

EMB145 – EMB135

AIRCRAFT
MAINTENANCE MANUAL

PLACARDS&MARKINGS&DECAL - MAINTENANCE PRACTICES

EFFECTIVITY: ACFT MODEL(S) EMB-135

1. General

- A. The placards used on the aircraft are of these types: anodized aluminum plates, acrylic plates, and adhesive polyester decals for external surfaces.
- 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
20-12-01-910-803-A	ADHESIVE POLYESTER DECAL - APPLICATION	ACFT MODEL(S) EMB-135
20-12-01-910-804-A	DECAL PROTECTION COATING - APPLICATION	ACFT MODEL(S) EMB-135
20-12-01-910-805-A	PAINTED TECHNICAL INSCRIPTION - APPLICATION	ACFT MODEL(S) EMB-135
20-12-01-930-801-A	PLACARDS - APPLICATION	ACFT MODEL(S) EMB-135
20-12-01-930-802-A	PLACARDS AND MARKINGS - APPLICATION OF THE SILK-SCREEN PRINT	ACFT MODEL(S) EMB-135



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TASK 20-12-01-910-803-A

EFFECTIVITY: ACFT MODEL(S) EMB-135

2. ADHESIVE POLYESTER DECAL - APPLICATION

A. General

- (1) This task gives the typical procedures to apply and bond placards to the aircraft surfaces.
- (2) Use personal protection equipment while you do the tasks.
- (3) All related persons must know the solvent handling procedures.
- (4) Do these tasks in an area with a good flow of air, where solvent vapors cannot collect and with no pieces of equipment which can make flames or sparks.
- (5) A fire extinguisher with a minimum of 25 kg of carbon dioxide or equivalent must be available.

B. Zones and Accesses

Not Applicable

C. Tools and Equipment

Not Applicable

D. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Plastic spatula	To install the decal	1
Commercially available	Needle	To install the decal	1
Commercially available	Soft pencil	To mark the position of the decal	1
Commercially available	Cleaning cloth	Cleaning equipment	1

E. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
O-T-634	Trichloroethane solvent	AR
ASTM-D-740	Methyl-ethyl-ketone solvent	AR
JAN-P-127 or equivalent	Masking tape	AR

F. Expandable Parts

Not Applicable

G. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	On the aircraft



H. Preparation

SUBTASK 841-015-C

WARNING: WHEN YOU USE METHYL-ETHYL-KETONE, OBEY THE SAFETY PRECAUTIONS GIVEN IN "PREPARATION".

CAUTION: PROTECT ACRYLIC AND OTHER PLASTIC TRANSPARENCIES TO PREVENT DAMAGE FROM METHYL ETHYL KETONE.

- (1) Wipe the receiving area with a cloth moist with methyl-ethyl-ketone or trichloroethylene to remove dirt, such as dust, grease, oil, or other contaminations.

- (2) Dry the area with a clean, dry cloth, before the solvent is dry.

