

Skid Tube Replacement

NOTE

All work must be accomplished in accordance with the Enstrom TH-28/480 Series Maintenance Manual and FAA AC 43.13-2A.

This document provides instructions for replacing a landing gear skid tube. Refer to the TH-28/480 Series Maintenance Manual, Paragraphs 8-50 through 8-55, for general maintenance instructions, as directed.

1.0 Set up

- 1.1 The following parts are required to complete the replacement of one skid tube.

<i>Description</i>	<i>Part Number</i>	<i>Quantity</i>
Skid Tube Assembly	4174003-3	1
Rivet*	CR3113-6-03 or CR3243-6-03	10
Non-Skid Coating	X-1567 Wing Walk, <i>Randolph Aircraft Products Co.</i> , or equivalent	As required to coat 272 in ² (1756 cm ²)
* Applicable to aircraft with a ground handling wheel saddle that is riveted to the skid tube.		

- 1.2 The following items are required to complete the replacement of a skid tube.

<i>Description</i>	<i>Part Number</i>	<i>Quantity</i>
Tooling struts	-	2
Tape measure	-	1
Jacks and or suitable tailcone support	-	A/R
Hose clamp	20040S, or equivalent	5
Drill & bit set	-	1
Rivet gun	-	1
Prop protractor	-	1
Masking tape/materials	-	A/R

- 1.3 Make two tooling struts as shown in *Figure 1(a)*. These tooling struts will be used to hold the landing gear in the correct position after the oleo struts are removed (*Figure 1(b)*).
- 1.4 Measuring from the aft end of the replacement skid tube, mark the skid tube at the (a) and (b) locations shown in *Figure 2*. **NOTE:** The location of the remaining skid tube assembly parts identified in *Figure 2* cannot be marked until the skid tube is positioned in the landing gear legs.

