



# **STANDARD OVERHAUL PRACTICES MANUAL**

## **APPLICATION OF ALUMINUM FOIL AND OTHER MARKERS**

**PART NUMBER  
NONE**

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## STANDARD OVERHAUL PRACTICES MANUAL

Revision No. 16  
Jul 01/2009

To: All holders of APPLICATION OF ALUMINUM FOIL AND OTHER MARKERS 20-50-05.

Attached is the current revision to this STANDARD OVERHAUL PRACTICES MANUAL

The STANDARD OVERHAUL PRACTICES 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.

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TRANSMITTAL LETTER

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## STANDARD OVERHAUL PRACTICES MANUAL

Location of Change

Description of Change

NO HIGHLIGHTS

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HIGHLIGHTS

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

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## STANDARD OVERHAUL PRACTICES MANUAL

### INTRODUCTION

#### 1. General

- A. The instructions in this manual tell how to do standard shop procedures during maintenance functions from simple checks and replacement to complete shop-type repair.
- B. This manual is divided into separate sections:
  - (1) Title Page
  - (2) Transmittal Letter
  - (3) Highlights
  - (4) Effective Pages
  - (5) Contents
  - (6) Revision Record
  - (7) Record of Temporary Revisions
  - (8) Introduction
  - (9) Procedures
- C. Refer to SOPM 20-00-00 for a definition of standard industry practices, vendor names and addresses, and an explanation of the True Position Dimensioning symbols used.
- D. The data is general. It is not about all situations or specific installations. Use it as a guide to help you write minimum standards.
- E. If the component overhaul instructions are different from the data in this subject, use the component overhaul instructions.

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INTRODUCTION

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## STANDARD OVERHAUL PRACTICES MANUAL

### APPLICATION OF ALUMINUM FOIL AND OTHER MARKERS

#### 1. INTRODUCTION

- A. The data in this subject comes from Boeing Process Specifications BAC5305 and BAC5312. The airline has a copy of the Boeing Process Specifications Manual.
- B. The data is general. It is not about all situations or specific installations. Use it as a guide and to write minimum requirements.
- C. Refer to SOPM 20-00-00 for a full list of all the vendor names and addresses.

#### 2. MATERIALS

##### A. Application of Aluminum Foil Markers

- (1) Adhesives
  - (a) BMS 5-14 (SOPM 20-50-12, Type 40)
  - (b) BMS 5-55 (SOPM 20-50-12, Type 12)
  - (c) BMS 5-91, Type 2 (SOPM 20-60-04)
  - (d) BMS 5-126 (SOPM 20-50-12, Type 38)
- (2) Solvents (SOPM 20-60-01 unless shown differently)
  - (a) Methyl ethyl ketone – TT-M-261
  - (b) Toluene – TT-T-548 or JAN-T-171, Grade A
  - (c) Xylene – TT-X-916
  - (d) Aliphatic naphtha – TT-N-95 (Replaces BMS 3-2)
  - (e) Thinner – MIL-T-81772
  - (f) Thinner – TT-T-306
  - (g) Series 80 (SOPM 20-30-80)
  - (h) Series 98-1 (SOPM 20-30-98)
- (3) Protective Overcoatings
  - (a) Type 41 (SOPM 20-60-02)
  - (b) BMS 10-60 clear
  - (c) MIL-C-83286 clear
  - (d) Edge sealer 4150, V76381
  - (e) Polyurethane – Hysol PC-18M, V12405 (MIL-I-46058, Type UR) (Replaces BMS 8-109, Type 1)
  - (f) 700 clear (aerosol can), V76381 (for indoor use only)
  - (g) Krylon clear (aerosol can), V86142 (for indoor use only)
- (4) Miscellaneous
  - (a) Abrasive paper – Aluminum oxide, 180-grit
  - (b) Wipers – BMS 15-5, Class B
  - (c) Metal conditioner/rust remover – MIL-M-10578, Type 2

##### B. Application of Plastic Film Decals and Markers

- (1) Solvents (SOPM 20-60-01)

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- (a) Aliphatic naphtha – TT-N-95, Types 1 and 2 (Replaces BMS 3-2, Types 1 and 2)
- (b) Ethyl alcohol, denatured, 95% – AMS 3002 or ASTM E1145, Type 2
- (c) Isopropyl alcohol – TT-I-735
- (d) Methyl propyl ketone (MPK) – BMS 11-9, grade optional
- (e) Thinner – TT-T-266
- (f) Thinner for vinyl process paste – 3911, V76381
- (2) Protective Overcoatings and Process Pastes
  - (a) Akzo 683-3-2 (BAC5710, Type 41) (SOPM 20-60-02)
  - (b) BMS 10-11, Type 2 clear (SOPM 20-60-02)
  - (c) Koppers Vinyl 401, V71191
  - (d) Desothane Edge Seal CA8000/B900B and Desothane HS Activator CA8000B, VK5635
  - (e) Vinyl process paste – 3900-series (colors black, blue, red, white), and 3920 (gloss clear), V76381
- (3) Miscellaneous
  - (a) Aluminum wool
  - (b) Carrier tape – SCPM-3, V76381
  - (c) Masking tape – PPP-T-42
  - (d) Plastic scraper, V76381
  - (e) Cutter – ST732-series
  - (f) Wipers – BMS 15-5, Class A or B
  - (g) Rubber roller – ST983L-3
  - (h) Plastic sweep – J5-0275-2010
  - (i) Placard edge adhesion tester – ST8815-AT

