DISTRIBUTION - REPAIR

EFFECTIVITY: ALL

1. General

   A. This section gives the procedures to repair the conditioned air polycarbonate ducts.

   B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
21-20-00-300-801-A	CONDITIONED AIR POLYCARBONATE DUCTS - REPAIR	ALL
21-20-00-300-802-A	CONDITIONED AIR POLYCARBONATE DUCTS - REPAIR	ALL
21-20-00-300-803-A	CONDITIONED AIR GLASS FIBER DUCTS - REPAIR	ALL
21-20-00-300-804-A	CONDITIONED AIR GLASS FIBER DUCTS - REPAIR	ALL

TASK 21-20-00-300-801-A
EFFECTIVITY: ALL

2. CONDITIONED AIR POLYCARBONATE DUCTS - REPAIR

A. General

(1) This task gives the procedures to repair the surfaces of ducts made from polycarbonate materials.

(2) Cracked polycarbonate ducts can be repaired in all locations of the aircraft.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-02/100	-
AMM TASK 21-20-01-000-801-A/400	-
AMM TASK 21-20-01-400-801-A/400	-
AMM TASK 21-20-04-000-801-A/400	-
AMM TASK 21-20-04-400-801-A/400	-
AMM TASK 53-01-02-400-801-A/400	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Rubber gloves	Hand protection	1
Commercially available	Safety goggles	Eye protection	1
Commercially available	Shop Wipes	For cleaning	AR
Commercially available	Paint brush	To apply the resin	AR
Commercially available	Sandpaper 240	To remove the paint	AR
Commercially available	Masking tape	To mask the duct surface	AR
Commercially available	Measuring scale	To measure the length of damage	AR

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
TT-I-735	Isopropyl Alcohol - Commercial grade	AR
O-E-760	Ethanol - Commercial grade	AR
Commercially available	EPOCAST 169A	AR
Commercially available	HE 1908 Adhesive	AR
Commercially available	Lexan F6006 series	AR
Commercially available	Polyurethane Paint FED. STD. 1595-36173	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	In the aircraft

I. Preparation

SUBTASK 841-002-A

(1) Remove the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(2) Remove the cockpit ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(3) Remove the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

(4) Remove the passenger-cabin ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(5) Remove and discard the tie-down strap(s) that attach(es) the duct.

(6) Remove the clamp (when applicable).

(7) Remove the duct(s).

(8) Remove the thermal insulating blankets as necessary (AMM TASK 21-20-01-000-801-A/400).

J. Crack in Polycarbonate Ducts - Repair (Figure 801)

SUBTASK 340-002-A

(1) To repair the surfaces of ducts, you must obey these conditions:

(a) The crack must be at least 1 millimeter wide.

(b) The total damaged areas, with all polycarbonate parts added together, cannot be larger than 103.0 cm^2 (16 in^2) on all the body of the duct. If the damaged area is larger than 103.0 cm^2 (16 in^2), you must replace the duct.

NOTE: The operator must control the total repair area. Embraer suggests that you have a form to control all repairs. Table 801 presents an example of such a form.

Table 801 - DAMAGED AREA CONTROL

COMPONENTS	DAMAGED AREA	DATE OF REPAIR	TOTAL DAMAGED AREA
Duct Assy Cond Air, Distr	38.7 cm^2 (6 in^2)	May25/02	38.7 cm^2 (6 in^2)
Duct Assy Cond Air, Distr	64.5 cm^2 (10 in^2)	Jul01/02	103.0 cm^2 (16 in^2)
Duct Assy Cond Air, Distr	3.2 cm^2 (0.5 in^2)	Jul15/02	106.2 cm^2 (16.2 in^2)[1]

[1] This duct has more than the permitted amount of limited repairs. Then, you must replace the duct.

(2) On the cracked side of the duct, do as follows:

WARNING:
- **HEAT, FIRE OR SPARKS CAN CAUSE AN EXPLOSION. USE EXPLOSION-PROOF EQUIPMENT WHEN PERFORMING THESE REPAIRS. NONCOMPLIANCE COULD CAUSE INJURY TO PERSONNEL.**
- **WEAR GOGGLES, DUST MASK, PROTECTIVE GLOVES AND CLOTHES WHEN CUTTING AND SANDING COMPOSITE MATERIALS.**

NOTE:
- The cracks repair in the ducts junction must be sanded to get a good finish and to prevent noises.
- The ducts junction must be in the same direction as the air flow.

Drill stop holes in each end of the crack (1).

(b) Remove burr from around the crack, where you will install the patch.

(c) With a 240-grit sandpaper, fully remove the excess material and filler from the area where you will make the repair.

(d) Remove all sanding dust with oil-free compressed air.

WARNING:
- **WEAR GLOVES AND GOGGLES AND PREVENT CONTACT WITH SOLVENT VAPORS DURING THE CLEANING.**
- **BE CAREFUL WHEN USING SOLVENTS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN HANDLING THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.**

NOTE:
- Dry the surface with a clean dry shop wipe. Do not let the solvent evaporate from the part and make sure that there is no remaining contamination on it.

- The part will be clean, when you rub the surface with a dry shop wipe and you can see no signs of dirt, oil, or debris.
- Do not touch the cleaned surfaces.

Wipe the surface, after you sand it, with a clean shop wipe soaked in isopropyl alcohol or ethanol.