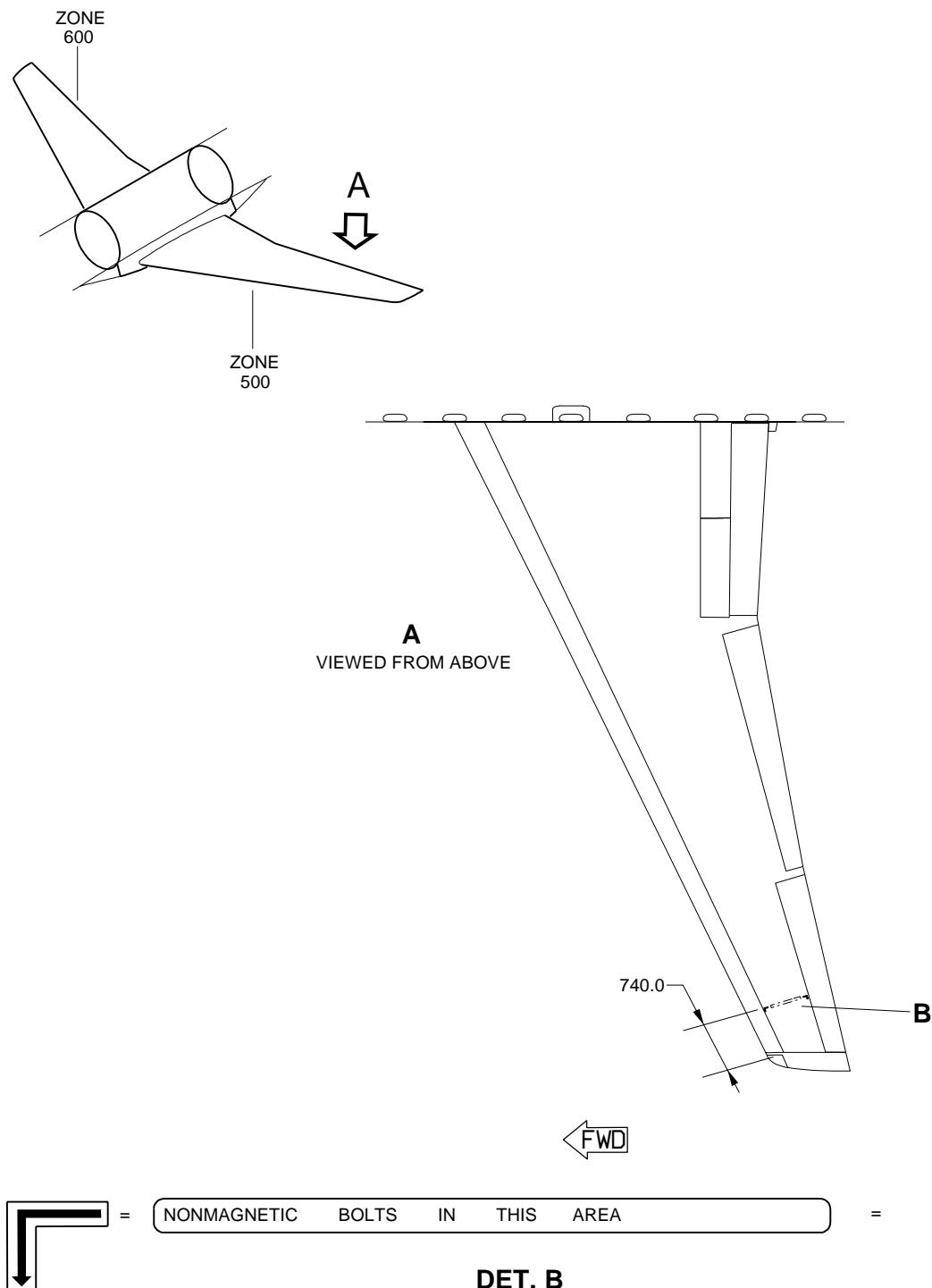
NOTE: The cleaned surface must be 5 mm wider than the decal area.

I. Application

SUBTASK 930-015-C

CAUTION: APPLY THE DECALS AT AMBIENT TEMPERATURE OF 16°C (60.8°F) TO 38°C (100.4°F) AND (30 TO 75%) OF RELATIVE HUMIDITY.

- (1) Prepare the area for sticking.
- (2) With a soft pencil, mark the correct position where the decal will be applied.
- (3) For the correct installation of the polyester decal that gives the instructions for installation of non-magnetic bolts, refer to [Figure 201](#).
- (4) Remove the liner protection of the decal.
- (5) Position the decal and press it over the surface, from one of the edges, with the aid of a plastic spatula.
- (6) Lightly and carefully use a plastic spatula on the decal to remove possible air bubbles, wrinkles, and ripples.
- (7) For overhead bin placards, apply silicone sealant RTV 780 (white) around the edges of the placards after they are installed.
- (8) If you see air bubbles under the decal after application, make a hole with a needle in the bubble edge and push the area with the thumb to keep the surface completely smooth and uniform.

EFFECTIVITY: ACFT MODEL(S) EMB-135
Location of Polyester Decal with Instructions for Installation of Non-Magnetic Bolts
Figure 201


- VALID FOR LEFT AND RIGHT WINGS (TOP AND BOTTOM)
- DIMENSION IN mm

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TASK 20-12-01-910-804-A

EFFECTIVITY: ACFT MODEL(S) EMB-135

3. DECAL PROTECTION COATING - APPLICATION

A. General

- (1) This task gives the typical procedures to apply and bond placards to the aircraft surfaces.
- (2) Decals applied to the aircraft external side must be protected against the effect of bad weather, hydraulic fluid, and fuel.
- (3) Decals applied to areas which can be touched by hydraulic fluid, oil, grease, fuel, etc.

B. References

REFERENCE	DESIGNATION
AMM TASK 20-12-01-910-803-A/200	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Brush	To apply polyurethane varnish	1
Commercially available	Plastic spatula	To install the decal	1
Commercially available	Needle	To install the decal	1
Commercially available	Soft pencil	To mark the position of the decal	1
Commercially available	Cleaning cloth	Cleaning equipment	1

F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
Commercially available	Double-face adhesive tape YR-9625	AR
AV138	Araldite adhesive	AR
O-T-634	Trichloroethane solvent	AR
ASTM-D-740	Methyl-ethyl-ketone solvent	AR
TT-N-95	Aliphatic Naphtha solvent	AR
JAN-P-127 or equivalent	Masking tape	AR
MEP10-058	Clear gloss polyurethane varnish	AR



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(Continued)

SPECIFICATION (BRAND)	DESCRIPTION	QTY
ASTM C-920	Sealant RTV 780	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	On the aircraft

I. Preparation

SUBTASK 841-016-C

- (1) Prepare the area for sticking.
- (2) Wipe the receiving area with a cloth moist with methyl-ethyl-ketone or trichloroethylene to remove dirt, such as dust, grease, oil, or other contaminations.
- (3) Dry the area with a clean, dry cloth, before the solvent is dry.
NOTE: The cleaned surface must be 5 mm wider than the decal area.
- (4) Prepare the area for sticking.

