COCKPIT FINISHING PARTS - REPAIR

EFFECTIVITY: ALL

1. General

A. This section gives the procedures to repair the cockpit interior components.

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*
25-13-00-300-801-A	COCKPIT FINISHING SOLID-LAMINATE PARTS - REPAIR	ALL
25-13-00-300-802-A	COCKPIT FINISHING HONEYCOMB-CORE PARTS - REPAIR	ALL
25-13-00-300-803-A	COCKPIT FINISHING POLYCARBONATE PARTS - REPAIR	ALL

TASK 25-13-00-300-801-A
EFFECTIVITY: ALL

2. COCKPIT FINISHING SOLID-LAMINATE PARTS - REPAIR

A. General

WARNING:

- **WEAR MASKS WHILE YOU PREPARE. 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.**
- **TO BREATH VAPORS OR PERMIT SOLVENT TO CONTACT SKIN OR EYES IS HAZARDOUS. 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.**

(1) This task contains repairs to components in the cockpit made of solid-laminate (epoxy resin reinforced with several layers of graphite/aramid or glass fabrics. A hybrid composite can contain layers of graphite aramid and glass fabrics).

(2) The most common construction is a sandwich of two laminated skins with a nonmetallic honeycomb core between them.

(3) Solid-laminate is used for small components, honeycomb panel edgebands, and at fitting locations.

(4) The solid-laminate repair is applicable to these parts in the cockpit:

(a) Pedal assembly lining;

(b) Chart holder assembly;

(c) Horizontal lining panel (applicable to aircraft POST-MOD. S.B.145-25-0211).

(d) LH/RH ceiling lining (applicable to aircraft with head-up display).

(5) To repair the surfaces of parts or panels, you must obey these conditions:

(a) If the total damaged area in the same material is not larger than 103.0 cm^2 (16 in^2), you can use any type of resin epoxy to solid-laminate.

(b) Other than the original materials, the total damage areas, all solid-laminate parts added together cannot be larger than 103.0 cm^2 (16 in^2).

(c) NOTE: The operator must control the total area of repair. Embraer suggests that you have a form where to control all repairs. See an example of such a form in Table 801.

Table 801 - DAMAGE AREAS CONTROL

COMPONENTS	DAMAGE AREA	DATE OF RE-PAIR	TOTAL DAMAGE AREA
Pedal assembly (zone 223)	38.7 cm^2 (6 in^2)	May25/99	38.7 cm^2 (6 in^2)
LH Ceiling lining (zone 225)	64.5 cm^2 (10 in^2)	Jul07/00	103.2 cm^2 (16 in^2)
RH Ceiling lining (zone 226)	3.2 cm^2 (0.5 in^2)	Jul15/00	106.4 cm^2 (16.2 in^2)[1]

[1] This repair is more than that permitted for solid-laminate 103.0 cm^2 (16 in^2). Then, you must use, the approved resin given in this task.

B. References

REFERENCE	*DESIGNATION*
S.B.145-25-0211	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Heat gun	To smooth the surfaces	
Commercially available	Sharp edge tool	To remove plies	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Sandpaper, 180 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
MEP 22-011	Epocast 50-A1/9816 Epoxy resin	AR
MIL C-9084	Type 7781 - Fiberglass Fabric	AR
Commercially available	Type 120 - Fiberglass Fabric	AR
Commercially available	Type 1581 - Fiberglass Fabric	AR
Commercially available	Style 584 - Graphite Fabric	AR
AMS 3901/5	Style 285 - Aramid Fabric	AR
Commercially available	Polyurethane paint FED. STD. 595-36173	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Cockpit

I. Solid-Laminate - Repair (Figure 801)

SUBTASK 340-002-A

(1) Determine the damage as follows:

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

(b) Check for delamination around the damage.

(2) For solid laminates (Figure 801), repair as follows:

(a) NOTE: This repair applies to components made from laminated graphite, aramid, or graphite/aramid/glass hybrid plies and epoxy resin without a honeycomb core repair.

(b) Mark the area to receive the repair layers with adhesive tape, with a 25 mm (1 in) margin.

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

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

(d) If applicable, remove the paint from the area where the repair will be installed, as follows:

1. Mask off the surface to keep the original paint intact out of the repair and the adjacent border.
2. Use a No. 180 sandpaper to remove a minimum of 25 mm (1 in) of paint on the border adjacent to the damage where the repair will be made.
3. Be careful not to go through the first layer when you sand the area.
4. Make sure that all filler or primers are also removed and the bare laminate surface is exposed.

(e) Prepare the damaged area according to step 3.

(f) Clean the damaged area according to step 4.

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

(h) Cure according to step 6.

(i) Refinish the repair according to step 7.

(3) To prepare damaged areas, do these steps (Figure 801):

WARNING:
- **SANDING GIVES OFF A FINE DUST CAN CAUSE SKIN IRRITATIONS. TO BREATH A LARGE QUANTITY OF THIS DUST CAN CAUSE INJURY TO YOU. OBEY PRECAUTIONS FOR SKIN AND RESPIRATION PROTECTION.**
- **EXPLOSION-PROOF EQUIPMENT MUST BE USED WHERE THE VAPOR IGNITION IS POSSIBLE.**
- **THE USE OF ELECTRICAL EQUIPMENT FOR GRAPHITE-FIBER COMPOSITE MATERIAL CUTTING IS NOT RECOMMENDED, BECAUSE THE GRAPHITE IS A CONDUCTIVE MATERIAL.**

(a) Remove damaged plies from laminates and sandwich-structure areas with No. 180 sandpaper, fine abrasive, or trim out the damaged surface. Keep a geometric shape (oval, circular, or rectangular), and be careful not to cause damage to the honeycomb or the surface around the damaged area. (This step is not applicable to original material made of style 285).