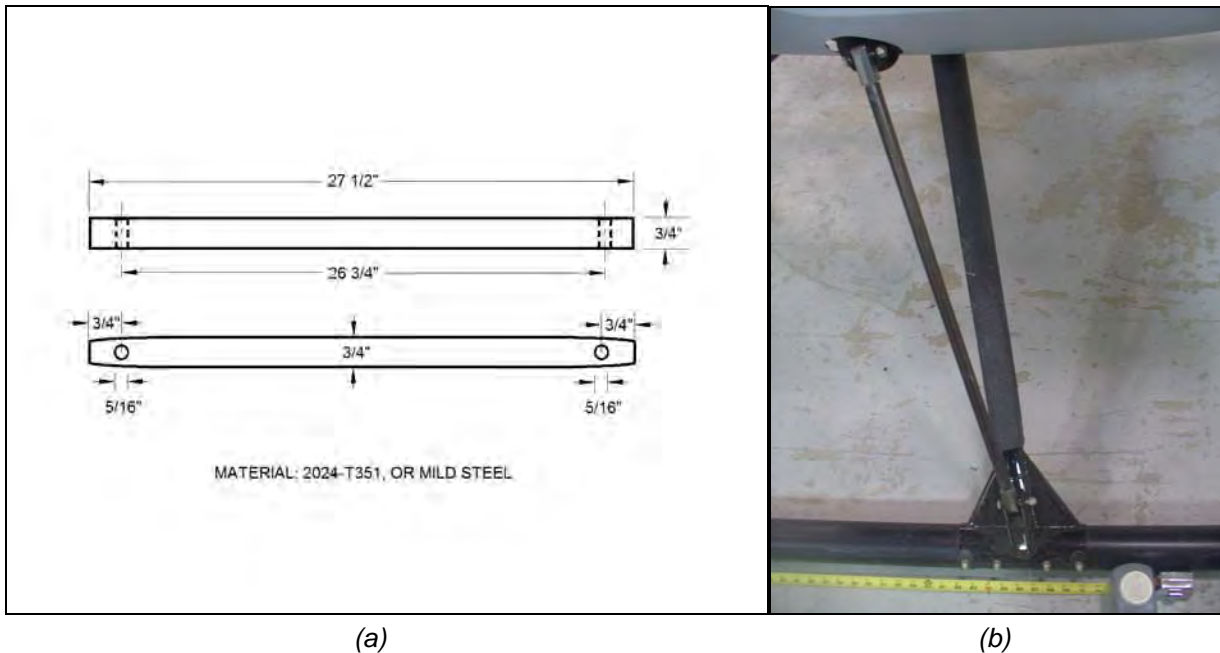


Figure 1. The tooling struts will be used to hold the landing gear in the correct position after the oleo struts are removed. The tooling strut drawing schematic is shown in (a). The forward landing gear with the tooling strut installed in place of the oleo strut is shown in (b). The schematic is not to scale.

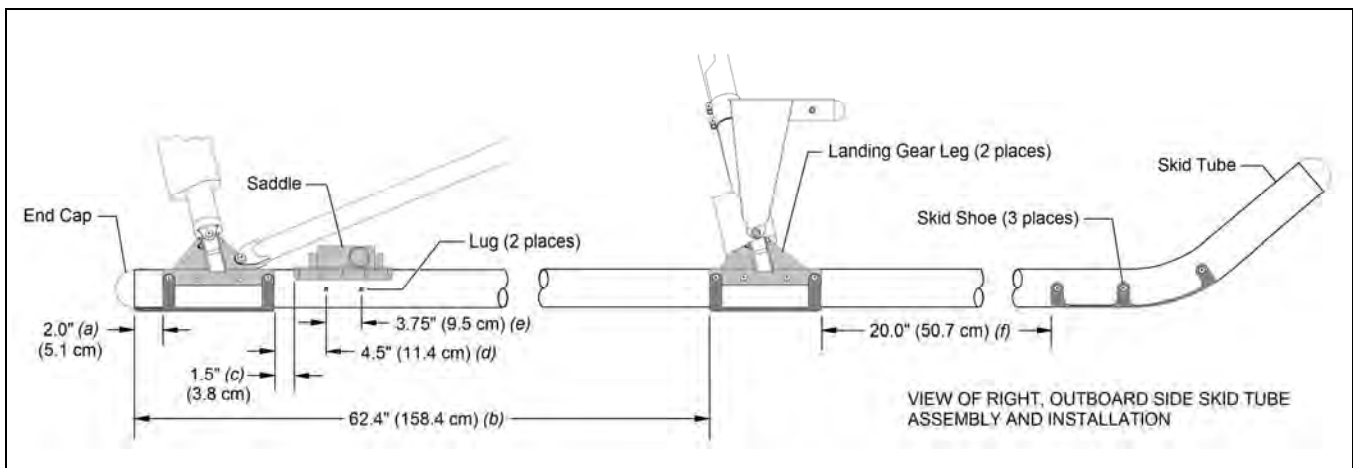


Figure 2. The locations of the aft (a) and the forward (b) landing gear legs on the skid tube are measured from the aft end of the skid tube (not including the end cap). The location of the saddle (c) is measured from the forward edge of the aft landing gear leg. The location of lug (d) is measured from the forward edge of the aft landing gear leg. The location of lug (e) is measured from the location of lug (d). The location of the forward skid shoe (f) is measured from the forward edge of the forward landing gear leg. The schematic is not to scale.

2.0 Hoist the aircraft

- 2.1 Remove the landing gear fairings per Maintenance Manual Paragraph 8-57,B to prevent damage to the fairings during removal of the oleos.
- 2.2 Jack the aircraft per Maintenance Manual Paragraph 4-69. The skids should be approximately 12-15 inches (20-25 cm) above the floor.
- 2.3 Remove the oleo struts from side of the landing gear to be replaced per Maintenance Manual Paragraph 8-65. **NOTE:** The oleos do not require depressurization.
- 2.4 Install the two tooling struts from step 1.3. Refer to *Figure 1(b)*.

