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SERVICE BULLETIN

SB-012624-A

ASSEMBLIES AND PARTS:

KIT NUMBER	PART NUMBER	DESCRIPTION	QUANTITY
ME001208	ICA016041	SWITCH ARM, MICRO, SPDT, ROLLER LEVER	2
	ICA016042	BRACKET, MOUNT, FWD POS, LIMIT SWITCH, NLG	1
	ICA016069	THUMB SCREW, PLASTIC HEAD, 10-32x.875	2

SPECIAL TOOLS:

- ITL012297 or equivalent 5 lb weight
- Rig Pins (ASN 00012, 00021+)
 - ITL002460-002 or equivalent .1875” rig pin
 - ITL002663 or equivalent .1625” rig pin
- ITL001714 NLG Rigging Tool (ASN 00001-00011, 00013-00020)
 - See “Note for 1.0 Configuration” below.
- Aircraft Battery Charger
 - Must be capable of charging battery to 14 V
 - Ex: Battery Tender 12V, 10 Amp Selectable Chemistry Battery Charger
 - Note: If charger automatically switches to a “maintenance” or “trickle charging” mode, charging may need to be reset to maintain 14 V.
- Digital Multimeter

INSTRUCTIONS:

It is permissible to disassemble the aircraft as required to permit accessibility, inspection, adjustment, maintenance, and repair in accordance with the latest release of the online ICON Aircraft [Maintenance Manual](#), ICA000833.

Note for 1.0 Configuration (ASN 00001-00011, 00013-00020)

1.0 configuration NLG parts are not compatible with rig pins. Instead, ITL001714 can be used to verify rig. To use ITL001714, fit the curved opening over the bellcrank, as shown in **Figure 1**.

- If the drag link fits within the hashed region of the tool (between the green lines in **Figure 2**), this is equivalent to a .1875” rig pin fitting.
- If the drag link fits within the raised region (between the red lines in **Figure 2**), this is equivalent to a .1625” rig pin fitting.

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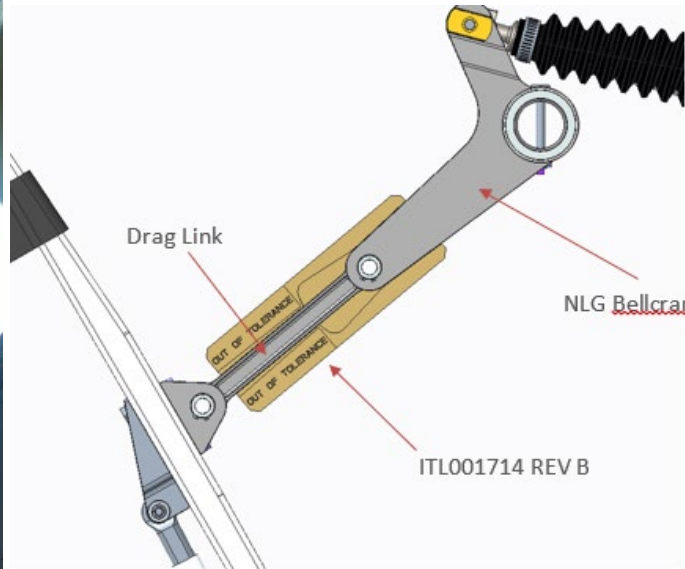


