WING TIP LENS - CLEANING/PAINTING

EFFECTIVITY: ALL

1. General

   A. This section gives the procedure to polish the wing-tip lens made from Polycarbonate (MIL-P-83310) with outer protection in Acrylic (MIL-P-5425).

   B. Do not use this procedure to wing-tip lens P/N 145-73501, which are made from Glass Monolithic (MIL -G-25667B) or Polycarbonate with hardcoat.

   C. This procedure assumes that aircraft is in maintenance status and parked in proper maintenance facility.

   D. 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*
57-30-01-100-801-A	WING-TIP LENS - POLISHING	ALL

TASK 57-30-01-100-801-A
EFFECTIVITY: ALL

2. WING-TIP LENS - POLISHING

A. General

(1) The polishing procedure is applied to remove scratches from the lens surface and to restore its original transparency.

B. References

REFERENCE	*DESIGNATION*
AMM TASK 57-30-00-000-801-A/400	WING TIP - REMOVAL
AMM TASK 57-30-00-400-801-A/400	WING TIP - INSTALLATION
AMM TASK 57-30-01-000-801-A/400	-
AMM TASK 57-30-01-400-801-A/400	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Dynabrade	Random Orbital Sander Model #56005 or equivalent	To sand the wing tip lens	
National-Detroit, Inc.	Orbital Pad Sander Model #1945 or equivalent	To sand the wing tip lens	
Ingersol-Rand	Orbital Buffer model #319 or equivalent	To polish the wing tip lens	
AT450BP Snap-on	Polisher, Air-power, Heavy Duty , Angle 7 inches	To polish the wing tip lens	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
KrautKramer DMS2	Ultrasonic Thickness Gauge	To measure thickness of the wing tip lens	1

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Commercially available	Isopropylic alcohol	AR
Commercially available	Felt Pad - 40 mil, 6 oz	AR
Commercially available	White Foam Pad - light density	AR
Commercially available	Blue Foam Pad - medium density	AR
Kimberly Clark	Wypall Wiper	AR
Micro-Surface Finishing Products, Inc.	4000-Grit Micromesh	AR
Micro-Surface Finishing Products, Inc.	3600-Grit Micromesh	AR

(Continued)

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Micro-Surface Finishing Products, Inc.	3200-Grit Micromesh	AR
Micro-Surface Finishing Products, Inc.	2400-Grit Micromesh	AR
Micro-Surface Finishing Products, Inc.	1800 -Grit Micromesh	AR
Micro-Surface Finishing Products, Inc.	1500-Grit Micromesh	AR
VSM-Coated Abrasives Corp.	800-Grit VSM Coated Abrasive CP918A	AR
VSM-Coated Abrasives Corp.	600-Grit VSM Coated Abrasive CP918A	AR
3M	400-Grit 413Q	AR
3M	320-Grit 413Q	AR
3M	240-Grit 413Q	AR
3M	3-micron wet/dry Tri-M-ite A/O	AR
3M	9-micron wet/dry Tri-M-ite A/O	AR
3M	15-micron wet/dry Tri-M-ite A/O	AR
3M	30-micron wet/dry Tri-M-ite A/O	AR
3M	30-micron IMFF A/O	AR
3M	60-micron IMFF A/O	AR
3M	100-micron IMFF A/O	AR
3M	120-micron Stikit	AR
3M	150-micron Stikit	AR
3M	180-micron Stikit	AR
Meguiar's	(Polishing product) Meguiar's Mirror Glaze M1008	AR
Micro-Gloss	(Polishing product) HP-100 Acrylic Restoral KIT	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Mechanic	wing tip lens
1	NDT Inspector	wing tip lens

I. Preparation (Figure 701)

SUBTASK 841-002-A

WARNING:
- **USE INDIVIDUAL PROTECTION EQUIPMENT DURING ALL WORKSTEPS OF THIS PROCESS.**
- **BE CAREFUL WHEN YOU USE CHEMICAL MATERIALS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN YOU HANDLE THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.**
- **CLEANING PRODUCTS ARE TOXIC AND FLAMMABLE. THE WORK MUST BE DONE IN A WELL VENTILATED AREA.**

CAUTION:
- DO NOT POUR CLEANING PRODUCT DIRECTLY ON THE LENS SURFACE.
- DO NOT ALLOW THE CLEANING PRODUCT TO EVAPORATE FROM THE LENS SURFACE. DRY IT WITH A LINT-FREE CLOTH.
- BE SURE NOT TO ACCIDENTALLY SCRATCH THE LENS WITH WATCHES, BRACELETS, RINGS, AND TOOLS. SCRATCHES CAN CAUSE OPTICAL DISTORTIONS.

