COMPOSITE MATERIAL PARTS - CLEANING/PAINTING

EFFECTIVITY: ALL

1. General

A. This section gives the procedures for cleaning and painting composite material parts.

B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
51-21-02-100-801-A	COMPOSITE MATERIAL PARTS - PAINTING REPAIR PROCESS	ALL
51-21-02-100-802-A	Acrylic Transparency - Sanding and Polishing	ALL

TASK 51-21-02-100-801-A
EFFECTIVITY: ALL

2. COMPOSITE MATERIAL PARTS - PAINTING REPAIR PROCESS

A. General

(1) This procedure gives the instructions to repair the paint of composite material parts. We recommend that you use the process if the damage to the external paint is such that permits you to see the composite material below.

NOTE: Damage to the composed material must be repaired first. Refer to SRM 51-72-00 or SRM 51-73-00. Then repair the paint.

(2) Obey the instructions below to repair the composite material parts.

B. References

REFERENCE	*DESIGNATION*
SRM 51-72-00	-
SRM 51-73-00	-

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Cup Ford IV	To adjust the viscosity	
Commercially available	Filter of the organdy fabric	To filter the mixture	
Commercially available	Spray gun	To spray the mixture	

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Soft cloth	To clean surfaces	AR

F. Consumable Materials

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
ASTM-D-740	Methyl Ethyl Ketone - (MEK)	AR
Commercially available	Aluminum Oxide Sandpaper #320	AR
MIL-P-17667	Neutral Kraft Paper	AR
MEP 10-070	Epoxy Primer	AR
MEP 10-069	Polyurethane Enamel	AR

(Continued)

SPECIFICATION (BRAND)	*DESCRIPTION*	*QTY*
Commercially available	Polyester Mass SW-74000	AR

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Outside the aircraft
1	Helps the other technician	Outside the aircraft

I. Preparation

SUBTASK 841-002-A

WARNING:
- **CLEANING PRODUCTS ARE TOXIC AND FLAMMABLE. A GOOD FLOW OF AIR MUST BE AVAILABLE WHEN THE WORK IS DONE IN CLOSED AREAS.**
- **BE CAREFUL WHEN USING SOLVENTS BECAUSE THEY ARE A HEALTH AND FIRE HAZARD. USE SAFETY GOGGLES AND PROTECTIVE CLOTHING WHEN HANDLING THEM. DO NOT BREATHE THEIR GASES AND WORK IN A WELL VENTILATED AREA.**

CAUTION:
- DO NOT PERMIT THE CLEANING PRODUCTS (SOLVENTS) TO TOUCH, PLASTICS OR SEALANT FILLET TO PREVENT DAMAGE TO THEM.
- DO NOT PUT THE REMAINING CLEANING MATERIAL BACK INTO THE ORIGINAL CONTAINERS TO PREVENT CONTAMINATION.
- DO NOT POUR CLEANING PRODUCT DIRECTLY ON THE SURFACE TO BE CLEANED.
- DO NOT PERMIT THE CLEANING PRODUCT TO EVAPORATE BEFORE IT IS DRIED WITH THE SOFT CLOTH.
- DO NOT WEAR CLOTHES WITH ZIPPER, NOR USE METAL OBJECTS (SUCH AS WATCHES, BRACELETS, AND RINGS) OR METAL TOOLS WHEN YOU CLEAN THE SURFACE.

(1) Clean up the area with a soft cloth soaked with Methyl Ethyl Ketone (MEK) or a similar solvent.

(2) Sand the surface to be repaired with aluminum oxide sandpaper #320.

(3) Clean up the area again with a soft cloth soaked with Methyl Ethyl Ketone (MEK).

(4) Isolate the adjacent area to be repaired with Neutral Kraft paper which obeys the MIL-P-17667 specification.

J. Epoxy Primer - Preparation and Application

SUBTASK 110-002-A

(1) Prepare the epoxy primer for application under clean conditions with a clean and solvent- resistant container. Metal, polyethylene and polypropylene containers are recommended. Containers such as coated and non-coated paper cup can contaminate the paint or change the paint properties.

(2) Shake each base component individually. Then mix them.

