



Retention System Provider Training Instructions and Documentation Worksheet

| Column A Current AGRSS Standard sections and language that requires instruction from the retention system provider to help ensure AGR technician compliance. Note that only those sections of the Standard pertaining to the required support of the retention system provider are listed. | Column B Retention System Provider instruction response to Column A (List the response that an AGR Technician should provide in order to match the instructions your company provides pertaining to the subject identified in Column A) | Column C Identify the location within your current, written, comprehensive training instructions where your instruction response from Column B can be identified. (Document name, page and paragraph) |
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| 3.0 Vehicle Assessment before Replacement | | |
| 3.01 Those engaged in automotive glass replacement shall not undertake or complete such installation when any related condition would compromise the retention system and the owner/operator shall be so notified. | Upon making a vehicle assessment using the criteria on the ADCO TITAN® “Inspection Checklist”, I look for conditions that may compromise the retention system such as corrosion, suspect materials, butyl and body damage. If I am unable to correct the compromised condition, I refrain from completing the auto glass replacement and notify the owner/operator of the vehicle immediately. I have noted these details on the checklist. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #3 – Pre-Inspection ; paragraph #1; Page #6 – Glass Removal , paragraphs #3 & #6; Page #22 |
| 4.0 Selection of Glass and Retention Systems | | |
| 4.01 Those engaged in automotive glass replacement shall use retention systems that are produced under documented quality assurance standards. | TITAN® products are produced under strict documented quality assurance standards that are registered to ISO/TS-16949:2009 and ISO 9001:2008. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #2, Quality Conformance , paragraph #1 |
| 4.03 Those engaged in automotive glass replacement must use either an OEM approved retention system or equivalent retention system as certified in writing by the equivalent retention system manufacturer directly or through a private labeler. | Performance characteristics of all TITAN® urethane adhesives meet or exceed criteria established by OEMs and FMVSS 212. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #2, Quality Conformance , paragraph #1 |

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| <p>4.04 Those engaged in automotive glass replacement shall obtain and follow written comprehensive and current application instructions from the retention systems manufacturer or private labeler. These instructions shall include at least the proper use of the retention system storage specifications, minimum drive-away time charts containing temperature and humidity variables if applicable, and any special procedures required for adverse weather conditions.</p> <p>NOTE: This section of the standard requires the technician, using your product for installation, to follow the exact written instructions. If they do not follow these instructions, an auditor will find the technician to be non-compliant to the standard. After reviewing urethane manufacture’s written instructions, we realize there are many items that would keep the technician safe, such as wearing goggles, but if not followed during the installation steps would not compromise the installation.</p> <p>With this in mind, please list your procedures for each of the following subject lines, defining your minimum requirements pertaining to each subject part of an auto glass replacement.</p> <p>Enter your answers in Column B and where these specific answers can be located in your current written instructions in Column C.</p> <p><u>1. GLASS CLEANING:</u></p> <ul style="list-style-type: none"> • Product requirements | <p>TITAN® 604 or glass cleaners that are silicone and ammonia free,</p> | <p>Page 3, “Glass Preparation”, Paragraph #1</p> |
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| <ul style="list-style-type: none"> • Application requirements • Storage requirements • Shelf-life (opened & unopened) • Adverse weather conditions • Additional requirements | <p>Clean and dry cloth or one time use paper towel, Abrasive Pad (If needed)</p> <p>Clean the entire glass using a generous layer of TITAN® 604 glass cleaner or industry approved glass cleaners that are silicone and ammonia free, especially the bonding area of the glass. Wipe off the film with a clean lint free cloth from the outside toward the center of the glass; repeat the cleaning process until the glass is free from containments such as dirt, dust oil and mold release agents. In the event there is excessive dirt and oils, “wet-scrub” the frit-band using an abrasive pad together with our TITAN® 604 glass cleaner and repeat the glass cleaning procedure as above. Be sure that the glass is clean and dry before proceeding.</p> <p>12 months in unopened container when stored at 77° F / 50% RH</p> <p>Limiting factors for the glass cleared would be pre-empted by the primer and urethanes</p> <p>Wet-Scrub Method:</p> <ul style="list-style-type: none"> • Apply TITAN® 604 glass cleaner to the affected area • Lightly “wet-scrub” with a fine weave abrasive pad • Clean the area with TITAN® 604 glass cleaner and a lent free cloth • Be sure that the glass is clean and dry before proceeding | <p>Page 3, “Glass Preparation”, Paragraph #1</p> <p>TITAN® 604 Tech Data Sheet</p> <p>Page 3, “Glass Preparation”, Paragraph #1</p> |
| <p>2. GLASS PREP/PRIMING:</p> <ul style="list-style-type: none"> • Product requirements • Application requirements | <p>TITAN® UP100 Primer, Daubers, acid brush or equivalent</p> <ul style="list-style-type: none"> • Applying ADCO TITAN® UP100 Universal Primer to Glass <ul style="list-style-type: none"> ○ Shake the TITAN® UP100 for at least one minute before use ○ Use a clean unused dauber, acid brush or equivalent each time the TITAN® UP100 is used ○ Apply a smooth continuous lane of primer on the glass/frit in the same location the urethane bead will be adhered | <p>Page #4, “Applying ADCO TITAN® UP100 Universal Primer to Glass”</p> |