(b) For original material of style 285, remove the damaged plies from the laminate by the tapering process with a type of sharp edge tool. Refer to Figure 801, sheet 1.

NOTE: The damaged plies must be removed until all damage go out.

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

(4) To clean damaged areas, do these steps:

WARNING:
- **KEEP SOLVENTS AWAY FROM SOURCES OF HEAT, FIRE, OR SPARKS, WHICH CAN CAUSE AN EXPLOSION.**
- **PREVENT CONTACT OF SOLVENT WITH SKIN, EYES, AND CLOTHING. WEAR EYE PROTECTION AND USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN YOU WORK IN A CONFINED SPACE OR AREA. TO BREATHE VAPORS OR PERMIT SOLVENT TO TOUCH YOUR SKIN OR EYES IS DANGEROUS.**

CAUTION: DO NOT PUT PARTS FULLY INTO SOLVENT AND, DURING THE CLEANING, REMOVE THE SOLVENT QUICKLY TO PREVENT DAMAGE TO THE PART.

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

(b) Clean surface with ethanol or isopropyl alcohol, a minimum of 12.70 mm (0.50 in) more than the limits of the sanded area.

NOTE: Let the solvent evaporate for a few minutes before you continue with the repair.

(5) To replace the plies, do these steps:

(a) Select fabrics (refer to Tables 802 and 803), with material of the same type and orientation as those of the original fabric.

NOTE:
- Follow the orientation of Table 802 to replace the correct quantity of plies for each type of fabric.
- Use an additional repair ply (in the same fabric as that originally used in the top ply in the case of hybrid composites) to minimize surface depression when plies are replaced.
- The resin content of the impregnated fabric must be 55 ± 5 percent by weight.
- For damage larger than 103.0 cm^2 (16 in^2), use the specified resin epoxy show in Table 804.
- For damages less than 103.0 cm^2 (16 in^2), use any resin epoxy used for solid-laminate.

(b) Cut the replacement plies to the necessary dimensions. There must be a 25.4 mm (1 in) overlap.

(c) Mark the area to receive the repair layers with adhesive tape, with a 25 mm (1 in) margin for the additional layer to settle.

(d) With a paint brush, apply a small quantity of the resin epoxy onto the repair area. Refer to Figure 801, sheet 1.

(e) With a paint brush, apply a small quantity of resin on the first ply.

(f) Install the first ply with resin on the damaged panel. Refer to Figure 801, sheet 1.

(g) NOTE: Laminate the first ply in the position in which it will be saturated with resin.

- Use of a roller pin or dowel will help distribute the resin evenly on the ply. Refer to Figure 801, sheet 2.
- The repair plies must be installed in the same sequence as that of the original plies repaired, in the case of hybrid composites.

(h) Apply pressure from one corner of the repair and work outward to prevent air bubbles.

(i) Install subsequent plies as necessary and do the procedures for each replaced ply.

NOTE:
- The maximum permitted number of plies acceptable for each repair is six plies.
- Each type-7781 or 1581 fiberglass is equivalent to two style-120 fiberglass plies.

(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.

CAUTION: SURFACE TEMPERATURE MUST NOT EXCEED 77°C (170°F). DAMAGE OR DISTORTION OF STRUCTURE CAN OCCUR IF THE TEMPERATURE OFF IS MORE THAN 77°C (170°F).

(a) Let the repair cure at room temperature, or accelerate the cure with heat until 77°C (170°F) are got.

NOTE:
- Obey Table 804 to use the curing time indicated for specified epoxy resin.
- If the heat lamp is used as a heat source to accelerate the cure, a variation of 3.9°C (7°F) per minute will be permitted and the lamp height above the parts must be according to Table 805.
- 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.

(b) Examine the patch to make sure that it is free from pits, blisters, starved areas, and excess resin deposits.

(7) To refinish parts, do as follows:

CAUTION: DO NOT SAND INTO THE ORIGINAL STRUCTURE. NOT TO DECREASE THE STRENGTH OF THE COMPONENT.

(a) Make sure that the panel has an only one thickness. If necessary, sand the area with No. 180 sandpaper, fine abrasive. Keep a geometric shape (oval, circular or rectangular) until you get a uniform surface.

(b) Apply the polyurethane paint to the repaired surface if the original paint was removed.

NOTE: The commercially available paint is not the same as the original. Thus the finishing parts will not look very similar to the original part.

(c) Remove the adhesive tape and the clean surface with ethanol or isopropyl alcohol.

NOTE: Do not permit the solvent to evaporate on the part and make sure that there is no contamination on it.

(8) Material substitution

(a) The substitution for fiberglass/aramid/graphite materials, when the "as manufactured" material is not available or not in stock, is shown in Table 802.

Table 802 - COMPOSITE MATERIAL SUBSTITUTION

ORIGINAL MATERIAL[1]	SUBSTITUTE MATERIAL
250°F Fiberglass Fabric 1 Ply Type 7781or 1581 1 Ply Type 120, 116	250°F Fiberglass Fabric 2 Plies Type 120 1 Ply Type 120
250°F Graphite	250°F Graphite
250°F Aramid Fabric 1 Ply Style 120, 220 1 Ply Style 285	250°F Aramid Fabric 1 Ply 120 1 Ply Type 7781 or 1581 or 2 Plies Type 120

[1] When original lamination is made at 250°F, the repair should be made at room temperature.

(9) Table 803 shows the specification for each type of solid - laminate used on cockpit.

