COMPONENT MAINTENANCE MANUAL

REPAIR OF POLYCARBONATE DUCTS

PART NUMBER
NONE

PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA
A DIVISION OF THE BOEING COMPANY
PAGE DATE: Jul 01/2009

COMPONENT MAINTENANCE MANUAL

Revision No. 6
Jul 01/2009

To: All holders of REPAIR OF POLYCARBONATE DUCTS 21-20-10.

Attached is the current revision to this COMPONENT MAINTENANCE MANUAL

The COMPONENT MAINTENANCE 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.

Pages replaced or made obsolete by this revision should be removed and destroyed.

ATTENTION

IF YOU RECEIVE PRINTED REVISIONS, PLEASE VERIFY THAT YOU HAVE RECEIVED AND FILED THE PREVIOUS REVISION. BOEING MUST BE NOTIFIED WITHIN 30 DAYS IF YOU HAVE NOT RECEIVED THE PREVIOUS REVISION. REQUESTS FOR REVISIONS OTHER THAN THE PREVIOUS REVISION WILL REQUIRE A COMPLETE MANUAL REPRINT SUBJECT TO REPRINT CHARGES SHOWN IN THE DATA AND SERVICES CATALOG.

Location of Change	Description of Change
	NO HIGHLIGHTS

COMPONENT MAINTENANCE MANUAL

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

TABLE OF CONTENTS

COMPONENT MAINTENANCE MANUAL

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

BOEING SERVICE BULLETIN	BOEING TEMPORARY REVISION	OTHER DIRECTIVE	DATE OF INCORPORATION INTO MANUAL

COMPONENT MAINTENANCE MANUAL

All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

Revision		Filed		Revision		Filed	
Number	Date	Date	Initials	Number	Date	Date	Initials

Revision		Filed	
Number	Date	Date	Initials

Revision		Filed	
Number	Date	Date	Initials

BOEING®

COMPONENT MAINTENANCE MANUAL

All temporary revisions to this manual will be accompanied by a cover sheet bearing the temporary revision number. Enter the temporary revision number in numerical order, together with the temporary revision date, the date the temporary revision is inserted and the initials of the person filing.
When the temporary revision is incorporated or cancelled, and the pages are removed, enter the date the pages are removed and the initials of the person who removed the temporary revision.

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

Temporary Revision		Inserted		Removed	
Number	Date	Date	Initials	Date	Initials

Temporary Revision		Inserted		Removed	
Date	Initials	Number	Date	Date	Initials

INTRODUCTION

1. General

A. The instructions in this manual supply the data necessary to do the maintenance functions together with the test, fault isolation, repair, and replacement of the defective parts.

B. This manual is divided into different parts:

(1) Title Page

(2) Transmittal Letter

(3) Highlights

(4) List of Effective Pages

(5) Table of Contents

(6) Temporary Revision & Service Bulletin Record

(7) Record of Revisions

(8) Record of Temporary Revisions

(9) Introduction

(10) Procedures & IPL Sections

C. Components that can be repaired have a different repair number for each specified repair. To find the repair number location of a component, look in the Repair-General procedure at the beginning of the REPAIR section. The Repair-General procedure also has an explanation of the True Position Dimension symbols used.

D. All dimensions, measures, quantities and weights included are in English units. When metric equivalents are given they will be in the parentheses that follow the English units.

E. The introduction to the Illustrated Parts List (IPL) shows how the IPL data is used.

F. Design changes, optional parts, configuration differences and Service Bulletin modifications may cause different part numbers. These part numbers are identified in the IPL with an alphabetical letter which is added to the end of the basic item number. This new item number is referred to as an alpha-variant. Throughout the manual, IPL basic item number references also apply to alpha-variants unless shown differently.

G. The tool reference numbers found in the individual procedures and in the Special Tools, Fixtures, and Equipment section are used to identify if a tool is a standard tool (STD-XXXX), a commercial tool (COM-XXXX), or a Special Tool (SPL-XXXX). This reference number is also used to distinguish between tools with similar names in the same procedure. These reference numbers are for use in the documentation only. They are not to be used for ordering tools.

REPAIR OF POLYCARBONATE DUCTS - DESCRIPTION & OPERATION

1. Description and Operation

A. This manual covers Boeing recommended procedures for repair of damaged polycarbonate ducts used in the airplane air conditioning system.

(NOT APPLICABLE)

(NOT APPLICABLE)

(NOT APPLICABLE)

(NOT APPLICABLE)

REPAIR

1. **General**

   A. Materials

   NOTE: Equivalent substitutes may be used.