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| <p>- Pre-primed glass</p> <p>- PAAS</p> <p>- Non-traditional contamination</p> <p>- Other</p> <p>3. PINCHWELD PREP/PRIMING:</p> <ul style="list-style-type: none"> • Product requirements • Application requirements | <p>to approximately 2mm in height (1/16”).</p> <p>If the urethane bead is not firmly intact or if there is not enough urethane to make a fresh cut, carefully remove the urethane bead from the glass with a razor blade and scotch bright using the “wet scrub” method as referenced above. Clean the entire glass with our TITAN® 604 glass cleaner and be sure that the glass is clean and dry before proceeding. If after this process the original urethane and primer does not come completely off the glass, new glass must be ordered.</p> <p>In the event windshields are supplied with a factory pre-applied black primer, these windshields should be prepared and cleaned using the surface preparation method as detailed earlier using the TITAN® Glass Cleaner as well as the TITAN® UP100 Primer</p> <p>Confirm that the adhesive bead is urethane. Clean the area around the pre-applied adhesive with the TITAN® 604 Glass Cleaner using the cleaning method as detailed above; scuff the surface of the urethane bead with sand paper or an abrasive pad and apply the TITAN® urethane adhesive product based on vehicle requirements and the customer SDAT needs</p> <p>In the event there is excessive dirt and oils, “wet-scrub” the frit-band using an abrasive pad together with our ADCO TITAN® 604 Glass Cleaner and repeat the glass cleaning procedure as above. Care should be taken to not scratch the glass or frit band. After wet-scrubbing repeat the cleaning process as detailed above. Be sure that the glass is clean and dry before proceeding</p> <p>Please refer to TITAN Step by Step Guide for Proper Installation Instructions for additional detail</p> <p>TITAN® UP100 Primer, Daubers, acid brush or equivalent</p> <ul style="list-style-type: none"> • Applying ADCO TITAN® UP100 Universal Primer to Pinchweld <ul style="list-style-type: none"> ○ Shake the TITAN® UP100 for at least one minute before use ○ Use a clean unused dauber, acid brush or equivalent each time the TITAN® UP100 is used | <p>Page #5, Paragraph #3</p> <p>Page #4, “Pre-Applied Adhesive System (PAAS)”</p> <p>Page #3, “New Glass”</p> <p>Page #8, “Applying ADCO TITAN® UP100 Universal Primer to Pinchweld”</p> |
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| <ul style="list-style-type: none"> • Storage requirements • Shelf-life (opened & unopened) • Adverse weather conditions • Additional requirements - Corrosion treatment | <ul style="list-style-type: none"> ○ Apply a smooth continuous lane of primer on the glass/frit in the same location the urethane bead will be adhered ○ For best results, ADCO recommends that this product be used at temperatures of 40° F (4°C) and above; allow 10 minutes to dry ○ If lower than 40° F (4°C) allow 25 minutes for the primer to dry. To determine if the primer is completely dry, wait 10 minutes after the application of the UP100 and using a clean nitrile glove touch it in an area that will not receive adhesive ○ Tightly seal container immediately after use <p>40° F to 90° F (5° C to 33° C) .</p> <p>6 months from date of manufacture when stored in unopened container at 77° F and 50% humidity - If the product becomes thick and cloudy do not use. With proper storage conditions the primer can be usable for up to 7 days after opening.</p> <p>At temperatures lower than 40° F, up to 25 minutes may be required for the primer to dry. To determine if the primer is completely dry, wait 10 minutes after the application of the UP100 and using a clean nitrile glove touch it in an area that will not receive adhesive</p> <p>Corrosion Removal: NOTE: Any time a technician is working with chemicals and power tools, always follow manufacturers-recommendations, appropriate safety equipment and protective gear should always be worn.</p> <p>Remove the corrosion to obtain a bright, corrosion free, metal surface. This should be done prior to trimming the remaining intact and well bonded adhesive bead. If this is not possible, clean the freshly cut original urethane bead after removing the corrosion with clean water. The method used to remove the corrosion will depend on the type of corrosion present and is to be consistent with automotive OEM recommendations:</p> | <p>TDS TITAN® UP100 Universal Primer</p> <p>TDS TITAN® UP100 Universal Primer</p> <p>Page #8, “Applying ADCO TITAN® UP100 Universal Primer to Pinchweld”</p> <p>Page #6, “Corrosion Treatment”</p> |
