STANDARD OVERHAUL PRACTICES MANUAL

BONDING AID FOR SHIMS, FILLERS AND DETAILS

PART NUMBER
NONE

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PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA
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PAGE DATE: Jul 01/2009

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STANDARD OVERHAUL PRACTICES MANUAL

Revision No. 6
Jul 01/2009

To: All holders of BONDING AID FOR SHIMS, FILLERS AND DETAILS 20-50-24.

Attached is the current revision to this STANDARD OVERHAUL PRACTICES MANUAL

The STANDARD OVERHAUL PRACTICES MANUAL is furnished either as a printed manual, on microfilm, or digital products, or any combination of the three. This revision replaces all previous microfilm cartridges or digital products. All microfilm and digital products are reissued with all obsolete data deleted and all updated pages added.

For printed manuals, changes are indicated on the List of Effective Pages (LEP). The pages which are revised will be identified on the LEP by an R (Revised), A (Added), O (Overflow, i.e. changes to the document structure and/or page layout), or D (Deleted). Each page in the LEP is identified by Chapter-Section-Subject number, page number and page date.

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A = Added, R = Revised, D = Deleted, O = Overflow

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INTRODUCTION

1. General

A. The instructions in this manual tell how to do standard shop procedures during maintenance functions from simple checks and replacement to complete shop-type repair.

B. This manual is divided into separate sections:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) Effective Pages

(5) Contents

(6) Revision Record

(7) Record of Temporary Revisions

(8) Introduction

(9) Procedures

C. Refer to SOPM 20-00-00 for a definition of standard industry practices, vendor names and addresses, and an explanation of the True Position Dimensioning symbols used.

D. The data is general. It is not about all situations or specific installations. Use it as a guide to help you write minimum standards.

E. If the component overhaul instructions are different from the data in this subject, use the component overhaul instructions.

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BONDING ASSEMBLY AID FOR SHIMS, FILLERS AND DETAILS

1. INTRODUCTION

A. The data in this subject comes from Boeing Process Specification BAC5444. The airline has a copy of the Boeing Process Specification Manual.

B. The data is general. It is not about all situations or specific installations. Use this data to help you write minimum requirements.

C. Refer to SOPM 20-00-00 for a full list of all the vendor names and addresses.

2. MATERIALS

NOTE: Equivalent substitutes can be used.

A. Method 2

(1) Adhesive transfer tape, width optional

(a) Scotch 464, 465, 468, 909, 924, Y926, Y953, 969, 973, 9568 (SOPM 20-60-04)

(b) BMS 5-91

B. Method 4

(1) Adhesives

(a) BMS 5-14

(b) EC-776, V76381

(c) EC-1357, V76381

(d) BMS 5-36 (for optional method)

(e) BMS 5-92 (for optional method)

C. Method 5

(1) Adhesive

(a) BMS 5-25, Type 2, Grade 1

(b) BMS 5-92 (for optional method)

D. Method 6

(1) Adhesive – BMS 5-25, Type 2, Grade 1

(2) Fabric – Style 1620 fiberglass

E. Method 8

(1) Adhesive – Super 77 Spray Adhesive, V76381

3. GENERAL

A. This procedure is only for shims, fillers and other such parts, which will be subsequently attached with permanent fasteners. Permanent fasteners do not include threaded bolts or equivalent fasteners that can be removed nondestructively. Do not use this procedure when the shims, fillers, or details are installed with wet primer or wet sealant, or when the parts can become hotter than 250 degrees F. during service.

B. This procedure has these methods:

(1) Method 1 – Obsolete

(2) Method 2 – Bonds with pressure sensitive adhesive tapes and films

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(3) Method 3 – Obsolete

(4) Method 4 – Bonds with contact adhesives or cyanoacrylates ("super glue")

(5) Method 5 – Bonds with epoxy resins

(6) Method 6 – Bond with epoxy resins with an added scrim

(7) Method 7 – Obsolete

(8) Method 8 – Bonds with spray adhesives

C. If the overhaul instructions do not specify the method, you can use Methods 2, 4, 5, or 6.

D. Mix ratios are nominal unless shown differently.

4. SURFACE PREPARATION

A. Clean the surfaces by the Final Cleaning procedure of SOPM 20-30-03.

5. APPLICATION OF ADHESIVES

A. Method 2

(1) You can cut the tape to size before or after application.

(2) Apply the tape to one of the surfaces to be bonded and press or roll with good pressure. Parts can be put in storage with paper-backed tape for approximately 2 months.

(3) Use only one layer of adhesive film.

(4) Peel the paper backing from the adhesive film and press or roll with pressure to make sure the bond is good.

(5) Parts can be used immediately.

B. Method 4

(1) Preferred procedure

(a) You can thin BMS 5-14 material up to 50 percent with methyl ethyl ketone. For EC-776 and EC-1357 no thinner is necessary.

(b) Apply a thin, smooth layer of adhesive to the two mating surfaces. The layer must not be thicker than 0.014 inch.

(c) Let the adhesive dry 10 minutes, or until the surface is tacky but does not get on your knuckles if touched.

(d) Assembly the parts and apply pressure. For small parts and thin shims, hand pressure is sufficient. For rigid sheet that does not easily bend under hand pressure, apply approximately 5 psi pressure by any method.

(e) Remove unwanted adhesive with solvent per BAC5750 (SOPM 20-30-03). Do not let solvent flow into the bond line.

(f) Parts with dried adhesive layers can be bonded by heat activation. Apply pressure to the assembled parts and heat with a heat source not hotter than 260 degrees F. until bonded.

