STANDARD OVERHAUL PRACTICES MANUAL

REPAIR OF CONDUCTIVE COATINGS

PART NUMBER
NONE

PUBLISHED BY BOEING COMMERCIAL AIRPLANES GROUP, SEATTLE, WASHINGTON, USA
A DIVISION OF THE BOEING COMPANY
PAGE DATE: Jul 01/2009

STANDARD OVERHAUL PRACTICES MANUAL

Revision No. 13
Jul 01/2009

To: All holders of REPAIR OF CONDUCTIVE COATINGS 20-10-06.

Attached is the current revision to this STANDARD OVERHAUL PRACTICES MANUAL

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Location of Change	Description of Change
	NO HIGHLIGHTS

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

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All revisions to this manual will be accompanied by transmittal sheet bearing the revision number. Enter the revision number in numerical order, together with the revision date, the date filed and the initials of the person filing.

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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.

REPAIR OF CONDUCTIVE COATINGS

1. INTRODUCTION

A. The data in this subject comes from Boeing Process Specification BAC5837 for preparation of exterior plastic surfaces for paint, and BAC5639 for application of BMS 10-21 conductive coating. The airline has a copy of the Boeing Process Specification manual.

B. The data is general. It is not about all situations or specific installations. Use this data as a guide to help you write minimum standards.

C. Refer to SOPM 20-00-00 for a list of all the vendor names and addresses.

2. EQUIPMENT

NOTE: Equivalent substitutes can be used.

A. Brush or spray equipment.

B. Controlled heat source up to 180°F to cure the conductive coating, unless room temperature cure is used.

C. Resistivity Gauge – 65C20346-1 (alternative to items D, E).

D. Ohmmeter that can measure 300 kilohm resistance (alternative to item C).

E. Tape, flexible copper – Scotch X-1181, V76381 (alternative to item C).

3. MATERIALS

NOTE: Equivalent substitutes can be used.

A. Solvents (Ref SOPM 20-60-01)

(1) Cleaning solvent, presealing – BMS 11-7

(2) Naphtha

(a) Petroleum Aliphatic, TT-N-95, Type 2

(b) Mineral spirits, TT-T-291

(c) Dry cleaning solvent, P-D-680, Type 1

(3) Reducer, 66-C-22, V06367

(4) Thinner, TR-15, V98502

(5) Thinner, 020-707, V85570

B. Primer – BMS 10-79, Type 3

C. Conductive Coating (Ref SOPM 20-60-02)

(1) Antistatic Coating – BMS 10-21, Type 2

(a) Cortaulds Aerospace (V85570) System

1) Base 528X306

2) Activator 910X464

(2) Antistatic Coating – BMS 10-21, Type 3

(a) Cortaulds Aerospace (V85570) System

1) Base 528X310

2) Activator 910X464

(b) Akzo (V98502) System

1) Base 463-6-84

2) Activator X-566

(c) Crown Metro (V37810) System

1) Base 10-P2-3

2) Activator EC-110

D. Surfacers and fillers material as necessary per Table 1.

Table 1: Surfacers and Fillers

Material	Purpose	Vendor
28-C-1 Static Conditioner Filler	To fill pinholes	V98795
Primer Surfacer, 825X466 Base and 910-702 Catalyst	For a good bond and to fill surface depressions on polyetheretherketone (PEEK) surfaces only	V85570
Laminar X-500 Off-White Surfacer, 8-W-5 Base and 50-C-3 or 10-C-32 Hardener	To fill depressions over a wide area	V98795
BMS 5-92, Type 1 and 3	To fill local pits and depressions on carbon/epoxy surfaces only	V33564 or V76381
Epibond 156A/B	To fill local pits and depressions on fiberglass surfaces only	V99384
EC-1838 A/B	To fill local pits and depressions	V76381
Scotch Weld DP-110 gray	To fill pits and small surface defects	V76381

4. SURFACE PREPARATION

A. Solvent clean the surface per SOPM 20-30-03.

B. Sand the area to be repaired to remove paint or primer and old conductive coating with 150 grit or finer abrasive cloth or paper.

C. Wipe off the sanding dust with a clean cloth wet with solvent.

CAUTION: PINHOLE FILLERS ARE RECOMMENDED ONLY TO FILL SMALL SURFACE DEFECTS LOCALLY AND NOT AS A SMOOTHING MATERIAL. A CONTINUOUS LAYER OF FILLER MATERIAL WILL NOT MAKE A GOOD BOND FOR THE COATING.

