BOMBARDIER
Toronto Site
PROPRIETARY INFORMATION

PPS 10.01

PRODUCTION PROCESS STANDARD

HANDLING, CARE AND FINISHING OF TRANSPARENT PARTS

Issue 19
- This standard supersedes PPS 10.01, Issue 18.
- Vertical lines in the left hand margin indicate technical changes over the previous issue.
- Direct PPS related questions to christie.chung@aero.bombardier.com or (416) 375-7641.
- This PPS is effective as of the distribution date.

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1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the handling, care and finishing of transparent parts.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction. The procedure specified in this PPS shall be followed to ensure compliance with all applicable specifications. In general, if this PPS conflicts with the engineering drawing, follow the engineering drawing. The requirements specified in this PPS are necessary to fulfil the engineering design and reliability objectives.

1.1.2 Refer to PPS 13.26 for the subcontractor provisions applicable to this PPS.

1.1.3 Procedure or requirements specified in a Bombardier BAPS, MPS, LES or P. Spec. do not supersede the procedure or requirements specified in this PPS. Similarly, the procedure and requirements specified in this PPS are not applicable when use of a BAPS, MPS, LES or P. Spec. is specified.

2 HAZARDOUS MATERIALS

2.1 Before receipt at Bombardier Toronto, all materials shall be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Toronto Environment, Health and Safety Department. Refer to the manufacturer's MSDS for specific safety data on any of the materials specified in this PPS. If the MSDS is not available, contact the Bombardier Toronto Environment, Health and Safety Department.

3 REFERENCES

3.1 PPS 13.13 - Personal Protective Respiratory Equipment.

3.2 PPS 13.26 - General Subcontractor Provisions.

3.3 PPS 14.01 - Torquing - Method and Identification.

3.4 PPS 31.17 - Solvent Usage.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Abrasive paper, aluminum oxide (waterproof), 320, 600, 1000 and 2500 grit size.

4.1.2 Anti-static cleaner:

- Clearfix Anti-Static ASC Spray
- Novus Plastic Cleaner No.1.
- Alglas AGC/22 Antistatic Glass Cleaner.

4.1.3 Buffing compound:

- (Jeweller's Rouge) Peerless A.S. -2 White Silica, Searock #844, or
- Tripoli Buffing Compound Grade 17 (in cake form) and Stick Buffing Tallow

4.1.4 Buffing compound, manual, Aluminum Powder (A 0.3 µ Powder).

4.1.5 Clearfix Acrylic Restoration Kit, Clearfix Corp.

- Clearfix CTP 40 Solution
- Buffing Pad BP 40 (hard pad)
- Clearfix CTP 20 Solution
- Buffing Pad BP 20 (soft pad)
- Clearfix Anti-Static ASC Spray
- Backing Plate
- Wiping Cloths

4.1.6 DSC 422-1 lint-free cotton gloves.

4.1.7 DSC 234-15 high temperature pressure sensitive tape.

4.1.8 Glass windshield cleaner:

- Belco concentrated glass cleaner, or
- Swish Glass Cleaner #2051.

4.1.9 Masking tape, 1" width.

4.1.10 Plastic windshield cleaner, Plexus Plastic Cleaner, Protectant, & Polish, B.T.I. Chemical Company.

4.1.11 Polishing cloths, DSC 378-2 or DSC 378-3.

4.1.12 Polycarbonate polishing cloths, felt cloth.

4.1.13 Polyester protective film, Protex 8216 -2 (without backing), -2L (with backing).

4.1.14 Protective coating, MIL-C-6799, Type 1, Class 2 - Spraylat SC-1058.

4.1.15 Protective wrapping paper, Kraft paper.

4.1.16 Rubber block, neoprene foam approximately 3/4" thick.

4.1.17 Rubber squeegee, 2" width.

4.1.18 Scratch removing compound, Novus Plastic Polish No.2.

4.1.19 Mild liquid soap, pH neutral, non-abrasive.

4.2 Equipment

4.2.1 Buffing machine, high speed, fitted with cloth buffing wheel.

4.2.2 Rosette type countersink, 90° or 100°.

4.2.3 Rotary power tool with up to 1200 rpm.

4.2.4 Suitable forced air circulation type heating oven, capable of maintaining a temperature of 160 ± 15°F at any place within the working zone.

