

# **INSTRUCTIONS FOR CONTINUED AIRWORTHINESS**

**Aero Twin, Inc. Nose Gear Gravel Deflector Kit No. NGDC-212**  
for  
**EADS CASA Model C-212-CB, -CC, -CD, -CE, -CF, -DE, -DF Aircraft**

Document No. NGDC-ICA

Maintenance Manual  
Airworthiness Limitations  
Illustrated Parts List

LOG OF REVISIONS			
REVISIONS		PAGES REVISED AND DESCRIPTION OF REVISIONS	APPROVAL SIGNATURE
NO.	DATE		
N/C	03/19/12	Original Issue	<i>Jason Kph</i>

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# 1.0 Maintenance Manual

## Aero Twin, Inc. Nose Gear Gravel Deflector, Kit No. NGDC-212

### 1.1 Description

The Aero Twin nose gear gravel deflector for the EADS CASA C-212 aircraft consists of a steel frame that is clamped to the nose gear fork. The steel frame extends aft around the rear of the nose wheel tire, where it supports a rubber mud flap. The gravel deflector provides protection from rock damage to the belly of the aircraft. This gravel deflector is to be installed only on EADS CASA Model C-212-CB, -CC, -CD, -CE, -CF, -DE, and -DF aircraft equipped with a 24 x 7.7 size nose gear tire.

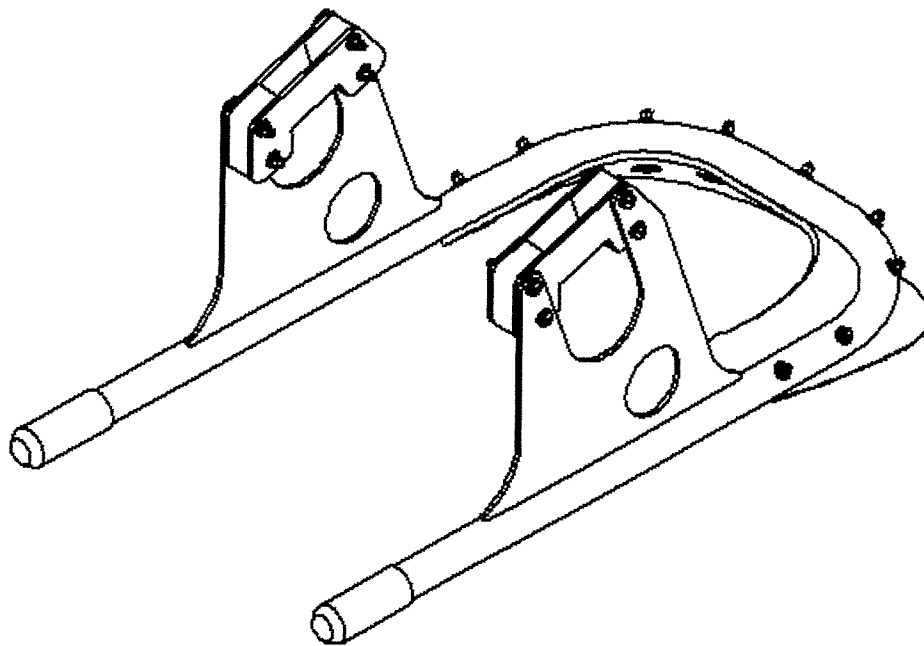


Figure 1.1.1 Nose Gear Gravel Deflector

### 1.2 Installation / Removal

#### 1.2.1 Installation:

1. Installation of the nose gear gravel deflector is performed in accordance with the installation instructions contained in document number NGDC-IM. See that document for further installation instructions.

#### 1.2.2 Removal:

1. To remove entire nose gear gravel deflector, support the gravel deflector frame, P/N NGDC-109, and remove the four bolts from the clamps on each side of the tire.
2. Remove the clamp plates, P/N NGDC-107, and clamp blocks, P/N NGDC-106. Lower the gravel deflector and pull aft off of the nose gear fork.
3. Update the weight and balance as specified in section 1.3.

### **1.3 Weight and Balance**

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When the nose gear gravel deflector 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 gravel deflector.

The nose gear gravel deflector weighs 9.25 pounds and is located at fuselage station 42.1, giving a total moment of 389 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 Inspection and Maintenance Instructions**

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#### **1.4.1 General:**

The Aero Twin Nose Gear Gravel Deflector installation is designed to be highly durable and fairly maintenance free. However, a maintenance program has been established to assure the continued airworthiness of the gravel deflector and its installation. Perform the inspections and maintenance as outlined below and document actions in the aircraft records.

#### **1.4.2 Scheduled Inspections:**

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 CASA C-212 Maintenance Manual or other FAA approved maintenance program, perform the following inspections on the nose gear gravel deflector:

- Visually inspect the steel structure for cracks, bends, dents, corrosion, or other defects.
- Visually inspect the mud 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 gravel deflector from the nose gear fork and perform the following inspections:

- Visually inspect the steel structure for cracks, bends, dents, corrosion, or other defects.
- Visually inspect the mud flap for security and condition.
- Visually inspect the hardware and fittings for security and condition.
- Visually inspect the aluminum clamp blocks for cracks, dents, corrosion, or other defects.
- Replace all self locking nuts used to clamp the gravel deflector to the nose gear fork.