Table 803 - FABRICS SPECIFICATION

SOLID - LAMI-NATE	CLASSIFICATION	SPECIFICATION
GLASS	FIBERGLASS FABRIC, STYLE 7781	MIL-C-9084
GRAPHITE	GRAPHITE FIBER FABRIC, STYLE 584	-
ARAMID	ARAMID FABRIC, STYLE 285 (AS AN OPTION, USE FIBERGLASS FABRIC, STYLE 7781)	AMS 3901/5

(10) Table 804, shows the specifications of specified resin epoxy.

Table 804 - FABRICS FOR REPAIR AT ROOM TEMPERATURE

BASE RESIN	CURING AGENT	PARTS BY WEIGHT		POT LIFE (MINUTES)	CURING TIME	SUPPLIER
		BASE RESIN	CURING AGENT			
EPOXY RESIN (LAMINATION)						

Table 804 - FABRICS FOR REPAIR AT ROOM TEMPERATURE (Continued)

BASE RESIN	CURING AGENT	PARTS BY WEIGHT		POT LIFE (MINUTES)	CURING TIME	SUPPLIER
		BASE RESIN	CURING AGENT			
A) Epocast 50-A1	9816	100	15	50	3 DAYS AT ROOM TEMPERATURE OR 2 HOURS AT 90°C (194°F)	VANTICO (CIBA -GEIGY BRAZIL)

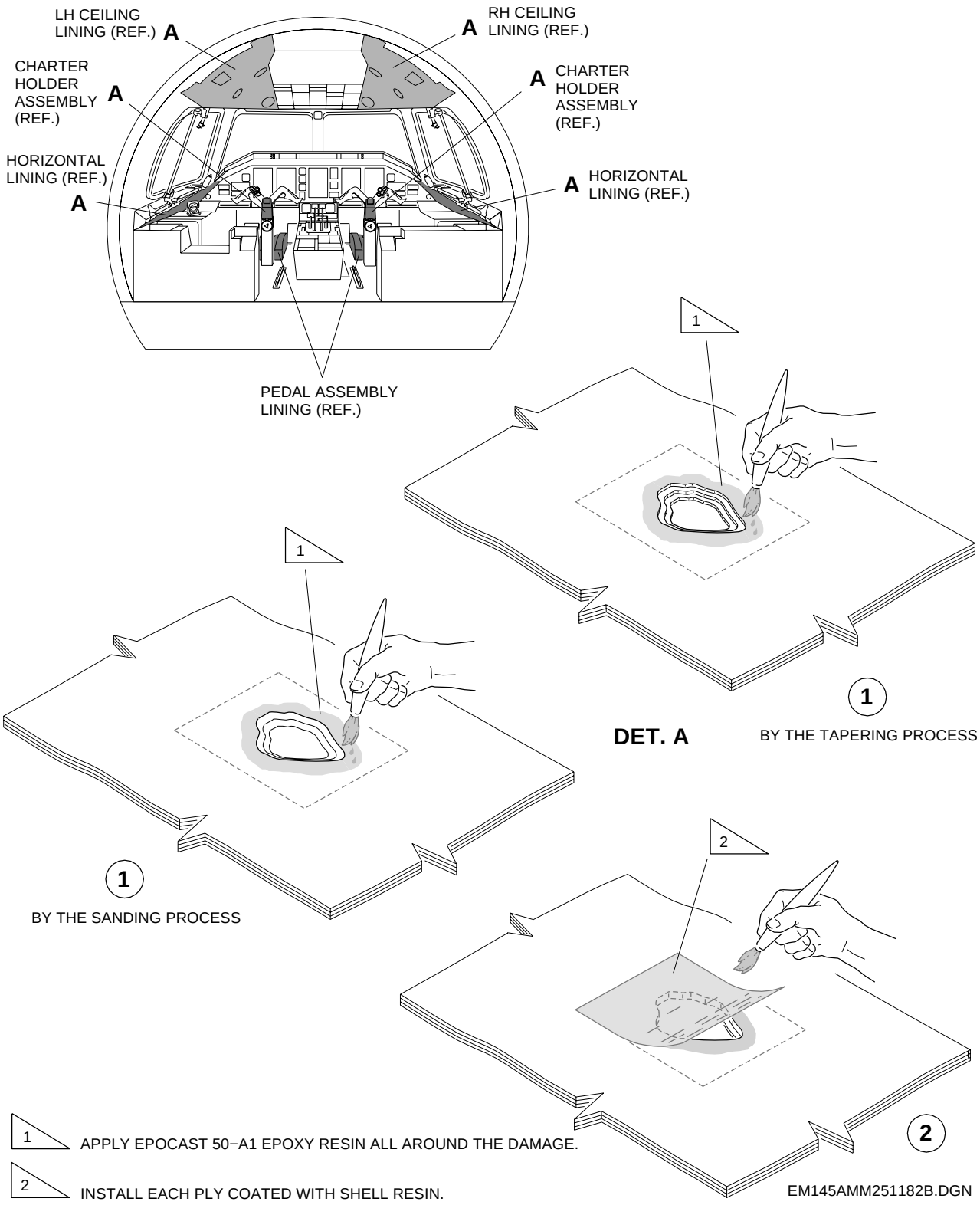
(11) Table 805, shows the values of temperatures using on the process to accelerate the cure time by heat lamp height.

