TO: ALL HOLDERS OF REPAIR OF POLYCARBONATE DUCTS COMPONENT MAINTENANCE MANUAL 21-20-10

REVISION NO. 2 DATED JAN 01/88

HIGHLIGHTS

Pages which have been added or revised are outlined below together with the highlights of the revision. Remove and insert the affected pages as listed and enter the Revision No. and date on the Record of Revision Sheet.

CHAPTER/SECTION AND PAGE NO.	DESCRIPTION OF CHANGE
ALL PAGES	This revision constitutes a complete reissue of all pages to add 737/747 customers. For 737/747 customers, this manual replaces information previously contained in Overhaul Manual 21-20-10 which has been cancelled.

REPAIR OF POLYCARBONATE DUCTS

NO ASSIGNED PART NUMBER

COMPONENT MAINTENANCE MANUAL
WITH
ILLUSTRATED PARTS LIST

REVISION RECORD

- Retain this record in front of manual. On receipt of revision, insert revised pages in the manual, and enter revision number, date inserted and initial.

REVISION NUMBER	REVISION DATE	DATE FILED	BY	REVISION NUMBER	REVISION DATE	DATE FILED	BY

TEMPORARY REVISION AND SERVICE BULLETIN RECORD

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

* = REVISED, ADDED OR DELETED

TABLE OF CONTENTS

*[1] Special instructions not required. Use standard practices.

INTRODUCTION

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement to complete shop-type repair.

This manual is divided into separate sections:

1. Title Page
2. Record of Revisions
3. Temporary Revision & Service Bulletin Record
4. List of Effective pages
5. Table of Contents
6. Introduction
7. Procedures

Refer to the Table of Contents for the page location of applicable sections. An asterisked flagnote *[ ] in place of the page number indicates that no special instructions are provided since the function can be performed using standard industry practices.

All weights and measurements used in the manual are in English units, unless otherwise stated. When metric equivalents are given they will be in parentheses following the English units.

REPAIR OF POLYCARBONATE DUCTS

DESCRIPTION AND OPERATION

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

REPAIR - GENERAL

1. Materials

NOTE: Equivalent substitutes may be used.

A. Solvent -- Methyl or Isopropyl Alcohol

B. Solvent -- BMS 3-2, Type 2; TT-N-95 Type 2; Aliphatic naphtha; or denaturated alcohol (Ref 20-60-01)

C. Ethylene Dichloride

D. Methylene Chloride

E. Lexan 9600 or scraps of polycarbonate to be repaired

F. Aluminum Oxide abrasive cloth, 180 grit or finer

G. Fiberglass fabric -- BMS 9-3, Type D (Ref 20-60-04)

H. Urethane adhesive -- BMS 5-105, Type II (Ref 20-60-04)

2. Repair

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

(1) Cleaning

(a) Clean damaged area of loose material and dirt by brushing with a stiff-bristle brush and blowing with compressed air.

(b) Wipe surface with methyl or isopropyl alcohol using clean, lint-free wiping material.

(c) Protect cleaned part from recontamination.

(2) Bonding

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

(a) Prepare bonding solution by one of the following methods:

1) Mix ethylene dichloride (maximum 40% by weight) and methylene chloride to adjust the evaporation rate.

2) Chop clean polycarbonate of the same grade and color into small pieces and make a 1 to 5% (by weight) solution in methylene chloride or a mixture of methylene chloride and ethylene dichloride.

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.

(b) Apply bonding solution to cracks using clean brush. Allow sufficient time for solution to dry.

(c) Check filled cracks to ensure proper bonding.

(3) Laminating

(a) Solvent clean surface to be laminated using either BMS 3-2, Type 2 cleaning solvent; TT-N-95, Type 2 aliphatic naphtha; or denaturated alcohol. Remove solvent by wiping dry. Do not permit solvent to dry by evaporation.

(b) Remove gloss by sanding with aluminum oxide abrasive cloth, 180 grit or finer.

(c) Remove dust with a clean, dry cloth and repeat step (a).

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

(d) Thoroughly blend base resin and catalyst parts of liquid urethane adhesive EC3532A and EC3532B, or EC3549A and EC3549B (BMS 5-105, Type II) 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.

(e) Apply a thin continuous coat of blended adhesive to fiberglass fabric, BMS 9-3, Type D and to repair surface using brush, spatula, or suitable dispensing gun.

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

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

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.