

LOU MARTIN &  
ASSOC INC

2107 DANBURY DRIVE  
SAN ANTONIO, TEXAS 78217

PHONE: (210) 930-8181  
FAX: (210) 930-8184

**COMPONENT MAINTENANCE MANUAL  
WITH  
ILLUSTRATED PARTS LIST**

**Bulkhead Shade Assembly  
777-113M001**

First Issue: MAR 03/06

25-23-09

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**Lou Martin & Assoc., Inc.**  
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Record of Revisions

Rev. No.	Issue Date	Date Inserted	By	Rev. No.	Issue Date	Date Inserted	By
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Introduction

TASK 25-23-09-990-801

1. General

- A. This document writing follows the directives of the “A.T.A Specification No. 100” updating N° 36. The instructions in this manual give the information necessary to do maintenance functions ranging from simple checks and replacement to complete shop type repair for the equipment, manufactured and supported by:

Lou Martin & Assoc., Inc. 2107 Danbury Drive San Antonio, TX. 78217 USA Tel.: (210) 930-8181 – Fax: (210) 930-8184
---

- B. This document is applicable to the following equipment:

Bulkhead Shade Assy.      777-113M001

TASK 25-23-09-990-802

2. Layout of manual

- A. This manual contains a general description and operation followed by data for maintenance, repair, disassembly and assembly of the equipment. This is followed by an illustrated parts list (IPL), which gives detailed information.
- B. The manual is divided into separate sections:
- (1) Title Page
  - (2) Record of Revisions
  - (3) Table of Contents
  - (4) Introduction
  - (5) Procedures and IPL Sections

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- C. This manual will be updated as required by revisions: Service Bulletins may be issued separately. Their effect on this manual will be made evident by reissue of the appropriate list of Service Bulletins.

TASK 25-23-09-990-803

3. Revision of the document

- A. Two types of revisions of the manual are used to follow the evolution of this equipment/

(1) Normal revision

- (a) Normal revisions are periodically issued.
- (b) They are printed on white paper
- (c) A List of Revisions gives a better follow-up of these revisions.
- (d) The changes in the text are shown by a vertical line drawn in the left margin.

(2) Temporary revision

- (a) Temporary revisions can be issued in advance of the normal revision.
- (b) They are printed on yellow paper.
- (c) A List of Temporary Revisions gives their follow-up.
- (d) A letter comes with these temporary revisions to give all the necessary information about the insertion of these revisions.

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- (3) General rules for the insertion of temporary revisions
  - (a) A yellow page (with a higher sequential number) can replace a yellow page.
  - (b) A yellow page cannot replace a white page.

TASK 25-23-09-990-804

4. Certification of operation

- A. The maintenance operations described in the present COMPONENT MAINTENANCE MANUAL have been checked in the manufacturer's workshop by observing the disassembly, assembly, testing, and trouble-shooting instructions detailed in this document.

TASK 25-23-09-990-805

5. WARNINGS-CAUTIONS-NOTES

- A. Special adjuncts to the text are expressed by the following headings:

WARNING : CALL ATTENTION FOR THE USE OF MATERIALS, PROCESSES, METHODS, PROCEDURES OR TOLERANCES WHICH MUST BE ADHERED TO CAREFULLY IN ORDER TO AVOID ANY INJURY.

CAUTION: CALL ATTENTION TO METHODS AND PROCEDURES, WHICH MUST BE ADHERED TO IN ORDER TO AVOID DAMAGE TO EQUIPMENT.

NOTE: Call attention to methods, which make the procedures easier.

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TASK 25-23-09-990-805

6. List of Abbreviations

ASSY	: ASSEMBLY
ATA	: AIR TRANSPORT ASSOCIATION OF AMERICA
FAA	: FEDERAL AVIATION ADMINISTRATION
FAR	: FEDERAL AVIATION REGULATION
IPL	: ILLUSTRATED PARTS LIST
LB.	: POUND
MS	: MILITARY STANDARD
NAS	: NATIONAL AEROSPACE STANDARD
REV	: REVISION
SB	: SERVICE BULLETINS
TR	: TEMPORARY REVISION