Figure 1. ITL001714

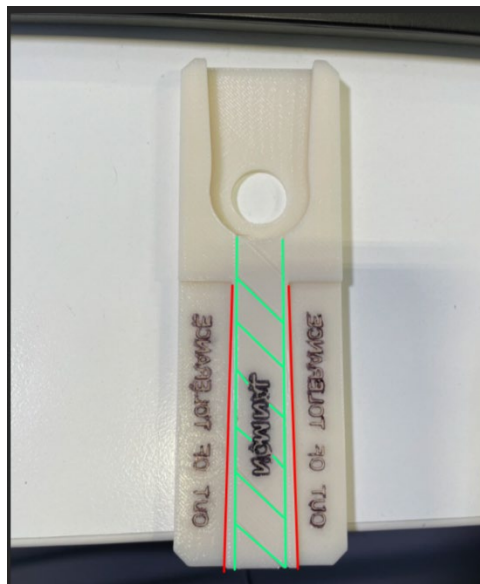


Figure 2. ITL001714 Rigging Interpretation

Additionally, 1.0 configuration parts are installed 90° from 1.2 configuration parts, with the limit switches below the adjuster bolt bracket rather than aft. The images in this document depict the 1.2 configuration.

Inspection

1. In lieu of jacking aircraft, support the nose as follows:
 - a. Remove the main landing gear 15A fuse from the overhead console. Save this fuse.



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- b. Remove instrument panel top(s) (See Aircraft Maintenance Manual Section 100514 or 100547/100397).
 - c. Fold the wings of the aircraft. This will move the center of gravity aft so that it is easier to lift the nose up and down during the NLG rigging checks.
 - d. Connect battery charger to the charging terminals. The charger used must have a selectable Lithium charging mode.
 - e. Have a foam block or equivalent nearby that can be placed under the aircraft on the keel aft of the NLG wheel well that will allow the nose wheel of the aircraft to have approximately 1 in or more clearance from the ground. This block will need to be removed numerous times during the procedure.
2. Charge aircraft battery to $14.0\text{ V} \pm 0.1\text{ V}$ (measured using a multimeter at the remote charging terminals) as measured with the MASTER switch in the ON position (this is higher than standard trickle charging).
 - a. This may be accomplished using a manually selectable chemistry charger set to “Lithium” mode.
 - b. CAUTION: Monitor battery voltage while charging to avoid damaging battery by over-charging.
 - c. The battery voltage must be maintained at $14.0\text{ V} \pm 0.1\text{ V}$, as measured with the MASTER switch in the ON position, prior to any landing gear extend and/or retract cycles.
 3. Inspect the nose landing gear (NLG) system (See Aircraft Maintenance Manual Section 100304).
 4. Confirm that the aircraft is properly rigged; as needed, re-rig:
 - a. Rig NLG system with gear UP.
 - i. Remove the bolt, washer, and rod which engage the doors from the NLG strut. **(Figure 4)**
 - ii. Attach 5lb weight (ITL012297) to NLG wheel.
 - iii. Confirm that 15A MLG fuse is removed and landing gear is in the DOWN position. Turn the MASTER switch to ON. Move LANDING GEAR switch to UP position to allow the landing gear to retract fully.
 - iv. When in the UP position a single sheet of paper should slide with minimal drag between the NLG strut and stop.

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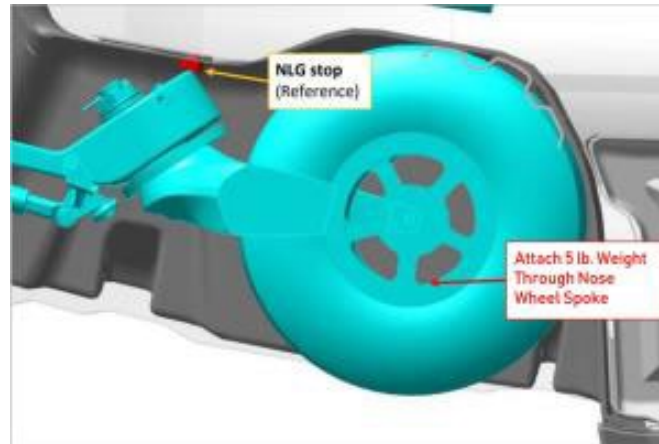