4.2.5 Suitable racks for vertical racking of acrylic plastic parts during annealing.

5 PROCEDURE

5.1 General

5.1.1 Transparent plastics are used primarily in aircraft applications for windows, landing light covers, wing tip glazing, etc., due to the high degree of optical clarity provided along with an extremely high resistance to impact or fatigue cracking.

5.1.2 The two types of transparent plastic used on Bombardier Toronto aircraft applications are acrylics and polycarbonates.

5.1.2.1 In general, acrylics are stronger and harder than polycarbonates, more resistant to surface marking or scratching and are more susceptible to solvent attack and crazing. Surface scratches, scuff marks or haziness on acrylics may be removed by polishing procedures specified herein.

5.1.2.2 Polycarbonates are generally more resistant to chemical or solvent attack than acrylics and are extremely resistant to impact fracture. Satisfactory restoration of scratched polycarbonate surfaces is difficult due to its inherent softness.

5.1.2.3 Although acrylic and polycarbonate plastics are very similar in appearance, they are quite different in their handling and finishing requirements and it is extremely important that all personnel handling and working with transparent plastics be aware of the particular type of plastic as defined by the engineering drawing, process sheet or assembly manual.

5.1.2.4 Transparent plastics are easily scratched and it is imperative that extreme care be taken at all stages of handling and fabrication to prevent damage.

5.1.3 Personnel handling transparent parts shall remove all rings, watches, and chains, and shall cover up any exposed hard surfaces like belt buckles and buttons that could come into contact with the transparent surfaces.

5.1.4 Wear clean cotton gloves (see paragraph 4.1.6) at all times when handling transparent parts.

5.1.5 DASH 8 windshields are manufactured from glass. It is imperative that extreme care be taken at all stages of handling and installation to prevent damage.

5.2 Handling Practices

5.2.1 Leave protective adhesive paper, protective coating (see paragraph 4.1.14) or protective rubber in place as long as possible during fabrication of transparent plastic parts.

5.2.2 Protect all transparent parts with protective film (see paragraph 4.1.13) during all stages of handling and installation.

5.2.3 Do not slide transparent parts against one another or across tables or work benches.

5.2.4 Cover work benches used for working with transparent parts with clean Kraft paper and ensure that the work benches are absolutely free of shop swarf, dirt or abrasive material. Vacuum such benches as necessary to keep them clean.

5.2.5 Transparent plastics are subject to attack and crazing by many solvents and cleaning fluids. It is of the utmost importance that only approved cleaning fluids and compounds (as specified in this PPS) be applied. Under no circumstances shall gasoline, alcohol, kerosene, benzene, xylene, ketones including acetones, carbon tetrachloride, de-icing fluid, lacquer thinners, glass cleaning compounds (with the exception of Alglas AGC/22 Antistatic Glass Cleaner), or other unapproved solvents be used as cleaning agents for transparent plastic parts.

5.2.6 When cleaning transparent plastic parts, do not rub off dust or dirt with a dry cloth as the dry abrasive particles will scratch the surface. Use a cloth moistened with water or anti-static cleaner (see paragraph 4.1.2) to remove surface particles. Transparent plastic parts become electrostatically charged when polished. Therefore, it is necessary to apply an anti-static cleaner as the last operation in any cleaning procedure. Use only polishing cloths (see paragraph 4.1.11) to clean or polish transparent parts. Never use a coarse or rough cloth for cleaning or polishing.