D. If the surface to be coated is a decorative surface, fill pinholes in the base material with a material given in Table 1. If the surface is not decorative, it is not necessary to fill pinholes.

E. Mask off all areas not to get the conductive coating.

5. PREPARATION OF CONDUCTIVE COATING

A. Shake the base material on a paint shaker before you mix in the activator.

B. Add the activator to the base material as shown in Table 2, or by the manufacturer's instructions. Identify the container with the date and time it was mixed, and when the pot life will end.

C. Let the mixture stand a minimum of 30 minutes before you use it.

Table 2: BMS 10-21 Coating Details

Specification	Vendor System	Mixing Ratio Parts by Volume	Pot Life, hours	
			Below 80°F	81-100°F
BMS 10-21 Type 2	Cortaulds Aerospace Base 528X306 Activator 910X464	 1 1	4	2
BMS 10-21 Type 3	Cortaulds Aerospace Base 528X310 Activator 910X464	 1 1	4	2
	Crown Metro Base 10-P2-3 Activator EC-110	 3 1	8	4
	Akzo Coatings Base 463-6-84 Activator X-566	 3 1	4	2

6. APPLICATION OF CONDUCTIVE COATING

A. Apply the BMS 10-21 conductive coating by brush or spray to a dry film thickness of 0.6-1.0 mil (0.0006-0.0010 inch) for Type 2 and 0.4-0.8 mil (0.0004-0.0008 inch) for Type 3. To monitor the film thickness, apply the coating also to a metal panel attached to the plastic part and measure the thickness on the panel after it is dry, or measure the coating on installed fasteners or inserts.

B. For grounded fastener locations, apply the BMS 10-21 coating down into the countersinks.

C. For repair of old coatings, apply the new BMS 10-21 coating to all of the sanded area. Be sure the new coating touches the edge of the old coating.

7. CURE OF CONDUCTIVE COATING

A. Before you install fasteners, let the coated countersink areas dry a minimum of 20 minutes at 70-90°F.

B. Before you make resistivity measurements or apply overcoat, cure the coating as follows:

(1) BMS 10-21 Type 2: Let the coating air dry 7 days at 70-80°F or cure per Paragraph 7.B.(3) at a minimum temperature of 140°F.

(2) BMS 10-21 Type 3: Let the coating cure 2 hours minimum at 60°F or cure per Paragraph 7.B.(3).

(3) Accelerated cure

(a) Let the coating dry a minimum of 15 minutes at room temperature.

(b) Cure at a temperature-time schedule along the curve defined by the values in Table 3:

Table 3: Conductive Coating Cure Schedules

Temperature (°F)	Time (Minutes)
180	15
160	20
140	30
120	45
100	70

Table 3: Conductive Coating Cure Schedules (Continued)

Temperature (°F)	Time (Minutes)
90	90
85	105
80	120

(c) Let the coating cool a minimum of 15 minutes at room temperature, before you continue with resistivity tests, or apply overcoat, etc.

8. RESISTIVITY MEASUREMENT OF CONDUCTIVE COATING

A. Measure the resistivity after the conductive coating is fully cured and before you apply overcoats to the coating. If the overhaul instructions specify more than one layer of conductive coating, measure the resistivity of the complete coating, not each individual layer.

B. For BMS 10-21, Type 2 coating, you can use an ohmmeter or equivalent equipment that can measure in the range 1 to 100 megohms per square (a square of any dimension). You can use the copper tape procedure (Figure 2) or the ST895A-1 probe (Figure 1).

C. For BMS 10-21, Type 3 coating, you can use an ohmmeter and the copper tape procedure (Figure 2), the ST895A-1 probe (Figure 1), or a special resistivity gage such as the 65C20346-1 unit (Figure 3).

D. If the resistance of Type 2 coating is between 1 and 100 megohms per square (a square of any dimension), or if the resistance of type 3 coating is less than 300 kilohms, conductive coating is satisfactory and overcoating may be applied as required per Paragraph 9. below.

E. If the resistance of BMS 10-21, Type 2 coating is greater than 100 megohms per square (a square of any dimension),

(1) Cure the coating at 140°F minimum for one more hour.

(2) Measure the resistance again.

(3) If the resistance is not between 1 and 100 megohms per square, remove the coating and try again per Paragraph 8.F.

F. If the resistance of Type 2 coating is less than 1 megohm per square (a square of any dimension), or if the resistance of Type 3 coating is more than 300 kilohms:

(1) Sand area with 240 grit or finer abrasive paper or cloth. Do not sand through the coating.

(2) Solvent clean per SOPM 20-30-03.

