

SERVICE BULLETIN

AA-SB-71-002

Repair of Powerplant Air Intake Filter Mesh

1. Planning Information

1.1 EFFECTIVITY

Alpha 160A with S/N 160A-06001 to 160A-07014 & 160A-0015 & Alpha 160Ai with S/N 160Ai-06007

1.2 CONCURRENT REQUIREMENTS

Nil.

1.3 REASON

This Service Bulletin provides a means to repair the Power Plant Air Intake Filter Mesh.

1.4 DESCRIPTION

Service Bulletin AA-SB-71-001 requires an inspection to be carried out on the Air Intake Filter supporting Mesh. This Service Bulletin provides a method to repair the air intake when the filter mesh is found to be failed. The repair does not eliminate the need to carry out regular inspections on the air intake IAW AA-SB-71-001

1.5 COMPLIANCE

On detection of a failure in the air intake filter mesh before further flight: Carry out accomplishment instructions in §3.

Make a logbook entry stating compliance with this Service Bulletin.

1.6 APPROVAL

Alpha Aviation Design Organisation DO65180, Certificate of Approval AA/60/0932.

1.7 WEIGHT AND BALANCE

N/A

1.8 REFERENCES

Alpha Aviation Design Ltd Drawing 60-71-900

1.9 OTHER PUBLICATIONS AFFECTED

Insert Service Manual Supplement AA/60/0932, November 2007 in the Service Manual.

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2. Material Information

2.1 MATERIALS IDENTIFICATION

QTY	P/N	Description	Material Comments
2	60-71-900-11	Doubler Long	ALCLAD SHT 2024 T3, .032" THK
2	60-71-900-13	Doubler Short	ALCLAD SHT 2024 T3, .032" THK
1	60-71-900-15	Wire Mesh	S/S, Φ0.8mm, 304, 5x5mm
AR	60-71-204-002	Rubber Skirting	HEAT RESISTANT SILICONE SHEET

2.2 CONSUMABLES

Nuplex K138 Epoxy Adhesive or AMS-S-8802 PRC type sealant adhesive.
MS20470AD4-7 or MS20470AD5-7 solid rivets.

2.4 SPECIAL TOOLING

Nil.

3. Accomplishment Instructions

- 3.1 Secure Aircraft and remove engine cowl.
- 3.2 Remove the Air Intake Box from the engine for repair.
- 3.3 Refer to drawing 60-71-900 and figure 1 below.
- 3.4 Drill out all rivets holding rubber skirt on. Inspect skirt for wear and damage and replace if necessary.
- 3.5 Remove the old 5x5mm wire mesh from the air box. Dress the remains of the spot welds to leave the surface flat and tidy.
- 3.6 Fabricate doublers 60-71-900-11 and 60-71-900-13 to mate with inside of air box. Create relief where necessary around clips and hinges. It is important that doublers fit snugly into the corner of the mesh to act as a throat washer. A 45° bend with R3.0mm is required on the edge of the doubler in contact with the mesh corner to provide a snug fit.
- 3.7 Repair any loose or broken clips or hinges IAW standard aircraft practice and procedures.
- 3.8 Fabricate wire mesh P/N 60-71-900-15 to fit inside air box opening. Ensure edge bends are bent with a smooth radius of 3mm as per drawing 60-71-900-15. Ensure the mesh face in contact with the filter element is flat within 3mm. Flanges on mesh to match the width of the doublers.
- 3.9 Temporarily install doublers and mesh, and drill off the holes in the doublers through the existing holes in the air intake box where the rubber skirting attaches.
- 3.10 Disassemble and degrease the box, mesh and doublers. Scuff the surface of the doublers in contact with the mesh with a new Scotch Brite Pad, or new '400 grit' sandpaper to ensure a good key for the adhesive to adhere to.
- 3.11 Mix the K138 epoxy IAW manufacturers instructions (Refer to Appendix A) Add micro balloons, glass spheres or micro fibre filler to the epoxy mixture to achieve a pasty consistency that would not run off. Alternatively AMS-S 8802 PRC type sealant adhesive may be used, again thickened to achieve a pasty consistency with micro balloon, glass spheres or micro fibre as required.
- 3.12 Apply a liberal layer of adhesive to the doubler inner surface. Place the wire mesh in place and plaster some adhesive over the mesh flanges where it mates with the doublers.
- 3.13 Install the doublers over the mesh, the rubber skirting and skirting doublers using specified rivets. Alternative rivets may be used, but if blind rivets are used, it is important to make sure there is no danger of any remains of the tails to be sucked into the engine.
- 3.14 After riveting, wipe off excess adhesive ensuring the mesh is clean.

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- 3.15 If Epoxy adhesive is used, cure the resin by placing the air box assembly in a warm oven at about 60° C +/- 10°C for 2 hours. PRC require curing for several hours at room temperature. (Place the air box face down in the oven if possible to prevent adhesive run-off onto the mesh.)
- 3.16 Inspect the assembly and clean off any adhesive run-off that occurred during curing.
- 3.17 Reinstall the air box, and carry out an engine ground run before returning the aircraft to service.

