Keeping up with repair techniques

In this issue of PanelTalk we present three articles about topics which, although quite different, sometimes go hand-in-hand. Elsewhere in this edition, we outline I-CAR NZ courses programmed for this year and including 'Movable and Stationary Glass' (GLA02). This course covers many other aspects associated with motor vehicle glass.

CHANGES IN STATIONARY GLASS REPLACEMENT RECOMMENDATIONS

The new I-CAR Enhanced Delivery program on stationary glass replacement, Movable and Stationary Glass Program 2, contains some significant changes in the recommendations from the original class developed in 1993. The most significant changes have to do with the urethane adhesive, specifically how the adhesive is cut out and recommended adhesive cure times. This article highlights those changes.

Full Cutout Only

There used to be two cutout methods discussed, a full cutout or "full strip" method and a partial cutout or "short cut" method. The full cutout method removes all but 1–2 millimeters of the existing urethane and requires applying a full bead of replacement urethane. The partial cutout method removes just a thin layer of the existing adhesive and only requires a thin, new bead of replacement urethane. There have always been issues why one method is more proper than the other. Today, no adhesive manufacturer and, as of this writing, only one vehicle manufacturer recommends the partial cutout method, which is under review.

The main reason why the partial cutout method is NOT generally recommended anymore is because the possibility of incompatible products has increased. Also, it's difficult to determine how well the existing adhesive bead has bonded to the pinchweld, which is a critical part of stationary glass replacement, especially for the windshield. Another reason is that it's more difficult with the partial cutout method to prevent the glass and mouldings from sitting too high on the pinchweld.

With the full cutout method, the adhesive is first removed as close to the glass as possible. Then the pinchweld can be inspected and cleaned and the glass dry-fitted. Then, just before the glass is ready to be installed, the existing urethane is final-trimmed to the 1–2 millimetre height (see Figure 1). This is done to minimize contamination possibilities. Also, freshly cut urethane makes the best bond to new urethane. Pinchweld primer is only applied to scratches in the urethane that expose bare metal, using a small cotton swab so that the primer is contained to the scratch (see Figure 2).

No Driveaway Cure Time

There are usually two cure times provided for urethane adhesives: the final cure time when the adhesive has reached its full strength and a driveaway cure time. Driveaway time is defined as the length of time required to enable the adhesive to reach enough strength for the vehicle to be released.

Movable And Stationary Glass-Program 2 recognizes only one cure time, the final cure time. This is because in a collision repair facility, there should be no reason to release the vehicle before the adhesive is completely cured.

The autoglass industry still recognizes driveaway time, since installers regularly perform mobile installations.

AGRSS Standard

Something new for anyone who performs stationary glass

Figure 1 - The last step with a full cutout is trimming the urethane adhesive to a final 1–2 millimetre height.

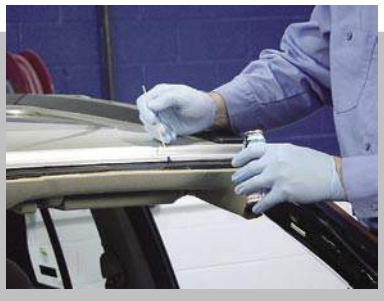


Figure 2 - A cotton swab is used instead of a wool dauber so that the primer is contained to the bare metal scratches.

installations is a stationary auto glass replacement standard available from the Automotive Glass Replacement Safety Standards (AGRSS) Council, Inc. AGRSS is a not-for-profit organization dedicated to the safe replacement of auto glass. AGRSS was founded and is supported by companies in the auto glass replacement industry that keep safe installation as their primary goal. AGRSS is an accredited American National Standards Institute (ANSI) standards development organization. The AGRSS standard (ANSI/AGRSS 002-2002 Automotive Glass Replacement Safety Standard) isNorth America's only auto glass replacement standard. The standard can be downloaded for free off the AGRSS website:www.agrss.com.

Conclusion

Along with the new I-CAR program on replacing stationary glass are new recommendations for urethane installations. Look for this program, and a new complete program on movable glass installations (Movable And Stationary Glass Program 1) in your area.

IDENTIFYING GLASS TINT

When replacing movable glass, there are a number of issues that may make obtaining the correct glass a challenge for the collision repair technician. One of these issues is identifying the colour of the tint, or whether there is a tint at all. Many vehicles may have more than one colour of tint available, and the tint is typically not labelled anywhere on the glass or the vehicle. Tint colour may depend on a number of variables, including the colour of the vehicle's exterior and interior. The more commonly used tint colours are green, blue, bronze, and grey. A glass placed in the window opening of a vehicle illustrates the difficulty in determining the tint colour (see Figure 1).