### 3. ALUMINUM FOIL MARKERS

- A. This section is about these markers:
  - (1) Cellophane-backed markers per BAC5875
  - (2) Photo placards per D3-4266
  - (3) Paper-backed metal labels per D6-14058
  - (4) Aluminum photosensitive decals per BAC5825
  - (5) Metal foil markers and photo placards that do not come with adhesive.
- B. Storage
  - (1) Adhesives
    - (a) BMS 5-14 – Below 80°F (40-50°F preferred)
    - (b) BMS 5-55 – 40-80°F (40-50°F preferred)
    - (c) BMS 5-91 – 40-90°F
    - (d) BMS 5-126 – Below 80°F (40-50°F preferred)
  - (2) Markers

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- (a) Storage conditions are important to prevent shrinkage of the strippable protective backing, wrinkles or curls in the marker, or contamination of the adhesive.
    - 1) The best storage conditions are 68-72°F and 40-60% relative humidity.
    - 2) Do not let the temperature or humidity get too high or too low. Temperatures of 85-90°F with low humidity are bad for cellophane-backed markers. The cellophane will shrink and open the adhesive to contamination. Although the paper-backed markers are not as easily damaged by these conditions, they also require the protection of correct wrappers and storage.
    - 3) When the temperature and humidity in the storage location cannot be controlled, the markers can be kept untrimmed.
  - (b) Markers cut to the correct size that come in sealed, moistureproof wrappers can be kept as supplied.
  - (c) When a package is opened, all of the markers in it must be applied within 48 hours unless the markers not used are immediately put away in a moistureproof wrapper or in the correct storage conditions.
- C. Surface Preparation
- (1) Clean all surfaces that the marker will touch. Clean the surfaces immediately before you apply the marker. Use one of these procedures:
    - (a) For corroded aluminum surfaces, mix 1 part metal conditioner with 3 parts water. Apply this to the surface and let it stay 30-60 seconds. Wipe this off with a damp wiper and then a dry wiper. Do this procedure again, if required, until the corrosion is gone.
    - (b) For surfaces that have Corogard EC-843, sand by hand with 180-grit aluminum oxide paper. Then wipe the surface with aliphatic naphtha.
    - (c) For cork surfaces, sand with 180-grit aluminum oxide paper until the surface is clean. Do this on an area approximately 1/8-3/8 inch larger than the marker. Remove the dust with a clean wiper.
    - (d) For BMS 8-86 (ABS plastic) surfaces, clean with aliphatic naphtha or Freon T-E 35. Do not use methyl ethyl ketone. If the surfaces are not very dirty, you can clean them with Jet Clean or Simple Green. But these two cleaners are not satisfactory for large amounts of grease, oils, dirt, or fingerprints.
    - (e) For all other surfaces, solvent clean them per SOPM 20-30-03 with a solvent from the list of materials.
  - (2) To be sure that the surface is clean, examine the surface visually with reflected light across the surface. Look for dirt, corrosion, oil, grease, and other unwanted matter. Clean the surfaces again if you find contamination.
- D. Marker Preparation
- (1) Add any required information with an electric typewriter that has pica type, and at the highest impression level. Make sure the typed information is clear, with sharp characters that do not cut through the aluminum.
  - (2) If the markers came untrimmed, cut them on the trim lines to the correct size before you remove the protective backing. The trim lines are indicated by trim marks on the marker.
- E. Application of Markers
- (1) General

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- (a) Hold up the surfaces of thin panels during the application of markers.
  - (b) Make sure the surfaces are prepared per Paragraph 3.C.(1) Make sure the surfaces have no sandiness or roughness unless permitted by Paragraph 3.E.(4)(a) and Paragraph 3.E.(4)(b) below.
  - (c) Do not use wrinkled, torn, or curled markers.
  - (d) After you remove the protective backing from the markers, do not touch the adhesive with the finger or fingernails, or let it be contaminated by unwanted matter.
  - (e) Make sure there is no moisture on the adhesive or the surface.
  - (f) When the marker is large in size or of complicated configuration, it could be easier to keep a small piece of the backing attached for protection until the marker is in the correct position and some of it is bonded to the surface.
  - (g) To prevent damage, give protection to the face of the marker during its application.
  - (h) Put the marker in the correct position on the prepared surface and push down to bond it. With a roller, start at one end, and roll the marker down firmly. To prevent roll marks, do not let the edges of the roller touch the marker. Be careful not to catch air under the marker.
  - (i) To remove air pockets, make a hole in them with a pin, and then smooth them down with a roller.
  - (j) When the marker has a protective paper facing, remove the paper by a pull on it at an angle of almost 180 degrees to the marker.
  - (k) A satisfactory application has a good bond along all of the edges. As a test, run a fingernail along the edge, but be careful not to lift the edge. The bond will usually get to full strength in 24 to 48 hours.
- (2) Application of Cellophane Backed Markers
- (a) Put the marker in water at 50-120°F for a minimum of 30 seconds but not more than 2 minutes.
  - (b) Remove the marker from the water. Remove unwanted water with clean, absorbent wipers.
  - (c) Make sure your hands are dry.
  - (d) To remove the cellophane backing, run a finger across one edge of the marker, and roll back the cellophane.
  - (e) Hold the loosened edge of the backing and carefully remove the backing from the marker.
  - (f) Apply the marker per Paragraph 3.E.(1) above.
- (3) Application of Paper-Backed Markers
- (a) Remove the paper backing from the marker, but do not touch the adhesive or give it contamination. Do not soak the backing to try to get it off.
    - 1) If the paper backing is not scored, roll it back with the ball of a finger. If the backing has a tab, use it to help remove the backing.
    - 2) If the paper backing is scored, bend it lightly along the scored line. Then lift the edge of the backing and slowly pull it from the marker. Do not let wrinkles get in the marker or backing.
  - (b) Apply the marker per Paragraph 3.E.(1) above.
- (4) Special Application Methods