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TASK 25-23-09-870-801

DESCRIPTION AND OPERATION

1. Description

A. General

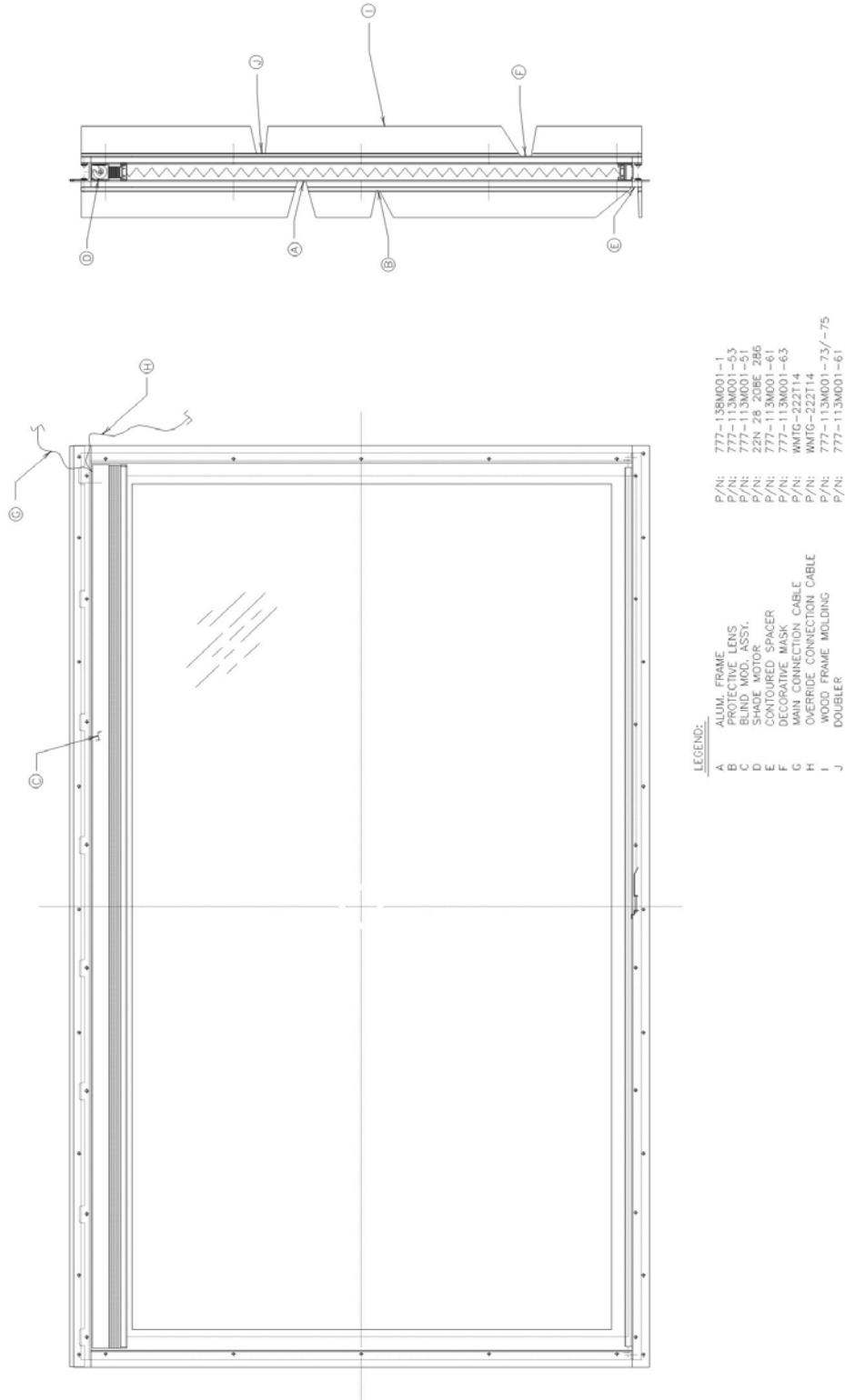
Basically, the decorative window shade assy. is made of alum. frame, blind assy., 8 contoured spacers, 2 decorative masks, 2 protective lenses, doublers, and 2 decorative wood frames.

For attachment, the window unit uses screws on fwd side of window (Ref drawing 777-113M001)

B. Composition

(See FIGURE 1 / GRAPHIC 25-23-09-991-001 Bulkhead Shade Assy.)

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BOEING 777 BULKHEAD SHADE ASSY. DIAGRAM  
 SHOWING PARTS BREAKDOWN

FIGURE 1 / GRAPHIC 25-23-09-991-001

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TESTING AND FAULT ISOLATION

TASK 25-23-09-700-801

1. Testing

A. General

- (1) The tests check the different adjustments, components and mechanisms of the window shade unit.
- (2) The defective parts must be repaired in workshops or can be replaced by serviceable parts.

B. Job set-up information

- (1) Tools, fixtures, equipment and materials

NOTE: Refer to “SPECIAL TOOLS, FIXTURE AND EQUIPMENTS”  
for full details on the items used.

C. Procedure

- (1) Make sure the shade unit operates with the desired tension, and does not bind.