White Paper and Colour Samples

When ordering glass that has more than one possible tint colour, a technique that may be used to help identify the colour is the white paper test. For this test, one piece of white paper is held behind the glass and a second piece is held in front of the glass, offset from the first piece. The paper held in front of the glass is used as a white standard for comparing the tint colour. The paper behind the glass provides a pure white background. With this method, the tint colour becomes much more apparent (see Figure 2).

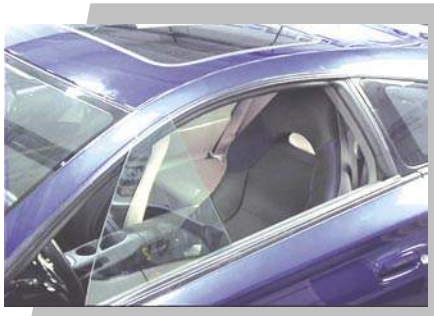


Figure 1 - Because of reflections, glass will pick up colors from items around it and its true tint color may be difficult to determine.

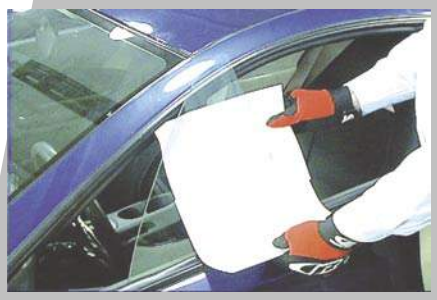


Figure 2 - Using the white paper test makes the tint color of the glass jump out at you, but it can still be difficult to tell whether the glass is blue or green.

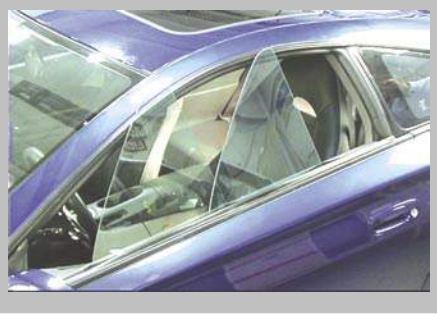


Figure 3 - This blue and green glass placed side by side shows the subtle difference between the two tints and illustrates the difficulty of determining the correct color.

Or does it? The glass shown in Figure 2 is available in green and blue. Is the glass tinted green or blue? In cases like this, it is helpful to have glass samples of known tint colours for comparison. With both blue and green tinted glass held in the opening, it is again difficult to tell which is green and which is blue (see Figure 3). When the white paper test is used, the difference in the colour is apparent, and now it can be seen that the glass on the left is green and the glass on the right is blue (see Figure 4).

Other colours that may be difficult to determine without comparing to a known sample are grey and bronze. When glass is checked with the white paper next to a clear sample it's apparent that it's tinted, but it's difficult to tell whether the tint is grey or bronze (see Figure 5). When the same glass is compared to a glass that is known to have a bronze tint, and the white paper test is used, the difference in the two becomes apparent and the glass in question can be labelled as grey with confidence (see Figure 6).

Figure 4 - With the white paper behind them, comparing the colors to each other makes it quite apparent which glass is blue and which is green.

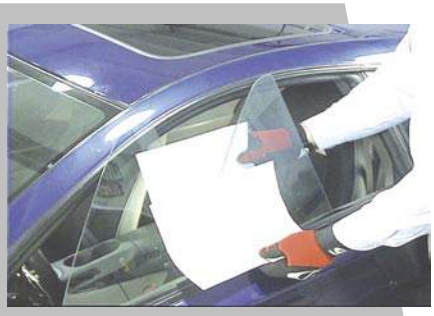


Figure 5 - When compared to clear glass it is readily apparent that this glass is tinted, but its true color is difficult to determine.

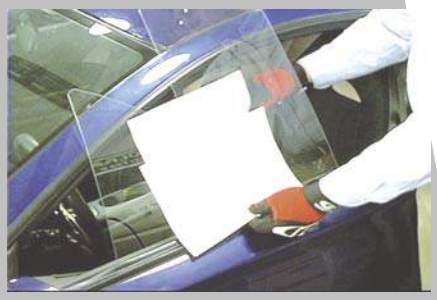
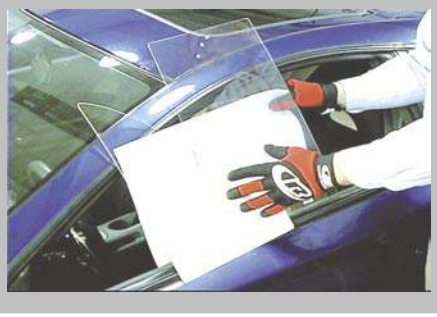


Figure 6 - When compared to a glass that is known to be bronze, it becomes obvious that this glass is tinted gray.