J. Application

SUBTASK 930-016-C

WARNING: WHEN YOU USE METHYL-ETHYL-KETONE, OBEY THE SAFETY PRECAUTIONS GIVEN IN "PREPARATION".

CAUTION: PROTECT ACRYLIC AND OTHER PLASTIC TRANSPARENCIES TO PREVENT DAMAGE FROM METHYL ETHYL KETONE.

- (1) Lightly and carefully use a plastic spatula on the decal to remove possible air bubbles, wrinkles, and ripples.
- (2) Apply masking tape to the area around the decal, with a 5-mm clearance between the decal edge and the masking tape.
NOTE: The overcoat with the clear polyurethane varnish must extend approximately 5 mm more than the perimeter of the decals.
- (3) With a brush, apply one coat of clear polyurethane varnish to the decal. Let the polyurethane varnish dry at ambient temperature for 1 hour (handling) and 24 hours (complete drying).
- (4) Remove the masking tape from the area around the decal.
- (5) If it is necessary to remove an old or incorrectly applied decal, do the procedure (AMM TASK 20-12-01-910-803-A/200).



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TASK 20-12-01-910-805-A

EFFECTIVITY: ACFT MODEL(S) EMB-135

4. PAINTED TECHNICAL INSCRIPTION - APPLICATION

A. General

- (1) This task gives the typical procedures to apply and bond placards to the aircraft surfaces.
- (2) Use personal protection equipment while you do the tasks.
- (3) All related persons must know the solvent handling procedures.
- (4) Do these tasks in an area with a good flow of air, where solvent vapors cannot collect and with no pieces of equipment which can make flames or sparks.
- (5) A fire extinguisher with a minimum of 25 kg of carbon dioxide or equivalent must be available.

B. References

REFERENCE	DESIGNATION
CPM 51-21-00	-
CPM 51-21-01	-
CPM 51-21-02	-
CPM 51-21-03	-
CPM 51-21-04	-
CPM 51-21-05	-
CPM 51-21-06	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Brush	To apply polyurethane varnish	1
Commercially available	Plastic spatula	To install the decal	1
Commercially available	Needle	To install the decal	1
Commercially available	Soft pencil	To mark the position of the decal	1
Commercially available	Cleaning cloth	To clean the equipment	1



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F. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
Commercially available	Double-face adhesive tape YR-9625	AR
AV138	Araldite adhesive	AR
O-T-634	Trichloroethane solvent	AR
ASTM-D-740	Methyl-ethyl-ketone solvent	AR
TT-N-95	Aliphatic Naphtha solvent	AR
JAN-P-127 or equivalent	Masking tape	AR
MEP10-058	Clear gloss polyurethane varnish	AR
ASTM C-920	Sealant RTV 780	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	On the aircraft

I. Preparation

SUBTASK 841-017-C

WARNING: BEFORE YOU HANDLE THE PRODUCTS USED IN THIS PROCEDURE, REFER TO THE MATERIAL SPECIFICATIONS AND HAZARDOUS MATERIAL SAFETY DATA CARDS FOR INFORMATION ON THEIR TOXICITY AND OBEY THE APPLICABLE PRECAUTIONS.

WARNING: ALWAYS USE INDIVIDUAL PROTECTION EQUIPMENT (GOOGLES, RUBBER GLOVES, AND RESPIRATORS) DURING THE PROCESS.

WARNING: DO NOT BREATHE VAPORS THAT COME FROM THE TANKS. AVAIL YOURSELF OF THE VENTILATION DIRECTION.

- (1) Make sure that the area where the technical inscription will be painted is in condition for that. Refer to the procedures listed below:
 - (2) Interior and Exterior Finishes - Surface Protection (CPM 51-21-00).
 - (3) Interior and Exterior Finishes - Stripping (CPM 51-21-01).
 - (4) Interior and Exterior Finishes - Before Surface Treatment (CPM 51-21-02).
 - (5) Interior and Exterior Finishes - Surface Protection Methods (CPM 51-21-03).
 - (6) Interior and Exterior Finishes - Surface Treatment (CPM 51-21-04).
 - (7) Interior and Exterior Finishes - Final Surface Protection (CPM 51-21-05).

- (8) Paint the inscription as described in CPM 51-21-06 - Interior and Exterior Finishes - Finish Topcoat.
- (9) Use this table to find the correct color.