   (1) Solvent –

   (a) Methyl Alcohol alcohol, B00072

   (b) Isopropyl Alcohol alcohol, B00130

   (c) BMS 3-2, Type 2solvent, B50079

   (d) TT-N-95 Type 2 solvent, B00083

   (e) Aliphatic Naphthasolvent, B00316

   (f) Denaturated Alcoholalcohol, B00068

   (g) Methylene Chloridesolvent, B00191

   (2) Ethylene Dichloride ethylene dichloride, B50181

   (3) Lexan 9600 or scraps of polycarbonate thermoplastic resin, G50670 to be repaired

   (4) Aluminum Oxide – 180 grit abrasive paper, G50381 , 180 grit or finer

   (5) Fiberglass fabric – BMS 9-3, Type D fabric, G00316 (SOPM 20-60-04)

   (6) Urethane adhesive – BMS 5-105, Type II adhesive, A00870 (SOPM 20-60-04)

2. **Repair**

   A. Procedure

   (1) Repair of pin holes, cuts and cracks consists of cleaning, bonding, and laminating the damaged area.

   (a) Cleaning

   1) Clean damaged area of loose material and dirt by brushing with a stiff bristle brush, STD-132 and blowing with compressed air supply, STD-4449.

   2) Wipe surface withalcohol, B00072 or alcohol, B00130 using clean, cotton cloth, G50316l.

   3) Protect cleaned part from recontamination.

   (b) Bonding

   WARNING: AVOID BREATHING VAPOR OR PROLONGED SKIN CONTACT OF METHYLENE CHLORIDE AND ETHYLENE DICHLORIDE. USE ADEQUATE VENTILATION AND, WHEN NECESSARY, RESPIRATOR PROTECTION.

   1) Prepare bonding solution by one of the following methods:

   a) Mix ethylene dichloride, B50181 (maximum 40% by weight) and solvent, B00191 to adjust the evaporation rate.

b) Chop clean polycarbonate of the same grade and color into small pieces and make a 1 to 5% (by weight) solution in solvent, B00191 or a mixture of solvent, B00191 and ethylene dichloride, B50181.

NOTE: (1) Scraps of equal material or Lexan 9600 can be used as an alternate to original polycarbonate material.

(2) A higher concentration solution increases the allowable working time, but may increase irregularities and squeeze out.

2) Apply bonding solution to cracks using clean brush, STD-122. Allow sufficient time for solution to dry.

3) Check filled cracks to ensure proper bonding.

(c) Laminating

1) Solvent clean surface to be laminated using either solvent, B50079, solvent, B00083, solvent, B00316 or alcohol, B00068. Remove solvent by wiping dry. Do not permit solvent to dry by evaporation.

2) Remove gloss by sanding with 180 grit abrasive paper, G50381 or finer.

3) Remove dust with a clean, dry soft cotton cloth, G50138 and repeat REPAIR-GENERAL, Paragraph 2.A.(1)(c)1).

WARNING: URETHANE ADHESIVE CONTAINS ISOCYANATES. AVOID BREATHING VAPOR OR SKIN CONTACT. BLEND AND USE ONLY IN WELL VENTILATED AREAS.

4) Thoroughly blend base resin and catalyst parts of liquid adhesive, A00870 (EC3532A and EC3532B, or EC3549A and EC3549B) in accordance with manufacturer's instructions.

NOTE: Useful work life of blended urethane adhesive at 70°-80°F is approximately 5-15 minutes for EC3532, and 30-70 minutes for EC3549.

5) Apply a thin continuous coat of blended adhesive to fiberglass fabric, G00316 and to repair surface using brush, G00268, spatula, STD-809, or suitable spray gun, STD-9077.

6) Bring surfaces together and apply pressure to ensure contact of faying surfaces.

7) Cure at temperature above 65°F according to the following schedule.

Table 601:

Adhesive	Cure Time	Handling Time
EC3532A & EC3532B	12 hr	20 minutes
EC3549A & EC3549B	48 hr	90 minutes

NOTE: Laminated part may be removed from adhesive application position after "handling time", provided that removal does not stress the bond during the cure time period.

(NOT APPLICABLE)

BOEING®

COMPONENT MAINTENANCE MANUAL

FITS AND CLEARANCES

(NOT APPLICABLE)

COMPONENT MAINTENANCE MANUAL

SPECIAL TOOLS, FIXTURES, AND EQUIPMENT

(NOT APPLICABLE)

COMPONENT MAINTENANCE MANUAL

ILLUSTRATED PARTS LIST

(NOT APPLICABLE)