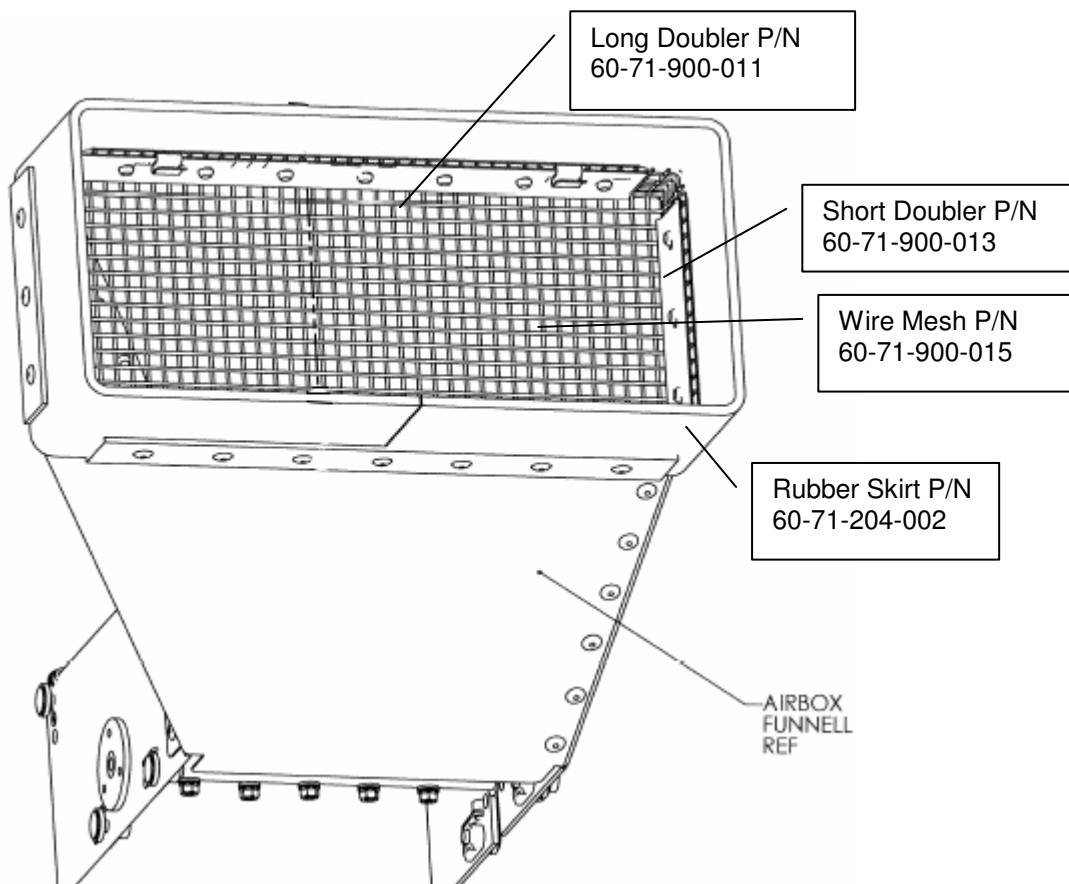


Figure 1: Repair for Air Box – Doubler for Wire Mesh.



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Appendix A

K138

(also known as K2004)

PERFORMANCE EPOXY ADHESIVE

DESCRIPTION:

K138 epoxy is a structural adhesive exhibiting high temperature in-service performance and good metal bonding properties.

FEATURES

- High temperature resistance
- Bonds metals
- Cures at 5°C
- Chemical resistant

BENEFITS

- Extreme condition performance
- Specific
- Condition tolerant
- Condition tolerant

NORMAL END USES:

- Bonding metals
- Hi temperature moulds
- Industrial assembly operations

TYPICAL PROPERTIES:

	<u>RESIN</u>	<u>HARDENER</u>	
Appearance:	Beige colour paste	Grey coloured paste	
Specific Gravity:	1.70	1.70	
Flash Point:	>110°C	>104°C	
Shelf Life:	>24 months	>24 months	
MIX RATIO:	<u>by weight</u>	<u>by volume</u>	
Resin	100	100	
Hardener	40	40	
<u>POT LIFE:</u> (Usable Life)	<u>@ 12°C</u> 60-70 minutes	<u>@ 15°C</u> 40-60 minutes	<u>@ 20°C</u> 30-40 minutes

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ARALDITE K138 (cont'd)

CURE TIME:

48 hours at 5°C
24 hours at 23°C
1 hour at 60°C

COVERAGE:

Use as volume required ($0.001\text{m}^3 = 1\text{Lt}$).
Use at $3\text{m}^2/\text{Lt}$ for normal bonding

SURFACE PREPARATION:

(a) Metals: Grind to clean bright surface.
Degrease with Eposolve 70.
(b) Timber and Composites: Abrade to roughen and clean. Degrease composites.

MIXING INSTRUCTIONS:

Carefully mix the product according to the stated mix ratio. The mix ratio is the only acceptable formula. Increased hardener levels result in a **weaker** product. Mix until uniform and no streakiness is evident. Mixing by **weight** is recommended due to the differential mix ratio.

APPLICATION:

Apply mixed adhesive with spatula. Clamp while curing at the above schedules. Only fully cured adhesives will exhibit the advised heat resistance (120°C). Inadequate mixing, incorrect mix ratios or movement before cure are the normal reasons for joint failure.

HEALTH AND SAFETY:

Use gloves wherever possible. Wash hands with warm, soapy water after any skin contact. Re-seal all container tightly. Clean up with Eposolve 70.

CURED PROPERTIES:

Maximum Operating Temperature:	120°C
Density kg/L:	1.70
Lap Shear Strength N/mm ² :	17