5.3 Protection of Transparent Plastic Sheet and Parts During Fabrication

5.3.1 During the handling and working of transparent plastic sheet or parts, extreme cleanliness shall be observed.

5.3.2 Plastic sheets shall have both surfaces covered with protective adhesive paper at all times. Only remove protective adhesive paper when absolutely necessary (i.e., during forming and annealing operations).

5.3.3 Except for acrylic side windows, re-cover the surfaces of the plastic with protective film (see paragraph 4.1.13) or protective coating (see paragraph 4.1.14) applied according to the manufacturer's instructions to a thickness of 0.008" - 0.010" immediately after the completion of the operation necessitating the removal of the protective adhesive paper. Cover acrylic side windows with protective film immediately after all machining processes.

5.4 Edge Finishing

5.4.1 Edge Finishing of Acrylic Plastics

5.4.1.1 After all machining operations and before forming, edge finish all acrylic plastic parts as follows:

Step 1. Relieve or chamfer all edge corners approximately 0.010" by sanding with 320 grit abrasive paper. Relieve edge corners of drilled holes approximately 0.010" using a 90° or 100° rosette type countersink.

Step 2. Polish all edge faces to a surface roughness of 125 RMS or finer by sanding with 320 grit abrasive paper followed by polishing with a high speed buffing wheel and buffing compound (see paragraph 4.1.3). Perform sanding of edges in the longitudinal direction.

5.4.1.2 Isolated transverse nicks on edge faces are acceptable provided that they are less than 0.010" deep.

5.4.2 Edge Finishing of Polycarbonate Plastics

5.4.2.1 Polycarbonate plastic parts do not require edge finishing after fabrication.

5.5 Annealing

5.5.1 Annealing of Acrylic Plastics

5.5.1.1 Anneal acrylic plastic parts which have been drilled, cut, formed, routed or machined, after all such operations have been completed.

5.5.1.2 Anneal acrylic plastic parts that are to be cemented after drilling, forming, routing or machining, both before and after cementing.

5.5.1.3 Remove the protective adhesive paper on the acrylic plastic parts before the annealing process. After the completion of the annealing process, re-cover surfaces of the plastic with protective film according to paragraph 5.3.3.

5.5.1.4 Except for laminated acrylic parts, anneal all acrylic plastic parts at a temperature of 160 ± 15°F for 24 to 48 hours, followed by air cooling to room temperature. Carry out annealing of laminated acrylic parts according to the manufacturer's instructions.

5.5.1.5 Clean and dry acrylic parts before placing in the annealing oven.

5.5.1.6 Rack parts vertically so as to permit free circulation of air and support adequately to avoid stressing or deformation during annealing.

5.5.2 Annealing of Polycarbonate Plastics

5.5.2.1 Polycarbonate plastic parts do not require annealing after machining and fabrication operations.

5.6 Installation Practices

5.6.1 Before installation of transparent parts, examine the protective film, protective coating, protective adhesive paper or protective rubber for indications of tears or marking on the protective surface. If marks or tears are visible, examine the surface of the part for scratches, and if present, reject the part.

5.6.2 Except as noted below, do not remove protective film, protective coating or protective rubber from transparent plastic parts during installation:

- If necessary, roll back the edges of the protective film or protective adhesive paper sufficiently to clear the framework and attachment hardware.
- If necessary, remove sufficient protective coating according to section 5.8 to clear the framework and attachment hardware.
- Surfaces of transparent parts which are enclosed on assembly (e.g., inside surfaces of landing light covers, internal surfaces on double window assemblies) shall have the protective film removed according to section 5.8 and the surfaces cleaned and polished according to section 5.9 immediately before assembly.

5.6.3 Plastic windows which are sealed in place on assembly shall have the fay seal surface of the plastic solvent cleaned according to PPS 31.17 before applying the sealant.

5.6.4 If bolts are used to attach transparent parts, take care during assembly to avoid stressing or distorting the part. If specified on the engineering drawing, carry out torquing according to PPS 14.01 to the torque values specified on the engineering drawing.