(3) Apply the conductive coating again per Paragraph 6. above.

(4) Cure coating per Paragraph 7. above.

(5) Measure the resistance again per Paragraph 8.A., Paragraph 8.B., Paragraph 8.C., above.

(6) Do not let waxed papers touch the coating during transportation, storage, etc.

9. APPLICATION OF OVERCOAT TO CONDUCTIVE COATING

A. Surfaces to be coated with enamel within 24 hours:

(1) Immediately before you apply the enamel, wipe the surface to be coated with a clean cheesecloth wet with naphtha.

(2) Wipe the surfaces with a clean dry cheesecloth before the naphtha dries.

(3) Apply and cure enamel as specified by the overhaul instructions.

B. Surfaces not to be coated with enamel in 24 hours:

(1) Immediately before you apply the primer, wipe the surfaces with a clean cheesecloth wet with naphtha.

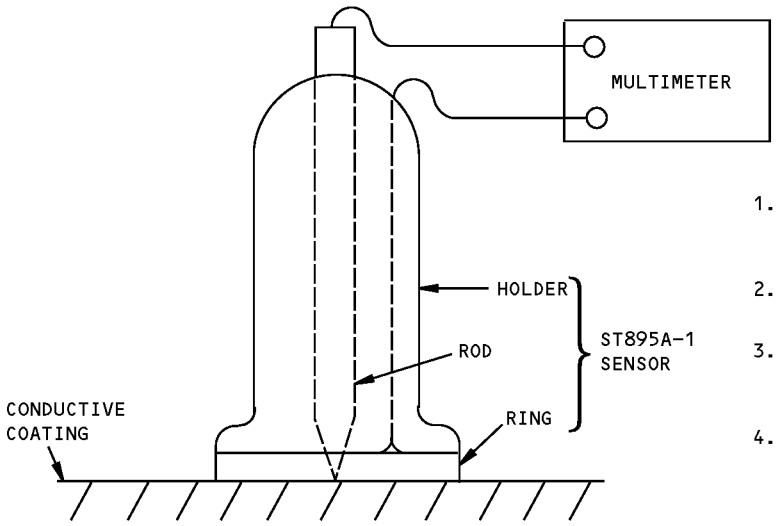
(2) Wipe the surfaces with a clean dry cheesecloth before the naphtha dries.

(3) Apply and cure BMS 10-79, Type 2 or 3 primer within 24 hours from the time the conductive coating was applied. A full cure of the conductive coating is not necessary for the masked areas, such as the countersinks around holes for grounded fasteners.

(4) Reactivate the primed surface immediately before you overcoat with enamel.

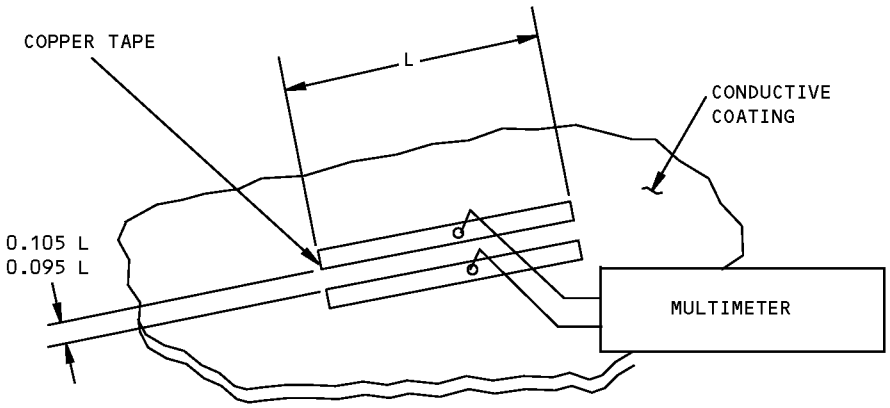
(5) If there are pinholes, apply Static Conditioner 28-C-1 only to these areas.

(6) Apply and cure the enamel as specified by overhaul instructions.