(f) Embraer recommends that you use the path Lexan F6006 series or Lexan F2001 series.

WARNING:
- **IF CHEMICAL CONTACT SKIN, WASH THOROUGHLY WITH WATER.**
- **IF CHEMICAL SHOULD SPLASH INTO EYES, FLUSH EYES WITH LARGE QUANTITIES OF WATER AND SEEK MEDICAL CARE. USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN WORKING IN A CONFINED SPACE OR AREA.**

(g) There is no specified type of adhesive to bond the patch to repair the duct.

NOTE:
- Embraer recommends that you use adhesive HE 1908.
- Be careful not to contaminate the adhesive of the patch.
- Apply firm, positive pressure and make the surface smooth as necessary to prevent air bubbles.
- Work the patch down over all the surface of the duct.
- The patch is not correctly bonded in the region where will installed, adapter it according the space necessary.
- Push the edges down until the scale cannot slip between the liner and the patch.

(h) If the adhesion is not sufficient, remove the patch and discard it.

NOTE:
- Clean the duct surface again, install a new patch (2) on the internal side of the duct and do an inspection.
- Embraer recommends that you use EPOCAST 169-A.
- Obey the procedures to do the cleaning, the installation, and the inspection.

(3) On the internal side of the duct, do as follows:

(a) Apply the patch (2).

NOTE: Cover all the damaged area.

(b) Apply firm, positive pressure and make the surface smooth as necessary to prevent air bubbles.

(4) On the external side of the duct, do as follows:

(a) Apply the polyurethane resin (3).

NOTE: Cover all the damaged area.

(b) Lightly sand the surface in the marked area to get a good adhesion.

(c) NOTE: Cover all the damaged area.

Apply the patch covered (4) and tighten the adhesive to compact the resin.

(d) Apply firm, positive pressure and make the surface smooth as necessary to prevent air bubbles.

NOTE: Let the resin cure at room temperature, or accelerate the cure with heat up to 77°C (170°F).

(e) After the resin is cured, clean the surface with isopropyl alcohol or ethanol.

(f) Make sure that the patch is correctly attached to the surface of the duct.

(g) If not, do the steps again.

K. Follow-on

SUBTASK 842-002-A

(1) Install the thermal insulating blankets as necessary (AMM TASK 21-20-01-400-801-A/400).

(2) Install the cockpit ducts as necessary (AMM TASK 21-20-04-400-801-A/400).

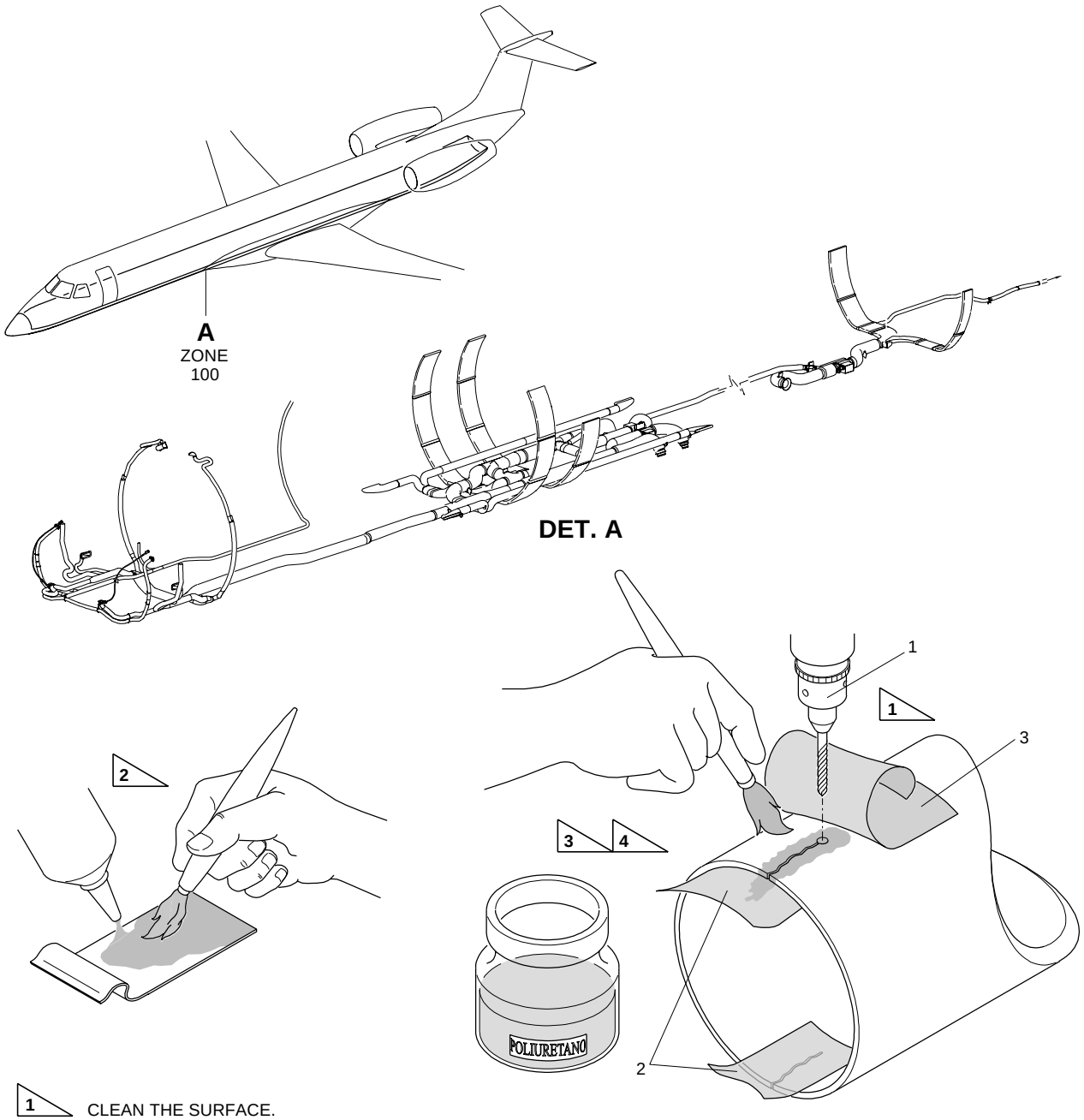
(3) Install the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(4) Install the passenger-cabin ducts as necessary (AMM TASK 53-01-02-400-801-A/400).

