

# \*RECOMMENDED SERVICE BULLETIN\*

**NUMBER:** SB11-01

**REVISION:** 00

**DATE:** 01/31/2011

**SUBJECT:** NOSE COWLING INSPECTION AND HEAT BLANKET INSTALLATION

**EFFECTIVITY:**

KODIAK 100 Series Aircraft Serial Numbers: 100-001 through 100-047

**SUMMARY:**

Quest has received a single report of heat blistering on the inside of the nose cowling (P/N **100-171-2401**). This Recommended Service Bulletin describes the inspection of the nose cowling (P/N **100-171-2401**) and installation of a nose cowling heat blanket (P/N **100-171-2403**).

**ACTION:**

Quest is recommending a one time inspection of the nose cowling (P/N **100-171-2401**) as shown in **Figure 1-1**, and installation of a nose cowling heat blanket (P/N **100-171-2403**) to the area shown in **Figure 3-1**.

**LOG OF CHANGES:**

Revision:	Date:	Description of Change:
00	01/31/2011	Initial Release

**ATTACHED DOCUMENTS:**

Document #:	Date:	Document Title:
RTV157-RTV159	07/24/2007	RTV159 Technical Data Sheet

**PARTS, TOOLS, AND EQUIPMENT:**

The parts, tools and equipment listed below are needed in order to complete the instructions contained within. Contact Quest Customer Service for parts and availability.

Item	Quantity	Part Number	Description
1	1	100-171-2403	Nose Cowling Heat Blanket
2	1	RTV159 (2.8 FL OZ)	RTV159 Silicone Rubber Adhesive

**FAA APPROVED:**

The inspection and modification described in this Recommended Service Bulletin has shown compliance with the applicable Federal Aviation Regulations and is FAA Approved.

**COMPLIANCE:**

Optional.

**INDUSTRY SUPPORT INFORMATION:**

N/A

**WEIGHT AND BALANCE:**

Negligible

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**CREDIT and WARRANTY INFORMATION:**

Quest will provide installation parts at no cost. Contact Quest Customer Service for parts and availability.

**Quest Customer Service**

**Service Bulletin SB11-01**

**Phone:** (208)263-1111 **Toll Free:** 1(866)263-1112

**Email:** [Customercare@questaircraft.com](mailto:Customercare@questaircraft.com)

**COMPLETION:**

Record the work performed in the KODIAK 100 Maintenance Records.

**ACCOMPLISHMENT INSTRUCTIONS:**

Accomplishment Instructions are listed in the next section of this Service Bulletin.

**MANPOWER:**

The instructions contained in this Recommended Service Bulletin will take approximately:

- 0.5 hours (for inspection)
- 0.5 hours (for installation of the nose cowling heat blanket (P/N 100-171-2403))
- 12-24 hours (for cure time)

**Attached Documents:**

Technical Data Sheet for RTV159.