### 1.4.3 Corrosion Prevention:

The steel frame of the gravel deflector and clamp plates are powder coated to protect these structures from the elements. The aluminum clamp blocks are painted. The finish on the gravel deflector parts must be inspected to ensure adequate corrosion prevention. If the powder coated surface of the steel tube or clamp plate structures are marred in service or during handling, the affected area should be stripped and repainted to prevent corrosion. See paragraph 1.4.5.3. Corrosion prevention is also enhanced by keeping the structure clean. The steel, aluminum, and rubber parts of the gravel deflector should be kept free of dirt and may be cleaned using water and a mild detergent.

### 1.4.4 Disassembly / Assembly:

#### 1.4.4.1 Disassembly:

- The rubber mud flap 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 mud flap, remove the nine MS24694S65 screws from the top of the frame along with the MS21042L3 nuts, A3235-028-935 countersunk washers, and NAS1149F0332P washers used with those screws.

#### 1.4.4.2 Assembly:

- Refer to the Illustrated Parts List when reassembling the nose gear gravel deflector.
- A new mud flap will require the attachment screw holes to be match drilled using a #8 drill. To install the mud flap, wrap it evenly around the back of the gravel deflector frame, leaving a 0.25 to 0.50 inch gap along the sides and rear of the tire, and orienting the flap downwards 45° from horizontal in the back. Match drill the screw holes in the rubber using a #8 drill and install the mud flap using the hardware specified in the Illustrated Parts List. Tighten the hardware to compress the rubber until the flat areas of the countersunk washers are flush with the surface of the mud flap.
- Replace self-locking type nuts with new hardware when reassembling the gravel deflector.
- Use standard torques specified in the CASA C-212 Maintenance Manual.

### 1.4.5 Gravel Deflector Repair:

#### 1.4.5.1 Hardware Replacement:

Hardware and fittings used throughout the gravel deflector 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 gravel deflector. 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.

#### 1.4.5.2 Steel 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.**

#### 1.4.5.3 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*<sup>™</sup>). 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. Nose Gear Gravel Deflector Kit No. NGDC-212**

**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.**

There are no airworthiness limitations for this modification.

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

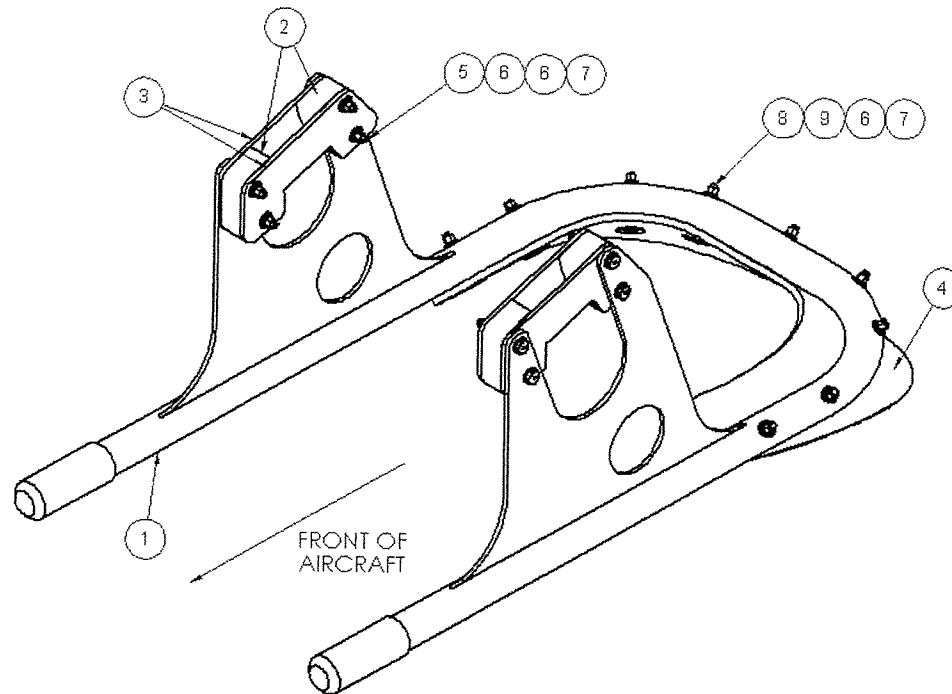


## 3.0 Illustrated Parts List

### Aero Twin, Inc. Nose Gear Gravel Deflector, Kit No. NGDC-212

#### 3.1 Complete Parts List:

The following is a complete parts list for the NGDC-212 nose gear gravel deflector including all installation hardware. The installation instruction for those items is detailed in document NGDC-IM, which was supplied with the gravel deflector kit STC package.



Item	Qty	Part Number	Item Description
1	1	NGDC-109	Gravel Deflector Frame
2	4	NGDC-106	Clamp Block
3	4	NGDC-107	Clamp Plate
4	1	NGDC-103	Mud Flap
5	8	AN3-14A	Bolt
6	25	NAS1149F0332P	Washer
7	17	MS21042L3	Nut
8	9	MS24694S65	Countersunk Screw
9	9	A3235-028-935	Countersunk Washer

Figure 3.1