(2) Optional procedure with BMS 5-36

(a) Apply BMS 5-36 adhesive to one of the mating surfaces. Apply it from the container with a medicine dropper or with the applicator that comes with the container. Make a layer as thin as possible with a glass rod or equivalent tool.

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(b) Assemble the parts immediately. Make final adjustment within seconds after the parts touch. Apply sufficient pressure by hand, with clamps or equivalent devices to make sure the parts fully touch until the bond sets. The time could be seconds or up to 3-5 minutes.

(c) Most bonds are sufficiently cured after 1 hour at 70-80 degrees F.

(d) If you spill large quantities of the liquid adhesive, flood the area with water. This will make the liquid cyanoacrylate cure. Then you can scrape it from the surface. Do not try to wipe up the spilled liquid adhesive with rags or tissues, because the fabric will cause polymerization. Large quantities of adhesive will generate heat as they cure, and make smoke and strong, irritating vapors.

(3) Optional procedure with BMS 5-92

(a) Clean the mating surfaces by the Precleaning and Final Cleaning procedures of BAC5750 (SOPM 20-30-03).

(b) Mix the individual components of the adhesive as follows:

Adhesive	Parts by Weight		Pot Life
	Part A	Part B	
BMS 5-92 Type 1	140	100	2 hours below 100°F
BMS 5-92 Type 3	140	100	2 hours below 100°F
EA9330	100	33	1 hour below 100°F
EC2216	140	100	2 hours below 100°F

(c) Apply a thin, continuous layer of the mixed adhesive to each mating surface. A one-surface application can be made on smooth mating surfaces of less than 12 square inches if the surfaces fit tightly and there are no voids in the bond area. A one-surface application can also be made on long, narrow surfaces if they are not wider than 1 inch and the adhesive will squeeze out at the edges.

(d) Put the parts together and apply steady pressure to make sure the surfaces fully touch. The bondline must be continuous and the pressure must be good for a good bond and for good control of the shim thickness.

(e) Wipe off unwanted adhesive, before it cures, with a clean wiper or cotton swab wet with the same solvent you used to clean the surfaces in Paragraph 5.B.(3)(a).

(f) Keep the pressure on, and cure at 65-100°F. for a minimum of 24 hours, or at 240-260°F. for 120-140 minutes or at 110-130°F. for 170-190 minutes.

C. Method 5

(1) Epibond 1539A/B-10

(a) Mix 113 parts of Epibond 1539 Part A with 100 parts by weight Part B. The pot life of the mixture is approximately 1 hour at 75°F. Do not thin the Epibond 1539.

(b) Mix the adhesive until smooth.

(c) Apply a layer of mixed adhesive, not more than 0.005 inch thick, to each mating surface.

(d) Put the parts together and apply 2-6 psi pressure to make sure the surfaces fully touch. A continuous bead of adhesive at the edges is usually a good sign of sufficient contact.

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(e) Wipe off unwanted adhesive, before it cures, with a clean wiper or cotton swab wet with the same solvent you used to clean the surfaces in Paragraph 5.C.(1)(a). Do not let the solvent get into the bondline.

(f) Keep the pressure on, and cure at 70-80°F. for a minimum of 12 hours. This adhesive will not cure satisfactorily below 65°F. Maximum strength comes after a minimum of 7 days at 75°F. A full cure can also be made in 2 hours at 115-135°F., or in 1 hour at 190-210°F.

(2) EA901NA/B-1

(a) Mix 113 parts of EA901 Part A with 100 parts by weight Part B. The pot life of the mixture is approximately 1 hour at 75°F. Do not thin the EA901.

(b) Mix 113 parts of Epibond 1539 Part A with 100 parts by weight Part B. The pot life of the mixture is approximately 1 hour at 75°F. Do not thin the Epibond 1539.

(c) Apply a layer of mixed adhesive, not more than 0.005 inch thick, to each mating surface.

(d) Put the parts together and apply 2-6 psi pressure to make sure the surfaces fully touch. A continuous bead of adhesive at the edges is usually a good sign of sufficient contact.

(e) Wipe off unwanted adhesive, before it cures, with a clean wiper or cotton swab wet with the same solvent you used to clean the surfaces in Paragraph 5.C.(2)(a). Do not let the solvent get into the bondline.

(f) Keep the pressure on, and cure at 70-80°F. for a minimum of 12 hours. This adhesive will not cure satisfactorily below 65°F. Maximum strength comes after a minimum of 7 days at 75°F. A full cure can also be made in 2 hours at 115-135°F., or in 1 hour at 190-210°F.

(3) Optional method (BMS 5-92) – Use the same procedure as in Paragraph 5.B. for BMS 5-92, above.

D. Method 6

(1) Preferred procedure

(a) Mix 113 parts of Epibond 1539 Part A with 100 parts by weight Part B. The pot life of the mixture is approximately 1 hour at 75°F. Do not thin the Epibond 1539.

(b) Mix the adhesive until smooth.

(c) Apply a thin layer of the mixed adhesive to each mating surface.

(d) Cut a piece of fiberglass fabric (scrim) to the exact size of the shim and put this against one of the prepared surfaces.

(e) Remove unwanted adhesive with solvent. Do not let the adhesive get into the bondline.

(2) Optional Procedure (BMS 5-92) – Use the same procedure as in Paragraph 5.B. for BMS 5-92, above.

E. Method 8

(1) Spray a very thin, smooth layer of adhesive to the mating surfaces of the shim only. Wait 30 seconds minimum for the adhesive to dry. Make a note of the time you applied the adhesive to the shim.

(2) Put the shim on the part and apply pressure to the assembly within 15 minutes after you applied the adhesive to the shim.

(3) Cure the adhesive by the vendor's instructions.

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