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TASK 25-23-09-700-802

2. Fault isolation

- A. Faults you can find during the operations are given here under together with their probable causes and their corrective actions.
- B. After the necessary corrective action is done, do an inspection of the window unit to make sure that the fault is corrected.
- C. Mechanical fault isolation

TROUBLE	POSSIBLE CAUSE	CORRECTION
<b>SHADE ASSY.</b>		
The motor continues to run after the travel rail meets the bottom rail.	Limit switch set to low.  Also refer to "Adjustments after installation"	Readjust the down limit switch tab on the top of the headrail. Slide it to the left. This will decrease the travel rail length.
The motor shuts off before the travel rail meets the bottom rail.	Limit switch set to high.  Also refer to "Adjustments after installation"	Readjust the down limit switch tab on the top of the headrail. Slide it to the right. This will increase the travel rail length.
There is no power to the motor when the switch is activated.	Loose wiring.	Check all electrical connections. Look for cold solder joints.
When the switch is pushed "up" the shade goes down.	Backward switch plate.	Remove the switch plate and rotate the switch 180 degrees.
<b>WINDOW UNIT</b>		
Unit is loose	Installation screws are loose.	Check and tighten any loose screws.
Battery back-up system is not responding.	Loose wire connection  Battery may have lost it's charge	Check connection cables  Recharge or replace 12V batteries as required.

NOTE: FOR ANY OTHER TECHNICAL ASSISTANCE CALL Lou Martin & Assoc., Inc.

FOR A REWRK, DUE TO MOTOR FAILUREOR REPLACING A BROKEN STRING, SEND ASSEMBLY BACK TO Lou Martin & Assoc., Inc. FOR A TYPICAL 24-HOUR RETURN PERIOD.

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- C. Adjustments after installation (See FIGURE 2/GRAPHIC 25-23-09-991-002)
- (1) The length of the shade can be adjusted up to three inches. Turn the screw counterclockwise to loosen the up/down adjustment tab.
  - (2) Move the adjustment tab to the right to lengthen the shade, and to the left to shorten the shade.
  - (3) When the proper adjustment is done, hold the adjustment tab in place while turning the screw clockwise to tighten.

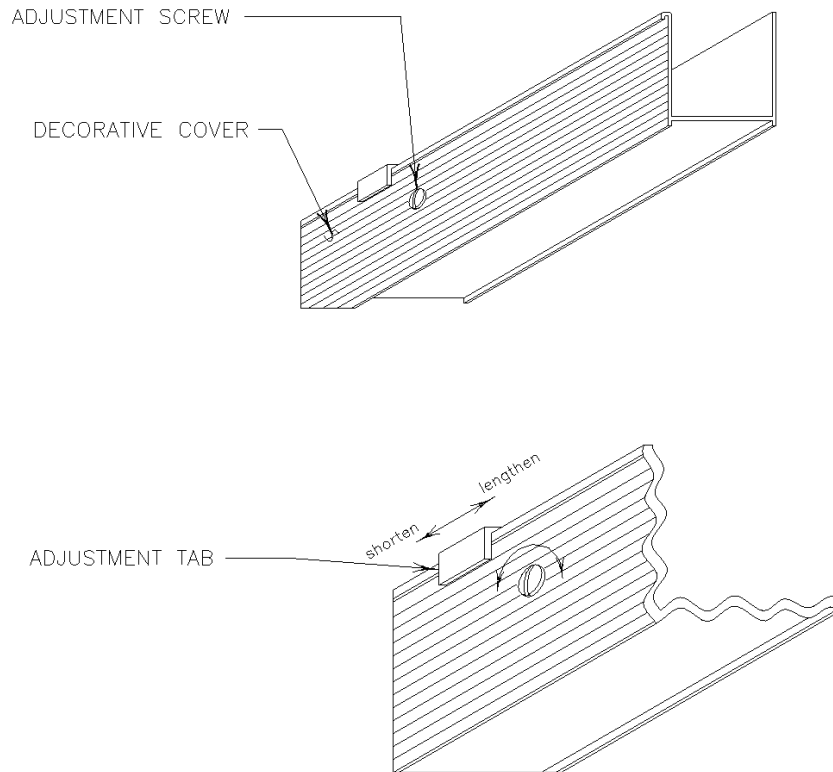


FIGURE 2 / GRAPHIC 25-23-09-991-002

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SCHEMATIC AND WIRING DIAGRAMS

TASK 25-23-09-420-801

1. General

The diagrams contained in this section are to be used to show the wiring for the electrical window units in the aircraft.

TASK 25-23-09-940-801

2. Job set-up information

- A. Tools, Fixtures, equipment and materials  
None.

TASK 25-23-09-420-802

3. Preliminary Steps

- A. Before the uninstalling, make note of the window assy. location for efficient re-installation and to prevent errors.