Table 201 - SCHEME OF PAINTING - CATEGORY OF LETTERING X BACKGROUND COLOR

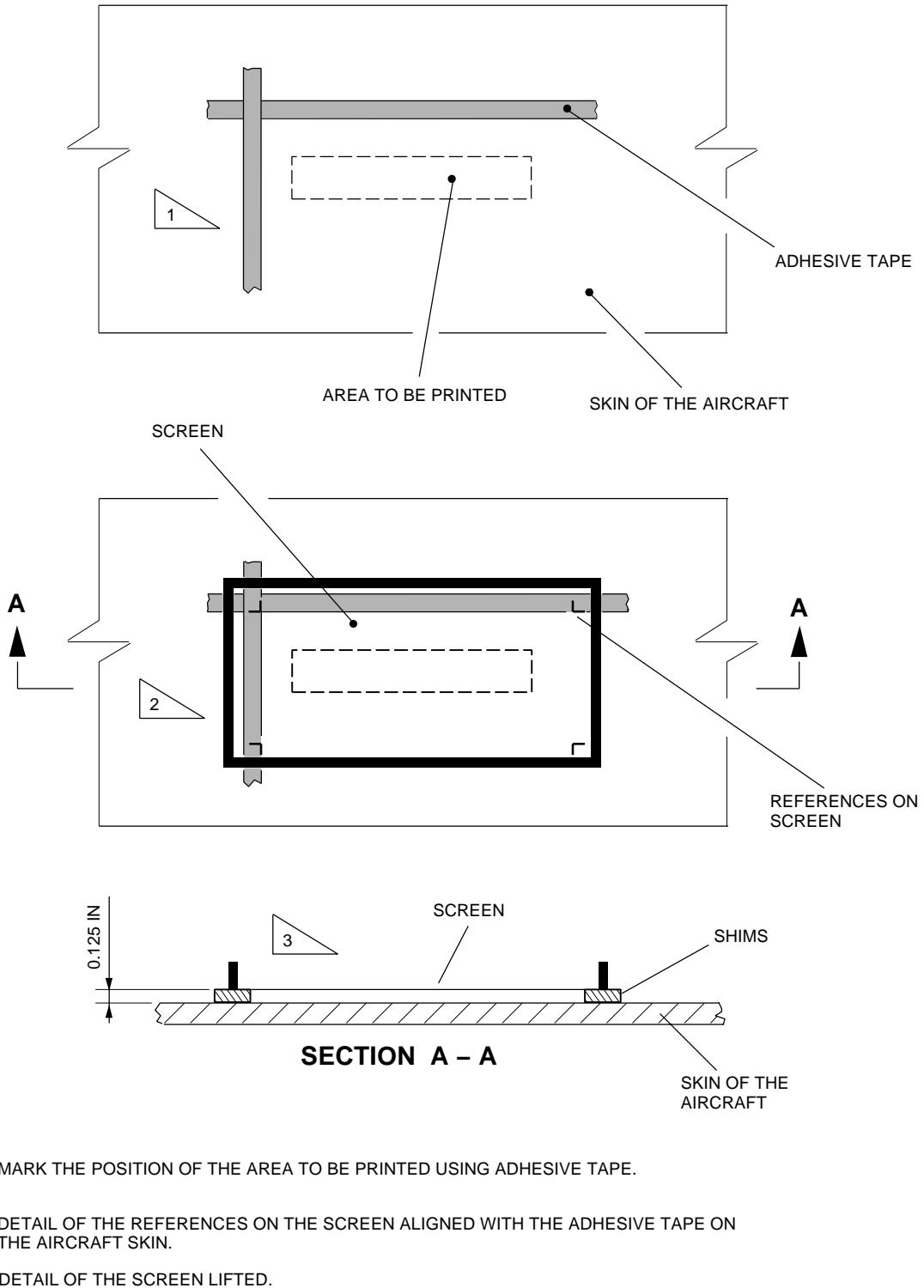
Category of Lettering	BACKGROUND COLOR	
	IF DARK:	IF LIGHT:
Warning and Caution	White	Red
Maintenance	Yellow	Yellow
Technical	White	Black