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# 1. REMOVAL AND INSPECTION OF THE NOSE COWLING

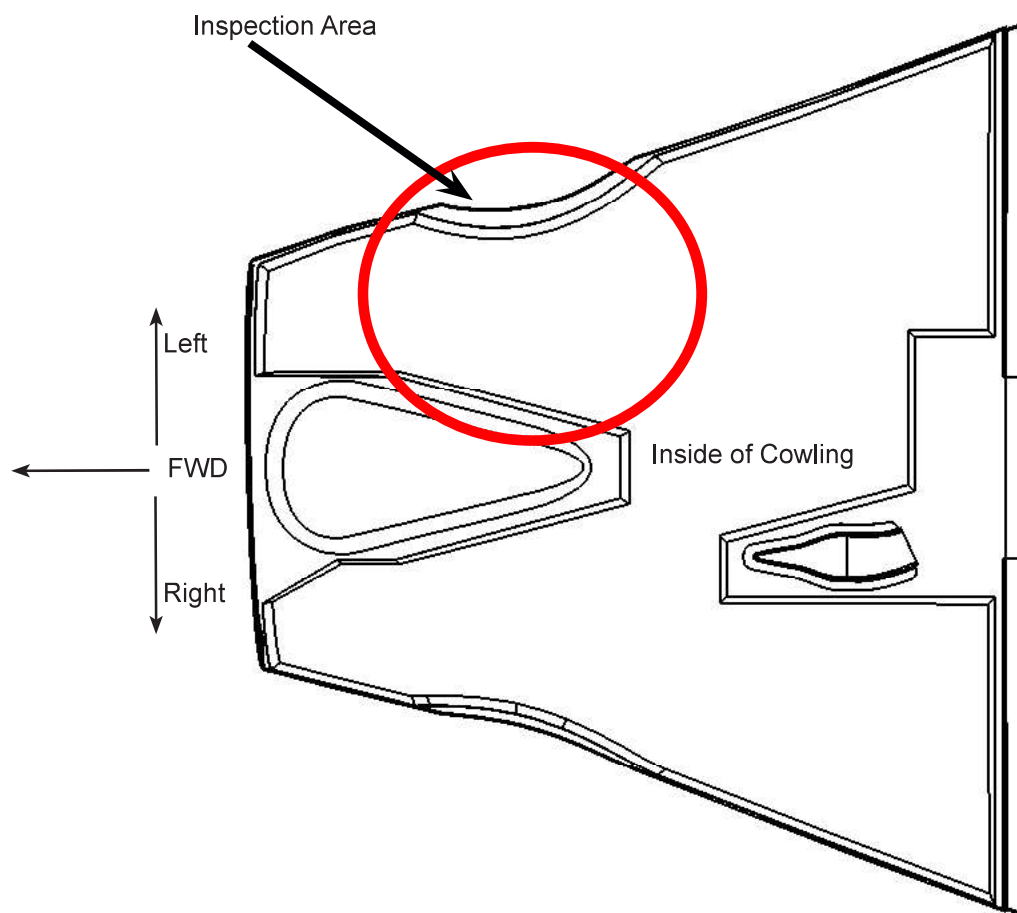
## 1.1 NOSE COWLING REMOVAL

Remove the nose cowl (P/N 100-171-2401) in accordance with the KODIAK 100 Maintenance Manual.

## 1.2 INSPECTION OF THE NOSE COWLING

Inspect the interior and exterior of the nose cowl (P/N 100-171-2401) in the location indicated in **Figure 1-1**. Inspect for delamination, major discoloration and blistering. If damage or defects are detected, proceed to **Section 2**, otherwise proceed to **Section 3**.

**NOTE:** A slight yellowing discoloration of the inside of the nose cowl (P/N 100-171-2401) is normal and does not indicate damage.



**Figure 1-1:** Nose Cowling Inspection Area

## 2. NOSE COWLING REPAIR

### 2.1 REPAIR INFORMATION

All repairs must be made in accordance with AC43.13 (**Chapter 3**).

**NOTE:** Review all material data sheets for the materials to be used during the nose cowling repair. Ensure that all data sheets are followed and that care is taken to ensure personal safety.

**Limitations of Repair:** (If repair cannot be completed within the limits outlined below, contact Quest Aircraft Company for directions.)

- Delaminated area must be less than or equal to 16 square inches.
- The exterior of the cowling may not be repaired using the procedure below. If damage exists on the exterior of the cowling, contact Quest Customer Service for repair instructions.

**Materials for Repair:** (The following materials are approved for this repair in the area outlined above. Repair materials not provided by Quest.)