TASK 25-23-09-420-803

4. Window wiring diagrams

- A. Refer to FIGURE 3/ GRAPHIC 25-23-09-991-003

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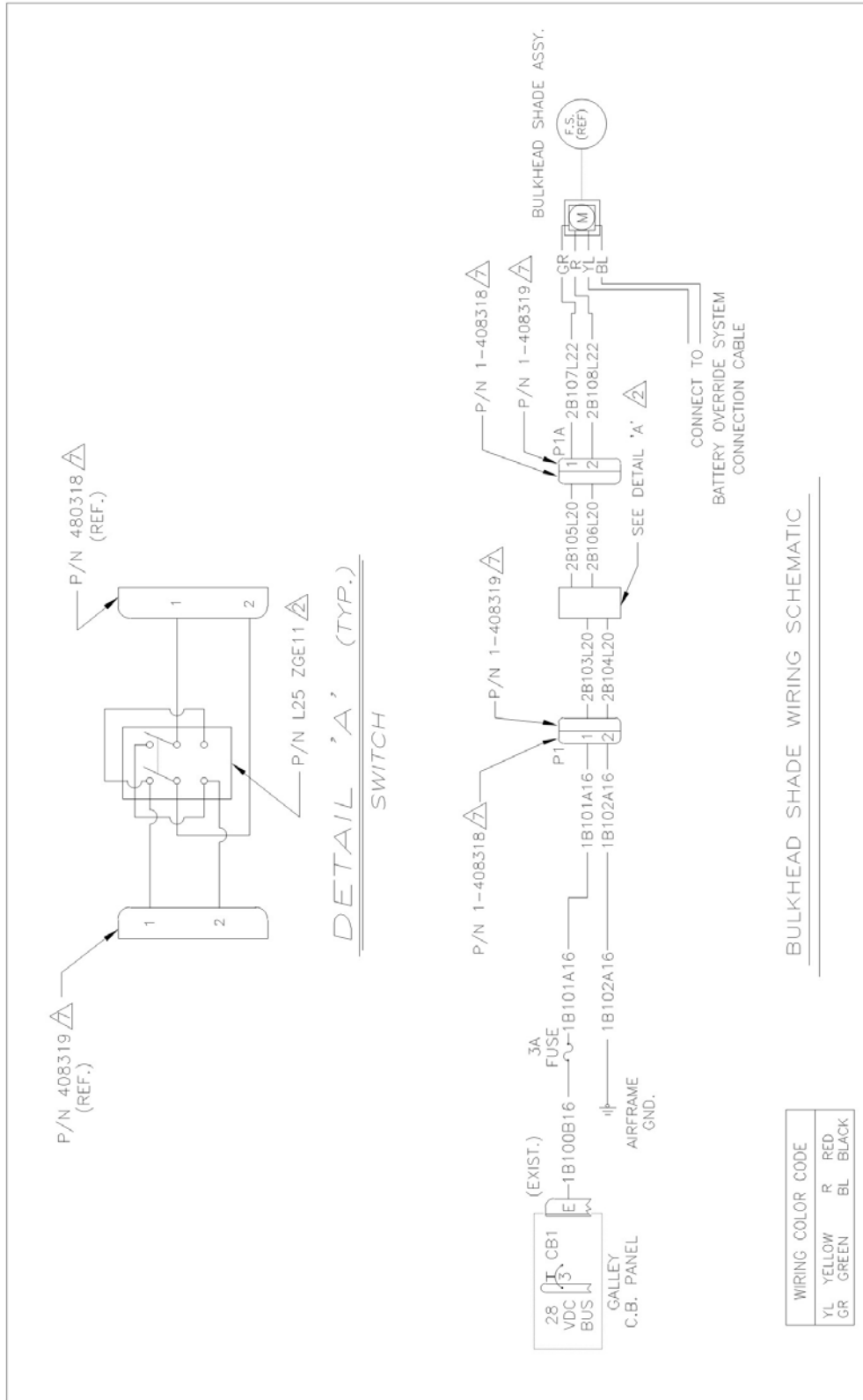


FIGURE 3 / GRAPHIC 25-23-09-991-003



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UNINSTALLING WINDOW SHADE ASSY.

TASK 25-23-09-000-801

1. General

- A. The overhaul instructions contained in this manual are usually implemented in mechanical overhaul workshops.
- B. Avoid removing identification plates, unless manufacturer authorization.
- C. Assure window unit inner and outer lens, and any decorative plated parts are protected at all times when removed from the aircraft.
- D. When removing and transporting the window unit assure the shade is in the up position.

TASK 25-23-09-940-802

2. Job set-up information

- A. Tools, Fixtures, equipment and materials  
None.

TASK 25-23-09-000-802

3. Preliminary Steps

- A. Before the uninstalling, make note of the window assy. location for efficient re-installation and to prevent errors.

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TASK 25-23-09-040-801

6. Bulkhead window assy. removal
  - A. Assure window shade is in full up position prior to removal
  - B. Reference Lufthansa Technik completion center specifications for removal of “Deco panels” from aft side of bulkhead.
  - C. Disconnect window unit main cable as well as battery back-up connection cables
  - D. Reference Lou Martin & Associates, Inc. installation drawing 777-113M002-501 for removal of bulkhead window unit.

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DISASSEMBLY

TASK 25-23-09-000-803

1. General

- A. The overhaul instructions contained in this manual are usually implemented in mechanical overhaul workshops.
- B. Avoid removing identification plates, unless manufacturer authorization.
- C. Only disassemble what is necessary to do the repairs or to replace defective part(s).
- D. When applying the following instructions, never disassemble those components, which have been proved to be in good condition after inspection unless their disassembly is necessary to get access to the defective part.
- E. All the parts must be identified before the disassembly in order to prevent the error and to make the reassembly easier.
- F. For the identification of damage or functional failure refer to:

“CHECKING”

TASK 25-23-09-940-803

2. Job set-up information

- A. Tools, fixtures, equipment and materials  
None.