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- (a) Cadmium plated surfaces; laminated, unpainted polyester materials; laminated, unpainted phenolic materials; unpainted rough surfaces (as on castings and cork)

**CAUTION:** DO NOT USE THIS ADHESIVE ON PRIMED OR PAINTED SURFACES.

- 1) Apply a light brush or spray coat of BMS 5-14 adhesive to the cleaned surface and let it dry for 5 to 20 minutes. While it dries, be careful to prevent contamination of the adhesive. After this time, the adhesive will be tacky, but will not get on a clean knuckle when lightly touched.
  - 2) Apply cellophane-backed markers per Paragraph 3.E.(2) above.
  - 3) Apply paper-backed markers per Paragraph 3.E.(3) above.
  - 4) Remove unwanted adhesive with a Series 98-1 solvent (SOPM 20-30-98).
- (b) Primed or painted rough interior surfaces (such as laminated painted polyester) and textured Tedlar surfaces

**CAUTION:** DO NOT USE THIS METHOD OR THIS ADHESIVE ON EXTERIOR SURFACES OPEN TO THE WEATHER

- 1) Apply a light brush or spray coat of BMS 5-55 adhesive to the cleaned surface and let it dry for 5 to 20 minutes. While it dries, be careful to prevent contamination of the adhesive. After this time, the adhesive will be tacky, but will not get on a clean knuckle when lightly touched.
  - 2) Apply cellophane-backed markers per Paragraph 3.E.(2) above.
  - 3) Apply paper-backed markers per Paragraph 3.E.(3) above.
  - 4) Remove unwanted adhesive with aliphatic naphtha.
- (c) Application of markers without self-contained adhesive to primed, painted, or plastic interior airplane surfaces

**CAUTION:** DO NOT USE THIS METHOD OR THIS ADHESIVE ON EXTERIOR SURFACES OPEN TO THE WEATHER

- 1) Prepare the marker and the surface per Paragraph 3.C. and Paragraph 3.D. above.
  - 2) Apply one coat of BMS 5-55 adhesive to the marker and to the surface per Paragraph 3.E.(4)(b)1) above.
  - 3) Apply the marker per Paragraph 3.E.(1) above.
  - 4) Remove unwanted adhesive with aliphatic naphtha.
- (d) Application of markers without self-contained adhesive to bare metal surfaces
- 1) Prepare the marker and the surface per Paragraph 3.C. and Paragraph 3.D. above.

**CAUTION:** DO NOT USE THIS ADHESIVE ON PRIMED OR PAINTED SURFACES.

- 2) Apply one coat of BMS 5-14 adhesive to marker and to the surface per Paragraph 3.E.(4)(a)1) above.
- 3) Apply the marker per Paragraph 3.E.(1) above.
- 4) Remove unwanted adhesive with a Series 80 solvent (SOPM 20-30-80).

F. Protection of Installed Markers from the Environment

- (1) Fuel, Hydraulic Fluid or Outdoor Weather

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- (a) Unless overhaul instructions are different, edge seal or overcoat all markers that are on surfaces outside the pressurized part of the fuselage, such as wing, empennage, wheel wells. Use one of the clear polyurethane coatings from the list of materials. (Do not use a coating which is noted "for indoor use only").
- (b) Apply the coating by spray or brush. For Type 41 coating, refer to SOPM 20-44-01 for the procedure. Make sure you thin the coating material sufficiently, for a good flow on the surface, and to prevent bubbles during the cure cycle. Use a gloss coating on a gloss surface. Use a flat coating on a semigloss or flat surface.
- (2) Normal Indoor Environment (such as test equipment)
  - (a) When markers will be only in a normal indoor service environment, overcoating and edge sealing are optional. If overcoating or edge sealing is specified, use a coating specified for indoor use from the list of materials, and applied per BAC5775. Or, as an option, use one of the other protective coatings from the list of materials. For Type 41 coating, refer to SOPM 20-44-01 for the procedure.
  - (b) If you use an optional coating, make sure you thin it sufficiently for a good flow on the surface and to prevent bubbles during the cure cycle. Use a gloss coating on a gloss surface. Use a flat coating on a semigloss or flat surface.

### G. Rework

- (1) Markers with sharp creases, torn edges, blisters, wrinkles, or characters you cannot read - Remove and discard the damaged markers. Apply new markers per Paragraph 3.E.
- (2) Markers with unsatisfactory bond on primed or painted exterior surfaces – Remove and discard the markers. Apply new markers per Paragraph 3.E.
- (3) Markers with unsatisfactory bond on primed, painted, or plastic interior surfaces
  - (a) Procedure 1 – If large areas of the marker are loose:
    - 1) Carefully remove the marker. If you damage it, discard the marker and apply a new one per Paragraph 3.E.
    - 2) Remove all adhesive from the surface and the back of the marker with solvent (SOPM 20-30-03).
    - 3) Manually solvent clean the surface and the back of the marker (SOPM 20-30-03).
    - 4) Apply the marker on the surface again, as a marker without self-contained adhesive. Refer to Paragraph 3.E.(4)(c) above.
  - (b) Procedure 2 – If only small areas are loose, in isolated locations:
    - 1) Carefully lift the loose part of the marker. Be careful not to damage the marker. If you damage it, remove the marker and apply a new one per Paragraph 3.E.
    - 2) Put a piece of BMS 5-91, Type 2 adhesive, below the lifted area of the marker.
    - 3) Push down firmly on the face of the marker to bond the adhesive to the surface of the part.
    - 4) Carefully remove the interliner. Do not let the adhesive get loose from the part surface.
    - 5) Push down on the loose area of the marker to bond it to the adhesive.
    - 6) With a fingertip, rub off the unwanted adhesive from around the edges of the marker.
- (4) Markers with unsatisfactory bond on metal surfaces
  - (a) Carefully remove the marker.

