

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

Aero Twin, Inc. Nose Gear Tire Scraper No. TSQ-100
for
Quest Model 100 Aircraft

Document No. TSQ-100-ICA

Maintenance Manual
Airworthiness Limitations
Illustrated Parts List

LOG OF REVISIONS			
REVISIONS		PAGES REVISED AND DESCRIPTION OF REVISIONS	APPROVAL SIGNATURE
NO.	DATE		
N/C	3/17/09	Original Issue	

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<h1>Table of Contents</h1>

Section	Page
Log of Revisions.....	2
Table of Contents	3
1.0 Maintenance Manual	4
1.1 Description.....	4
1.2 Installation/Removal.....	4
1.3 Weight and Balance.....	5
1.4 Maintenance Instructions	5
2.0 Airworthiness Limitations.....	7
3.0 Illustrated Parts List	8
3.1 Complete Parts List	8
Drawing TSQ-100-A, Sheet 1 of 1.....	8
Drawing TSQ-100-I, Sheet 1 of 1	9

1.0 Maintenance Manual

Aero Twin, Inc. Nose Gear Tire Scraper, Kit No. TSQ-100

1.1 Description

The Aero Twin nose gear tire scraper for the Quest Kodiak aircraft consists of a steel frame that is bolted to the nose gear by using existing bolts. The steel frame extends aft and down to attach to the rubber plate. The tire scraper provides protection from rock damage to the aircraft.



Figure 1.1.1 Nose Gear Tire Scraper Kit

1.2 Installation / Removal

(Refer to drawing TSQ-I, 1 sheet)

1.2.1 Installation:

1. Remove the nose wheel in accordance with the Quest 100 maintenance manual.
2. Remove the aft existing bolts (NAS6606-20) attaching nose gear fork. Also remove the associated washers and nuts.
3. Replace aft bolts, washers, and nuts with new hardware (NAS6606-22, bolts, MS20002C6, countersunk washers, NAS1149F0663P, washers, and MS21045-6, nuts) attaching P/N TSQ-100 to the nose gear.
4. Reinstall nose wheel in accordance with the Quest 100 maintenance manual.
5. Update weight and balance by adding 0.8 pounds at FS -30.9. Complete Form 337 indicating installation of STC.

1.2.2 Removal:

1. Remove the nose wheel in accordance with Question 100 maintenance manual.
2. Remove hardware attaching P/N TSQ-100 to the nose gear.
3. Replace aft bolts, washers, and nuts with NAS6606-20 bolts, new NAS1149F0663P washers, new MS20002C6 countersunk washers, and new MS21045-6 nuts.
4. Reinstall nose wheel in accordance with Quest 100 maintenance manual.

1.3 Weight and Balance

When the tire scraper is installed or removed, the aircraft empty weight and balance must be updated to reflect the configuration change. This section includes information required for weight and balance calculations pertaining to the installation of the nose gear tire scraper.

The total weight of the tire scraper is 0.8 pounds and its center of gravity is located at fuselage station -30.9, giving a total moment of -24.7 in-lbs. When the tire scraper is installed on the aircraft, the weight of the scraper must be added to the empty aircraft weight. The moment contribution from the tire scraper must be added to the previous empty aircraft moment. The new empty aircraft center of gravity is then calculated by dividing the new moment by the new empty weight. If the tire scraper is removed from the aircraft, the weight and balance of the aircraft must be updated by subtracting the weight and moment contribution of the tire scraper from the empty weight and moment and dividing the new moment by the new weight to achieve the new aircraft center of gravity.

1.4 Maintenance Instructions

1.4.1 General:

The Aero Twin Nose Gear Tire Scraper installation is designed to be highly durable and fairly maintenance free. However, a maintenance program has been established, in accordance with Appendix G of 14 CFR Part 23, to assure the continued airworthiness of the tire scraper and its installation. Adherence to the established plan is mandatory and records of performance of required inspections and maintenance must be maintained. See Section 2.0, Airworthiness Limitations, for required maintenance items and intervals.

1.4.2 Corrosion Prevention:

The steel frame of the tire scraper is powder coated to protect the structure from the elements. The finish on the tire scraper parts must be inspected to ensure adequate corrosion prevention. If the powder coated surface of the steel plate structure is marred in service or during handling, the affected area should be stripped and repainted to prevent corrosion, see paragraph 1.4.4.3. Corrosion prevention is also enhanced by keeping the structure clean. The steel and rubber parts of the tire scraper should be kept free of dirt and may be cleaned using water and a mild detergent.