(5) Install the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

EFFECTIVITY: ALL

Crack in Polycarbonate Ducts - Repair
Figure 801



1 CLEAN THE SURFACE.

2 BOND THE PATCH WITH ADHESIVE.

3 FILL THE DECOR−SIDE WITH RESIN.

4 APPLY POLYURETHANE PAINT TO THE PREPARED AREA.

− DIMENSIONS ARE IN MILLIMETERS WITH INCH CONVERSIONS IN PARENTHESES.

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TASK 21-20-00-300-802-A
EFFECTIVITY: ALL

3. CONDITIONED AIR POLYCARBONATE DUCTS - REPAIR

A. General

(1) This task gives the procedures to repair the surface of ducts made from polycarbonate materials.

(2) Split polycarbonate ducts can be repaired in all locations of the aircraft.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-02/100	-
AMM TASK 21-20-01-000-801-A/400	-
AMM TASK 21-20-01-400-801-A/400	-
AMM TASK 21-20-04-000-801-A/400	-
AMM TASK 21-20-04-400-801-A/400	-
AMM TASK 53-01-02-400-801-A/400	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Rubber gloves	Hand protection	1
Commercially available	Safety goggles	Eye protection	1
Commercially available	Shop Wipes	For cleaning	AR
Commercially available	Paint brush	To apply the resin	AR
Commercially available	Sandpaper 240	To remove the paint	AR
Commercially available	Masking tape	To mask the duct surface	AR
Commercially available	Measuring scale	To measure the length of damage	AR

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
TT-I-735	Isopropyl Alcohol - Commercial grade	AR
O-E-760	Ethanol - Commercial grade	AR
Commercially available	EPOCAST 169A	AR
Commercially available	HE 1908 Adhesive	AR
Commercially available	LEXAN F6006 series	AR
Commercially available	Polyurethane Paint FED. STD. 1595-36173	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	In the aircraft

I. Preparation

SUBTASK 841-003-A

(1) Remove the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(2) Remove the cockpit ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(3) Remove the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

(4) Remove the passenger-cabin ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(5) Remove and discard the tie-down strap(s) that attach(es) the duct.

(6) Remove the clamp (when applicable).

(7) Remove the duct(s).

(8) Remove the thermal insulating blankets as necessary (AMM TASK 21-20-01-000-801-A/400).

J. Split in Polycarbonate Ducts - Repair (Figure 802)

SUBTASK 340-003-A

(1) To repair the surfaces of ducts, you must obey these conditions:

(a) The split must be at least 1 millimeter wide.

(b) If the damaged area is larger than 103.0 cm^2 (16 in^2) you must replace the duct.

NOTE: The operator must control the total repair area. Embraer suggests that you have a form to control all repairs. Table 802 presents an example of such a form.

Table 802 - DAMAGED AREA CONTROL

COMPONENTS	DAMAGED AREA	DATE OF REPAIR	TOTAL DAMAGED AREA
Duct Assy Cond Air, Distr	38.7 cm^2 (6 in^2)	May25/02	38.7 cm^2 (6 in^2)
Duct Assy Cond Air, Distr	64.5 cm^2 (10 in^2)	Jul01/02	103.0 cm^2 (16 in^2)
Duct Assy Cond Air, Distr	3.2 cm^2 (0.5 in^2)	Jul15/02	106.2 cm^2 (16.2 in^2)[1]

[1] This duct has more than the permitted amount of limited repairs. Then, you must replace the duct.

(2) On the split side of the duct, do as follows:

(a) Check the duct in the vicinity of the damage for entry of water, oil, fuel, dirt or other foreign matter.

(b) Check for delamination around the damage.

(3) To hard damage split, repair as follows: (Figure 802)

NOTE: This repair applies to components made from polycarbonate.

WARNING: WEAR GLOVES AND GOGGLES AND PREVENT CONTACT WITH SOLVENT VAPORS DURING THE CLEANING.

(a) Clean up the duct with ethanol or isopropyl alcohol to remove dirt, oil, and debris.

(b) Mark the area where you will make the repair (1) according to (Figure 802).

(c) Cut out around mark done (2).

(d) With a 180-grit sandpaper, fully remove the excess material and filler from the area where you will make the repair.

(e) Wipe the surface, after you sand it, with a clean shop wipe soaked in ethanol or isopropyl alcohol.

NOTE: Be careful not to go through the region that will be repaired.