Figure 3. Rigging with gear up

- v. If adjustment is needed: Extend landing gear. Adjust rigging by loosening jam nut and adjusting crowned bolt for TOP bolt. Re-torque jam nut to 15±2 in-lbs. Cycle gear. Repeat as needed.
- vi. Verify MASTER switch is ON and the landing gear is UP. Move LANDING GEAR switch to DOWN position to allow the landing gear to extend fully.
- vii. Remove 5lb weight (ITL012297) from NLG wheel.
- viii. Install rod into NLG strut: Using isopropyl alcohol, clean surfaces where lubricant will be applied. Apply lubricant (ICA012078) liberally to threads and shank of bolt. Install rod into NLG strut with bolt and washer. Torque bolt to 25-28 in-lb. (Reference **Figure 4**)

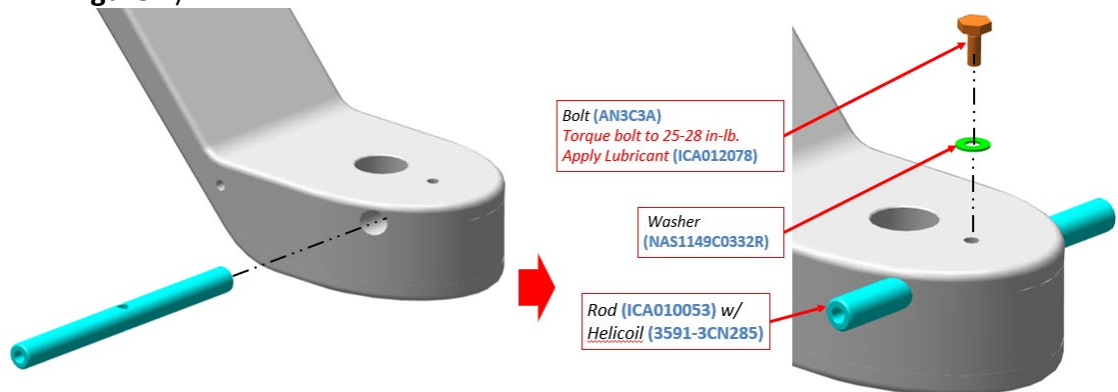


Figure 4. NLG Strut Hardware

- b. Validate rigging with gear DOWN: Cycle the nose landing gear 5 times (with MLG fuse removed), verifying correct function of the following:
 - i. Nose gear doors close fully against the fuselage skins with no gaps or looseness.
 - ii. There are uniform gaps between the edges of the doors and the fuselage joggle.
 - iii. The door flanges rest against each other.
 - iv. Instrument panel position lights indicate correctly.
 - v. Normal gear function with no blown fuses.



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- vi. .1875 rig pin fits (or equivalent for 1.0 config).
 - vii. If adjustment of the extended position is necessary, adjust rigging by loosening jam nut and adjusting crowned bolts (NAS428H3-7). Re-torque jam nut to 15±2 in-lbs.
5. Remove LH headlight to view limit switch during measurement (reference Maintenance Manual section 100515).
 - a. Disconnect D9033P from LH headlight.
 - b. Remove hardware retaining LH headlight to receptacle. Retain hardware for reinstallation.
 6. With the weight off the nose landing gear, gently rotate the NLG bellcrank forward with moderate hand pressure. Record the angle with a digital protractor (see **Figure 5**).
 7. With the weight off the nose landing gear, gently rotate the NLG bellcrank backward with moderate hand pressure. Record the angle with a digital protractor, taking care to take the measurement in the same location as before (see **Figure 5**).
 8. If the difference between the fwd and aft bellcrank measurements is greater than 1.5°, stop and replace the NLG actuator, including mounting eye bushings and bolts (reference Maintenance Manual sections 100425 and 100359) and repeat the steps above. If less than 1.5°, continue to step 9.