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| | <p>Repair by Type:</p> <p>1.) Light – <i>Light, orange discoloration of the metal</i> Use mechanical sanding equipment or hand-sand with light grit sandpaper, remove the corrosion. Apply two coats of TITAN® UP100</p> <p>2.) Moderate – <i>Moderate, orange with red spots, discoloration of the metal</i> Use sanding wheel, sand blasting or other mechanical tools to remove the corrosion. Care must be taken when using a sanding wheel so that the thickness of the metal is not significantly reduced. Apply two coats of TITAN® UP100</p> <p>3.) Severe – <i>Severe, deep “pitting”, dark red spots and raised edges</i> For corrosion of the pinchweld described as Severe, and having and area not to exceed 1 square inch or a cumulative total of 24 square inches we recommend using a sanding wheel, sand blasting or other mechanical tools to remove the entire contaminated area. Care must be taken when using a sanding wheel so that the thickness of the metal is removal and replacement by personnel trained in metal restoration. Apply two coats of TITAN® UP100</p> <p>For treatment areas greater than 1 square inch or a treatment area greater than a cumulative total of 24 square inches we recommend removal and replacement by personnel trained in metal restoration.</p> <p>4.) Perforation – <i>Perforation includes small holes to large losses of metal</i> Send to a body shop for removal and replacement by personal trained in metal restoration.</p> <p>After removal of all of the corrosion apply a coat of TITAN® UP100 and allow dry time as referenced above, then apply a second coat of TITAN® UP100. The TITAN® UP100 has shown very good results for rust protection in laboratory salt spray chamber testing, especially when applied in two layers and has very low conductivity which provides a barrier against electric currents that could cause corrosion or other problems.</p> | |
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| | <ul style="list-style-type: none">• Applying ADCO TITAN® UP100 Universal Primer to the Pinchweld<ul style="list-style-type: none">○ Shake the TITAN® UP100 for at least one minute before use○ Use a clean unused dauber, acid brush or equivalent each time the TITAN® UP100 is used○ Apply primer on the metal area of the bonding surface being careful to not prime the freshly cut bead of urethane, if any remains.○ Allow 10 minutes to dry○ If lower than 40° F (4°C) allow 25 minutes for the primer to dry○ Apply a second coat of TITAN® UP100 – Allow the first coat to completely dry before applying the second <p>Perforation corrosion located in the windshield mounting area of a vehicle’s pinchweld, just like perforation corrosion located in any structural area of a vehicle, requires replacement of the entire section of metal. Filling these types of areas with body filler is not acceptable. Furthermore, I-CAR has made recommendations that state “do not use body filler on the pinchweld where glass urethane adhesive will be applied.” This recommendation was taken from the March - April 2000 I-CAR Advantage and this document also states that, “small irregularities in the flange surface will be filled when the adhesive bead is applied.” Keep in mind that the glass bonding area of a pinchweld does not require a “Class A” appearance and, if required, welded areas can be sanded smooth prior to TITAN® UP100 Universal Primer application.</p> <p>Again, do not apply body filler in areas where glass bonding adhesive will be applied.</p> <p>Using a pinchweld-perpetration tool, trim the original bead of urethane leaving 1/16 – 1/8 of an inch (1 – 2 millimeters) of the original urethane bead on the pinchweld or clean the previously trimmed bead. Make sure there are no contaminates and do not touch the pinchweld after prepping the area.</p> | |
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| | <p>Complete adhesive removal is required for repaired, newly painted pinchwelds and when OEM urethane has poor adhesion.</p> <p>If the technician discovers the previous installation used improper methods or sealants, the pinchweld must be completely cleaned of substance. If the old bead of urethane is not adhering to the pinchweld and would compromise the integrity of the new installation, it must be removed.</p> <p>A complete adhesive removal requires the total removal of existing material down to the pinchweld. In a complete removal, the pinchweld must be cleaned of all products and materials other than the clean weld and the original paint. This method must be used when:</p> <ul style="list-style-type: none"> • The pinchweld has been repainted for any reason (i.e. body shop corrosion treatment) • The pinchweld is damaged • The existing urethane adhesive is loose or deteriorated. • An improper product was previously used (i.e. – butyl, silicone, etc.). Fully correct any adverse glass installation related condition(s) caused by the use of inappropriate materials or methods. <p>After exposing the original paint, using an abrasive pad carefully scuff the paint on the pinchweld, abrading the clear coat and/or topcoat, exposing the OEM paint. Care must be taken so that the e-coat and phosphate coatings, which lie beneath the OEM paint, are not removed. The e-coat and phosphate coatings are essential part of the OEM corrosion inhibiting system and it is not possible to replace these in the after market. Apply TITAN[®] UP100 and allow 10 - 15 minutes for it to dry. Then follow the ADCO TITAN[®] Urethane Application and Glass Installation procedures found on page #9.