1 Make sure that all excess material burr was removed from the surface.

(f) Prepare and apply repair plies according to step 4.

(g) Cure according to step 5.

(4) To prepare damaged areas, do these steps (Figure 802):

WARNING: USE SKIN PROTECTION AND BREATHE CAREFULLY WHEN YOU SAND. SANDING RELEASES A FINE POWDER THAT CAN CAUSE SKIN IRRITATION. BREATHING TOO MUCH OF THIS POWDER CAN CAUSE HEALTH PROBLEMS.

(a) Use No. 180 sandpaper, fine abrasive, or trim out the damaged surface to remove burr.

(b) Do a geometric shape (oval, circular, or rectangular) (2), using another piece of the same material (polycarbonate).

(c) Cut out a piece approximate smaller than split.

(d) If necessary, heat this piece that will be introduce in the split, form approximate and compare in surface.

(e) Use adhesive HE 1908 in the patch to bonded the path Lexan F6006 series (or Lexan F2001 series according split).

(f) Apply the patch in internal side of the duct (2).

(g) Apply firm, positive pressure and make the surface smooth as necessary to prevent air bubbles entrapped air.

(h) Apply the piece in split (3).

(i) Lightly sand the polyurethane resin fill the area between this piece and split, to get a good adhesion (3).

(j) Apply another patch in the other side (3).

(5) To cure the repair, do these steps:

WARNING: USE HEAT CURING EQUIPMENT THAT IS PERMITTED BY THE LOCAL FIRE PROTECTION AUTHORITIES. TO PREVENT CAUSE INJURY TO PERSONNEL.

(a) Let the repair cure at room temperature.

NOTE:
- Obey to use the curing time indicated for specified polyurethane resin.
- Curing time does not include the time necessary for the mold and part to heat up the correct temperature. Curing time is the period after the part has got that temperature.

(6) Material substitution for polycarbonate, when the "as manufactured" material is not available or not in stock.

K. Follow-on

SUBTASK 842-003-A

(1) Install the thermal insulating blankets as necessary (AMM TASK 21-20-01-400-801-A/400).

(2) Install the cockpit ducts as necessary (AMM TASK 21-20-04-400-801-A/400).

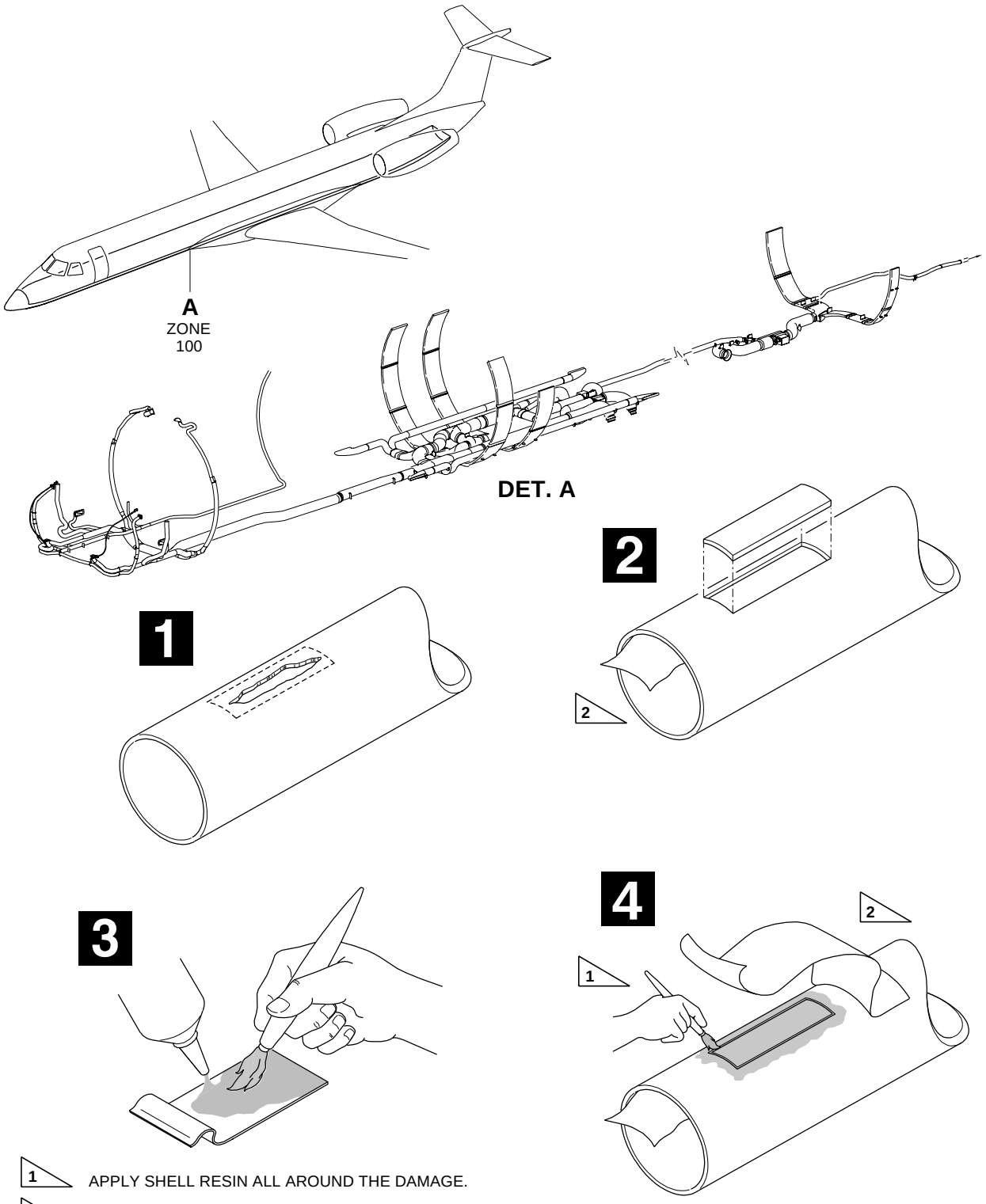
(3) Install the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(4) Install the passenger-cabin ducts as necessary (AMM TASK 53-01-02-400-801-A/400).