Table 805 - HEAT LAMP HEIGHT AND PART TEMPERATURE

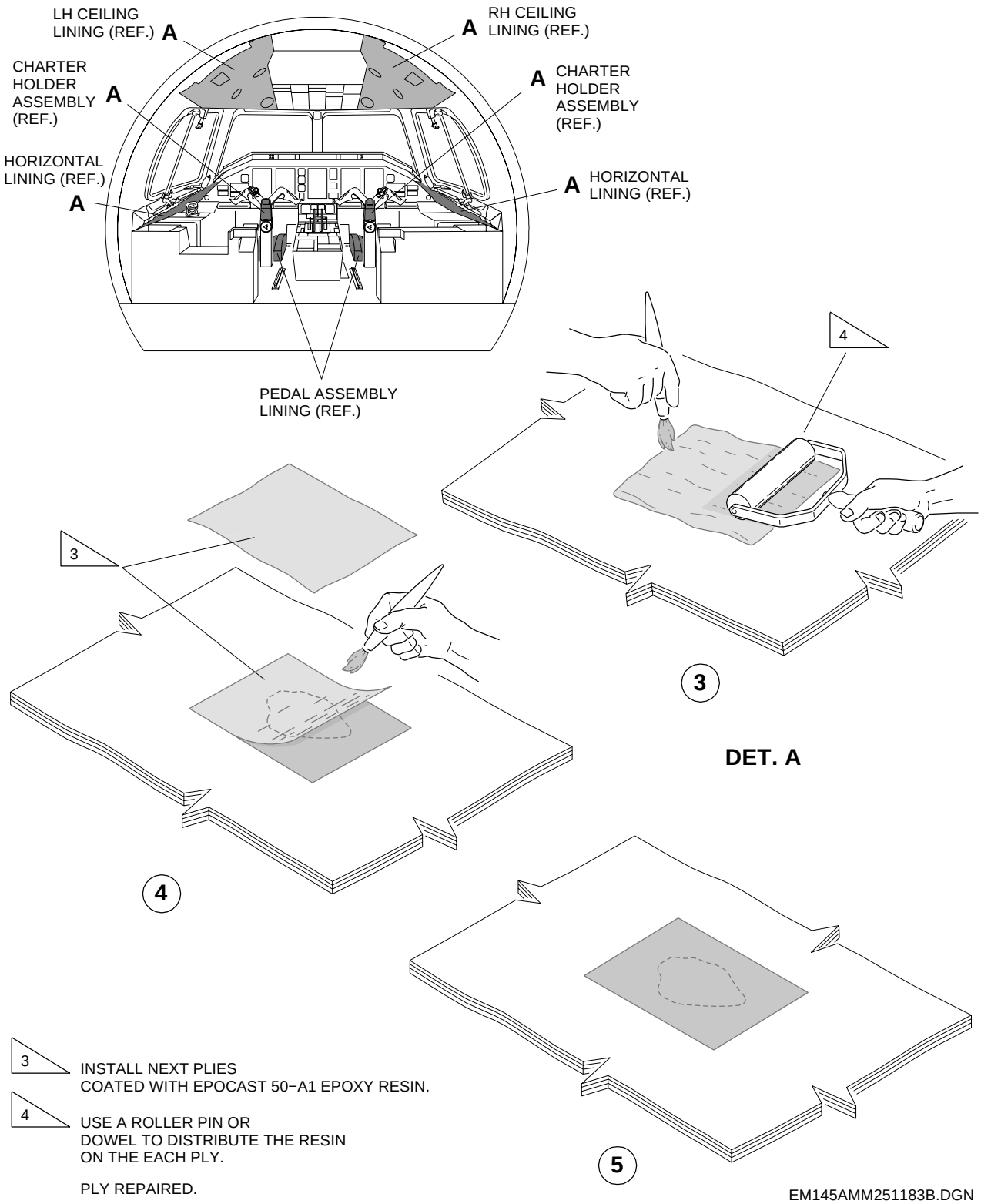
TEMPERATURE (°C/°F)	HEAT LAMP HEIGHT (H) (mm/in) (INFRA-RED LAMP 250 W)
57/135	381.0/15.0
60/140	345.4/13.6
66/150	309.9/12.2
71/160	284.5/11.2
77/170	266.7/10.5
82/180	248.9/9.8
94/190	233.7/9.2
93/200	223.5/8.8

EFFECTIVITY: ALL

Solid-Laminate - Repair
Figure 801 - Sheet 1



EFFECTIVITY: ALL
Solid-Laminate - Repair
Figure 801 - Sheet 2



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TASK 25-13-00-300-802-A
EFFECTIVITY: ALL

3. COCKPIT FINISHING HONEYCOMB-CORE PARTS - REPAIR

A. General

(1) This task gives the procedures to repair components in the cockpit made of honeycomb-core composite with solid-laminate skins.

(2) The most common construction is a sandwich of two laminated skins with a nonmetallic honeycomb core between them.

(3) Solid laminate is used for small components, honeycomb panel edgebands, and at fitting locations.

(4) The nonmetallic honeycomb-core/solid-laminate skin repair is applicable to these parts in the cockpit:

(a) Glareshield Panel.

(b) Central Ceiling Panel.

(c) RH/LH Aft Consoles.

(d) RH /LH Lateral Consoles.

(5) To do repairs, you must obey these conditions:

(a) For repairs with original materials and processes as defined in this task, the repair has no limitations.

(b) Other than the original materials, the total damage areas, all honeycomb-core parts added together cannot be larger than 103.0 cm^2 (16 in^2).

(c) NOTE: The operator must control the total area of repair. Embraer recommends that you have a form where to control all repairs. See an example of this form in Table 806.

