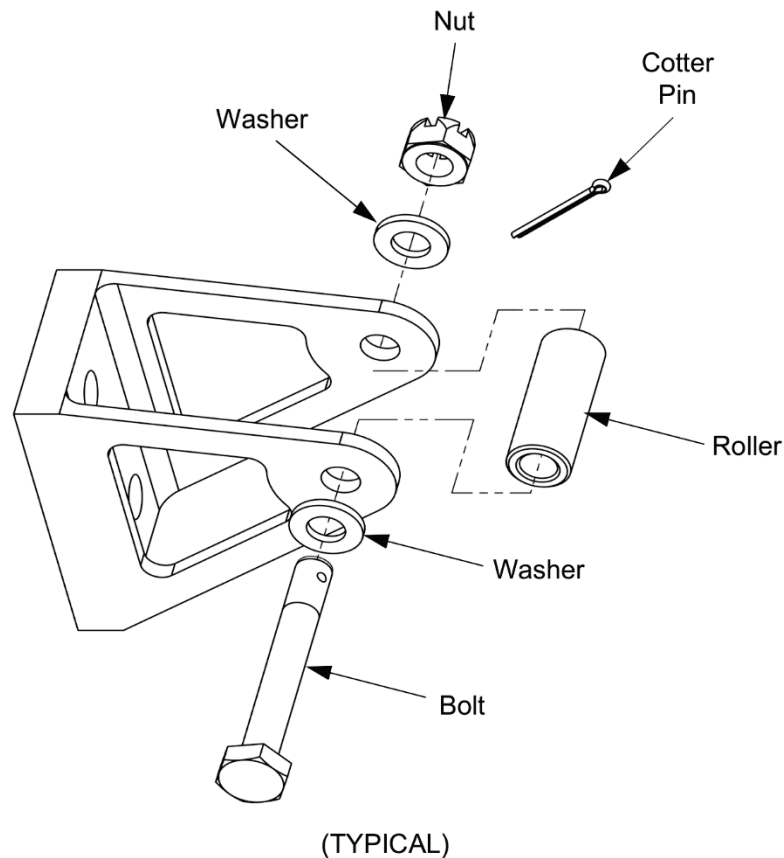
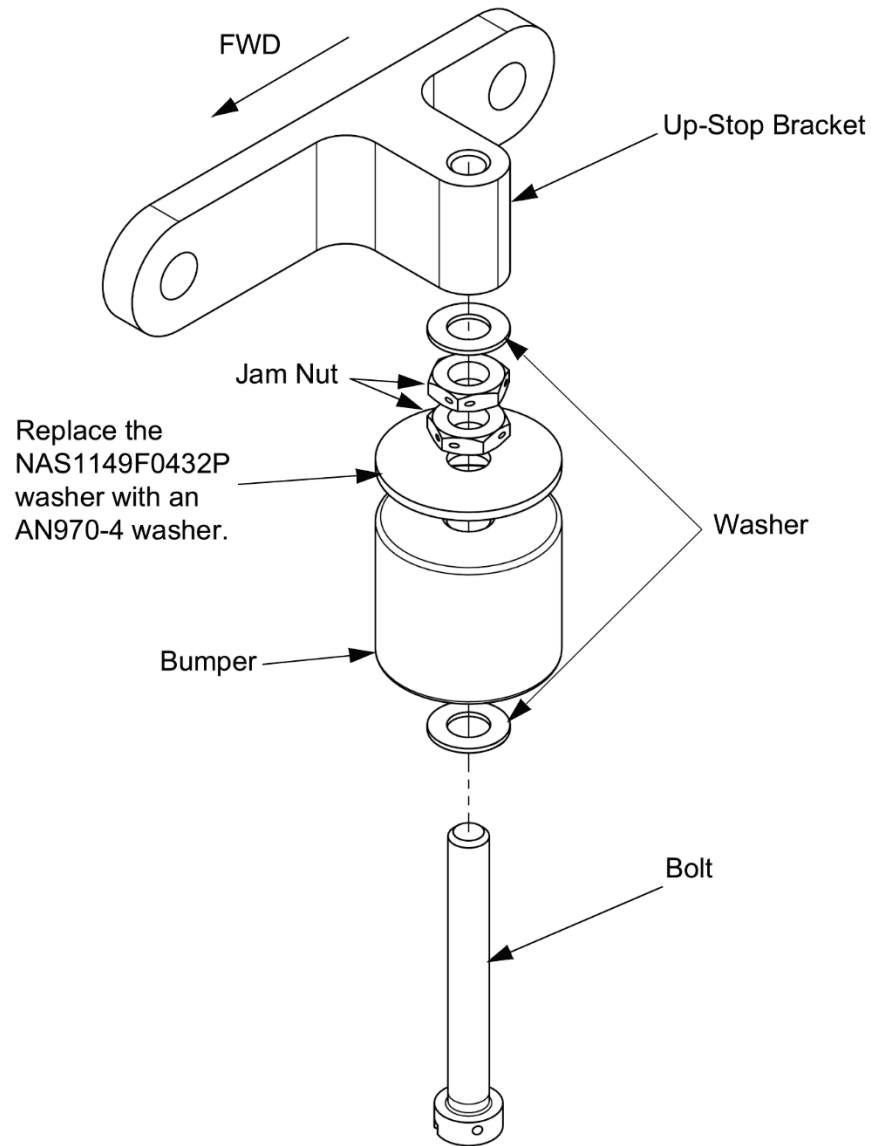