5.6.5 Edge relieve holes drilled through acrylic plastic parts according to paragraph 5.4.1.1.

5.7 Protection During Painting of Complete Aircraft

5.7.1 Before painting, carefully mask off all edges of the protective film, protective coating, protective adhesive paper or protective rubber to prevent solvent or paint contact with the surface of transparent parts.

5.7.2 Do not remove protective film, protective coating, protective adhesive paper or protective rubber from transparent parts at any time while the aircraft is in the paint shop.

5.8 Removal of Protective Film, Adhesive Paper, Coating or Rubber

5.8.1 Only remove protective film, protective adhesive paper, protective coating or protective rubber from transparent parts after all fabrication and assembly operations, including painting of aircraft, have been completed. If necessary, protective film, adhesive paper or rubber may be removed to facilitate flight test operations. If necessary, cut protective rubber partially to facilitate receipt inspection. Take care not to damage the window when cutting or trimming protective rubber. After receipt inspection, restore the protective rubber to its original position using DSC 234-15 tape.

5.8.1.1 Transparent parts which had the protective film or protective adhesive paper removed to facilitate test flight operations shall have protective film re-applied to the parts according to section 5.12 before painting or any other manufacturing operations on the aircraft. For protective rubber, restore cut or trimmed areas using DSC 234-15 tape.

5.8.1.2 To remove protective film, protective adhesive paper or protective coating, lift one corner and peel off. Remove adhesive remaining on the surface of the plastic part by dabbing the remaining adhesive with the adhesive side of the protective film. Extremely stubborn adhesive may be removed by solvent cleaning according to PPS 31.17. If necessary, protective coating may be soaked with water at room temperature to help soften the film.

5.8.1.3 Under no circumstances shall knives, scrapers, spatulas (either metal or plastic), etc., be used to remove protective film, protective coating or protective adhesive paper from the surface of transparent parts.

5.9 Cleaning of Glass Windshields

5.9.1 Clean glass windshields as follows:

Step 1. Wash the surface of the windshield with soap (see paragraph 4.1.19) and water to remove dust, grit and other contaminants, as much as possible. Use bare hands during washing to feel for and carefully dislodge any particles on the surface.

Step 2. Remove any streaking or further contamination by one of the following methods:

- Solvent clean according to PPS 31.17.
- Wipe with a clean cloth dampened with Belco concentrated glass cleaning solution (see paragraph 4.1.8)
- Spray apply Swish Glass Cleaner #2051 (see paragraph 4.1.8) to the windshield and then wipe dry with a clean cloth.

Step 3. If the cleaning methods employed were not able to remove contaminants (e.g., adhesive left on the surface of the glass) refer to Bombardier Toronto Liaison Engineering for an alternate method of contaminant removal.

5.10 Cleaning and Polishing of Acrylic and Polycarbonate Plastics

5.10.1 Clean transparent plastic parts by washing the surface of the part with soap (see paragraph 4.1.19) and water. Use bare hands during washing to feel for and carefully dislodge any particles on the surface.

5.10.2 Streaks or smudges which are not removed by washing with soap and water may be removed by either solvent cleaning according to PPS 31.17 or by lightly spraying with plastic cleaner (see paragraph 4.1.10), followed by wiping and buffing with clean cloths.

5.10.3 After washing, blot the part surface with a soft cloth (see paragraph 4.1.11). Do not rub the surface of the transparent part with a dry cloth before applying anti-static cleaner (see paragraph 4.1.2). Rubbing the surface with a dry cloth results in the surface becoming electrostatically charged. This electrostatic charge attracts dust and will result in scratching of the surface when rubbed with a cloth.

5.10.4 As the final cleaning treatment of transparent plastic parts, apply anti-static plastic cleaner (see paragraph 4.1.2) and buff with a clean soft cloth (see paragraph 4.1.11) to a high polish. Buff only as necessary to remove all traces of anti-static cleaner and produce a clean polished surface. Over buffing will result in the surface becoming electrostatically charged.