Table 806 - DAMAGED AREA CONTROL

COMPONENTS	DAMAGE AREA	DATE OF REPAIR	TOTAL DAMAGE AREA
Glareshield Panel (zone 223)	38.7 cm^2 (6 in^2)	May25/01	38.7 cm^2 (6 in^2)
RH Lateral console (zone 224)	64.5 cm^2 (10 in^2)	Jul0701	103.2 cm^2 (16 in^2)
LH Lateral console (zone 223)	3.2 cm^2 (0.5 in^2)	Jul15/01	106.4 cm^2 (16.5 in^2)[1]

[1] This repair is more than that permitted for parts made of solid-laminate skins with nonmetallic honeycomb 103.0 cm^2 (16 in^2). Then, you must replace the honeycomb-core parts.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 25-13-00-300-801-A/800	COCKPIT FINISHING SOLID-LAMINATE PARTS - REPAIR

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Heat gun	To heat the filled area	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Rubber gloves	Hand protection	1
Commercially available	Safety goggles	Eye protection	1
Commercially available	Sandpaper, 320-400 grit	To remove the paint	AR
Commercially available	Shop Wipes	For cleaning	AR

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
TT-I-735	Isopropyl Alcohol - Commercial grade	AR
O-E-760	Ethanol - Commercial grade	AR
MEP 22-011	Epocast 50-A1/9816 - Epoxy resin	AR
Commercially available	Masking tape	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Wherever necessary

I. Parts in Honeycomb-Core with Solid-Laminate Skins - Repair (Figure 802)

SUBTASK 340-003-A

(1) Do a check around the damage for entry of water, oil, fuel, dirt or other foreign matter.

WARNING:
- **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 SEEK MEDICAL AID. USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN YOU DO WORK IN A CONFINED SPACE ON AREA.**
- **WEAR GLOVES AND GOGGLES DURING CLEANING OPERATIONS.**
- **AVOID SOLVENT VAPORS DURING THE CLEANING. USE SOLVENTS IN A WELL VENTILATED AREA.**

CAUTION: DURING THE CLEANING, REMOVE THE SOLVENT QUICKLY TO PREVENT DAMAGE TO THE PART.

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

(3) With masking tape, mask the area out of the repair to protect it.

(4) If applicable, remove the paint from the area where the repair will be made, as follows:

(a) Mask off the surface to keep the original paint intact out of the repair and the adjacent border.

(b) Remove a minimum of 25 mm (1.0 in) of paint on the border adjacent to the damage where the repair will be made.

(c) Be careful not go through the first layer when you sand the area.

(d) Make sure that all filler or primers are also removed and the bare laminate surface is exposed.

(5) Remove the solid-laminate plies, if the damaged is only in the skin (AMM TASK 25-13-00-300-801-A/800).

NOTE: This repair applies to components made from laminate graphite, aramid, or graphite/aramid/glass hybrid plies and epoxy resin without honeycomb-core repair.

(6) For repair to one skin and the honeycomb core, when the damage is less than 103.0 cm^2 (16 in^2), do these steps. Refer to Figure 802, sheet 1.

(a) Trim out the damaged lamination to a smooth shape with rounded corners, or a circular or oval shape. Be careful not to cause damage to the undamaged plies, core, or adjacent material.

NOTE: Rectangular or square shapes with rounded corners are permitted.

(b) Fill with resin the honeycomb-core repair area.

NOTE: For damage of less than 103.0 cm^2 (16 in^2) use a resin to fill the honeycomb-core.

(c) Replace the solid-laminate-ply parts (AMM TASK 25-13-00-300-801-A/800).

(7) For repair to one skin and the honeycomb-core, when the damage is larger than 103.0 cm^2 (16 in^2), do these steps. Refer to Figure 802, sheet 2.

NOTE:
- The plugged honeycomb must be of the same material as the original core.
- The replacement core must overlap and make close contact with the cell walls of the adjacent core material.
- When applicable, the depth of the core plug must allow for the thickness of the glass filler plies between the core plug and the undamaged core or skin.
- Let the repair cure at room temperature, or accelerate the cure with heat at 65°C (149°F) for 1 hour.

(a) Trim out the damaged lamination to a smooth shape with rounded corners, or a circular or oval shape. Be careful to cause damage to the undamaged plies, core, or adjacent material.

(b) To remove the core, trim the the skin and the core to the same outline. The core area removed must be a minimum of 12.7 mm (0.50 in) larger than the visible core damage limits.

NOTE: Be careful not to cut into an undamaged skin on the opposite side.

(c) Sand cavity walls. Vacuum to remove sanding residue.

NOTE: Make sure that there are no debris and particles on the work area.

(d) Clean up the panel with ethanol or isopropyl alcohol.

(e) Cut a section of core to match the repair area.

NOTE: The replacement core must have a minimum of 1.6 mm (1/16 in) more than the thickness, for adjustment-during cure.

(f) Put the core into the panel flush against the opposite skin.

NOTE:
- The resin content of the impregnated fabric must be 55 ± 5 percent by weight.
- For damage greater than 103.0 cm^2 (16 in^2), use a unapproved and specified resin.

NOTE: Core must fit loosely into the panel.

(g) Bond the core into position with resin.

NOTE: Let the repair cure at room temperature, or accelerated the cure with heat at 65°C (149°F) for 1 hour.

(h) Sand the surface of the repair core plug to be repaired. Vacuum to remove the sanding residues.