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- (b) Remove all adhesive from the marker and the surface with solvent (SOPM 20-30-03).
- (c) Manually solvent clean the marker and the surface (SOPM 20-30-03).
- (d) Apply the marker on the surface again as a marker without self-contained adhesive. Refer to Paragraph 3.E.(4)(d)
- (5) Adhesive-backed markers with unsatisfactory edge bonds – If the edges come loose or you think the adhesive or the bond could be bad, seal the edge of the marker or overcoat it with an applicable protective coating from the list of materials. Or remove the marker and apply a new one per Paragraph 3.E. above.

### 4. PLASTIC FILM DECALS AND MARKERS

A. This section is about these markers, which are all pressure-sensitive:

- (1) BAC5312, Type F
  - (a) BMS 10-26, Type 1, Grade A (vinyl)
  - (b) BMS 10-26, Type 1, Grade B (polyvinyl fluoride)
  - (c) BMS 13-47, Type 1, Class 3, Grade B (polyvinyl fluoride) (BACT193)
- (2) BAC5312 Type K – BMS 10-26, Type 5, Grade A (fluid resistant polyester)
- (3) BAC5312 Type L – MIL-F-22735 (reflective vinyl with fluorescent pigments)
- (4) BAC5312 Type N
  - (a) BMS 10-26, Type 3, Grade A (polyester)
  - (b) BMS 10-26, Type 4, Grade A (polyester, perforated)
  - (c) BMS 10-26, Type 7, Grade A (polyester)
  - (d) BMS 10-26, Type 8, Grade A (polyester, perforated)
- (5) BAC5312, Type P
  - (a) BAC5316, Type P (rigid vinyl placard)
  - (b) BMS 10-26, Type 6, Grade C (polycarbonate placard)
- (6) BAC5875, Type 4 (polyester applique)

B. Surface Preparation

- (1) Unless specified below, before you apply the plastic film marker, solvent clean the surface by the Final Cleaning Method in SOPM 20-30-03. Be sure to clean an area sufficiently large for the marker and the edge seal area around it.
- (2) Remove wax coatings and corrosion inhibiting compounds from aluminum surfaces by the Alkaline Cleaning procedure in SOPM 20-30-03. Clean the surface until the area shows a water-break-free surface.
- (3) Solvent clean plastic surfaces by the Final Cleaning Method in SOPM 20-30-03.
- (4) For cork surfaces, lightly sand with 150-grit abrasive paper until the surface is clean. Do this on an area 0.38 inch wider than the area of the marker. Remove sanding dust with a clean wiper.
- (5) To make the edge seal have a better bond on markers in a high wind shear exterior location, it is optional to lightly sand enamel coated surfaces immediately adjacent to the edge of the marker. Use 180-grit or finer aluminum oxide paper or Scotch-Brite pads. Then solvent clean by the Final Cleaning procedure in SOPM 20-30-03.

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- (6) For Type P (rigid vinyl or polycarbonate placards), clean the surface by the Final Cleaning Method in SOPM 20-30-03, with isopropyl alcohol, denatured alcohol, or methyl propyl ketone. Dry with a clean wiper.

### C. Application of Markers on Nonbreak Smooth Surfaces

- (1) Unless specified by the overhaul instructions, all exterior markers must be edge sealed (by paint or edge sealer as given in Paragraph 4.F. below), or given an overcoat by one of the materials given in Table 1. When you apply overcoat to a marker, extend the coating approximately 0.2-0.5 inch out from the edge of the marker. When you use paint to seal the edges of a marker, apply the marker before you apply the final topcoat.
- (2) If the markers have no premask and are applied in an area to be painted, premask them with carrier tape before you apply them.
- (3) If the marker is supplied in pieces, apply the pieces in the sequence that puts the top layer of the overlap downstream from the line of flight.
- (4) For markers smaller than 1 foot on a side, remove the backing and put the marker face down on a smooth surface.
- (5) For markers larger than 1 foot on a side:
  - (a) Put the marker in position on the surface and hold it there with masking tape.
  - (b) Separate the marker from its backing at one edge with a small piece of sandpaper or with the fingernail.
  - (c) Cut a sheet of carrier tape approximately 4 inches longer than the marker and approximately the same width. On premasked markers, use the premask as a carrier.
  - (d) Put the carrier on the marker, with one carrier edge 2 to 3 inches beyond the marker edge. This carrier edge will become a hinge.
  - (e) With masking tape, make a hinge between the carrier and the surface.
  - (f) Rub the carrier on with a plastic scraper. Use short strokes from the midpoint of the hinge to the edges, and remove all wrinkles and air bubbles.
  - (g) Fold the carrier and the marker back at the hinge, along the surface with the backing upward. Use masking tape to hold them in this position.
  - (h) Remove the marker backing sheet.
- (6) For strip markers, remove approximately 1 foot of backing and lay the marker face down on a smooth surface.
- (7) Bond the marker to the surface.
  - (a) Markers smaller than 1 foot on a side:
    - 1) Move the marker into position and touch one edge to the surface.
    - 2) Put a piece of backing on the adhesive side at the other end of the marker. This will help you hold the marker when you pull it tight in the next step.
    - 3) Pull the marker tight, but keep the remaining part away from the surface until the scraper pushes it down in the next step.
    - 4) With a plastic scraper, rub the marker down on the surface. Remove the piece of backing as you rub that area onto the surface.
    - 5) Remove all air bubbles. Rub all of the edges to make sure the edges are correctly bonded to the surface.

