


INSTRUCTIONS FOR CONTINUED AIRWORTHINESS & INSTALLATION INSTRUCTIONS

**Aero Twin, Inc. Main Gear Gravel Deflector Kit No. GD5-102
for
Cessna Models 182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J,
182K, 182L, 182M, 182N, 182P, and 182Q Aircraft
with S/N 18266590 and Lower**

Document No. GD5-102-ICA

Maintenance Manual
Airworthiness Limitations
Illustrated Parts List

LOG OF REVISIONS			
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1.0 Maintenance Manual

Aero Twin, Inc. Main Gear Gravel Deflector, Kit No. GD5-102

1.1 Description

The Aero Twin main gear gravel deflectors for the Cessna 182 series of aircraft consists of a steel structure made from square tubing and flat plates. The structure bolts to the inside of the landing gear through the axle bolts. A rubber flap is screwed to the aft end of the steel frame. The gravel deflectors provide protection from rock damage to the mid and aft portions of the aircraft.

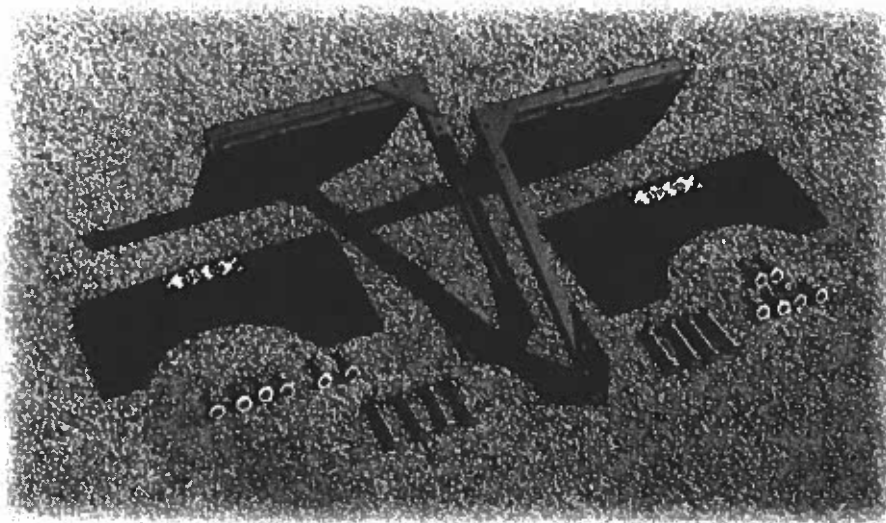


Figure 1.1.1 Main Gear Gravel Deflectors

1.2 Installation / Removal

1.2.1 Installation:

NOTE: This kit is not to be used with installed speed fairings or other accessories mounted to the main gear.

1. Remove the left main gear wheel and axle per the FAA approved maintenance manual. Ensure that the axle alignment shims can be reinstalled in the same pattern as were originally installed.
2. Attach the left gravel deflector (GD6-101-L) as shown on drawing GD5/6-I-1, Sheet 1, using the new hardware supplied with the kit. Torque the axle and attach nuts per the FAA Approved Maintenance Manual.
3. To install the tire scraper, fit it snug against the tire, on top of the installed gravel deflector, as shown on drawing GD-I-2, Sheet 1. Match drill the fastener holes through the bottom of the frame and then through the rubber tire scraper.
4. Trim the overhanging tire scraper rubber flush with the outside edge of the frame, as shown in drawing GD-I-2, Sheet 1.

5. Attach the "NO STEP" placard on the top side of the rubber tire scraper as shown on drawing GD-I-2, Sheet 1.
6. Install the right gravel deflector (GD6-101-R) following the same procedure, (steps 1-5).

1.2.2 Removal:

1. To remove the main gear gravel deflectors, remove the left main gear wheel and axle per the FAA approved maintenance manual. Ensure the axle alignment shims can be reinstalled in the same pattern as were originally installed.
2. Remove the left gravel deflector (GD5-102-L) by removing the four NAS bolts supplied with the kit and replacing them with the original aircraft hardware.
3. Remove the right gravel deflector (GD5-102-R) in the same manner.

1.3 Weight and Balance

When the main gear gravel deflectors are 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 main gear gravel deflectors.

The main gear gravel deflectors have a combined weight of 8.5 pounds, which is located at fuselage station 68.0, giving a total moment of 578 in-lbs. When the deflector is installed on the aircraft, the weight of the deflector must be added to the empty aircraft weight. The moment contribution from the gravel deflector must be added to the previous empty aircraft moment. The new empty aircraft center of gravity is then calculated by dividing the total moment by the total empty weight. If the gravel deflector is removed from the aircraft, the weight and balance of the aircraft must be updated by subtracting the weight and moment contribution of the gravel deflector from the empty aircraft 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 main gear gravel deflector 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 gravel deflector 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 gravel deflector is powder coated to protect the structure from the elements. The finish on the gravel deflector parts must be inspected to insure adequate corrosion prevention. If the powder coated surface of the steel tube 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 gravel deflector should be kept free of dirt and may be cleaned using water and a mild detergent.

1.4.3 Disassembly / Assembly:

1.4.3.1 Disassembly:

- The rubber mud flap and tire scraper on the gravel deflector should be inspected for wear and may need to be replaced periodically when they are ineffective in protecting the aircraft from rock damage.
- To remove the tire scraper, remove the five MS24694S64 and two MS24694S68 screws from the top of the frame along with the seven MS21042-L3 nuts, A3235-028-935 countersunk washers, and NAS1149F-0332P washers used with those screws.
- To remove the mud flap, remove the five MS24694S64 screws from the top of the frame along with the MS21042L3 nuts, A3235-028-935 countersunk washers, and NAS1149F-0332P washers used with those screws.