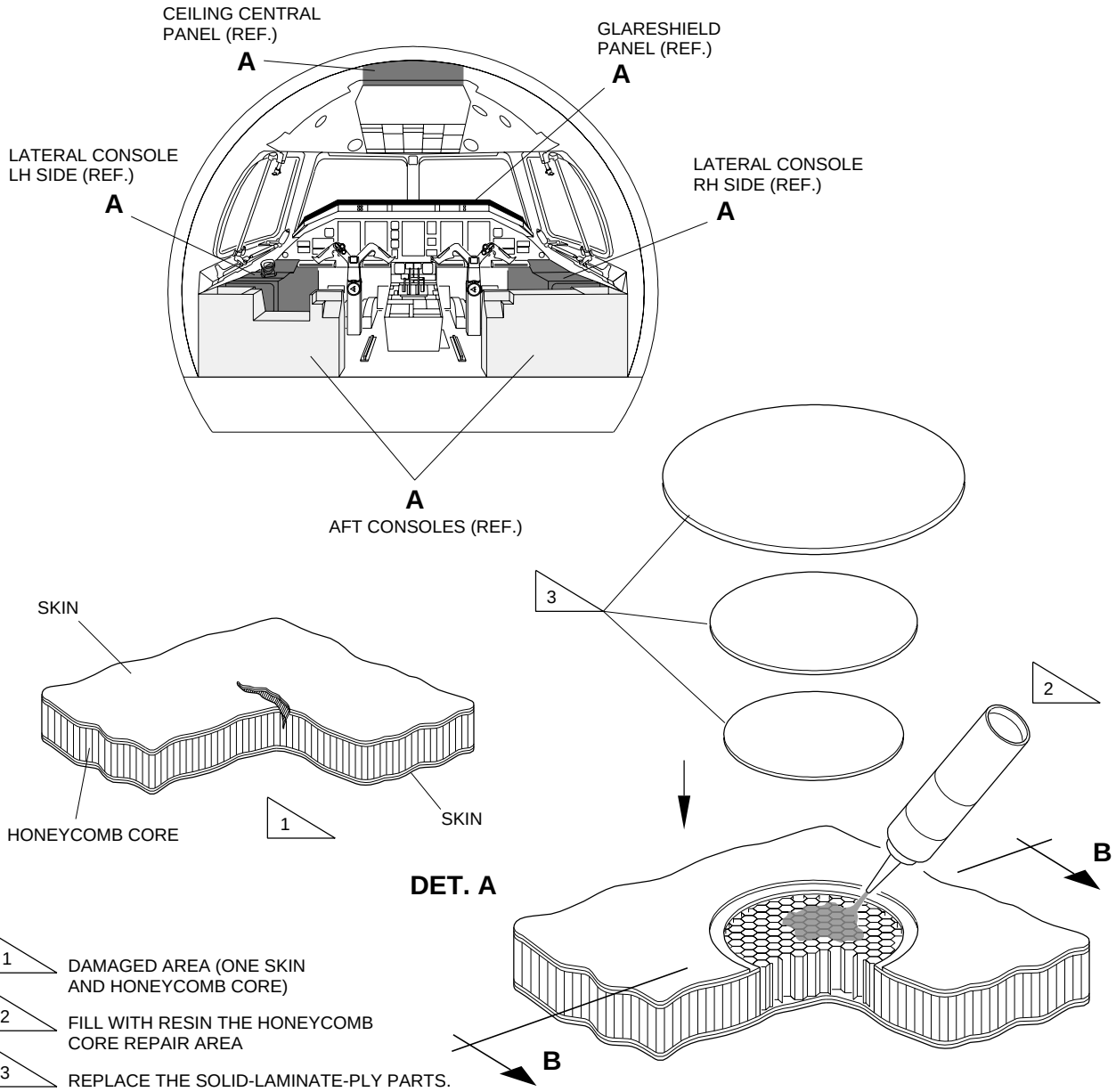
(i) Clean up the panel with ethanol or isopropyl alcohol.

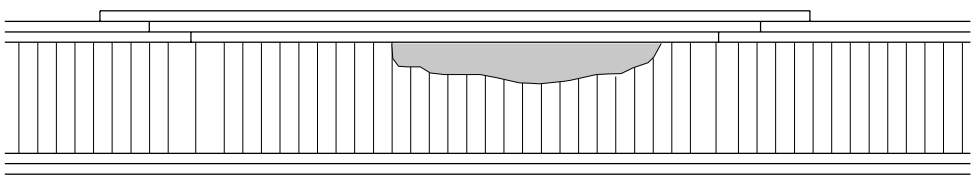
(j) Replace the solid-laminate-ply parts (AMM TASK 25-13-00-300-801-A/800).

NOTE: When the opposite inner skin is also damaged, prepare and apply repair plies to one surface of the panel. A caulk plate can be used on the opposite face of the panel to restrain the core plug in position.