J. Application

SUBTASK 930-017-C

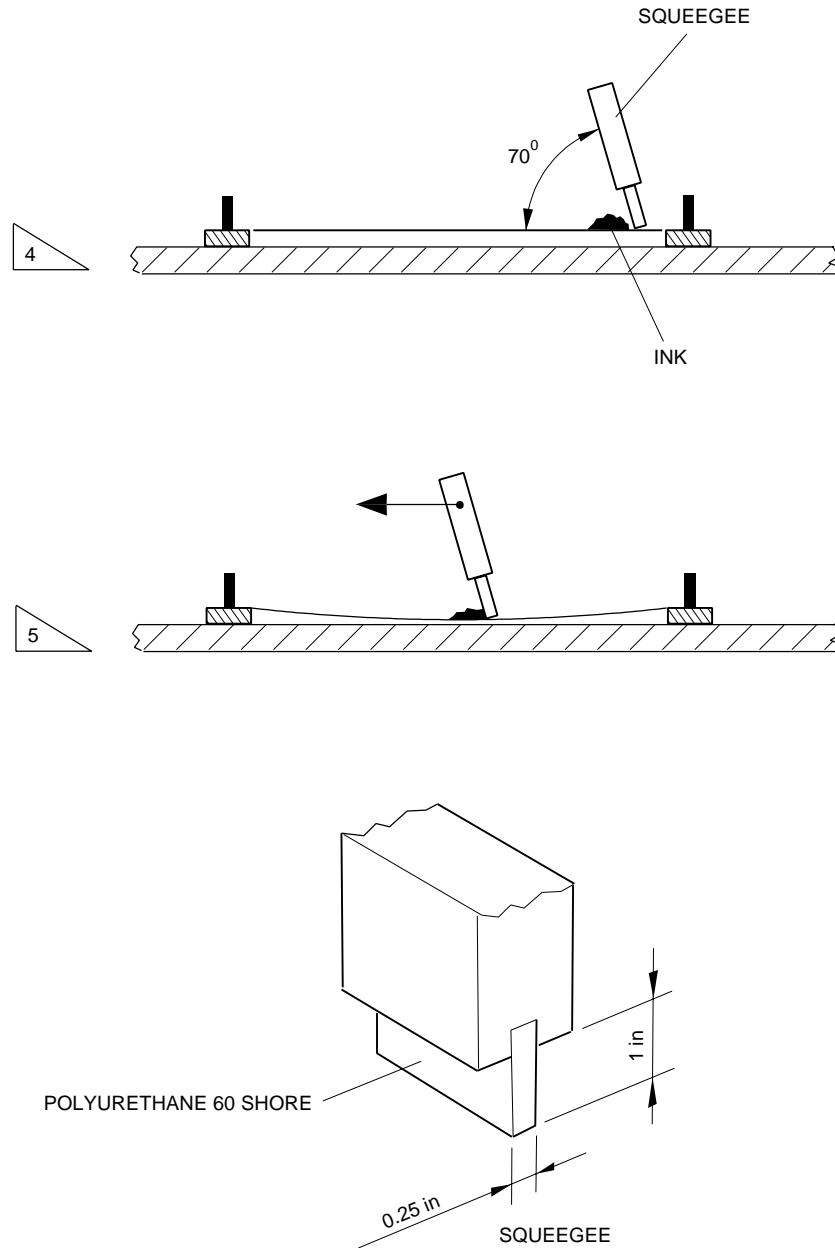
- (1) Apply a small amount of ink to the screen on one side of the image.
- (2) Put the screen on the surface to be printed.
- (3) Align the location marks (adhesive tape) on the aircraft surface with the register marks on the screen.
- (4) Lift the screen approximately 0.125 in.
NOTE: Use shims under the screen.
- (5) Hold the squeegee at approximately 70 degrees from the horizontal surface and draw across the image.
NOTE: The screen must lift off the surface as the squeegee prints across the image with one pass only.
- (6) Immediately after you do step (5), remove the screen and clean the screen and the squeegee with a cheesecloth wet with thinner.
- (7) Examine the printing for defects.
NOTE: If the printing has defects, remove it immediately after the ink application with a cloth wet with Rhodiasolve and do the silk-screen print procedure again from the first step.
- (8) Let the ink dry.

EFFECTIVITY: ACFT MODEL(S) EMB-135
 Explanation for Painted Technical Inscription
 Figure 202 - Sheet 1



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EFFECTIVITY: ACFT MODEL(S) EMB-135
Explanation for Painted Technical Inscription
Figure 202 - Sheet 2



-  **4** POSITION OF THE SQUEEGEE AND PLACE OF THE INK.
-  **5** SQUEEGEE DRAWING THROUGH THE SCREEN.

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TASK 20-12-01-930-801-A

EFFECTIVITY: ACFT MODEL(S) EMB-135

5. PLACARDS - APPLICATION

A. General

- (1) This task gives the typical procedures to apply and bond placards to the aircraft surfaces.
- (2) Use personal protection equipment while you do the tasks.
- (3) All related persons must know the solvent handling procedures.
- (4) Do these tasks in an area with a good flow of air, where solvent vapors cannot collect and with no pieces of equipment which can make flames or sparks.
- (5) A fire extinguisher with a minimum of 25 kg of carbon dioxide or equivalent must be available.