(3) Prepare the epoxy primer in the volume ratio (base, catalyst, and thinner) specified by the manufacturer.

NOTE: The catalyst must always be added to the base component and not in the opposite sequence. Adjust the viscosity for 17 ± 1 sec in Cup Ford IV at the temperature of 18°C (64.4°F) to 35°C (95°F), by addition of thinner as specified by the manufacturer.

(4) Before the application of the epoxy primer, permit a ½-hour stand time after the mix of the base, catalyst and thinner (as specified).

(5) Before the application, filter the mixture through an organdy fabric.

(6) Apply one coat of epoxy primer with a spray gun and permit it to cure. Refer to the figure (Figure 701).

NOTE: The drying time shown in figure 701 is given to make the production easier and it is not equivalent to the full cure of the coating. Full cure of the coating changes with the film thickness, temperature, humidity and color. Seven days are always necessary to get the optimum cure before the surface can be open to the weather and put back to service. The used temperature is 23°C ± 3°C (75°F ± 5°F). Forced drying temperatures will not decrease the time necessary for an optimum cure. The drying times given in figure 701 are for one-coat thickness.
All times are approximate and must be increased in the same proportion as the thickness of the films increases. These items are approximate and must be used as a guideline only.

K. Polyurethane Enamel - Preparation and Application

SUBTASK 110-003-A

NOTE: Before you apply the final painting, you can use polyester resin to make the surfaces smooth. Obey the product manufacturer's instruction.

(1) Prepare the polyurethane enamel for application under clean conditions with a clean and solvent-resistant container. Metal, polyethylene and polypropylene container are recommended. Containers such as coated and non-coated paper cup can contaminate the paint or change the paint properties.

(2) Shake each base component individually. Then mix them.

(3) Prepare the polyurethane enamel in the volume ratio (base, catalyst, and thinner) specified by the manufacturer.

NOTE: The catalyst must always be added to the base component and not in the opposite sequence. Adjust the viscosity for 17 ± 1 sec in Cup Ford IV at the

temperature of 18°C (64.4°F) to 35°C (95°F), by addition of thinner as specified by the manufacturer.

(4) Before its application, filter the mixture through an organdy fabric.

NOTE: The mixture of polyurethane enamels supplied by different manufacturers is not permitted to prevent problems of incompatibility in the liquid and drying phases.

WARNING: IN THIS PHASE, SOLVENT MUST NOT BE ADDED. IF THE MANUFACTURER RECOMMENDS THE USE OF SOLVENT TO OBEY THE VISCOSITY REQUIREMENTS, THE PROPORTION SPECIFIED BY THE MANUFACTURER MUST BE OBEYED.

(5) NOTE: The proportion specified by the manufacturer must always be obeyed.

Apply polyurethane enamel with a spray gun.

(6) The correct drying time of the polyurethane enamel at ambient temperature is shown in Table 701.

(a) Table 701 - DRYING TIME

DRYING	TIME (h)
Dust free (1)	2.0 Max
Dry to Tape (1)	8.0 Max
Recoatable (1)	6.0 Min
	12.0 Max
Forced Drying	30 Minutes flash-off followed by 1 hour at 80°C (176°F) or 2 hours at 60°C (140°F)

(1) At 20°C (68°F) ± 2°C (3.6°F)