</p> <p>In the special case of a newly painted pinchweld, one of the following four options may be selected.</p> <p>Option 1: Whenever possible, remove the windshield, by cutting the adhesive as close to the glass as possible, and leave the entire remaining urethane adhesive bead in place. Do not trim the adhesive bead until the vehicle has been painted and the new windshield is ready to be installed. In this case, it is not necessary to tape or</p> | <p>Page #10 “Complete Adhesive Removal”</p> |
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| | <p>otherwise protect the existing urethane. After the vehicle is repaired and painted, remove most of the existing urethane leaving 1/8 inch on the pinchweld and install the windshield (full cut method).</p> <p>Option 2: If the pinchweld area is to be repaired and painted by a body shop, remove the section of metal to be repaired, repair pinchweld and apply an epoxy etch primer coat. Allow the epoxy etch primer coat to cure for at least as long as would be required prior to applying topcoat over the epoxy etch primer coat, following manufacturer's recommendations. If topcoat is to be applied to remainder of the vehicle, mask off the bond area of the pinchweld with masking tape. Continue painting the vehicle as required. If a forced drying process is to be used, remove the tape prior to baking the topcoat. Next, lightly abrade the primer surface using an abrasive pad. Apply TITAN® UP100 Primer and allow 10 minutes for drying time. Then set the windshield using the appropriate ADCO TITAN® adhesive for the vehicle type and required drive away time.</p> <p>Option 3: If a freshly primed pinchweld has already been color coated and allowed to cure the proper time required by the manufacturer, follow the instructions posted under Option 2.</p> <p>Option 4: If the vehicle's OEM urethane bead has poor adhesion and easily peels away from pinchweld to reveal unblemished original paint, begin by scuffing with an abrasive pad. If the clear coat and basecoat pulled away from the vehicle with the original urethane bead, lightly abrade the exposed area using an abrasive pad. Apply TITAN® UP100 according to the instructions on page 7 in this guide. Allow 10 minutes drying time. Set the windshield using the appropriate ADCO TITAN® adhesive for the vehicle type and required drive away time.</p> <p>*IMPORTANT NOTE: Options 2, 3, and 4 above call for the use of TITAN® UP100 Universal Primer. If any of these procedures are to be performed at temperatures below 40°F (4°C), then please refer to the special low temperature precautions for these products, which can be found in the <i>Installation in Adverse Seasonal Conditions</i> section on page 13 of this guide.</p> | |
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| | <p>millimeters). This will give you the appropriate triangular bead.</p> <ol style="list-style-type: none"> 2. Hold the applicator 90° from the pinchweld or glass and dispense a bead of TITAN® urethane adhesive with a continuous motion around the entire perimeter. In the case of applying onto the pinchweld apply the TITAN® urethane directly on top of the freshly trimmed existing bead of urethane. 3. The TITAN® urethane adhesive must be applied so that the finished bead cross section profile and dimensions meet or exceed original equipment configuration. Use a paddle stick or other tool to make sure there are no gaps and all seams and corners are even. 4. Using protective gloves take glass from stand or workstation. 5. Lay glass directly down on the bead of urethane; line up the glass with the dry-fit marks made earlier. 6. Apply even pressure around perimeter of glass to assure seal and level of set. 7. When sealing air or water leaks, only compatible polyurethane shall be used (silicone or butyl is not to be used). If a leak exists: <ol style="list-style-type: none"> 1. Apply pressure to the spot to ensure the glass makes contact with the TITAN® urethane adhesive. 2. Dispense a small bead of urethane in the area between the glass and the pinchweld. 8. If you have a push-in molding to set, be sure the urethane is visible around the perimeter of the pinchweld. If the molding will not touch the TITAN® urethane shoot a small bead of urethane in the area between the glass and the pinchweld and reapply pressure to the molding. 9. Reinstall the removed parts in reverse order. 10. Complete the paperwork recording the lot numbers for the TITAN® urethane adhesive system used. 11. Allow the TITAN® urethane to cure according to product specifications before returning the vehicle to the | |
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TITAN PRO2® Safe Drive Away Chart

