

**DATE RELEASED**

07-09-24

**DATE EFFECTIVE**

07-01-24

**SUBJECT**

Nose landing gear leg vendor material defect

**EFFECTIVITY****MODEL-R7****SERIAL NO:** 10196-10228**Synopsis:**

Vashon Aircraft has found that our vendor supplied a non-conforming material for the side brace tubes that make up the 812601 nose landing gear weldment. This finding has been realized after receiving several field reports of bent nose landing gear legs, following landings below the limit landing acceleration loads that the Ranger was substantiated to. If not corrected, this could lead to a propeller strike and possible airframe damage.

The portion of the weldment in question is the shorter, 810401 side brace tubes shown in Figure 2 (not the 810403 main strut tube). The 810401 tubes are supplied to Vashon Aircraft from a third party that performs the cope cut operation. Vashon Aircraft has discovered that the third party fulfilled an order with an unconfirmed percentage of parts made from material that does not conform to the 810401 drawing. The non-conforming material does not exhibit the necessary allowable strength requirements and is not heat treatable. While a certification of conformance and material certifications were supplied from the third party, non-conforming parts still entered our inventory. The weldments passed the heat treat quality check because the strength validation gets performed on the 810403 main strut tube.

**REQUIRED ACTION**

Inspect the nose landing gear leg by following the instructions laid out in the "Method of Compliance" section. This inspection tests the 810401 side brace tubes for Rockwell C hardness (HRC). The hardness metric is proportional to heat treatment strength, so if the 810401 side brace tube does not register on the HRC scale (i.e. not heat-treated), then it is clear that the part is made from the non-conforming material.

- If either one of the 810401 tubes do NOT register on the HRC scale, then the part is non-conforming and the nose landing gear weldment needs to be replaced.
- If both 810401 tubes register on the HRC scale, then the part is conforming and does not need to be replaced.

**TYPE OF MAINTENANCE:**

Low

**MINIMUM LEVEL OF CERTIFICATION:**

Owner

**TIME OF COMPLIANCE:**

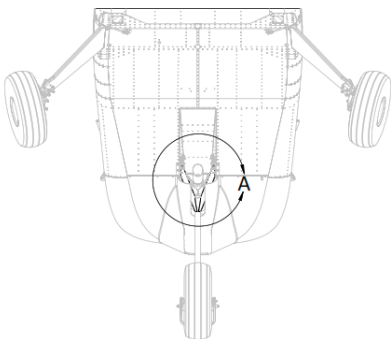
Within next 10 hours

**MATERIALS REQUIRED:**

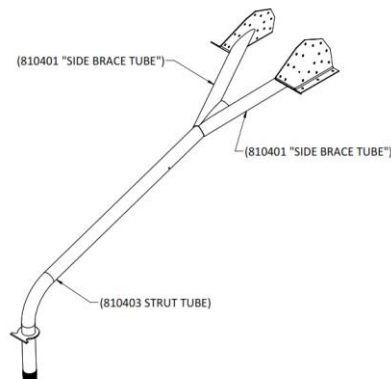
- Sandpaper
- Hardness Testing Device (supplied by Vashon aircraft—please return)
- High Gloss Spray Paint, White

**METHOD OF COMPLIANCE**

**Step 1:** Locate the 810401 side brace tubes on the nose landing gear leg weldment under the belly of the aircraft and near the exhaust collector.

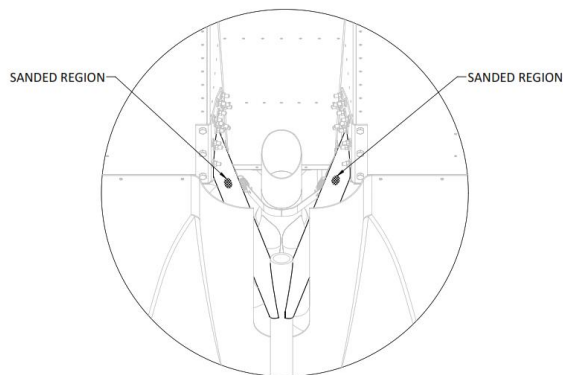


**Figure 1: Belly View**



**Figure 2: 812601 Nose Landing Gear Weldment**

**Step 2:** Using a piece of sandpaper, sand off the white powder coat until roughly a ¼ inch circle of bare metal is visible in an accessible spot on the 810401 side brace tube. (see Figure 3).



**Figure 3: Detail A**

Step 3: Plug in the impact device into the display, set the hardness test device to measure “Steel & Cast Steel”, and to set the metric to “HRC”. (see Figure 4 below)



**Figure 4:** Hardness Tester Display

Step 4: On the impact device, slide the sleeve all the way down to load the impact body. At this point, the impact device is ready to be triggered.



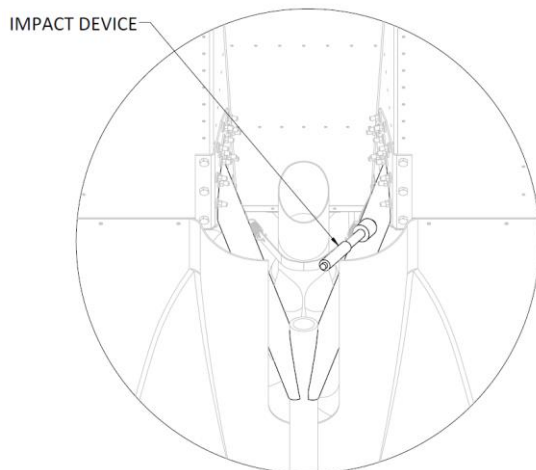
**Figure 5:** Impact Device Sleeve



**Figure 6:** Loading Impact Device

**Step 5:** Place the impact device base directly on top of the bare metal that was sanded. *NOTE: It is important that the axis of the device is placed perpendicular to the tube and that you and the device are stable during the test.* Push the release button on the top of the device. You will hear the plunger impact the tube and bounce back a few times. The display will then show the hardness reading. If it registers on the HRC scale, a number will be present. If it does *not* register, then a downwards arrow will be present with no number (see Figure 8).

\*If a hardness value does not show on the display, test a few more times to make sure the device is mounted firmly on the surface of the tube and not pointing at an angle. (Each impact test requires the device to be triggered by sliding the sleeve down, as described in Step 4).



**Figure 7:** HRC Test on Tube



**Figure 8:** Non-registered hardness

**Step 6:** If the test registers on the HRC scale, then that tube can be considered conforming, and this process must be repeated for the adjacent 810401 tube on the weldment.

If either one of the 810401 tubes do not register on the HRC scale after testing multiple times, then the nose landing gear leg needs to be replaced. Contact Vashon Aircraft for parts procurement and install per the aircraft maintenance manual.

**Step 7:** Coat the exposed, bare metal with a high gloss, white paint (*Only applicable if both 810401 tubes are conforming and the weldment does not need to be replaced*).

**Step 8:** Make a logbook entry indicating compliance to this service bulletin and notify Vashon Aircraft of the results.

**LABOR REQUIRED:**

0.5 hrs for Inspection only

7 hrs for nose landing gear replacement (if applicable)