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- (b) Markers larger than 1 foot on a side:
    - 1) Turn the carrier back into position.
    - 2) Hold the marker at the free end. Pull it tight, but keep it away from the surface. Do not let the marker touch the surface until the scraper pushes it down in the next step.
    - 3) From the hinged end, with a plastic scraper, rub the marker down on the surface. Use short, fan-shaped strokes.
  - (c) Strip markers:
    - 1) Align the marker on the surface. Touch and bond approximately 3 inches of the marker. This bonded section will become a hinge in the steps which follow.
    - 2) Remove as much as 3 more feet of backing. Align the marker. Pull the marker tight, but keep it away from the surface until the scraper pushes it down in the next step.
    - 3) From the bonded end, with a plastic scraper, rub the marker down onto the surface. Rub all of the edges to make sure the edges are correctly bonded to the surface.
    - 4) Do steps 2) and 3) until all of the marker is bonded to the surface. If there is a splice, such as at corners, make an overlap in the ends. Keep overlaps between 0.5 and 2.0 inches.
  - (8) Remove pre-mask, carrier, and masking tape
    - (a) If the marker was applied on primer and the surface requires a topcoat, let the pre-mask stay on the marker. Apply the topcoat up to the marker and remove the pre-mask while the topcoat is wet. Then the topcoat will flow sufficiently to seal the edges of the marker. If the topcoat does not flow sufficiently, or if it did not completely seal the edges of the marker, seal the edges per Paragraph 4.F. below.
    - (b) To remove the pre-mask or carrier from the marker, pull it back at an angle of 180 degrees. Keep the carrier because you can use it again if it is clean and not bonded to itself.
    - (c) Remove masking tape that was used to hold the marker in position.
  - (9) If the marker was applied on pressurized areas, make a small hole in the marker with a pin or equivalent sharp tool. This will prevent blisters.
  - (10) Bubbles can be removed until 8 hours after the marker was applied. Make a small hole in the bubble with a sharp tool. Push out the caught air in the direction of the hole.
  - (11) If necessary, clean the installed marker by the Final Cleaning procedure in SOPM 20-30-03.
  - (12) If finish or coating was removed, apply it up to the marker edges by the overhaul instructions.
  - (13) Seal the edges of the marker per Paragraph 4.F. below.
- D. Application of Markers on Raised and Recessed Surfaces (Figure 1)
- (1) Across a joint between two surfaces which move with respect to each other.
    - (a) Method 1 (Preferred for gaps of 0.100 inch or more) – Cut the marker at the approximate center of the gap and bend the edges of the marker around both edges, as shown.
    - (b) Method 2 (Optional, and for gaps of 0.100 inch or less) – Cut the marker at the forward or upper skin edge and bend the other edge around the aft or lower skin edge, as shown.
  - (2) Across lap joints
    - (a) Method 3 (Preferred) – Bend the marker smoothly and continuously around the edge of the lap joint, as shown.

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- (b) Method 4 (acceptable where the marker goes along the lap joint for an important distance)
    - Cut the marker at the overlap edge and put the other edge of the marker against the bottom of the overlap edge, as shown.
  - (3) On exterior emergency exit handles (Method 5)
    - (a) Before you remove the backing paper, put the handle on the backing paper side of the marker. Cut slits in the marker overlap around each rounded corner, as shown.
    - (b) Remove the backing paper and apply the marker. Bend down the tabs around the edges of the part, as shown.
    - (c) Seal the edges per Paragraph 4.F. below.
  - (4) Type K markers on rivets and fasteners that are not smooth with the surface
    - (a) With the correct ST732-series cutter, cut and remove an area of marker approximately the size of the fastener head. Be careful not to damage the surface below the marker.
    - (b) Push down the marker film around the head of the fastener. Let the adhesive cure for 30 minutes.
    - (c) With a brush, apply BMS 10-11, Type 2 enamel on the head of the fastener. Use an amount to give a dry film thickness of 1.5-2.0 mils (0.0015-0.0020 inch). Let the enamel have an overlap of 0.25 inch on the marker.
  - (5) Markers that cover the fasteners of removable panels
    - (a) With the correct ST732-series tool, cut around the heads of the fasteners.
    - (b) Push down the marker film into the recess or slot.
- E. Application of Type F markers to printed circuit boards, printed wiring assemblies, electronic components and modules
  - (1) Remove the backing, put the marker in position, and touch one edge to the surface. Markers smaller than 2.0 inches on a side can be applied easily with thumb or finger pressure. On larger decals, use a plastic scraper to rub down the marker and remove air bubbles. Push down on all the edges to make sure they are correctly bonded to the surface.
  - (2) Bubbles can be removed until 8 hours after the marker was applied. Make a small hole in the bubble with a sharp tool. Push out the caught air in the direction of the hole.
  - (3) If necessary, clean the installed marker by the Final Cleaning procedure in SOPM 20-30-03.
  - (4) Seal the edges per Paragraph 4.F. below.
- F. Edge Sealing. Use one of these methods:
  - (1) Use paint to seal the edges. When markers are applied before the final topcoat, edge seal is not necessary. But edges of markers must be completely sealed by topcoat to give protection from erosion. If this is not possible, also edge seal per step (2).
  - (2) Apply edge sealer and cure it (Table 1) to a thickness that gives a smooth, continuous transition from the substrate to the surface of the marker. When you use 683-3-2 edge seal, two applications of the sealer could be necessary to get a sufficient seal thickness and a continuous layer. Then let the first layer become tacky before you apply the second layer to prevent lift off, or drag, of the edge seal. The edge seal must extend a minimum of 0.2 inch onto the substrate and a minimum of 0.2 inch onto the marker. Also, the edge seal must end in a continuous wet edge, and not make beads on the surfaces. After you apply the final layer of edge seal, cure the seal for a minimum of 30 minutes in protected, dry conditions.

