SECTION 7

DOORS

INDEX

INTRODUCTION

This section of the manual contains the service operations that are necessary for the removal, installation, adjustment and sealing of door assemblies and individual door hardware components. The procedures are arranged in the sequence that they would be performed when servicing a door, such as, trim removal, parts replacement or adjustment, and resealing. To locate specific procedures, refer to the "Door Index".

Hardware items are divided into three categories. Those which are common to all doors are found under "Front and Rear Doors" which also includes door and side roof rail weatherstrips. Items which are peculiar to front or rear doors are found under "Front Doors" or "Rear Doors" respectively.

Body series or style references in the procedures are explained under "General Information" in Section I of this manual.

FRONT AND REAR DOOR

PULL HANDLES

Door pull handles are secured to the door with screws which are inserted through either the handle hinges or handle escutcheons into the door inner panel. On some styles, the handles are additionally retained to the door trim assembly with screws or studs which are installed from the outboard side of the door trim assembly. On these latter styles it is necessary to remove the door trim assembly in order to remove the door pull handle.

NOTE: On all styles it is necessary to remove screws inserted through the handle into the door inner panel in order to remove the door trim assembly.

Styles with pull handles that can be removed independent of the door trim assembly are as follows:

a. Cadillac 68000-68100-68300-68400 Series

b. Buick 48437-67 Styles

c. Buick 49487 Style with standard trim

Styles with pull handles that are assembled to the door trim assembly and can only be removed in a bench operation are as follows:

a. Pontiac 26239 Style

b. Cadillac 68200 Series

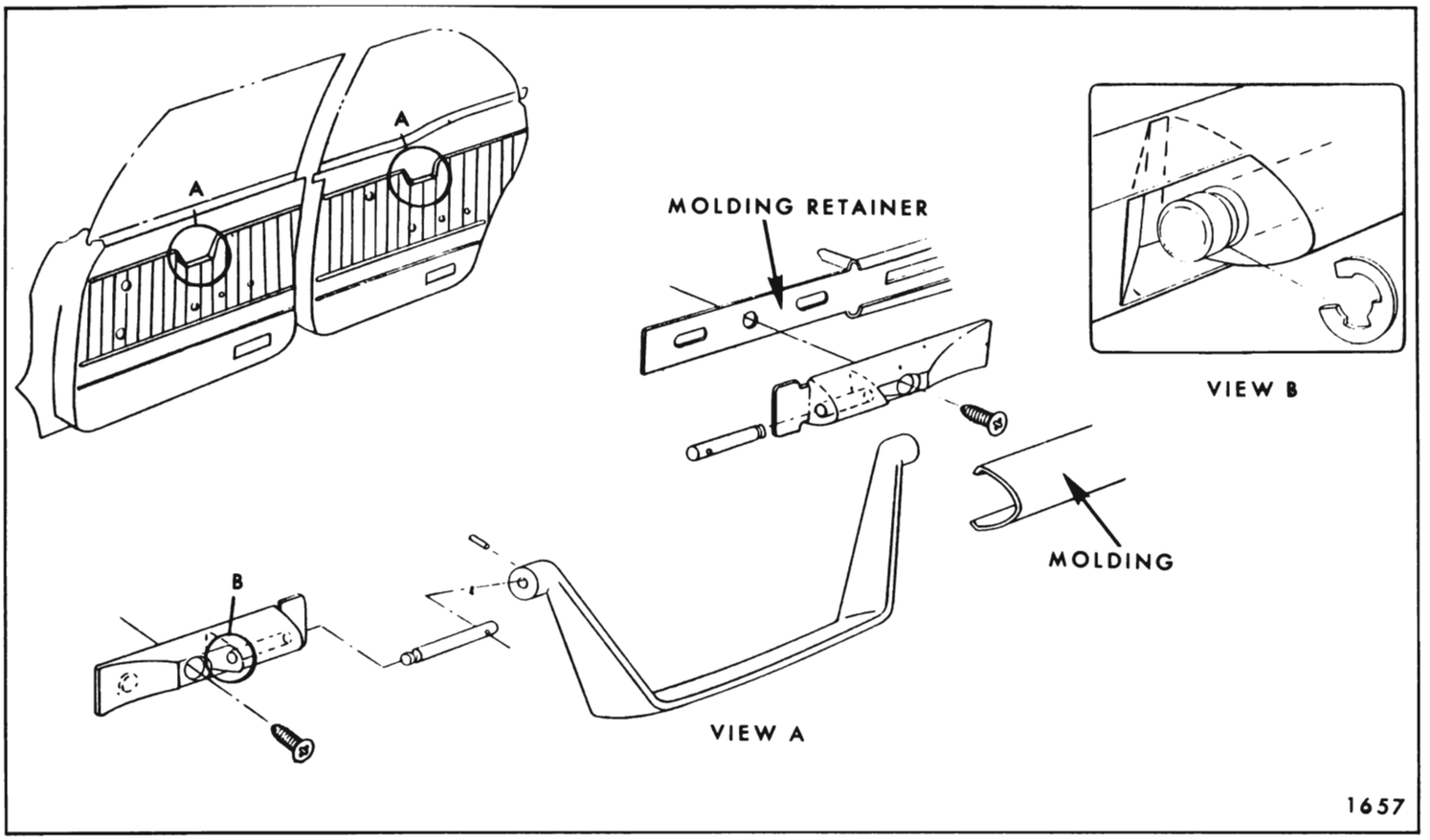

Fig. 7-1—Door Pull Handle Installation - 26239 Style

c. Oldsmobile "C & E" Body Series

d. Buick 48439-69 Styles

e. Buick 49487 with custom trim

Figures 7-1, 7-2, 7-3, 7-4, 7-5, 7-6 and 7-7 are typical of the various types of attachment.

FRONT AND REAR DOOR ARM RESTS

There are two basic types of arm rests; those which are applied to the door after trim pad installation, such as shown in Figure 7-8, and those which are assembled to the trim pad prior to trim pad installation as shown in Figure 7-9.

To remove the applied type shown in Figure 7-8, merely remove the screws inserted through the arm rest base into the door inner panel. To remove the type assembled to the trim pad, remove the trim pad as described in a following procedure and remove the arm rest screws or stud nuts from the outboard side of the trim pad in a bench operation.

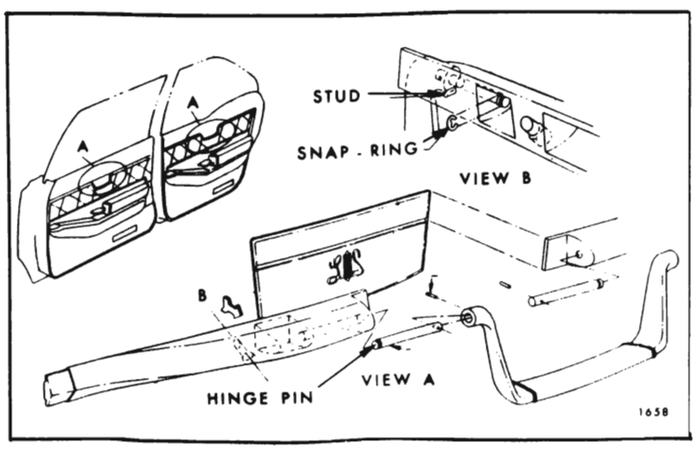

Fig. 7-2—Door Pull Handle Assembly - 38669 Style

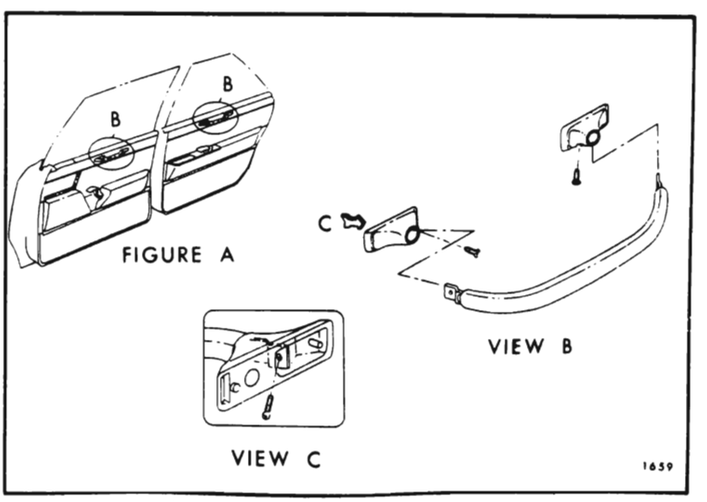

Fig. 7-3—Door Pull Handle Installation - 68200 Series Shown - Other 68000 Series Similar

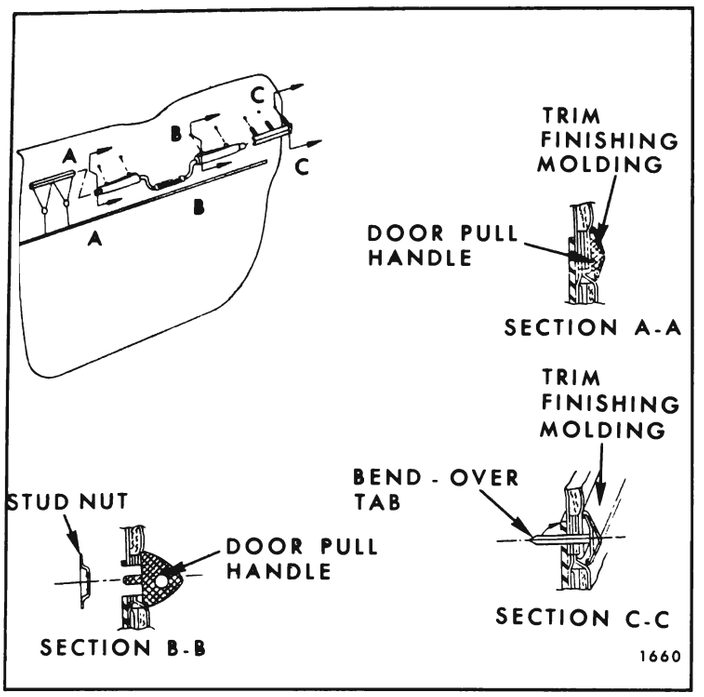

Fig. 7-4—Door Pull Handle Installation - 38000 Series Shown - 39000 Series Similar

Figure 7-6 illustrates the arm rest assembly and pull handle build-up on the 49487 Style with custom trim. Retention of this assembly to trim pad is similar to that shown in Figure 7-9.

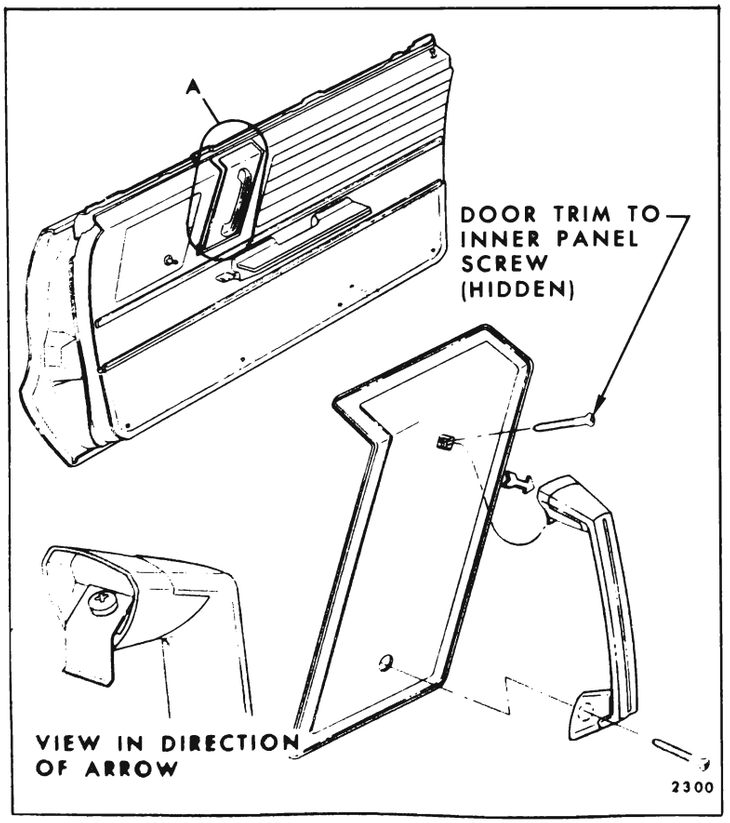

Fig. 7-5—Door Pull Handle Removal - 49487 Style with Standard Trim

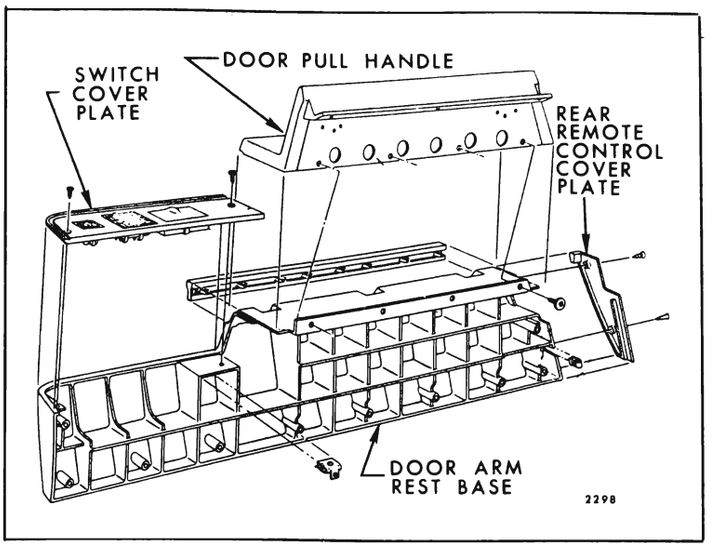

Fig. 7-6—Door Arm Rest and Pull Handle - 49487 Style with Custom Trim

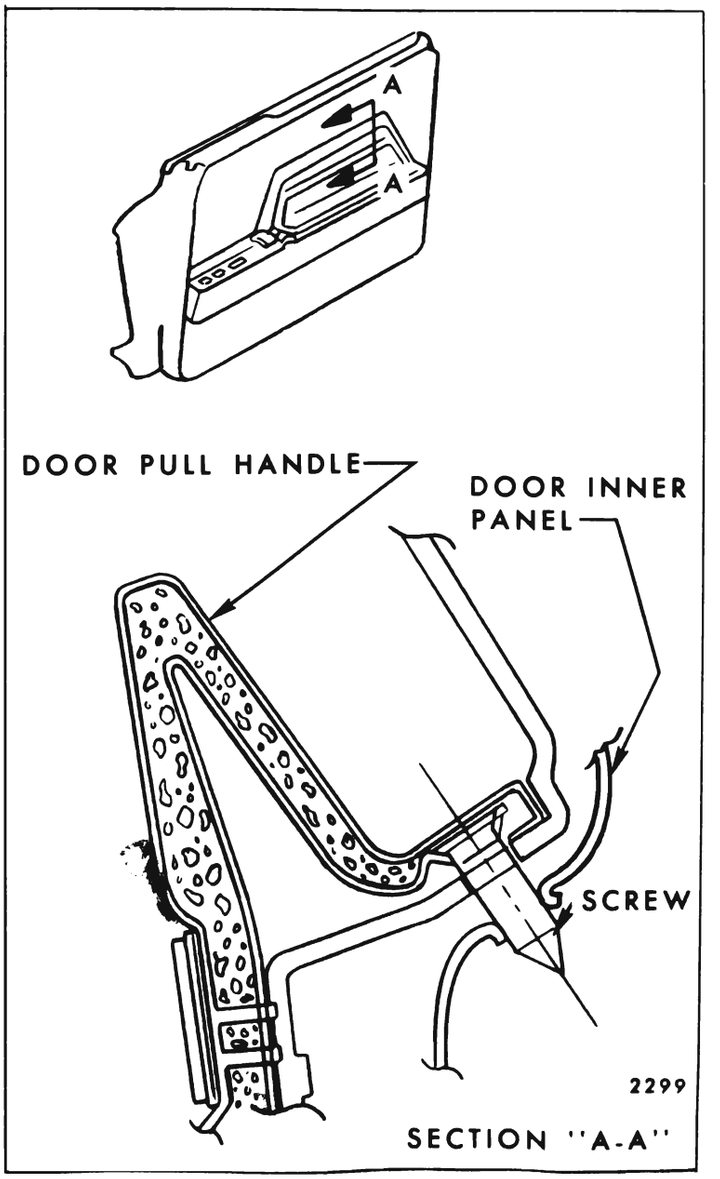

Fig. 7-7—Door Pull Handle Retention - 49487 Style with Custom Trim

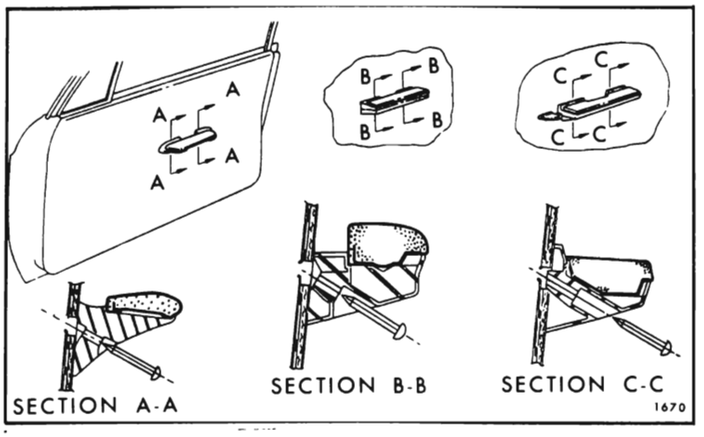

Fig. 7-8—Typical Applied-Type Door Arm Rests

FRONT AND REAR DOOR INSIDE HANDLES

To remove manually operated ventilator and door window inside handles, and door lock remote control handles which are not partially covered by the door arm rest, proceed as follows:

1. Depress door trim assembly sufficiently to permit insertion of tool J-7797 between handle and bearing plate (Fig. 7-10).

2. Push tool to disengage handle retaining spring from spindle and remove bearing plate and handle from door.

3. To install, engage retaining spring on handle and position handle to door at same angle as opposite side door handle; then, press handle until spring engages spindle.

To remove "paddle" type door handles, proceed as follows:

1. On styles with "applied" type door arm rests as shown in Figure 7-8, Section "C-C", remove arm rest as previously described. Then, remove screw securing handle to remote control spindle and remove handle.

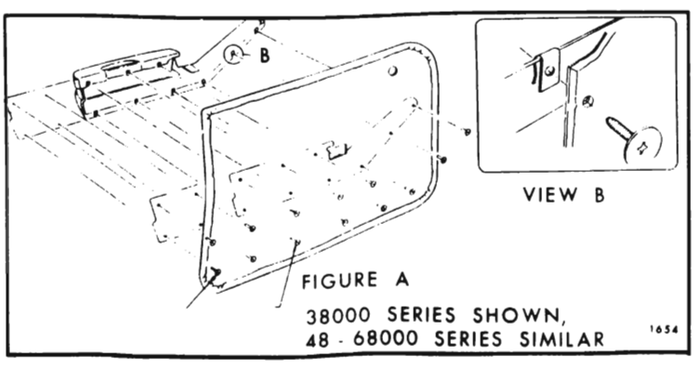

Fig. 7-9—Arm Rest to Door Trim Pad Installation

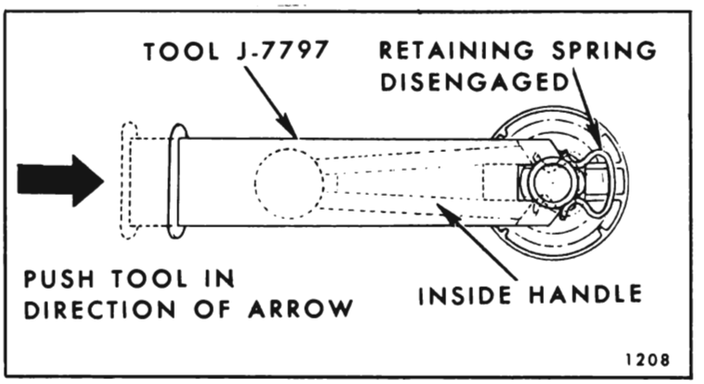

Fig. 7-10—Door Inside Handle Removal

2. On styles with arm rests that are a component part of the door trim assembly as shown in Figure 7-9, it is necessary to remove remote control cover plate (Fig. 7-11) to gain access to remote control handle screw.

NOTE: On 49487 Styles with dual remote control handles, remove switch cover plate to gain access to front handle and remote control cover plate at rear for access to rear handle (Fig. 7-6).

FRONT AND REAR DOOR TRIM ASSEMBLY—ALL "B-C & E" STYLES

The door trim assembly is secured to the door by the trim support return flange which hangs over the door inner panel across the top, and by a combination of retaining nails and screws down the sides and across the bottom.

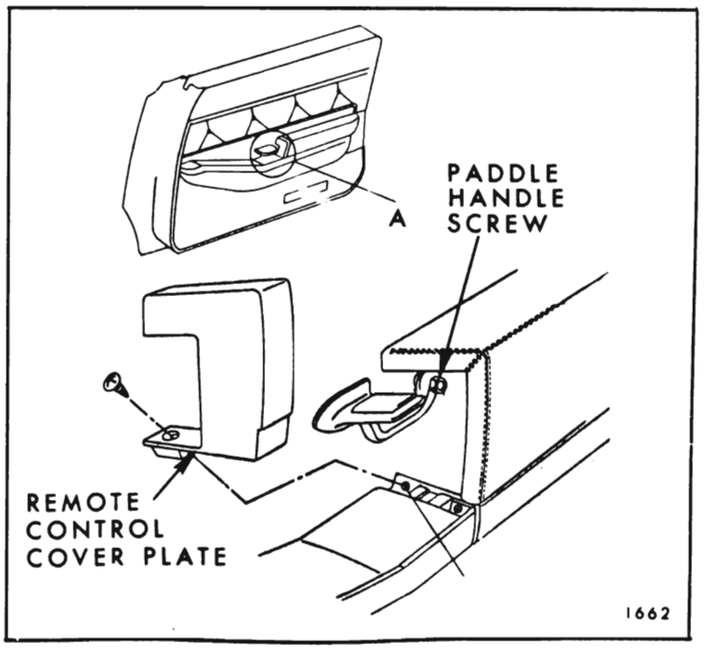

Fig. 7-11—Remote Control Handle and Cover Plate - Front Door Shown - Rear Door Typical

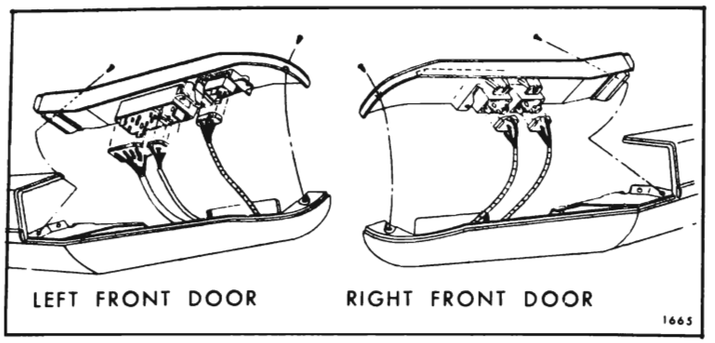

Fig. 7-12—Front Door Arm Rest Switch Cover Assembly

Removal and Installation:

1. Remove all door inside handles as previously described.

2. Remove inside locking rod knob.

3. On styles with door pull handles, remove screws inserted through handle into door inner panel. On some styles, removal of screws removes handle. On other styles, handle will still be retained to trim pad. Refer to "Door Pull Handles" for specific types of retention.

   a. On 26239 Style, screws are hidden by door upper finishing moldings. To expose screws, pry moldings off retainers using a flat-blade tool (Fig. 7-1).

   b. On 49487 Style with custom trim, screws are accessible but partially hidden behind door pull handle (Section "A-A", Fig. 7-7).

   c. On Buick "C" two-door Styles and "E" styles with standard trim, remove pull handle to gain access to trim finishing panel screw hidden under handle (Fig. 7-5).

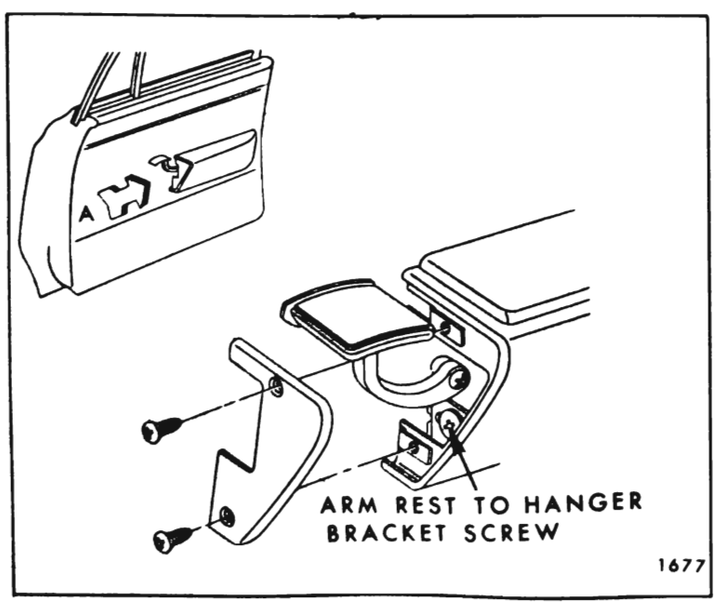

Fig. 7-13—Front Door Arm Rest Base Cap - 68200 Series

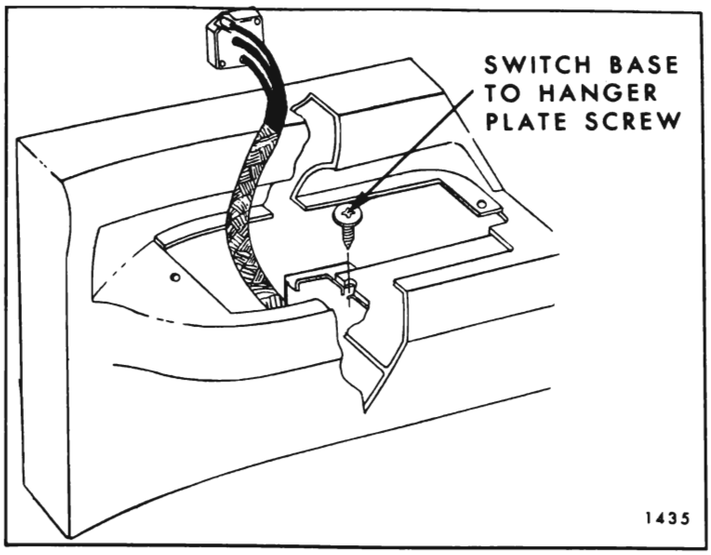

Fig. 7-14—Door Trim Pad Removal - 68200 Series

4. On styles with switch plate located in arm rest as shown in Figure 7-12, remove exposed screws and disconnect switches from wire harness connectors.

5. Remove all exposed screws present under switch plate cover and/or directly under remote control spindle. These screws secure the trim pad to the door hanger plate. (Figs. 7-13 and 7-14 show typical hanger plate attachments.)

6. On styles equipped with arm rest cup, remove screw from cup.

7. Remove all screws present, down sides and along bottom of door trim pad.

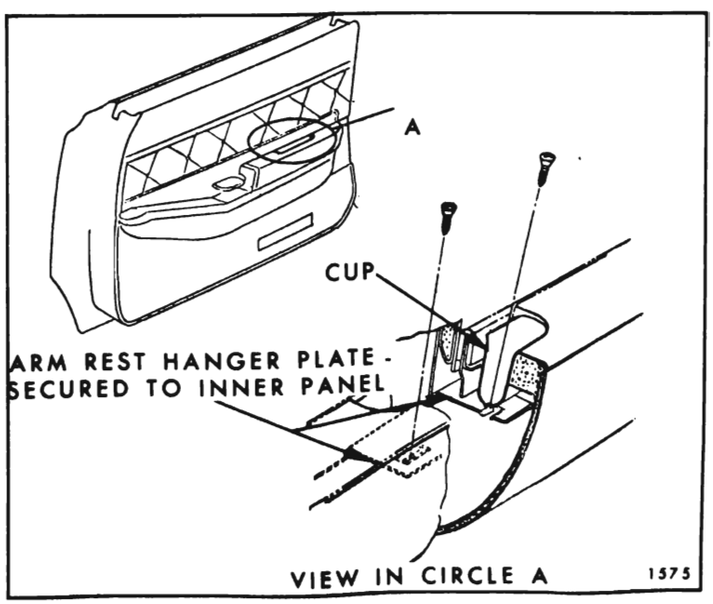

Fig. 7-15—Door Arm Rest Cup Attachment

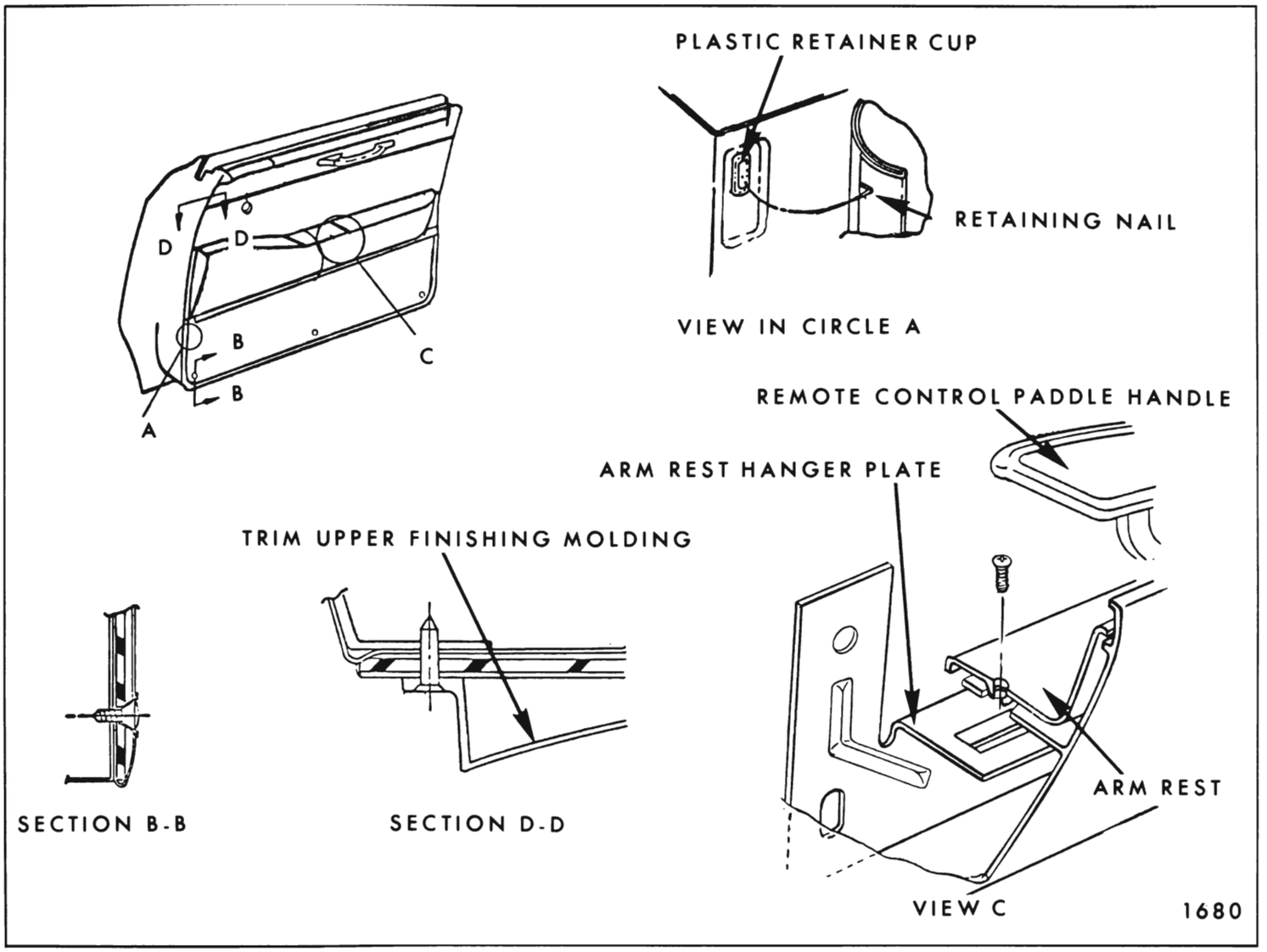

Fig. 7-16—Door Trim Pad Removal

8. Starting at a lower corner, insert tool J-6335 between door inner panel and trim assembly. Working upward, carefully disengage retaining nails from plastic cups inserted in door inner panel. (Fig. 7-16, View "A").

NOTE: Use care not to damage inner panel water deflector.

9. Lift trim assembly upward to disengage it from door inner panel and remove trim assembly.

NOTE: On styles equipped with vacuum door locks and electric window switches located on trim pad, disconnect harness or vacuum hoses at switch on selector valve.

10. To install, reverse removal procedure.

FRONT AND REAR DOOR TRIM ASSEMBLY—ALL "A" STYLES

There are two types of door trim pads utilized on all "A" bodies. On certain styles the front and rear door trim pad is secured to the door inner panel by trim pad retainers at top, retaining clips along both sides and screws at the bottom. Trim pad retainers are attached to the door inner panel by screws. The retaining clips (along sides) are pressed into plastic retainers or cups which fit into slots in the door inner panel. (Fig. 7-17).

On other styles the hang-on door trim pad is used. This trim pad is further secured by attaching screws along the bottom edge and by retaining nails inserted into plastic retaining cups located in the door inner panel.

Removal and Installation:

1. Remove door inside handles and arm rest assembly.

2. At bottom of door, remove screws securing trim assembly to door inner panel.

3. On styles utilizing hang-on type door trim pad, proceed as follows:

   a. With a clean rubber mallet, tap along side of trim pad to help free nails from retainers.

   b. Starting at bottom of trim pad, carefully insert tool J-6335, or a suitable flat-bladed tool, between door trim assembly and door inner panel at retaining nail locations and disengage nails from retainers. Remove door trim pad from door. (See Fig. 7-18).

4. On other styles proceed as follows:

   a. Remove attaching screws along bottom of door trim pad.

   b. Carefully insert tool J-6335, or a suitable flat-bladed tool, between door trim assembly and door inner panel at retaining clip locations and disengage clips from retaining plugs. (See Fig. 7-17).

   NOTE: Broken or damaged retaining clips should be replaced.

   c. Pull top edge of trim pad down slightly to disengage it from the trim pad retainer and remove trim pad from door.

5. On all styles, to install, reverse removal procedure. Exercise care not to disturb inner panel water deflector.

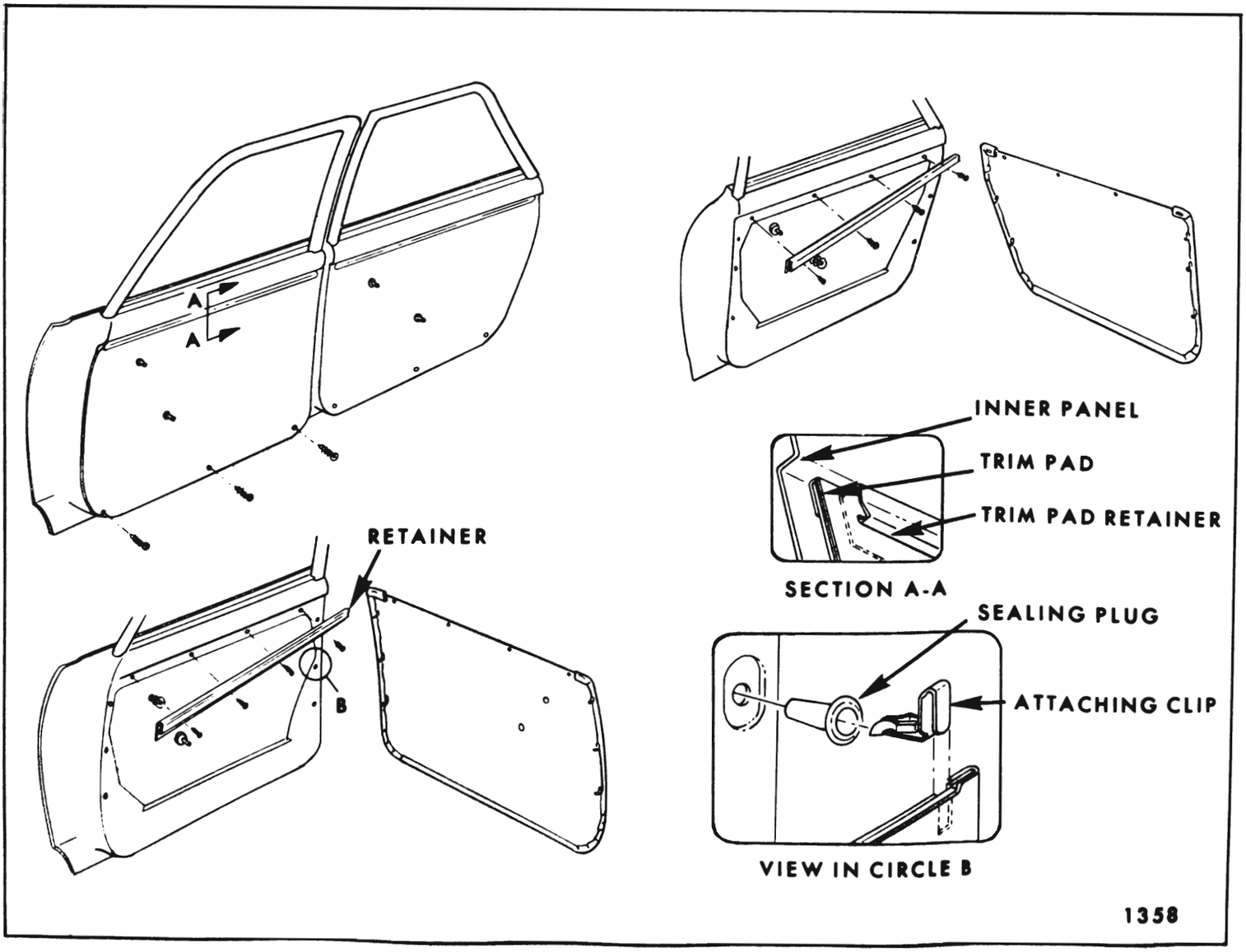

Fig. 7-17—Door Trim Pad Removal

CAUTION: Retaining nails must not pierce back of plastic retainers as waterleaks may develop. For this reason, it is important that PROPER LENGTH repair tab nails (1/2") are used when replacing broken trim retaining nails.

NOTE: If plastic retainers are loose and will not remain engaged in door inner panel, install a 1/2" x 3/4" piece of cloth-backed waterproof body tape over retaining hole in inner panel. Make two slits in tape to form an "X" pattern. Check retainer for a snug fit and if still loose, repeat above operation by installing a second piece of tape over the existing repair. This same procedure can be used to repair waterleaks which develop around perimeter of retainer.

FRONT AND REAR DOOR TRIM ASSEMBLY—ALL "X" STYLES

Both the front and rear door trim assemblies are secured to the door inner panel by trim pad retainers at top and bottom of trim pad and by retaining clips along both sides. The retainers are secured to the door inner panel by screws. The retaining clips are pressed into plastic retainers or cups which fit into slots in the door inner panel.