(1) Make sure that the aircraft is safe for maintenance.

(2) Remove the wing tip (AMM TASK 57-30-00-000-801-A/400).

(3) Remove the wing tip lens AMM TASK 57-30-01-000-801-A/400.

(4) Prepare a detergent solution with neutral detergent (MEP 21-012) diluted 10% in volume of water. Prepare a cleaning solution with isopropylic alcohol diluted 50% in volume of water).

(5) Wash the wing tip lens with flush water and neutral detergent to clean all dirt, debris and foreign matters. Clean the exterior surface of the wing tip lens carefully. Use a Wypall wiper moist with a mixture of isopropyl alcohol and water.

J. Sanding

SUBTASK 120-002-A

CAUTION:
- DURING ALL SANDING OPERATIONS, KEEP THE EXTERIOR SURFACE OF THE WING TIP LENS WET TO PREVENT HEAT DISTORTION AND MATERIAL BUILDUP ON SANDPAPER.
- DO NOT APPLY UNDUE PRESSURE TO THE SANDING PAD.

(1) Wipe the lens clean in order to remove any dirt or particles.

(2) Perform a Detailed Visual inspection at wing tip lens for cracks and obvious damages, verify all area at wing tip lens edge for crazing multiples cracks) at fastener holes, If found any crack or crazing areas at lens replace the part.

(3) Measure the lens thickness near the scratched area with an ultrasonic gauge. Compare the actual remaining thickness with original thickness per Table 701.

Table 701 - WING TIP LENS MATERIALS AND THICKNESS

PART NUMBER	MATERIAL	ORIGINAL THICKNESS	MINIMUM REMAINING THICKNESS
145-73501-( )	POLYCARBONATE + HARDCOAT	3 mm (0.118 in)	Polishment - Not Applicable
145-73501-901/-902	GLASS MONOLITHIC	3 mm (0.118 in)	Polishment - Not Applicable
145-73130-901/-902	POLYCARBONATE + ACRYLIC OUTER COATED	5 mm (0.197 in)	4.36 mm (0.172 in)
135-05286-901/-902	POLYCARBONATE + ACRYLIC OUTER COATED	5 mm (0.197 in)	4.36 mm (0.172 in)
145-73513-001/-002	POLYCARBONATE + ACRYLIC OUTER COATED	3 mm (0.118 in)	2.62 mm (0.104 in)

(4) If the Lens thickness is within allowable limits as indicated in Table 701, proceed with sanding procedures. If the thickness values is out of limits per Table 701, please contact Embraer Technical Support for further instructions.

(5) Evaluate the damaged area, check visually the depth of scratches and select the initial abrasive grit from the Table 702.

Table 702 - ABRASIVE GRIT SELECTION

Depth of Scratch		**Abrasive Grit "Micro-mesh"**	**Abrasive Grit "3M"**
mm	**inch**		
0.076 - 0.102	0.003 - 0.004	4000	3 mic (pink coat)
		3600	9 mic (blue coat)
		3200	15 mic (gray coat)
		2400	30 mic (green coat)
		1800	-
0.102 - 0.254	0.004 - 0.010	1500	30 mic (green print)
0.254 - 0.381	0.010 - 0.015	800	60 mic (black print)
0.381 - 0.508	0.015 - 0.020	600	100 mic (brown coat)
0.508 - 0.635	0.020 - 0.025	400	120 mic
Greater than 0.635	Greater than 0.025	Rework not recommended	

(6) For use of Abrasive type "Micro-mesh" or 3M Products, hand sand carefully the scratch area with the aid of a hard rubber pad, as necessary to remove the damage, select at Table 702.

