

## WINDSHIELDS AND WINDOWS - MAINTENANCE PRACTICES

### 1. General

- A. This section provides instructions and tips for cleaning and installing windshields and windows installed in the crew, passenger and/or cargo compartments of the airplane. Also included in this section are cleaning instructions for the window plugs.

### 2. Tools, Equipment and Materials

- A. For a list of required tools, equipment and materials, refer to Windows - General.

### 3. Cleaning Instructions

**CAUTION: Windshields and windows (acrylic-faced) are easily damaged by improper handling and cleaning techniques.**

**CAUTION: Do not use methanol, denatured alcohol, gasoline, benzene, xylene, methyl n-propyl ketone, acetone, carbon tetrachloride, lacquer thinners, commercial or household window cleaning sprays on windshields or windows.**

- A. Instructions For Cleaning.

- (1) Place airplane inside hangar or in shaded area and allow to cool from heat of sun's direct rays.
- (2) Using clean (preferably running) water, flood the surface. Use bare hands with no jewelry to feel and dislodge any dirt or abrasive materials.
- (3) Using a mild soap or detergent (such as a dishwashing liquid) in water, wash the surface. Again use only the bare hand to provide rubbing force. (A clean cloth may be used to transfer the soap solution to the surface, but extreme care must be exercised to prevent scratching the surface.)
- (4) When contaminants on acrylic windshields and windows cannot be removed by a mild detergent, Type II aliphatic naphtha, applied with a soft clean cloth, may be used as a cleaning solvent. Be sure to frequently refold cloth to avoid redepositing contaminants and/or scratching windshield with any abrasive particles.
- (5) Rinse surface thoroughly with clean fresh water and dry with a clean cloth.
- (6) Hard polishing wax should be applied to acrylic surfaces. (The wax has an index of refraction nearly the same as transparent acrylic and will tend to mask any shallow scratches on the windshield surface).
- (7) Acrylic surfaces may be polished using a polish meeting Federal Specification P-P-560 applied per the manufacturer's instructions.

**NOTE: When applying and removing wax and polish, use a clean, soft cloth, such as cotton or cotton flannel.**

### 4. Windshield and Window Preventive Maintenance

**NOTE: Utilization of the following techniques will help minimize windshield and window crazing.**

- A. General Notes and Techniques For Acrylic Windshields.

- (1) Keep all surfaces of windshields and windows clean.
- (2) If desired, wax acrylic surfaces.
- (3) Carefully cover all surfaces during any painting, powerplant cleaning or other procedure that calls for use of any type of solvents or chemicals. Refer to Windows - General for approved covering materials.
- (4) Do not park or store airplane where it might be subjected to direct contact with or vapors from: methanol, denatured alcohol, gasoline, benzene, xylene, methyl n-propyl ketone, acetone, carbon tetrachloride, lacquer thinners, commercial or household window cleaning sprays, paint strippers, or other types of solvents.
- (5) Do not leave sun visors up against windshield when not in use. The reflected heat from these items causes elevated temperatures on the windshield. If solar screens are installed on the inside of the airplane, make sure they are the silver appearing, reflective type.
- (6) Do not use a power drill motor or other powered device to clean, polish, or wax surfaces.

### 5. Windshield and Window Installation Techniques

- A. Installation Techniques.

- (1) Special drills must be used when drilling holes in acrylic. Standard drills will cause the hole to be oversized, distorted, or excessively chipped.

- (2) Whenever possible, a coolant such as a plastic drilling wax should be used to lubricate the drill bit. Cessna recommends "Reliance" drill wax or Johnson No. 140 Stick Wax.
- (3) Drilled holes should be smooth with a finish of 125 rms (root mean square).
- (4) The feed and speed of the drill is critical. Refer to Table 201 for thickness verses drill speed information.

**Table 201. Material Thickness vs. Drill Speed.**

<b>Thickness (in inches)</b>	<b>Drill Speed (RPM)</b>
0.062 to 0.1875	1500 to 4500
0.250 to 0.375	1500 to 2000
0.4375	1000 to 1500
0.500	500 to 1000
0.750	500 to 800
1.00	500

- (5) In addition to feed and speed of the drill bit, the tip configuration is of special importance when drilling through acrylic windows and windshields. Tip configuration varies with hole depth, and the following information applies when drilling through acrylic:
  - (a) Shallow Holes - When hole depth to hole diameter ratio is less than 1.5 to 1, the drill shall have an included tip angle of 55 degrees to 60 degrees and a lip clearance angle of 15 degrees to 20 degrees.
  - (b) Medium Deep Holes - When hole depth to hole diameter ratio is from 1.5 to 1 up to 3 to 1, the drill shall have an included tip angle of 60 degrees to 140 degrees and a lip clearance angle of 15 degrees to 20 degrees.
  - (c) Deep Holes - when hole depth of hole diameter ratio is greater than 3.0 to 1, the drill shall have an included tip angle of 140 degrees and a lip clearance of 12 degrees to 15 degrees.
- (6) Parts which must have holes drilled shall be backed up with a drill fixture. Holes may be drilled through the part from one side. However, less chipping around holes will occur if holes are drilled by drilling the holes from both sides. This is accomplished by using a drill with an acrylic backup piece on the opposite side. Remove the drill from the hole and switch the backup plate and finish drilling from the opposite side.

B. If it is necessary to inspect the windshield, refer to Windshields and Windows - Inspection/Check.

## **6. Window Plug Cleaning**

A. Window Plug Cleaning Instructions.

- (1) Remove window plugs.
- (2) Dust or vacuum both sides of plug with a clean, dry cotton cloth.
- (3) Clean both sides of plug with a clean, damp cotton cloth.
- (4) Oily spots and stains may be cleaned with household spot removers, used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place on the plug to be cleaned. Never saturate the felt trim around the plug with a violent solvent; it may damage the felt material.
- (5) Scrape off stuck materials with a dull knife, then clean the area.

## **7. Windshield Rain Repellent**

A. A Cessna approved rain repellent and surface conditioner may be used to increase the natural cleaning of the windshield during rain. Apply in accordance with manufacturers instructions.

**NOTE:** REPCON is the only rain repellent conforming to Federal Specification MIL-W-6862 that is approved to use on Cessna Model 208 series airplanes.