Minimum installation humidity: 10%

| RH | 20% | 50% | 75% | 90% |
|-----------------|------------|------------|------------|------------|
| >85°F | 2 hr | 2 hr | 2 hr | 2 hr |
| 70° F | 2 hr | 2 hr | 2 hr | 2 hr |
| 55° F | 2 hr | 2 hr | 2 hr | 2 hr |
| 40° F | 2 hr | 2 hr | 2 hr | 2 hr |
| 25° F | 2 hr | 2 hr | 2 hr | 2 hr |

TITAN® 660 Safe Drive Away Chart

Minimum installation humidity: 10%

| RH | 20% | 50% | 75% | 90% |
|-----------------|------------|------------|------------|------------|
| >85°F | 3 hr | 3 hr | 3 hr | 3 hr |
| 70° F | 3 hr | 3 hr | 3 hr | 3 hr |
| 55° F | 4 hr | 3 hr | 3 hr | 3 hr |
| 40° F | 5 hr | 5 hr | 5 hr | 5 hr |

TITAN® 380 Safe Drive Away Chart

Minimum installation humidity: 10%

| RH | 20% | 50% | 75% | 90% |
|-----------------|------------|------------|------------|------------|
| >85°F | 5 hr | 4 hr | 4 hr | 3 hr |
| 70° F | 6 hr | 4 hr | 4 hr | 4 hr |
| 55° F | 11 hr | 6 hr | 6 hr | 5 hr |
| 40° F | 24 hr | 24 hr | 24 hr | 24 hr |

TITAN® 660, TITAN PRO1® & TITAN PRO2® products are non-conductive

TITAN® 380, TITAN® 660, TITAN PRO1® & TITAN PRO2® are all High Modulus Products

- **Non-conductive considerations**
- **High modulus considerations**
- **Other**