1.4.3.2 Assembly:

- Refer to the Illustrated Parts List when reassembling the main gear gravel deflector.
- A new mud flap will require holes to be match drilled into the rubber deflector using the holes in the frame as a guide using a #10 drill. These holes should be bored out using a 0.25 bit. It should then be installed using the hardware specified in the Illustrated Parts List. Tighten nuts until outer edge of countersunk washers contact mud flap. Maintain minimum of 1.5-thread exposure through locking feature of nut.
- A new tire scraper will require the oversized rubber part to be trimmed and drilled as required for proper fit once the rest of the assembly is installed. The scraper should be fitted on top of the frame's surface and should also be snug against the tire. Seven 3/16" holes should be match drilled into the scraper using the steel frame as a guide. These holes should be bored out in the scraper using a 0.25 bit.
- Reinstall the screws, countersunk washers, washers, and nuts. Tighten nuts until outer edge of countersunk washers contact mud flap. Maintain minimum of 1.5-thread exposure through locking feature of nut.

1.4.4 Gravel Deflector Repair:

1.4.4.1 Hardware Replacement:

Hardware and fittings used throughout the gravel deflector are aircraft standard. Hardware should be replaced if corroded, damaged, or excessively worn. 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 Square Tube Frame:

Before any repairs may be made to the steel tube 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.

2.0 Airworthiness Limitations

Aero Twin, Inc. Main Gear Gravel Deflector Kit No. GD5-102

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 main gear gravel deflector installation only.

2.1 Scheduled Inspections and Maintenance:

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

At each inspection interval for which inspection of the main wheel assembly is required by the FAA approved Cessna 182 Maintenance Manual or other FAA approved maintenance program, the following inspections shall be performed on the main gear gravel deflector:

- Visually inspect the steel structure for cracks, bends, dents, corrosion, or other defects.
- Visually inspect the mud flap and tire scraper 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 gravel deflector and perform the following inspections:

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

FAA Approved: *J. J. King* 6/18/08 for G. Holt.

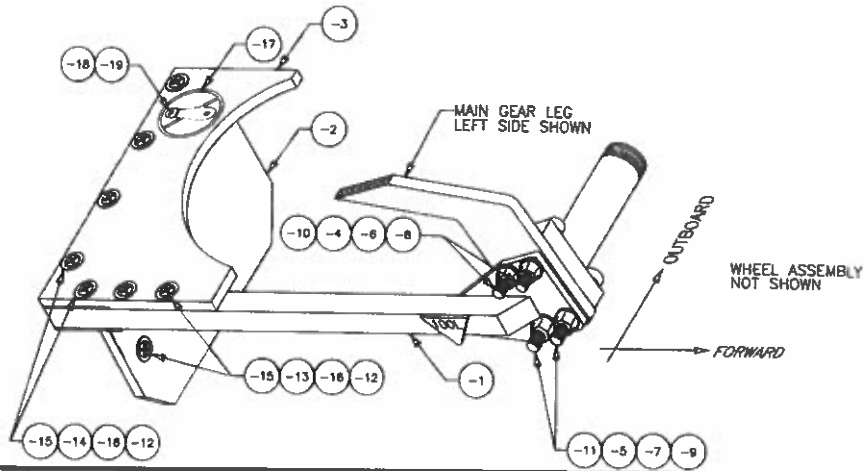
-----End of Section 2.0 Airworthiness Limitations-----

3.0 Illustrated Parts List

Aero Twin, Inc. Main Gear Gravel Deflector, Kit No. GD5-102

3.1 Complete Parts List:

The following is a complete parts list for the GD5-102 main gear gravel deflector including all installation hardware. The installation instruction for those items is detailed in section 1.2.1 of this document.



Item	Qty	Part Number	Item Description
1	1L, 1R	GD6-209-L(R)	Left (Right) Gravel Deflector Weldment
2	2	GD-210	Rubber Deflector
3	2	GD-102	Rubber Tire Scraper
4	12	NAS1149F 0663P	Washer
5	12	NAS1149F 0563P	Washer
6	4	MS20002C6	Washer
7	4	MS20002C5	Washer
8	4	NAS146-XX*	Bolt (See Figure 3.2)
9	4	NAS145-XX*	Bolt (See Figure 3.2)
10	4	MS21042-L6	Nut
11	4	MS21042-L5	Nut
12	22	MS21042-L3	Nut
13	22	A3235-028-935 or FW235-28	Washer
14	4	MS24694-S68	Screw
15	18	MS24694-S64	Screw
16	22	NAS1149F 0332P	Washer
17	2	GD-NSP	Placard
18	4	MS20470A4-9	Rivet
19	4	NAS1149FN432P	Washer

Figure 3.1

ITEM-8	
NAS146-43 or MS20006-32	S/N 33000-51886
NAS146-47 or MS20006-36	S/N 51887-53598
NAS146-45 or MS20006-34	182E, 182F, & 182G
NAS146-43 or MS20006-32	182H, 182J, 182K, 182L, 182M, & 182N
NAS146-35 or MS20006-24	182P & 182Q S/N 18266590 and lower

ITEM-9	
NAS145-44 or MS20005-35	S/N 33000-51886
NAS145-45 or MS20005-36	S/N 51887-53598, 182E, 182F, & 182G
NAS145-41 MS20005-32	182H, 182J, 182K, 182L, 182M, 182N
NAS145-35 MS20005-26	182P & 182Q S/N 18266590 and lower

***Figure 3.2**