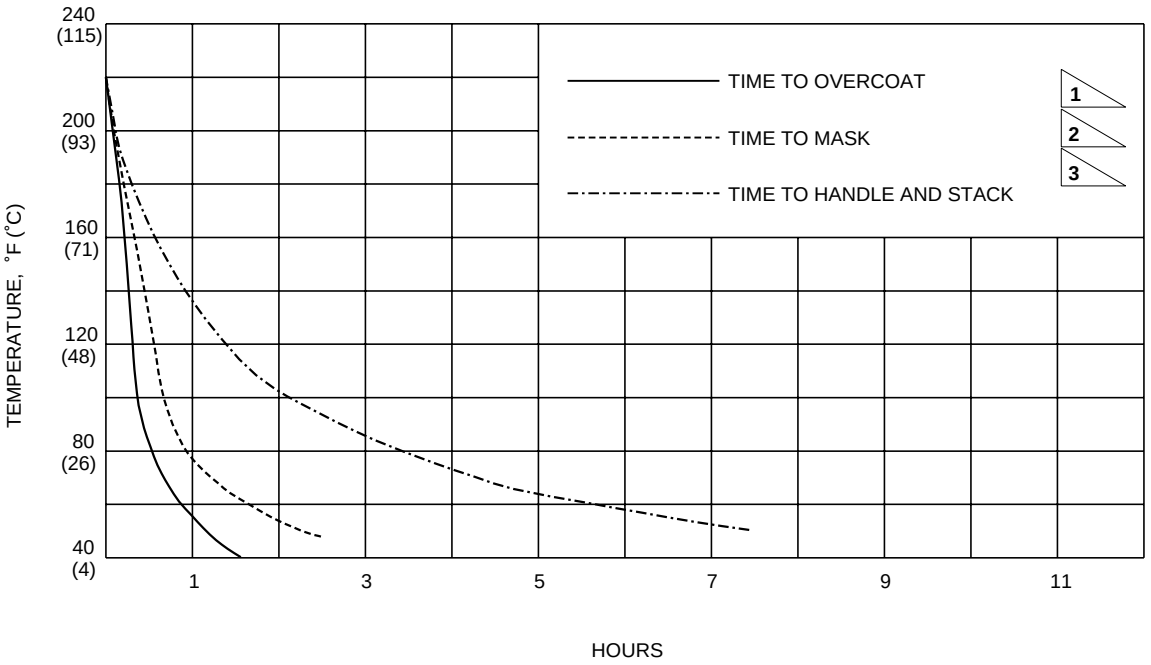
L. Follow-on

SUBTASK 842-002-A

(1) Remove the work stand from the work area.

(2) Remove the Neutral Kraft paper from the adjacent area.

EFFECTIVITY: ALL
Primer - Cure Time
Figure 701



1 DO NOT HEAT OR DRY BONDED ASSEMBLIES OVER 180˚F (82˚C).

2 DO NOT HEAT OR DRY PEENED ALUMINUM PARTS OVER 200˚F (93˚C).

3 DO NOT HEAT OR DRY ALUMINUM PARTS OVER 250˚F (121˚C).

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TASK 51-21-02-100-802-A
EFFECTIVITY: ALL

3. Acrylic Transparency - Sanding and Polishing

A. General

(1) This task gives the procedures to sand and polish acrylic transparencies of the aircraft.

(2) This procedure can be applied to remove damaged areas within the allowable limits defined for the component. To make sure that the damage is within the allowable limits, refer to the applicable SRM task.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 20-00-00/200	- MAINTENANCE PRACTICES

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Sandpaper, 400 grit	To sanding	
Commercially available	Sandpaper, aluminum-oxyde grain, No. 220	To sanding	
Commercially available	flannel cloth,cotton	To polishing	
Commercially available	Abrasive,cushioned - Reference PN: Micromesh MMR1500	To sanding and polishing	
Commercially available	Abrasive,cushioned - Reference PN: Micromesh MMR1800	To sanding and polishing	
Commercially available	Abrasive,cushioned - Reference PN: Micromesh MMR2400	To sanding and polishing	
Commercially available	Abrasive,cushioned - Reference PN: Micromesh MMR3200	To sanding and polishing	
Commercially available	Abrasive,cushioned - Reference PN: Micromesh MMR3600	To sanding and polishing	
Commercially available	Abrasive,cushioned - Reference PN: Micromesh MMR4000	To sanding and polishing	
Commercially available	Abrasive,cushioned - Reference PN: Micromesh MMR6000	To sanding and polishing	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Outside the aircraft or in a bench

I. Preparation

SUBTASK 100-002-A

WARNING: MAKE SURE THAT THE AIRCRAFT IS IN A SAFE CONDITION BEFORE YOU DO THE MAINTENANCE PROCEDURES. THIS IS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO THE EQUIPMENT.

(1) Put the aircraft safe for maintenance;

(a) Do the procedure to make the aircraft safe for maintenance (AMM MPP 20-00-00/200).

(b) Put a workstand in position to get access to the work area.

(c) If the damage is in the internal side of the component, do the procedure below prior to continue the procedure:

1 Remove the damaged component. Refer to the applicable AMM task.

NOTE: The removal of the damaged component is necessary to prevent damage to other components.