Removal and Installation:

1. Remove door inside handles and arm rest assembly.
2. Carefully insert tool J-6335, or a suitable flat-bladed tool, between door trim assembly and

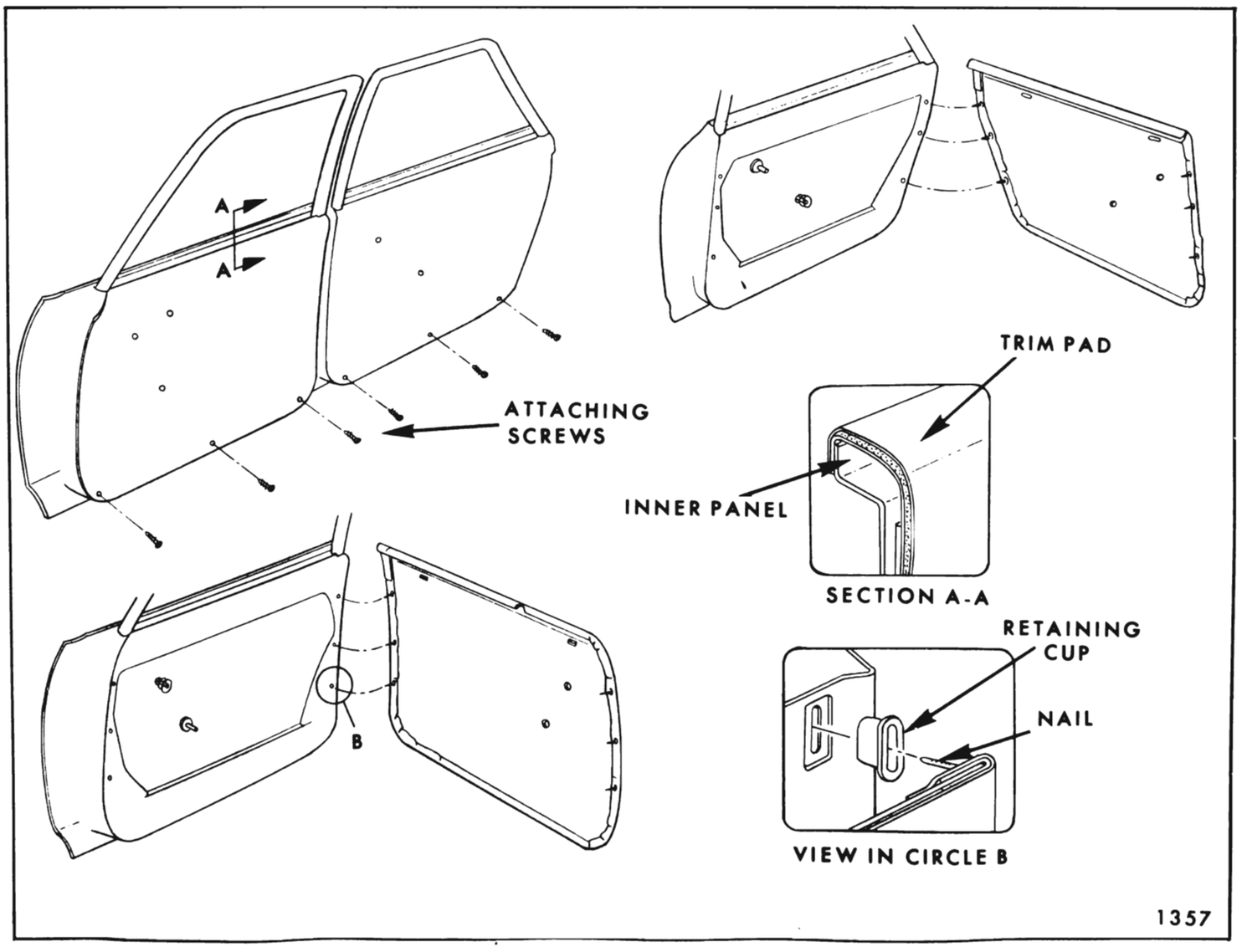

Fig. 7-18—Hang-On Door Trim Pads

door inner panel at retaining clip locations and disengage clips from retaining plugs. (See Figure 7-19).

NOTE: Broken or damaged retaining clips should be replaced.

3. Pull top edge of trim down and slightly inboard to disengage it from the top retainer and then lift trim pad upwards to disengage it from the bottom retainer and remove assembly from door.

CAUTION: Exercise care not to buckle trim pad.

4. To install, reverse removal procedure.

NOTE: Exercise care not to disturb inner panel water deflector.

5. If plastic retaining plugs are loose and will not remain engaged in door inner panel, install a 1/2, x 3/4" piece of cloth-backed waterproof body tape over retaining plug hole and door inner panel. (See Fig. 7-19). Make two slits in tape to form an "X" pattern. Check retainer for a snug fit and, if still loose, repeat above operation by installing a second piece of tape over the existing repair. This same procedure can be used to repair waterleaks which develop around perimeter of retainer.

FRONT AND REAR DOOR TRIM ASSEMBLY—ALL "Z" STYLES

Both front and rear door trim pads are retained by clips across the top and down the sides and by screws across the bottom. The clips are attached to the reverse side of the trim pad and are installed into plastic sealing plugs inserted in piercings in the door inner panel. The screws are installed from the exposed side of the trim pad and are readily accessible for removal.

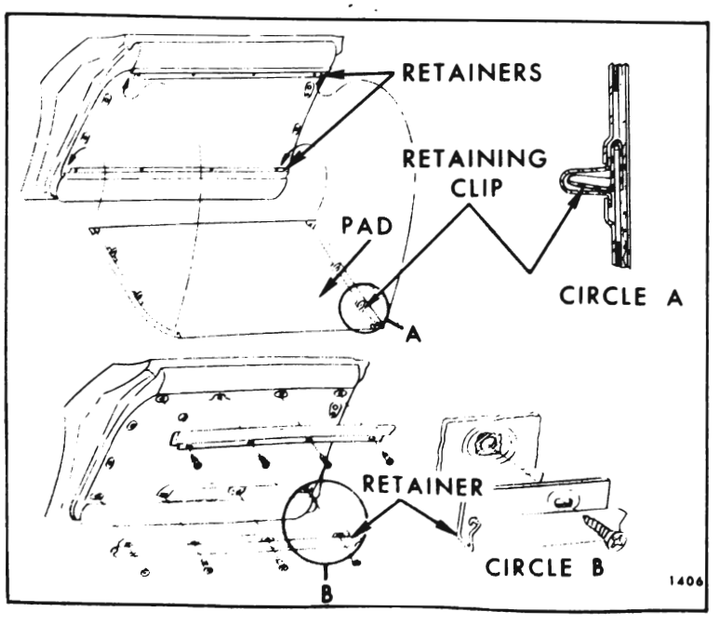

Fig. 7-19—Door Trim Pad Removal

Removal and Installation:

1. Apply masking tape as protective covering to door inner panel painted surfaces adjacent to top and front edges of trim pad.

2. Remove door inside handles and door arm rest as previously described.

3. Carefully insert tool J-6335, or an equivalent flat-bladed tool, between door trim assembly and door inner panel at retaining clip locations and disengage clips from plastic sealing plugs. (Fig. 7-20).

4. Remove screws from across bottom and remove trim pad from door.

5. To install, reverse removal procedure.

FRONT AND REAR DOOR WEATHERSTRIPS—ALL STYLES

Both the front and rear doors use nylon fasteners to retain the door weatherstrips. The fasteners are a component part of the weatherstrip and secure the weatherstrip to the door by engaging piercings

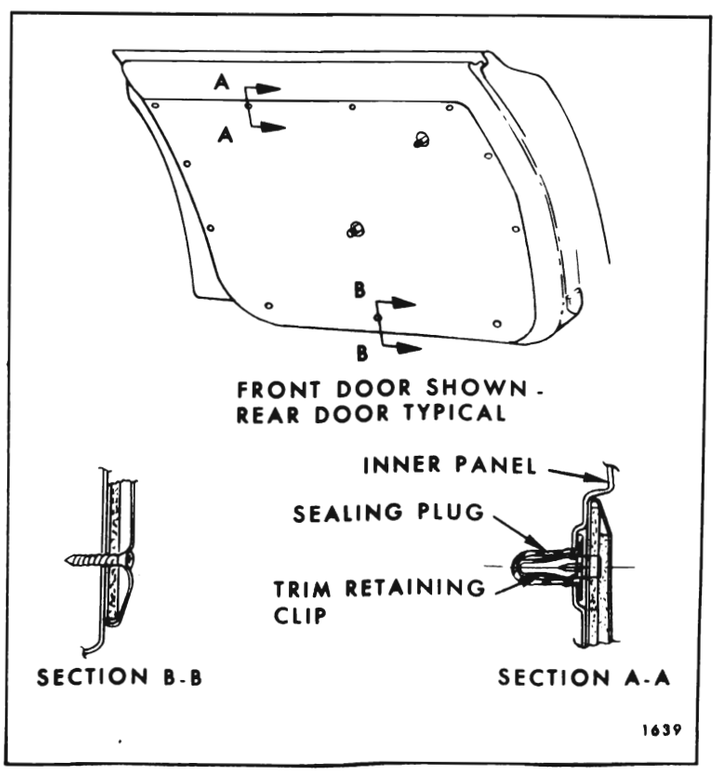

Fig. 7-20—Door Trim Pad Retention

in the door panels. The serrations of the fastener retain the fastener in the piercing and also seal the openings from water entry. (Fig. 7-21).

On "B" Body Sedan Styles, nylon fasteners are used around the entire perimeter of the door. On "A" and "X" Closed Styles, nylon fasteners are used below the belt line only. Weatherstrip adhesive retains the weatherstrip around the door upper frame above the beltline (Fig. 7-22).

In addition to the nylon fastener, "B" Body Sedan Styles use a limited amount of weatherstrip adhesive at the beltline. All styles other than closed styles use plastic fasteners at the belt.

To disengage nylon fasteners from door panel piercings use tool J-21104 or equivalent (Fig. 7-21). This tool permits removal of the weatherstrip without damaging the serrations on the fasteners so that the weatherstrip can be reinstalled if desired.

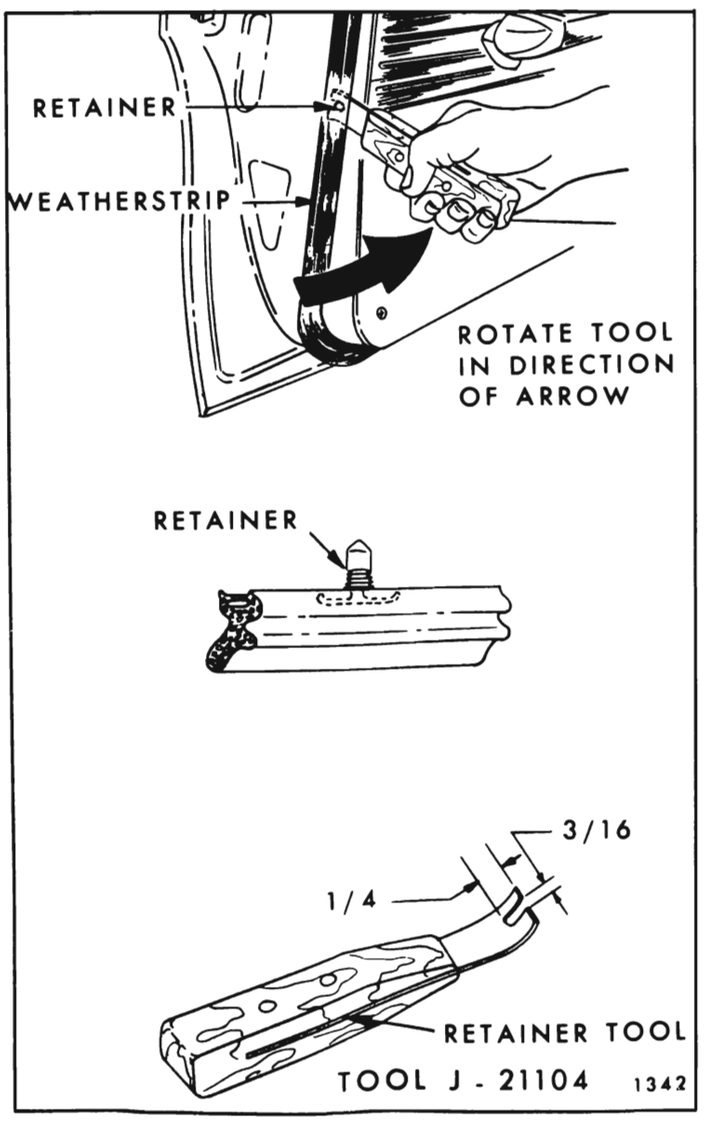

Fig. 7-21—Door Weatherstrip Removal

Although a replacement door weatherstrip will include the nylon fasteners, individual fasteners are available as a service part.

Removal

1. On all hardtop and convertible styles, remove exposed plastic fasteners at beltline. On all "E" Styles and "B-C 39" and "C-69" Style rear doors, remove door trim assembly to gain access to fastener under trim pad (Fig. 7-23).

2. On sedan styles, use a flat-blade tool to break cement bond between door and weatherstrip. On "B" Body Sedan Styles, weatherstrip adhesive is used for a distance of 9" at beltline (Figs. 7-24 and 7-25). On "A & X" Sedan Styles, weatherstrip is retained by weatherstrip adhesive completely around door upper frame (Fig. 7-22).

3. On all styles, use tool J-21104 or equivalent to disengage weatherstrip from door where weatherstrip is retained by nylon fasteners. Nylon fastener usage is below the beltline on all styles, and above the belt only on "B" Body Sedan Styles.

Installation:

1. If previously removed weatherstrip is to be reinstalled, inspect nylon fasteners and replace those that are damaged.

2. Clean off all old weatherstrip adhesive from door.

3. On styles without door upper frames, position weatherstrip to door and install plastic fasteners at front and rear ends of weatherstrip.

4. On sedan styles with door upper frames, position color-coded section of weatherstrip to door as follows:

   a. On front doors, color code should be located at rear upper corner of door upper frame (Fig. 7-24).

   b. On rear doors, color coded section should begin at beltline of door lock pillar and extend upward (Fig. 7-25).

5. Tap nylon fasteners into door piercings using a hammer and blunt caulking tool.

6. On "A and X" Sedan Styles, apply a bead of black weatherstrip adhesive to gutter of door upper frame as shown in section "A-A",

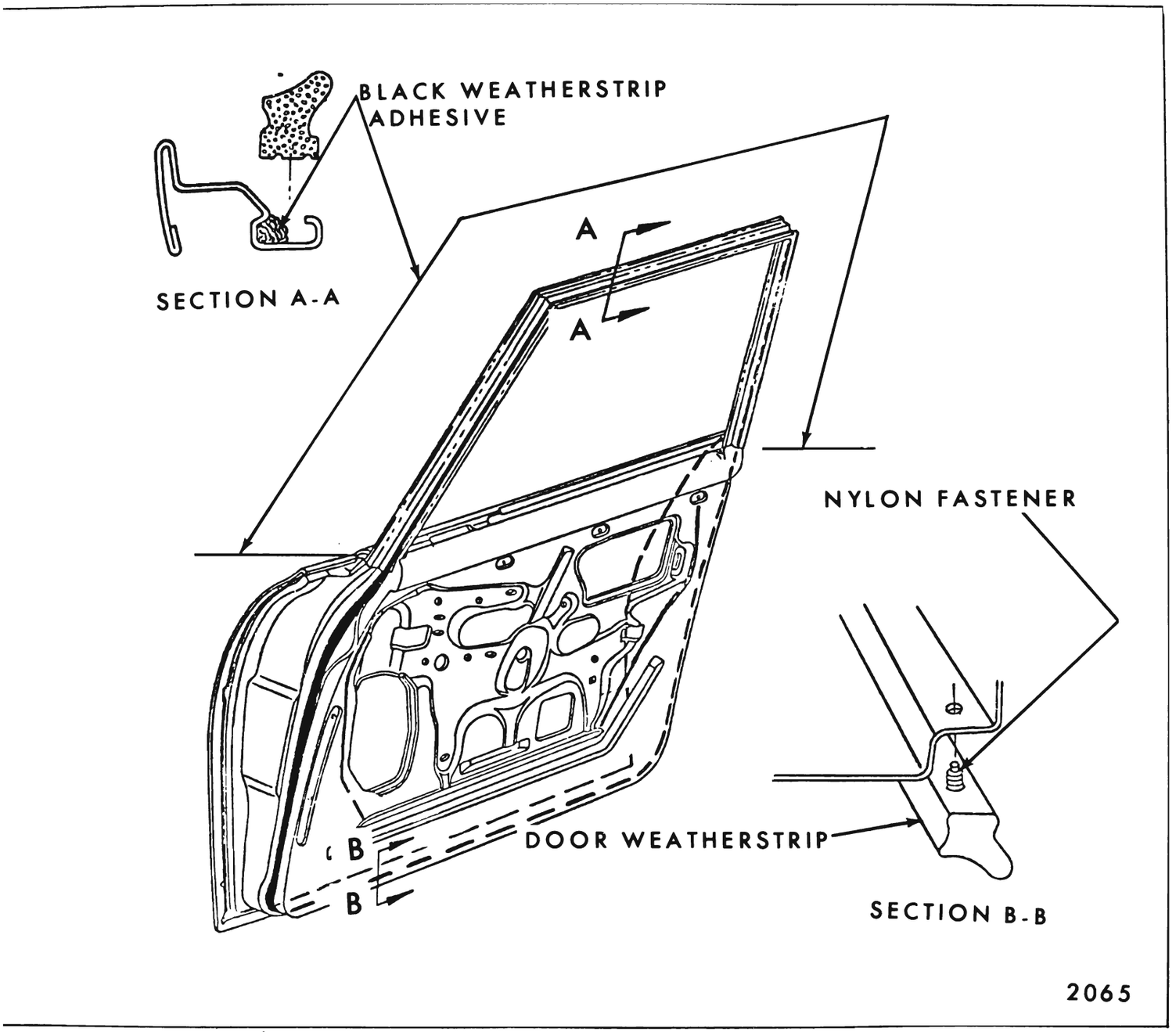

Fig. 7-22—Door Weatherstrip - "A & X" Closed Styles

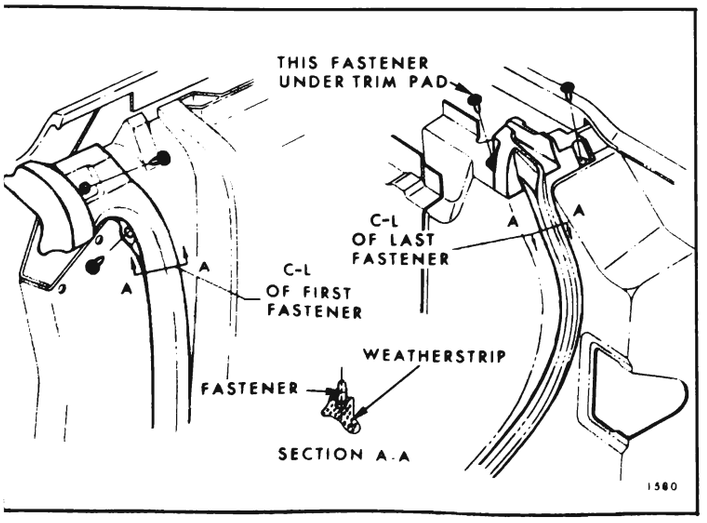

Fig. 7-23—Door Weatherstrip - "B-C 39" Rear Door Shown - "E" Front Door Similar

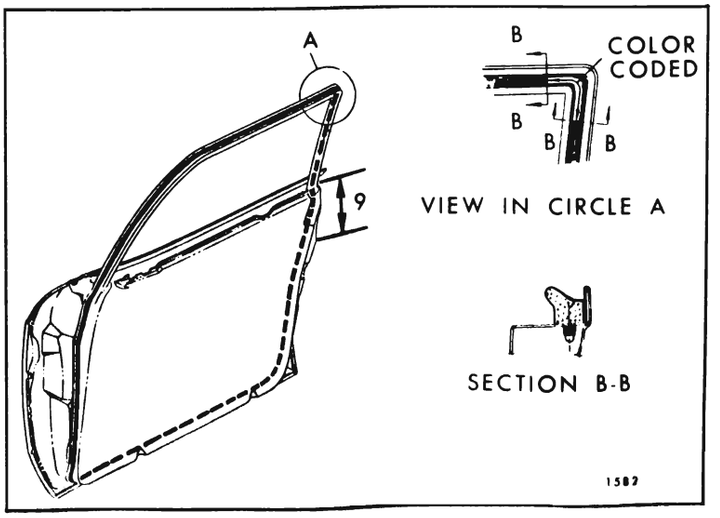

Fig. 7-24—Front Door Weatherstrip

Figure 7-22. Allow adhesive to become tacky, then, install weatherstrip.

7. After all fasteners have been installed on sedan styles, apply weatherstrip adhesive between door and weatherstrip outboard surface at the following locations:

   a. For 5" around rear upper corner of front door upper frame (Circle "A", Figure 7-24) and 9" down door lock pillar starting at beltline.

   b. On sedan rear doors, 9" down both door lock pillar and door hinge pillars starting at beltline (Fig. 7-25).

   c. On door lock pillar on hardtop styles starting at beltline and extending down 2".

   NOTE: If weatherstrip becomes damaged at fastener location and will not retain fastener, remove fastener and secure weatherstrip to door with weatherstrip adhesive. If more than two consecutive fastener locations become damaged, replace weatherstrip.

Although weatherstrip adhesive is specified only at specific locations, it can be used at any point where additional retention is required.

DOOR BOTTOM DRAIN HOLE SEALING STRIPS

Door bottom drain slot sealing strips (dust barriers) are attached to door inner panels over door bottom drain slots to prevent entry of dust and cold air at these locations (Fig. 7-26).

To remove sealing strips, use a flat-blade tool to pry retaining plugs from door inner panel piercings.

To install, insert a blunt pointed tool, such as dull ice pick or scratch awl, into strip retaining plugs and push plugs into door panel piercings.

DOOR BOTTOM AUXILIARY SEALING STRIP—(ALL CADILLAC STYLES AND PONTIAC "B" STYLES)

The door bottom auxiliary sealing strip is secured to the door inner panel with weatherstrip adhesive. The strip is installed after water deflector installation and prior to trim installation. As shown in section "A-A", Figure 7-27, the upper edge of the strip is aligned with the water deflector drain slot. The rolled, semi-bulbublar section of the sealing strip extends down below the door trim pad when the trim is installed and fills the opening between the door and door sill plate.

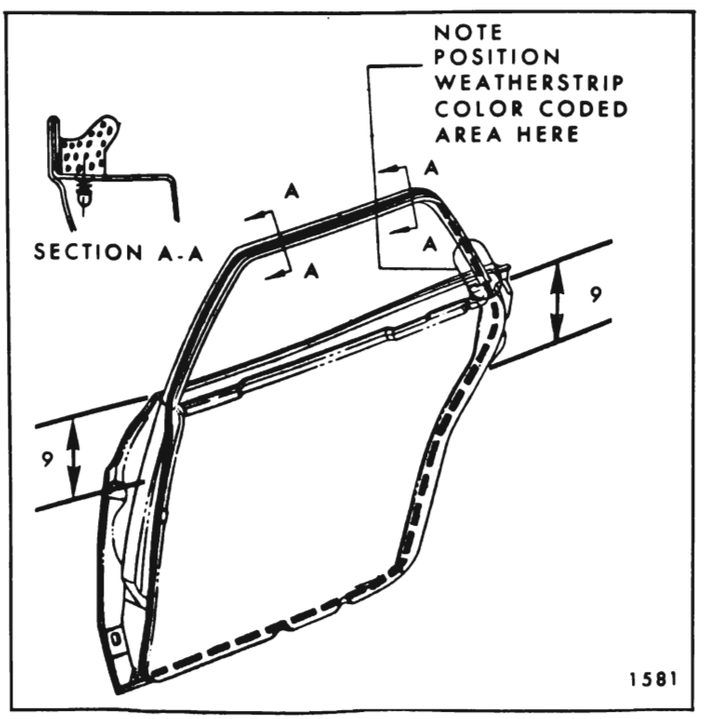

Fig. 7-25—Rear Door Weatherstrip

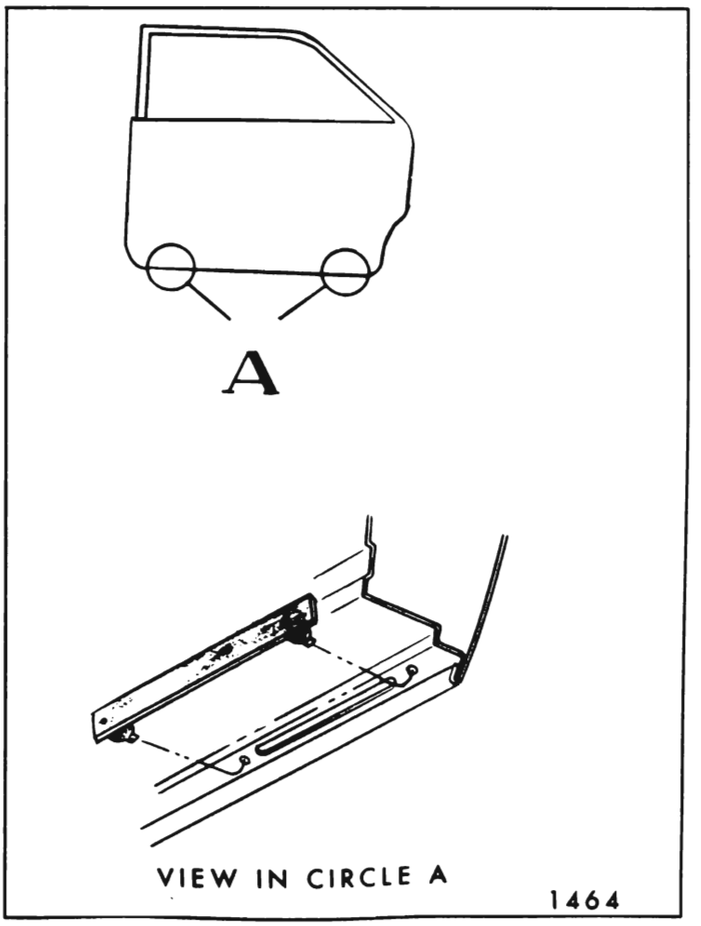

Fig. 7-26—Door Bottom Drain Hole Sealing Strips

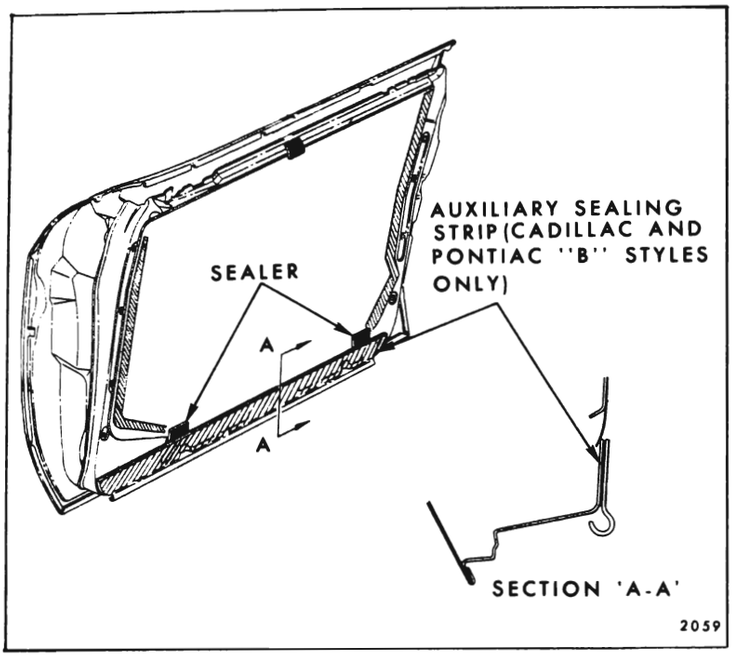

Fig. 7-27—Door Inner Panel Sealing

FRONT AND REAR DOOR WATER DEFLECTORS

A waterproof paper deflector is used to seal the door inner panel and prevent entry of water into body. The deflector is secured by a string loaded sealing material along both front and rear edges and by the application of waterproof sealing tape at front and rear lower corners. Whenever work is performed on front or rear doors where the paper water deflector has been disturbed, the deflector must be properly sealed and taped to the inner panel to prevent serious waterleaks. It is important that all service personnel performing door hardware adjustments or sealing operations be aware of the importance of using the specified material and recommended removal and installation or replacement procedures. For service sealing, body caulking compound is recommended if additional sealing material is required.

When access to the inner panel is required to perform service operations, the deflector may be completely or partially detached from the inner panel. If the existing water deflector is damaged, so that it will not properly seal the door, replacement of the deflector is required.

The following procedure covers complete removal and installation of the water deflector. If only partial removal of the deflector is required, perform only those steps which are necessary to expose the required area of the door inner panel.

Removal

1. Remove door trim assembly.
2. Remove waterproof body tape securing top of water deflector to door inner panel.
3. Using a flat blade tool such as a putty knife, carefully break cement bond between water deflector and door inner panel down both sides of deflector. Make certain tool blade is between inner panel and string that is imbedded in sealer (Fig. 7-27).
4. When seal has been broken down both sides of deflector, carefully remove tape from inner panel at lower corners of water deflector. Disengage water deflector from inner panel drain slot and remove deflector. On Cadillac Styles and Pontiac "B" Styles it will be necessary to partially remove door bottom auxiliary sealing strip to permit removal of tape at bottom of deflector (Fig. 7-27).

Installation:

1. Inspect water deflector and, where necessary, repair any tears or holes with waterproof body tape applied to both sides of deflector.
2. If a new water deflector is to be installed, use old water deflector as a template. Trim new deflector to proper size and cut holes for door inside hardware. If old sealer does not effect a satisfactory seal, apply a bead of body caulking compound (approximately 3/16" diameter) to inner panel at unsealed areas.
3. Position water deflector to door inner panel and insert lower edge of deflector in retaining slot. Then firmly roll or press edges of deflector to obtain a good bond between deflector and door inner panel.

   NOTE: On styles using polyethylene coated paper, black shiny side should be against inner panel.
4. Seal lower corners of deflector by re-applying previously removed tape or new pieces of 2" or 2 1/2" water proof body tape.
5. On styles with door inner panel hardware attachments that are outboard of water deflector, seal attaching bolt head and panel piercing with body caulking compound.

SPRING CLIPS

A spring clip is used to secure remote control connecting rods and inside locking rod connecting

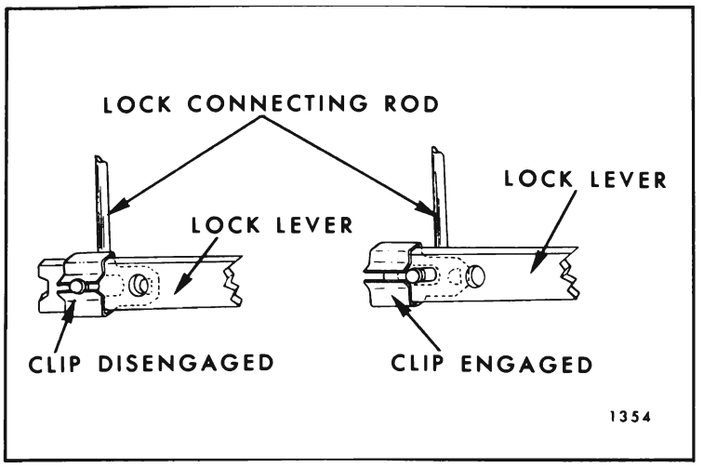

Fig. 7-28—Door Lock Spring Clip

links to door levers. A slot in the clip provides for disengagement of the clips, thereby, facilitating detachment of linkage.

To disengage a spring clip, use a screwdriver, or other suitable tool, to slide clip out of engagement (See Fig. 7-28).

FRONT AND REAR DOOR OUTSIDE HANDLE ASSEMBLY—ALL STYLES

Removal and Installation:

1. Raise door window. Remove door trim assembly and detach upper rear corner of inner panel water deflector sufficiently to gain access to door outside handle attaching screws (Fig. 7-29).
2. Remove screws through access hole and door handle and gaskets from outside of body.

   NOTE: On 68069 and 68169 Styles it is necessary to remove rear door ventilator regulator

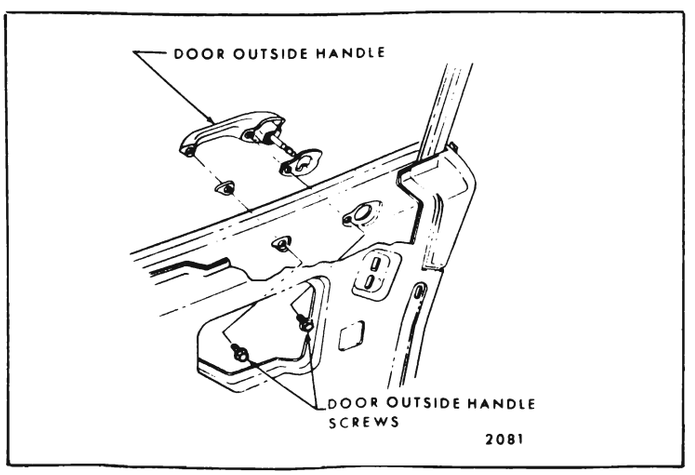

Fig. 7-29—Door Outside Handle Removal

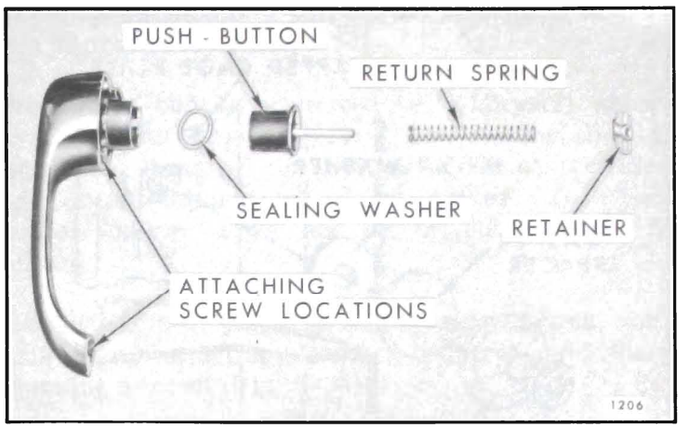

Fig. 7-30—Front Door Outside Handle

as described in the rear door section in order to remove rear door outside handle.

3. To install, reverse removal procedure.

DOOR OUTSIDE HANDLE DISASSEMBLY—ALL STYLES

1. Remove door outside handle as previously described.
2. Depress retainer slightly and turn 1/4 turn either direction. Remove retainer, spring, push button and shaft, and sealing washer from handle (Fig. 7-30 for front door handles, Fig. 7-31 for rear door handles).

   NOTE: Parts are serviced as shown in the illustrations; separate components for the front door handle, and a push button, spring, and retainer assembly for the rear door handle except on "E" Body Styles. On "E" Styles the front door push button, spring, and retainer are serviced as an assembly.

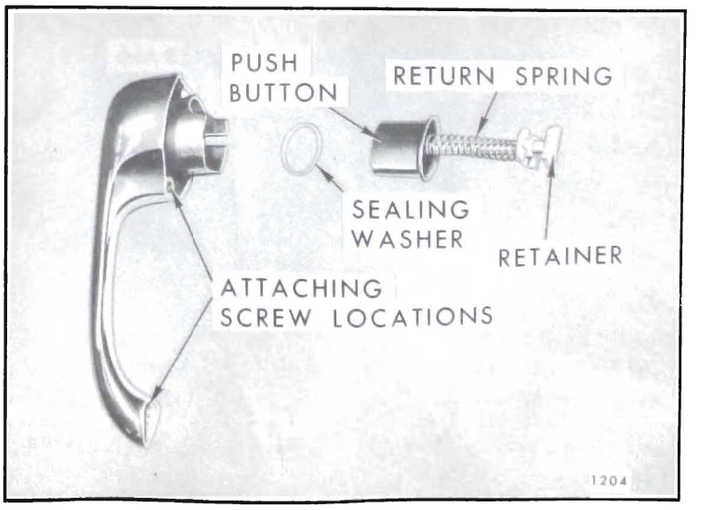

Fig. 7-31—Rear Door Outside Handle

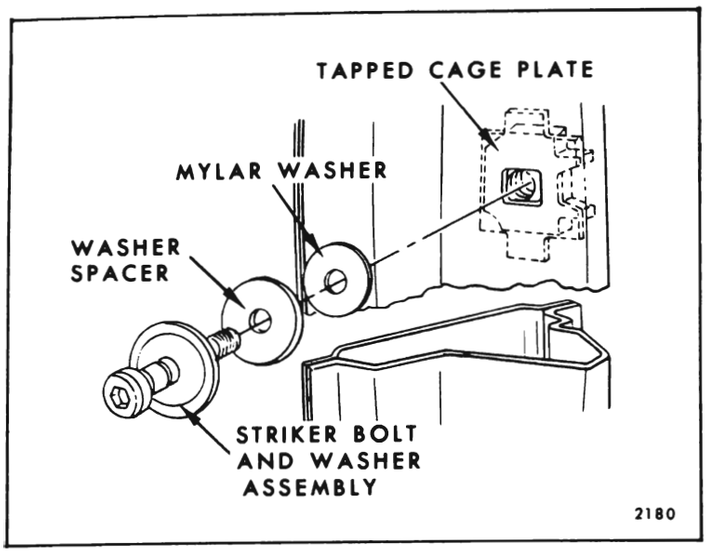

Fig. 7-32—Door Lock Striker Installation

FRONT AND REAR DOOR LOCK STRIKERS—ALL STYLES EXCEPT "X" BODY

The front and rear door lock striker consists of a single metal bolt and washer assembly that is threaded into a tapped, floating cage plate located in the body lock pillar. With this design, the door is secured in the closed position when the door lock fork-bolt snaps-over and engages the striker bolt.