1.4.3 Disassembly / Assembly: (Refer to drawings TSQ-A, 1 sheet)

1.4.3.1 Disassembly:

- The rubber flap that acts as the tire scraper should be inspected for wear and may need to be replaced periodically when it is ineffective in protecting the aircraft from rock damage. To remove the rubber flap (P/N TSQ-100-3), first remove P/N TSQ-100 from the nose gear (see section 1.2.2 Removal). Next remove the five MS24694S54 screws from the forward side of TSQ-100 with the MS21044N3 nuts, and A3235-028-24A countersunk washers.

1.4.3.2 Assembly:

- Install the rubber flap using the following hardware as shown in Figure 1.4.3.2:
 - 5 MS24694S54 screws
 - 5 A3235-028-24A countersunk washers
 - 5 MS21044N3 nuts
- Use standard torques specified in the FAA approved Quest Maintenance Manual.
- Reinstall P/N TSQ-100 in accordance with section 1.2.1

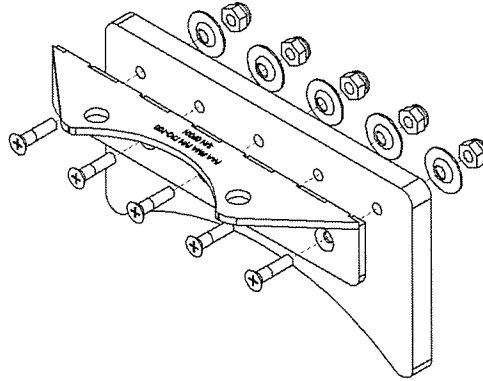


Figure 1.4.3.2 – Tire Scraper Assembly

1.4.4 Tire Scraper Repair:

1.4.4.1 Hardware Replacement:

Hardware and fittings used throughout the tire scraper are aircraft standard. Hardware should be replaced if corroded, damaged, or excessively worn. Replace self-locking type nuts with new hardware when reassembling or reinstalling the tire scraper. Do not substitute hardware - refer to the Illustrated Parts List for correct part numbers. If you encounter difficulty procuring replacement hardware or fittings, contact Aero Twin, Inc. at (907) 274-6166. Refer to previous section for assembly information.

1.4.4.2 Steel Frame:

Before any repairs may be made to the steel frame, written approval must be obtained from the manufacturer, Aero Twin Inc. Contact Aero Twin Engineering Department at (907) 274-6166 or write: Aero Twin Inc., Engineering Dept., 2403 Merrill Field Dr., Anchorage AK, 99501.

1.4.4.3 Painted and Powder Coated Surfaces:

Painted and powder coated surfaces should be maintained and refinished as required to prevent corrosion. When refinishing of a painted surface is required, lightly sand the affected area using fine sandpaper or an abrasive pad (such as 3M *Scotch-Brite*[™]). When refinishing a powder coated surface, a commercial grade stripper may be used. Polish out minor surface nicks or scratches where present. Clean the area thoroughly with a clean cloth wetted with non-petroleum-based solvent to remove any residual oils and dust. Apply a zinc-chromate or equivalent primer coat, then a matching color coat of quality enamel or epoxy-type paint. Follow manufacturer's instructions in preparing and applying primer and color coats. If a surface was previously powder coated, and it is desired to keep a powder coat finish, contact Aero Twin, Inc. at (907)274-6166.

-----End of Section 1.0 Maintenance Manual-----

2.0

Airworthiness Limitations

Aero Twin, Inc. Nose Gear Tire Scraper, Kit No. TSQ-100

The Airworthiness Limitations section is FAA approved and specifies maintenance required under paragraphs 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

This section describes required inspection, maintenance, and replacement items. When repairs are deemed necessary, follow accepted standard practices and/or specific maintenance instructions in Section 1.4 of this manual. This section constitutes Component Airworthiness Limitations which apply to the nose gear tire scraper installation only.

2.1 Scheduled Inspections and Maintenance:

Note: First inspection should be accomplished at next aircraft inspection requiring inspection of the nose wheel assembly so that subsequent inspections coincide.

At each inspection interval for which inspection of the nose wheel assembly is required by the FAA approved Quest 100 Maintenance Manual or other FAA approved maintenance program for the aircraft, the following inspections shall be performed on the nose gear tire scraper:

- Visually inspect the steel structure for cracks, bends, dents, corrosion, or other defects.
- Visually inspect the rubber flap for security and condition.
- Visually inspect the hardware and fittings for security and condition.

At intervals not to exceed 500 hours or Annual Inspection, remove the tire scraper from the nose gear assembly and perform the following inspections:

- Visually inspect the steel structure for cracks, bends, dents, corrosion, or other defects.
- Visually inspect the rubber flap for security and condition.
- Visually inspect the hardware and fittings for security and condition.
- Replace all self locking nuts used to attach the tire scraper to the nose gear.