3.0 Remove the existing skid tube and disassemble (reference *Figure 3*)

- 3.1 Remove the bolts (8), washers (9)(11), and nuts (10) attaching the skid shoes (5)(6)(7) and the skid tubes to the landing gear legs.
- 3.2 Remove the skid shoes from the skid tube and remove the skid tube from the landing gear legs.
- 3.3 Inspect the landing gear legs for damage in accordance with Maintenance Manual paragraph 8-52, B.
- 3.4 Inspect the skid shoes if they are to be installed on the new skid tube per Maintenance Manual paragraph 8-62.
- 3.5 Remove the ground handling bolts (22) or the ten rivets or bolts (26) attaching the ground handling wheel saddle (25) to the skid tube. If the saddle is riveted to the skid tube, use care when removing the rivets to avoid damage to the saddle. If the saddle is bolted to the skid tube, retain the two nutplate strips located inside the skid tube.
- 3.6 Inspect the saddle if it is to be installed on the new skid tube for excessive wear or damage, as applicable.
- 3.7 Inspect the saddle nutplate strips if they are to be installed in the new skid tube for excessive wear or damage, as applicable.

4.0 Position the replacement tube

- 4.1 Level the aircraft per Maintenance Manual paragraph 8-67.
- 4.2 Insert the skid tube into the landing gear legs with the toe pointed forward and upward. Place wood blocks under the skid tube to support it for steps 4.3 through 7.2.
- 4.3 Locate the skid tube with the two measurement marks from step 1.4 (*Figure 2(a) and (b)*) at the aft edges of the aft and forward landing gear legs.
- 4.4 Rotate the skid tube so the toe is vertical when viewed from directly in front.

- 4.5 Make sure the skid tube is seated firmly in the landing gear legs. Install two P/N 20040S hose clamps, or equivalent, around each leg to hold the skid tube in place.
- 4.6 Recheck the position of the legs with the marks on the skid tube and the vertical alignment.

5.0 Locate landing gear leg holes

- 5.1 Locate the holes for the landing gear legs in the skid tube from the holes in the legs.
- 5.2 Drill four 1/8" (3.2 mm) pilot holes and open to 7/32" (5.6 mm) on each side of the skid tube.
- 5.3 Drill through the near and far holes to a final 1/4" (0.250"/6.35 mm) diameter.

6.0 Locate ground handling wheel attachment holes

NOTE

Early production TH-28/480 aircraft used two attachment lugs (bolts) for the ground handling wheel installation. Proceed to step 6.5 for aircraft with this installation.

- 6.1 Locate the saddle position with the measurement mark from step 1.4 (*Figure 2(c)*) at the aft edge of the saddle. Install one P/N 20040S hose clamp, or equivalent, around the saddle and skid tube to hold the saddle in place. **NOTE**: The saddle should be upright with the chamfered lug on the forward side.
- 6.2 Locate the holes for the saddle in the skid tube from the holes in the saddle.

NOTE

The saddle may be either riveted or bolted. Proceed to step 6.3 for drilling the rivet holes. Proceed to step 6.4 for drilling the bolt holes.