**Epoxy Resin:** Magnolia 6167 A/B

**Fiberglass:** Style 7781 (8.9oz Fiberglass E Cloth)

**Honeycomb:** 3/8" thick Nomex overexpanded honeycomb with 3/16" cell size and 3 lb/cu.ft density.

**Finish:** Apply Dexter Aerospace 643-3 series polyurethane enamel gloss or equivalent paint on interior cowl surfaces.

## 3. INSTALLATION OF NOSE COWLING HEAT BLANKET

1. Position the nose cowling heat blanket (P/N **100-171-2403**) as shown in **Figure 3-1**.

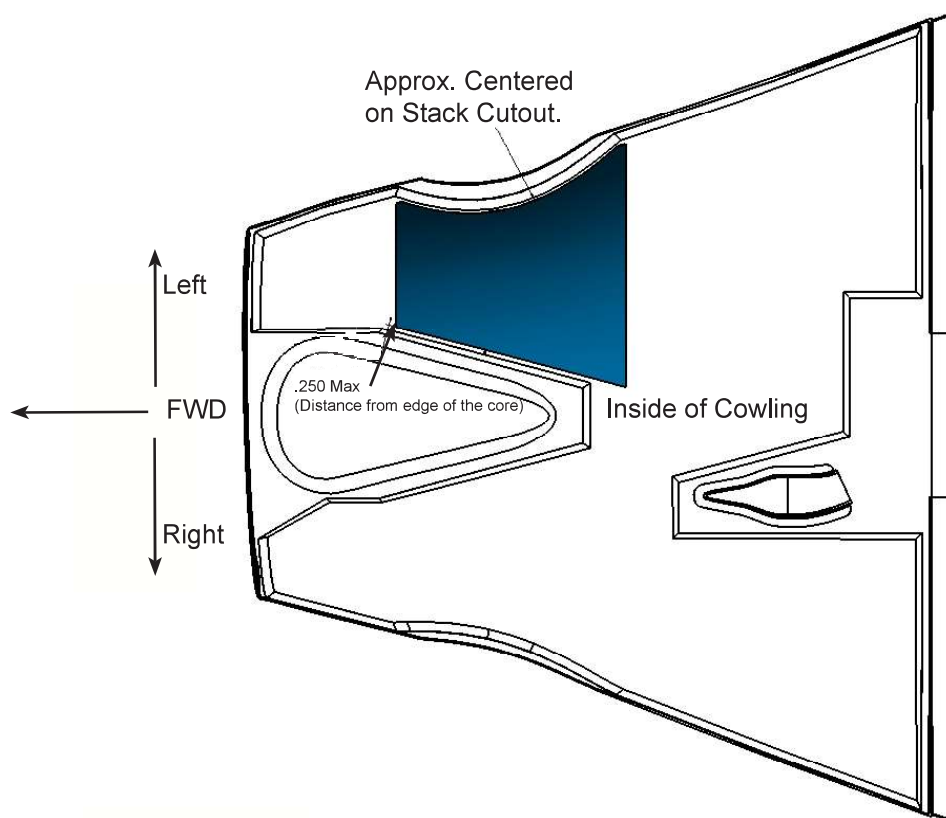
**NOTE:** The bonding surface of the nose cowling heat blanket is colored red.

**CAUTION:** Follow all manufacturer's safety instructions.

2. Mark the outline of the nose cowling heat blanket (P/N **100-171-2403**) and remove it from the nose cowling (P/N **100-171-2401**)
3. Using MEK or equivalent, clean the bonding areas of the nose cowling (P/N **100-171-2401**) and the nose cowling heat blanket (P/N **100-171-2403**)
4. Apply RTV159 evenly to the bonding surface of the nose cowling heat blanket (P/N **100-171-2403**). Position and firmly press the nose cowling heat blanket (P/N **100-171-2403**) onto the nose cowling (P/N **100-171-2401**). Slowly work out any air bubbles.

**NOTE:** Using RTV159, fillets may be created along the edges of the nose cowling heat blanket.

5. Clean any excess RTV159 with alcohol, Acetone or MEK.
6. Touch-free cure time is 30 min, Room-temp cure time is 24 hours.



**Figure 3-1:** Nose Cowling Heat Blanket Installation

## **4. REINSTALLATION OF THE NOSE COWLING**

### **4.1 NOSE COWLING INSTALLATION**

Reinstall the nose cowling (P/N **100-171-2401**) in accordance with the KODIAK 100 Maintenance Manual.

## **5. RECORD WORK PERFORMED IN KODIAK LOG BOOKS**

Upon completion, record all work performed in the appropriate KODIAK maintenance records.

RTV157 - RTV 159

**High Strength Silicone Adhesive Sealants**

**Product Description**

RTV157 and RTV159 are one-component, ready-to-use, high strength silicone rubber adhesive sealants. They cure to tough resilient silicone rubber on exposure to atmospheric moisture at room temperature. RTV159 sealant also provides high temperature performance. Both of these products release acetic acid vapours as a by-product of cure. RTV157 and RTV159 sealants are paste consistency products which can be applied to horizontal, vertical and overhead surfaces in applications requiring high strength and temperature performance. Since these adhesive sealants utilize a moisture cure system, they must not be used in thicknesses of greater than 6mm. Where section depths exceed 6mm, Momentive performance materials one-component, addition cure or two-component silicone rubber compounds are suggested. These sealants were not designed for and should not be used for applications intended for permanent implantation into the human body.