FAA Approved: _____

-----End of Section 2.0 Airworthiness Limitations-----

3.0 Illustrated Parts List

Aero Twin, Inc. Nose Gear Tire Scraper, Kit No. TSQ-100

3.1 Complete Parts List:

Drawings TSQ-100-A, sheet 1 of 1, and TSQ-100-I, sheet 1 of 1 are provided her for a listed of all tire scraper parts and hardware. Rubber flap, P/N TSQ-100-3, is installed prior to delivery. Drawing TSQ-100-A, sheet 1 of 1, is provided only for reference in replacing the rubber flap.

NOTES:

1. WELD ENTIRE OUTSIDE SEAM BETWEEN ITEMS 1 AND 2. GRIND TO 100.0 GRIND FINISHED WELD FLUSH WITH FACES OF ITEMS 1 AND 2.
2. FINISH ITEM 4 IN ACCORDANCE WITH FINISH SPECIFICATION AT P-F-9701, LATEST REVISION, AS IT PERTAINS TO THE FINISH OF STEEL PARTS.
3. LENGTH OF ITEM 3 MAY VARY ONE DASH NUMBER AS REQUIRED.

PROPERTY AND CONFIDENTIAL

AERO TWIN, INC.
 1401 WHEEL HOLLOW ROAD, ANDERSON, ALABAMA 37301
 615-752-1100
 615-752-1101
 615-752-1102
 615-752-1103
 615-752-1104
 615-752-1105
 615-752-1106
 615-752-1107
 615-752-1108
 615-752-1109
 615-752-1110
 615-752-1111
 615-752-1112
 615-752-1113
 615-752-1114
 615-752-1115
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 615-752-1117
 615-752-1118
 615-752-1119
 615-752-1120

NOSE TIRE SCRAPER ASSEMBLY

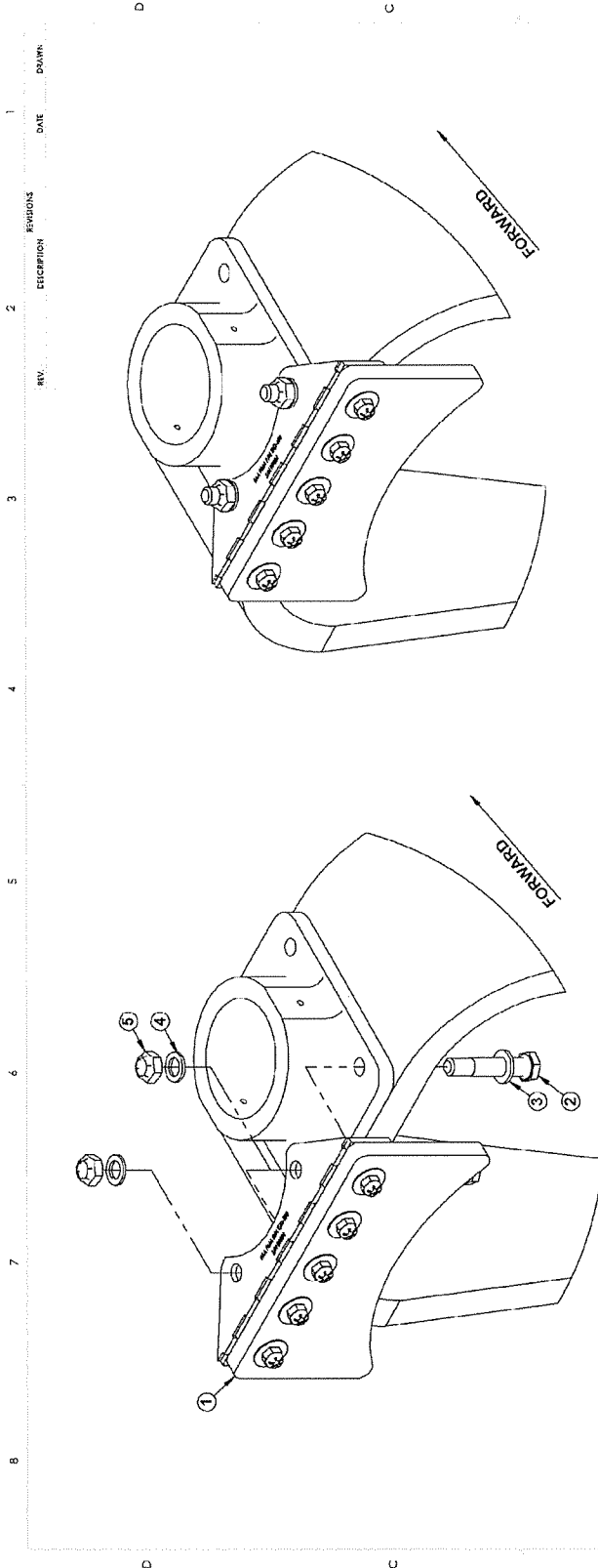
REV: N/C
 B TSQ-100-A
 SCALE: NOT TO SCALE
 SHEET 1 OF 3