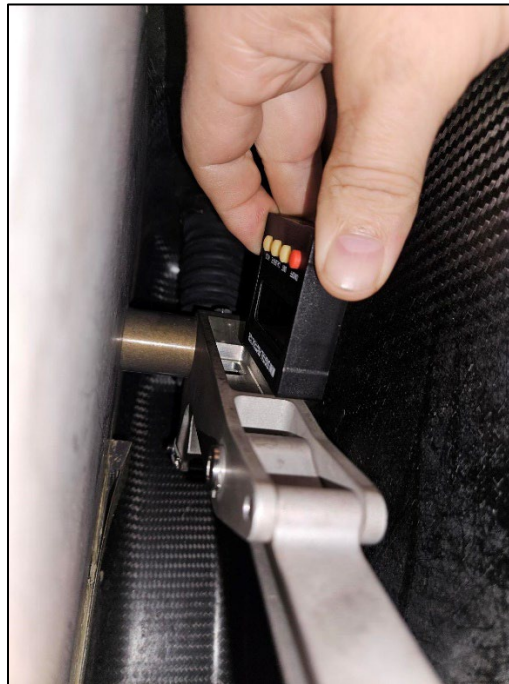


Figure 5. Bellcrank Measurement

9. Extend the landing gear, set the aircraft on the ground (aircraft weight on landing gear), and extend the wings.



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- a. While lowering the aircraft to the ground, carefully push the NLG bellcrank to the most extended point (over-extending slightly). To accomplish this, push aft on the portion of the bellcrank that extends toward the NLG leg.
10. With aircraft wings extended, both HT tips installed, NLG bellcrank manually rotated aft (over-extended position), and weight on wheels, .1625 rig pin (ITL002663) fits (or equivalent for 1.0 config).
11. With aircraft wings extended, both HT tips installed, NLG bellcrank manually rotated forward (under-extended position), and weight on wheels, .1625 rig pin (ITL002663) fits (or equivalent for 1.0 config).

NOTE: The remainder of the inspection is not required if completing the repair immediately.

12. Using pin gauges or feeler gauges, reach through the LH headlight opening to inspect the gap between the “extend” or “BOT” switch arm and the switch body just forward of the switch plunger (see **Figure 6**).
 - a. If this gap is zero (the switch arm is touching the switch body), inspect the switch body and the limit switch adjuster bolt bracket for cracks. If damage is found, contact ICON for further instructions.

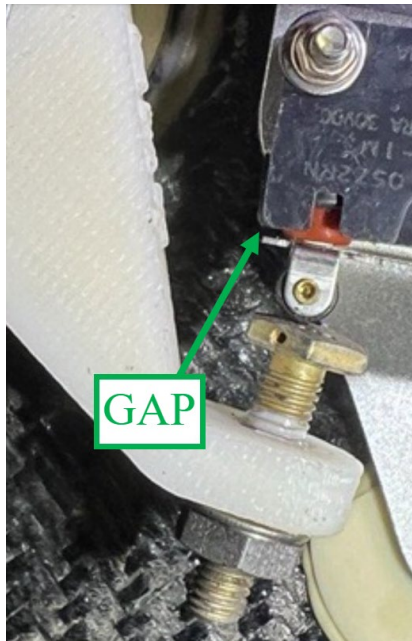


Figure 6. Switch Gap Measurement

- b. If the gap measurement is greater than .010 inch, **PASS. Continue to REPAIR or REASSEMBLY.**
 - i. If PASS, the repair can be deferred until the next condition inspection.
- c. If the measurement is less than .010 inch, **FAIL. Continue to REPAIR immediately.**



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Repair

1. In lieu of jacking aircraft, support the nose as follows:
 - a. Remove the main landing gear 15A fuse from the overhead console. Save this fuse.
 - b. Remove instrument panel top(s) (See Aircraft Maintenance Manual Section 100514 or 100547/100397).
 - c. Fold the wings of the aircraft. This will move the center of gravity aft so that it is easier to lift the nose up and down during the NLG rigging checks.
 - d. Connect battery charger to the charging terminals. The charger used must have a selectable Lithium charging mode.
 - e. Have a foam block or equivalent nearby that can be placed under the aircraft on the keel aft of the NLG wheel well that will allow the nose wheel of the aircraft to have approximately 1 in or more clearance from the ground. This block will need to be removed numerous times during the procedure.
2. Remove the NLG limit switch mounting bracket from the studs. Identify whether 8-32 or 10-32 studs were installed.
3. For aircraft with 10-32 studs, modify the new Limit Switch Bracket (ICA016042) by increasing the size of the 2x holes indicated in **Figure 7** to $.191" +.010/-0.000"$.