(7) For the "3M" method, sand with the aid of a random orbital sander.

(8) Sand with the first grit until the existing damage is removed. Always keep the exterior surface of the part wet and change the paper frequently to prevent acrylic buildup on the paper.

(9) With the next higher grit-number paper (finer grit), sand the part until all of the scratches from the previous grit are removed. If you do the sanding by hand, sand 90 degrees to the last grit (cross pattern).

(10) Continue sanding with consecutively higher grits until the finest abrasive grit is used.

NOTE: Periodically measure the lens thickness in order to check if the final lens thickness has not been reached per Table 701.

(11) When the existing damage is completely removed from lens surface, stop the sanding procedure and prepare to polishment.

(12) Wash the wing tip lens with flush water and neutral detergent to clean all dirt, debris and foreign matters. Clean the exterior and interior surfaces of the wing tip lens carefully. Use a Wypall wiper moist with a mixture of isopropylic alcohol and water.

(13) Measure the lens thickness near the scratched area with an ultrasonic gauge. Compare the actual remaining thickness with original thickness per Table 701.

(14) If the Lens thickness is within allowable limits as indicated in Table 701, follow with polishing procedures. If the thickness values is out of limits per Table 701, please, stop the procedures and contact Embraer Technical Support for further instructions.

K. Polishing (Figure 701)

SUBTASK 120-003-A

WARNING:
- **USE INDIVIDUAL PROTECTION EQUIPMENT DURING ALL OPERATIONS OF THIS PROCESS.**
- **BE CAREFUL WHEN YOU USE CHEMICAL MATERIALS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN YOU HANDLE THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.**

CAUTION:
- DO NOT DO THIS PROCEDURE UNDER SUNSHINE OR ON HEATED SURFACE.
- PREVENT THE CONTACT OF THE MATERIAL WITH PLASTIC SURFACES OR RUBBER. USE CLEANING CLOTH MOIST WITH ISOPROPYLIC ALCOHOL IF CONTACT OCCURS.

(1) Wipe the lens clean in order to remove any particles from the lens surface.

(2) The next polishing steps are done by hands (manually) except the last step that could be done by using a Polisher air-powered.

(3) Put the Micro-mesh sheet or polysand in the blue foam pad or equivalent soft material. It is recommended to use a lens shape molded foam blocks (this will reduce the hand and fingers stress during polishing steps).

(4) Use moderate pressure over the lens surface and start polishing in cross (+) pattern and alternating way such one polishing in one direction (e.g. in flight direction) and the next transversely. Do not polish the lens in circular or X patterns.

(5) Repeat the procedures changing the micro-mesh grit as necessary to obtain a new pattern more fine. Try to use the micro-mesh or polysand sheets with water (this will remove the fine abrasive particles from sheets avoiding to re-scratch the surface again). If you are polishing with dry sheet, after a few polishing time, remove the abrasive residues from sheets by passing the pad over other surface.

(6) Start with 1500 Grit Micro-mesh and progressively change to next high grits such as 1800, 2400, 3200, 3600 and finally use the 4000 Grit Micro-mesh, the polishing time with each sheets is approximately 1 minute to 2 minutes, depending on surface condition.

(7) Wash the lens surface with clean water, dry all surface and inspect visually for remaining scratches.

(8) NOTE: During polishing procedures do not overheat the lens surface, the temperature must be kept from 48°C to 54°C.

For final polishing step, use a air-powered Polisher tool with a clean buffer (at approximately 1800 RPM max.), polish with the polishing product and a cloth disc made with 70 to 100 clean flannel, the disc thickness will have 10 cm (4 in) to 20 cm (8 in), the polishing must be done using the thickness surface (tangent to surface). Use small pressure and a cross pattern (+) one of directions must be parallel to flight direction, try to avoid circular movements.

(9) Hand-polish corners and edges, as necessary, with the aid of polishing product and a felt pad.

(10) Wash the lens surface with clean water, dry all surface and inspect visually for remaining scratches.

(11) The Final Cleaning is done by a dry clean and soft cloth. Clean the internal and external surfaces.

(12) Do a final visual inspection for obvious damages and optical distortions.