**Key Performance Properties**

- High strength
- High temperature performance
- Low temperature flexibility
- One-component
- Room temperature cure
- General primerless adhesion
- Excellent electrical insulation properties
- Excellent weatherability, ozone, and chemical resistance

**Typical Product Data**

<b>UNCURED PROPERTIES:</b>	<b>RTV157</b>	<b>RTV159</b>
Consistency	Paste	Paste
Colour	Grey	Red
Application Rate, g/min.	155	175
Density, g/cm <sup>3</sup>	1.09	1.09
Tack-Free Time, minutes	45	45
<b>CURED PROPERTIES:</b>	<b>RTV157</b>	<b>RTV159</b>
Mechanical:		
Hardness, Shore A	28	28
Elongation, %	825	825
Tensile Strength, MPa	6.9	7.2
Tear Strength, kN/m	16	17
Peel Strength, kN/m <sup>(2)</sup>	10.7	10.7



<b>Electrical:</b>		
Dielectric Strength, kV/mm	20.7	19.7
Dielectric Constant	2.9	2.6
Dissipation Factor	0.0009	0.0007
Volume Resistivity, ohm.cm	$7.5 \times 10^{14}$	$1.1 \times 10^{15}$
<b>Thermal:</b>		
Brittle Point, °C	-60	-60
Maximum Continuous Operating Temperature, °C	204	260
Maximum Intermittent Operating Temperature, °C	260	315
Additional Information: <sup>(3)</sup>		
Linear Shrinkage, %	1.0	1.0
Thermal Conductivity, W/m.K	0.21	0.21
Coefficient of Expansion cm/cm, °C	$27 \times 10^{-5}$	$27 \times 10^{-5}$

(1) Cured 3 days at 25°C and 50% relative humidity.

(2) Cured 7 days at 25°C and 50% relative humidity. Substrate was alclad aluminum.

(3) Information is provided for customer convenience only. These properties are not tested on a routine basis

### Specifications

Typical product data values should not be used as specifications. Assistance and specifications are available by contacting Momentive performance materials Technical Service RTV1 and RTV2.

### PATENTS

RTV157 and RTV159 sealants are within the scope of Patents 3,438,930, 3,541,044 and 3,635,743.

### Instructions for Use

#### Surface Preparation

RTV157 and RTV159 sealants will bond to many clean surfaces without the aid of primers. These surfaces typically include many metals, glass, ceramic, silicone rubber and some rigid plastics. These adhesive sealants will also produce fair bonds to organic rubber and to some flexible plastics not containing fugitive plasticizers (which migrate to the surface, impairing adhesion). An evaluation should be made to determine bond strength for each specific application. For difficult-to-bond substrates, use of a primer is suggested. Primers SS4004P, SS4044P, and SS4179 are recommended for use with these sealants.

Where adhesion is required, surfaces should be thoroughly cleaned with a suitable solvent to remove dirt, oil and grease. The surface should be wiped dry before applying the adhesive sealant.

When solvents are used, proper safety precautions must be observed. All solvents must be considered toxic and must be used only in well ventilated areas.

Exposure to high vapour concentration must be avoided, when flammable solvents are used, storage, mixing and use must be in areas away from heat, sparks or other sources of ignition.

#### **Application and Cure Time Cycle**

RTV157 and RTV159 sealants may be applied directly to clean or primed substrates. Where broad surfaces are to be mated, the sealant should be applied in a thin, less than 6mm diameter, bead or ribbon around the edge of the surface to be bonded.

The cure process begins with the formation of a skin on the exposed surface of the sealant and progresses inward through the material. At 25°C and 50% relative humidity, RTV157 and RTV159 sealants will form a tack-free surface skin in about 30 to 60 minutes. Once the tack-free skin has begun to form, further tooling of the adhesive sealant is not advisable. As the adhesive sealant cures, acetic acid vapours are released from the sealant surface. The odour of acetic acid will completely disappear when curing is completed.

Because these adhesive sealants cure by reacting with atmospheric moisture, higher temperatures and humidity will accelerate the cure process lower temperatures and humidity will slow the cure rate. Exact cure time will depend on temperature, humidity, sample thickness and sealant configuration. Since cure times increase with thickness, use of these adhesive sealants should be limited to section thicknesses of 6mm or less.

#### **Bond Strength Development**

In addition to the effects of temperature and relative humidity, development of maximum bond strength will depend on joint configuration, degree of confinement, sealant thickness and substrate porosity. Normally, sufficient bond strength will develop in 12 to 24 hours to permit handling of parts. Minimum stress should be applied to the bonded joint until full adhesive strength is developed, generally considered to be 7 days at 23C / 50% RH. Eventually, the adhesive strength of the bond will exceed the cohesive strength of the silicone. Always allow maximum cure time available for best results.