TASK 25-23-09-000-804

3. Preliminary Steps

- A. Before the disassembly, put marks on all the parts to help the reassembly and to prevent errors.

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TASK 25-23-09-040-804

4. Wood Frame Molding

- A. Use a flat screw driver to pry the wood frame molding from the window unit to release dual lock connections.

NOTE: ASSURE THAT SCREW DRIVER MAKES CONTACT WITH ALUM. PLATES ON BACKSIDE OF MOLDING IN ALL FOUR CORNERS ONLY.

- B. Molding is also held in place with redundant lanyard connections in four places. Shift molding around as required to remove the four screws & stop nuts holding lanyards in place.
- C. Once removed assure frame stored in a clean bag or soft cloth material to protect it until frame is ready to be re-attached.

TASK 25-23-09-040-805

5. Protective Lens

- A. Use masking tape or equivalent to mark location of top of lens as well as the side that faces outboard.
- B. Remove screws one side at a time, use masking tape or equivalent to mark the locations of doublers as well as which side faces out.
- C. Reuse screws to hold decorative mask in place until reattachment of inner lens.

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CLEANING

TASK 25-23-09-100-801

1. General

- A. A full cleaning is necessary before each accurate inspection to find the correct location and the extent of the damage.
- B. Cleaning removes all the remaining particles, which can have an unwanted effect on the performance of the equipment. It also helps the possible repair.

TASK 25-23-09-940-804

2. Job set-up information

- A. Tools, Fixtures, equipment and materials

NOTE: Refer to “SPECIAL TOOLS, FIXTURES, EQUIPMENT AND MATERIALS” for full details on the items used.

---

REFERANCE	QTY	NAME
#PC-10	AR	NOVUS PLASITC POLISH
BRILLIANIZE	AR	CLEANER & POLISH
39139 (Prepsol)	AR	CLEANER FOR NON-FABRIC PARTS

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TASK 25-23-09-100-802

3. Procedure

A. How to use Novus Plastic Polish No. 1

Remove surface dust with soft cloth. Shake bottle contents and apply a light mist. Spread evenly and buff with a clean, soft, lint-free cloth.

B. How to use BRILLIANIZE Cleaner & Polish

Shake contents firmly and apply evenly to any hard, shiny, non-absorbent surface at room temperature. Rub gently. Before surface dries, polish with a dry lint-free cloth or non-damaging material, until the surface feels “as smooth as ice”.



FIGURE 4/ GRAPHIC 25-23-09-991-004

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C. Shade fabric

Lou Martin easy-glide shade systems utilize a metallized fabric, which is inherently anti-static. They actually repel dust and seldom require cleaning. An occasional light sweep of a vacuum is all that should be needed.

In the event of a mishap, Lou Martin easy-glide shades may be cleaned with a mild detergent and water. However, water spotting can occur. If a detergent is required, we suggest a mild detergent such as woolite.

Do not use ammonia cleaners near the Lou Martin easy-glide shade. Ammonia cleaners will damage the shade.



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AIRWORTHINESS LIMITATIONS

TASK 25-23-09-200-801

1. General

- A. The Airworthiness Limitations section is FAA-approved and specifies maintenance required under §§43.16 and 91.403 of the Federal aviation regulations, unless an alternative program has been FAA approved.

Inspections are to be carried out at the discretion of Lufthansa Technik and owner of the aircraft.

Write all the damage detected, in some condition, the cause and/or the source. Immediately repair all the damage found.

- B. Visually check all hardware, detail parts and assemblies for the following criteria:

- (1) Wear, tears, fraying of the shade & decorative mask fabric.
- (2) Tightening of the screws and nuts
- (3) Condition of the Protective Lenses for scratches, cracks or spots.
- (4) Condition of the alum frame and wood frame molding for scratches, chipping or fading of the paint.

- C. Do a careful check of all the parts for corrosion, distortion, incipient cracks, cracks, dents, nicks, scores, stripped threads, excessive wear, etc. which can damage the performance of the equipment and give it an unsatisfactory condition.

TASK 25-23-09-200-802

2. Replacement of Parts

After the replacement of an item, write a list of the defective parts you must replace and a list of the parts on which a repair or a new production is necessary.

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REPLACEMENT & REPAIR

TASK 25-23-09-300-801

1. General

- A. The procedures given in this chapter are general repair procedures and are not applicable to the riveted or welded parts. The manufacturer must repair the riveted or welded junctions, which are damaged.

TASK 25-23-09-940-805

2. Job set-up information

- A. Tools, fixtures, equipment and materials
- B. It is recommended that the completion center contact Lou Martin & Assoc., Inc. for replacement parts to insure quality and operation

NOTE: Assure window unit lenses, plated parts, decorative mask parts are protected at all times when work is being done.