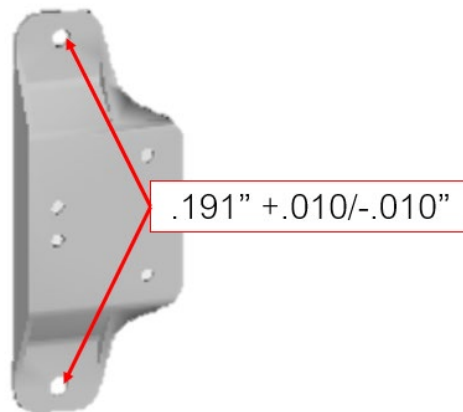
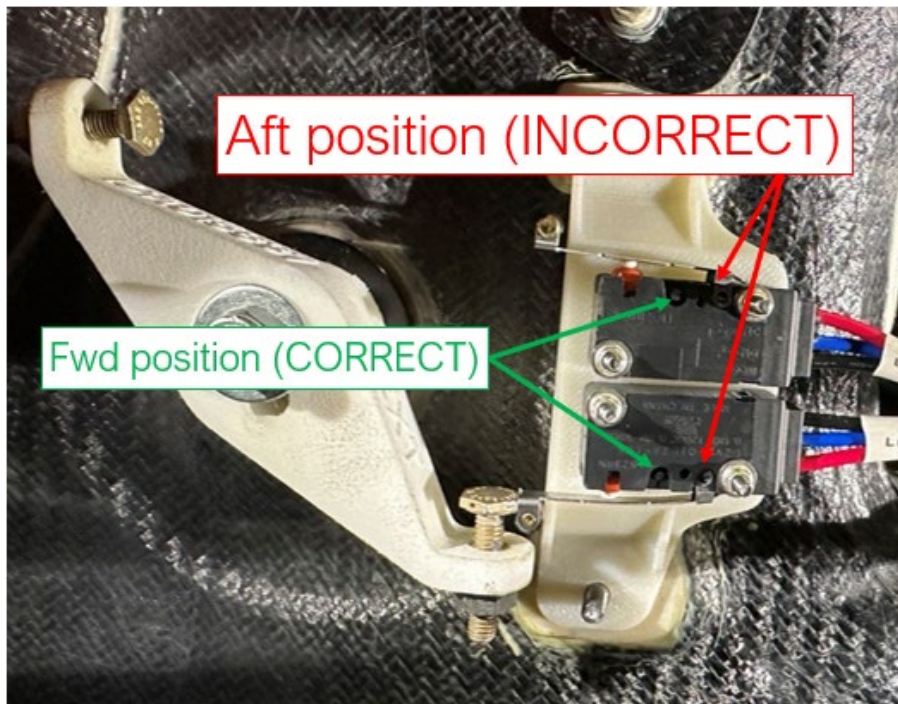
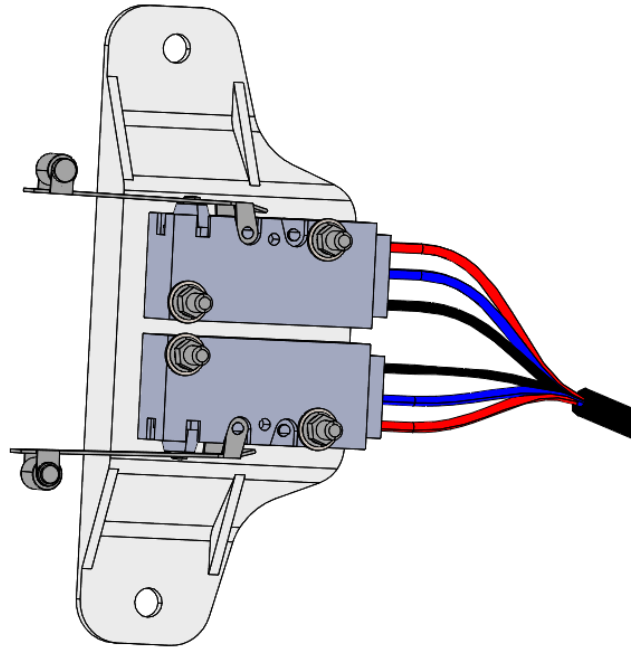