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- (3) If the markers will be applied to exterior surfaces which will get a high wind shear (such as on wings, on fuselage at and forward of Section 41, and on the empennage), make sure the edge seal is continuous and has a good bond with the surfaces for the longest possible service life. Then two applications of edge seal could be necessary for a sufficiently thick coating.
- (4) Unless the overhaul instructions are different, edge seals are optional on all markers applied to interior surfaces.
- (5) For strip markers, sealing is optional on all edges but the leading edges.

**Table 1: Edge Sealing of Plastic Film Markers**

Sealer	Marker BAC5312 Type				Marker BAC5875, Type 4	Application Notes
	F	K	L	N *[2]		
Akzo 683-3-2 *[1]	X	X	—	X	X	Mix 2 parts 683-3-2 base to X-310A catalyst. Pot life is 4 hours at 70°F. Apply with brush. Cure 3-4 hours at 65-75°F. Refer to SOPM 20-44-01 for more information. *[2]
CA8000/~ B900B CA8000B *[3]	X	X	—	X	—	Mix by the vendor's instructions. Apply in 30 minutes. Cure 30 minutes minimum in protected, dry conditions. *[2]
Koppers Vinyl 401	X	—	—	X	X	Apply with brush. Cure 2-3 hours at 65-75°F.

\*[1] Preferred option for hydraulic fluid resistance.

\*[2] Brush application preferred. Application above 50°F is recommended for better bond.

\*[3] Preferred option for hydraulic fluid resistance and good bond in high shear marker applications.

### G. Touch up of minor damaged areas of Types F and N markers.

- (1) Clean the surface of the marker with naphtha. Wipe the marker dry with a clean cloth.
- (2) With a brush, apply the correct vinyl process paste on the damaged area. If necessary, the paste can be thinned with No. 3911 thinner.
- (3) If the dried touched-up area does not have the gloss of the surrounding marker, apply 3920 gloss clear paste to the area.

### H. Rework

- (1) If the marker was applied unsatisfactorily, remove it immediately, if possible, because the adhesive bond quickly becomes strong.

**CAUTION:** IF YOU USE HEAT TO REMOVE A MARKER, DO NOT LET THE PART SURFACE GET HOTTER THAN 130°F.

- (2) Remove the marker with paint stripper per SOPM 20-30-02 or with heat from an approved heat source. To use heat to remove a marker, increase its temperature to about 120°F, lift an edge and then peel off the marker. A recommended heat source is a 250-watt heat lamp in an approved fixture.
- (3) Do not try to use a removed marker again. Discard it and apply a new one.

### I. Application of through-cut Type P placards

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- (1) Identify the location where the placard will be installed. You can mark the location with a grease pencil (Schwan All-Stabilo 8046 or equivalent). Make sure the surface is between 50 and 100 degrees F.
- (2) Make a decision about which piece of the release liner to remove to make the installation easier.
- (3) Slightly bend the placard in the middle to lift the center edges of the release paper from the placard. If this does not work, you can use a tool such as a scalpel or tweezers to lift the release paper.
- (4) Remove the release paper from the back of the placard. As an alternative, you can keep one side of the liner on the placard to help when you apply it. Hold the placard by its front and the release liner, or by the edges if the liner is completely removed. Be careful not to put a crease in the placard during liner removal. Put the placard on the surface and lightly push on it to bond the exposed edge. While the placard is attached only along its edge, it can be adjusted slightly if necessary. Smoothly attach the portion without the liner.
- (5) If some of the liner was remaining in position on the back of the placard, carefully remove it and push down to bond the remaining area of the placard.
- (6) Now apply firm pressure on all of the placard surface to make sure all of it fully touches the surface, and to remove all air pockets. You can use the rubber roller or the plastic sweep to do this. If the roller or sweep cannot be used, you can use finger pressure applied on clean, dry wipers over the placard. Make sure the edges and corners of the placard have a good bond with the surface.
- (7) If necessary, remove unwanted adhesive or grease pencil marks with a wiper damp with isopropyl alcohol or denatured alcohol. Do not soak the wiper in the alcohol or let alcohol get into the bond line.
- (8) Replace any placard if it must be moved after more than only one edge touches the surface, or if the adhesive has contamination, or if there is any crease, damage, or defect visible on the surface of the placard.
- (9) Be sure to do a test of the bond. Refer to BAC5312 for details.