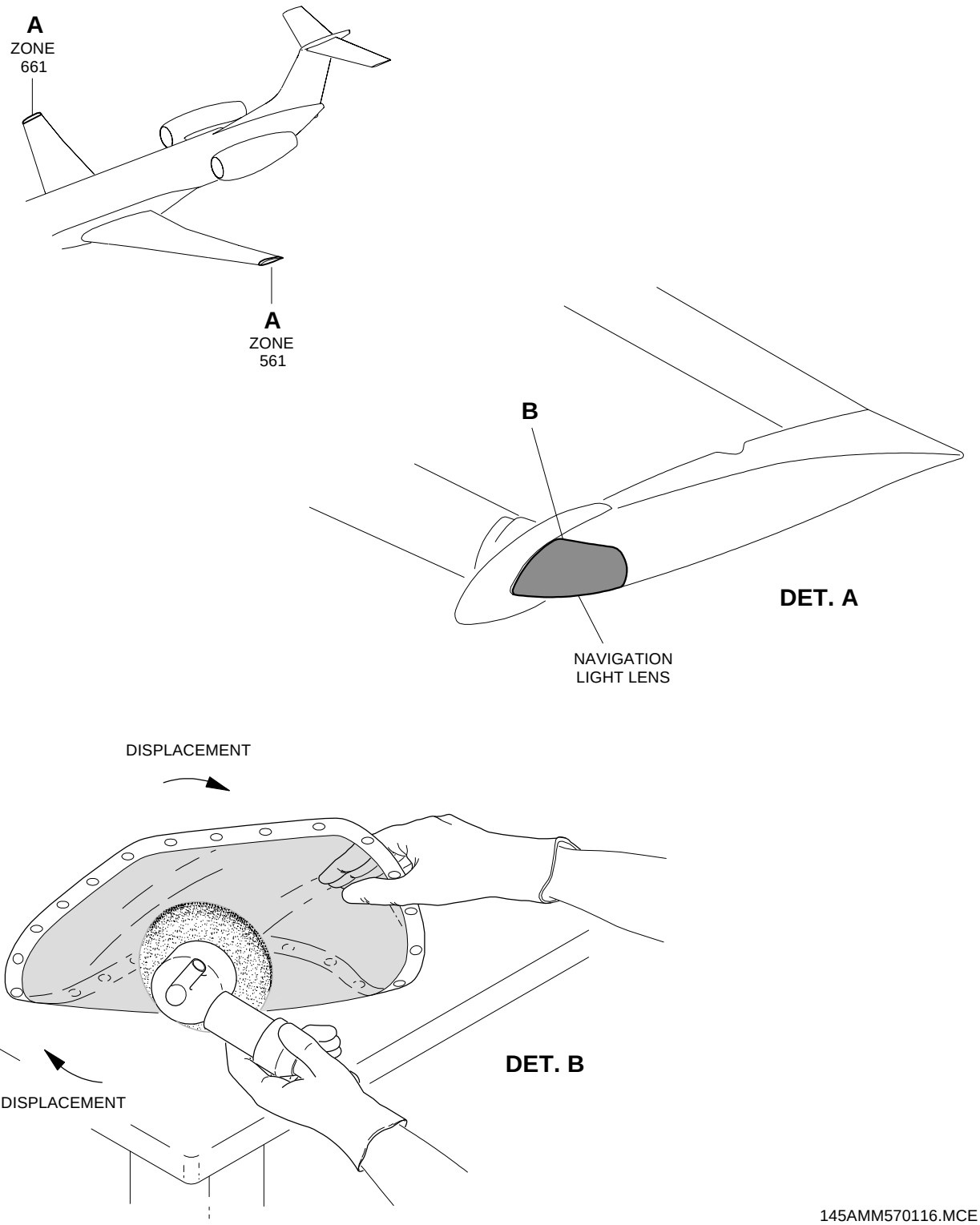
L. Follow-on

SUBTASK 842-002-A

(1) Install the wing tip lens AMM TASK 57-30-01-400-801-A/400 to the wing tip.

(2) Install the wing tip AMM TASK 57-30-00-400-801-A/400 to the aircraft.

EFFECTIVITY: ALL
Wing Tip Lens - Polishing
Figure 701



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