B. Zones and Accesses

Not Applicable

C. Tools and Equipment

Not Applicable

D. Auxiliary Items

ITEM	DESCRIPTION	PURPOSE	QTY
Commercially available	Cleaning cloth	Cleaning equipment	1

E. Consumable Materials

SPECIFICATION (BRAND)	DESCRIPTION	QTY
Commercially available	Double-face adhesive tape YR-9625	AR
JAN-P-127 or equivalent	Masking tape	AR

F. Expandable Parts

Not Applicable

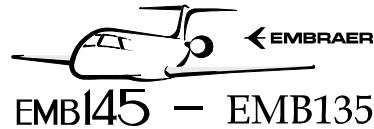
G. Persons Recommended

QTY	FUNCTION	PLACE
1	Does the task	On the aircraft

H. Preparation

SUBTASK 841-013-C

WARNING: WHEN YOU USE TRICHLOROETHANE, OBEY THE SAFETY PRECAUTIONS GIVEN IN "PREPARATION".



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- (1) Wipe the rear side of the nameplate and the receiving area with a cloth moist with trichloroethane to remove dirt, such as dust, grease, oil, or other contaminations.

I. Application

SUBTASK 930-013-C

- (1) With the placard on a flat surface, apply double-face adhesive tape to its rear side. Cut off the unwanted part.
- (2) Remove the protection film from the double-face adhesive tape and attach the placard to the correct place.

TASK 20-12-01-930-802-A
EFFECTIVITY: ACFT MODEL(S) EMB-135
6. PLACARDS AND MARKINGS - APPLICATION OF THE SILK-SCREEN PRINT
A. General

- (1) This task gives the typical procedures to apply silk-screen print to the aircraft surfaces.

B. References

<i>REFERENCE</i>	<i>DESIGNATION</i>
CPM 51-21-00	-
CPM 51-21-01	-
CPM 51-21-02	-
CPM 51-21-03	-
CPM 51-21-04	-
CPM 51-21-05	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

<i>ITEM</i>	<i>DESCRIPTION</i>	<i>PURPOSE</i>	<i>QTY</i>
Commercially available	Serigraphy Squeegee	To spread paint on the screen surface	1
Commercially available	Soft pencil	To mark the position of the silk-screen master	1
Commercially available	Cleaning cloth	To clean the area to be printed	AR
Commercially available	Cheesecloth	To clean the squeegee and the screen	AR

F. Consumable Materials

<i>SPECIFICATION (BRAND)</i>	<i>DESCRIPTION</i>	<i>QTY</i>
MEP 13-073	Rhodiasolve E-23 - cleaning solvent	AR
MEK (ASTM-D-740)	Methyl-Ethyl-Ketone	AR
TT-N-95	Aliphatic Naphtha - cleaning solvent	AR
MIL-T-81533A	Degreasing Fluid	AR
MEP 13-083	CRC10900 - solvent degreaser	
TTI-735	Isopropyl Alcohol	AR
A-A-857	Thinner	AR

(Continued)

<i>SPECIFICATION (BRAND)</i>	<i>DESCRIPTION</i>	<i>QTY</i>
MEP10-084	Ink	AR
Commercially available	Adhesive Tape	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

<i>QTY</i>	<i>FUNCTION</i>	<i>PLACE</i>
2	Do the task	On the aircraft

I. Preparation

SUBTASK 841-014-B

WARNING: BEFORE YOU HANDLE THE PRODUCTS USED IN THIS PROCEDURE, REFER TO THE MATERIAL SPECIFICATIONS AND HAZARDOUS MATERIAL SAFETY DATA CARDS FOR INFORMATION ON THEIR TOXICITY AND OBEY THE APPLICABLE PRECAUTIONS.

WARNING: ALWAYS USE INDIVIDUAL PROTECTION EQUIPMENT (GOOGLES, RUBBER GLOVES, AND RESPIRATORS) DURING THE PROCESS.

WARNING: DO NOT BREATHE VAPORS THAT COME FROM THE TANKS. AVAIL YOURSELF OF THE VENTILATION DIRECTION.

- (1) Do this task in an area with a good flow of air.
- (2) A fire extinguisher with a minimum of 25 kg of carbon dioxide or equivalent must be available.
- (3) Obey all the cleaning safety precautions.
- (4) Make sure that the area where the technical inscription will be painted is in correct condition for this procedure. Refer to these procedures:
 - Interior and Exterior Finishes - Surface Protection (CPM 51-21-00).
 - Interior and Exterior Finishes - Stripping (CPM 51-21-01).
 - Interior and Exterior Finishes - Before Surface Treatment (CPM 51-21-02).
 - Interior and Exterior Finishes - Surface Protection Methods (CPM 51-21-03).
 - Interior and Exterior Finishes - Surface Treatment (CPM 51-21-04).
 - Interior and Exterior Finishes - Final Surface Protection (CPM 51-21-05).
- (5) Use this table to find the correct color of the print.