(1) Repair materials

---

REFERANCE	QTY	NAME
MR-10 (.19 Thk.)	AR	Replacement inner lens
MS21044-N08	AR	Replacement stop nut
AN525-832	AR	Replacement screw
777-113M001-59	AR	Replacement doubler
12V #PS-1212	AR	Replacement battery
Power Sonic (or equivalent)		

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TASK 25-23-09-350-803

3. Replacement procedure for a damaged protective lens

- A. Mark both sides of protective lens on frame to assure replacement protective lens is properly located during reassembly.
- B. Remove protective lens from window assy. (See “DISASSEMBLY”, section 5)
- C. Trim replacement inner lens to size, ref chart on previous page for lens material specs. Lens size is the same for both sides of window unit. Lens size is 60.06 X 37.09.
- D. Before attaching new lens decide which side of lens is to be attached to reveal. Remove this side’s protective film. Note: use a static blow-off gun to eliminate dust attraction.
- E. Remove screws holding decorative mask in place. Assure that both mask and lens are aligned correctly with frame prior to attachment.
- F. Clamp replacement protective lens to window assy., assure lens follows the curve on contour spacer. Note: it will help if the either left or right of lens is clamped first then the other side, this will force the lens to follow contour’s curve. Test shade up & down to check for tension. Loose lens will ease the tension on the shade, if not refer to “Testing & Fault Isolation”
- G. Attach new protective lens to window frame assy. Match drill lens with existing attachment locations. Note: when drilling assure not to damage nut plates located on backside of reveal. Then remove clamps. (See “ASSEMBLY”, section 4)

TASK 25-23-09-350-804

4. Replacement procedure for any blind mod component

- A. Due to the complexity and precision required for optimal shade operation, Lou Martin & Associates, Inc. recommends returning the window unit to the factory to ensure optimal operation.

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TASK 25-23-09-350-805

5. Recharge/Replacement procedure for back-up battery
  - A. After removing window unit from bulkhead, uninstall back-up battery control unit from bulkhead. Reference Lufthansa Technik completion center specifications for removal procedure.
  - B. Remove four screws holding top panel in place, and remove both 12V batteries. This is also a good time to check batteries for any leakage or corrosion of connection contacts.
  - C. If battery does not recharge to a desirable level or shows major wear (leakage, corrosion on contacts, etc...), Lou Martin & Associates, Inc. recommends replacement of battery to maintain optimal operation.
  - D. When recharge/replacement is completed re-insert both batteries in back-up control unit and re-attach top panel with four screws.
  - E. Re-insert battery unit in bulkhead per Lufthansa Technik completion center specifications

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ASSEMBLY

TASK 25-23-09-400-801

1. General

- A. Before the assembly, make sure that the CLEANING, the CHECK and the REPAIR procedures of all parts are done.
- B. Where it is possible, it is recommended to use new parts and genuine approved parts.

TASK 25-23-09-940-806

2. Job set-up information

- A. Tools, Fixtures, equipment and materials

NOTE: Refer to SPECIAL TOOLS, FIXTURES, EQUIPMENT AND MATERIALS for full details on the items used.

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REFERENCE	QTY	NAME
MS21044-N08	AR	Replacement stop nut
AN525-832	AR	Replacement screw

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TASK 25-23-09-440-802

4. Protective lens reattachment

- A. Reattach protective lens with AN528-832 screw, pick-up nut plates and MS21044-N08 stop nut between nut plates.
- B. Remove protective film from inboard side of lens after attachment.



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FITS AND CLEARANCES

TASK 25-23-09-820-801

1. General

- A. The listed clearances are to insure the window is properly installed into the aircraft

TASK 25-23-09-820-802

2. Clearances

- A. Assure a min. clearance of .063 in. (1.59 cm) between the window shade assy. and existing structure.
- B. Assure a min. clearance of .13 in. (3.18 cm) between the window assy's snout and the inboard side of the aircraft's existing pressure lens.

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SPECIAL TOOLS, FIXTURES, EQUIPMENT

TASK 25-23-09-940-807

1. Special tools, fixtures and equipments

No special tools, fixtures and equipment are necessary for the maintenance or the overhaul to be performed on the standard equipment.

Standard tools are used for these operations.

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STORAGE

TASK 25-23-09-940-808

1. General

- A. When any of the window assay's need to be removed from the aircraft, Lou Martin & Assoc., Inc. recommends to stow the shade is in the up position.
- B. Store in a sheltered, ventilated place with normal hygrometric degree (70%)
- C. Cover the window unit with large clean plastic bags or equivalent to protect it from dust and other airborne particles.
- D. On the outside of the bag or cover add a tag with its location in the aircraft for tracking purposes and quicker reinstallation in the aircraft.

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ILLUSTRATED PARTS LIST

TASK 25-23-09-950-801

1. Introduction

A. General

- (1) The Illustrated Parts List (IPL) intends to show the details of the equipment and permits easy provisioning of the spares necessary for the maintenance of this equipment.