Tech Data Sheets

Tech Data Sheets

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| 5.0 Installation Standards- Adhesive Bonded | | |
| 5.01 Those engaged in automotive glass replacement shall follow the adhesive manufacturer's application instructions as provided by the manufacturer directly, or through the private labeler. All in-shop or mobile installations shall be performed under environmental and other conditions that are compatible with the application instructions required in Section 5. | ADCO provides complete application instructions | ADCO TITAN® Step by Step Guide to Proper Installations |
| 5.02 Products must be stored and controlled according to manufacturers' requirements as provided directly or through a private labeler. | Always store TITAN® products as outlined on the technical data sheets. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #19, Miscellaneous Procedures & Handling, Item #6 and Techdata Sheets. |
| 5.03 No automotive glass replacement shall be undertaken using an adhesive glass retention bonding system that would not achieve minimum drive-away strength by the time the vehicle may be reasonably expected to be operated. | ADCO publishes the TITAN® Drive-Away Recommendations on the Techdata sheets and the installation guide. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #6, Glass Removal, Paragraph #2; Page #19, Miscellaneous Procedures & Handling, #7; Pages #15 - 17. |
| 5.04 The vehicle owner / operator shall be advised of the minimum drive-away time under the circumstances of the replacement. | Always adhere to published TITAN® Drive-Away Recommendations allowing the urethane to cure and notify vehicle owner/operator. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #19, Miscellaneous Procedures & Handling, Item #7. |
| 5.05 Adhesive must be applied so that the finished bead cross section profile and dimensions meet or exceed original equipment configuration. | The TITAN® urethane adhesive is applied so that the finished bead cross section profile and dimensions meet or exceed original equipment configuration using a paddle stick or other tool to make sure there are no gaps and all seams and corners are even. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #9, Urethane Application and Glass Installation, Item #3. |
| 5.06 If the OEM installation was polyurethane, then the glass must be replaced with polyurethane or an equivalent adhesive bonding system. If the OEM installation was butyl, polysulfide, or other non-polyurethane, and the | If the OEM installation was butyl, polysulfide, or other non-polyurethane, and the vehicle is licensed for highway use, adhesive bonded stationary glass installations shall be performed using urethane or an equivalent retention system unless in conflict with current OEM specifications, such as | ADCO TITAN® Step by Step Guide to Proper Installations: Page #5, Glass Removal, Paragraph #4; Page #12, Page #13, Paragraph #4 |

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| vehicle is licensed for highway use, adhesive bonded stationary glass installations shall be performed using polyurethane or an equivalent retention system unless in conflict with current OEM specifications. | rubber gasket installations. Check the retention system on the vehicle to see if the OEM installation was urethane. If so, the glass must be replaced with polyurethane or an equivalent adhesive bonding system. | |
| 5.07 All adhesive system component lot numbers must be traceable to each job. | Record lot numbers and expiration dates that are printed on all TITAN [®] products. | ADCO TITAN[®] Step by Step Guide to Proper Installations: Page #2, Quality Conformance , Paragraph #4; Page #3, Glass Preparation , Paragraph #1; Page #9, Urethane Application and Glass Installation , Item #10. Page #22, Inspection Checklist , “Adhesive and Primer” |
| 5.09 No product that has exceeded its expiration date, open shelf life, or active shelf life shall be used. | Only products within the stated shelf life were used. | ADCO TITAN[®] Step by Step Guide to Proper Installations: Page #2, Quality Conformance , Paragraph #4. |
| 5.11 When inappropriate replacement materials or methods are detected, those engaged in automotive glass replacement shall report their findings to the vehicle owner/operator. | When inappropriate replacement materials or methods are detected, report your findings to the vehicle owner/operator. | ADCO TITAN[®] Step by Step Guide to Proper Installations: Page #6, Glass Removal , Paragraph #6. |
| 5.12 When those engaged in automotive glass replacement correct inappropriate glass installations, they shall remove any inappropriate materials that would compromise the retention system. They shall fully correct any adverse glass installation related condition(s) caused by the use of inappropriate materials or methods, and they shall use appropriate methods described elsewhere within Section 5 of this document. | A complete adhesive removal requires the total removal of existing material down to the pinchweld. In a complete removal, the pinchweld must be cleaned of all products and materials other than the clean weld and the original paint. This method must be used when: <ul style="list-style-type: none"> • An improper product was previously used (i.e. – butyl, silicone, etc.). Fully correct any adverse glass installation related condition(s) caused by the use of inappropriate materials or methods. | ADCO TITAN[®] Step by Step Guide to Proper Installations: Page #13, Paragraph #4. Page #5, Glass Removal , Paragraph #4; Page #10, Complete Adhesive Removal , Paragraph #3 and 4 th bullet. |
| 5.13 When sealing air or water leaks within a polyurethane retention system, only compatible polyurethane adhesive shall be used. (No silicone or butyl may be used). | If a leak exists, apply pressure to the spot to ensure the glass makes contact with the TITAN [®] urethane adhesive. Dispense a small bead of urethane in the area between the glass and the pinchweld, only compatible urethane shall be used. | ADCO TITAN[®] Step by Step Guide to Proper Installations: Page #9, Item #7; Page #12, Rubber Gaskets , paragraph #1; |
| 5.14 Only the full cut method should be used for polyurethane retention systems. | Evaluate the pinchweld area of the vehicle. The condition of the adhesive system that was used and the condition of the | ADCO TITAN[®] Step by Step Guide to Proper Installations: Page #5, Glass |