Figure 7. Bracket Modifications for 10-32 Studs

4. Remove Limit switches from existing mounting bracket by removing the two screws. Retain hardware.
5. Remove short switch arms from the aft position and install new long switch arms (ICA016041) on the **forward** position of the switches. (**Figure 8**)

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*Figure 8. Long Switch Arms Installed*

6. Re-install switches on new mounting bracket (ICA016042). Torque screws to 4 in-lb.
7. Remove the (2) adjuster bolts from the limit switch bracket assembly; retain jam nuts and washers. See **Figure 9**.

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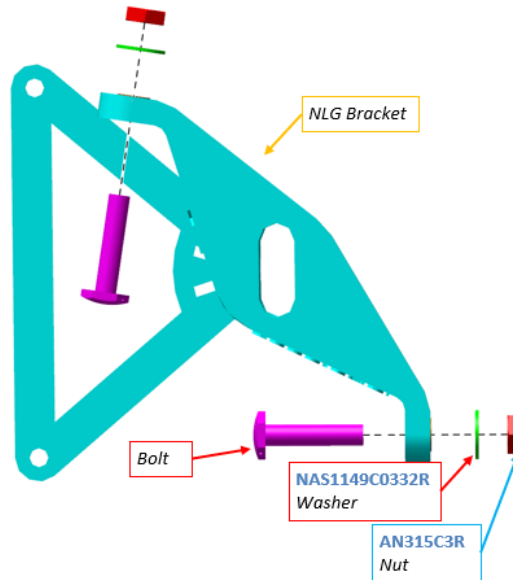


Figure 9. Adjuster Bolt Hardware Stackup

8. Using isopropyl alcohol, clean surfaces where lubricant will be applied. Apply lubricant (ICA012078) liberally to threads and shank of new thumbscrews (ICA016069).
9. Install thumbscrews in the same manner as the bolts from **Figure 9**.
 - a. Adjust screw on limit switch retrofit bracket so bottom (“BOT”) extended limit switch is activated. Adjust screw gap on limit switch retrofit bracket so that top (“TOP”) side has the same gap as the bottom.
 - b. Tighten jam nuts to a sharp rise in torque, taking care not to rotate the thumbscrews. A small rotation of the thumbscrew can significantly affect rig.
10. Using isopropyl alcohol, clean surfaces where lubricant will be applied. Apply ICA012078 Tef-Gel to the threads of the studs. Install limit switch assembly onto studs as shown in **Figure 10** below with:
 - a. If 8-32 studs were used: 2x NAS1149CN832R washers and 2x MS21043-08 nuts torqued to 14 in-lb.
 - b. If 10-32 studs were used: 2x NAS1149C0332R washers and 2x MS21043-3 nuts torqued to 20 in-lb.