2 Cover the undamaged side of the transparency with a protective coating and lay it down in a workstand.

(2) Wash the transparency with water and lightly wipe it with a clean Cotton flannel cloth.

NOTE: Use circular movements to clean the transparency.

(3) Sand the transparency as follows:

(a) Locally hand-rework the damaged area using a foam rubber sanding block and an abrasive paper grit number, based on the damage depth. Refer to (Table 701).

NOTE: Rework a region of at least 50.0 mm (2.0 in) beyond the damaged area.
This first sanding step must be performed perpendicularly to the damage.
Use linear movements when sanding the transparency.
Keep the area moist with water from a spray or misting bottle and change the sandpaper frequently.

Table 702 - Damage Depth X Abrasive Paper

DAMAGE DEPTH (D)	**ABRASIVE PAPER**
D ≤ 0.102 mm (D ≤ 0.004 in)	Cushioned abrasive MMR1800
0.102 mm < D ≤ 0.254 mm (0.004 in < D ≤ 0.010in)	Cushioned abrasive MMR1500

Table 702 - Damage Depth X Abrasive Paper (Continued)

DAMAGE DEPTH (D)	ABRASIVE PAPER
0.254 mm < D ≤ 0.381 mm (0.010 in < D ≤ 0.015 in)	400 grit sandpaper
D > 0.381 mm (D > 0.015 in)	aluminum-oxyde grain sandpaper No. 220

(4) Continue to sand until all damage is removed.

(5) Wash the transparency with water and lightly wipe it with a clean Cotton flannel cloth.

NOTE: Use circular movements to clean the transparency.

(6) Repeat steps Item 3 (a) and Item 4 using the next (greater) abrasive paper grit number (Table 702) and changing the direction of the sanding movement in 90°. Continue to sand until the marks of the previous sandpaper are removed.

NOTE: You can use a bright light in the opposite side of the rework to help checking if the marks of the previous sandpaper were removed.
The cushioned abrasive papers are included in Cushioned Abrasives Micromesh Kit -.

Table 703 - Abrasive Papers Grit Numbers

aluminum-oxyde grain sandpaper No. 220
400 grit sandpaper
Cushioned abrasive MMR1500
Cushioned abrasive MMR1800
Cushioned abrasive MMR2400
Cushioned abrasive MMR3200
Cushioned abrasive MMR3600
Cushioned abrasive MMR4000
Cushioned abrasive MMR6000

(7) Wash the transparency with water and lightly wipe it with a clean Cotton flannel cloth.

NOTE: Use circular movements to clean the transparency.

(8) After completing the damage removal procedure, do the steps below:

(a) Rework the entire transparency surface using a foam rubber sanding block and the next (greater) grit number of the cushioned abrasive paper (Table 702). Move the foam rubber sanding block perpendicularly to the previous sanding direction, covering the entire transparency surface. Repeat this pattern until the marks of the previous sandpaper are removed.

NOTE: Keep the area moist with water from a spray or misting bottle and change sandpaper frequently;
To get better optical results, it is necessary to sand the entire transparency surface uniformly.
You can use a bright light in the opposite side of the rework to help checking if the marks of the previous sandpaper were removed.

(b) Wash the transparency with water and lightly wipe it with a clean Cotton flannel cloth.

NOTE: Use circular movements to clean the transparency.

(c) Repeat steps Item 8 (a) and Item 8 (b) changing the cushioned abrasive paper grit number (Table 702) until the Cushioned abrasive MMR6000 is reached.

NOTE: Do not skip any abrasive paper grit number.
Change the direction of the sanding movement in 90° at every abrasive paper grit number changing.

(9) Polish the transparency as follows:

(a) Apply Micro-Gloss 2 Ounce Liquid Abrasive to the transparency surface. Spread the polishing compound over the entire transparency surface with a clean, unused Cotton flannel cloth, in a linear pattern.

NOTE: The Micro-Gloss 2 Ounce Liquid Abrasive is included in the Cushioned Abrasives Micro-mesh Kit -.

(b) Polish the transparency using a buffing wheel moving it back and forth across the transparency surface.