EFFECTIVITY: ALL

Honeycomb-core Part - Repair
Figure 802 - Sheet 1



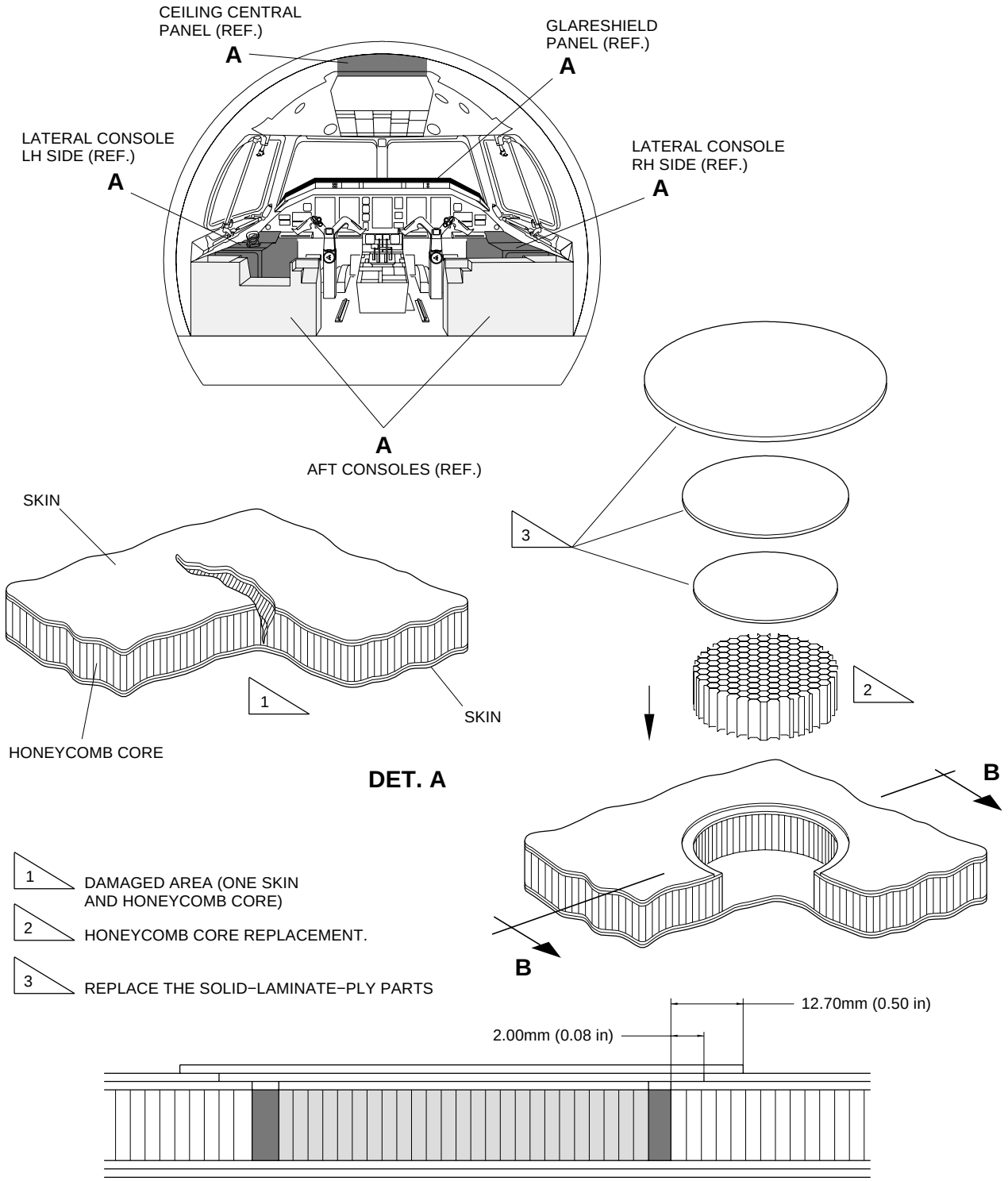


SECTION B-B

145AMM251184.MCE

EFFECTIVITY: ALL

Honeycomb-core Part - Repair
Figure 802 - Sheet 2



SECTION B–B

145AMM251185.MCE A

TASK 25-13-00-300-803-A
EFFECTIVITY: ALL

4. COCKPIT FINISHING POLYCARBONATE PARTS - REPAIR

A. General

(1) This task gives the procedures to repair the surfaces of parts and panels made from polycarbonate materials in the cockpit.

(2) The polycarbonate repair is applicable to these parts in the cockpit when cracks occur:

(a) RH/LH ceiling panels (without head-up display);

(b) windshield linings;

(c) LH/RH lateral lining panels;

(d) Horizontal lining panel (PRE-MOD S.B.145-25-0211).

(e) Overhead circuit breaker panels protection.

(3) To repair the surfaces of parts and panels, you must obey the conditions given below:

(a) The patch must be at least 1 millimeter thick.

(b) The total damage areas, all polycarbonate parts added together cannot be larger than 103.0 cm^2 (16 in^2).

NOTE: The operator must control the total area of repair. Embraer suggests that you have a form to control all repairs . See an example of such a form in Table 807.

Table 807 - DAMAGE AREAS CONTROL

COMPONENTS	DAMAGED AREA	DATE OF REPAIR	TOTAL DAMAGED AREA
RH Lateral Lining (zone 223)	38.7 cm^2 (6 in^2)	May25/99	38.7 cm^2 (6 in^2)
LH Lateral Lining (zone 224)	64.5 cm^2 (10 in^2)	Jul01/00	103.0 cm^2 (16 in^2)
LH Ceiling Lining (zone 225)	3.2 cm^2 (0.5 in^2)	Jul15/00	106.2 cm^2 (16.2 in^2)[1]

[1] This repair is more than the allowable amount of limited repairs. Then, you must replace the panel.

B. References

REFERENCE	*DESIGNATION*
S.B.145-25-0211	-

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 surface panel	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. 595-36173	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Cockpit

I. Polycarbonate Parts - Repair (Figure 803)

SUBTASK 340-004-A

(1) On the non-décor side of the panel, do the steps a thru e, as follows:

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

(a) With a 240 grit sandpaper, fully remove the paint and filler from the area where you will install the patch repair.

NOTE: Paint removal should extend at least 12.5 millimeters (0.5 inches) beyond the border of the damage where you will install the patch.

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

NOTE:
- Dry the surface with a clean dry shop wipe. Do not permit the solvent to evaporate from the part and make sure that there is no remaining contamination on it.
- The part will be clean when a clean, dry shop wipe can be passed over the surface and show no indications of dirt, oil, or debris.
- Do not touch the cleaned surfaces.

(c) Set the correct patch Lexan F6006 series according to color.

(d) Use any type of adhesive to bond the patch Lexan F6006 series to the panel.