(5) Install the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

EFFECTIVITY: ALL

Split in Polycarbonate Ducts - Repair
Figure 802



1 APPLY SHELL RESIN ALL AROUND THE DAMAGE.

2 PUT ADHESIVE IN AROUND DAMAGE SURFACE.

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TASK 21-20-00-300-803-A
EFFECTIVITY: ALL

4. CONDITIONED AIR GLASS FIBER DUCTS - REPAIR

A. General

(1) This task gives the procedures to repair glass fiber ducts.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-02/100	-
AMM TASK 21-20-01-000-801-A/400	-
AMM TASK 21-20-01-400-801-A/400	-
AMM TASK 21-20-04-000-801-A/400	-
AMM TASK 21-20-04-400-801-A/400	-
AMM TASK 53-01-02-400-801-A/400	-
SRM 51-72-08, Composites - Repair of Solid Laminates at Room Temperature - Type A	-
TABLE 803	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Heat gun	To blow dry air the surfaces	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Sandpaper, 240 grit	To break surface gloss	AR
Commercially available	Rubber gloves	Hand protection	1
Commercially available	Safety goggles	Eye protection	1
Commercially available	Shop Wipes	For cleaning	AR
Commercially available	Dust mask	To prevent skin irritations and excessive inhalation	1
Commercially available	Paint brush	To apply the resin	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
TT-I-735	Isopropyl Alcohol - Commercial grade	AR
O-E-760	Ethanol - Commercial grade	AR
Commercially available	EPOCAST 169A	AR
Commercially available	HE 1908 Adhesive	AR
MIL C-9084	Type 7781 - Fiberglass Fabric	AR
Commercially available	Type 120 - Fiberglass Fabric	AR
Commercially available	Type 1581 - Fiberglass Fabric	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	In the aircraft

I. Preparation

SUBTASK 841-004-A

(1) Remove the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(2) Remove the cockpit ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(3) Remove the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

(4) Remove the passenger-cabin ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(5) Remove and discard the tie-down strap(s) that attach(es) the duct.

(6) Remove the clamp (when applicable).

(7) Remove the duct(s).

(8) Remove the thermal insulating blankets as necessary (AMM TASK 21-20-01-000-801-A/400).

J. Crack in Glass Fiber Ducts - Repair (Figure 803)

SUBTASK 340-004-A

WARNING:
- **WEAR MASKS. THE GASES THAT IT GIVES OFF ARE A POTENTIAL HEALTH HAZARD.**
- **WEAR EYE GOGGLES, DUST MASK, AND PROTECTIVE GLOVES AND CLOTHES WHEN YOU CUT AND SAND COMPOSITE MATERIALS.**
- **HEAT, FIRE OR SPARKS CAN CAUSE AN EXPLOSION. USE EXPLOSION-PROOF EQUIPMENT WHEN YOU DO THESE REPAIRS. NONCOMPLIANCE CAN CAUSE INJURY TO PERSONNEL.**
- **DO NOT BREATH VAPORS OR PERMIT SOLVENT TO CONTACT SKIN OR EYES. WEAR NEOPRENE GLOVES WITH COTTON LINERS, PROTECTIVE CLOTHING, AND EYE GOGGLES.**
- **IF CHEMICAL CONTACT OCCURS, WASH FULLY WITH WATER.**
- **IF YOU GET A CHEMICAL IN THE EYES, FLUSH THE EYES WITH LARGE QUANTITIES OF WATER AND GET MEDICAL AID. USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN YOU DO WORK IN A CONFINED SPACE OR AREA.**

CAUTION:
- REFER TO THE SPECIFIC GLASS FIBER DUCTS REPAIR FOR THE REPAIR LIMITS AND MATERIAL OF THE COMPONENTS BEFORE USING THESE REPAIR INSTRUCTIONS. FAILURE TO COMPLY COULD RESULT IN AN UNACCEPTABLE AND UNAUTHORIZED REPAIR.
- ROOM TEMPERATURE REPAIRS MUST NOT BE USED IN STRESS CRITICAL AREAS OR PRIMARY STRUCTURE COMPONENTS. FAILURE TO COMPLY WOULD RESULT IN AN INADEQUATE REPAIR.

(1) On the cracked side of the duct, do as follows:

(2) With a 240-grit sandpaper, fully remove the excess material and filler from the area where you will make the repair.

WARNING: WEAR GLOVES AND GOGGLES AND PREVENT CONTACT WITH SOLVENT VAPORS DURING THE CLEANING.

(a) Clean it by blowing with dry air.