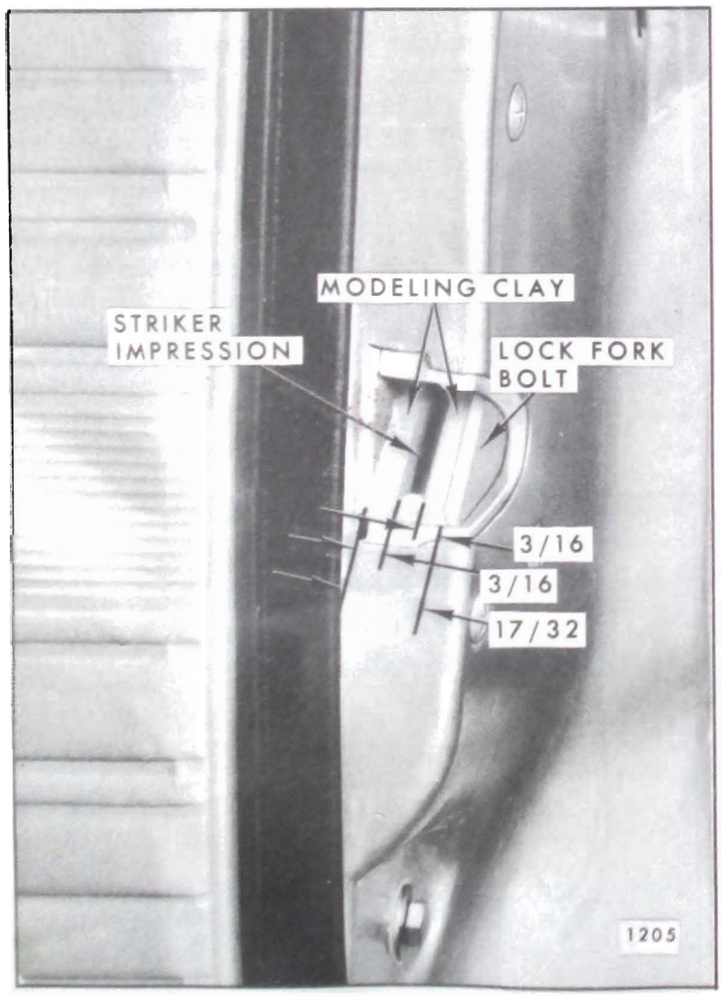

Fig. 7-33—Lock to Striker Engagement

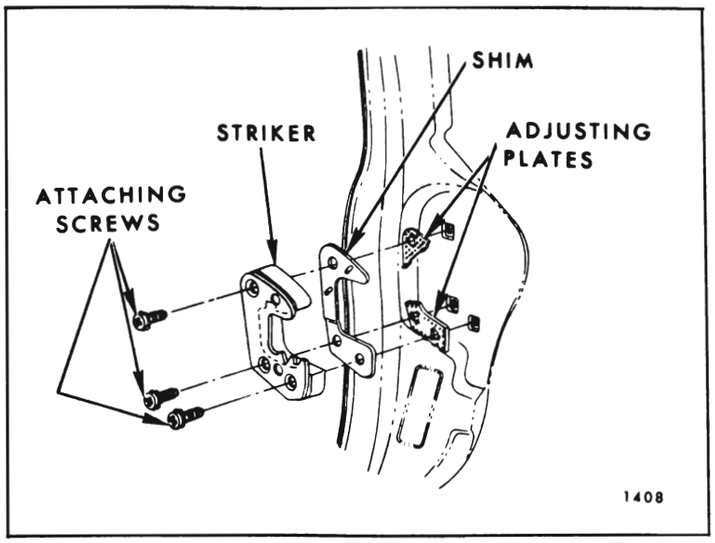

Fig. 7-34—Door Lock Striker Installation

Removal and Installation:

1. Mark position of striker on body lock pillar using a pencil.

2. Insert a 5/16" wrench into hex-head fitting in head of striker bolt and remove striker (Fig. 7-32).

3. To install, reverse removal procedure. Make certain striker is positioned within pencil mark. Also, make certain that paint protecting plastic washer is installed (Fig. 7-32).

   IMPORTANT: Whenever a door has been removed and reinstalled or realigned, the door should not be closed completely until a visual check is made to determine if lock fork-bolt will correctly engage with striker.

Adjustments

1. To adjust striker up or down, or in or out, loosen striker bolt and shift striker as required; then tighten striker.

2. To determine if striker fore or aft adjustment is required, proceed as follows:

   a. Make certain door is properly aligned.

   b. Apply modeling clay or body caulking compound to lock bolt opening as shown in Figure 7-33.

   c. Close door only as far as necessary for striker bolt to form an impression in clay

or caulking compound as shown in Figure 7-33.

CAUTION: Do not close door completely. Complete door closing will make clay removal very difficult.

d. Measure the impression in the clay as follows: Striker head should be centered fore and aft as shown. Although 3/16" is shown as desired measurement on both sides of striker head, a tolerance of plus or minus 1/32" is allowed. The following spacers are available as service parts and can be used individually or in combination to achieve the desired alignment.

5/64" spacer - Part #4469196

5/32" spacer - Part #4469197

1/4 " spacer - Part #4469194

5/16" spacer - Part #4469195

FRONT AND REAR DOOR LOCK STRIKERS—"X" BODY STYLES

As shown in Figure 7-34, the door lock striker is secured to the center pillar or body lock pillar by cross-recessed attaching screws. By loosening the screws the striker can be adjusted up-or-down or in-or-out. By adding or subtracting shims, the striker can be adjusted fore or aft.

Removal and Installation:

1. With a pencil, mark position of striker on body pillar.
2. Remove door lock striker attaching screws and remove striker and adjusting plates from pillar (Fig. 7-34).
3. Prior to installation, seal all striker plate attaching screw clearance holes with body caulking compound.
4. Apply a 1/8" bead of body caulking compound around entire back surface of striker plate.
5. Place striker and adjusting plates within scribe marks on pillar and install striker plate attaching screws.

CAUTION: Whenever a door has been removed and installed or realigned, the door SHOULD NOT be closed completely until a visual check is made to determine if lock extension will engage in striker notch. A single shim is installed behind the striker assembly in production (Fig. 7-34).

This shim can be removed or additional shims (available as service parts) can be installed if required. Removal or addition of shims provides fore or aft adjustment of the striker. To adjust striker up or down and in or out, proceed as follows:

Loosen striker plate attaching screws and shift striker and adjusting plates as required and tighten attaching screws (Fig. 7-34).

SIDE ROOF RAIL WEATHERSTRIP AND RETAINER

The side roof rail weatherstrip is cemented to a side roof rail weatherstrip retainer, which, in turn, is secured with screws to the side roof rail. The adhesive that retains the weatherstrip also protects against water entry between the retainer and weatherstrip. A saturated polyurethane foam sealing strip prevents water entry between the retainer and side roof rail.

Removal—("17-37-39-57 and C-69" Styles)

1. Remove plastic fasteners at front and screw at rear of side roof rail weatherstrip. On "C-69" styles, plastic fasteners are used at front of front door side rail weatherstrip and screw at rear of rear door side rail weatherstrip (Fig. 7-35 for "17-37-39 and 57" Styles, Fig. 7-36 for "C-69" Styles).
2. While carefully pulling weatherstrip out of retainer, simultaneously break cement bond between weatherstrip and weatherstrip retainer using a flat-blade tool.
3. With weatherstrip removed, screws securing weatherstrip retainer to side roof rail are exposed. Remove screws to remove side roof rail weatherstrip retainer (Fig. 7-39).

Removal—(Chev, "47" Style, Buick—Oldsmobile "87" Styles)

1. At front of weatherstrip, disengage plastic fasteners from front body hinge pillar (Fig. 7-37 and 7-38).
2. Remove screw inserted through weatherstrip into side roof rail at rear of weatherstrip where it joins quarter window run channel.
3. Starting at front body hinge pillar, carefully pull weatherstrip out of retainer while simultaneously using a flat blade tool to break cement bond between retainer and weatherstrip.

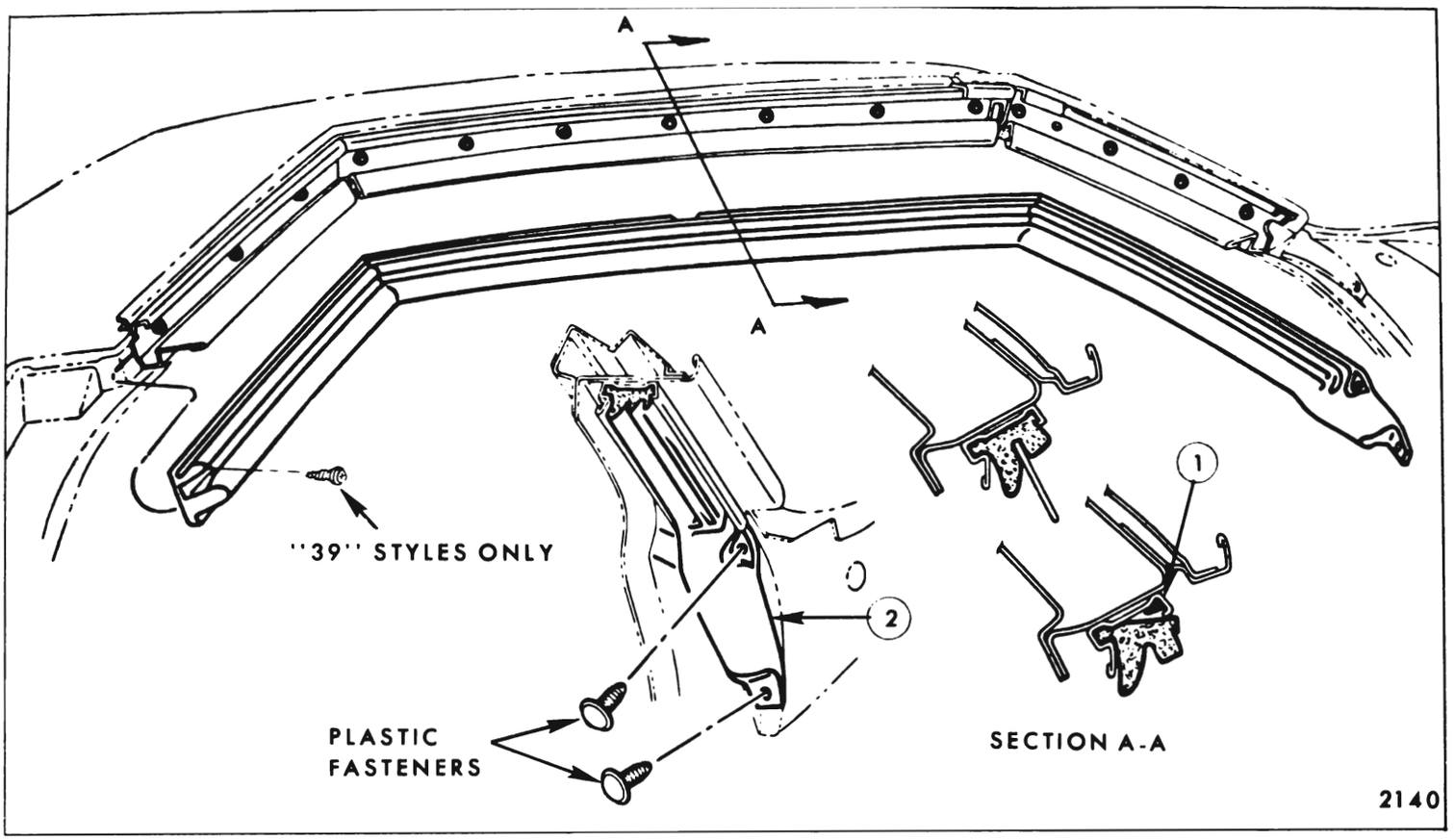

Fig. 7-35—Side Roof Rail Weatherstrip - "17-37-39 and 57" Styles

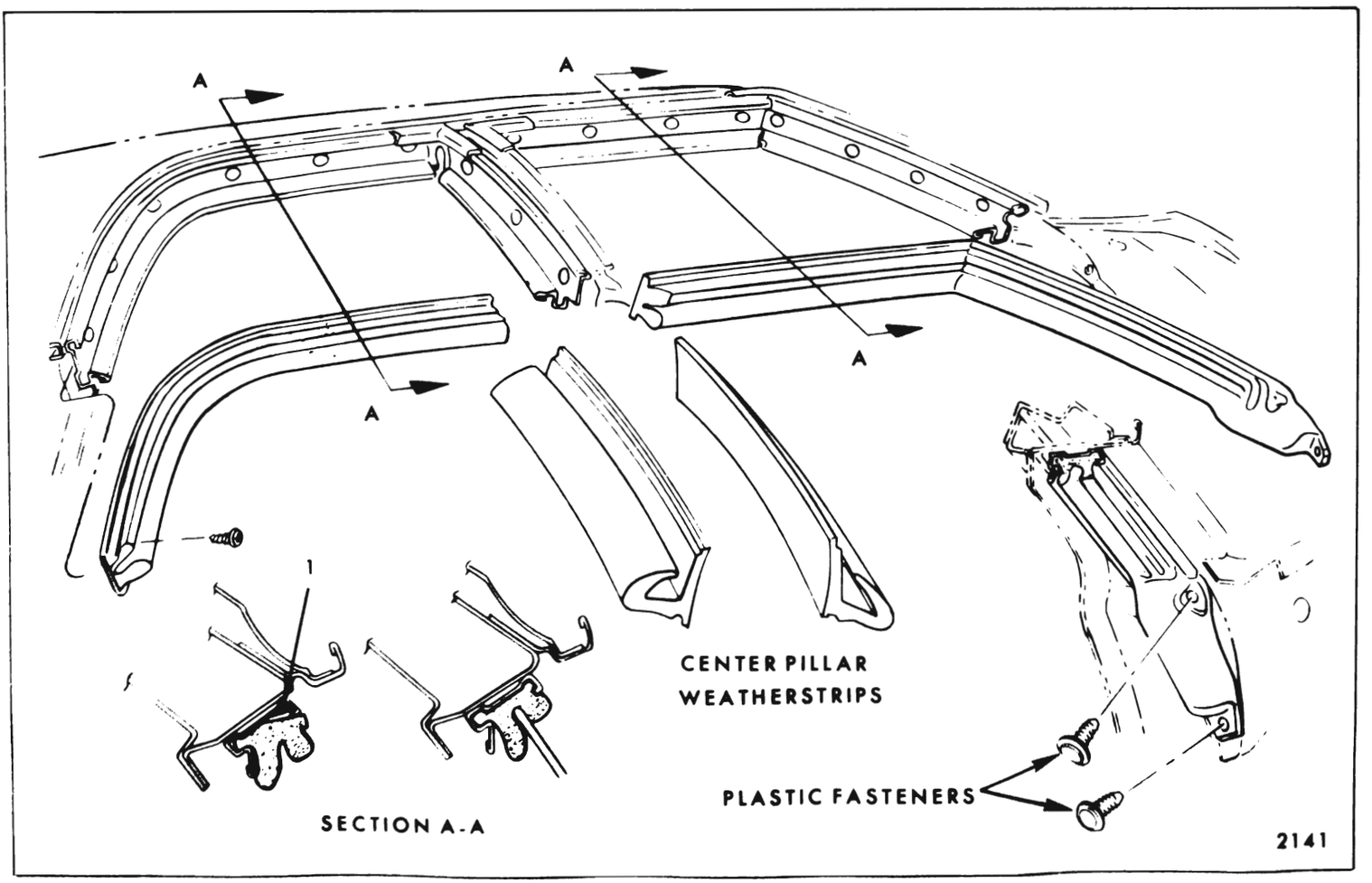

Fig. 7-36—Side Roof Rail and Center Pillar Weatherstrips - "C-69" Styles

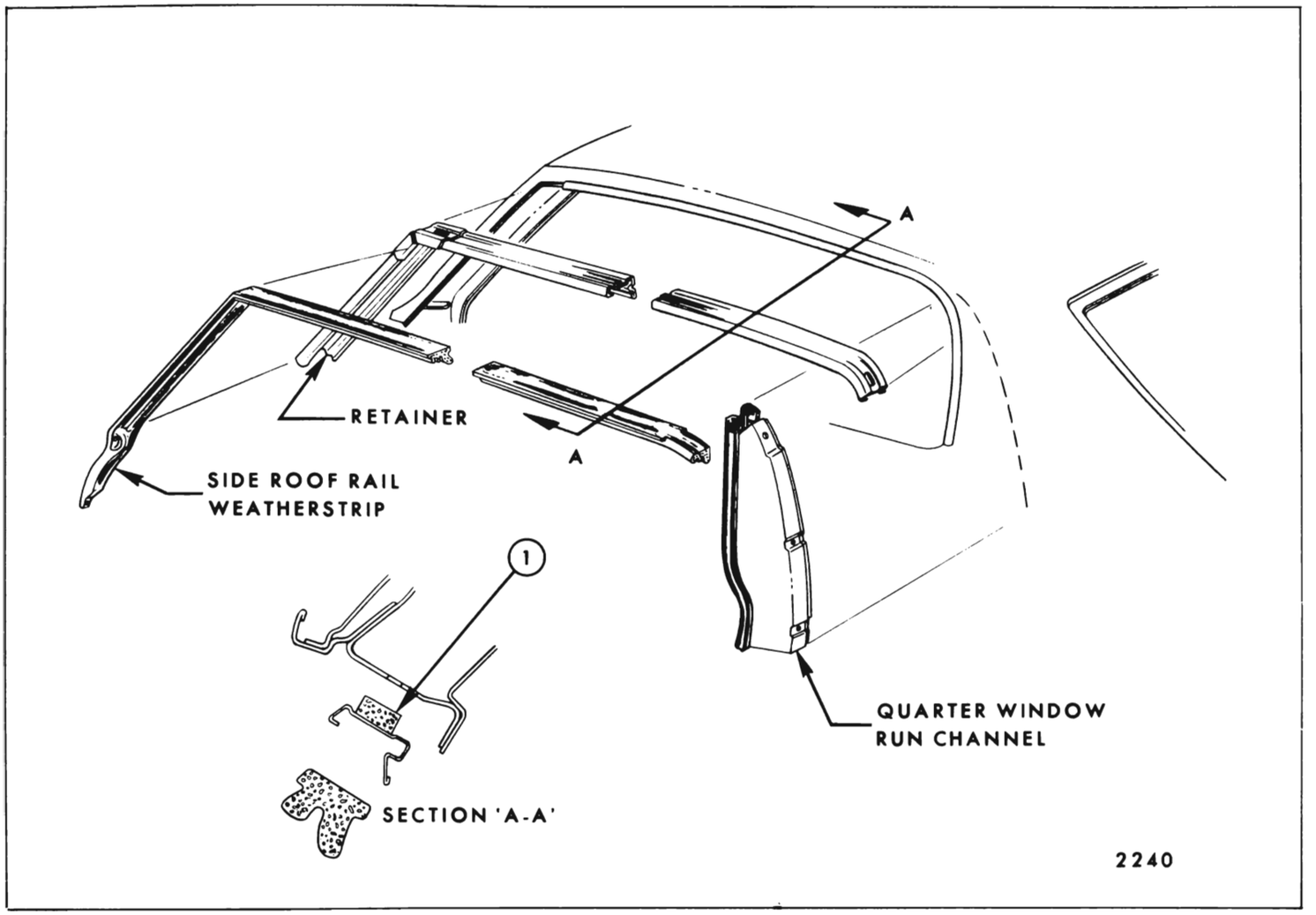

Fig. 7-37—Side Roof Rail Weatherstrip and Retainer - "B-47" Styles

4. On "87" Styles only, carefully break cement bond at butt joint of weatherstrip and quarter window rear run channel and remove weatherstrip.

5. If retainer is to be removed, remove attaching screws and pull retainer forward.

Installation (All Styles)

1. If retainer were removed, remove and discard saturated polyurethane foam sealing strip from side roof rail weatherstrip retainer and/or side roof rail. ("1", Fig. 7-38 and 7-37 "E & B" Styles shown, others similar).

2. Scrape off any excess black weatherstrip adhesive from weatherstrip retainer.

3. Apply a continuous bead of a pumpable type body caulking compound to surface of retainer that mates with side roof rail ("1", Fig. 7-39). Apply bead outboard of attaching screw holes.

4. Position retainer to body and install attaching screws. Prior to installing weatherstrip, reinstall door glass stabilizer clip(s) in retainer using retainer screws for retention. (Fig. 7-39 for all styles except "C-69", Fig. 7-36 for clip locations on "C-69" Styles). At front door opening, install clip just forward of front door window upper rear corner. On "C-69" Style rear doors, install clip just rearward of rear door window front upper corner.

5. Apply a bead of black weatherstrip adhesive to outboard flange of weatherstrip retainer ("1", Fig. 7-35 & 7-36). Extend adhesive down front body hinge pillar to seal lower front end of weatherstrip that is retained with plastic fasteners ("2", Fig. 7-35).

6. Position front end of weatherstrip to body and install plastic fasteners. Then, using a flat-blade tool, begin engaging weatherstrip with retainer as shown in Section "A-A", Figures 7-35 and 7-36). Engage inboard lip of weatherstrip first, then, outboard lip.

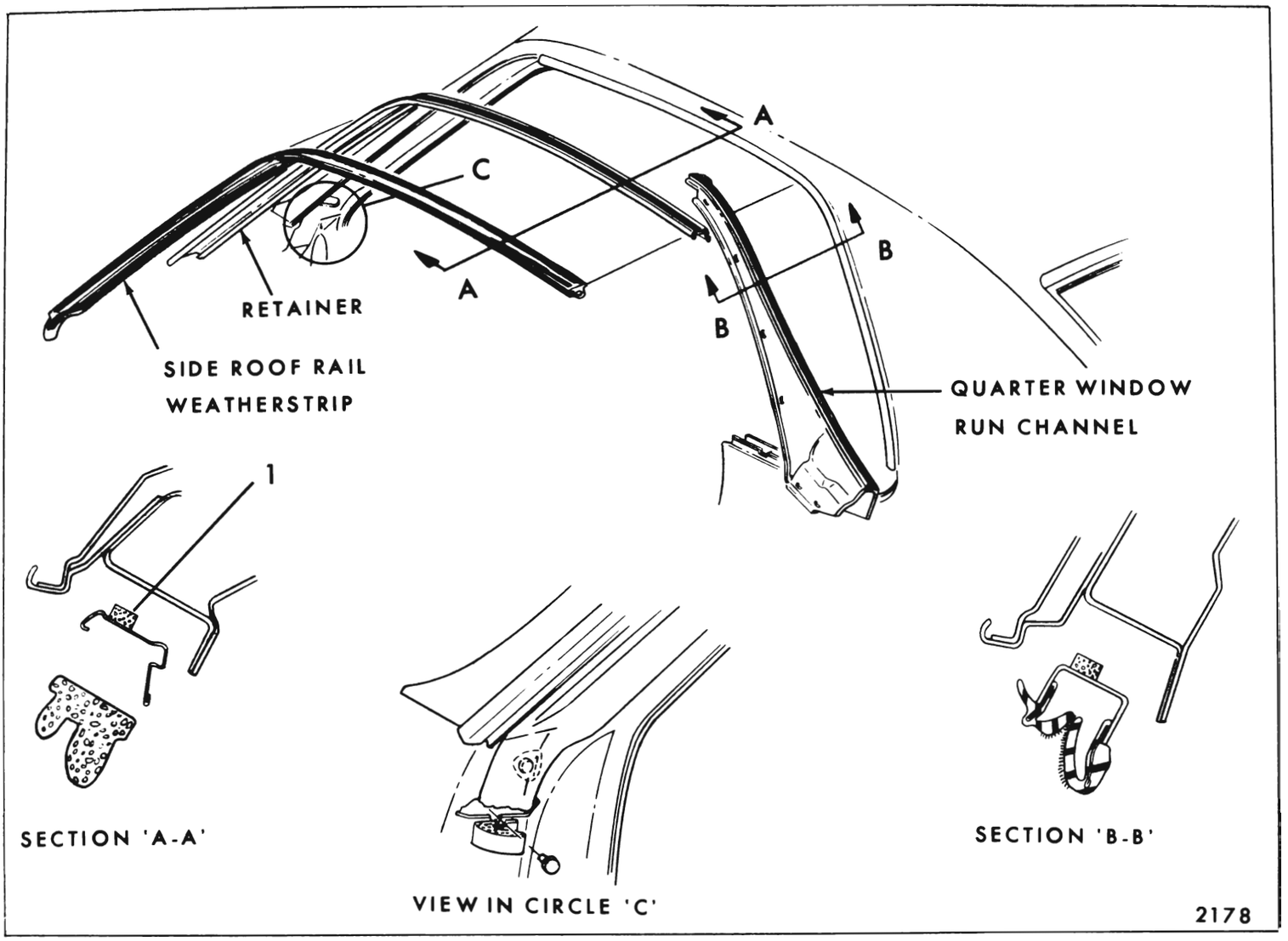

Fig. 7-38—Side Roof Rail Weatherstrip and Retainer - "E" Styles

7. After weatherstrip has been installed along length of retainer on "39" and "C-69" Style, install screw at rear end of weatherstrip (Figs. 7-35 and 7-36).

SIDE ROOF RAIL WEATHERSTRIP ADJUSTMENT

The side roof rail weatherstrip can be adjusted either inboard or outboard to effect a proper seal with the door or quarter window. To reposition the weatherstrip, disengage the inboard edge of weatherstrip from retainer and loosen retainer attaching screws. Adjust retainer as required and tighten screws. For proper relationship of weatherstrip to door window, refer to "Front Door Window Adjustments".

CENTER PILLAR WEATHERSTRIPS C-69 STYLES

The center pillar weatherstrips are retained with adhesive in retainers that are screwed to the center pillar. In addition, the weatherstrips are retained at the top by a barb in the retainer that engages the weatherstrip. Due to the presence of the barb, a center pillar weatherstrip cannot be removed by sliding it out at the bottom of the retainer. Instead, it must be worked out of the retainer with a flat-blade tool. Starting at the lower end and working upward, disengage weatherstrip from retainer outboard flange.

Although the weatherstrip cannot be slid out of the retainer, it is installed by engaging the upper end of the strip with the lower end of the retainer and sliding the strip upward. Prior to installing weatherstrip, apply a bead of black weatherstrip adhesive to outboard flange of retainer to secure weatherstrip when it is installed.

NOTE: The center pillar weatherstrips can be adjusted inboard or outboard to achieve a better seal with the door window. To reposition the weatherstrip, remove weatherstrip from retainer and adjust retainer in or out as required.

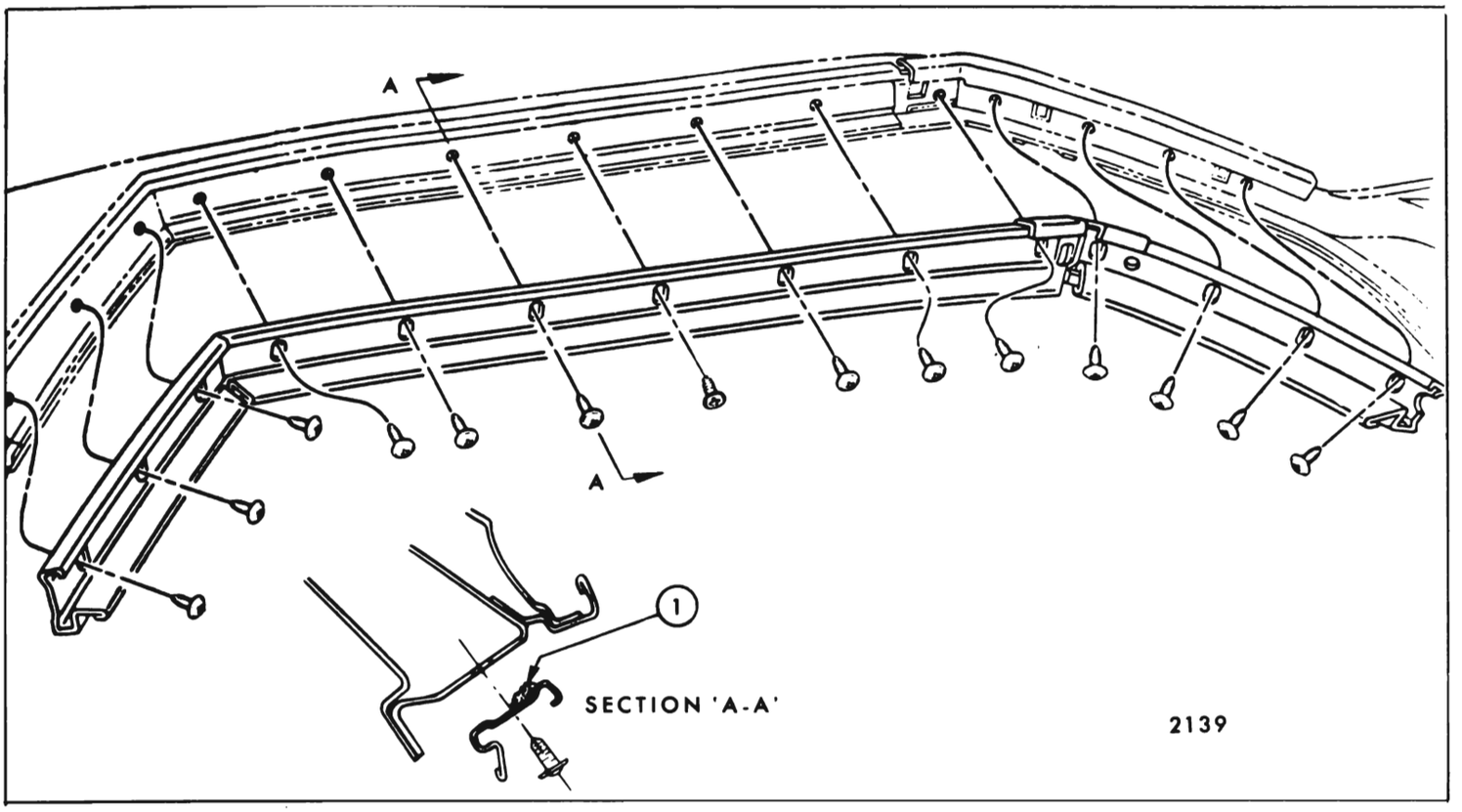

Fig. 7-39—Side Roof Rail Weatherstrip Retainer - "17-37-39 and 57" Styles

FRONT DOORS

DESCRIPTION

All doors fall into two basic categories, closed styles (those with door upper frames) and hard top or convertible styles (those without door upper frames). Although front doors utilize the same fundamental hardware, the presence or lack of a door upper frame usually determines the removal or installation sequence of any particular part.

Any work performed on door hardware usually requires removal of trim pad and inner panel water deflector. The procedures for these items are covered in "Front and Rear Doors" (see index).

Unless otherwise stated, the front door service procedures listed here pertain to all body styles.

Illustrations 7-40, 7-41, 7-42, 7-43, 7-44, 7-45, 7-46, 7-47, 7-48 and 7-49, are typical of front doors with the trim assembly and inner panel water deflector removed. These figures identify the component parts of the front door assembly (by style), their relationship and various attaching points.

FRONT DOOR HINGES

Hinges are the swing-in type on "A-X & Z" Body Styles and the swing-out type on "B-C & E" Body Styles. Both upper and lower hinges on "Z" Body Styles and upper hinges only on "A & Z" Body Styles are constructed of die cast aluminum. The lower hinges on "A & X" Bodies and both upper and lower hinges on "E" Bodies are constructed of malleable iron. An integral check is incorporated into the upper hinge on "E" Body Styles; a two stage hold-open is incorporated into lower hinges of "A-B-C & E" Body Styles; and, an integral check and single stage hold-open feature is used on lower hinge of "X & Z" Body Styles.

CAUTION: Use only the recommended procedures for adjusting front doors. Hinges will break under strain of bending in any attempt to short-cut adjustments. Care should also be exercised when removing or replacing a door assembly.

Removal and Installation

The front door assembly can be removed with or without the hinges attached. If only the door

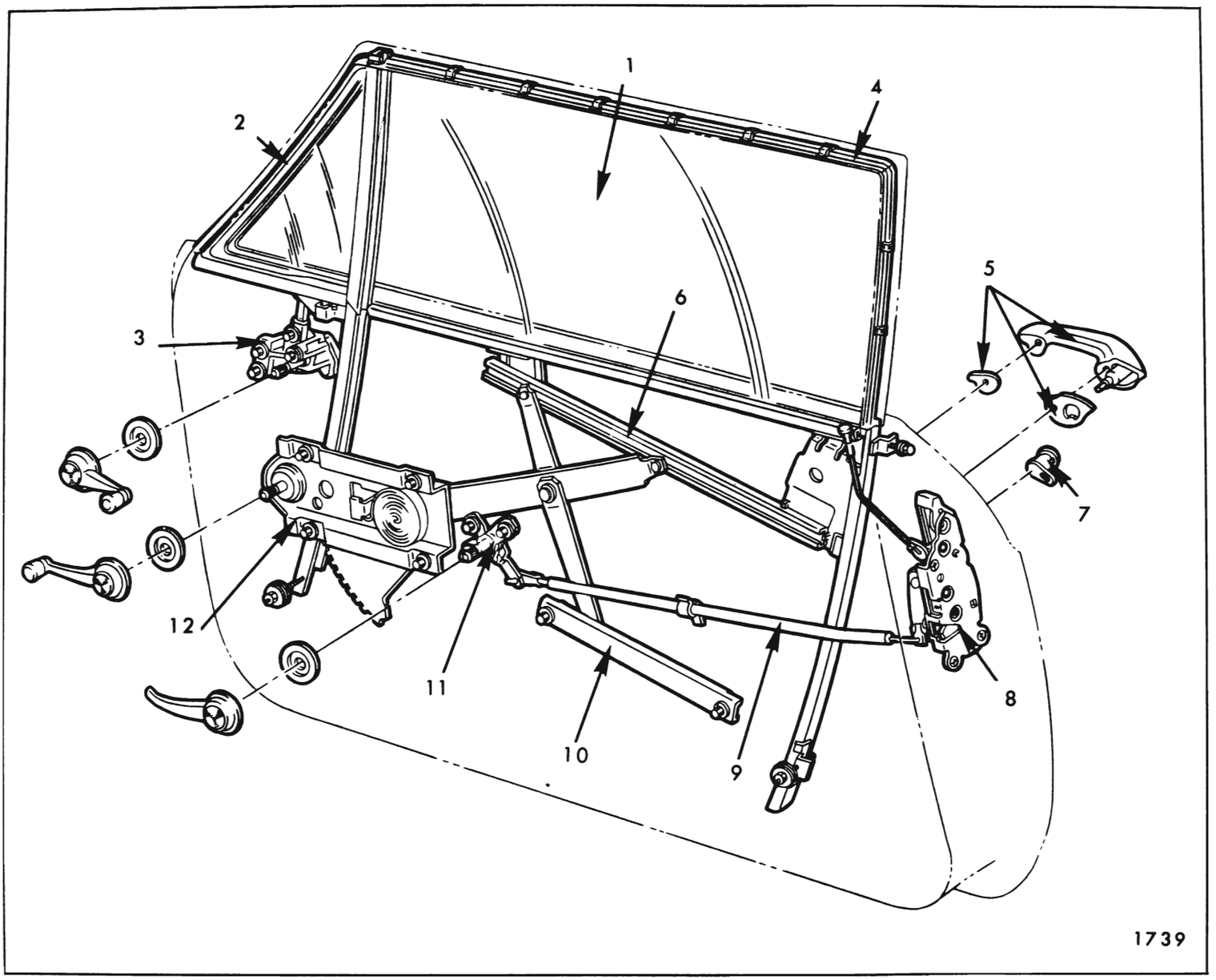

Fig. 7-40—Front Door Hardware - "B" Closed Styles

1. Window Assembly
2. Ventilator Assembly
3. Ventilator Regulator
4. Window Glass Run Channel
5. Door Outside Handle and Sealing Gaskets
6. Lower Sash Channel Cam
7. Lock Cylinder
8. Door Lock
9. Remote Control Connecting Rod
10. Inner Panel Cam
11. Remote Control
12. Window Regulator

assembly is to be serviced, it is recommended that the door be removed from the hinges. If the hinges must be serviced, remove the door and hinges from the body as an assembly and remove the hinges from the door in a bench operation.

1. Mark (pencil) hinge location on door or body pillar, dependant on how door will be removed (with or without hinges).

2. On doors equipped with power operated windows and/or vacuum door locks, remove trim pad and water deflector sufficiently to disconnect harness assembly(s) and remove same from door. On Pontiac-Oldsmobile-Buick styles equipped with electric ventilators, disconnect door wire harness at jumper wire connector, not at motor. On Cadillac styles with electric ventilators, disconnect harness at motor.

NOTE: On all styles, removal of door from body (without hinges attached) can be accomplished without loosening front fender. On "A-E & X" Body Styles, however, removal of hinges necessitates loosening of front fender.

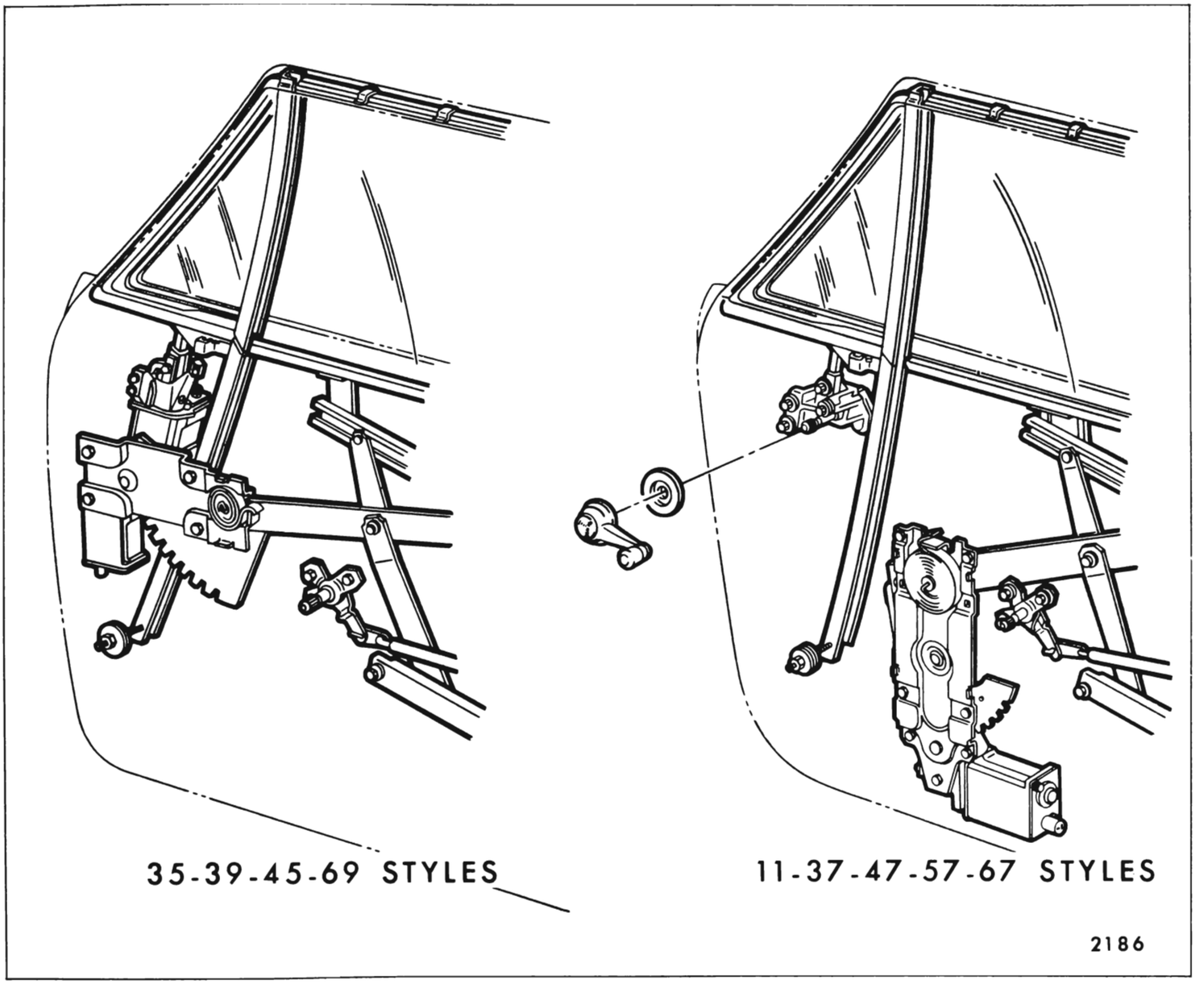

Fig. 7-41—Front Door Hardware Electrical Options - "B & C" Styles
NOTE: Electric ventilator available on both closed and hardtop styles, but not on all styles or all models.