B. Use of the illustrated parts list

- (1) “Introduction” section

The introduction contains all explanatory information for the individual sections necessary for the use of this IPL.

- (2) “Illustrated Parts List” section

The detailed parts list gives the list and the illustrations of parts making up the considered assembly. The different columns of the parts list pages are organized as follows:

- 1<sup>st</sup> column: Figure and item number  
2<sup>nd</sup> column: Manufacturer’s part number  
3<sup>rd</sup> column: Airline part number (not used)  
4<sup>th</sup> column: Indenture  
5<sup>th</sup> column: Designation  
6<sup>th</sup> column: Usage from to  
7<sup>th</sup> column: Quantity per Assembly

- (a) Figure and item number

1 Each illustration receives a figure number starting at 01 and carrying on in sequence.

2 Each illustration can be divided up into several folios

3 When it is necessary to add figures, alphabetic indexes are added to the original figure, from A to Z, except I and O

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- 4 An item number is attributed to each part mentioned in the detailed parts list. Numbers start at 001A up to 999A per sequence of 10 by 10 or else in order to insert additional items.
- 5 Alternative parts have the same item as the initial part and are indexed.
- 6 To follow the evolution of the standard of parts or assemblies modification, items are indexed from B to Z, except I and O.
- 7 Non-illustrated items are identified by a dash placed in front of the item.

(b) Manufacturer's part number

This column indicates the original manufacturer's part number or the part manufacturer.

(c) Airline part number

This column is left blank; it is reserved for the airline.

(d) Indenture

The designation is presented according to indentations indicating as follows the relation between the different components:

- 1 Assembly
- 2 Sub-assemblies
- 2 Attaching parts of the sub-assembly
- 3 Constitutive parts of the sub sub-assembly
- 3 Attaching parts of the sub sub-assembly
- 4 Constitutive parts of the sub subassembly
- Etc.

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(e) Designation

The designation of the item can be followed by:

- The CAGE manufacturer's code,
- Cross-references indicating numbers, figures, items where this very item is illustrated.

(f) Usage from to

The interchangeability relation of constitutive parts according to the higher assembly is identified by the item number.

This code is only valid for the assembly dealt with in the corresponding figure.

Example:

FIG-ITEM	PART NUMBER	AIRLINE PART NUMBER	I N D	NOMENCLATURE	USAGE FROM TO	UNITS PER ASSY.
- 1A	PN1		1	ASSEMBLY 1		RF
- 1B	PN2		1	ASSEMBLY 2		RF
- 1C	PN3		1	ASSEMBLY 3		RF
10A	SPN1		2	SUB-ASSEMBLY 1	1AC	1
10B	SNP2		2	SUB-ASSEMBLY 2	1B	1
20A	SSNP1		3	SUB SUB-ASSEMBLY 1	10A	1
20B	SSPN2		3	SUB SUB-ASSEMBLY 2	10B	1
30A	SPN3		2	SUB-ASSEMBLY 3		1



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(g) Quantity per assy.

This column gives the number of parts required for an immediately higher assembly.

If a same assembly or a same part appears in several figures, the quantity is only given in the first parts list; the RF abbreviation appears in the following parts list.

If the quantity of a component is to be established as required (EX. seal, etc.) the quantity is replaced by the term AR (as required)

(2) How to use the Illustrated Parts List

(a) When the part number is known:

- 1 Turn to the numerical index and locate the part number.
- 2 The figure and item number on the illustration where the part appears are listed in the column to the right of the part number.
- 3 The corresponding item number in the accompanying parts list will give part number, description, assembly relationship and quantity required for that particular application.

(b) When the part number is not known:

- 1 Look through the illustrations and find the assembly of which the component is part, or look through the illustrations and identify the part by appearance. Note the item number in the exploded view and find part, description and quantity required for that part.

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(5) List of abbreviations

The following abbreviations have been used in this CMM:

AR	As Required. Indicates that an indefinite quantity is required
ASSY	Assembly
CMM	Component Maintenance Manual
CAGE CODE	Commercial and Government Entity Code
DET	Detail
FIG	Figure
H	Horizontal
IND	Indenture
IPL	Illustrated Parts List
LH	Left Hand
NHA	Next Higher Assembly
NP	After any description means that this part number constitutes an assembly of breakdown parts not supplied as a whole. Although not procurable, a view of each assembly, sub-assembly, sub-sub-assembly, or small unit, exploded as necessary to show detail parts, is provided to illustrate each part in the detail parts list. Illustrations of all parts will be technically correct in assembly installation relationships.
QTY	Quantity
RF	Reference indicates those parts which have their quantity listed elsewhere in the Illustrated Parts List.
R	Recline
RH	Right Hand
SYM	Symmetrical
V	Vertical