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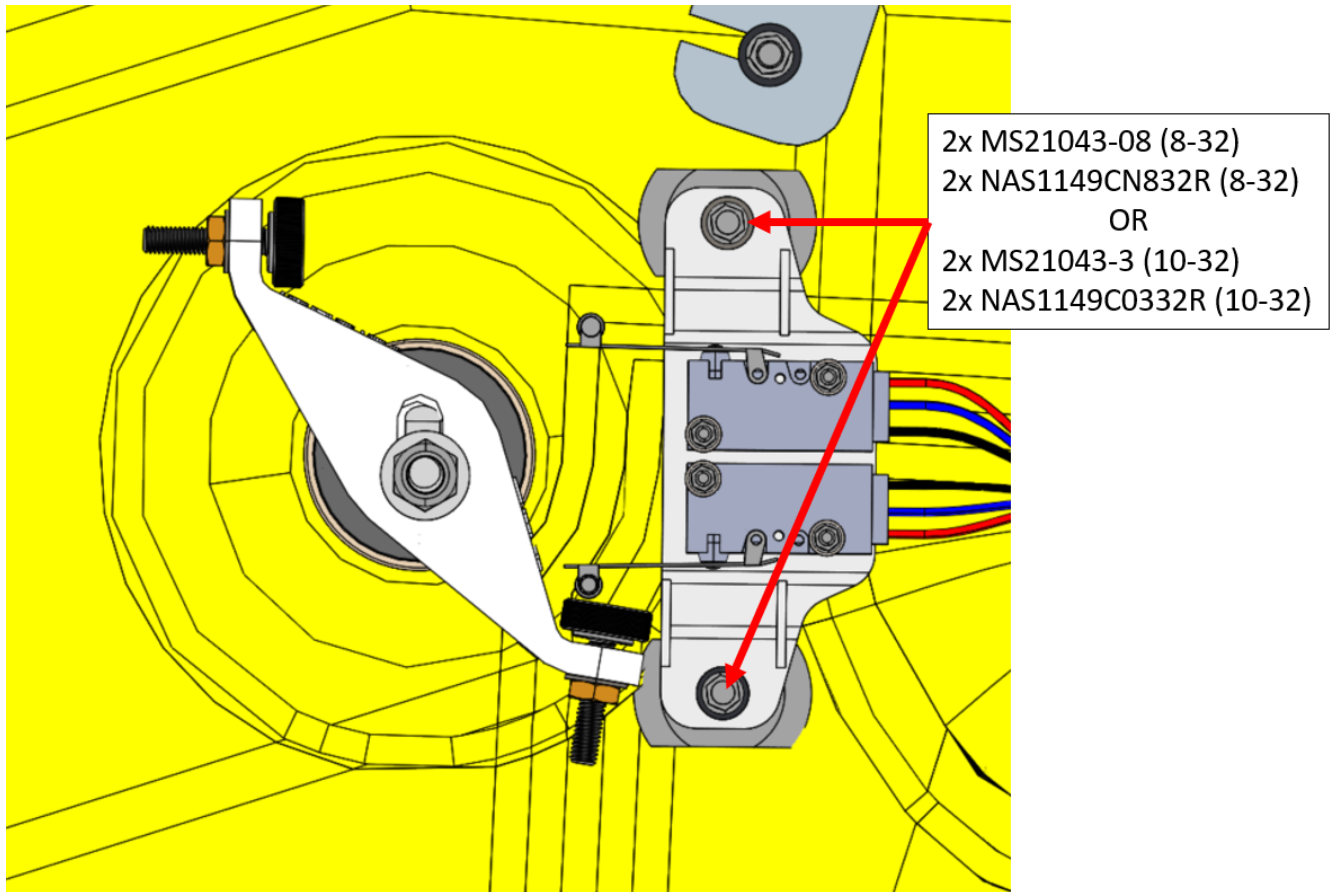


Figure 10. Installed limit switch subassembly; (1.0 config: Orient 90° clockwise)

11. Rig NLG system with gear UP.

- a. The battery voltage must be maintained at $14.0\text{ V} \pm 0.1\text{ V}$, as measured with the MASTER switch in the ON position, prior to any landing gear extend and/or retract cycles.
- b. Remove the bolt, washer, and rod which engage the doors from the NLG strut. **(Figure 4)**
- c. Attach 5lb weight (ITL012297) to NLG wheel.
- d. Confirm that 15A MLG fuse is removed and landing gear is in the DOWN position. Turn the MASTER switch to ON. Move LANDING GEAR switch to UP position to allow the landing gear to retract fully.
- e. When in the UP position a single sheet of paper should slide with minimal drag between the NLG strut and stop **(Figure 3)**.
- f. If adjustment is needed: Extend landing gear. Adjust rigging by loosening jam nut and adjusting thumbscrew slightly (approx. $1/8$ turn or less). Carefully re-torque jam nut to 15 ± 2 in-lbs. Cycle gear. Repeat as needed.