NOTE: Use the lateral of the buffing wheel to perform the polishing process to avoid circular movements.
Use light pressure and keep buffer moving during the polishing operation to minimize heat buildup and the chance of localized distortion;
After each polishing operation, trim loose cloth fibers/stringers from the buffing wheel with scissors.

(10) Wipe the transparency surface with a dry Cotton flannel cloth to remove any residue that remains after polishing.

(11) Measure the overall thickness of the transparency using an optical micrometer, ultrasonic thickness gage or equivalent depth measuring device. Check if it is within the allowable limits given in the respective SRM task.

NOTE: The refractive index is given in the applicable task for the component you are polishing.

J. Follow-on

SUBTASK 940-002-A

(1) Inspect the transparency for distortion.

(2) If distortion exists and the transparency is still above the minimum thickness, repeat the sanding and polishing procedures. Otherwise, contact Embraer.

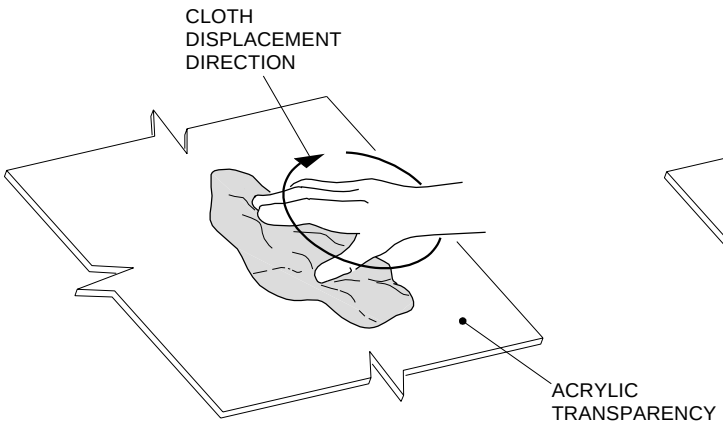
NOTE: Begin in the area of the most severe distortion and work outwards from that location.

(3) If you removed the component, install it. Refer to the applicable AMM task.

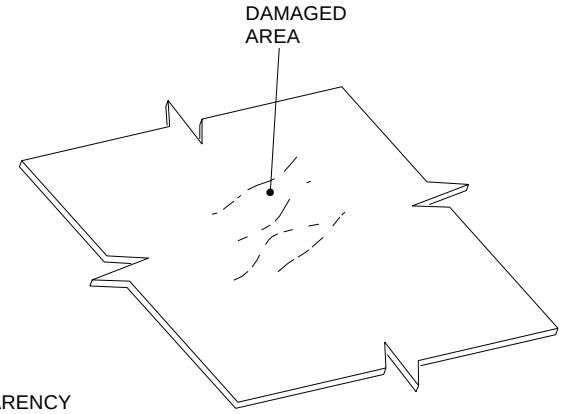
(4) Put the aircraft back to its initial condition (AMM MPP 20-00-00/200).

EFFECTIVITY: ALL

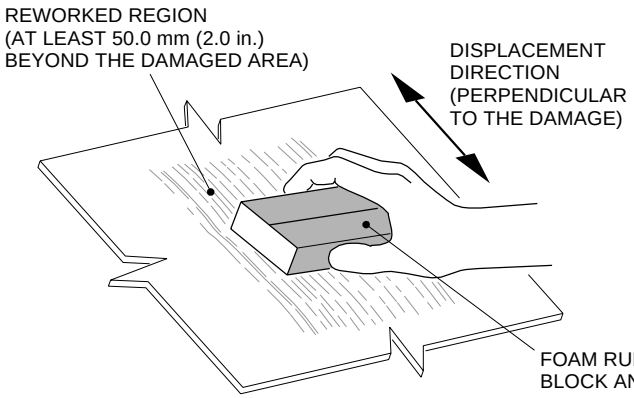
Acrylic Transparencies - Sanding and Polishing
Figure 702 - Sheet 1