#### **PACKAGING AND DISPENSING**

RTV157 and RTV159 adhesive sealants are supplied ready-to-use in collapsible aluminum squeeze tubes, caulking cartridges and in bulk containers.

Collapsible aluminum tubes may be squeezed by hand or with the aid of mechanical wringers which allow more complete removal of material from the tube. Air-operated dispensing guns may also be used with aluminum tubes and offer the advantages of improved control and faster application for production line use. The sealant may be dispensed from caulking cartridges, by using simple mechanical caulking guns or air-operated guns. Air-operated guns will allow greater control and application speed. Both tubes and cartridges are easy to use, can be put into production quickly and require minimal capital investment.

Bulk containers require a larger initial investment in dispensing equipment, but offer the most economical packaging for volume production. Bulk dispensing systems are air-operated extrusion pumps coupled to hand or automated dispensing units. Pumps which are specifically designed for pumping one-component RTV silicone rubber have TEFLON<sup>1</sup> seals, packings, and TEFLON<sup>1</sup> lined hoses to prevent moisture permeation and pump cure problems.



**CLEANUP AND REMOVAL**

Before curing, solvent systems such as naphtha or methyl ethyl ketone (MEK) are most effective. Refer to solvent use warnings in the section on surface preparation.

After cure, selected chemical strippers which will remove the silicone rubber are available from other manufacturers. Specific product information may be obtained on request.

<sup>1</sup>TEFLON is a registered trademark of DuPont.

**Handling and Safety**

Material Safety Data Sheets are available upon request from Momenive performance materials. Similar information for solvents and other chemicals used with the Momenive performance materials products should be obtained from your supplier. When solvents are used, proper safety precautions must be observed.

**Storage and Warranty  
Period**

The warranted shelf life will be indicated by the 'use before date' on the associated documents with a minimum of 4 months when stored in the original unopened containers below 27° C.

**Availability**

RTV157 is available in 204 kg drums, 18.1 kg pails, 170 g Semco cartridges and 85 gram tubes.



# MOMENTIVE

performance materials

RTV157 - RTV 159

## PRINCIPAL LOCATIONS – Regional Information

North America	World Headquarters 187 Danbury Road Wilton, CT 06897, USA	T 800.295.2392	F 607.754.7517
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Europe, Middle East, Africa and India	D-51368 Leverkusen Germany	T 00.800.4321.1000 T +31.164.293.276	F +31.164.241.750
Pacific	Akasaka Park Building - 5-2-20 Akasaka Minato-ku, Tokyo 107-6112 Japan	T +81.3.5544.3100	F +81.3.5544.3101

## CUSTOMER SERVICE CENTERS

North America	Charleston, WV 25314, USA E <a href="mailto:cs-na.silicones@momentive.com">cs-na.silicones@momentive.com</a>		
	<ul style="list-style-type: none"> <li>Specialty Fluids</li> <li>UA, Silanes, Resins, and Specialties</li> <li>RTV Products-Elastomers</li> <li>Sealants and Adhesives &amp; Construction</li> </ul>	T 800.523.5862 T 800.334.4674 T 800.332.3390 T 877.943.7325	F 304.746.1654 F 304.746.1623 F 304.746.1623 F 304.746.1654
Latin America	E <a href="mailto:cs-la.silicones@momentive.com">cs-la.silicones@momentive.com</a>		
	<ul style="list-style-type: none"> <li>Argentina &amp; Chile</li> <li>Brazil</li> <li>Mexico &amp; Central America</li> <li>Venezuela, Ecuador, Peru, Colombia, &amp; Caribbean</li> </ul>	T +54.11.4862.9544 T +55.11.4534.9650 T +52.55.5899.5135 T +58.212.285.2149	F +54.11.4862.9544 F +55.11.4534.9660 F +52.55.5899.5138 F +58.212.285.2149
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Pacific	E <a href="mailto:cs-ap.silicones@momentive.com">cs-ap.silicones@momentive.com</a>		
	<ul style="list-style-type: none"> <li>Japan</li> <li>China</li> <li>Korea</li> <li>Singapore</li> </ul>	T +81.276.20.6182 T +86.21.5050.4666 (ext. 1523) T +82.2.6201.4600 T +65.6220.7022	
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