3. To remove door, proceed as follows:

   a. Without hinges attached:

      (1) With aid of a helper (to support door) remove upper and lower hinge to door attaching bolts (or screws) and remove door from body (see Fig. 7-50 - "A" Body, Fig. 7-51 "B-C & E" Body, Fig. 7-52 - "X" Body and Fig. 7-53 - "Z" Body).

   b. With hinges attached:

      (1) On "B-C & Z" Body Styles, remove hinge to body attaching bolts and remove door (see Fig. 7-53).

      NOTE: On 68000 Series, it is necessary to remove the cowl air intake grille to gain access to the upper hinge to body attaching bolts.

      (2) On "A-E & X" Styles, loosen front fender as required:

         a. On "A" Body Styles, remove the front fender to cowl attaching bolt(s) and the first two or three (closest to cowl panel) fender to fender reinforcement attaching bolts. One or more of these latter bolts also serve as hood hinge attaching bolts.

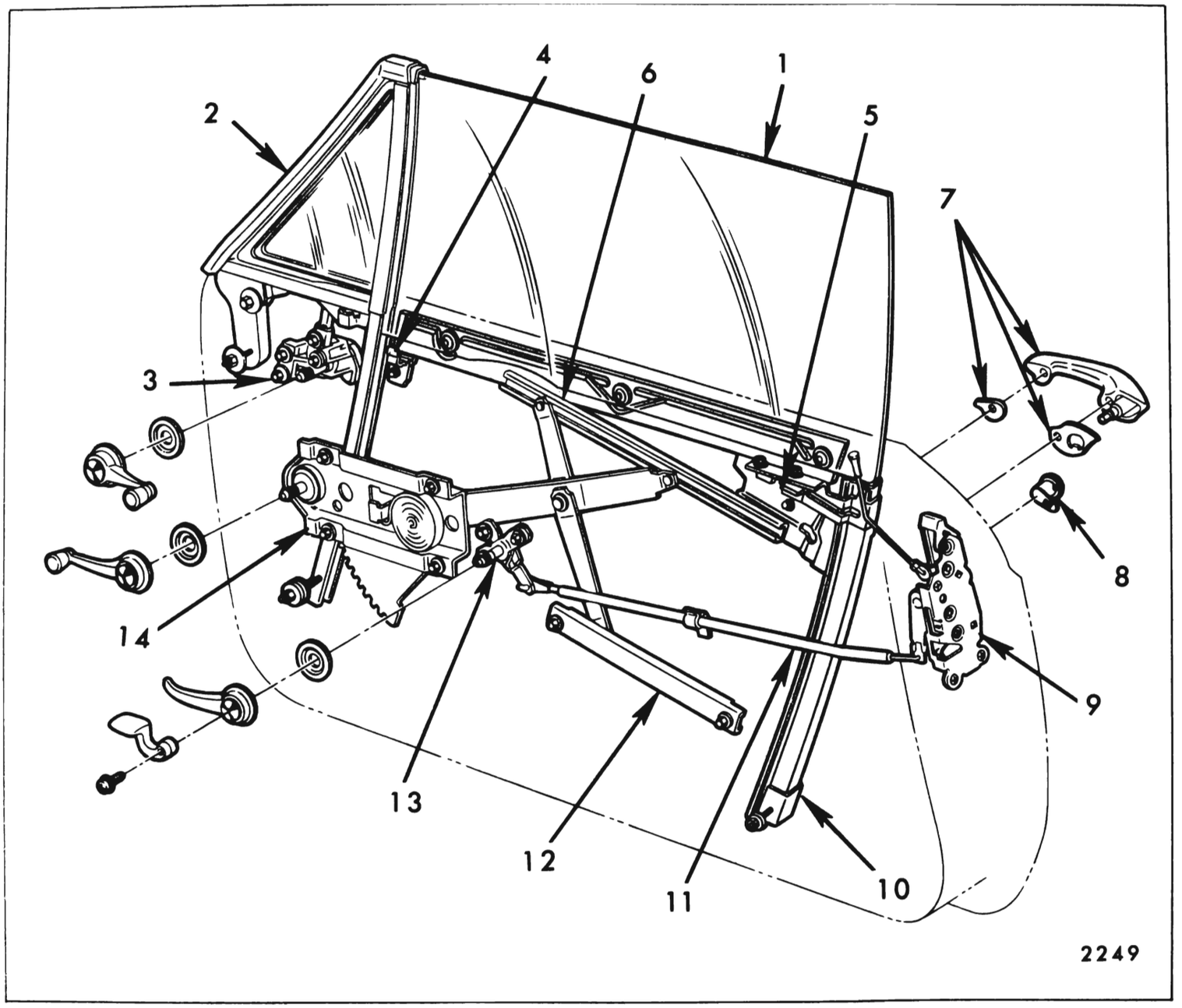

Fig. 7-42—Front Door Hardware - "B & C" "37-47-57 and 67" Styles Shown - "39" and "C-69" Styles Similar

1. Window Assembly
2. Ventilator Assembly
3. Ventilator Regulator
4. Window Front Upper Stop
5. Window Rear Upper Stop
6. Lower Sash Channel Cam (Welded to Window Lower Sash)
7. Outside Handle and Sealing Gaskets
8. Lock Cylinder
9. Door Lock
10. Window Glass Run Channel
11. Remote Control to Lock Connecting Rod
12. Inner Panel Cam
13. Remote Control
14. Window Regulator

Remove fender to rocker panel attaching bolt(s) and the first four or five fender to fender skirt attaching bolts. Prop rear of fender away from body with wooden blocks (see Fig. 7-54).

NOTE: The number of fender bolts that must be loosened to gain adequate fender clearance is determined by the style involved. Tool J-21550, however, is designed for adjustment of front door hinge to body attaching bolts. Usage of this tool alleviates the need of loosening the front fender (see Fig. 7-55).

b. On "E" Body Styles, loosen lower attachment of front fender and prop fender away from body with a wooden block (see Fig. 7-56).

c. On "X" Body Styles, remove the first six top fender bolts (number one being

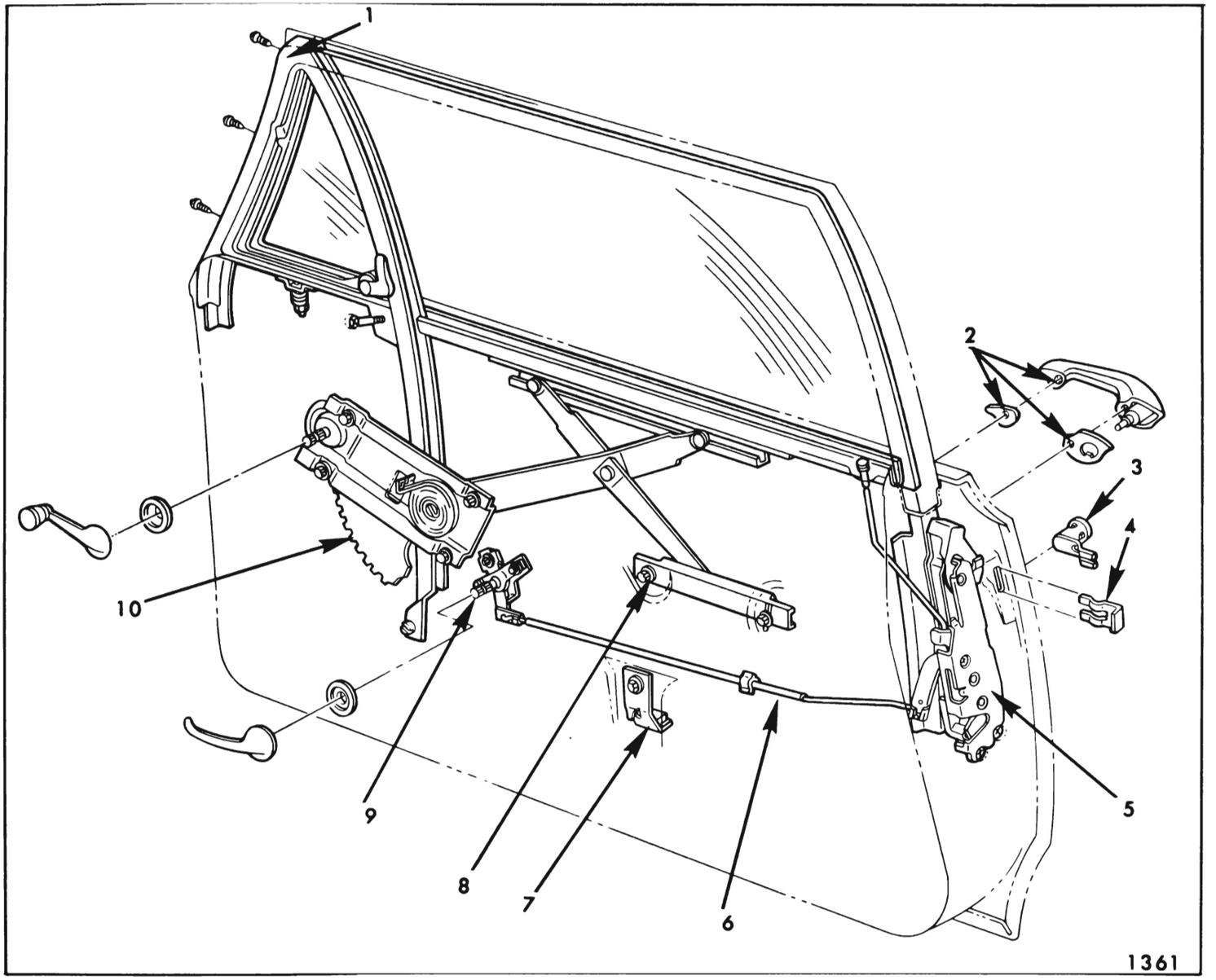

Fig. 7-43—Front Door Hardware - "A & X" Closed Styles

1. Ventilator
2. Outside Handle and Sealing Gaskets
3. Cylinder
4. Lock Cylinder Retainer
5. Lock
6. Remote Control Connecting Rod
7. Window Lower Stop
8. Inner Panel Cam
9. Remote Control
10. Window Regulator

on the cowl and working toward the front bumper). Also remove one lower fender bolt (below body hinge pillar panel, just forward of rocker panel). Hold rear of fender away from the body with a wooden block. (see Figs. 7-57 and 7-58).

(3) With aid of a helper to support door, remove upper and lower hinge to body attaching bolts (or screws) and remove door from body.

4. To install, reverse removal procedure. Align hinges within scribe marks and tighten attaching bolts or screws. Prior to installation of doors, that were removed with hinges attached, apply a coat of heavy-bodied sealer to surfaces of hinges that contact body to prevent squeaks and avoid waterleaks at attaching locations.

FRONT DOOR ADJUSTMENTS

Door adjustments are provided through the use of floating anchor plates in the door and front body hinge pillars. When checking the door for alignment, and prior to making any adjustments, remove striker from body lock pillar to allow door to hang free on its hinges. Loosen front fender as required.

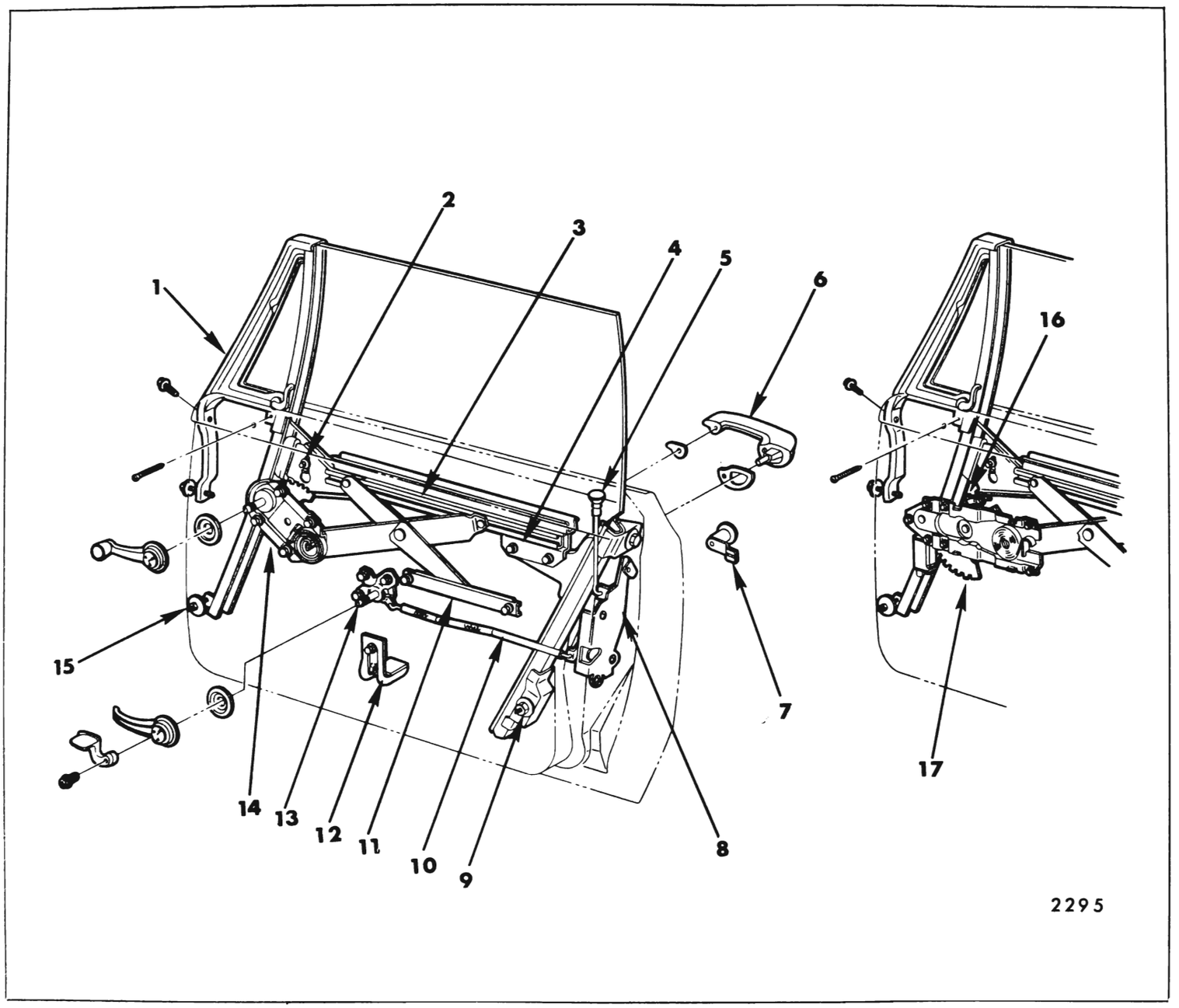

Fig. 7-44—Front Door Hardware - "A-39" Styles

1. Ventilator Front Frame
2. Window Front Up-Stop
3. Sash Channel Cam
4. Rear Guide
5. Lock to Locking Lever Rod
6. Outside Handle and Sealing Gaskets
7. Locking Cylinder
8. Lock
9. Rear Glass Run Channel
10. Remote Control Connecting Rod
11. Inner Panel Cam
12. Window Lower Stop
13. Remote Control
14. Window Regulator (Manual)
15. Ventilator Division Channel
16. Regulator Sector Gear Stop (Electric Only)
17. Window Regulator (Electric)

1. Adjustment provided at body hinge pillars:

Up or down on all body styles, in or out on "X & Z" Body Styles and fore or aft on "A-B-C and E" Body Styles.

2. Adjustment provided at door hinge pillars:

Fore or aft on "X & Z" Body Styles, in or out on "A-B-C & E" Body Styles and a slight amount of up or down on "A-B & C" Bodies.

When all door adjustments have been accomplished, reinstall lock striker and check lock extension to striker engagement as described in "Door Lock Striker Adjustments".

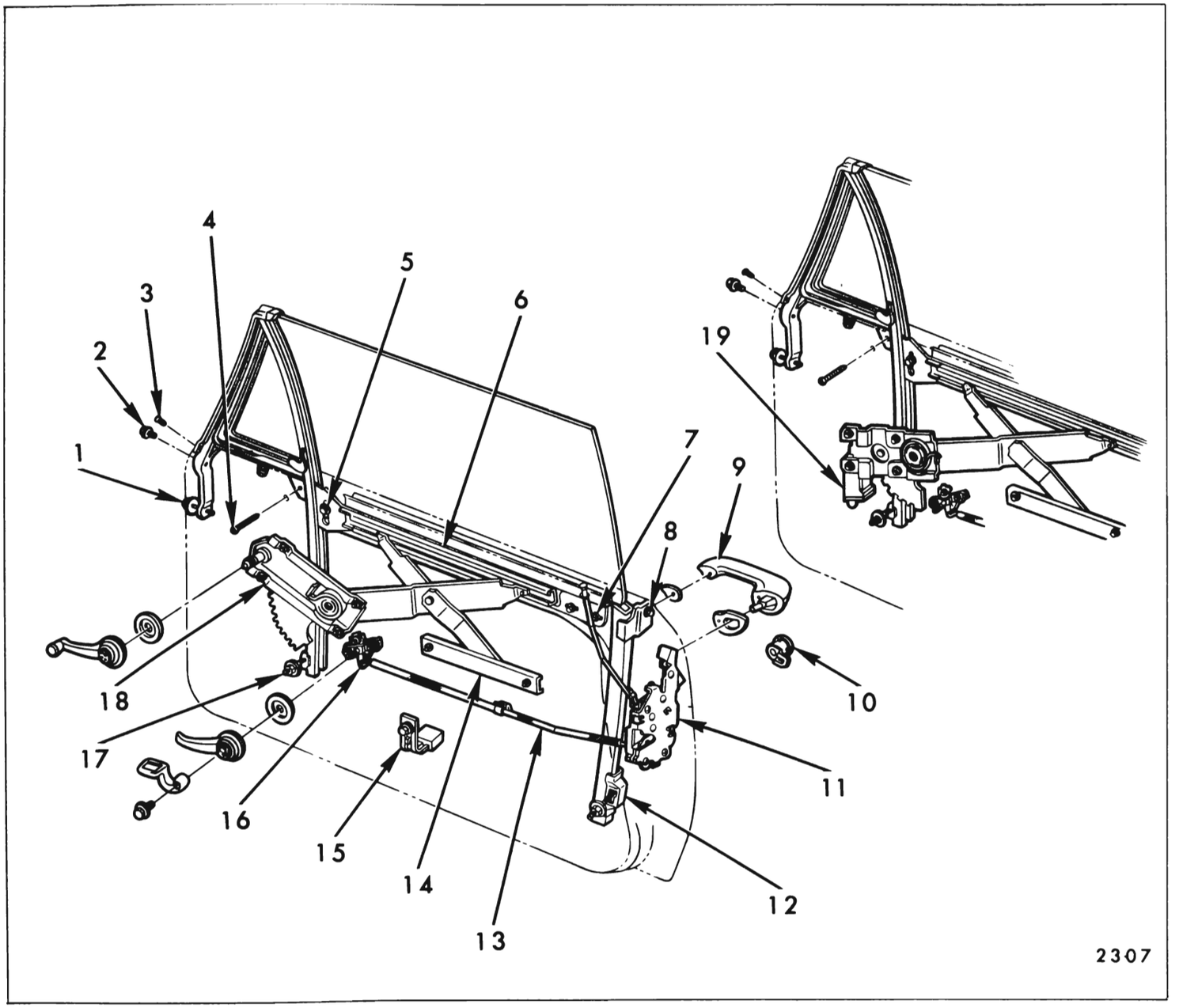

Fig. 7-45—Front Door Hardware - "A-17 and 67" Styles

1. Ventilator Frame Lower Adjusting Stud and Nut
2. Ventilator Frame Upper Attaching Bolt
3. Ventilator Frame to Inner Panel Screw
4. Ventilator to Door Inner Panel Attaching Screw
5. Window Front Up-Stop
6. Window Sash Channel Cam
7. Window Rear Guide
8. Glass Rear Run Channel Upper Bolt
9. Outside Handle Assembly
10. Lock Cylinder
11. Lock
12. Glass Rear Run Channel Lower Adjusting Stud and Nut
13. Lock to Remote Control Connecting Rod
14. Inner Panel Cam
15. Window Lower Stop
16. Remote Control
17. Ventilator Division Channel Lower Adjusting Stud and Nut
18. Window Regulator (Manual)
19. Window Regulator (Electric)

FRONT DOOR WINDOW INNER PANEL CAM

All styles equipped with a door window double arm regulator utilize an inner panel cam. This cam houses the lower roller of the regulator balance arm (see Fig. 7-40).

Removal and Installation

1. Raise door window, remove door trim pad and detach inner panel water deflector.
2. Remove attaching bolts (two) and slide cam out of engagement with regulator balance arm roller.

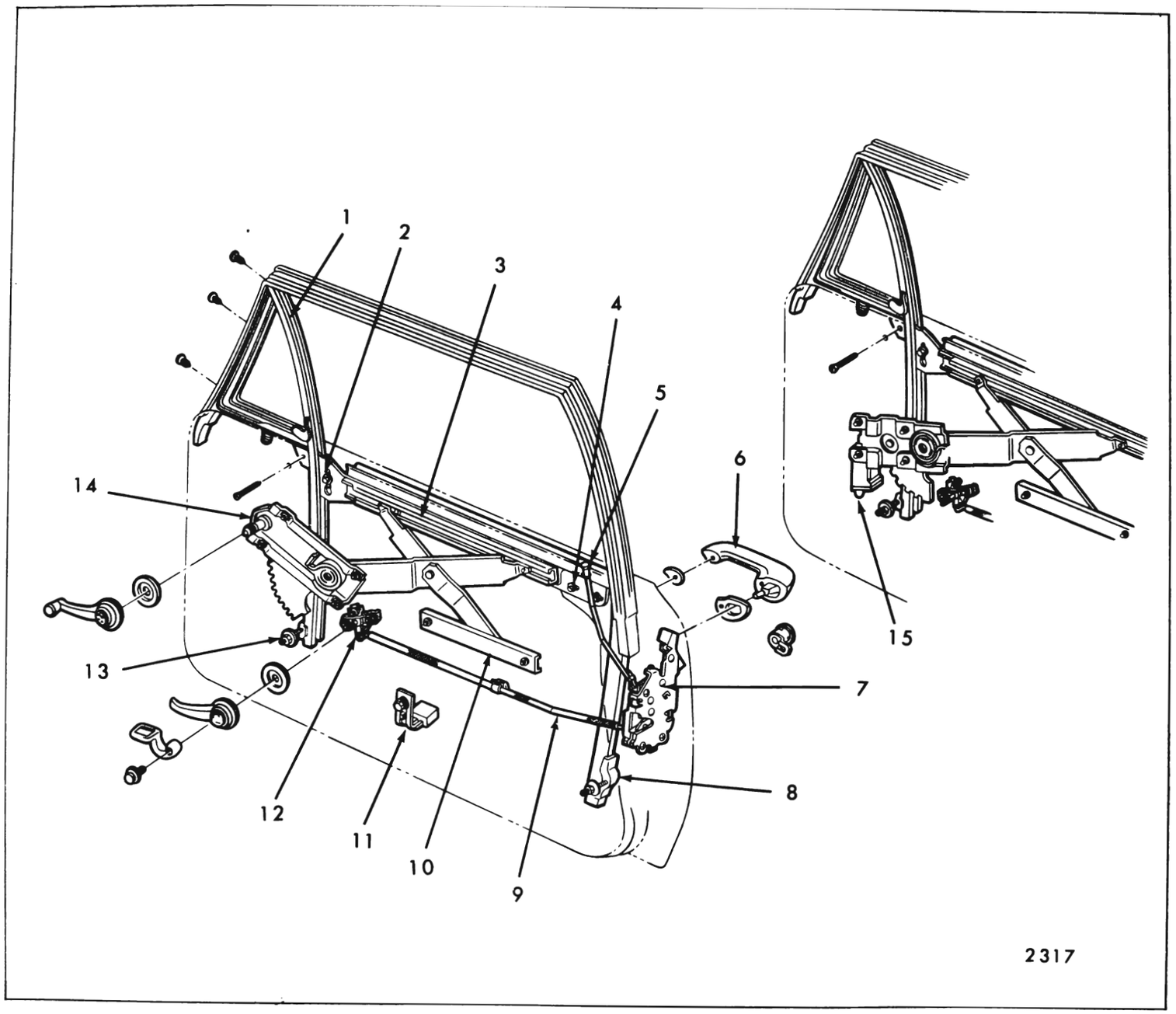

Fig. 7-46—Front Door Hardware "A-07" Styles

1. Ventilator Assembly
2. Window Front Up-Stop
3. Sash Channel Cam
4. Rear Guide
5. Lock to Locking Lever Rod
6. Outside Handle and Sealing Gaskets
7. Lock
8. Rear Glass Run Channel
9. Remote Control Connecting Rod
10. Inner Panel Cam
11. Window Lower Stop
12. Remote Control
13. Ventilator Division Channel
14. Window Regulator (Manual)
15. Window Regulator (Electric)

NOTE: One end of the inner panel cam is adjustable up or down to correct a rotated door window.

FRONT DOOR LOCK REMOTE CONTROL AND CONNECTING ROD

The remote control is secured to the door inner panel by three attaching bolts. On some styles the remote is attached to the inboard surface of the inner panel and on other styles, to the outboard surface. The removal and installation is, however, the same for either method of attachment (Fig. 7-59).

Removal and Installation

1. Raise door window, remove door trim pad and detach inner panel water deflector.

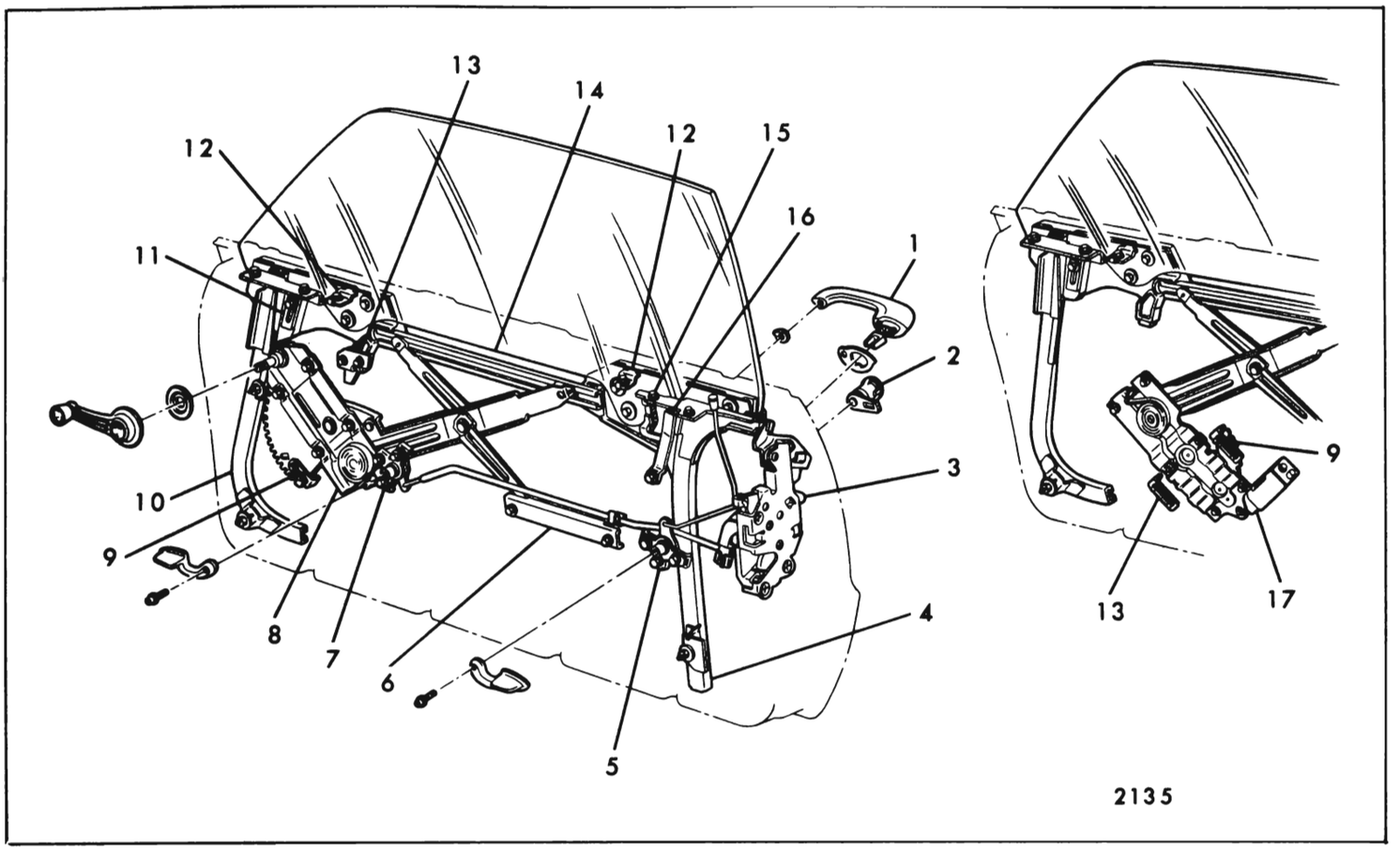

Fig. 7-47—Front Door Hardware "E" Styles

1. Outside Handle
2. Lock Cylinder
3. Lock
4. Window Rear Guide Channel
5. Rear Remote Control (Optional)
6. Inner Panel Cam
7. Front Remote Control
8. Window Regulator (Manual)
9. Window Regulator Sector Gear Stop (Up-Travel)
10. Window Front Guide Channel
11. Window Front Up-Stop
12. Trim Pad Adjusting Plate
13. Window Regulator Sector Gear Stop (Down-Travel)
14. Window Glass Lower Sash Channel Cam
15. Window Glass Stabilizer
16. Window Rear Up-Stop
17. Window Regulator (Electric)

NOTE: Some "E" Body Styles are equipped with two remote controls, one front and one rear. Attachment for both, however, is the same.

2. Remove bolts securing remote to door inner panel ("2", Fig. 7-59).

3. Pivot remote inboard slightly, to disengage connecting rod, and remove remote from door.

4. To install, reverse removal procedure.

NOTE: Connecting rod can be removed at this point by disconnecting spring clip from lock.

FRONT DOOR LOCK ASSEMBLY AND VACUUM ACTUATOR

All styles except "X" Body Styles use the fork bolt lock design. The "X" Body Styles use the rotary bolt type. Both types include a safety interlock feature. Where necessary, striker spacers should be used to insure satisfactory lock and striker engagement.

Removal and Installation

1. Raise door window, remove trim pad and detach inner panel water deflector.

2. Working through large access hole, disengage remote control to lock connecting rod at lock

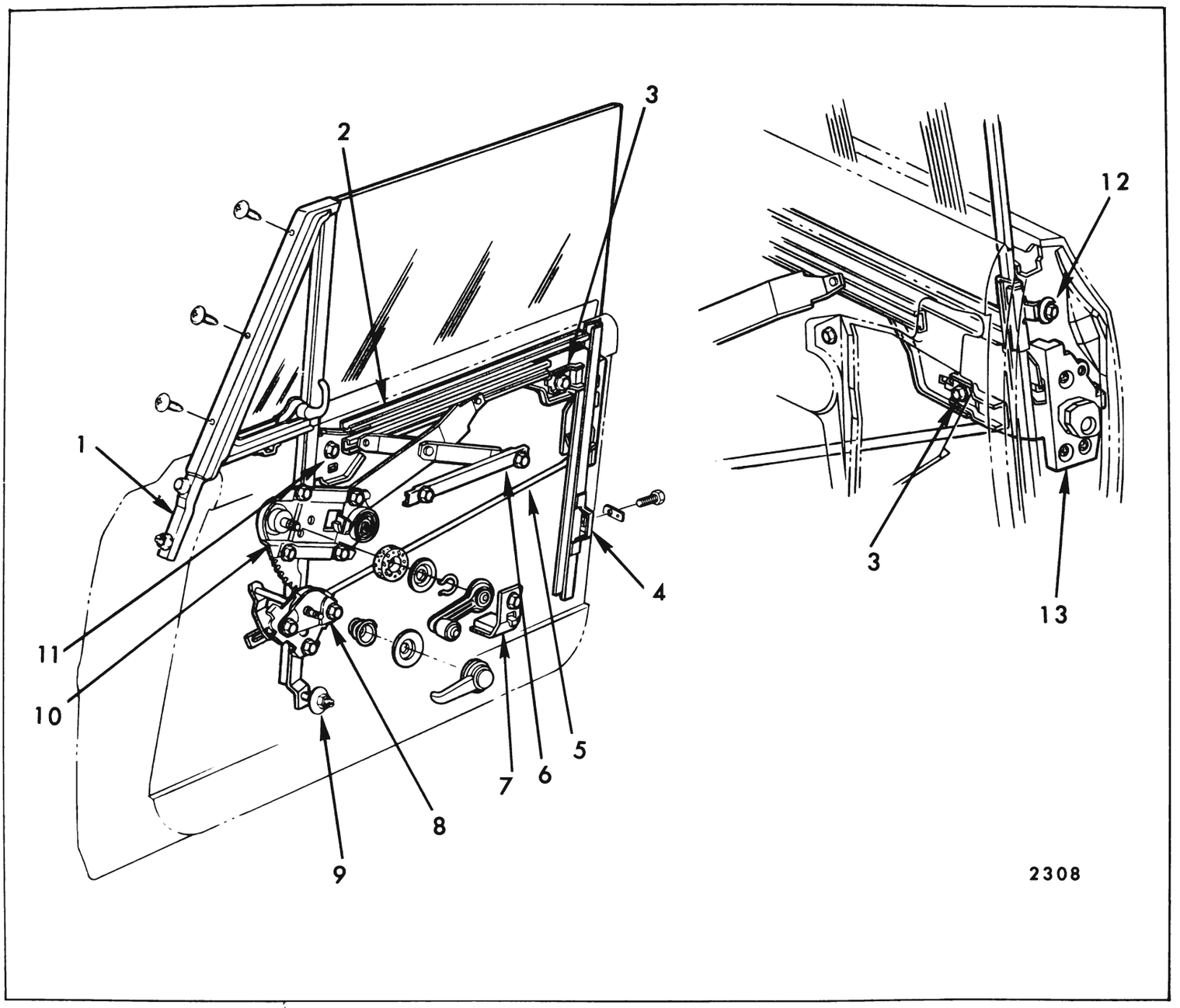

Fig. 7-48—Front Door Hardware "X-37" Styles

1. Ventilator Front Frame
2. Sash Channel Cam
3. Window Rear Up-Stop
4. Rear Glass Run Channel Lower Attachment
5. Remote Control Connecting Rod
6. Inner Panel Cam
7. Window Lower Stop
8. Remote Control Assembly
9. Ventilator Division Channel
10. Regulator
11. Window Front Up-Stop
12. Rear Glass Run Channel Upper Attachment
13. Lock

as specified under "Door Lock Spring Clips" in the preceding Front and Rear Door section.

NOTE: On some styles, it may be necessary to loosen the rear glass run channel to gain sufficient clearance to remove lock.

3. On styles with vacuum lock actuators, disconnect vacuum hoses from actuators.

4. Remove three screws securing lock to door lock pillar panel and remove lock assembly, with lock to locking lever rod attached, from body (see Fig. 7-60 - "A" Body shown, other styles similar). If vacuum actuator is to be serviced, remove in bench operation.

NOTE: The design of the lock to locking lever rod attaching clip does not allow disengagement of rod from lock with lock in an installed position. This rod can be removed from lock as a bench operation after removal of lock assembly.

5. To install, reverse removal procedure.

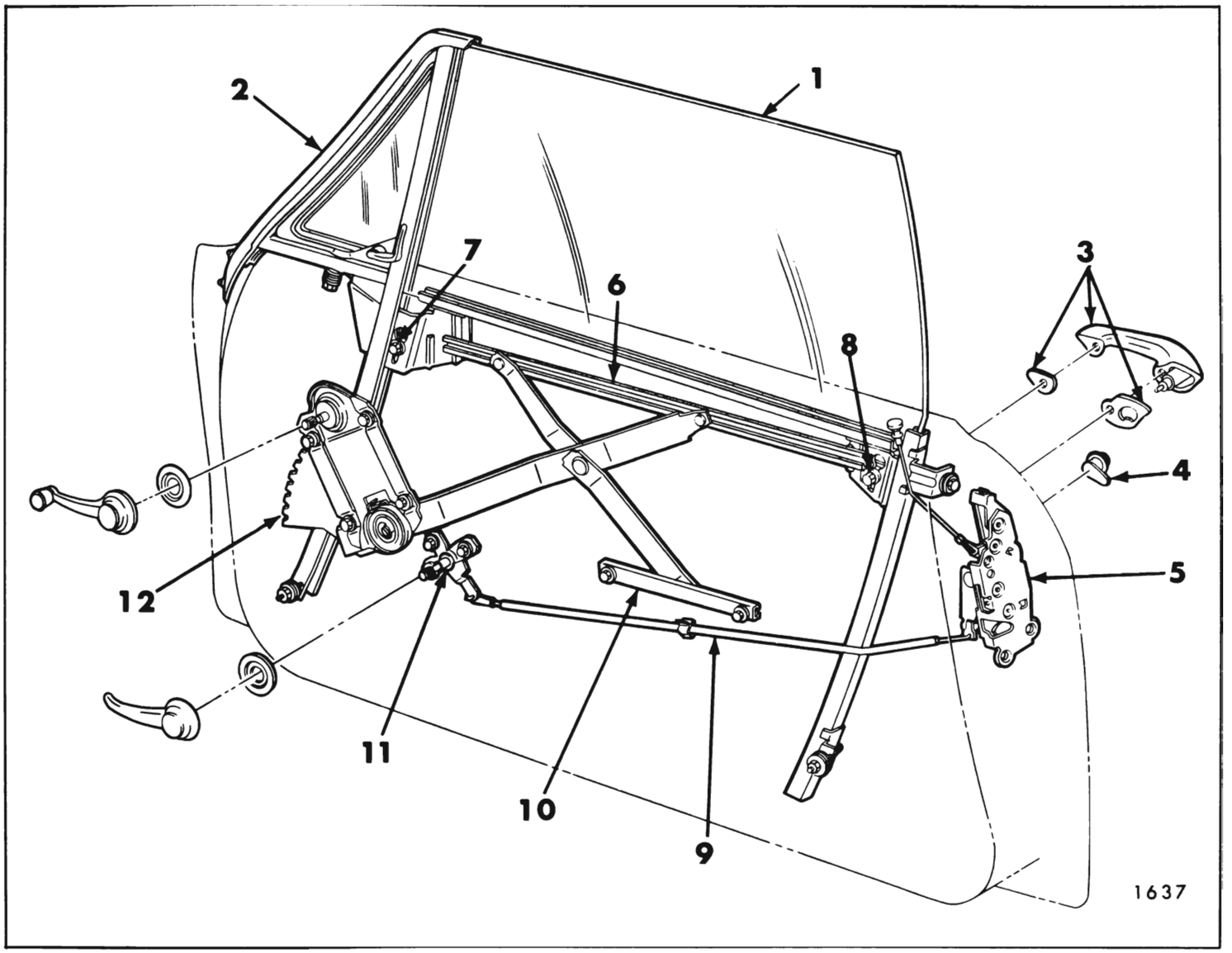

Fig. 7-49—Front Door Hardware "Z-37 and 67" Styles - "39" Similar

1. Window Assembly
2. Ventilator Assembly
3. Door Outside Handle and Sealing Gaskets
4. Lock Cylinder
5. Door Lock
6. Lower Sash Channel Cam
7. Front Up-Travel Stop
8. Rear Up-Travel Stop
9. Remote Control Connecting Rod
10. Inner Panel Cam
11. Remote Control
12. Window Regulator

NOTE: The complete vacuum system and trouble-shooting procedure is covered elsewhere in this manual - see index.