NOTE:
- Embraer suggest to use adhesive HE 1908.
- If the damage is larger than 103.0 cm^2 (16 in^2), you must replace the panel.
- Be careful not to contaminate the adhesive of the patch.
- Apply firm, positive pressure and smooth as necessary to prevent entrapped air.
- Work the patch down over all the area.

(e) Use a straightedge or rule to make sure that the edges of the patch are correctly bonded to the panel.

NOTE:
- The patch is not correctly bonded if a scale or straightedge can penetrate more than 1.6 millimeters between the patch and liner ($1/16^{th}$ inch).
- Push the edges down until the scale cannot slip between the liner and the patch.

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

NOTE:
- Clean the panel surface again, install a new patch, and do an inspection.
- Obey the above procedures to do the cleaning, the installation, and the inspection.

(2) On the décor side of the panel, do the steps a thru f as follows:

(a) Fill the crack with any type of resin.

NOTE:
- Embraer suggest to use EPOCAST 169-A.

- If the damage is larger than 103.0 cm^2 (16 in^2), you must replace the panel.

(b) Mask off the surface to keep the original paint intact outside the patch repair and on the adjacent border.

(c) Sand the surface as described in the step 1, a.

(d) Clean the surface as described in the step 1, b.

(e) Apply polyurethane paint to the prepared area.

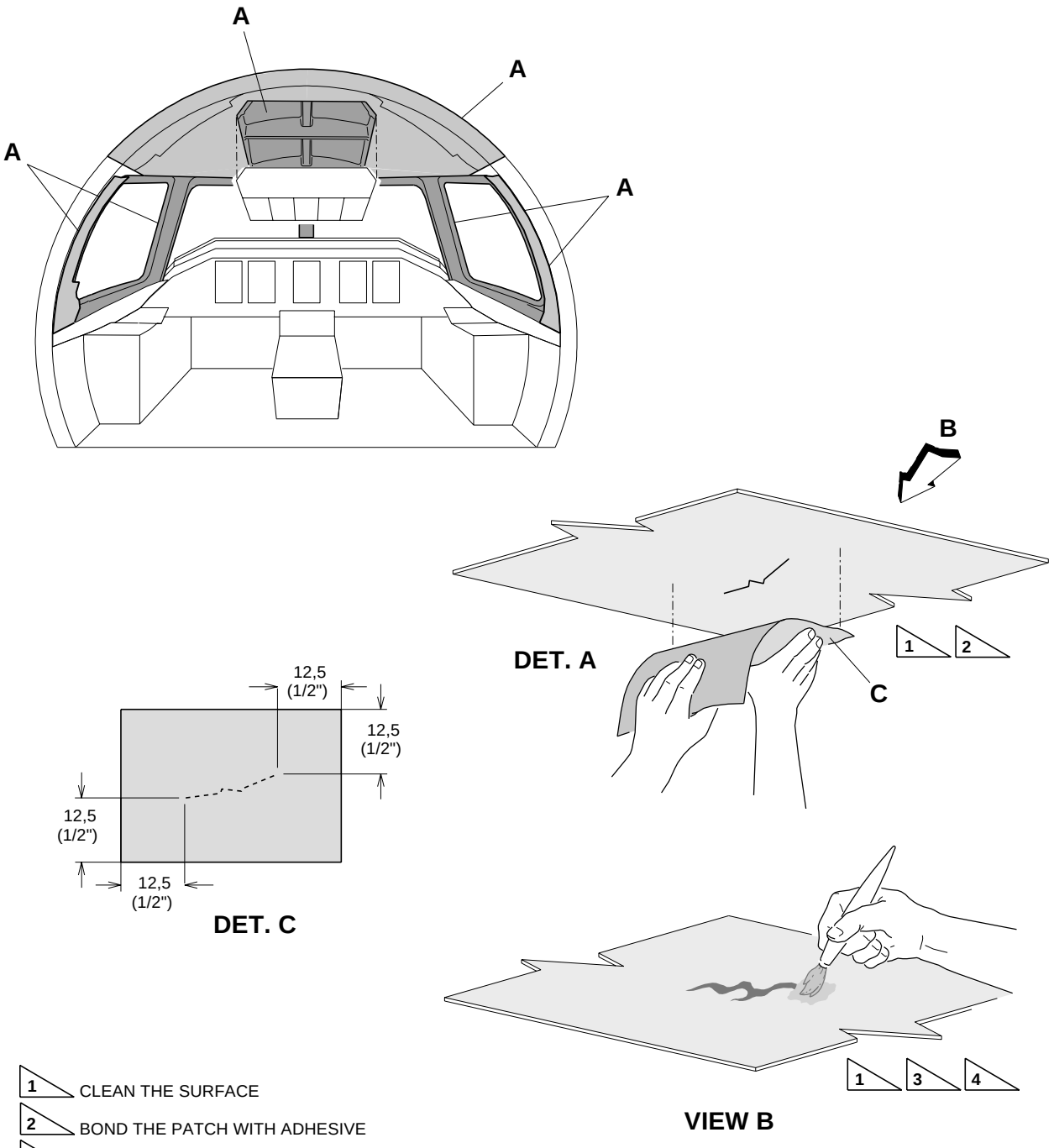
NOTE: The commercially available paint is not the same as the original. Thus, the finishing parts will not look very similar to the original part.

(f) Remove the adhesive tape and clean surface with ethanol or isopropyl alcohol.

NOTE: Do not permit the solvent to evaporate on the part and make sure that there is no contamination on it.

EFFECTIVITY: ALL

Polycarbonate Patch Repair
Figure 803



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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