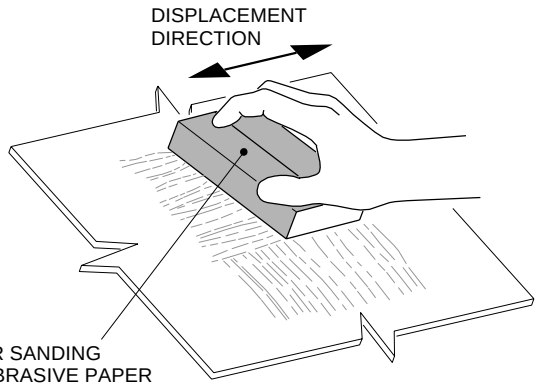
1− WASH AND WIPE THE ACRYLIC TRANSPARENCY



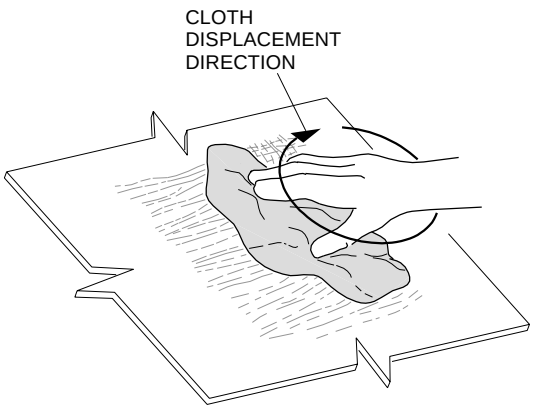
2− DETERMINE THE DAMAGED AREA



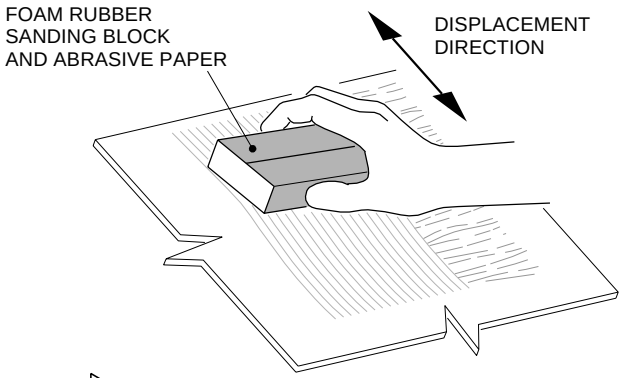
3− FIRST SANDING/DAMAGE REMOVAL



4− SECOND SANDING/DAMAGE REMOVAL



5− WASH AND WIPE THE ACRYLIC TRANSPARENCY



1 6− ENTIRE ACRYLIC TRANSPARENCY REWORK (FIRST STEP)

1 THIS STEP SHALL BE REPEATED UNTIL THE 6000 GRIT ABRASIVE PAPER IS REACHED.

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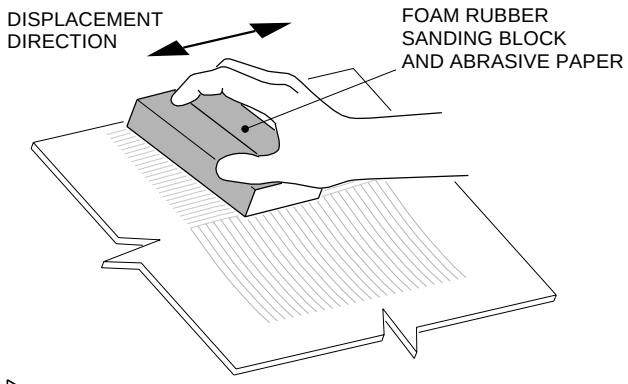
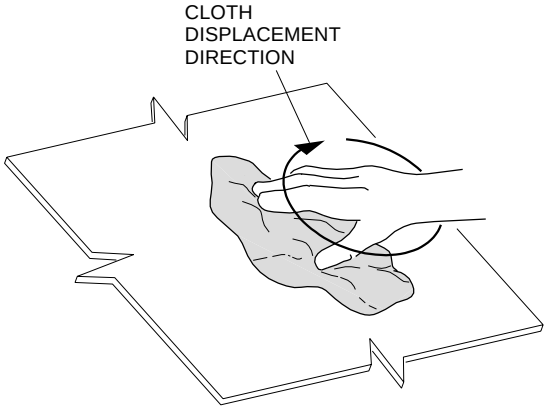
EFFECTIVITY: ALL