FRONT DOOR LOCK CYLINDER ASSEMBLY—ALL STYLES EXCEPT CHEVROLET FOUR-DOOR STYLES

Removal and Installation

1. Raise door window, remove door trim pad and detach inner panel water deflector.
2. With a screwdriver, or other suitable tool, slide lock cylinder retaining clip (on door outer panel) out of engagement and remove lock cylinder (see Fig. 7-61).
3. To install, reverse removal procedure.

FRONT DOOR LOCK CYLINDER ASSEMBLY—CHEVROLET "B" FOUR-DOOR STYLES

Removal and Installation

1. Perform steps 1 and 2 of the preceding "Front Door Lock Cylinder Assembly" procedure.

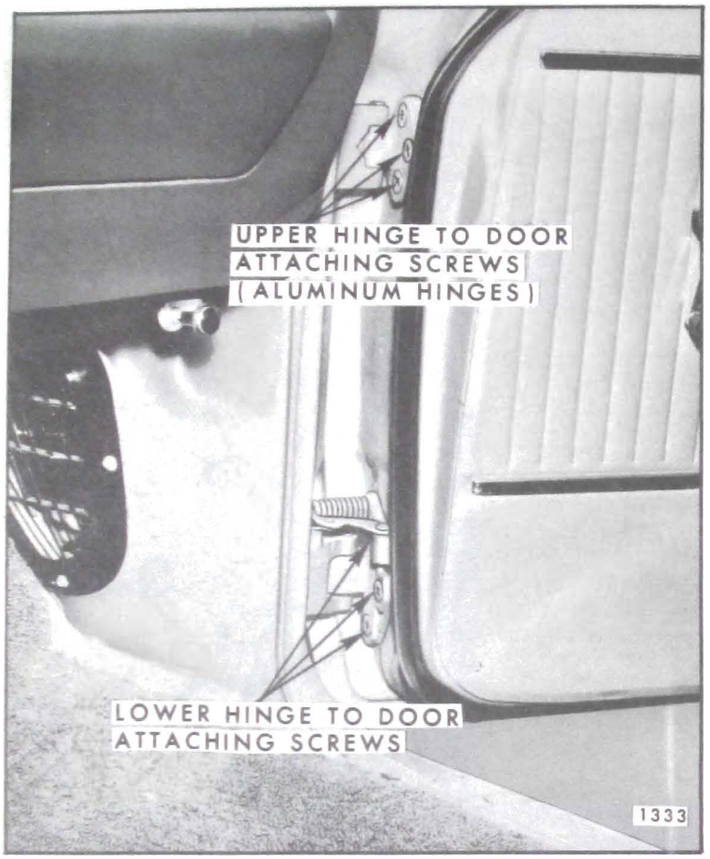

Fig. 7-50—Front Door Hinge Attachment - "A" Styles

2. Disengage spring clip securing lock cylinder to lock connecting rod at lock ("B", Fig. 7-62). Refer to "Front and Rear Door" section for spring clip disengagement.

3. Disengage lock cylinder to lock connecting rod at lock cylinder and remove lock cylinder and sealing gasket from outside of door.

4. To install, reverse removal procedure.

Disassembly and Assembly

1. Remove lock cylinder from door.

2. With a flat-bladed tool, remove retaining clip and pawl (Fig. 7-63).

3. To assemble, reverse disassembly procedure.

NOTE: The lock cylinder housing scalp used in production is usually damaged when removed and must be replaced by a new scalp available as a service part. The service lock cylinder housing scalp is secured by tabs.

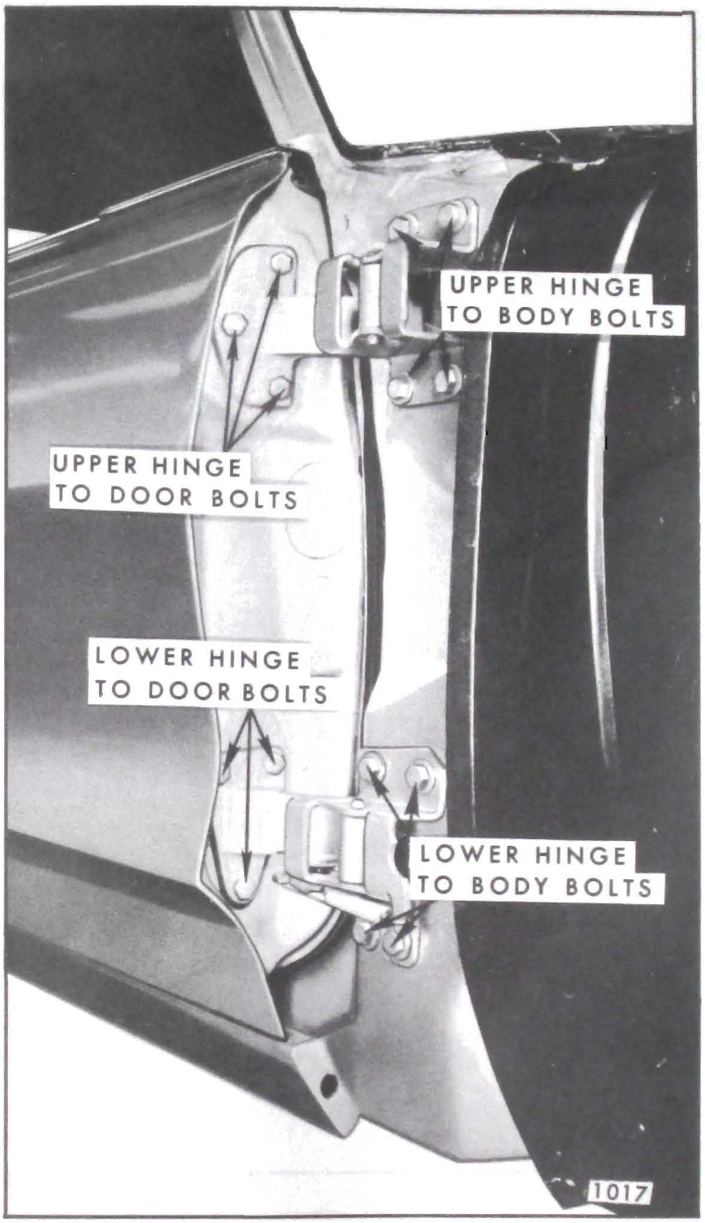

Fig. 7-51—Front Door Hinge Attachment - "B-C and E" Styles

FRONT DOOR VENTILATOR REGULATOR-MANUAL AND ELECTRIC— ALL "B & C" STYLES

Removal and Installation

1. Raise door window. Remove door trim assembly and detach inner panel water deflector sufficiently to gain access to regulator attachments.

2. On Pontiac, Oldsmobile and Buick styles equipped with electric ventilator regulators, disconnect door wire harness at ventilator jumper harness connector, not at ventilator

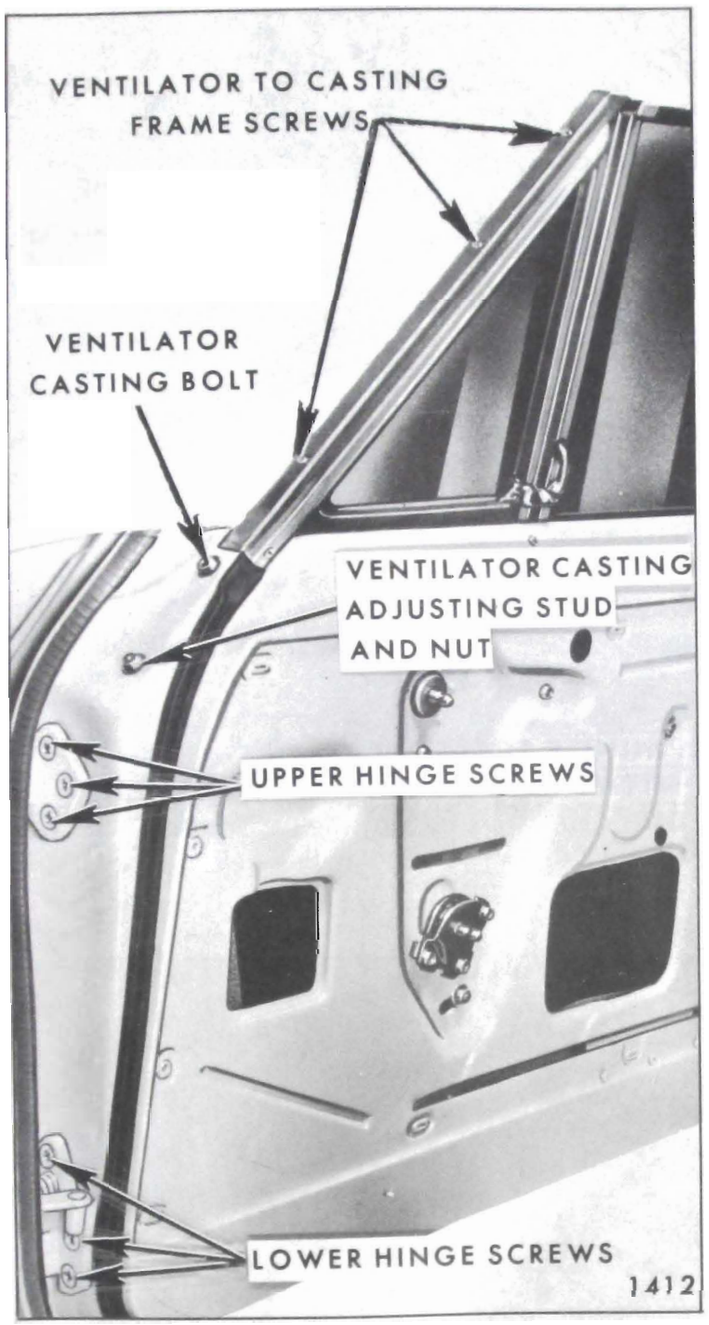

Fig. 7-52—Front Door Hinges and Ventilator - "X" Styles

motor. On Cadillac styles with electric ventilator, disconnect harness at motor.

3. Remove ventilator T-shaft attaching bolt "3" and ventilator regulator to inner panel attaching bolts "4" (Fig. 7-59).

4. Pull regulator down to disengage from ventilator T-shaft and remove regulator through access hole.

5. To install, reverse removal procedure. Check operation of ventilator prior to installing water deflector.

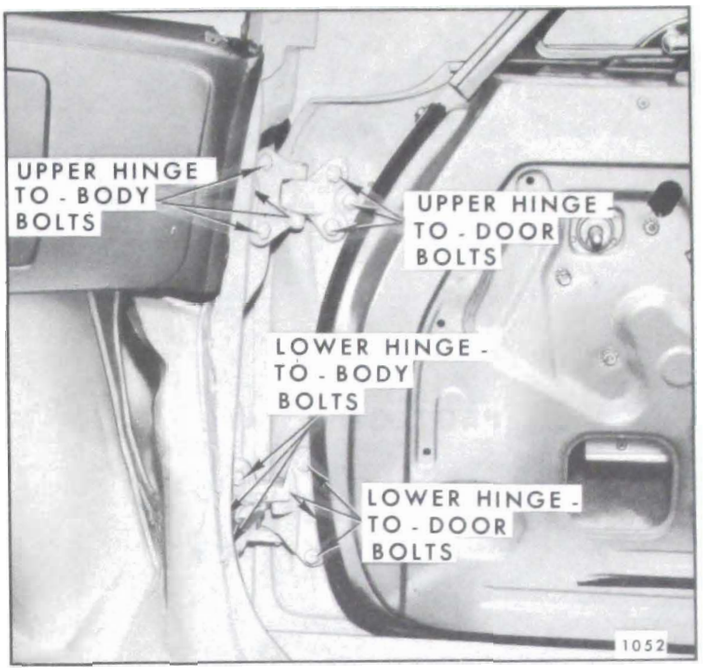

Fig. 7-53—Front Door Hinges - "Z" Styles

FRONT DOOR VENTILATOR ASSEMBLY "B-11-35-45 AND 69" STYLES

Removal and Installation

1. Remove door trim assembly and inner panel water deflector.

2. Remove ventilator regulator as previously described.

3. Lower door window. Remove screws securing ventilator lower frame to door inner panel and to door outer panel (Fig. 7-64).

4. Remove division channel lower adjusting stud nut (Fig. 7-64).

5. Remove ventilator upper attaching screws along door upper frame (Fig. 7-64). Disengage upper front end of glass run channel from door upper frame to permit rearward movement and removal of vent from door frame.

6. Lower ventilator assembly sufficiently to tilt assembly inward, then lift ventilator assembly upward and remove from door.

7. To install, reverse removal procedure. Prior to installation, inspect saturated polyurethane foam sealing material along length of door upper frame contacted by ventilator (Fig. 7-65). If material is damaged, replace with

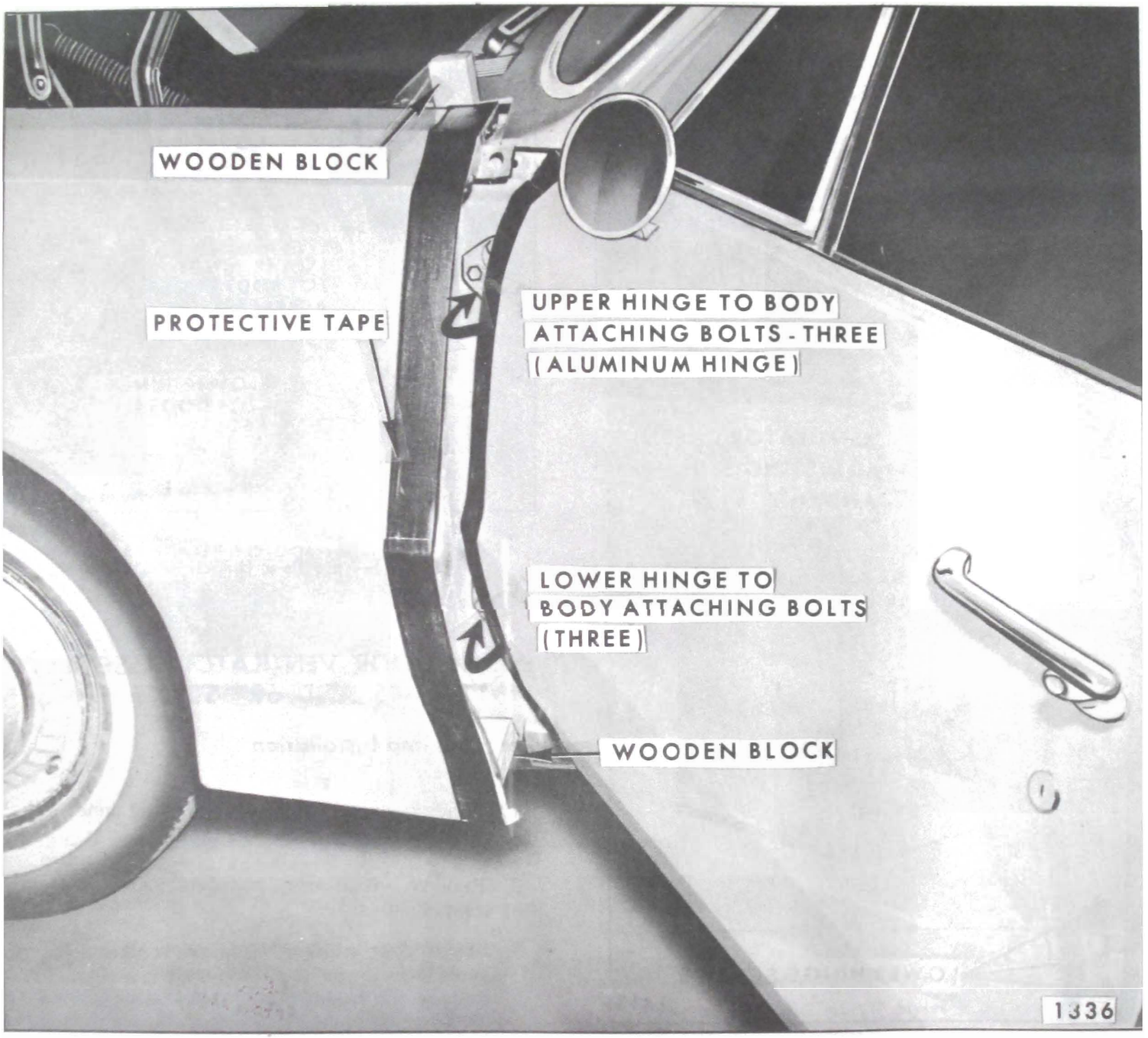

Fig. 7-54—Front Door Hinge Attachment - "A" Styles

new sealing strip or its equivalent. This is furnished in 5 foot sections under part #4480378 (Saturated Polyurethane Foam).

FRONT DOOR VENTILATOR ASSEMBLY— "A & X" CLOSED STYLES

The front door ventilator assembly is a manually operated friction type unit on all styles.

Removal and Installation

1. Raise door window. Remove door trim pad and detach inner panel water deflector.
2. On "A" Body Styles, remove door window glass run channel lower rear retainer attaching screw and remove retainer through large access hole. Figure 7-66 is typical of retainer retention except on "07" Styles. For "07" Styles, see Fig. 7-67.
3. On "X" Body Styles, remove door lock remote control assembly and connecting rod.
4. Remove ventilator division channel lower adjusting stud and nut and ventilator to door inner panel attaching screw.
5. Remove window lower stop. Lower window completely and slide it as far rearward as

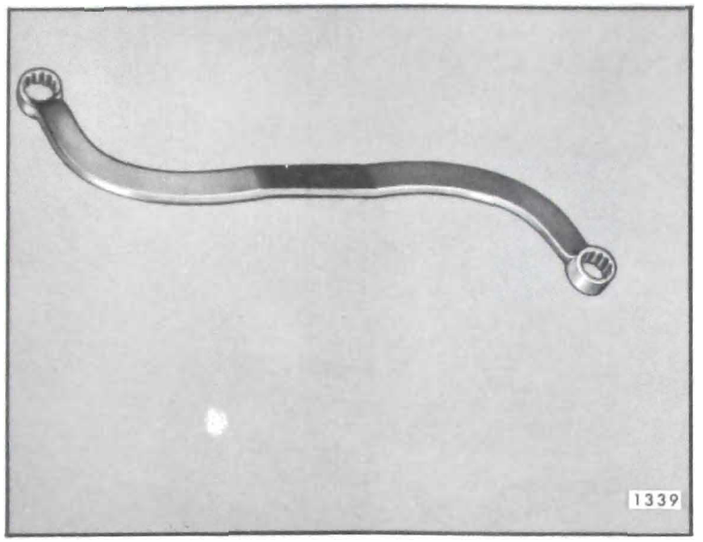

Fig. 7-55—"A" Body Front Door Hinge Tool J-21550

possible (see Fig. 7-67 for "A" Body Styles and 7-68 for "X" Body Styles).

6. Remove ventilator to door upper frame attaching screws (see Fig. 7-68 for "X" Bodies and View "A" in Fig. 7-69 for "A" Bodies).
7. On "A" Body Styles, remove glass run channel from ventilator division channel (above belt line).

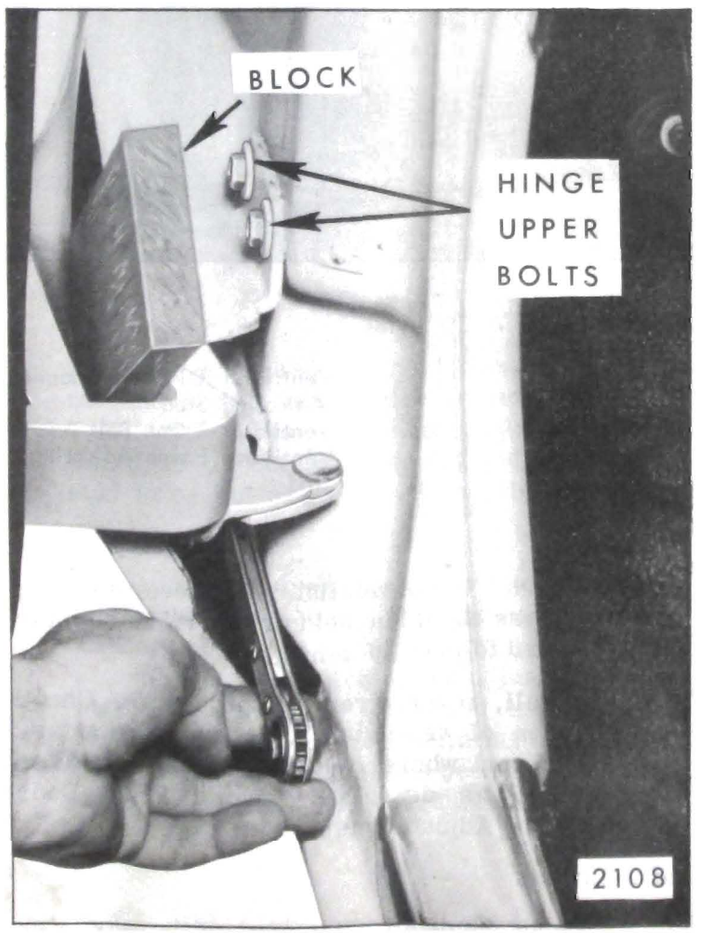

Fig. 7-56—Door Hinge Attachment - "E" Styles

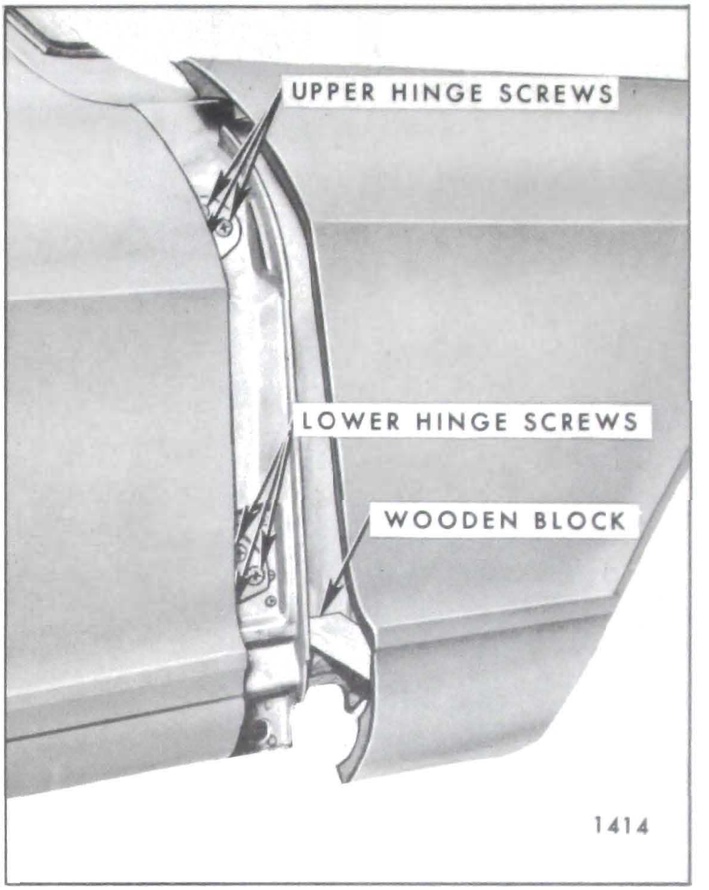

Fig. 7-57—Front Door Hinge Removal - "X" Styles

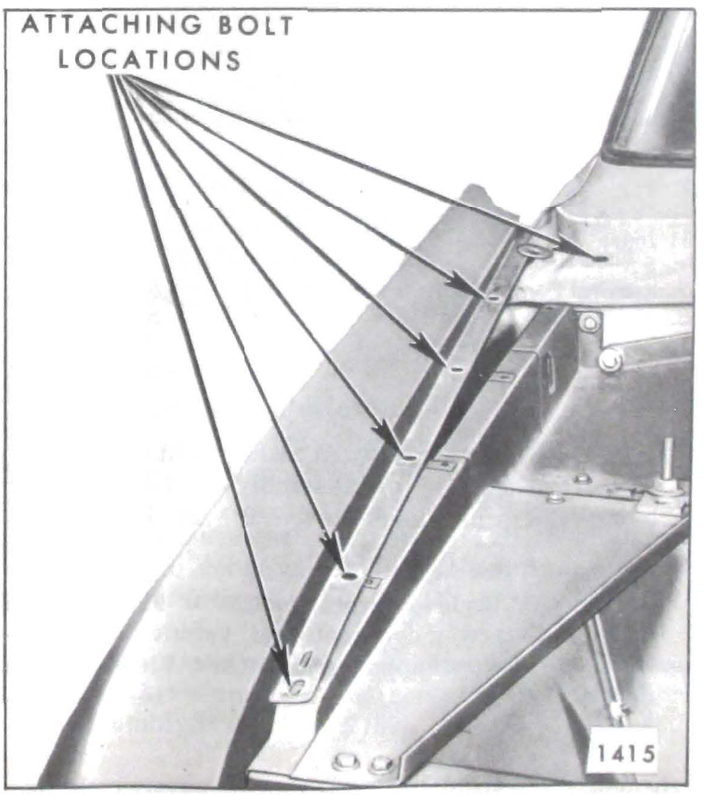

Fig. 7-58—Loosening Front Fender - "X" Styles

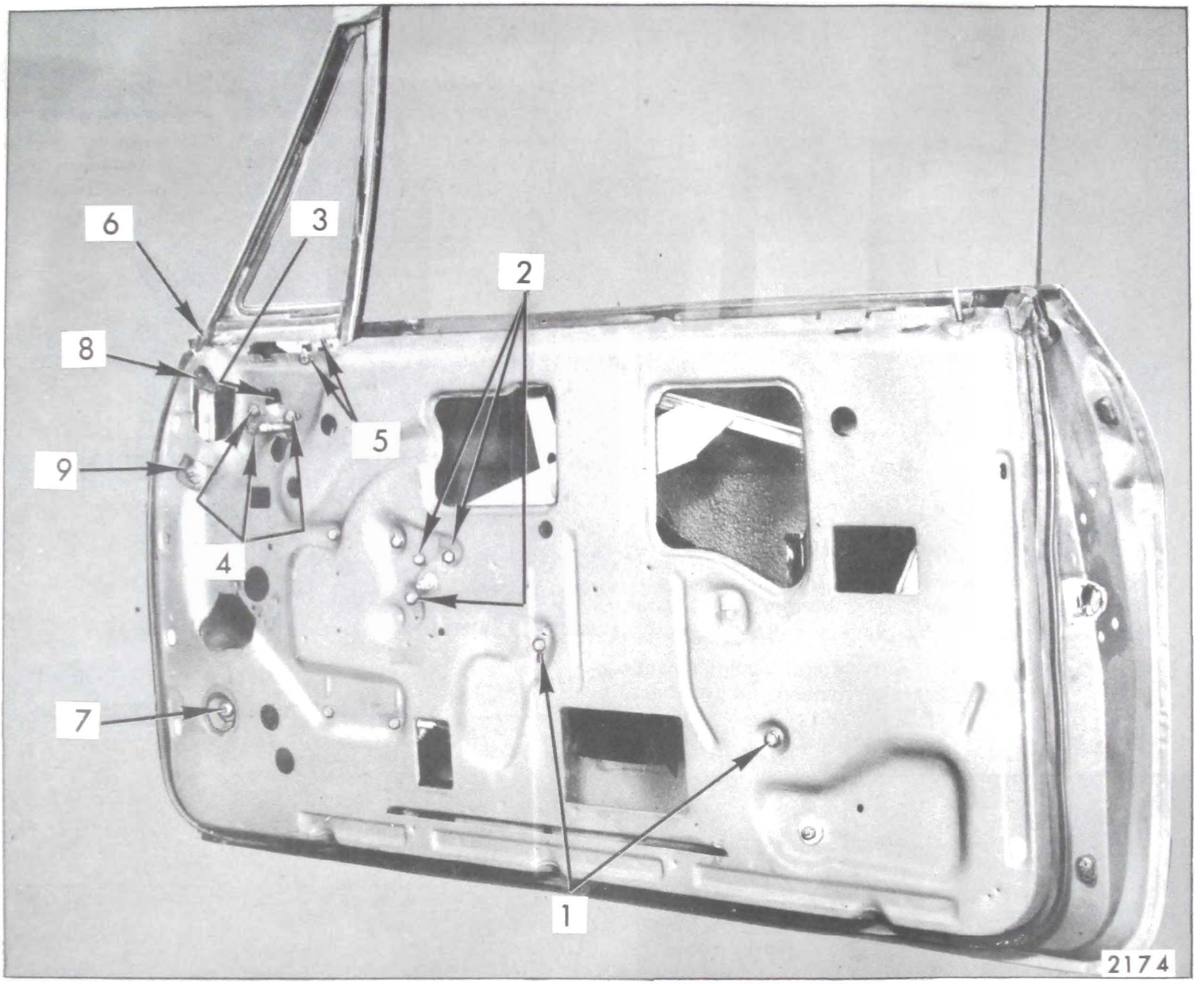

Fig. 7-59—Front Door Hardware Attachment - "B & C" Styles

1. Inner Panel Cam Bolts
2. Remote Control Bolts
3. Ventilator "T" Shaft Bolt
4. Ventilator Regulator Bolt
5. Ventilator Frame Screws
6. Ventilator to Door Pillar Seal
7. Ventilator Division Channel Adjusting Stud
8. Ventilator Frame Bolt
9. Ventilator Frame Adjusting Stud

8. Lift ventilator rearward and upward until lower forward corner of assembly is free of door upper frame (see View "B" in Fig. 7-69).

9. On "A" Styles, rotate ventilator assembly in an outboard movement and remove unit outboard of door upper frame (see View "C" in Fig. 7-69).

10. On "X" Styles, lift ventilator inboard and upward and remove from door.

CAUTION: After ventilator has been removed, door glass should be held or otherwise suitably supported to prevent damage.

11. To install, reverse removal procedure. Check operation of ventilator and door window assembly, and where required, adjust ventilator assembly as described under "Front Door Ventilator Adjustments".

Adjustments

1. A slight fore or aft adjustment of the ventilator division channel is available at the lower

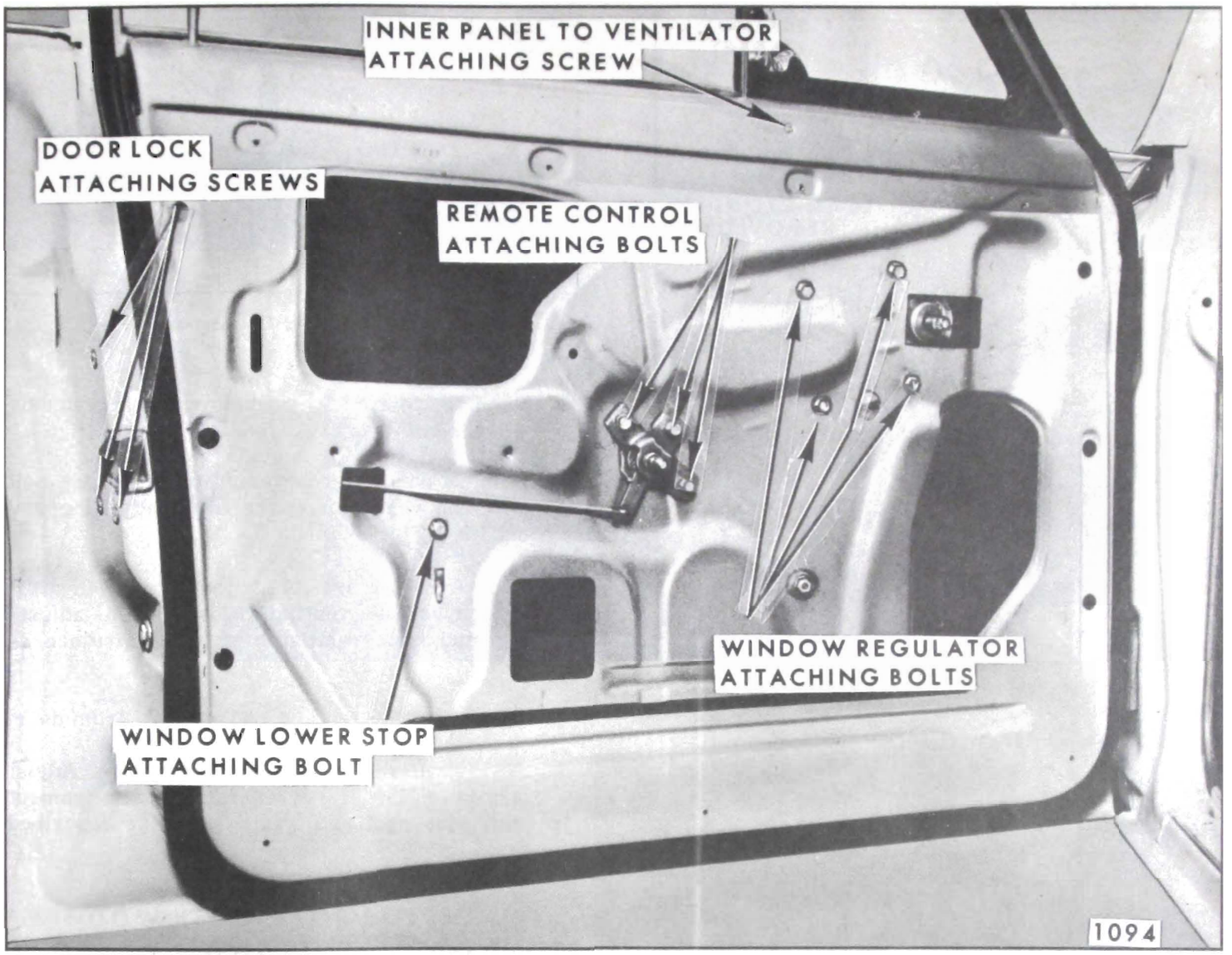

Fig. 7-60—Front Door Hardware - "A" Styles

adjusting stud and nut by loosening attaching nut and sliding nut in slot provided (see Fig. 7-69). The division channel can also be positioned in or out by loosening nut and turning stud in or out as required and tightening nut.

2. The effort required to open or close the ventilator can be set by straightening retaining washer tab and tightening or loosening the adjusting nut. Tightening the adjusting nut will increase operating effort and loosening adjusting nut will decrease operating effort. When the desired adjustment has been obtained, bend down washer tab to lock nut in position (See Fig. 7-70).

NOTE: This adjustment should be performed as a bench operation.

FRONT DOOR VENTILATOR-MANUAL AND ELECTRIC—ALL "B & C" "37-39-47-57 AND 67" AND "C-69" STYLES

Removal and Installation

1. Raise door window. Remove door trim assembly and inner panel water deflector.

2. Remove screws securing ventilator lower frame to door outer panel return flange and to door inner panel ("5", Fig. 7-59).

3. At front of ventilator assembly, break cement bond between door weatherstrip and ventilator assembly ("6", Fig. 7-59).

4. Remove ventilator division channel lower adjusting stud nut ("7", Fig. 7-59).

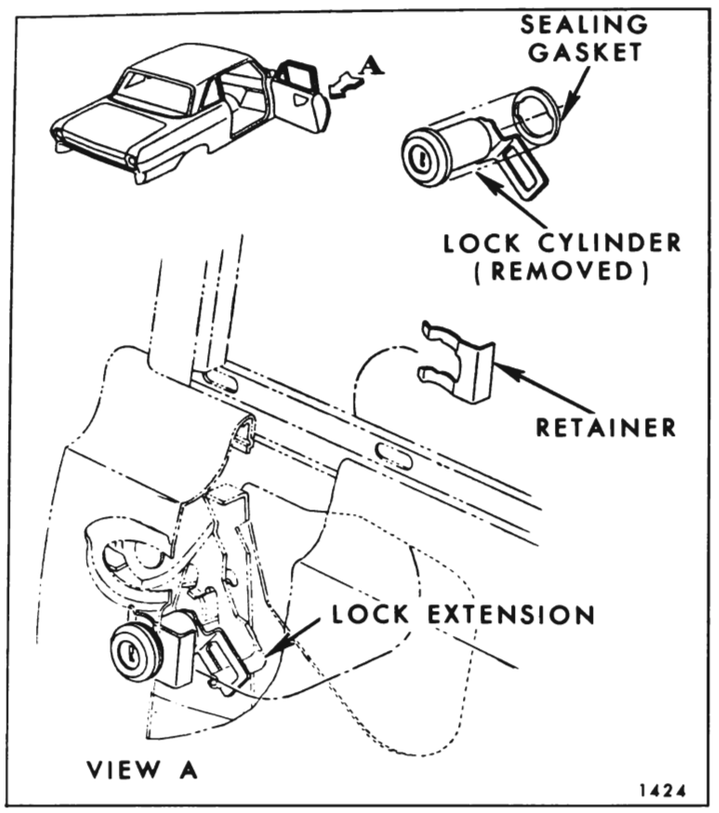

Fig. 7-61—Front Door Lock Cylinder Removal - "X" Styles Shown - Others Similar

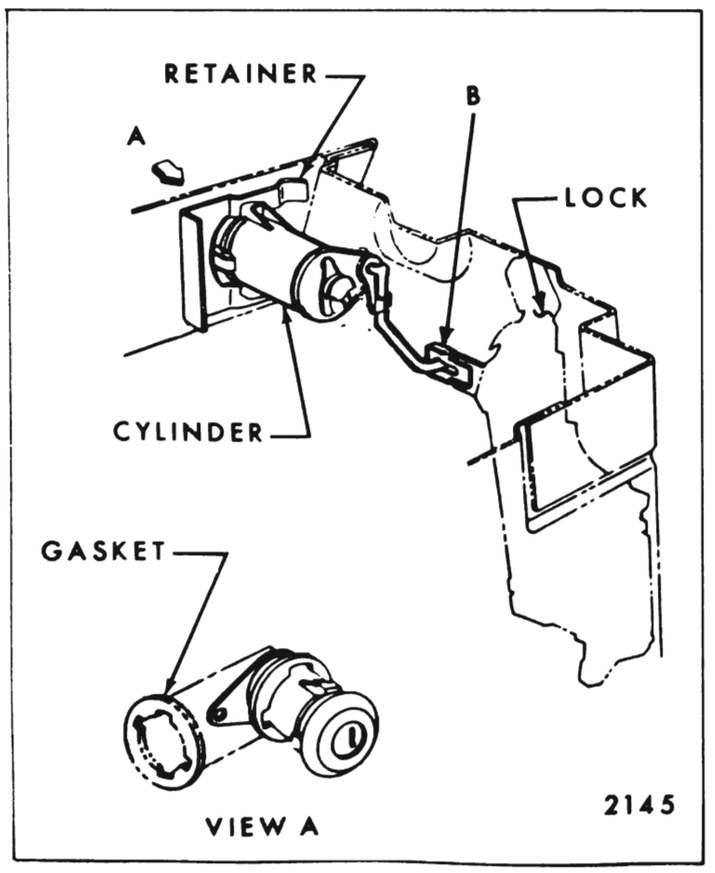

Fig. 7-62—Front Door Lock Cylinder Removal - Chevrolet "B" Four-Door Styles

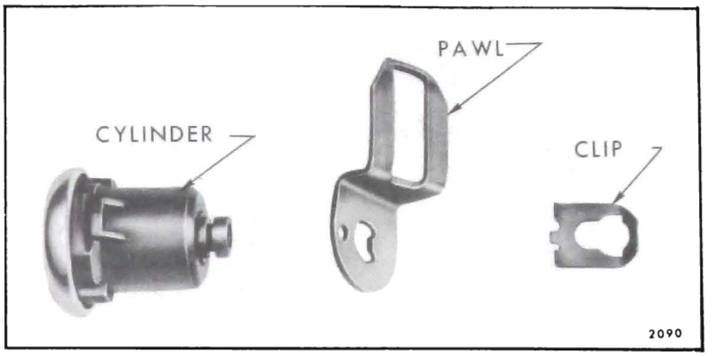

Fig. 7-63—Door Lock Cylinder Assembly

5. Remove ventilator regulator as previously described.

6. Remove ventilator lower frame attaching bolt "8" and ventilator lower frame adjusting stud nut "9" (Fig. 7-59).

7. Lift ventilator assembly upward approximately 6" and remove ventilator lower frame adjusting stud from ventilator at upper front access hole.