8) P/N TSQ-100

4) P/N TSQ-100-4 WELDMENT - ISO VIEW

4) P/N TSQ-100-4 WELDMENT - SIDE VIEW

ITEM	QTY	PART NO.	DESCRIPTION	MATERIAL	DIMENSION	SPECIFICATION
8	1	TSQ 100	TIRE SCRAPER			
7	5	MS2704IN3	NUT			TINNERMAN
6	5	A335-008-2A4	COUNTERSINK WASHER			
5	5	MS22825E54	SCREW			
4	1	TSQ-100-4	BRACKET			
3	1	TSQ-100-3	VERT. PLATE			100.0 W/LP
2	1	TSQ-100-2	HORIZ. PLATE			100.0 W/LP
1	1	TSQ-100-1	HORIZ. PLATE			100.0 W/LP



EXPLODED VIEW

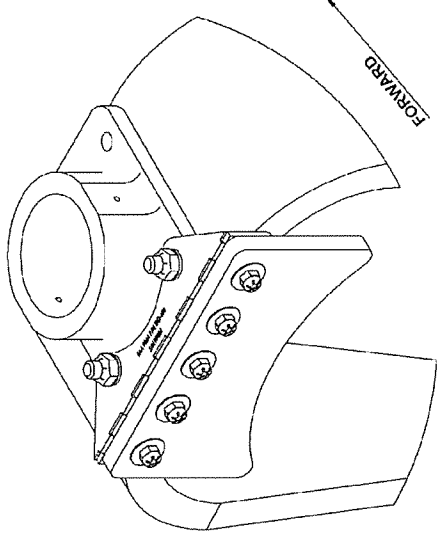
INSTALLATION INSTRUCTIONS:

1. REMOVE NOSE WHEEL IN ACCORDANCE WITH QUEST 100 MAINTENANCE MANUAL.
2. REMOVE TWO AFT EXISTING BOLTS ATTACHING NOSE WHEEL TO NOSE GEAR AND ASSOCIATED WASHERS AND NUTS.
3. REMOVE TWO EXISTING BOLTS ATTACHING NOSE WHEEL TO NOSE GEAR AND ASSOCIATED WASHERS AND NUTS.
4. REINSTALL NOSE WHEEL IN ACCORDANCE WITH QUEST 100 MAINTENANCE MANUAL.
5. UPDATE WEIGHT AND BALANCE BY ADDING 0.8 POUNDS AT FS -30.9. COMPLETE FORM 337 INDICATING INSTALLATION OF STC.
6. MAINTAIN IN ACCORDANCE WITH DOCUMENT NUMBER TSQ-100-ICA, LATEST APPROVED REVISION.

REMOVAL INSTRUCTIONS:

1. REMOVE NOSE WHEEL IN ACCORDANCE WITH QUEST 100 MAINTENANCE MANUAL.
2. REMOVE HARDWARE ATTACHING ITEM -1 TO THE NOSE GEAR.
3. REPLACE AFT BOLTS, WASHERS, AND NUTS WITH NAS6606-20 BOLTS AND NEW ITEMS -3 THROUGH -5.
4. REINSTALL NOSE WHEEL IN ACCORDANCE WITH QUEST 100 MAINTENANCE MANUAL.

INSTALLATION



PROPERTY AND CONFIDENTIAL
 PART NUMBER: -
 DRAWN: J. EPPER
 CHECKED: E. HAYER
 INC. APR: J. EPPER
 NAME: J. EPPER
 DATE: 03/06/07
 DESIGNED: C. H. HAY
 DATE: 03/17/07
 AERO TWIN, INC.
 2433 AIRFIELD ROAD, ANCHORAGE, ALASKA 99501
 (907) 574-5141 FAX: (907) 574-5142
 airtwin@airtwin.com
 airtwin.com

DO NOT SCALE DRAWING
 UNITS: DIMENSIONS SPECIFIED IN INCHES UNLESS OTHERWISE NOTED
 TITLE: NOSE TIRE SCRAPER INSTALLATION
 SIZE: DWG. NO. B TSQ-100-1
 REV: N/C
 SCALE: NOT TO SCALE
 SHEET 1 OF 1

ITEM	QTY	PART NO.	DESCRIPTION	MATERIAL	DIMENSION	SPECIFICATION
5	2	MS21025-6	NUT			
3	2	FAST114R0653P	WASHER			
4	2	MS2000226	COUNTERSUNK WASHER			
2	2	NAS6606-22	BOLT			
1	1	TSQ-100	TIRE SCRAPER			TSQ-100-A

-----End of Section 3.0 Illustrated Parts List-----