5.11 Restoration of Transparent Plastics

5.11.1 General

5.11.1.1 Except as noted below, repair or restore transparent plastic parts according to the applicable procedure specified in Table II.

- Refer damaged windows of critical optical importance (i.e., flight compartment windows) to Bombardier Toronto Liaison Engineering for approval to repair according to the procedure specified herein.
- Damaged polycarbonate windows or any parts made from mar-resistant polycarbonate cannot be satisfactorily restored through polishing techniques.

5.11.1.2 Restoration and repair of transparent plastic parts basically consists of first removing the surface damage by a suitable abrasive means (depending on the extent of the damage) followed by sequentially polishing the surface with successively finer abrasives to reproduce, as close as possible, the original transparency.

5.11.2 Restoration Procedure

5.11.2.1 As the first step in the restoration procedure, estimate and classify the extent of the damage according to Table I.

5.11.2.2 After classifying the damage according to Table I, refer to Table II to select the initial method of repair to be used and start with this step.

- In general, the initial method selected shall be the finest abrasive method which will readily and completely remove the surface damage.
- If the surface damage is not readily removed with the initial method, use the preceding step in Table II as the starting point.
- As most of the restoration time is spent removing the original damage, it is imperative that this step be done thoroughly and completely.
- Carry out each step in the polishing sequence in turn according to Table II. Take care to ensure that all traces of the preceding step are removed before going to the next step.

TABLE I - DAMAGE CLASSIFICATION

CLASS OF DAMAGE	DESCRIPTION	DEFINITION
DEEP OR MAJOR SCRATCHES	• Usually have a build-up on both sides of crevices and are easily felt with the fingertip.	Over 0.004 inch in depth.
MINOR SCRATCHES, PAINT OVERSPRAY	• Do not leave a build-up on the sides and are detectable with the fingernail but not felt with the fingertip.	0.001 to 0.004 inch in depth
HAIRLINE SCRATCHES, HAZINESS, SCUFF MARKS	• Very light scratches which may be caused by careless removal of protective film or by rubbing cheesecloth over the pane or windshield wiper abrasion.	Under 0.001 inch in depth

TABLE II - RESTORATION POLISHING SEQUENCE

CLASS OF DAMAGE	STEP	METHOD	PROCEDURE
DEEP OR MAJOR SCRATCHES (Begin repair with the appropriate grit paper. Finish with polishing and final cleaning as specified in step 4)	1	**SANDING** 600 grit paper	Step 1. Soak paper in water for 3-4 minutes before use. Step 2. Wrap paper around a small rubber block (see paragraph 4.1.16). Step 3. Wet sand using a straight line motion at right angles to the damage or preceding sanding marks. Step 4. Wash part surface thoroughly with water between using each successive grade of sand paper.
	2	**SANDING** 1000 grit paper (Note 1)	
	3	**SANDING** 2500 grit paper	
MINOR SCRATCHES, PAINT OVERSPRAY (Begin repair at Step 4) **HAIRLINE SCRATCHES, HAZINESS, SCUFF MARKS** (Begin repair at Step 4)	4	**POLISHING AND FINAL CLEANING** (see section 5.11.3, section 5.11.4 or section 5.11.5) (Note 2)	Polish and perform final cleaning by applying anti-static cleaner according to the instructions specified in paragraph 5.11.3.5. (Notes 2, 3 & 4)

Note 1. It is acceptable to perform intermediate sanding with successively finer abrasive paper (e.g., sanding with 600 grit (step 1) followed by 800 grit, 1000 grit, 1800 grit, and finishing with 2500 grit (step 3)) provided that the initial sanding is done with a 600 grit paper and the final sanding with a 2500 grit paper and at lease one intermediate sanding procedure (e.g., 1000 grit paper).