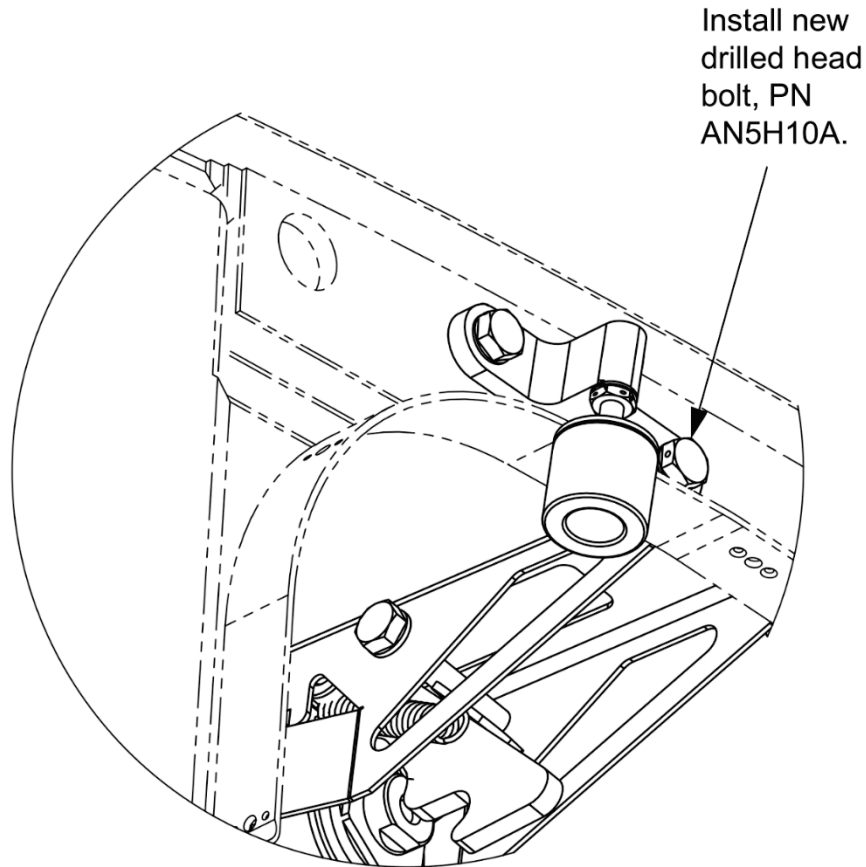
Figure 5: Main Landing Gear Up-lock Contact



(Right side shown, left side opposite.)

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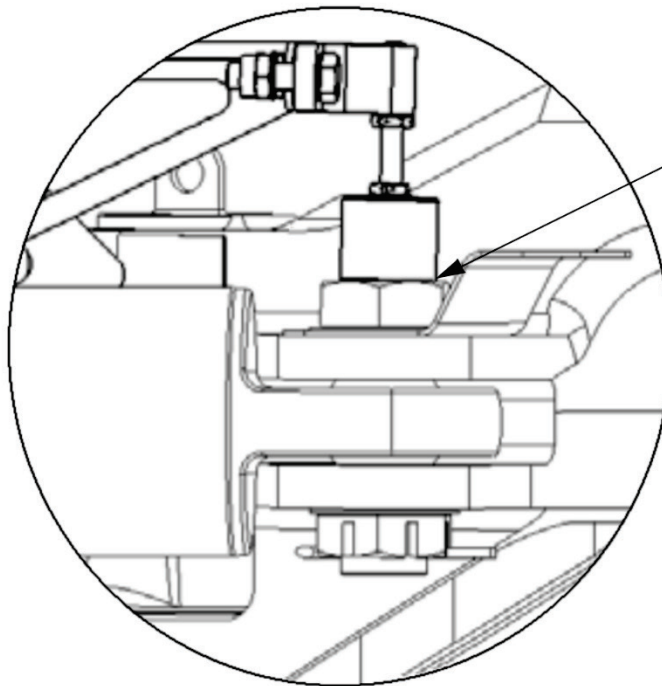
Figure 6: Main Landing Gear Up-lock Contact



(Left side shown, right side opposite.)

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Figure 7: Main Landing Gear Up-lock Contact



Adjust the up-stop so the bumper just contacts the bolt head when the landing gear is retracted.

(Left side shown, right side opposite.)

7 **WEIGHT AND BALANCE:**

Negligible

8 **PUBLICATIONS AFFECTED:**

Epic E1000 Aircraft Maintenance Manual P/N SK05000000
Epic E1000 Illustrated Parts Catalog P/N SK05000004

9 **RECORD COMPLIANCE:**

Make appropriate entry in airplane maintenance records.

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Appendix A: Compliance Letter

Please complete and mail this form to Customersupport@epicaircraft.com

This is to certify that I have completed the work in accordance with the Epic Aircraft, LLC Service Bulletin.

Aircraft Owner Information:

Date: _____ Aircraft Serial Number: _____ Aircraft Reg. Number: _____

Owner's Name: _____

Maintenance Entity Information

Name of Shop Performing the work: _____

Name of Person(s) Performing inspection and/or work: _____

Phone Number: _____ Email: _____

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