Table 202 - CATEGORY OF LETTERING X BACKGROUND COLOR

Category of Lettering	BACKGROUND COLOR	
	IF DARK:	IF LIGHT:
Warning and Caution	White	Red
Technical	White	Black

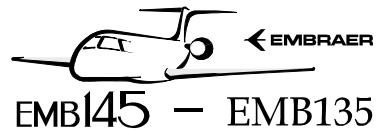
- (6) Make sure that the screen is free from cracks, wrinkles, or creases.
- (7) Make sure that the squeegee is 0.5 in. wider at each end than the screen print and that it is clean, not too stiff, straight, and with sharp square edges.
- (8) Clean the area to be printed with any cleaning solvent and a clean low-lint cloth.
- (9) Mark the position of the area to be printed.

NOTE: Put an adhesive tape on the area to be printed aligned with the reference marks on the screen.

J. Application

SUBTASK 930-014-B

- (1) Apply a small amount of ink to the screen on one side of the image.
- (2) Put the screen on the surface to be printed.
- (3) Align the location marks (adhesive tape) on the aircraft surface with the register marks on the screen.
- (4) Lift the screen approximately 0.125 in.
NOTE: Use shims under the screen.
- (5) Hold the squeegee at approximately 70 degrees from the horizontal surface and draw across the image.
NOTE: The screen must lift off the surface as the squeegee prints across the image with one pass only.
- (6) Immediately after you do step (5), remove the screen and clean the screen and the squeegee with a cheesecloth wet with thinner.
- (7) Examine the printing for defects.
NOTE: If the printing has defects, remove it immediately after the ink application with a cloth wet with any cleaning solvent and do the silk-screen print procedure again from the first step.
- (8) Let the ink dry.
- (9) For a multicolored silk-screen print, do as follows:
 - (a) For each color, use a different screen with the same register marks.
 - (b) Make sure that the squeegee is cleaned before ink colors are changed.



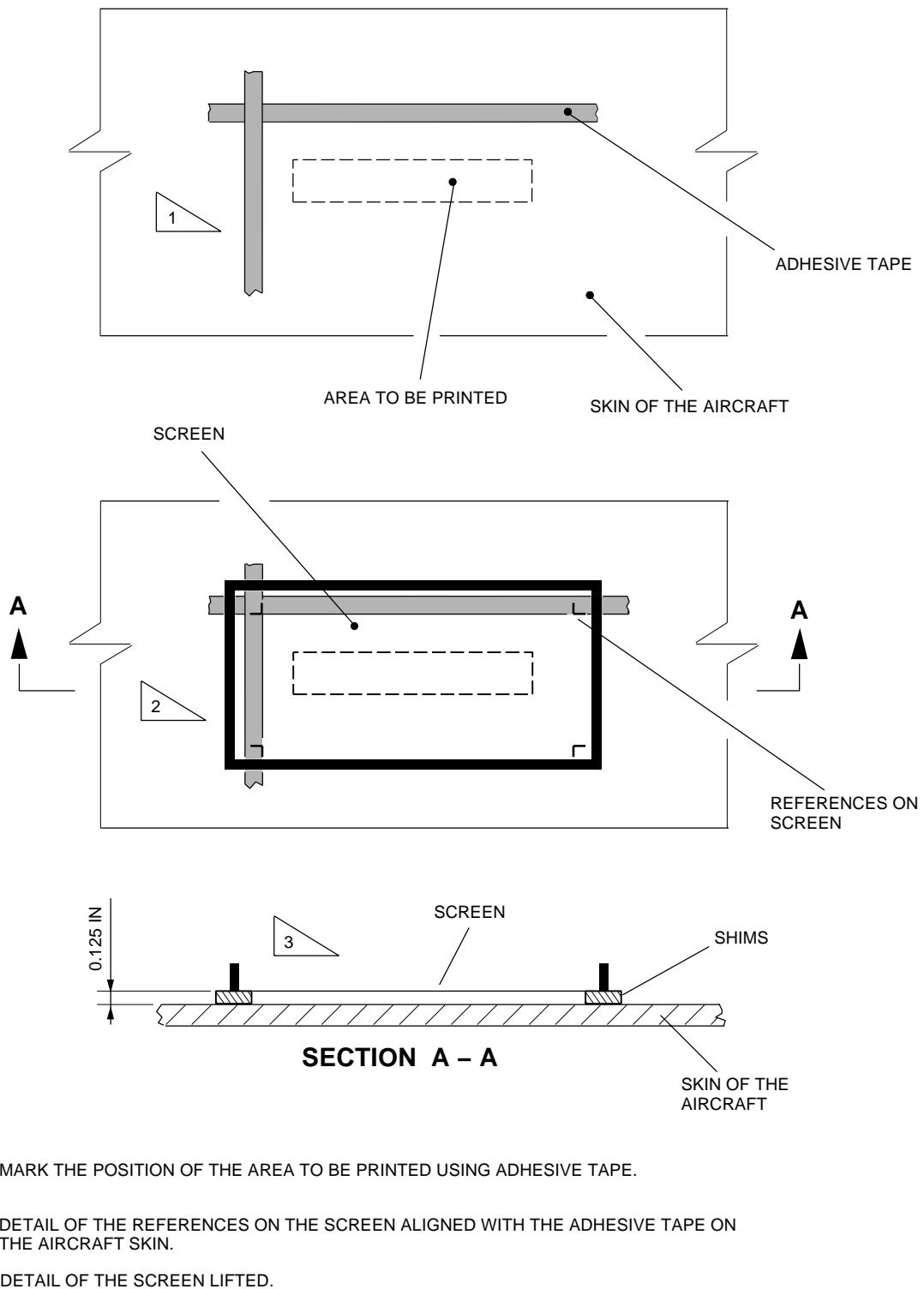
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- (c) Start with the lightest color and complete with the darkest color.
- (d) Apply each color with only one pass in the same direction.
- (e) Let the ink dry before you apply the subsequent color.