Note 2. Do not use the Clearfix Acrylic Restoration Kit or the Global CS1 Window Repair Machine to polish polycarbonate parts. Polycarbonate parts may be final polished according to section 5.11.5 or as specified by note 4.

Note 3. It is also acceptable to polish and perform final cleaning using the Global CS1 Window Repair Machine supplied by Global Aero Services Inc. Operate the machine according to the manufacturer's operation manual. Refer to section 5.11.4 for some highlighted cautions taken from the operation manual.

Note 4. It is acceptable to polish hairline scratches, haziness, or scuff marks using the plastic polish specified in paragraph 4.1.18. Use water to ensure complete removal of compound after polishing. Apply anti-static cleaner according to paragraph 5.10.4 as the final cleaning treatment.

5.11.3 Polishing Using Clearfix Acrylic Restoration Kit

5.11.3.1 Clearfix Acrylic Restoration kits shall only be used to polish bare, uncoated acrylic surfaces.

5.11.3.2 With proper use and caution, the Clearfix Process will not overheat acrylic surfaces. When polishing, stop periodically to check the temperature of the surface being restored. The temperature should never exceed 110°F. A general guideline is to periodically hold your bare hand on the surface being polished. If you cannot comfortably keep your hand on the surface for 5 seconds or longer, stop polishing and let the surface cool.

5.11.3.3 Overheating is caused by not having enough solution on the pad, exceeding the RPM requirements, or by buildup of material on the pad during longer polishing jobs. Remedies are to stay within RPM limits and to keep the pad and acrylic surface wet by adding solution as needed. To remove material buildup on the pad simply wash the pad in warm water, wring out and spin dry with the power tool. The pad need not be completely dry to resume polishing.

5.11.3.4 The buffing pads supplied in the kit are designed to polish approximately 10 square feet of acrylic surface. This assumes the pads are washed and stored properly after each use. During use, the pads become worn and their ability to absorb the proper amount of solution and their overall effectiveness deteriorates. Discard the buffing pads and backing plate after all of the solution in the kit has been used.

5.11.3.5 Polish acrylic surfaces using Clearfix Acrylic Restoration Kit as follows:

Step 1. Connect the backing plate to the power tool (see paragraph 4.2.3).

Step 2. Attach the BP 40 hard buffing pad (red dot) to the center of the backing plate.

Step 3. Thoroughly clean the acrylic surface using Clearfix Anti-Static Cleaner ASC and the cloths provided in the kit.

Step 4. Place a one inch diameter dollop of CTP 40 solution in the center of the BP 40 buffing pad.

Step 5. Without turning on the tool, compress the pad against the acrylic surface so that the pad absorbs the solution.

Step 6. Remove the pad from the surface and place another one inch diameter dollop of CTP 40 solution in the center of the pad.

Step 7. Holding the pad against the surface, begin polishing at about 500 RPM. Keep the pad moving across the surface with a consistent pressure against the surface. Never compress the pad to over half of its original thickness, and never stop moving the pad across the surface.

Step 8. Continually move the pad alternately in an up-and-down and side-to-side motion over the surface being restored. Work slowly and do not exceed 500 RPM. The pad will become harder to move, indicating the chemical is drying out. Add additional CTP 40 solution to the center of the pad to keep the surface of the pad and the window moist.

Step 9. Periodically check the temperature of the window with your bare hand. Working slowly, adding solution or washing excess material form the pad will avoid overheating the surface.

Step 10. After 2 to 3 minutes, clean the window with Clearfix Anti-Static Cleaner ASC and check progress.

Step 11. Repeat Step 4 through Step 10 on area still needing repairs.

Step 12. Inspect to see if all visible scratches have been removed before proceeding to Step 13.

Step 13. Remove the BP 40 hard buffing pad and replace it with the BP 20 soft buffing pad (blue dot).

Step 14. Apply a one inch diameter dollop of CTP 20 solution to the center of the pad.