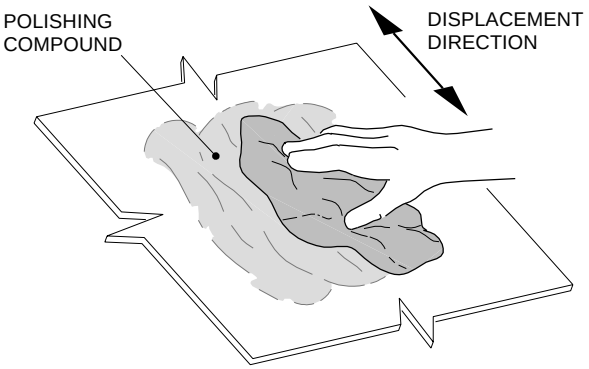
Acrylic Transparencies - Sanding and Polishing
Figure 702 - Sheet 2



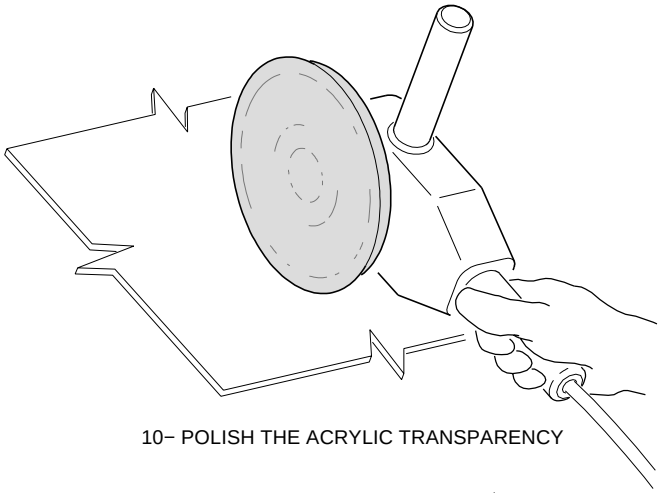
1 7− ENTIRE ACRYLIC TRANSPARENCY REWORK (SECOND STEP)



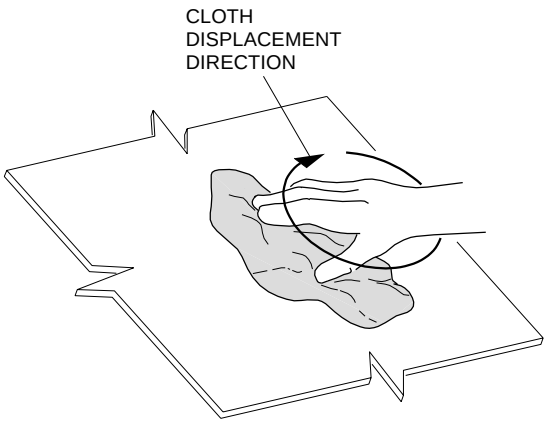
1 8− WASH AND WIPE THE ACRYLIC TRANSPARENCY



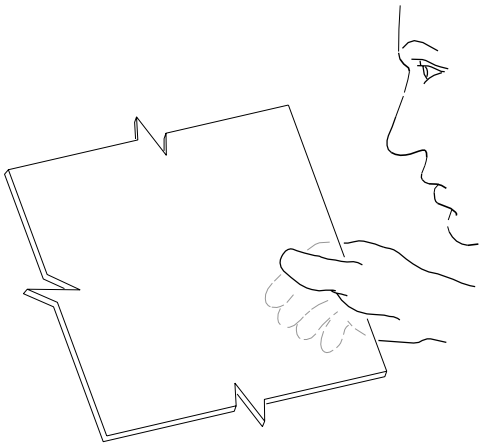
9− SPREAD THE POLISHING COMPOUND



10− POLISH THE ACRYLIC TRANSPARENCY



11− WIPE THE ACRYLIC TRANSPARENCY CLEAN



12− MEASURE THE THICKNESS AND INSPECT FOR OPTICAL DISTORTIONS

1 THIS STEP SHALL BE REPEATED UNTIL THE 6000 GRIT ABRASIVE PAPER IS REACHED.

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