8. Lift ventilator upward and remove from door.

9. To install, reverse removal procedure. Adjust ventilator for proper operation and alignment with side roof rail weatherstrip as described below.

FRONT DOOR VENTILATOR ADJUSTMENTS—ALL "B & C" "37-39-47-57 AND 67" AND "C-69" STYLES

The front door ventilator assembly can be adjusted up-or-down, in-or-out at the top, and slightly fore-or-aft. To perform any ventilator adjustments it is first necessary to remove the door trim assembly and inner panel water deflector to expose ventilator attachments. Then, remove or loosen the following attachments.

a. Remove ventilator lower frame to inner panel and ventilator lower frame to outer panel screws ("5", Fig. 7-59).

b. Loosen ventilator lower frame attaching bolt "8".

c. Loosen ventilator lower frame adjusting stud nut "9" and ventilator division channel lower adjusting stud nut "7".

d. Loosen ventilator regulator attaching bolts "4".

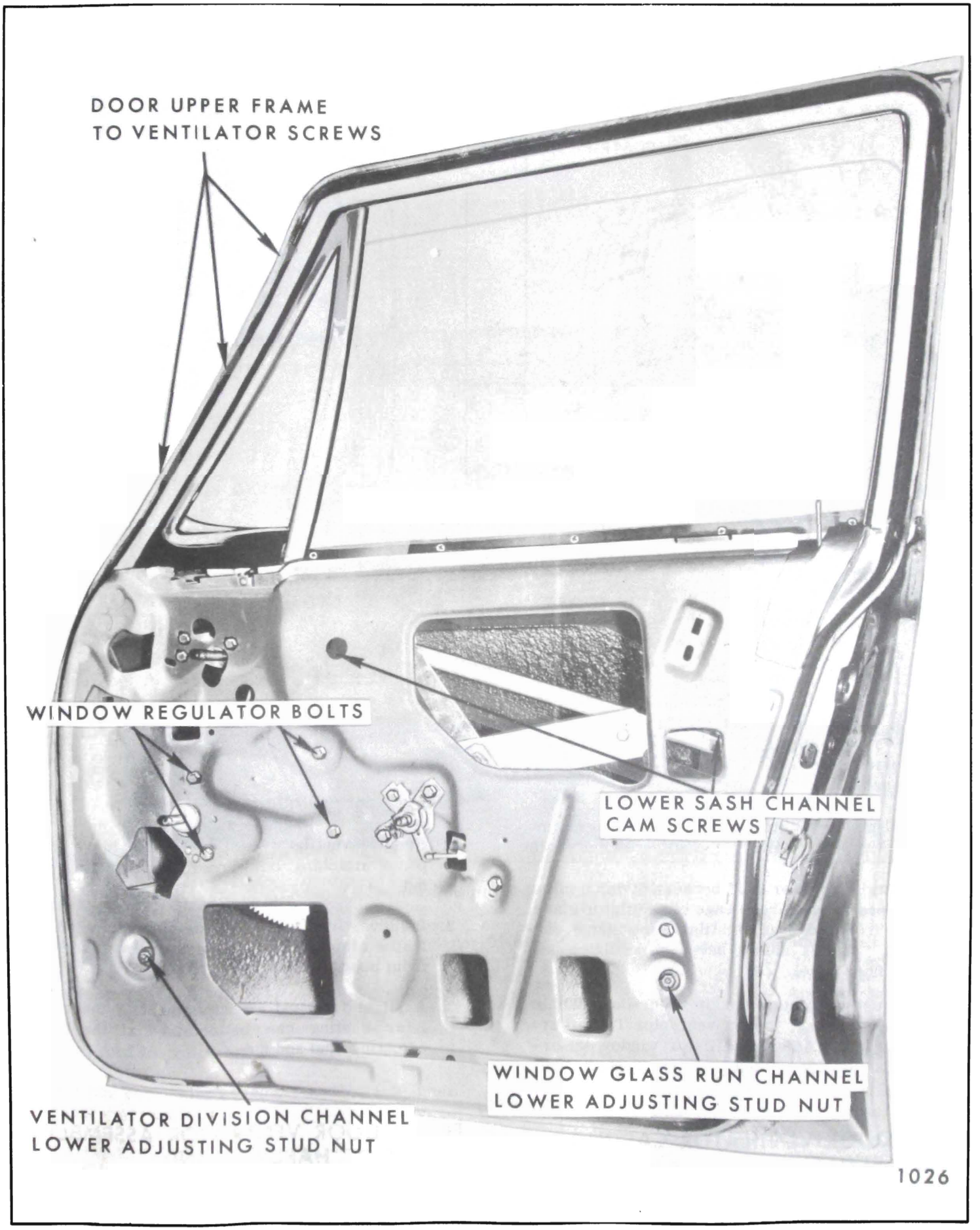

Fig. 7-64—Door Ventilator and Regulator Attachment - "B & C" Closed Styles

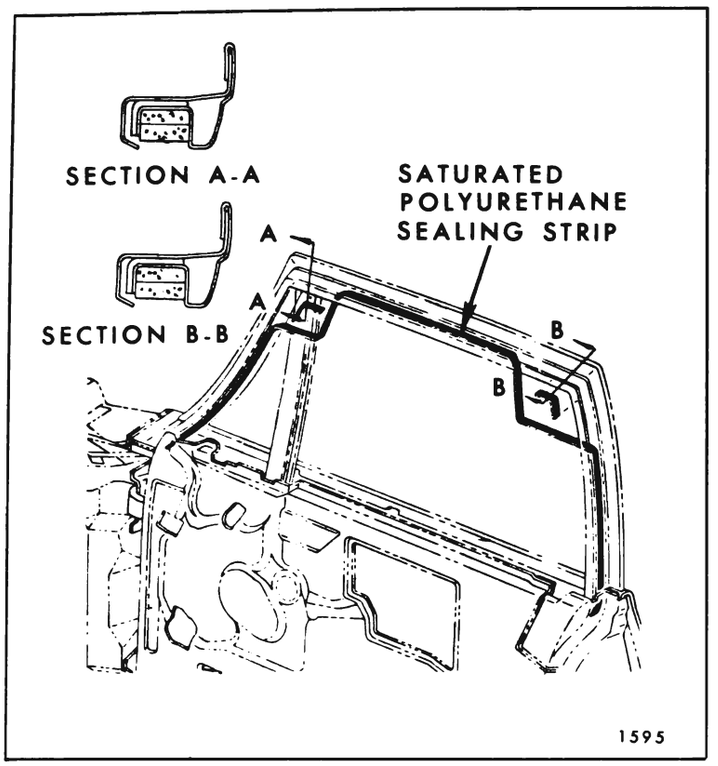

Fig. 7-65—Front Door Window Glass Run Channel Sealing - "B & C" Closed Styles

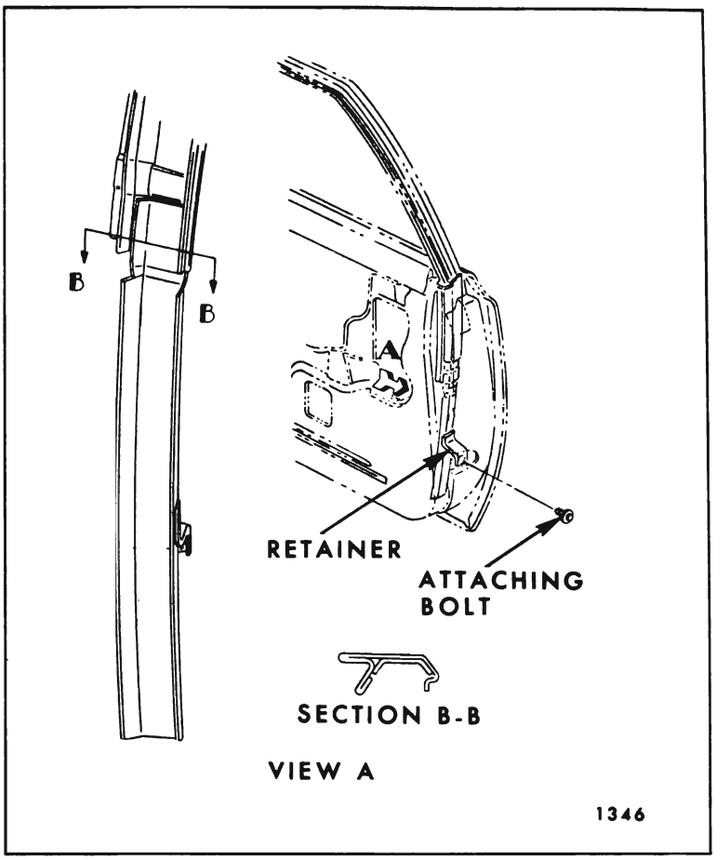

Fig. 7-66—Door Window Glass Run Channel Lower Rear Retainer - "A" Styles

1. To adjust the top of the ventilator assembly in-or-out, adjust the ventilator lower frame and ventilator division channel adjusting studs as required, then tighten the stud nuts.

2. To position ventilator fore-or-aft or up-or-down to obtain proper alignment with side roof rail weatherstrip, shift loosened ventilator to desired position and tighten attaching nuts and bolts.

3. To eliminate flutter (play) of ventilator window, tighten ventilator T-shaft attaching bolt.

4. To obtain a better seal between division pillar weatherstrip and rear edge of ventilator glass, shim front edge of ventilator regulator outboard. Install shims between regulator and door inner panel.

5. To adjust ventilator window up-or-down within ventilator frame, loosen ventilator T-shaft attaching bolt. Adjust ventilator window up-or-down as desired, then, tighten T-shaft bolt.

FRONT DOOR VENTILATOR CASTING—"X-37" STYLES

The front door ventilator casting is used on all "37" Styles and is secured to the front door assembly by one attaching bolt and one adjusting stud and nut. The front facing of the ventilator frame is secured to the ventilator casting by five attaching screws.

Removal and Installation

1. Remove ventilator casting to door hinge pillar panel attaching bolt and lower adjusting stud nut.

2. Remove five ventilator casting to ventilator frame attaching screws and remove assembly from door.

3. A slight fore and aft adjustment of the ventilator casting can be obtained at the lower adjusting stud and nut.

FRONT DOOR VENTILATOR ASSEMBLY—"A-X & Z" HARDTOP AND CONVERTIBLE STYLES

The front door ventilator assembly is a manually operated friction type unit.

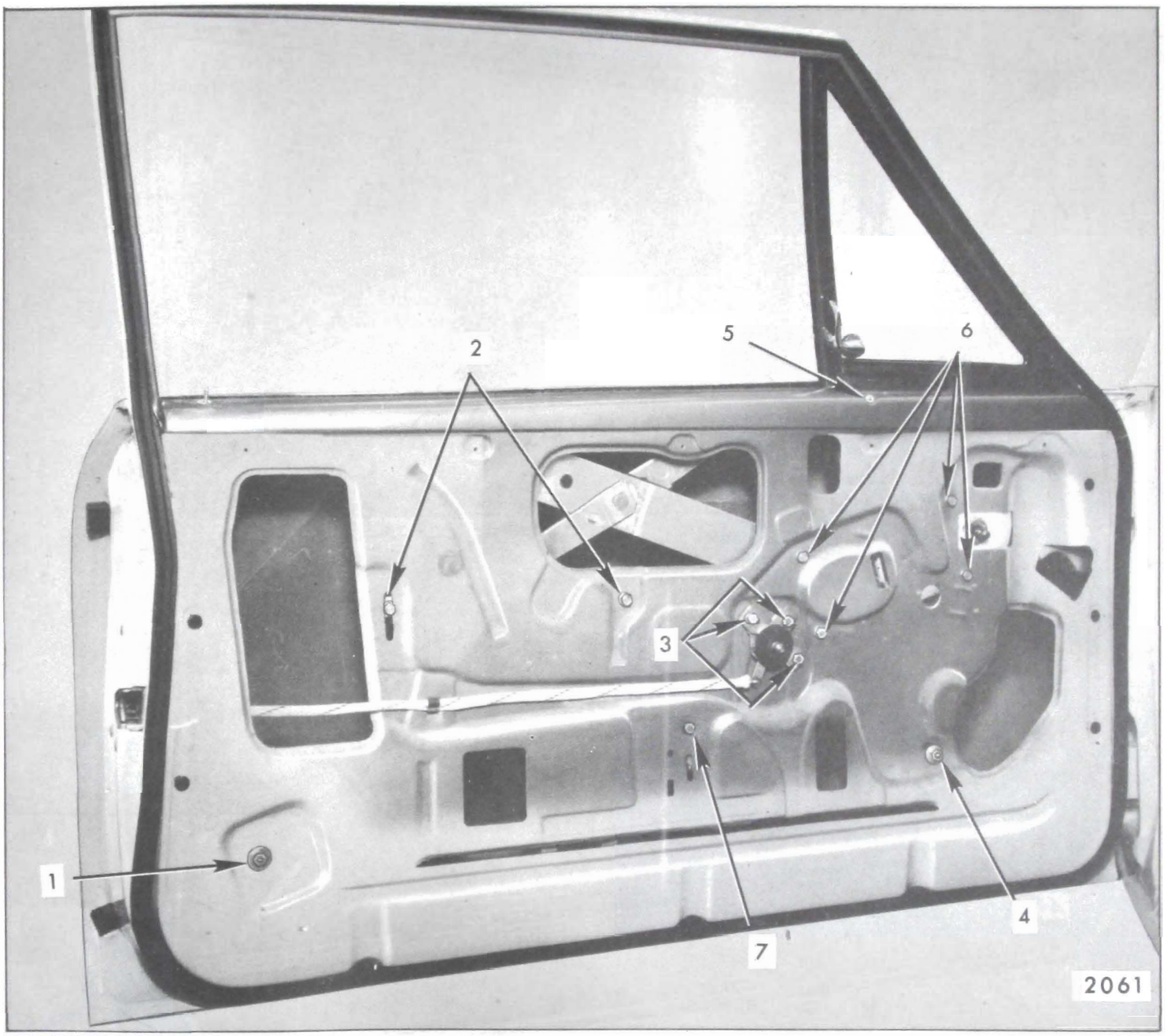

Fig. 7-67—Front Door Hardware - "A-07" Style

1. Rear Glass Run Channel Lower Retainer Adjusting Stud and Nut
2. Inner Panel Cam Bolts
3. Remote Control Bolts
4. Ventilator Division Channel Lower Adjusting Stud and Nut
5. Ventilator to Inner Panel Attaching Screw
6. Window Regulator Bolts
7. Window Lower Stop Attaching Bolt

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.

2. On "A-39" Styles, remove front door window - see index.

3. Remove ventilator division channel lower adjusting stud nut and ventilator to door inner panel attaching screw(s) (See Fig. 7-71).

NOTE: On "A-39" Styles, ventilator to door inner and outer panel return flange attaching screws must be removed. This additional screw is what necessitates removal of door window.

4. On all "A" Body Styles (except "A-39"), remove door window lower stop and completely lower window. Lower door window on all other styles.

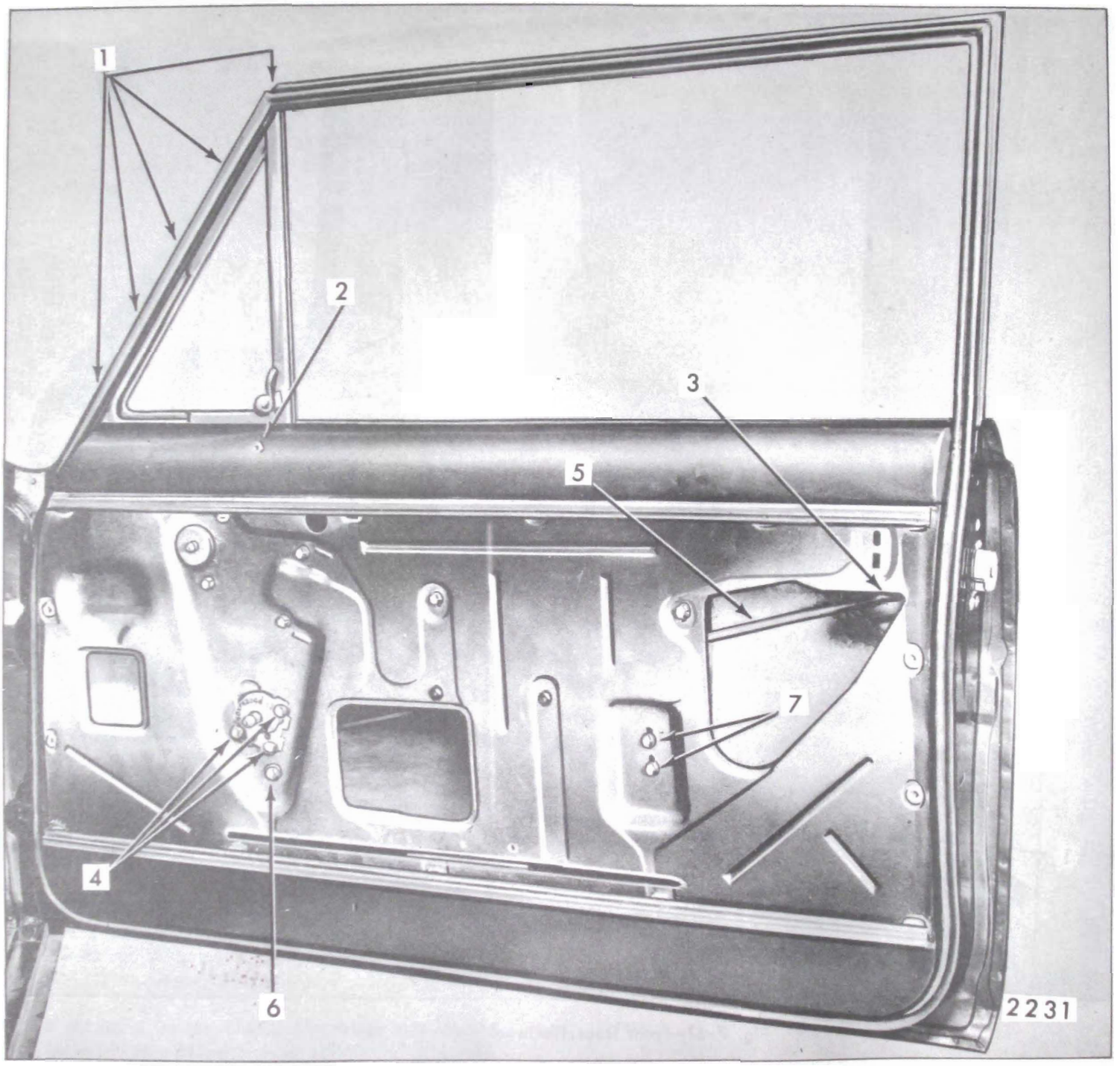

Fig. 7-68—Front Door Hardware Attachment - "X" Styles

1. Window Frame To Ventilator Attaching Screws
2. Ventilator To Door Inner Panel Attaching Screw
3. Spring Clip (Hidden)
4. Remote Control Attaching Bolts
5. Door Lock Connecting Rod
6. Ventilator Division Channel Lower Adjusting Stud And Nut
7. Window Lower Stop Adjusting Stud And Nut

5. On "X" Body Styles, remove front door ventilator casting.

6 On "A & Z" Body Styles, on door hinge pillar, remove ventilator frame lower attaching bolt, ventilator front frame attaching screw(s) and ventilator frame lower adjusting stud nut (see Fig. 7-71).

7. On "Z" Body Styles, loosen rear glass run channel upper attaching screw and remove run channel lower adjusting stud nut. Move door glass as far rearward as possible.

8. Push ventilator lower adjusting stud free of inner panel and rotate top edge of ventilator rearward until front frame clears hinge pillar (see Fig. 7-71).

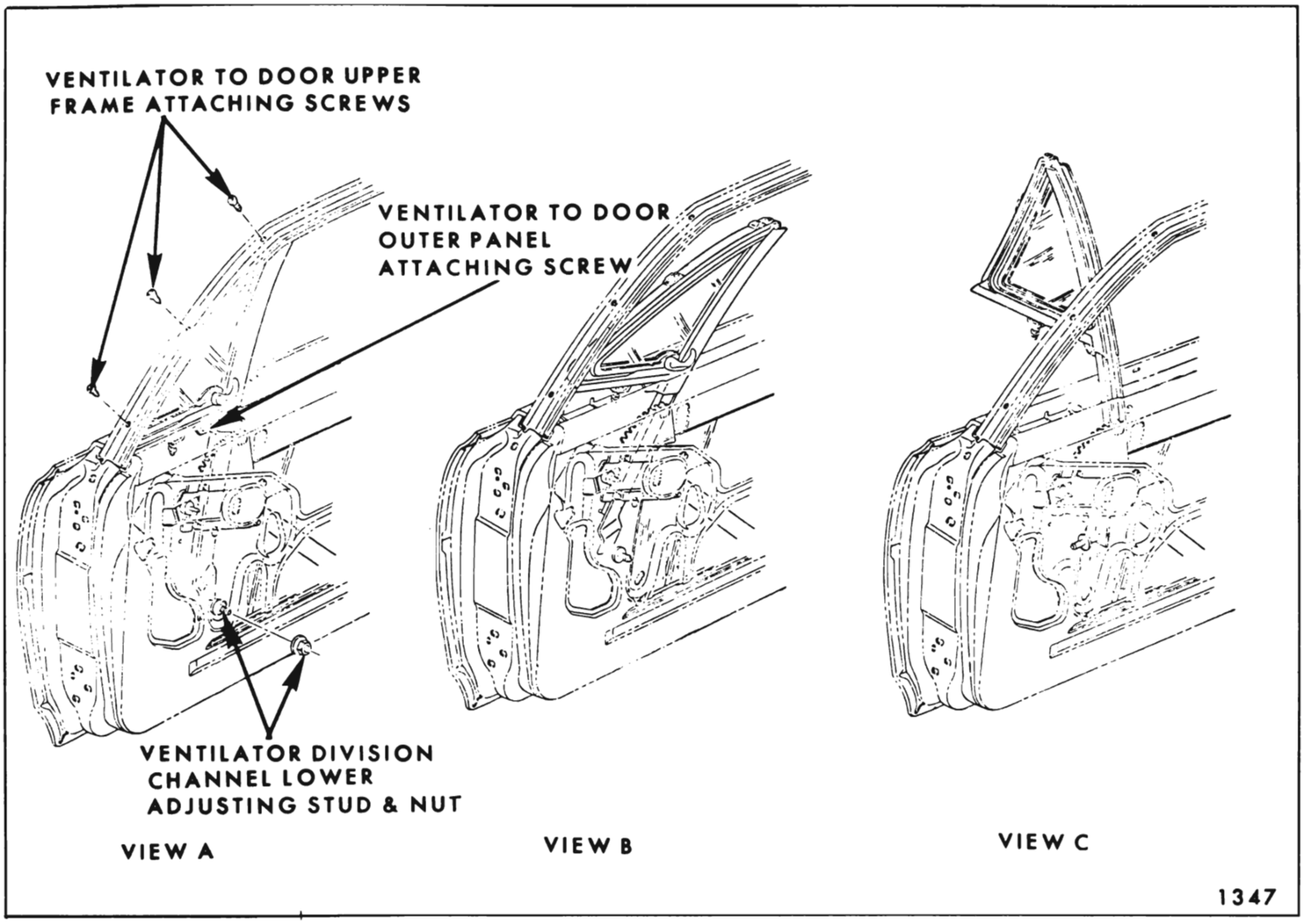

Fig. 7-69—Front Door Ventilator Removal

9. Turn ventilator 90 degrees, as shown in Figure 7-71, and remove assembly from body.

   CAUTION: After ventilator has been removed, door glass should be held or otherwise suitably supported to prevent damage.

10. To install, reverse removal procedure.

Adjustments

1. A slight fore and aft adjustment of ventilator division channel is available at lower adjusting stud and nut by loosening attaching nut and sliding stud in slot provided. The division channel can also be positioned in or out by loosening nut and turning stud in or out as required and tightening nut.

2. The effort required to open or close the ventilator can be set by straightening retaining washer tab and tightening or loosening the adjusting nut. Tightening increases effort and loosening decreases effort. When desired adjustment has been obtained, bend down washer tab to lock nut in position (see Fig. 7-70).

   NOTE: This adjustment should be performed as a bench operation.

3. The ventilator frame lower adjusting stud and nut provides in or out adjustment by use of an oversize attaching hole and fore or aft adjustment by turning stud in or out as required.

FRONT DOOR VENTILATOR ASSEMBLY—WEATHERSTRIP—"A-B & C" STYLES

Removal and Installation

1. Remove front door ventilator assembly.

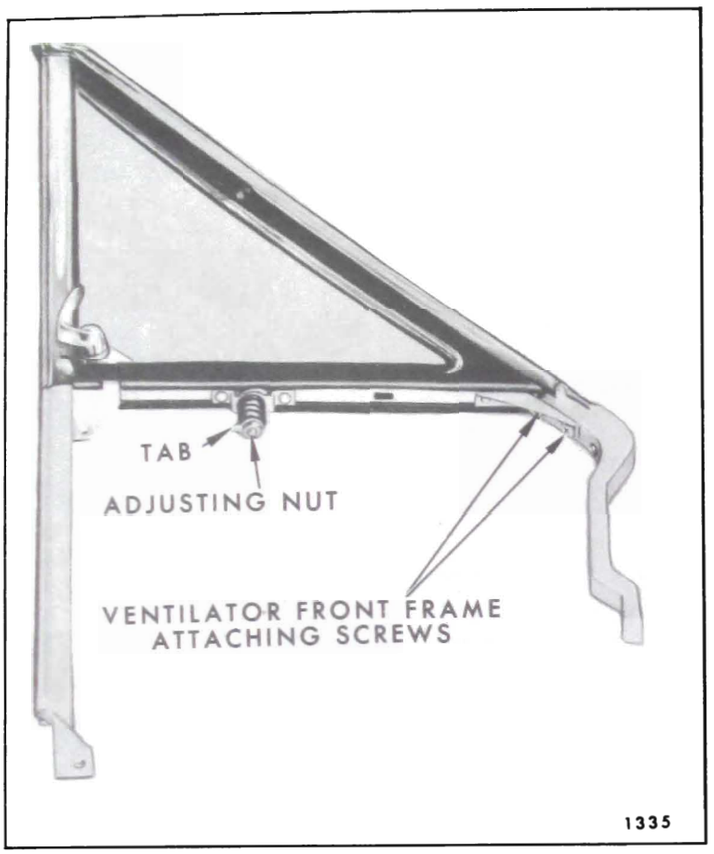

Fig. 7-70—Front Door Ventilator Assembly - "A" Style Shown - "X & Z" Similar

2. Remove ventilator glass and sash channel from ventilator frame by opening glass approximately 60° and pushing glass downward slightly to disengage glass unit from ventilator frame at upper pivot point; then, upward to disengage lower T-shaft from frame. (Fig. 7-72).

3. Remove ventilator division channel upper rubber bumper attaching screw.

4. Remove two attaching screws securing ventilator casting to frame and separate ventilator casting from frame so that the ventilator weatherstrip can be removed (Fig. 7-72).

5. To install, reverse removal procedure. Prior to installation, apply a ribbon of medium bodied sealer between ventilator weatherstrip and casting.

FRONT DOOR WINDOW ASSEMBLY—"B-11-35-45 AND 69" STYLES

The front door window assembly consists of a frameless piece of solid tempered safety plate glass pressed into a thin-section lower sash channel. When cycled, the glass operates within the ventilator division glass run channel and window glass run channel.

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.

2. On "35-45 and 69" Styles only, remove front door ventilator as previously described.

3. Remove glass run channel lower adjusting stud nut (Fig. 7-73).

4. On "11" Styles, operate window to approximately 3" down from "full-up" position and remove lower sash channel cam attaching screws.

5. On "35-45 and 69" Styles, lower window to "full-down" position and remove lower sash channel cam attaching screws through lower access holes.

6. On "11" Styles, remove glass from door by simultaneously pivoting glass (front edge down and rear edge up) and lifting glass upward and outboard of door upper frame. On "35-45 and 69" Styles, remove glass by lifting it upward and outboard of door upper frame.

7. To install, reverse removal procedure. Check window for proper operation before installing water deflector.

FRONT DOOR WINDOW ADJUSTMENTS—"B-11-35-45 AND 69" STYLES

Adjustments have been provided to relieve a binding door glass due to misalignment of the glass run channels. The glass can also be adjusted to correct a rotated (cocked) door window assembly. To perform the following adjustments, remove door trim assembly and detach inner panel water deflector, where necessary, to gain access to the hardware attaching points.

Adjustments

1. To adjust lower portion of ventilator division channel for proper alignment with door window assembly, lower door window and loosen ventilator adjusting stud nut. Turn adjusting stud in or out or position lower end of channel fore or aft as required; then tighten adjusting stud nut (Fig. 7-64).

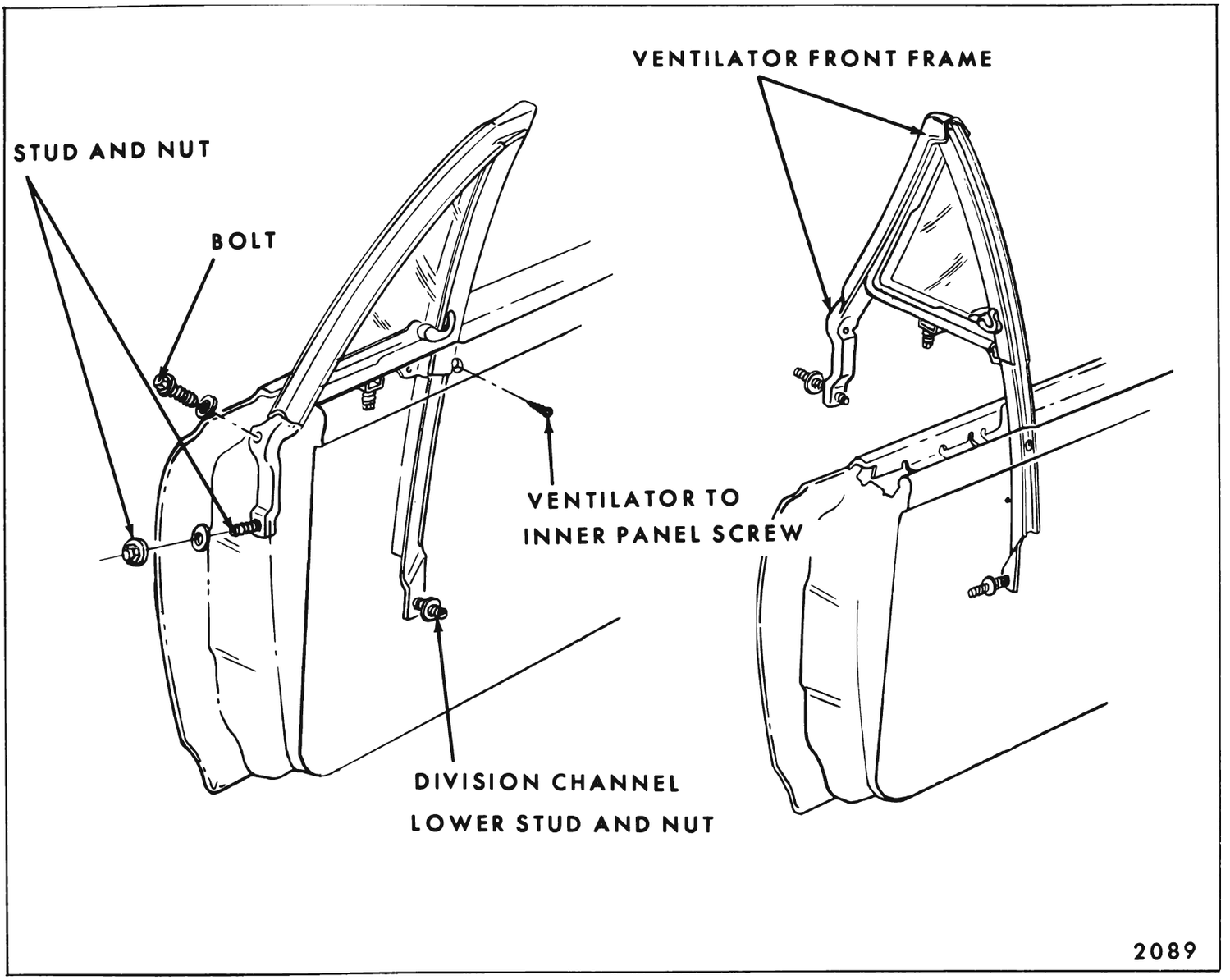

Fig. 7-71—Front Door Ventilator Removal - "A" Style Shown - "X & Z" Similar

2. To adjust lower section of door window rear glass run channel in-or-out for proper alignment with door window, first raise door window. Then, loosen rear run channel lower adjusting stud nut. Adjust channel as required and tighten nut (Fig. 7-64).

NOTE: Adjustments 1 and 2 must be coordinated to provide a properly operating front door window assembly.

3. The door window inner panel cam is adjustable at the front and can correct a rotated (cocked) front door window (Fig. 7-64).

FRONT DOOR WINDOW ASSEMBLY— "A & X" CLOSED STYLES

The front door window is a solid tempered safety plate glass. The glass fits into a lower sash channel assembly which incorporates a welded-on lower sash channel cam. With this type of design, the door glass, lower sash channel and sash channel cam are removed from the door as a unit.

CAUTION: Care should be exercised to make certain glass does not strike body metal during installation or removal procedure as edge chips can cause solid tempered safety plate glass to shatter. DO NOT attempt to grind glass.

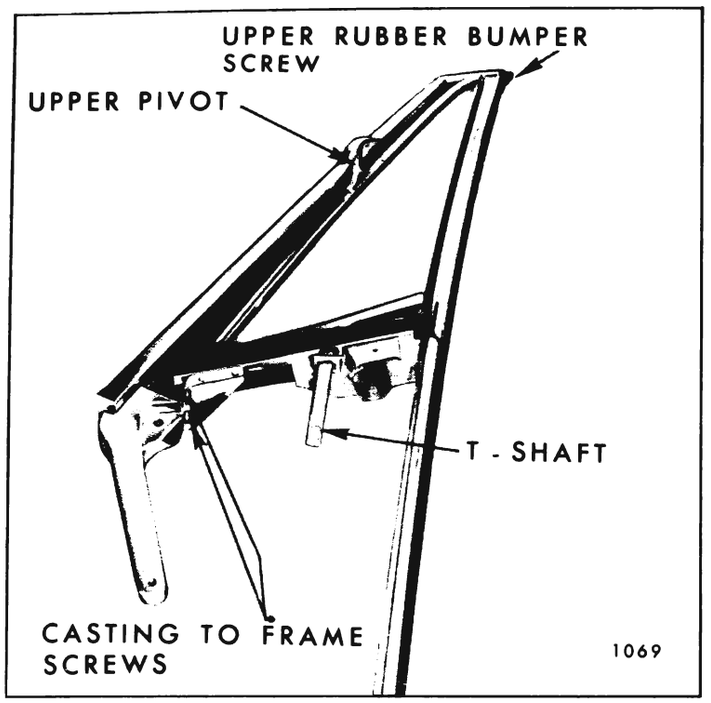

Fig. 7-72—Front Door Ventilator - "B & C" Styles

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.
2. On styles so equipped, remove inner panel cam.
3. Remove glass run channel lower rear retainer, front door ventilator assembly and inner belt strip (draft strip).
4. Raise door window to a position of almost fully closed. On styles equipped with a double arm regulator, rotate balance arm close to lift arm.
5. Move door window forward to disengage regulator arm roller(s) from window lower sash channel cam and remove door glass outboard of door upper frame on "A" Body Styles and inboard of door upper frame on "X" Body Styles (see Fig. 7-74 for "A" Bodies and Fig. 7-75 for "X" Bodies).
6. To install, reverse removal procedure.

Adjustments

A slight amount of fore or aft adjustment is available at the ventilator division channel lower adjusting stud and nut as explained under "Front Door Ventilator Assembly - Adjustments". On some styles, a rotated glass can be corrected by adjustment of the inner panel cam as explained under "Front Door Window Inner Panel Cam".

FRONT DOOR WINDOW ASSEMBLY— ALL "B & C" STYLES EXCEPT CLOSED

The front door window assembly consists of a solid tempered safety plate glass window and a bolted-on lower sash channel assembly which includes a welded-on sash channel cam. With this design, the door glass and sash channel are removed from the door as a unit and replacement glasses installed in bench operations.

Figure 7-76 is an exploded view of the front door window assembly and identifies the various components and their assembly sequence.

CAUTION: When installing glass to sash channel bolts, torque to 60 inch pounds (5 foot pounds). Also, when replacing door glass, replace glass spacers.

Removal and Installation

1. Remove door trim assembly and inner panel water deflector.
2. Operate glass to "full-up" position and remove front up-travel stop from lower sash channel (Fig. 7-77).
3. Operate window to half-down position and remove rear up-stop (Fig. 7-77).
4. With window in full-up position, remove glass run channel upper attaching bolts and lower adjusting stud nut (Fig. 7-77). Disengage run channel from window assembly and remove through access hole.
5. Remove inner panel cam bolts (Fig. 7-77). Disengage cam from regulator lift arm roller and remove cam.
6. With front upper corner of window inboard of ventilator division channel, rotate window assembly counter-clockwise until lower sash channel cam is parallel with belt line. Then move window assembly rearward to disengage regulator lift arm roller from lower sash channel cam and remove window from door.
7. To install, reverse removal procedure. Adjust window for proper alignment as described in the following procedure.

Adjustments

To perform any door window adjustments it is necessary to remove the door trim assembly and inner panel water deflector to expose the adjustment provisions.