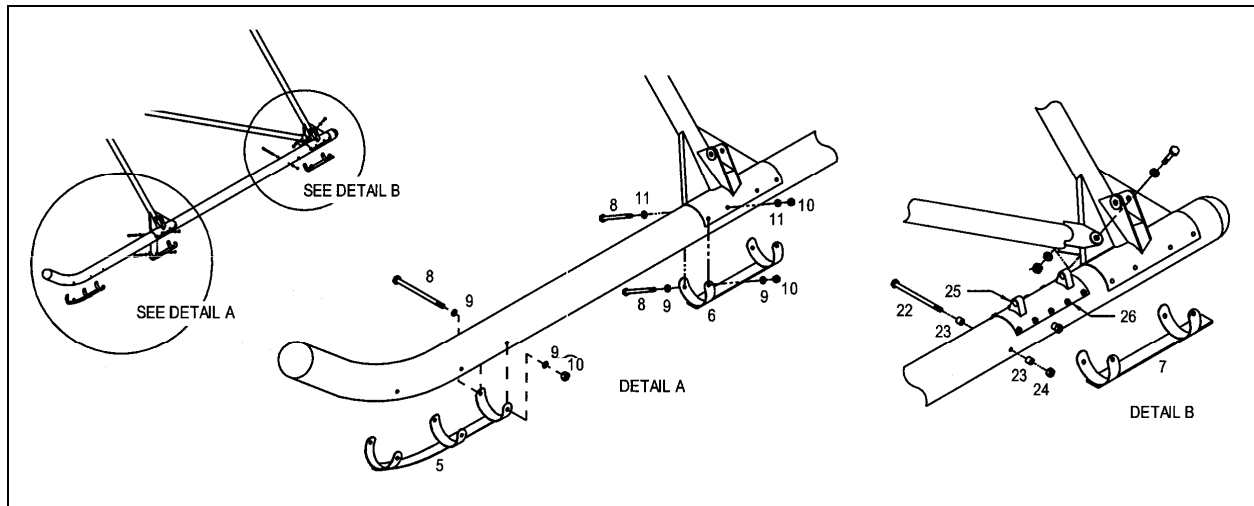
- 6.3 Riveted Saddle: Drill five size 10 (0.194"/4.9 mm) holes on each side of the skid tube. Proceed to step 7.0.
- 6.4 Bolted Saddle: Drill five size 12 (0.189"/4.8 mm) holes on each side of the skid tube. Proceed to step 7.0.
- 6.5 Lugs: Locate two holes for both inboard and outboard sides of the skid tube. Locate the aft lug hole (*d*) 4.5 inches (11.4 cm) forward of the forward edge of the aft landing gear leg. Locate the forward lug hole (*e*) 3.75 inches (9.5 cm) forward of the aft lug hole. The location of the holes would be at the three and nine o'clock positions relative to the upright skid tube.
- 6.6 Drill four 1/8" (3.2 mm) pilot holes. Drill through the near and far holes to a final 1/4" (0.250"/6.35 mm) diameter.

7.0 Locate forward skid shoe holes

- 7.1 Locate the position of the aft edge of the forward skid shoe (*f*) from the forward edge of the forward landing gear leg. Install two P/N 20040S hose clamps, or equivalent, around the skid shoe and skid tube to hold the skid shoe in place. **NOTE:** The skid shoe should fit the toe of the skid tube tightly. The dimension (*f*) can be changed ± 0.75 " (1.9 cm) to make the skid shoe fit properly.
- 7.2 Drill six 1/8" (3.2 mm) pilot holes. Drill through the near and far holes to a final 1/4" (0.250"/6.35 mm) diameter.
- 7.3 Remove the blocking and remove the skid tube and de-burr all holes.
- 7.4 Remove the end cap from the skid tube and clean out all chips and debris from the inside of the tube.
- 7.5 If required, reinstall the ground handling wheel saddle onto the skid tube with the hardware removed in step 3.5. For a riveted saddle installation, use CR3213-6-03 rivets or CR3243-6-03 oversize rivets, as required. For a bolted saddle installation, reinstall the two nutplate strips in the skid tube before installing hardware.
- 7.6 If required, reinstall the ground handling wheel attachment lugs into the skid tube with the hardware removed in step 3.5.
- 7.7 Reinstall the end cap to the skid tube.

8.0 Install skid tube

- 8.1 Reinstall the skid shoes and the skid tube to the forward and aft landing gear legs per Maintenance Manual paragraph 8-54, D and E with the hardware removed in step 3.1
- 8.2 Install the forward skid shoe on the skid tube with the hardware removed in step 3.1.
- 8.3 Reinstall the oleo struts per Maintenance Manual paragraph 8-70.
- 8.4 Remove blocking and jacks and lower the aircraft.
- 8.5 Reinstall the cowling and landing gear fairings per Maintenance Manual paragraph 8-60, B.
- 8.5 Apply non-skid surface coating, *X-1567 Wing Walk Compound*, or equivalent, to the skid tube areas shown in *Figure 4*. Apply the coating per the manufacturer's instructions. **NOTE:** Mask adjacent areas to avoid inadvertent application. Allow the coating to dry overnight before removing the masking.
- 8.6 Document maintenance action in the maintenance records or logbook.



ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY PER SKID TUBE	EFFECTIVITY		
				TH-28	480	480B
5	4174009-13	. Wear Plate	1	X	X	X
6	4174007-5	. Wear Plate	1	X	X	X
7	4174007-8	. Wear Plate, Left Hand	1	X	X	X
7	4174007-7	. Wear Plate, Right Hand	1	X	X	X
-7	4220132-1	. Wear Plate, Heavy Duty (Also replaces Item 6)	2	X	X	X
8	AN4-33A	. Bolt	11	X	X	X
9	AN960-416L	. Washer	14	X	X	X
10	AN365-428A	. Nut	11	X	X	X
11	AN960-416	. Washer	8	X	X	X
22*	AN4-37A	. Bolt	2	X	X	
23*	28-16348-1	. Spacer	4	X	X	
24*	AN364-428A	. Nut	2	X	X	
25	ECD4057-11	. Saddle, Ground Handling Wheel	1	X	X	X
25	WC400-00	. Saddle, Ground Handling Wheel	1	X	X	
26	CR3213-6-03	. . Rivet	10	X	X	X
26**	AN3-5A	. . Bolt	10	X	X	
-27**	AN960-10L	. . Washer	10	X	X	
-28**	4174004-1	. Nutplate	2	X	X	

- Item not illustrated

* S/N 5001-5026 only

** Applicable to aircraft with a bolted ground handling wheel saddle installation

Figure 3. Landing Gear Assembly and Installation

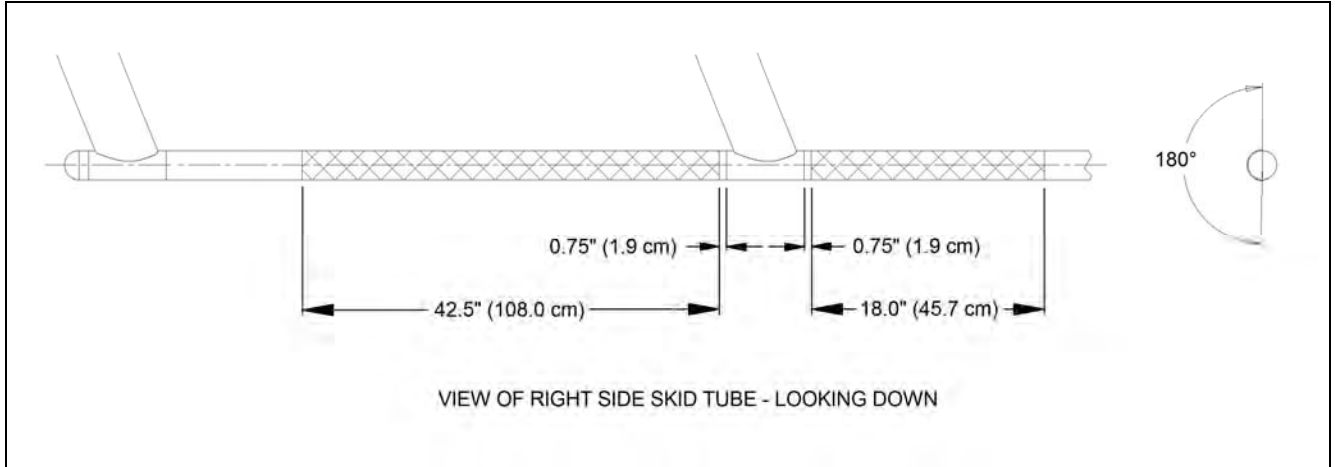


Figure 4. Non-skid surface coating application area