Step 15. Use the same polishing technique as specified in Step 5 through Step 9. Increase the drill speed to approximately 1000-1200 rpm. Work slowly and periodically, check the temperature of the surface. Add solution to keep the pad and surface moist and wash out the pad as needed.

Step 16. Clean the restored acrylic surface using Clearfix Anti-Static Cleaner ASC and the wiping cloths provided. Examine the surface and repeat steps as needed to ensure all areas are clear.

5.11.4 Polishing Using the Global CS1 Window Repair Machine

5.11.4.1 The Global CS1 Window Repair Machine shall only be used to polish bare, uncoated acrylic surfaces.

5.11.4.2 Operate the machine according to the manufacturer's instructions.

5.11.4.3 Although the CS1 window repair system removes approximately 0.0001 inches after each complete repair operation, it is important to ensure by taking measurements after each repair operation that the window is within the engineering drawing thickness requirement. The maximum amount of material removed shall not exceed 0.005 inches cumulative.

5.11.4.4 To measure window thickness, use the Panametrics Ultrasonic Thickness Gauge (Model 25Dl) or the Seiko Instruments Thermal Printer (Model DPU-414).

5.11.4.4.1 In order to assure a consistent method of measurement and reliable results, each window shall be measured in five separate locations (see Figure 1). Each of these points shall be measured after each repair operation, and the results printed out and retained for reference. Maintain a thickness measurement log for each window and this log should be readily available upon Bombardier Aerospace's request.

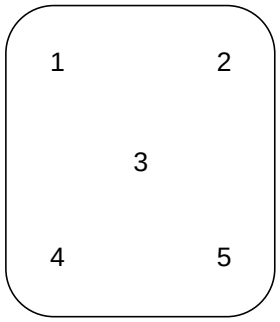

FIGURE 1 - MEASUREMENT POINTS

5.11.5 Polishing Polycarbonate Parts

5.11.5.1 General

5.11.5.1.1 Final polish polycarbonate parts by one of the following methods:

- Buffing with Jewellers Rouge (see paragraph 4.1.3) using a felt cloth followed by applying anti-static cleaner according to paragraph 5.10.4.
- Machine buffing with Tripoli Buffing Compound (see paragraph 4.1.3) according to section 5.11.5.2.
- Hand buffing using aluminum powder (see paragraph 4.1.4) according to section 5.11.5.3.

5.11.5.2 Machine Buffing

5.11.5.2.1 While buffing, the plastic should be constantly moved or the wheel moved so as not to buff the same area constantly.

5.11.5.2.2 Buff the plastic with a wheel coated with tallow and Tripoli buffing compound. When buffing wheels have been used before, remove any hardened tallow by running them against a metal edge. The abrasive coated wheel should operate at approximately 2000 feet per minute.

5.11.5.2.3 Wash the plastic thoroughly with soap and water to remove all traces of abrasive. Dry and then buff with a soft cotton wheel to which only tallow has been applied. This wheel should operate at 3200 to 3600 feet per minute.

5.11.5.2.4 Apply anti-static cleaner according to paragraph 5.10.4.

5.11.5.3 Hand Buffing

5.11.5.3.1 Remove scratches with a small amount of aluminum powder added to a clean water damped polishing cloth (paragraph 4.1.11) which is wrapped around a small rubber block (see paragraph 4.1.16). Polish the entire area in a circular motion.

5.11.5.3.2 Rinse thoroughly with clean water, rubbing with bare hands to loosen any abrasive or foreign matter and dry with a clean, water dampened polishing cloth (paragraph 4.1.11).

5.11.5.3.3 Repeat procedure outlined above as required.

5.11.5.3.4 Apply anti-static cleaner according to paragraph 5.10.4.

5.12 Application of Protective Film

5.12.1 Apply protective film as follows:

Step 1. Cut a single piece of the protective film that will cover the entire exposed area of the transparent plastic part.

Step 2. If applicable, remove the backing from the protective film and position the film over the part to be covered.