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- g. Verify MASTER switch is ON and the landing gear is UP. Move LANDING GEAR switch to DOWN position to allow the landing gear to extend fully.
 - h. Remove 5lb weight (ITL012297) from NLG wheel.
 - i. Install rod into NLG strut: Using isopropyl alcohol, clean surfaces where lubricant will be applied. Apply lubricant (ICA012078) liberally to threads and shank of bolt. Install rod into NLG strut with bolt and washer. Torque bolt to 25-28 in-lb. (Reference **Figure 4**)
12. Validate rigging with gear DOWN: Cycle the nose landing gear several times (with MLG fuse removed and battery voltage maintained at $14.0\text{ V} \pm 0.1\text{ V}$ with master switch ON), verifying correct function of the following:
- a. Nose gear doors close fully against the fuselage skins with no gaps or looseness.
 - b. There are uniform gaps between the edges of the doors and the fuselage joggle.
 - c. The door flanges rest against each other.
 - d. Instrument panel position lights indicate correctly.
 - e. Normal gear function with no blown fuses.
 - f. .1875 rig pin fits (or equivalent for 1.0 config).
 - g. If adjustment of the extended position is necessary, adjust rigging by loosening jam nut and adjusting thumbscrew (ICA016069) slightly (approx. 1/8 turn or less). Carefully re-torque jam nut to 15 ± 2 in-lbs.
 - h. With aircraft wings extended, both HT tips installed, NLG bellcrank manually rotated aft (over-extended position), and weight on wheels, .1625 rig pin (ITL002663) fits (or equivalent for 1.0 config).
 - i. With aircraft wings extended, both HT tips installed, NLG bellcrank manually rotated forward (under-extended position), and weight on wheels, .1625 rig pin (ITL002663) fits (or equivalent for 1.0 config).

REASSEMBLY:

1. Reinstall LH headlight hardware and connector in accordance with the Aircraft Maintenance Manual, section 100352.
2. Reinstall MLG 15A fuse.
3. It is permissible to reassemble the aircraft, as required pursuant to maintenance and repair, in accordance with the latest release of the ICON Aircraft [Maintenance Manual](#), ICA000833.

VERIFICATION:

1. Confirm rigging was validated in final steps of repair sequence above.
2. Confirm MLG fuse has been reinstalled.



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Logbook Entry:

"I hereby certify the **INSPECTION PORTION ONLY** has been completed in accordance with Service Bulletin (SB-012624-A, NLG Limit Switch Over-Engagement) and all referenced documents. **REPAIR has been deferred to next condition inspection, at which point the repair is mandatory.** Potentially unclear procedures have been clarified with ICON Aircraft (ref. FAA Exemption 10829C)".

OR

"I hereby certify the inspection and repair have been completed in accordance with Service Bulletin (SB-012624-A, NLG Limit Switch Over-Engagement) and all referenced documents. Potentially unclear procedures have been clarified with ICON Aircraft (ref. FAA Exemption 10829C)".

For aircraft registered outside the U.S., omit "(ref. FAA Exemption 10829C)"

If you have questions, comments, or concerns about this Service Bulletin and/or if you are no longer owner/operator of this aircraft, please forward this information to the present owner/operator and notify ICON Aircraft at:

ICON Aircraft
2141 ICON Way, Suite 100
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(707) 564-4000

support@iconaircraft.com

Please include the aircraft registration number, serial number, your name, and if known the contact information of the new owner/operator.