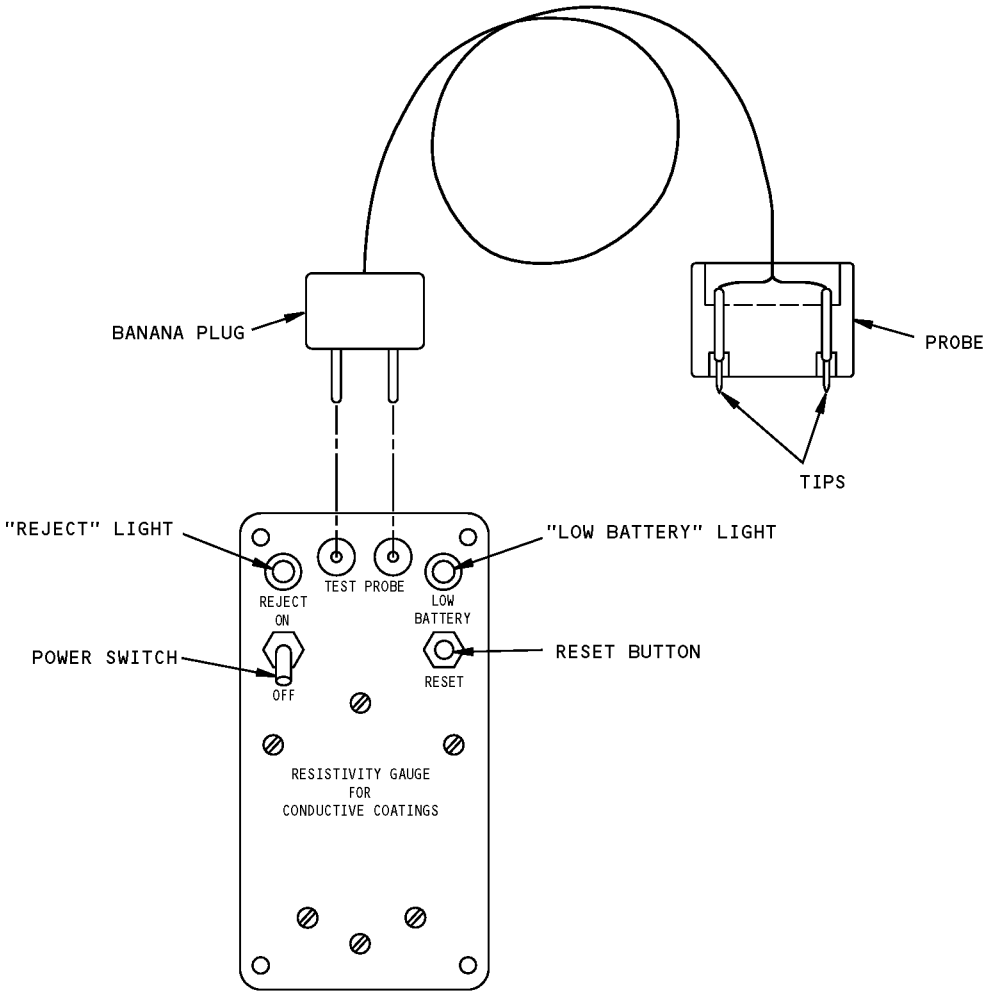
1. MAKE SURE THE SURFACES OF THE ROD AND THE RING ARE CLEAN.
2. PUT THE SENSOR ON THE COATING.
3. PUSH DOWN ON THE HOLDER UNTIL THE RING IS TIGHTLY AGAINST THE COATING.
4. READ THE RESISTANCE VALUE ON THE METER.

Resistance Measurement with ST895A-1 Sensor
Figure 1



1. CUT TWO PIECES OF COPPER TAPE, EACH OF LENGTH L.
2. PUT THE TAPE ON THE SURFACE, PARALLEL AND APART AS SHOWN.
3. TOUCH THE METER PROBES TO THE TAPE AS SHOWN AND READ THE METER.
4. RESISTIVITY = METER READING X 10 (OHMS/SQUARE).
5. RESISTANCE = METER READING X 6 (OHMS).
6. REMOVE THE COPPER TAPE WHEN DONE.

Resistance Measurement with Copper Strips
Figure 2



1. PLUG THE PROBE INTO THE INSTRUMENT, BUT DO NOT TOUCH IT TO THE COATING YET.
2. TURN THE POWER SWITCH ON.
3. MAKE SURE THE "REJECT" AND "LOW BATTERY" LIGHTS ARE ON.
4. PUSH THE RESET BUTTON.
5. MAKE SURE THE "LOW BATTERY " LIGHT GOES OFF. MAKE SURE THE "REJECT" LIGHT STAYS ON.
6. PUT THE TIPS OF THE PROBE ON THE COATING. IF THE "REJECT" LIGHT GOES OFF, THE RESISTIVITY IS LESS THAN 300 KILOHMS. IF THE REJECT LIGHT STAYS ON, THE RESISTIVITY IS MORE THAN 300 KILOHMS

Resistivity Measurement with 65C20346-1 Gage
Figure 3