### J. Application of kiss-cut Type P placards

- (1) Identify the location where the placard will be installed. You can mark the location with a grease pencil (Schwan All-Stabilo 8046 or equivalent). Make sure the surface is between 50 and 100 degrees F.
- (2) Remove unwanted placard material or adhesive from the edges of the placard.
- (3) Carefully bend the release liner away from the edge of the placard. Remove the release liner from the back of the placard. As an alternative, you can keep one side of the liner on the placard to help when you apply it. Hold the placard by its front and the release liner, or by the edges if the liner is completely removed. Be careful not to put a crease in the placard during liner removal.
- (4) Put the placard on the surface and lightly push on it to bond the exposed edge. While the placard is attached only along its edge, it can be adjusted slightly if necessary. Smoothly attach the portion without the liner.
- (5) If some of the liner was remaining in position on the back of the placard, carefully remove it and push down to bond the remaining area of the placard.

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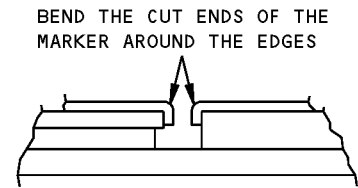
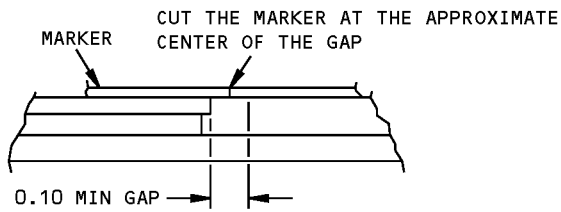


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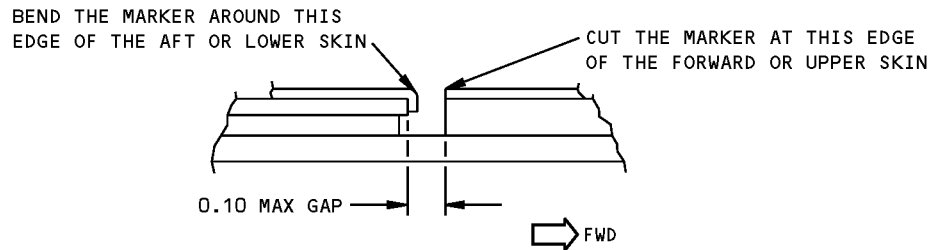
- (6) Now apply firm pressure on all of the placard surface to make sure all of it fully touches the surface, and to remove all air pockets. You can use the rubber roller or the plastic sweep to do this. If the roller or sweep cannot be used, you can use finger pressure applied on clean, dry wipers over the placard. Make sure the edges and corners of the placard have a good bond with the surface.
- (7) If necessary, remove unwanted adhesive or grease pencil marks with a wiper damp with isopropyl alcohol or denatured alcohol. Do not soak the wiper in the alcohol or let alcohol get into the bond line.
- (8) Replace any placard if it must be moved after more than only one edge touches the surface, or if the adhesive has contamination, or if there is any crease, damage, or defect visible on the surface of the placard.
- (9) Be sure to do a test of the bond. Refer to BAC5312 for details.

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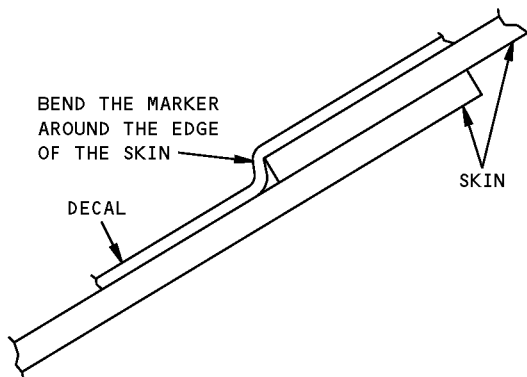
## STANDARD OVERHAUL PRACTICES MANUAL