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| | pinchweld must be examined to determine if the ANSI approved Full Cut Method can be used for the replacement glass. Check the condition of the pinchweld to make sure it is structurally sound and free of defects. If the OEM installation was butyl, polysulfide, or other non-polyurethane, and the vehicle is licensed for highway use, adhesive bonded stationary glass installations shall be performed using urethane or an equivalent retention system unless in conflict with current OEM specifications, such as rubber gasket installations. Check the retention system on the vehicle to see if the OEM installation was urethane. If so, the glass must be replaced with polyurethane or an equivalent adhesive bonding system | Removal, Paragraph #4. |
| 6.0 Installation Standards- Rubber Gasket | | |
| 6.01 If the OEM utilizes the combination of a rubber gasket and polyurethane as a retention system, an equivalent adhesive bonding system must be used in the installation. In cases when the OEM didn't include polyurethane or an equivalent adhesive system, such systems shall be used if later production models included the addition of adhesive systems without body style modification. | If the OEM utilizes the combination of a rubber gasket and polyurethane as a retention system, an equivalent adhesive bonding system must be used in the installation. In cases when the OEM didn't include polyurethane or an equivalent adhesive system, such systems shall be used if later production models included the addition of adhesive systems without body style modification. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #12, Rubber Gaskets. |
| 6.02 If the OEM gasket installation did not include adhesive and the vehicle is licensed for highway use, the installation shall include polyurethane or an equivalent adhesive bonding system. The following are permissible exceptions: egress applications, antique restorations, or in cases in which this practice conflicts with current vehicle manufacturer specifications. | If the OEM gasket installation did not include adhesive and the vehicle is licensed for highway use, the installation shall include polyurethane or an equivalent adhesive bonding system. The following are permissible exceptions: egress applications, antique restorations, or in cases in which this practice conflicts with current vehicle manufacturer specifications. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #12, Rubber Gaskets. |
| 6.03 When sealing air or water leaks within a rubber gasket/polyurethane ADHESIVE | When sealing air or water leaks within a rubber gasket/polyurethane only compatible polyurethane shall be | ADCO TITAN® Step by Step Guide to Proper Installations: Page #12, Rubber |

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| SYSTEM only compatible polyurethane shall be used. (No silicone or butyl may be used). | used. (No silicone or butyl may be used). | Gaskets. |
| 6.04 When sealing air or water leaks within a rubber gasket/SEALANT SYSTEM only OE compatible sealant shall be used. | When sealing air or water leaks within a rubber gasket/polyurethane only compatible polyurethane shall be used. (No silicone or butyl may be used). | ADCO TITAN® Step by Step Guide to Proper Installations: Page #12, Rubber Gaskets. |
| 7.0 Additional Requirements | | |
| 7.04 Whenever OEM retention systems are modified on later production models without body style modification, the most current retention system shall be used in the replacement unless otherwise specified by the OEM. | In cases when the OEM didn't include polyurethane or an equivalent adhesive system, such systems shall be used if later production models included the addition of adhesive systems without body style modification. If the OEM gasket installation did not include adhesive and the vehicle is licensed for highway use, the installation shall include polyurethane or an equivalent adhesive bonding system. | ADCO's Step by Step Guide to Proper Installations: Page #12, Rubber Gaskets |
| 7.05 The failure of any product used in the glass installation process that the installer believes could jeopardize customer safety shall be reported promptly to the manufacturer or supplier of the product. | When inappropriate replacement materials or methods are detected, report your findings to the vehicle owner/operator. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #6, Glass Removal, Paragraph #3. |
| 7.06 Those engaged in automotive glass replacement shall not introduce any chemical agents, such as cleaners, solvents, lubricants, release agents, or utilize any installation practice, which will adversely affect the glass retention system. | Technicians engaged in automotive glass replacement shall not introduce any chemical agents, such as cleaners, solvents, lubricants, release agents, or utilize any installation practice, which will adversely affect the glass retention system. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #13, Paragraph #4 |
| 7.07 Those engaged in automotive glass replacement shall maintain documentation to demonstrate compliance with this standard. | Documentation shall be maintained to demonstrate compliance with this standard. | ADCO TITAN® Step by Step Guide to Proper Installations: Page #9, Item #10; Page #14, Post Inspection |