Conclusion

The potentially difficult problem of identifying the tint colour of a glass can be easily solved with the use of two sheets of white paper and a few samples of glass with the tint colour known.

MOISTURE-SENSING WINDSHIELD WIPERS

Interior rearview mirrors used in vehicles today are housing many different electronic parts including automatic dimming features, outside temperature readings, a compass, airbag status indicators, Global Positioning System (GPS) and telematics system parts, tyre pressure monitor indicators and microphones for hands-free phones (see Figure 1). Also included in this list are moisture sensors. Moisture sensors are used with automatic windshield wiper systems and may be original equipment or an aftermarket accessory.

Information on these systems is not easy to find. One source is a technical paper written a few years ago by the Society of Automotive Engineers (SAE): “Development of Rain Sensor for Automatic Wiper System.” Look for paper #2001-01-0612.

An automatic windshield wiper system is considered a safety feature. This is because when the system is activated, the driver is no longer distracted by the constant need to adjust the windshield wipers according to the changing weather condition. These systems are featured on newer model years of many vehicles.

Method Of Operation

Moisture-sensing windshield wipers use a moisture sensor and control module to automatically activate the windshield wipers when moisture, such as rain or snow, is detected on the windshield. The intensity of the moisture signals an adjustment to the speed of the windshield wipers. Moisture sensitivity can be controlled based on driver preference.

With one type of automatic system, the moisture sensor and control module are contained in one assembly that is mechanically fastened at the base of the rearview mirror, facing the windshield (see Figure 2). With another type of system, the moisture sensor is mechanically fastened at the base of the rearview mirror and the control module is mounted elsewhere, such as beneath the rear package shelf or the instrument panel.

When the system is turned ON, an infrared beam or beams from the optical moisture sensors reflect off the outer glass layer of the windshield at a 45° angle. If the glass is dry, most of the infrared beam is deflected back into the sensor. If there is moisture, the beam is interrupted and deflected in different directions at different rates depending on the intensity of the moisture. The control module uses the amount of deflection to turn the windshield wipers ON and OFF and continually adjust the speed.

On some systems, the automatic system is activated by the delay

setting on the windshield wiper switch and deactivated by the HIGH or LOW windshield wiper speed setting. On other systems, there may be an actual AUTOMATIC setting on the windshield wiper switch (see Figure 3).

Inspecting the System

Since the moisture sensor and control module are hidden from view, it may be difficult to determine if a vehicle is equipped with a moisture-sensing windshield wiper system. One of the indicators is a larger-than-normal housing at the base of the rearview mirror. However, the rearview mirror mount can also house other sensor-activated systems or a navigation system. There may be an indication on the windshield wiper switch of an automatic setting. If available, the system may be identified in the vehicle owner's manual. Otherwise, the only way to determine if there is an automatic wiper system on-board may be to physically operate the system during the post-repair inspection.

When performing a post-repair inspection, if the windshield wipers operate at the HIGH and LOW speeds, but not in the INTERMEDIATE setting, apply water to the windshield, start the vehicle and shift to DRIVE. If the windshield wipers operate, then the system is in good working condition. If they do not operate, either the automatic feature is inoperative or the delay feature is inoperative and further testing is required.

Typically, a DVOM is used to make voltage and resistance checks according to a flowchart provided by the vehicle maker. At least one system requires a scan tool to test the sensor and control module for proper operation. If the moisture sensor or control module is damaged, it should be replaced. Typically, if the wiring is damaged, it can be repaired using general wiring repair guidelines and waterproof connectors.

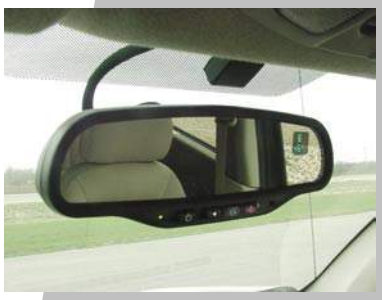


Figure 1 - This rearview mirror includes an automatic dimming feature, a compass, an outside temperature reading and GPS.

Figure 2 - This moisture sensor is highly visible.

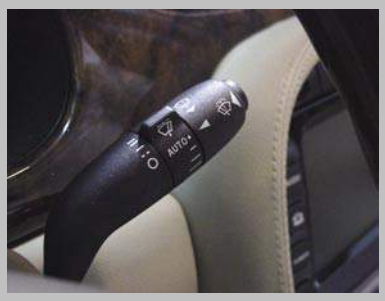


Figure 3 - This moisture-sensing system is operated using a separate switch on the steering column.

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