(b) Use glass fabric pre-impregnated with epoxy resin style 7781. Refer to TABLE 803.

(c) Use an additional repair ply (the same fabric as that originally used in the top ply in the case of hybrid composites) so as to minimize the surface depression when plies are replaced.

NOTE:
- Cut replacement plies to required dimensions. There should be a 1 in (25 mm) overlap.

- Manually impregnate fabrics using epoxy resin. Refer to SRM 51-72-08, Composites - Repair of Solid Laminates at Room Temperature - Type A.
- Laminate first ply in the position in which it will be saturated with resin. Repeat the procedure for every ply.
- The repair plies must be installed in the same sequence as that of the original plies being repaired, in the case of hybrid composites.

(d) Determine the number of plies that have been cut, mask off the area around the cleaned-up damage.

(e) Allow 12.7 mm (0.50 in.) of minimum overlap for each extra ply replacement, plus 12.7 mm (0.50 in.) for each ply to ensure that the existing top ply is completely covered by the repair

(f) Lightly sand surface within marked area in order to achieve good bonding characteristics.

(g) NOTE:
- These repairs require rapid use of catalyzed resin materials.
- The repairs in this section are room temperature repairs, the cure of which may be accelerated by the application of heat as specified herein.

Sand surface to remove excess resin, exercising care so as not to damage fibers.

Table 803 - FABRICS FOR REPAIR AT ROOM TEMPERATURE

MATERIAL	CLASSIFICATION	SPECIFICATION
GLASS	FIBERGLASS FABRIC, STYLE 7781	SAE AMS-C 9084
GRAPHITE	GRAPHITE FIBER FABRIC, STYLE 584	–
ARAMID	ARAMID FABRIC, STYLE 285 (AS AN OPTION, USE FIBERGLASS FABRIC, STYLE 7781)	AMS 3901/5

K. Follow-on

SUBTASK 842-004-A

(1) Install the thermal insulating blankets as necessary (AMM TASK 21-20-01-400-801-A/400).

(2) Install the cockpit ducts as necessary (AMM TASK 21-20-04-400-801-A/400).

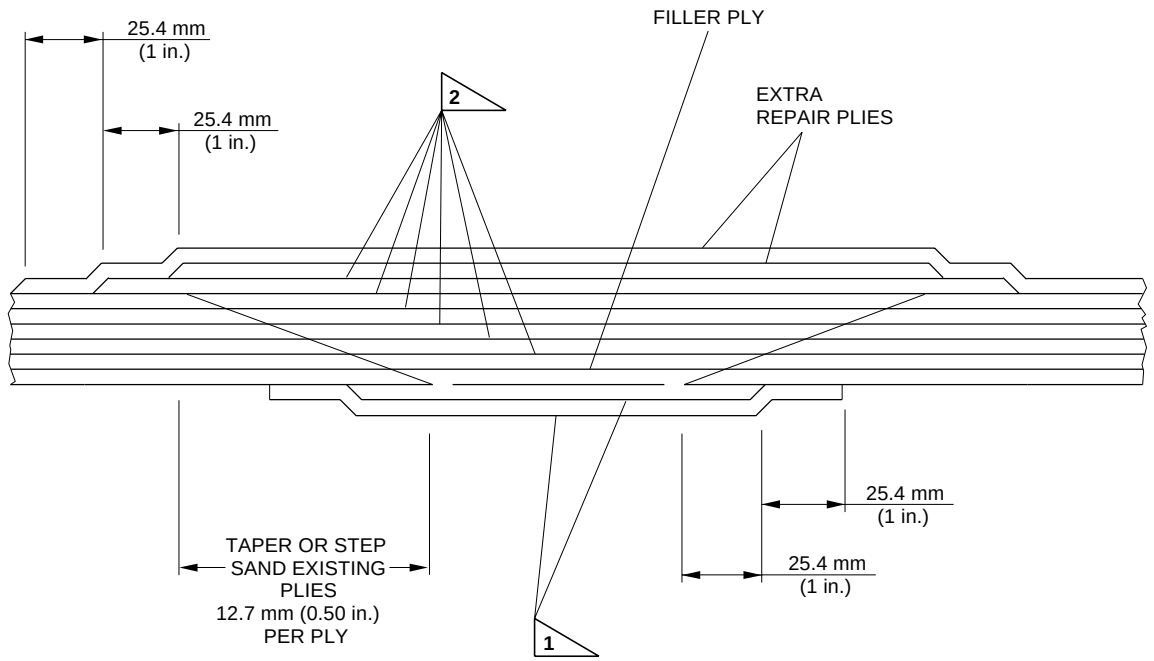
(3) Install the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(4) Install the passenger-cabin ducts as necessary (AMM TASK 53-01-02-400-801-A/400).