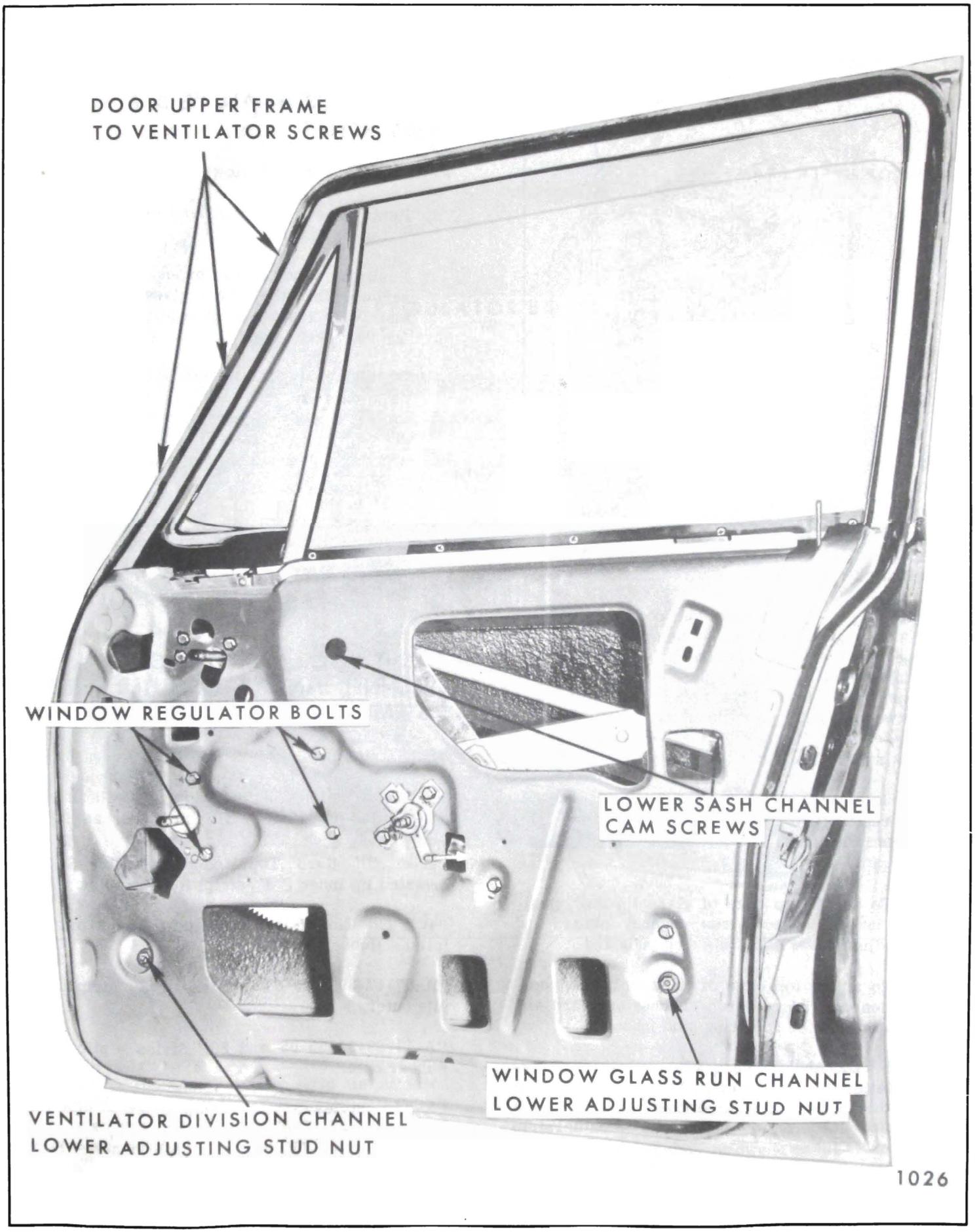

Fig. 7-73—Door Ventilator and Regulator Attachment - "B & C" Closed Styles

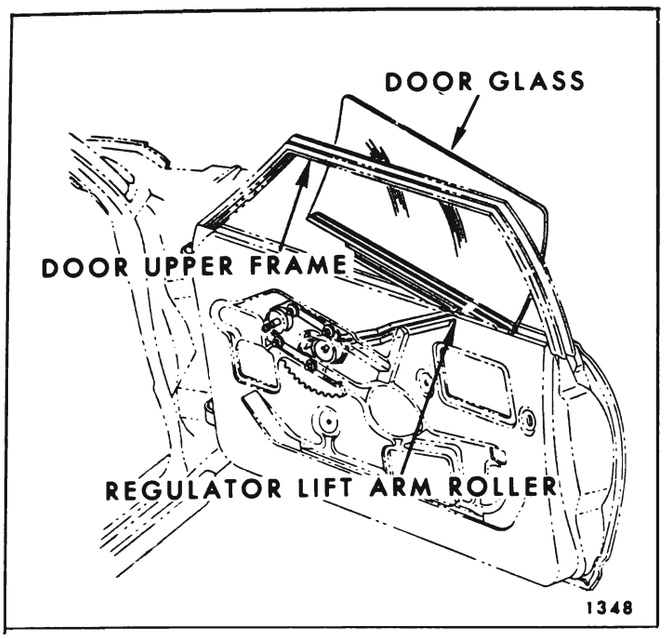

Fig. 7-74—Front Door Window Removal - "A" Styles

1. To correct a rotated window condition (glass cocked in opening), loosen inner panel cam attaching bolts (Fig. 7-77) and adjust front end of cam up or down as required.

   NOTE: If cam adjustment does not correct condition, loosen glass to sash channel attaching bolt nuts (Fig. 7-76) and reposition glass on sash channel. The sequence for making this adjustment is to first obtain flush alignment between lower sash channel and outer strip assembly at the belt line. Then, loosen glass bolt nuts and adjust glass.

2. To adjust upper rear edge of glass in-or-out in relation to side roof rail weatherstrip, loosen glass run channel lower adjusting stud nut and upper attaching bolts (Fig. 7-77).

   a. To adjust top edge of glass inboard, position top edge of run channel inboard and adjust lower adjusting stud outboard.

   b. To adjust top edge of glass outboard, position top edge of run channel outboard and adjust lower adjusting stud inboard.

      IMPORTANT: When adjusting glass in relation to side roof rail, position glass so that in closed position it is sufficiently high and inboard to tuck under weatherstrip outer lip as shown in Figure 7-78.

3. To adjust window up-travel, operate window to full-up position and loosen window front and rear upper stops (Fig. 7-77). Operate window to desired position and tighten stop bolts while forcing stops against welded-in stops on door inner panel.

FRONT DOOR WINDOW LOWER SASH CHANNEL CAM—ALL "E & Z" BODY STYLES

Removal and Installation

1. Remove door trim pad and detach inner panel water deflector.

2. Position window to expose cam attaching screws. On either style, glass will be approximately 3" from full-up position (see Fig. 7-79 for "E" Bodies and Fig. 7-80 for "Z" Bodies).

3. On "Z" Body Styles, remove one front and one rear cam to sash channel attaching screws. On "E" Body Styles, remove two attaching screws at rear (see Fig. 7-79), lower door window and remove two attaching screws at front.

4. Supporting glass with on hand, disengage cam from regulator rollers and remove cam. Lower glass to door bottom.

5. To install, reverse removal procedure.

FRONT DOOR WINDOW GLASS RUN CHANNEL INNER AND OUTER STRIP ASSEMBLIES (DRAFT STRIPS)

Draft strips are used to form a belt seal between door inner and outer panels and glass assembly. The construction and attachment of these strips vary with the body style involved, as follows:

"B & C" Hard Top and Convertible Styles - Inverted lip inner ("J" strip) Rubber outer

"B & C" Closed Styles - Multifilament pile inner (pile) - Rubber outer

"A-07-17-39 and 67" Styles - "J" strip inner - pile outer

"A-11-69-35-55-65 and 80" Styles - pile inner - Rubber outer

"X-37" Styles - "J" strip inner - pile outer

"X-11-69 and 35" Styles - pile inner - Rubber outer

"E" - All Styles - "J" strip inner - pile outer

"Z" - All Styles - pile inner - pile outer

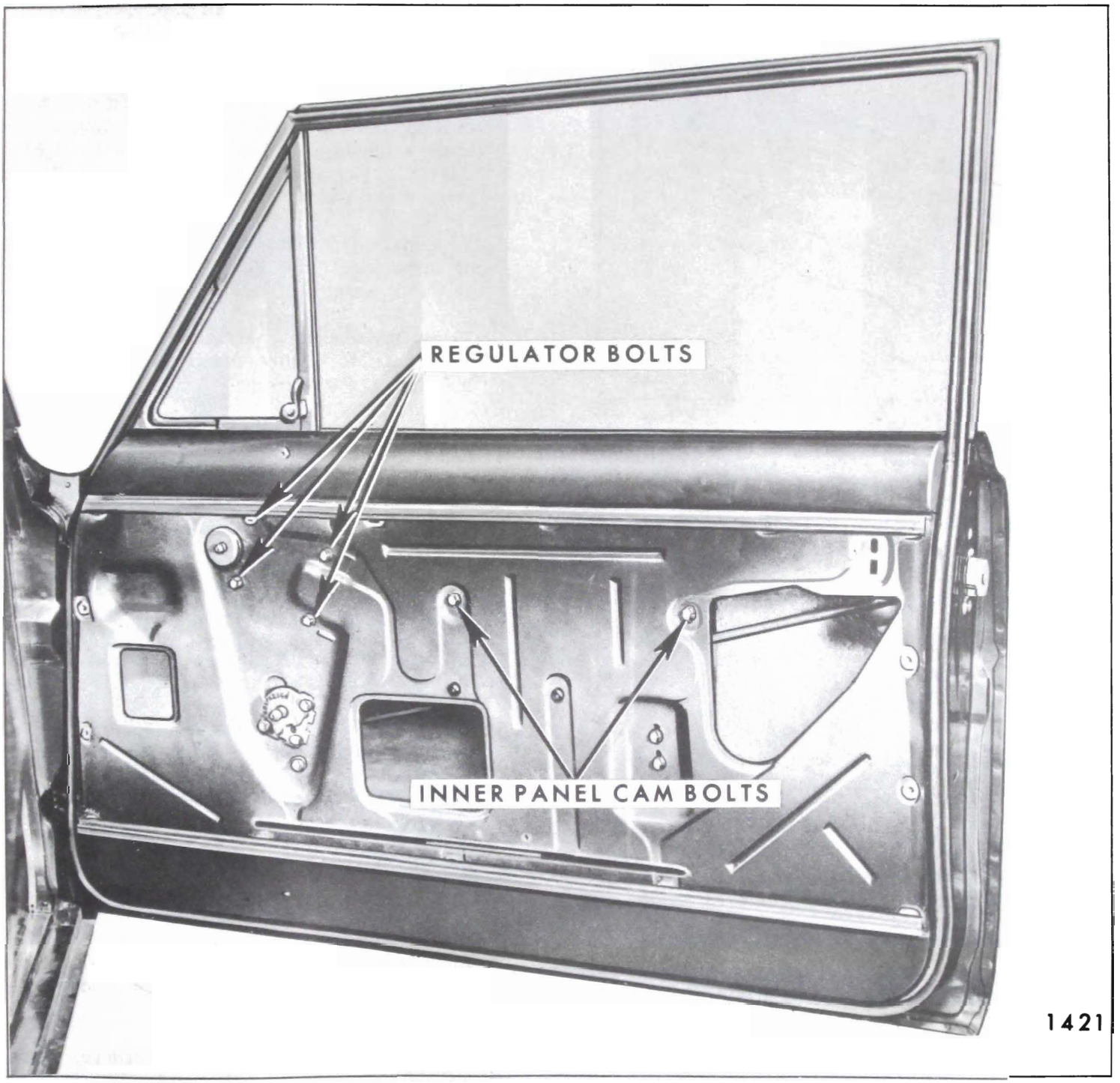

Fig. 7-75—Front Door Hardware - "X" Styles

On all "B & C", "E & A" Bodies equipped with deluxe trim, the inner draft strip is attached to the door trim pad. All "B & C" outer draft strips are attached with screws but need not be removed to facilitate door window removal. All "X-E" and the remaining "A" Body Style inner draft strips are attached by clips. All "A-X-E" and "Z" outer draft strips are attached with a combination of clips and screws (usually one at each end, front and rear).

On those styles equipped with a rubber lip outer draft strip, only the inner draft strip need be removed to facilitate door glass removal. On all other styles, however, both inner and outer draft strips must be removed preceding door glass removal.

Removal and Installation

NOTE: This procedure covers only draft strips attached directly to either the door inner or

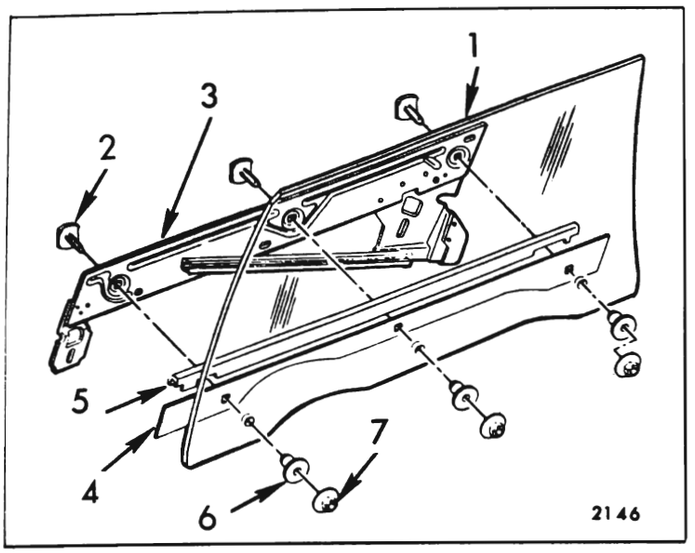

Fig. 7-76—Front Door Window Assembly - All "37-39-47-57 and 67" and "C-69" Styles

1. Door Window Glass
2. Glass to Lower Sash Channel Attaching Bolts (Center Bolt Not Used on "39" Styles)
3. Lower Sash Channel Assembly
4. Sash Channel Lower Filler
5. Sash Channel Upper Filler
6. Glass to Sash Channel Spacers
7. Glass to Sash Channel Nuts

outer panels. When the draft strip is attached to a trim pad, it is removed as part of the trim assembly.

1. The door window must be low enough to provide adequate clearance between top edge of glass and draft strip to be removed. If simply lowering window will not accomplish this needed clearance, proceed as follows:

   a. On styles equipped with a bolted-on lower stop, remove stop and lower window to bottom of door.

   b. On styles equipped with a welded-on lower stop, remove stop bumper to gain the required clearance.

   c. If additional clearance is still needed, remove door window lower sash channel cam and lower glass to bottom of door.

2. Remove draft strip attaching screws.

   NOTE: On most outer draft strips, the forward attaching screw is hidden beneath the ventilator division channel. This will require either removal or loosening of ventilator assembly to gain access.

3. Apply cloth-backed tape as a protective cover to painted surfaces adjacent to strip assembly to be removed.

4. Insert a flat blade tool (slotted to fit over tang of clip) between door panel return flange and strip assembly at clip locations (Fig. 7-81). Carefully pry clips from slots in panel and remove strip assembly.

5. To install, position strip assembly so that tang of clips start into slots in door panel, then press at each clip location and engage clips.

   Prior to installing strip assembly, reform clip tangs to assure positive retention when installed.

   NOTE: To make strip assembly removal tool, make a 1/4" wide by 3/8" deep slot in a J-2772 headlining inserting tool or equivalent.

FRONT DOOR WINDOW SASH CHANNEL GUIDE PLATE—"A-17-39 AND 67" STYLES

The guide plate is attached to the window sash channel by two bolts and acts in the dual capacity of window guide and rear up-travel stop.

Removal and Installation

1. Raise door window to a position almost fully closed (see Fig. 7-82).

2. Remove door trim pad and detach inner panel water deflector sufficiently to gain access to guide plate attaching bolts.

3. Remove two bolts securing guide plate to glass lower sash channel and remove guide plate (see Fig. 7-82).

4. To install, reverse removal procedure. Fore and aft adjustment of the guide plate is provided by usage of elongated attaching holes.

   NOTE: Figure 7-82 is for "17 and 67" Styles. Refer to Figure 7-87 for "39" Styles.

FRONT DOOR WINDOW UP-TRAVEL STOPS—"A-E-X & Z" HARDTOP AND CONVERTIBLE STYLES

On "A-Z & X" Body Styles, the rear up-travel stop is attached (single bolt) to glass sash channel and contacts a welded-on support (flange) on door inner panel. The front up-travel stop is attached (single bolt) to an extension in the glass

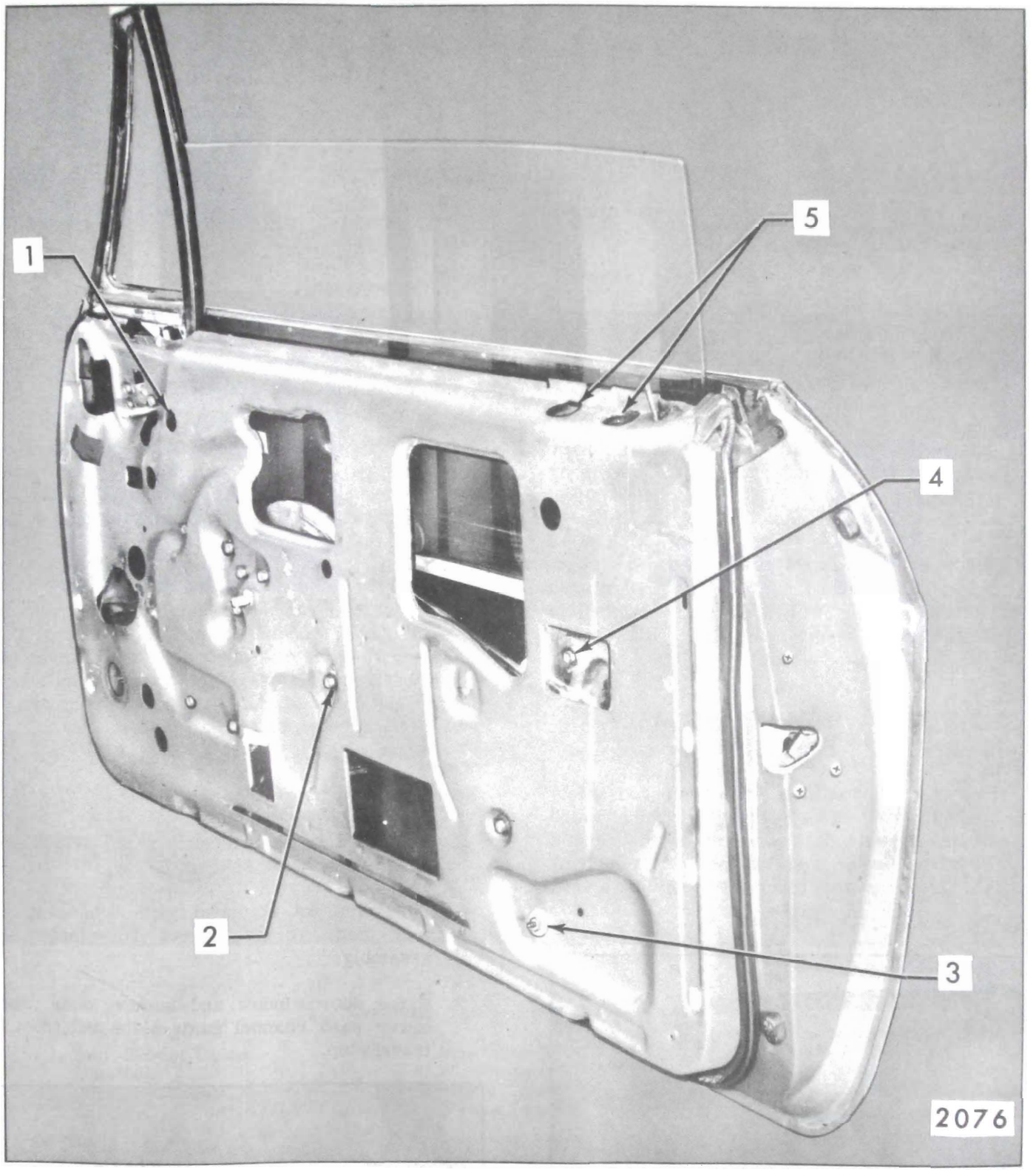

Fig. 7-77—Front Door Window Removal - "B & C" Hardtop Styles

1. Front Up-Stop Access Hole
2. Inner Panel Cam Bolts
3. Glass Run Channel Adjusting Stud and Nut
4. Rear Up-Stop Bolt
5. Glass Run Channel Upper Bolts

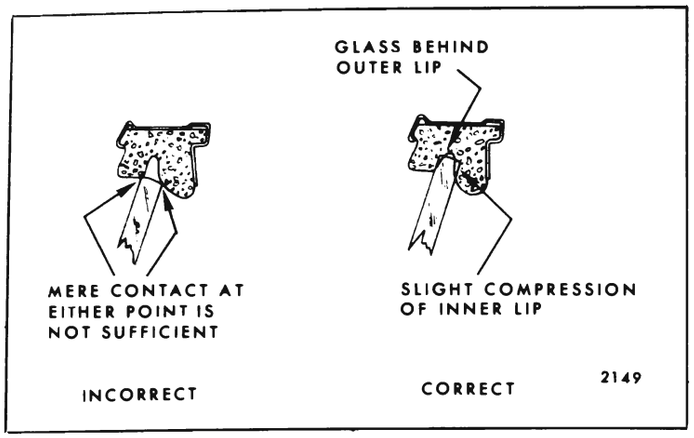

Fig. 7-78—Window to Side Roof Rail Weatherstrip Alignment

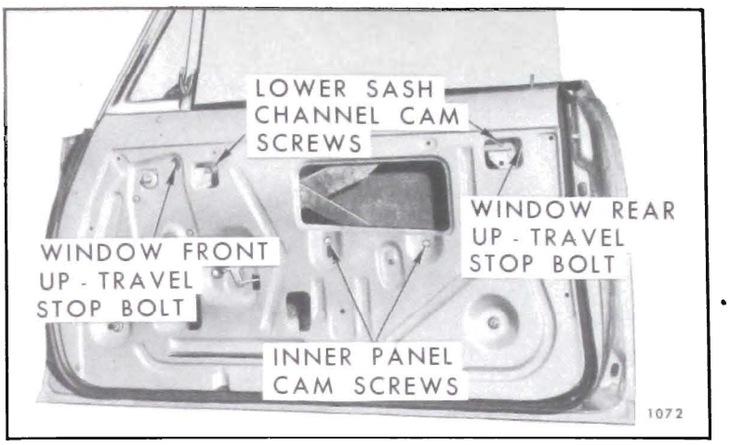

Fig. 7-80—Front Door Hardware - "Z" Styles

sash channel and contacts ventilator stationary stop (finger). Both up-stops are adjustable up or down.

On "E" Body Styles, the front door window is equipped with two up-stops, one front and one rear. Both stops are attached to the glass lower sash channel with single bolts that are accessible through the door inner panel (see Fig. 7-83).

FRONT DOOR WINDOW ASSEMBLY— "A-17 AND 67" STYLES

The front door window is a solid tempered safety plate glass that fits into a lower sash channel which incorporates a welded-on cam. With this design, the door glass, lower sash channel and sash channel cam are removed from the door as a unit.

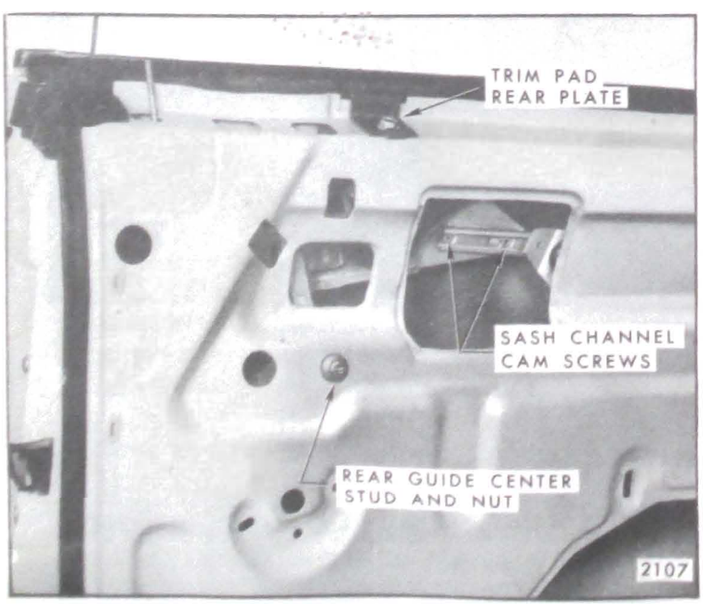

Fig. 7-79—Door Window Attachment

CAUTION: Use care to make certain glass does not strike hard objects. Edge chips or deep scratches can cause solid tempered safety plate glass to shatter. Do not attempt to grind or drill glass.

Figure 7-84 is an exploded view of "17 and 67" Style front door window assemblies. Chevrolet uses a single sash channel cam while Pontiac, Oldsmobile and Buick use a double sash channel cam. This difference is due to a variance in belt line heights but does not materially affect glass removal and installation procedures.

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.

2. On styles not equipped with a hang-on door trim pad, remove glass run inner strip assembly.

3. Raise door window and remove door window lower sash channel guide plate and front up-travel stop.

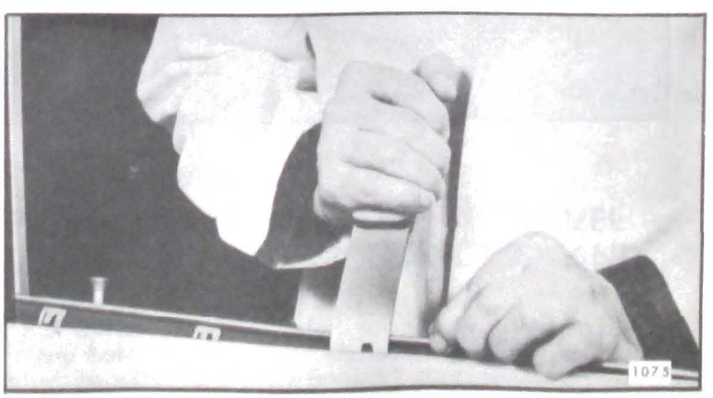

Fig. 7-81—Glass Run Channel Inner - Outer Strip Assembly Removal - "A-X & Z" Styles

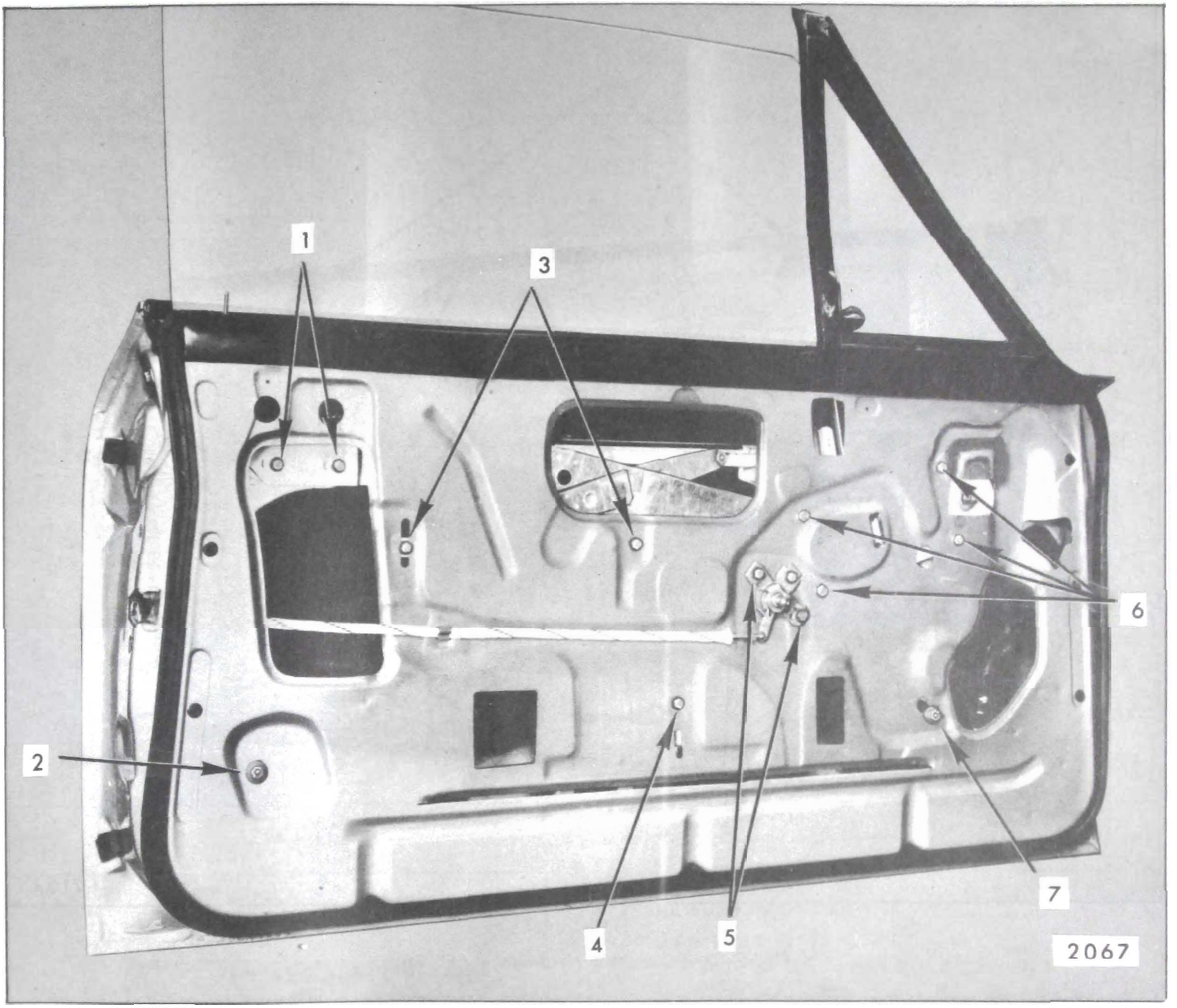

Fig. 7-82—Front Door Hardware - "A-17 and 67" Styles

1. Sash Channel Guide Plate Bolts
2. Glass Run Channel Lower Adjusting Stud and Nut
3. Inner Panel Cam Bolts
4. Window Lower Stop Bolt
5. Remote Control Bolts
6. Window Regulator Bolts
7. Ventilator Division Channel Lower Adjusting Stud and Nut

4. Remove inner panel cam.

5. Lower window slightly and tilt rear edge of glass up until lower sash channel clears door lock pillar at belt line (see Fig. 7-85 for Chevrolet styles and 7-86 for Pontiac, Oldsmobile and Buick styles).

6. Slide window rearward to disengage regulator lift and balance arm rollers from sash channel cam(s) and remove assembly from door.

7. To install, proceed as follows:

   a. On Chevrolet styles, the regulator lift arm roller is installed into the sash channel cam preceding the balance arm roller.

   b. On Pontiac, Oldsmobile and Buick styles, the regulator lift arm roller is installed into the rear sash channel cam simultaneously with the balance arm roller being installed into the front sash channel cam (see Fig. 7-86).

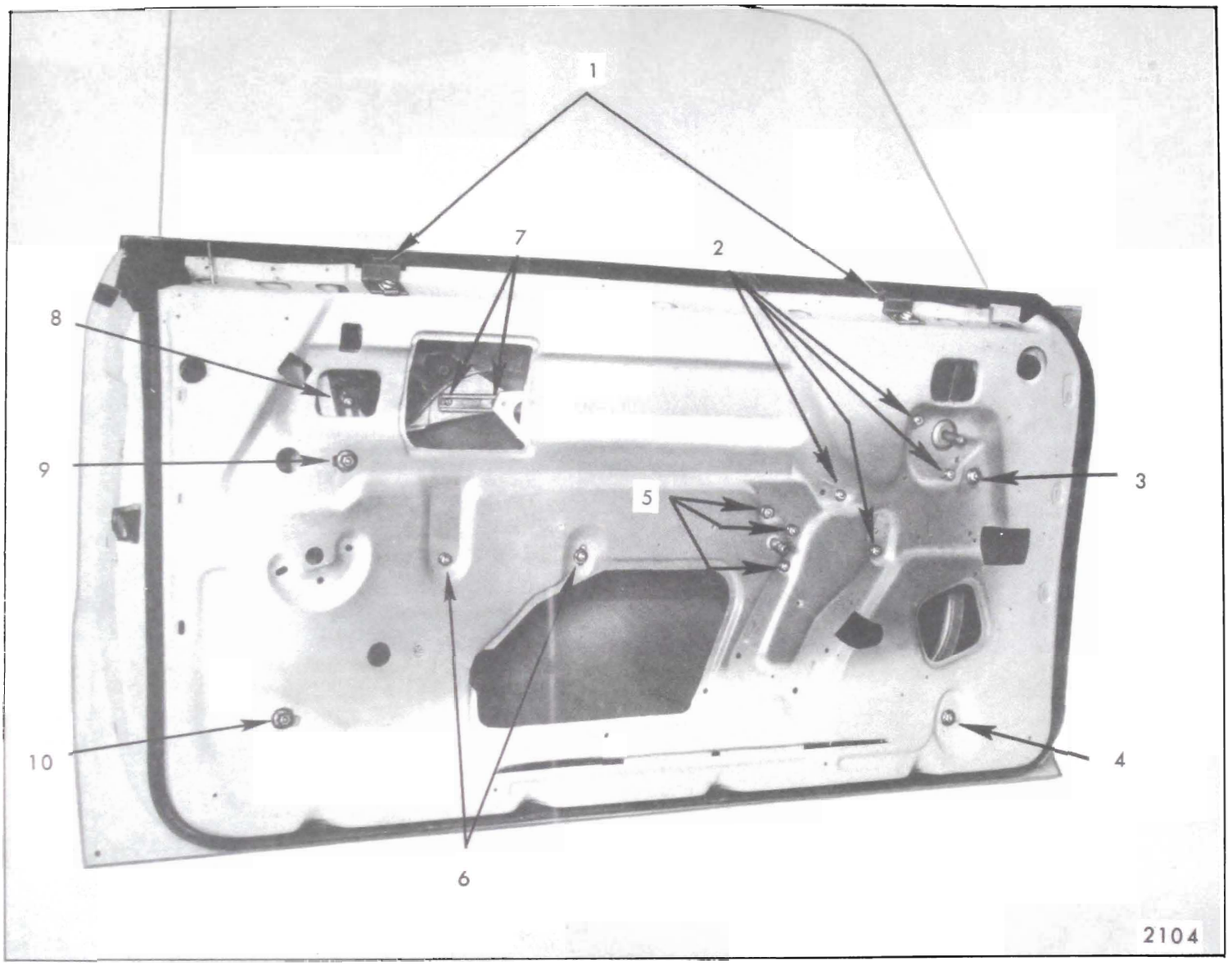

Fig. 7-83—Front Door Hardware - "E" Styles

1. Trim Pad Adjusting Plates
2. Window Regulator Attaching Bolts
3. Front Guide Center Adjusting Stud and Nut
4. Front Guide Lower Adjusting Stud and Nut
5. Remote Control (Standard) Attaching Bolts
6. Inner Panel Cam Attaching Bolts
7. Glass Sash Channel Rear Attaching Screws
8. Window Rear Up-Travel Stop
9. Rear Guide Center Adjusting Stud and Nut
10. Rear Guide Lower Adjusting Stud and Nut

c. Install previously removed hardware and cycle window to insure proper operation prior to installing inner panel water deflector and door trim pad.

Adjustments

The front door window is adjustable fore or aft at guide plate; up or down at up-travel stops; in a rotation manner at inner panel cam; up or down and in or out at rear edge by adjusting rear glass run channel.

The rear run channel lower adjusting stud provides in or out adjustment. This attachment, however, is located on the door inner panel and requires removal of trim pad to gain access (see Fig. 7-62).