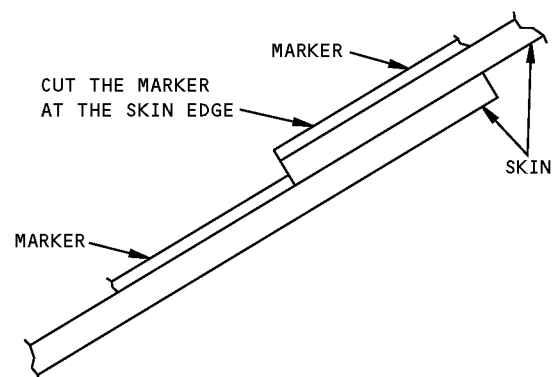
METHOD 1



METHOD 2



METHOD 3



METHOD 4

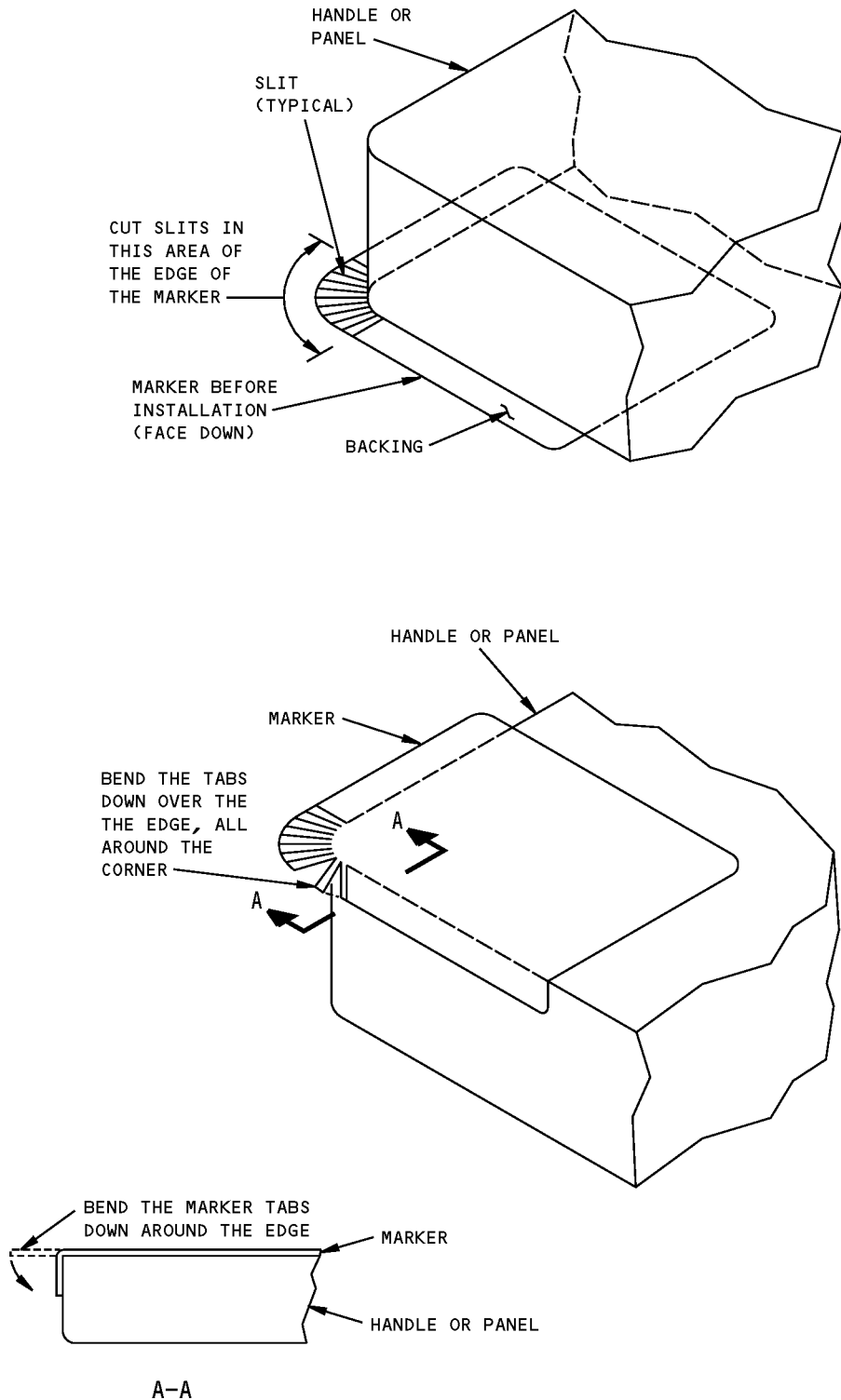
ALL DIMENSIONS ARE IN INCHES

Plastic Film Markers on Raised and Recessed Surfaces  
Figure 1 (Sheet 1 of 2)

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## METHOD 5

Plastic Film Markers on Raised and Recessed Surfaces  
Figure 1 (Sheet 2 of 2)

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**STANDARD OVERHAUL PRACTICES MANUAL****5. INDICIA STRIPS ON LIGHTPLATES****A. Removal with Heat**

**CAUTION:** DO NOT APPLY TOO MUCH HEAT, OR THE INDICIA STRIP WILL MELT AND REQUIRE REMOVAL WITH SOLVENT.

- (1) Increase the temperature of the indicia strip to approximately 120°F with warm water, hair dryer, lamp, or equivalent until the adhesive becomes soft.
- (2) With a knife blade, lift a corner of the indicia strip. Then carefully peel the strip off the lightplate.
- (3) If necessary, clean the lightplate with cheesecloth wet with a solution of approximately equal parts of BMS 11-7 solvent and water.
- (4) Dry the lightplate. Install a new indicia strip.

**B. Removal with Solvent**

**CAUTION:** TOO MUCH BMS 11-7 SOLVENT COULD DAMAGE THE TRANSLUCENT WHITE COATING OR THE ACRYLIC BASE MATERIAL OF THE LIGHTPLATE

- (1) With a brush or a cloth, apply sufficient BMS 11-7 solvent to the indicia strip to make it wet.
- (2) After approximately 2 minutes the indicia strip will be wrinkled. Apply BMS 11-7 solvent to the surface again.
- (3) After approximately 2 more minutes, the indicia strip will be soft. Push this material off the lightplate with a wooden scraper or equivalent.
- (4) Clean the lightplate with cheesecloth wet with a solution of approximately equal parts of BMS 11-7 solvent and water.
- (5) Dry the lightplate. Install a new indicia strip.

**6. VINYL PLACARDS ON INTERIOR SURFACES**

**CAUTION:** DO NOT USE FREON TF ON SURFACES THAT HAVE BMS 10-55 WATER-BASE PAINT.

- A. Clean the surface with Freon TF or detergent cleaner. Dry the surface fully.
- B. Use a template or masking tape to give limits to the area where the adhesive will be applied. Make this area approximately 1/16 inch smaller than the area of the placard.
- C. With a brush, apply BMS 5-55 adhesive to this area. Then remove the template or the tape.
- D. Let the adhesive dry 15 minutes minimum.
- E. Remove the release paper from the back of the placard.
- F. Install the placard on the surface. With strong hand pressure and cheesecloth, rub the placard onto the surface.
- G. If necessary, remove unwanted adhesive with naphtha.

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