(5) Install the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

EFFECTIVITY: ALL

Crack in Glass Fiber Ducts - Repair
Figure 803



DIMENSIONS: mm
(in)

1 EXTRA REPAIR PLIES AT THIS LOCATION ARE REQUIRED ONLY IF THE DAMAGE PENETRATES THIS SURFACE

2 DETERMINE NUMBER OF PLIES, ORIENTATION, AND APPLY PLIES OF 7781 GLASS FABRIC

145AMM210715.MCE

TASK 21-20-00-300-804-A
EFFECTIVITY: ALL

5. CONDITIONED AIR GLASS FIBER DUCTS - REPAIR

A. General

(1) This task gives the procedures to repair split in glass fiber ducts.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 06-41-02/100	-
AMM TASK 21-20-01-000-801-A/400	-
AMM TASK 21-20-01-400-801-A/400	-
AMM TASK 21-20-04-000-801-A/400	-
AMM TASK 21-20-04-400-801-A/400	-
AMM TASK 53-01-02-400-801-A/400	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Rubber gloves	Hand protection	1
Commercially available	Safety goggles	Eye protection	1
Commercially available	Shop Wipes	For cleaning	AR
Commercially available	Paint brush	To apply the resin	AR
Commercially available	Sandpaper 240 grit	To remove the excess material	AR
Commercially available	Masking tape	To mask the duct surface	AR
Commercially available	Measuring scale	To measure the length of damage	AR

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
TT-I-735	Isopropyl Alcohol - Commercial grade	AR
O-E-760	Ethanol - Commercial grade	AR

(Continued)

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Commercially available	EPOCAST 169A	AR
Commercially available	HE 1908 Adhesive	AR
MIL C-9084	Type 7781 - Fiberglass Fabric	AR
Commercially available	Type 120 - Fiberglass Fabric	AR
Commercially available	Type 1581 - Fiberglass Fabric	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	In the aircraft

I. Preparation

SUBTASK 841-005-A

(1) Remove the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(2) Remove the cockpit ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(3) Remove the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

(4) Remove the passenger-cabin ducts as necessary (AMM TASK 21-20-04-000-801-A/400).

(5) Remove and discard the tie-down strap(s) that attach(es) the duct.

(6) Remove the clamp (when applicable).

(7) Remove the duct(s).

(8) Remove the thermal insulating blankets as necessary (AMM TASK 21-20-01-000-801-A/400).

J. Split in Glass Fiber Ducts - Repair (Figure 804)

SUBTASK 340-005-A

WARNING:
- **WEAR MASKS. THE GASES THAT IT GIVES OFF ARE A POTENTIAL HEALTH HAZARD.**
- **WEAR EYE GOGGLES, DUST MASK, AND PROTECTIVE GLOVES AND CLOTHES WHEN YOU CUT AND SAND COMPOSITE MATERIALS.**
- **HEAT, FIRE OR SPARKS CAN CAUSE AN EXPLOSION. USE EXPLOSION-PROOF EQUIPMENT WHEN YOU DO THESE REPAIRS. NONCOMPLIANCE CAN CAUSE INJURY TO PERSONNEL.**
- **DO NOT BREATH VAPORS OR PERMIT SOLVENT TO CONTACT SKIN OR EYES. WEAR NEOPRENE GLOVES WITH COTTON LINERS, PROTECTIVE CLOTHING, AND EYE GOGGLES.**
- **IF CHEMICAL CONTACT OCCURS, WASH FULLY WITH WATER.**
- **IF YOU GET A CHEMICAL IN THE EYES, FLUSH THE EYES WITH LARGE QUANTITIES OF WATER AND GET MEDICAL AID. USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN YOU DO WORK IN A CONFINED SPACE OR AREA.**

CAUTION:
- REFER TO THE SPECIFIC GLASS FIBER DUCTS REPAIR FOR THE REPAIR LIMITS AND MATERIAL OF THE COMPONENTS BEFORE USING THESE REPAIR INSTRUCTIONS. FAILURE TO COMPLY COULD RESULT IN AN UNACCEPTABLE AND UNAUTHORIZED REPAIR.
- ROOM TEMPERATURE REPAIRS MUST NOT BE USED IN STRESS CRITICAL AREAS OR PRIMARY STRUCTURE COMPONENTS. FAILURE TO COMPLY WOULD RESULT IN AN INADEQUATE REPAIR.

(1) To repair the ducts, you must obey these conditions.

(2) Do the steps, that follow:

(a) If the damaged area is larger than 103.0 cm^2 (16 in^2), you must replace the duct.

NOTE: The operator must control the total repair area. Embraer suggests that you have a form to control all repairs. Table 804 presents an example of such a form.

Table 804 - DAMAGED AREA CONTROL

COMPONENTS	DAMAGED AREA	DATE OF REPAIR	TOTAL DAMAGED AREA
Duct Assy Cond Air, Distr	38.7 cm^2 (6 in^2)	May25/02	38.7 cm^2 (6 in^2)
Duct Assy Cond Air, Distr	64.5 cm^2 (10 in^2)	Jul01/02	103.0 cm^2 (16 in^2)

Table 804 - DAMAGED AREA CONTROL (Continued)

COMPONENTS	DAMAGED AREA	DATE OF REPAIR	TOTAL DAMAGED AREA
Duct Assy Cond Air, Distr	3.2 cm^2 (0.5 in^2)	Jul15/02	106.2 cm^2 (16.2 in^2)[1]

[1] This duct has more than the permitted amount of limited repairs. Then, you must replace the duct.

(3) On the split side of the duct, do as follows:

(a) Check the duct in the vicinity of the damage for entry of water, oil, fuel, dirt or other foreign matter.

(b) Check for delamination around the damage.

(4) To hard damage split , repair as follows: (Figure 802).

NOTE: This repair applies to components made from glass fiber.

WARNING: WEAR GLOVES AND GOGGLES AND PREVENT CONTACT WITH SOLVENT VAPORS DURING THE CLEANING.

(a) Clean up the duct with ethanol or isopropyl alcohol to remove dirt, oil, and debris.