Retention System Provider Deliverables:

| Deliverable: | Retention System Provider Response: | Is Documentation Included: |
|--------------|-------------------------------------|----------------------------|
|--------------|-------------------------------------|----------------------------|

| | | (Yes, No) |
|---|---|-----------|
| <p>4.01 Those engaged in automotive glass replacement shall use retention systems that are produced under documented quality assurance standards.</p> <p>Identify your organizations current quality assurance standard and how this should be identified by your glass shop customers.</p> | <p>ADCO adheres to the FMVSS AND OEM standards as stated in the ADCO TITAN® Step by Step Guide to Proper Installations; ISO/TS 16949:2002 Certificate of Registration</p> | Yes |
| <p>4.02 Those engaged in automotive glass replacement must use either an OEM approved retention system or equivalent retention system as certified in writing by the equivalent retention system manufacturer directly or through a private labeler.</p> <p>Provide validation to this requirement and how your glass shop customers' would demonstrate your compliance to this section of the Standard.</p> | <p>ADCO letter attests to meeting or exceeding the strength standards established by GM. Their specifications are representative of the majority of the OEMs and serve as a reasonable guide to meeting overall OEM requirements.</p> | Yes |
| <p>4.03 Those engaged in automotive glass replacement shall obtain and follow written comprehensive and current application instructions from the retention systems manufacturer or private labeler. These instructions shall include at least the proper use of the retention system storage specifications, minimum drive-away time charts containing temperature and humidity variables if applicable, and any special procedures required for adverse weather conditions.</p> <p>Identify the name and publish date of the document(s) fitting the description of “current, comprehensive, written application instructions” that are to be on hand and utilized by your company’s glass shop customers.</p> | <p>ADCO’s TITAN® Step by Step Guide to Proper Installations, 08/09, should be made available for reference at all times.</p> | Yes |
| <p>5.03 No automotive glass replacement shall be undertaken using an adhesive glass retention bonding system that</p> | <p>Technical Bulletin T-001, TITAN® Product Line gives minimum drive-away times for each product. Also specific</p> | Yes |

| | | |
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| <p>would not achieve minimum drive-away strength by the time the vehicle may be reasonably expected to be operated.</p> <p>Identify the drive-away-time chart to be utilized by your company's glass shop customers in order to be compliant with this requirement.</p> | <p>product Techdata sheets provide drive-away times as well as the ADCO TITAN® Step By Step Guide to Proper Installations.</p> | |
| <p>8.01 Technicians installing replacement automotive glass shall be fully qualified for the tasks they are required to perform. Such qualifications shall include, at a minimum, completion of a comprehensive training program with a final exam and a continuing education component. The program shall include, among other things: AGR safety issues, an understanding of OEM installation standards and procedures, relevant technical specifications, comprehensive retention system specific training and the opportunity to apply and demonstrate the skills technicians learn.</p> <p>IF YOUR COMPANY DOES PROVIDE TRAINING, identify the name of your training course, the testing provided, the certificates provided and the frequency of such training and, or continuing education.</p> | <p>ADCO's training is credited for continuing education.</p> <p>Training: ADCO TITAN® Step By Step Guide to Proper Installations</p> <p>Testing: ADCO TITAN® Tech Training Test</p> | <p>Yes</p> |

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