EFFECTIVITY: ACFT MODEL(S) EMB-135

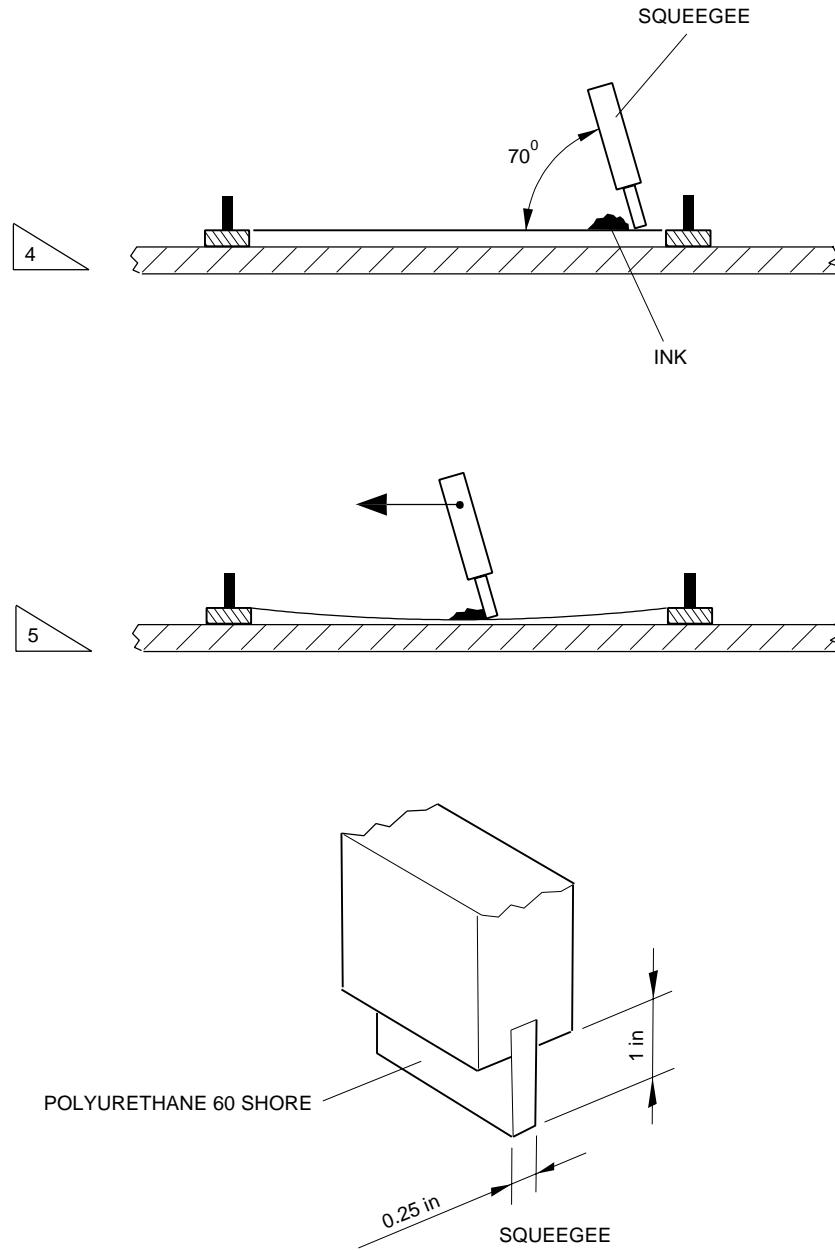
Application of the Silk-screen Print

Figure 203 - Sheet 1



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EFFECTIVITY: ACFT MODEL(S) EMB-135
 Application of the Silk-screen Print
 Figure 203 - Sheet 2



 4 POSITION OF THE SQUEEGEE AND PLACE OF THE INK.

 5 SQUEEGEE DRAWING THROUGH THE SCREEN.

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