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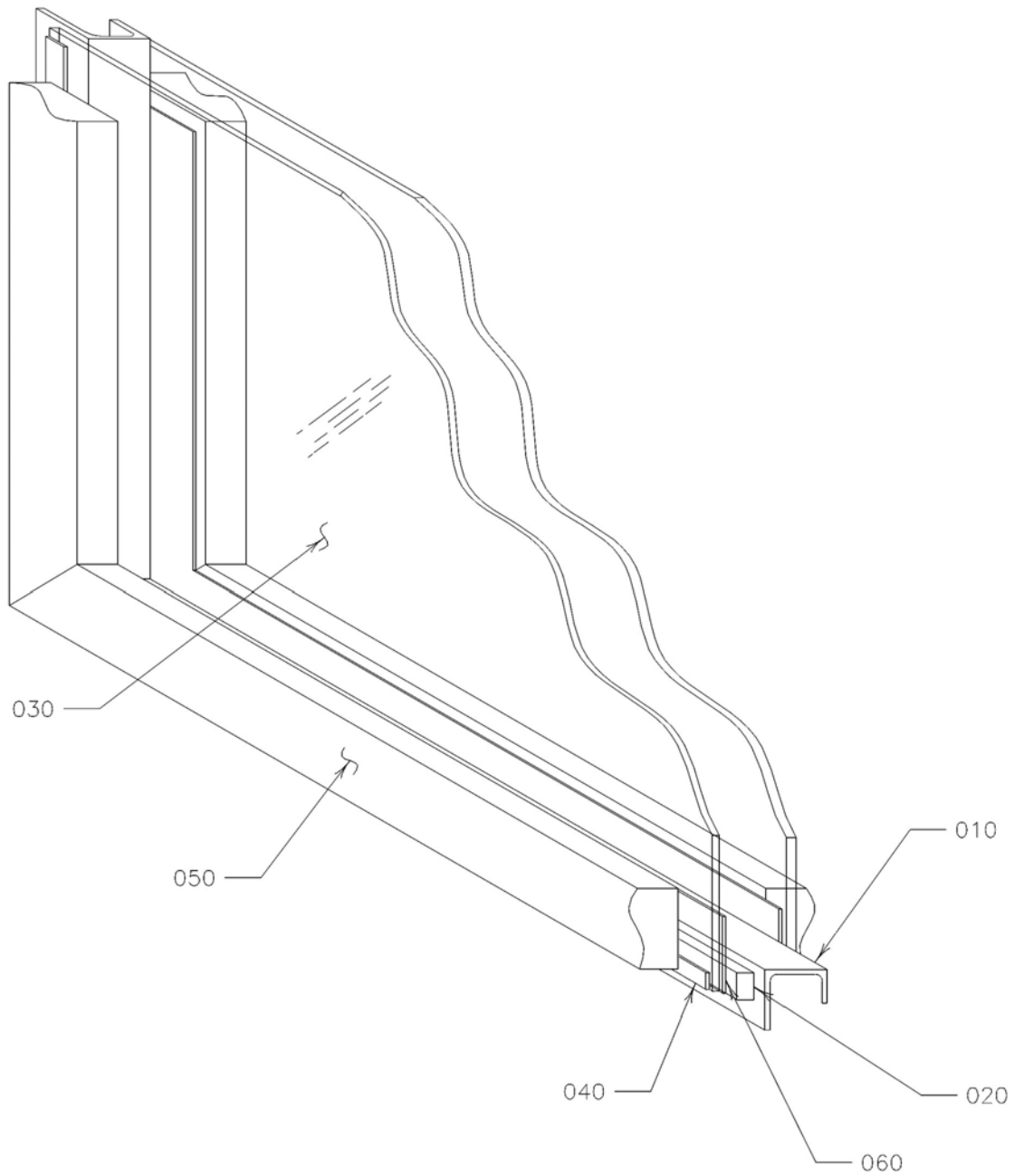
3. Alphanumerical index

PART NUMBER	AIRLINE STOCK NUMBER	FIGURE	ITEM	TTL REQUIRED
777-113M001-53		005	030	
777-M113M001-59		005	040	
777-113M001-61		005	020	
777-113M001-63		005	060	
777-113M001-73/-75		005	050	
777-138M001-1		005	010	

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PART NUMBER	AIRLINE STOCK NUMBER	FIGURE	ITEM	TTL REQUIRED

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Decorative Electrical Window Shade Assy.  
Shade and Lower Rail not shown for clarity  
FIGURE 5/ GRAPHIC 25-23-09-991-005

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05 FIG-ITEM	PART NUMBER	AIRLINE PART NUMBER	I N D	NOMENCLATURE	USAGE FROM TO	UNITS PER ASSY.
010	777-138M001-1		1	WINDOW FRAME		1
020	777-113M001-61		1	CONTOUR SPACER		8
030	777-113M001-53		1	PROTECTIVE LENS		2
040	777-M113M001-59		1	DOUBLER		A/R
050	777-113M001-73/-75		1	WOOD FRAME MOLDING		2
060	777-113M001-63		1	DECORATIVE MASK		2