(b) Do the mark in the area to receive the repair (1), according (Figure 802).

(c) Cut out around mark done (2), according (Figure 802).

(d) With a 240-grit sandpaper, fully remove the excess material and filler from the area where you will make the repair.

(e) Wipe the surface, after you sand it, with a clean shop wipe soaked in ethanol or isopropyl alcohol.

NOTE: Be careful not to go through the region that will be repair.

1. Make sure that all excess material burr was removed from the surface.

(f) Prepare and apply repair plies according to step 5.

(g) Cure according to step 6.

(5) To prepare damaged areas, do these steps (Figure 804):

WARNING: USE SKIN PROTECTION AND BREATHE CAREFULLY WHEN YOU SAND. SANDING RELEASES A FINE POWDER THAT CAN CAUSE SKIN IRRITATION. BREATHING TOO MUCH OF THIS POWDER CAN CAUSE HEALTH PROBLEMS.

(a) After from burr removal on the areas with No. 240 sandpaper, fine abrasive, or trim out the damaged surface.

(b) Do a geometric shape (oval, circular, or rectangular), using another piece of the same material (fiberglass).

(c) Cut out a piece approximate smaller than split.

(d) If necessary, heat this piece that will be introduce in the split, form approximate and compare in surface.

(e) Use adhesive HE 1908 in the patch to bonded the path Type 7781 - Fiberglass Fabric (or Type 120 - Fiberglass Fabric, or Type 1581 - Fiberglass Fabric according split).

(f) Apply the patch in internal side of the duct.

(g) Apply firm, positive pressure and make the surface smooth as necessary to prevent air bubbles.

(h) Apply the piece in split.

(i) Lightly sand the epoxy resin fill the area between this piece and split, to get a good adhesion.

(j) Apply another patch in the other side.

(6) To cure the repair, do these steps:

WARNING: USE HEAT CURING EQUIPMENT THAT IS PERMITTED BY THE LOCAL FIRE PROTECTION AUTHORITIES. TO PREVENT CAUSE INJURY TO PERSONNEL.

(a) Let the repair cure at room temperature.

NOTE:
- Obey to use the curing time indicated for specified epoxy resin.
- Curing time does not include the time necessary for the mold and part to heat up the correct temperature. Curing time is the period after the part has got that temperature.

(7) Material substitution for fiberglass, when the "as manufactured" material is not available or not in stock.

K. Follow-on

SUBTASK 842-005-A

(1) Install the thermal insulating blankets as necessary (AMM TASK 21-20-01-400-801-A/400).

(2) Install the cockpit ducts as necessary (AMM TASK 21-20-04-400-801-A/400).

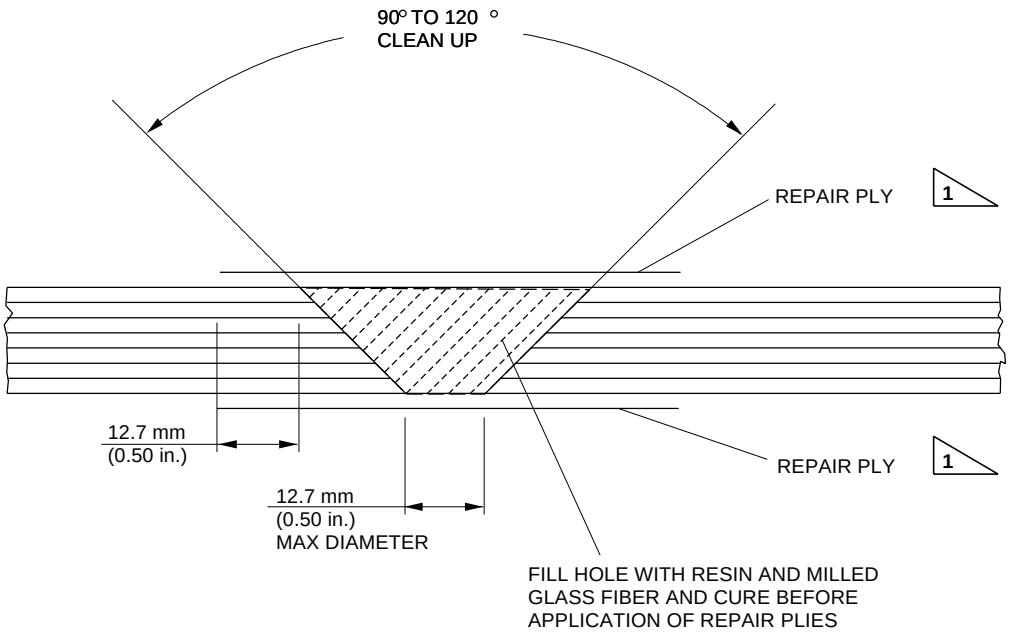
(3) Install the cockpit floor panels as necessary (AMM MPP 06-41-02/100).

(4) Install the passenger-cabin ducts as necessary (AMM TASK 53-01-02-400-801-A/400).

(5) Install the passenger-cabin floor panels as necessary (AMM MPP 06-41-02/100).

EFFECTIVITY: ALL

Split in Glass Fiber Ducts - Repair
Figure 804



DIMENSIONS: mm
(in)

1 THE ORIGINAL SURFACE PLY GLASS FABRIC;
PREPARE AND APLLY ONE PLY OF 7781 GLASS FIBER FABRIC.

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