Step 3. Starting at one end of the part, rub the protective film against the part using a rubber squeegee. Work the film down the part, removing air bubbles trapped under the film by rubbing the area with the squeegee.

6 REQUIREMENTS

6.1 General

6.1.1 Protective film, protective adhesive paper, protective coating or protective rubber may only be removed from transparent parts after all fabrication and assembly operations, including painting of aircraft, have been completed. If necessary, protective film, adhesive paper or rubber may be removed to facilitate flight test operations. If necessary, protective rubber may have been be partially cut to facilitate receipt inspection. Take care not to damage the window when cutting or trimming protective rubber. After receipt inspection, protective rubber shall be restored to its original position using DSC 234-15 tape.

6.1.2 All transparent plastic parts shall be treated with anti-static cleaner according to section 5.10 as the final cleaning treatment.

6.2 Acrylic Plastic Parts

6.2.1 All edge faces of acrylic plastic parts shall be edge finished to a surface roughness of 125 RMS or smoother after all machining or cutting operations. Isolated transverse nicks or scratches to a maximum depth of 0.010" are acceptable.

6.2.2 All edge corners, including drilled holes, shall be edge relieved approximately 0.010".

6.2.3 Acrylic plastic parts shall be annealed according to section 5.5.1 after all machining and forming operations. Acrylic plastic parts which are to be cemented after machining or forming shall be annealed before and after cementing.

6.2.4 Except for damaged optically critical parts, remove all surface scratches on acrylic plastic windows according to section 5.11. Examine acrylic panels intended for use in optically critical areas according to the relevant Acceptance Test Procedure and refer damaged optically critical parts to Bombardier Toronto Liaison Engineering for approval to repair according to section 5.11.

6.2.5 Small scratches and scuff marks on landing or taxi light covers or wing tip glazing are acceptable to a maximum of 10% of the total area of the part, provided that the damage is not detrimental to the function of the part. If necessary, remove scratches and scuff marks on light covers or wing tip glazing according to section 5.11.

6.2.6 Signs of crazing, fracture or any other damage on acrylic plastic parts installed in frames around the frame edges and holes is unacceptable.

6.3 Polycarbonate Plastic Parts

6.3.1 Polycarbonate windows having scratches or scuff marks on their surface are not acceptable.

6.3.2 Small scratches and scuff marks on polycarbonate landing light or taxi light covers or wing tip glazing are acceptable provided that the scratches or scuff marks do not exceed 10% of the total area of the part and that the damage is not detrimental to the function of the part.

7 SAFETY PRECAUTIONS

7.1 Observe standard plant safety precautions when performing the procedure specified herein.

7.2 Wear protective respiratory equipment according to PPS 13.13 and Bombardier approved safety glasses at all times when sanding or buffing plastic parts with power equipment.

7.3 Refer to PPS 31.17 for the safety precautions for handling and using solvents.

7.4 Provide sufficient ventilation when using windshield cleaners.

7.5 Observe all safety instructions regarding the use of power tools.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for the handling, care and finishing of transparent parts shall have a good working knowledge of the applicable procedure and requirements as specified herein and shall have exhibited their competency to their supervisor.

9 STORAGE OF PLASTIC SHEETS AND PARTS

9.1 Store acrylic sheets vertically on edge or horizontally on a flat surface which is solidly supported along its length.

9.2 When sheets are horizontally stacked, arrange them so that smaller sheets lie on larger ones and do not overhang.

9.3 Incorrect storage for considerable periods results in sagging or bowing. This bow is not permanent and may be removed by reversing the sheet to allow it to sag in the opposite direction.

9.4 Store formed parts so as to avoid any pressure or sagging. If necessary, use light frames to support such parts.

9.5 The storage area shall be cool, moderately moist and well ventilated.

9.6 It is especially important to keep formed parts away from sources of heat. Acrylic possesses a plastic memory and tends to resume its original flat shape when heated.