FRONT DOOR WINDOW ASSEMBLY— "A-39" STYLES

The front door window is a solid tempered safety plate glass that fits into a lower sash channel which incorporates a welded on cam. With this design,

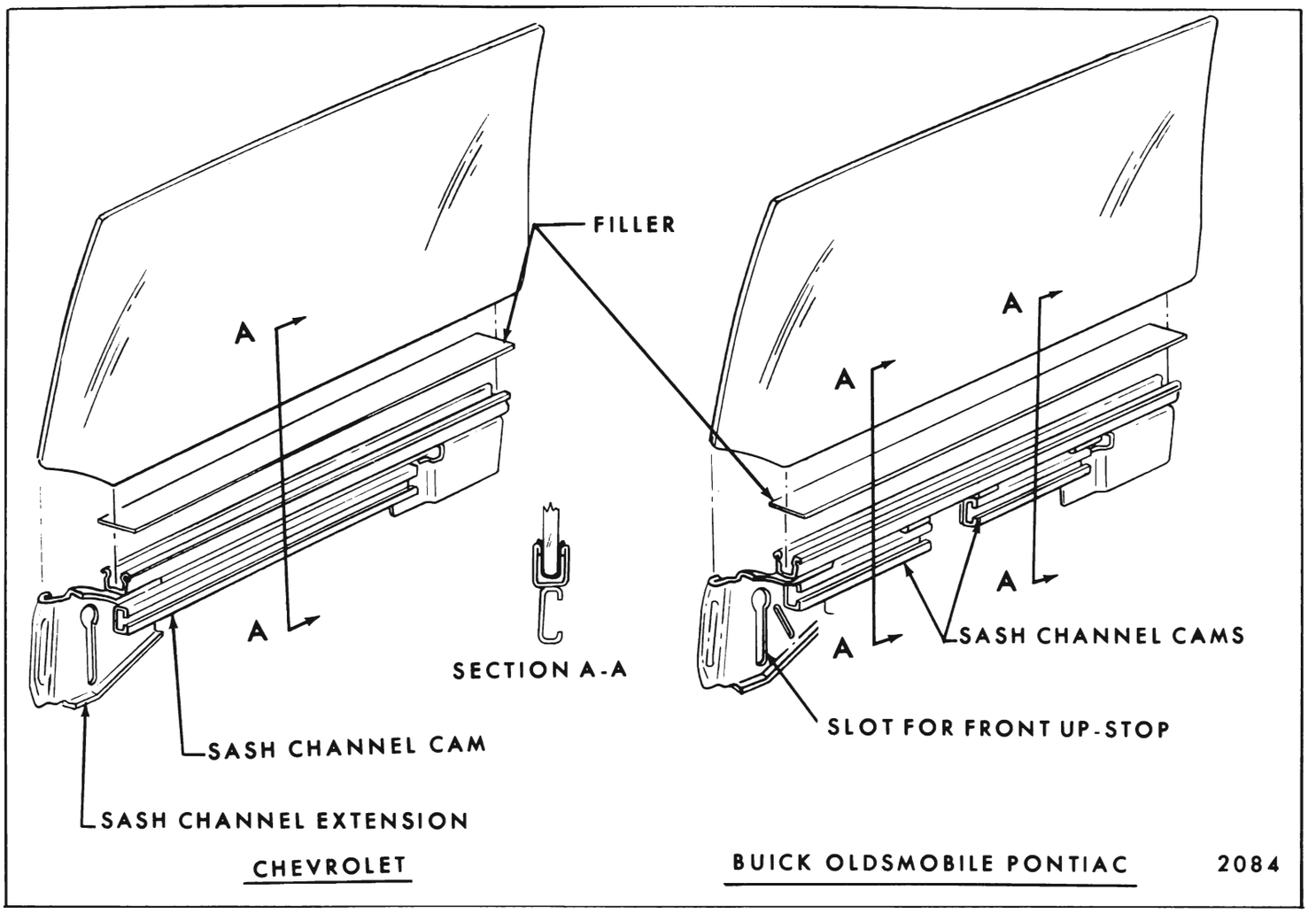

Fig. 7-84—Front Door Window Assembly - "A-17 and 67" Style

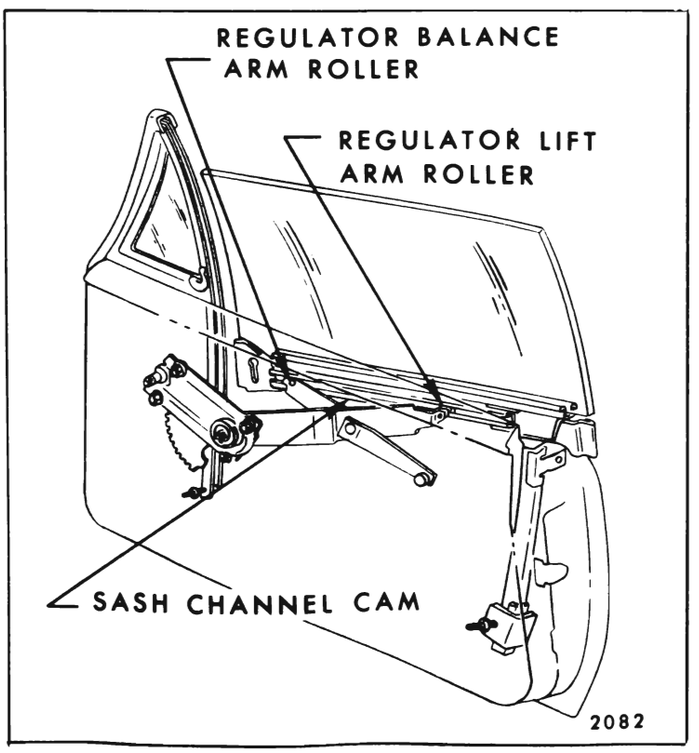

Fig. 7-85—Front Door Window Installation - Chevrolet "A-17 and 67" Styles

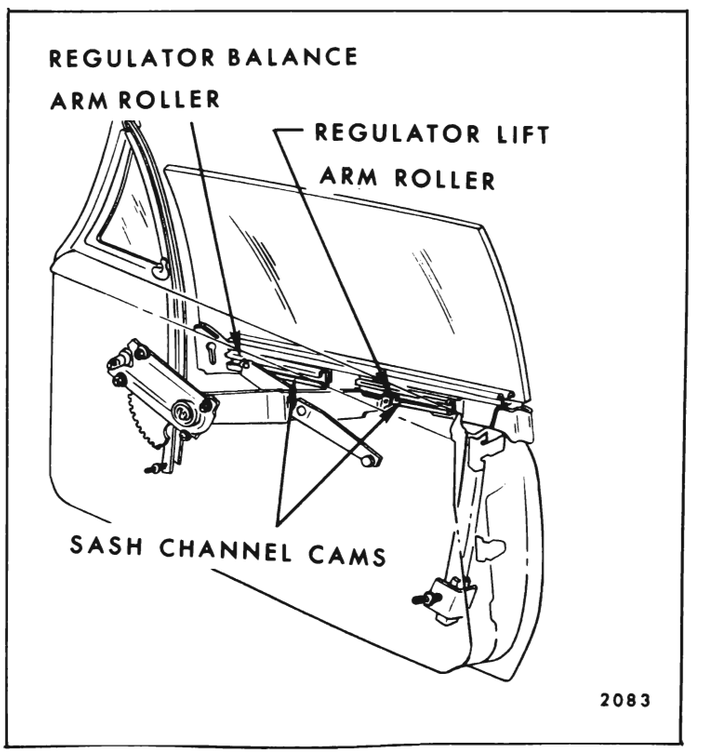

Fig. 7-86—Front Door Window Installation - Buick, Oldsmobile, Pontiac "A-17 and 67" Styles

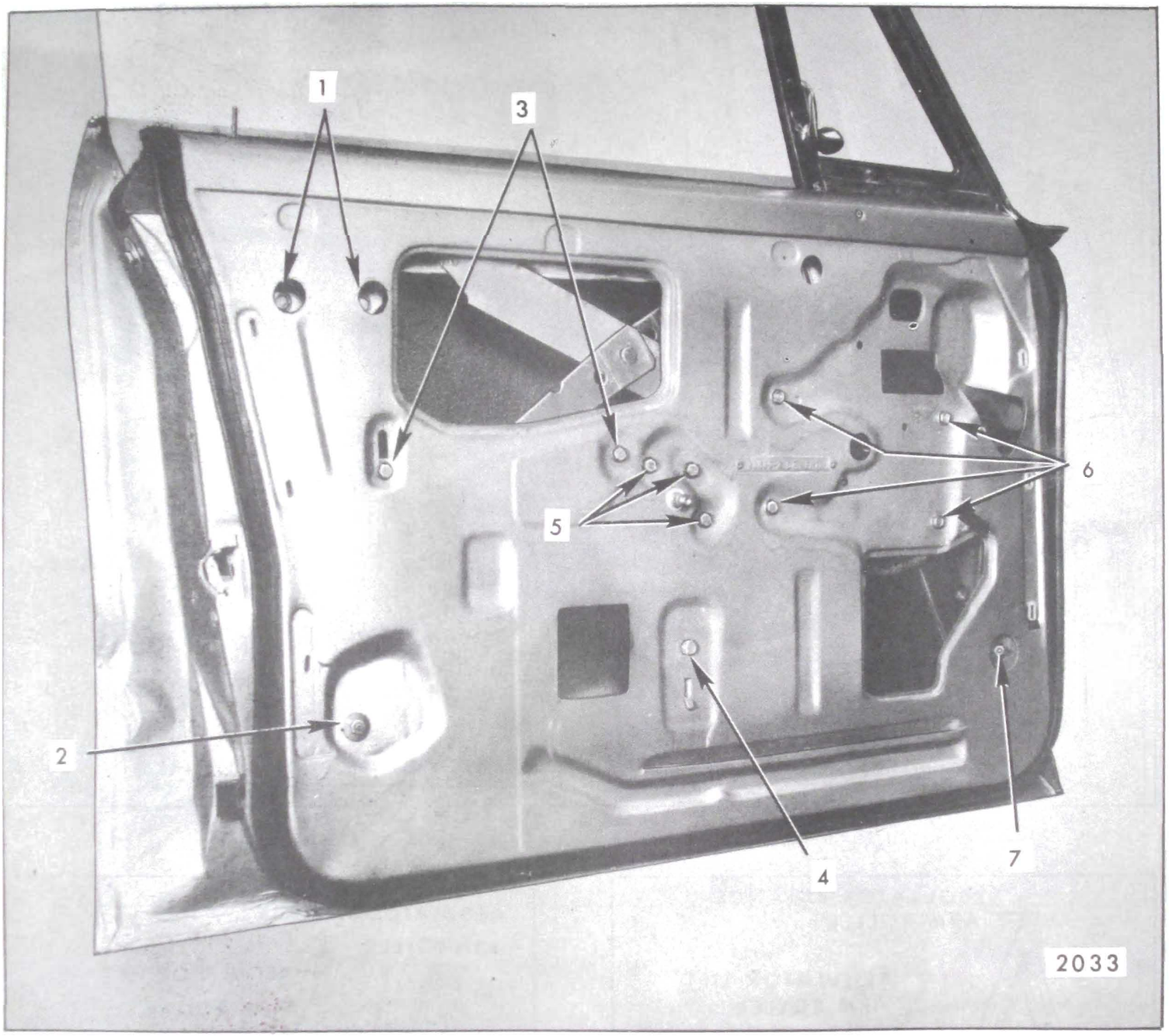

Fig. 7-87—Front Door Hardware - "A-39" Style

1. Sash Channel Guide Plate Bolts
2. Glass Run Channel Lower Adjusting Stud and Nut
3. Inner Panel Cam Bolts
4. Window Lower Stop Bolt
5. Remote Control Bolts
6. Window Regulator Bolts
7. Ventilator Division Channel Lower Adjusting Stud and Nut

the door glass, lower sash channel and sash channel cam are removed from the door as a unit.

CAUTION: Use care to make certain glass does not strike hard objects. Edge chips or deep scratches can cause solid tempered safety plate glass to shatter. Do not attempt to grind or drill glass.

Removal and Installation

1. Remove door trim pad and detach inner panel water deflector.
2. On styles not equipped with a hang-on door trim pad, remove inner strip assembly (draft strip).
3. Raise door window. Remove sash channel guide plate, front up-stop and inner panel cam (see Fig. 7-87).
4. Lower window slightly and tilt rear edge of glass up until lower sash channel clears door lock pillar at belt line.

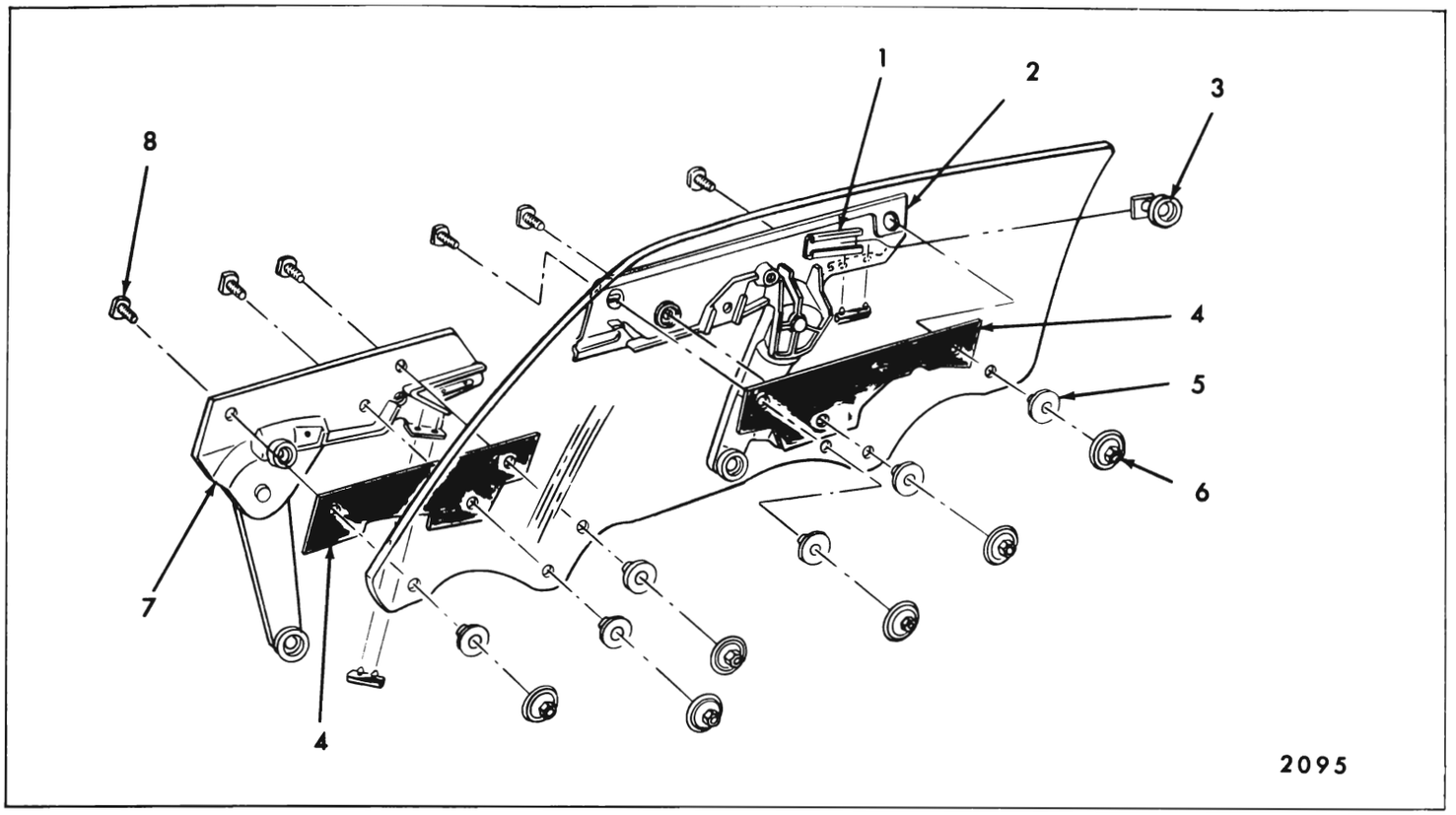

Fig. 7-88—Front Door Window Assembly

1. Sash Channel Plate Rear Cam
2. Rear Sash Channel
3. Cam Roller
4. Glass Filler
5. Spacer
6. Nut
7. Front Sash Channel
8. Bolt

5. Slide window rearward to disengage regulator lift and balance arm rollers from sash channel cam and remove assembly from door.

6. To install, reverse removal procedure. Cycle window to insure proper operation prior to installation of water deflector and trim pad.

NOTE: Front door window adjustments for "A-39" Styles are the same as outlined for "A-17 and 67" Styles with one exception. A regulator sector gear stop (window down-travel) is additionally used on "39" Styles. This stop is attached to the inner panel and can be adjusted to raise or lower the window height in the down position. The stop is used only on power operated (electric) windows.

FRONT DOOR WINDOW ASSEMBLY—49487 STYLES

The front door window assembly consists of a frameless piece of solid tempered safety plate glass and bolt-on front and rear lower sash channel assemblies. With this design the window is removed from the door as an assembly and glass replacements made as bench operations.

Figure 7-88 identifies the components of the door window assembly.

NOTE: When installing glass to sash channel nuts and washers, torque to 60 inch lbs. (5 foot lbs.).

CAUTION: Solid tempered safety plate glass will shatter if it is ground, drilled, chipped or deeply scratched. (see Fig. 7-88).

Removal and Installation

1. Raise door window, remove trim pad and detach inner panel water deflector.

2. Remove front and rear up-stops and lower sash channel cam.

3. Remove glass run channel outer strip and molding assembly (see exterior molding section of manual).

4. Raise glass straight up and remove assembly from body.

NOTE: If necessary, loosen upper attachments of front and rear glass guide channels.

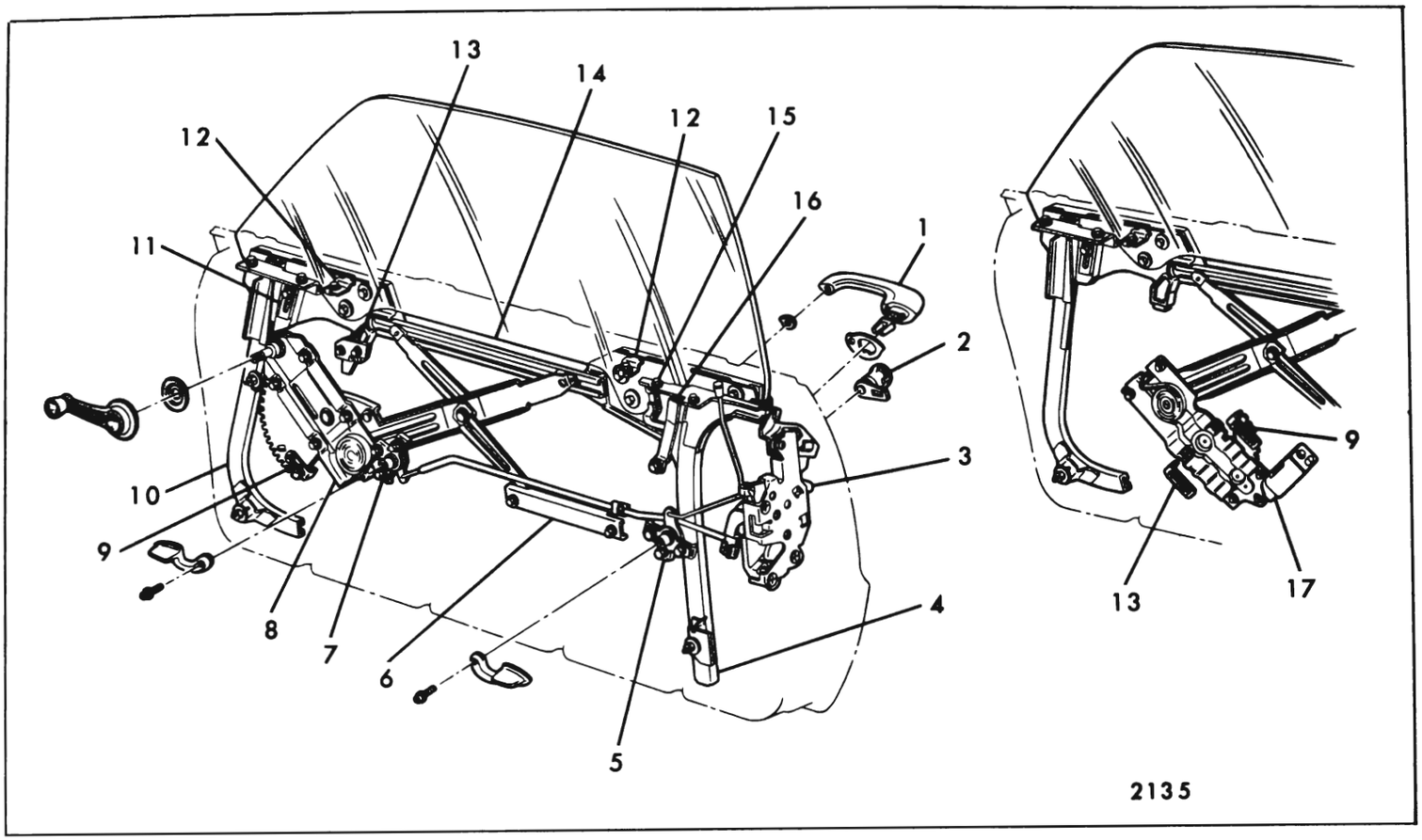

Fig. 7-89—Front Door Hardware - "E" Styles

1. Outside Handle
2. Lock Cylinder
3. Lock
4. Window Rear Guide Channel
5. Rear Remote Control (Optional)
6. Inner Panel Cam
7. Front Remote Control
8. Window Regulator (Manual)
9. Window Regulator Sector Gear Stop (Up-Travel)
10. Window Front Guide Channel
11. Window Front Up-Stop
12. Trim Pad Adjusting Plate
13. Window Regulator Sector Gear Stop (Down-Travel)
14. Window Glass Lower Sash Channel Cam
15. Window Glass Stabilizer
16. Window Rear Up-Stop
17. Window Regulator (Electric)

5. To install, reverse removal procedure.

Adjustments

A rotated glass can be corrected by adjustment of inner panel cam. Up or down adjustment is available at front and rear up-travel stops. In or out adjustment is available at front and rear guides. In addition, the regulator is equipped with two sector gear stops, one controlling up-travel of glass and one down-travel. Each stop is attached to the inner panel with two bolts and both are adjustable. (see Fig. 7-89).

The recommended sequence of total glass adjustment is as follows:

a. Turn front and rear guide center adjusting studs outboard (clockwise) until bearing surface is completely out of engagement with door inner panel.

b. Adjust upper attachments of front and rear guide to proper outboard positions (relationship of glass to side rail weatherstrip).

c. Adjust rear guide upper attachments for proper fore or aft positions.

d. Adjust glass up-travel stops.

e. Adjust front and rear guide lower adjusting studs for proper glass operation.

f. Turn center adjusting studs (both guides) back into contact with door inner panel.

g. Adjust sector gear stops.

FRONT DOOR WINDOW ASSEMBLY—"X-37" STYLES

The front door window glass is a solid tempered safety plate glass. The glass fits into a lower sash channel assembly which incorporates a welded-on lower sash channel cam. With this type of design the door glass, lower sash channel and sash channel cam are removed from the door as a unit.

CAUTION: Care should be exercised to make certain glass does not strike body metal during installation or removal procedure as edge chips can cause solid tempered safety plate glass to shatter. DO NOT attempt to grind glass.

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.
2. Lower door window and remove front and rear up-travel stops (see Fig. 7-90).
3. Remove front door ventilator casting and ventilator assembly.
4. Remove window down-travel stop.
5. Lower window to full down position.
6. Slide window forward, while tilting front edge upward, to disengage regulator lift arm from lower sash channel cam and remove window from door.
7. To install, reverse removal procedure. After installation of window assembly, lubricate entire length of lower sash channel cam and inner panel cam with Lubriplate or equivalent.

FRONT DOOR WINDOW ADJUSTMENTS—"X-37" STYLES

1. To adjust the window in or out or fore or aft at front section, lower door window and loosen ventilator division channel lower adjusting stud and nut. Turn adjusting stud in or out or position lower end of channel for or aft as required and tighten stud nut.
2. To adjust the window in or out at rear section, loosen rear run channel lower attaching nut. Adjust channel as required, and tighten nut.
3. Up or down adjustment is available at the lower stop assembly and additionally at the up-travel stops.

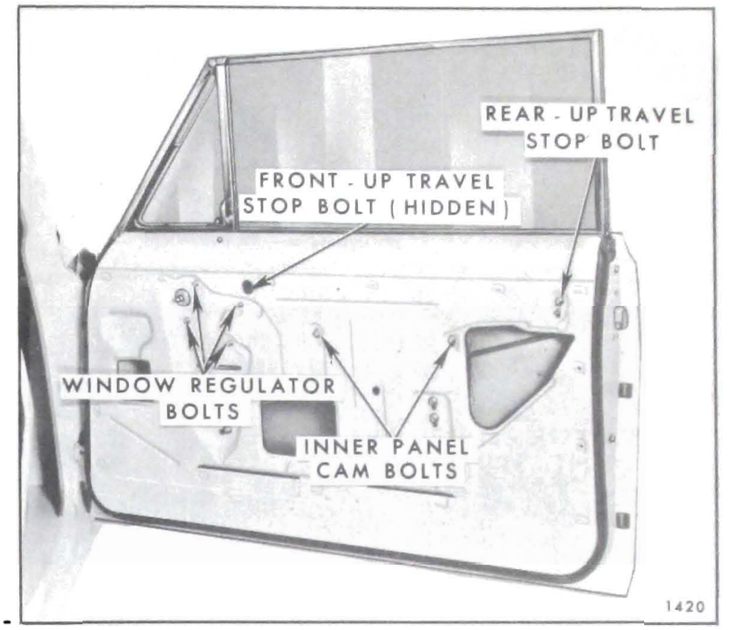

Fig. 7-90—Front Door Window Hardware Attachments - "X-37" Style

FRONT DOOR WINDOW ASSEMBLY—"Z-37-39 AND 67" STYLES

The front door window assembly consists of a frameless piece of solid tempered safety plate glass pressed into a thin-section lower sash channel. When cycled, the glass operates within the ventilator division run channel and the window rear run channel. Guide plates welded to the front and rear of the sash channel also operate in the run channels and give stability to the glass in the full up position.

NOTE: Because these guide plates are not adjustable, it is imperative that replacement door glasses be installed flush with the guide plates at the front and rear of the glass. If glass is too far forward or rearward in relation to guide plates, window assembly will be tight within the run channels.

CAUTION: Handle glass with care. Edge chips can cause solid tempered safety plate glass to shatter. Do not attempt to grind glass.

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector. Operate window to almost full-up position.
2. Working through front and rear upper access holes, remove bolts securing front and rear up-travel stops to lower sash channel and remove stops.

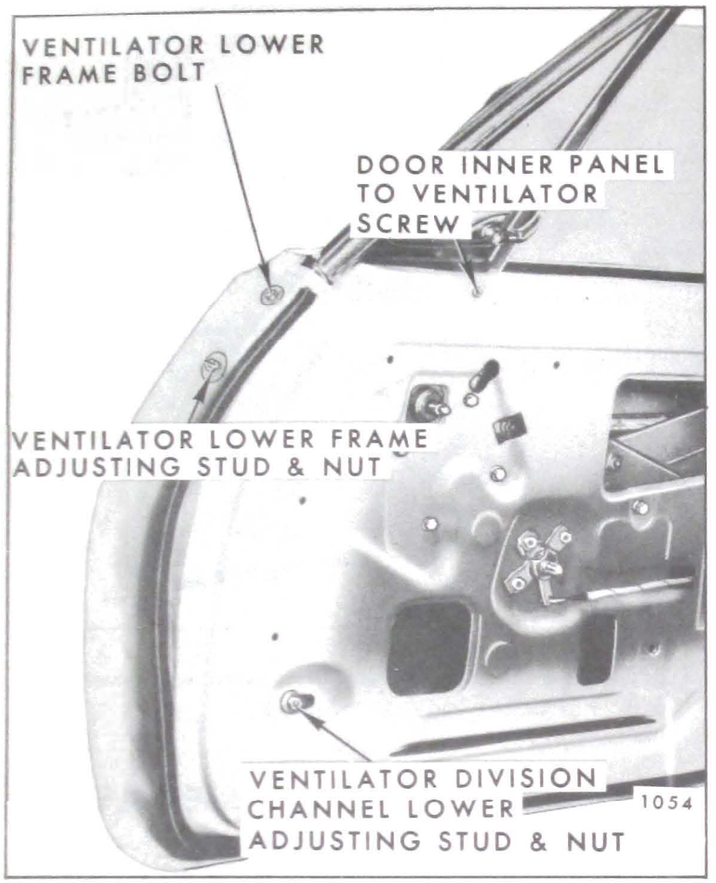

Fig. 7-91—Front Door Ventilator Attachments - "Z" Styles

3. Lower glass to approximately 3" down from full-up position and remove lower sash channel cam attaching screws.

4. Supporting glass with one hand, disengage cam from regulator rollers and remove cam. Lower glass to door bottom.

5. Remove both inner and outer strip assemblies at belt as described under "Glass Run Channel Inner and Outer Strip Assemblies"

6. Loosen ventilator attaching screws and adjusting stud nuts at points described below and illustrated in Figure 7-91.

   a. Ventilator division channel lower adjusting stud nut.

   b. Door inner panel to ventilator attaching screw.

   c. Ventilator adjusting stud nut and ventilator attaching bolt located on door hinge pillar.

7. Lift window assembly and remove it from between door panels at belt line.

8. To install, reverse removal procedure. Adjust window as described below. Adjust ventilator as described under "Front Door Ventilator Adjustments."

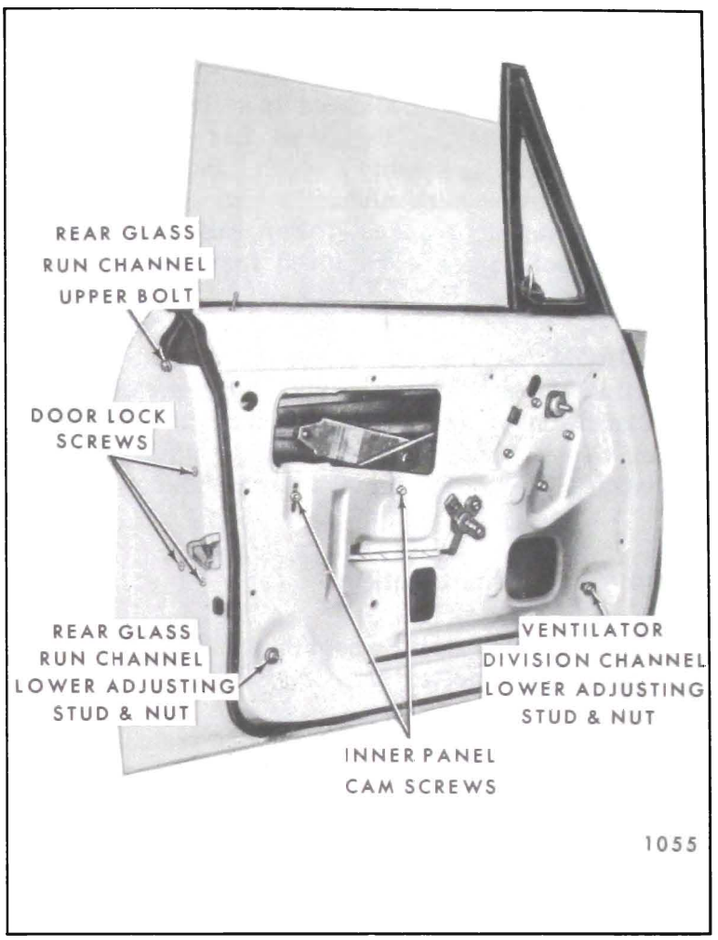

Fig. 7-92—Front Door Hardware - "Z" Styles

FRONT DOOR WINDOW ADJUSTMENTS—"Z" STYLES

To adjust the front door window up or down, loosen the front and rear up-travel stops and operate window to desired position. Then, position and tighten adjustable stops on sash channel against welded-on stops on front and rear run channels.

To rotate the glass in the opening (lower or raise front edge of glass) loosen the inner panel cam attaching screws. Raise or lower adjustable end of cam as required and tighten cam screws.

To adjust rear edge of glass in or out at the belt line, loosen the rear glass run channel upper attaching screw (Fig. 7-92) and adjust the run channel in or out as required.

To adjust the top edge of glass in or out in relation to side roof rail, loosen lower adjusting stud nuts of vent division channel and rear glass run channel (Fig. 7-92). Adjust studs in or out as required, then tighten stud nuts.

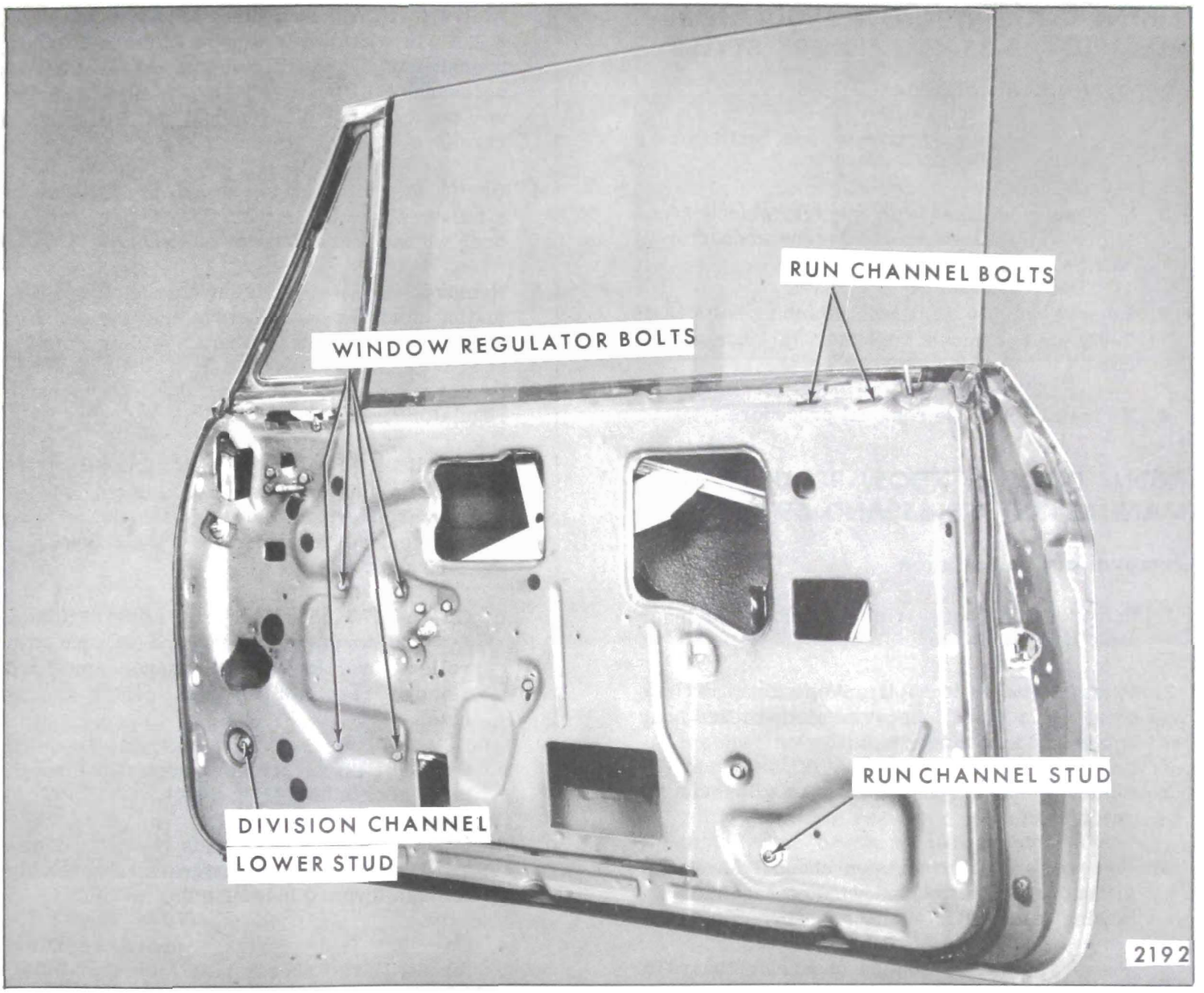

Fig. 7-93—Window Regulator Removal - "B & C" Hardtop Styles

Slight fore and aft adjustment is available by adjusting the vent division channel and rear glass run channel fore or aft at the lower adjusting stud locations (Fig. 7-92).

FRONT DOOR WINDOW REGULATOR—MANUAL AND ELECTRIC—ALL "B & C" STYLES EXCEPT CLOSED STYLES

Removal and Installation

1. Remove front door window assembly as previously described.
2. On two-door styles, remove ventilator division channel lower adjusting stud and nut (Fig. 7-93).
3. On styles equipped with electric window regulators, disconnect wire harness connector at window regulator motor.
4. Remove window regulator attaching bolts (Fig. 7-93).
5. Remove regulator through large access hole. On electric styles it will be necessary to press lower end of ventilator division channel outboard to permit removal.
6. To install, reverse removal procedure.

FRONT DOOR WINDOW REGULATOR—ELECTRIC—"B-35-45 AND 69" STYLES

Removal and Installation

1. Remove front door window and ventilator as previously described.
2. On styles equipped with electric window regulators, disconnect wire harness connector at window regulator motor.
3. Remove window regulator attaching bolts (Fig. 7-93) and remove regulator through access hole.
4. To install, reverse removal procedure.

FRONT DOOR WINDOW REGULATOR—MANUAL—"11-35-45 AND 69" STYLES

Removal and Installation

1. Remove front door trim assembly and inner panel water deflector.
2. Operate window to "full-up" position and secure in place with pieces of cloth-backed body tape applied over door frame.
3. Remove inner panel cam as previously described.
4. Remove ventilator division channel lower adjusting stud and nut and window regulator attaching bolts (Fig. 7-93).
5. Press ventilator division channel outboard to permit disengagement of regulator spindle from inner panel, then run regulator balance arm roller and lift arm roller out of lower sash channel cam at front. Remove regulator through large access hole.
6. To install, reverse removal procedure.

FRONT DOOR WINDOW REGULATOR ASSEMBLY—MANUAL AND ELECTRIC—ALL "A-E-X & Z" STYLES

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.
2. On two-door styles, remove inner panel cam.
3. On closed styles, raise door window. Secure window in full up position by installing a twelve to fifteen inch piece of body tape (2" or 2 1/2" in width) over window frame and firmly pressing tape to both sides of glass. This is necessary to positively hold glass in the up position during removal of the window regulator.
4. On "A-E & X" hard top styles, prop window in a full-up position. On "Z" Body Styles, remove door window and ventilator assembly.
5. Remove ventilator division channel lower adjusting stud and nut. On electric styles, disconnect wire harness from regulator motor.
6. Remove regulator attaching bolts and remove regulator as follows:
   a. On all "A" Styles except "17 and 67" Styles work regulator rearward to disengage lift arm from window lower sash channel cam and remove regulator from door (see Fig. 7-60 and 7-67).
   b. On "A-17 and 67" Styles, slide regulator forward to disengage lift and balance arm rollers from lower sash channel cam(s) and remove regulator through center access hole.
   c. On 49487 Styles, remove regulator through large access hole (Fig. 7-94).
   d. On "X" Body Styles, slide regulator downward and rearward and remove assembly through forward loading hole.
   e. On "Z" Body Styles, remove regulator through large access hole (see Fig. 7-95).
7. To install, reverse removal procedure. Cycle window several times to insure proper operation before installing water deflector and trim.

FRONT DOOR WINDOW REGULATOR ELECTRIC MOTOR ASSEMBLY

The electric motor assembly which powers the electrically operated window regulators is a twelve volt, reversible direction motor with an internal circuit breaker and a self-locking gear drive. The motor is secured to the regulator assembly with bolts.

Removal and Installation

1. Remove front door window electric regulator and clamp assembly in a vise (Fig. 7-96).

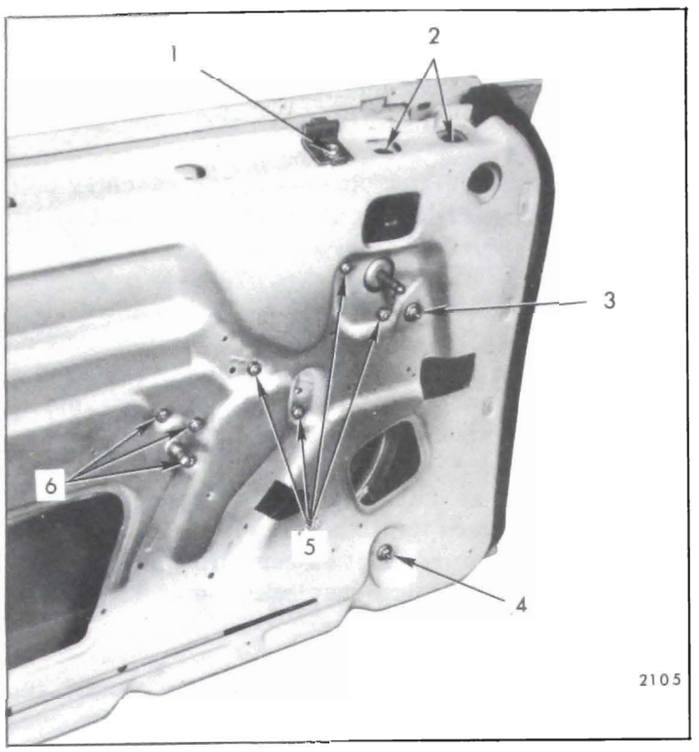

Fig. 7-94—Front Door Hardware—"E" Styles

1. Trim Pad Adjusting Plate (Front)
2. Window Front Guide Channel Upper Bolts
3. Window Front Guide Channel Center Adjusting Stud and Nut
4. Window Front Guide Channel Lower Adjusting Stud and Nut
5. Window Regulator Bolts
6. Front (Standard) Remote Bolts

NOTE: The position of regulator assembly in vise will vary with type of regulator and position of lift arm.

2. Drill a 1/4" hole through regulator back plate and sector gear. The exact point of this hole will be dependent on the position of the regulator lift arm.

IMPORTANT: DO NOT drill into the motor housing, part of which is indicated by the dotted line illustrated in Figure 7-96. In addition, locate hole sufficient distance from edge of sector gear to insure proper retention of sector gear to back plate.

3. Install a 3/16" bolt through hole in regulator back plate and sector gear and install a nut on the bolt. DO NOT tighten nut.

CAUTION: Be sure to perform steps 2 and 3 before attempting to remove motor from regulator assembly. The regulator lift arm is under tension from the regulator counterbalance spring and can cause SERIOUS INJURY if motor is removed from regulator without locking the sector gear in position with a nut and bolt.

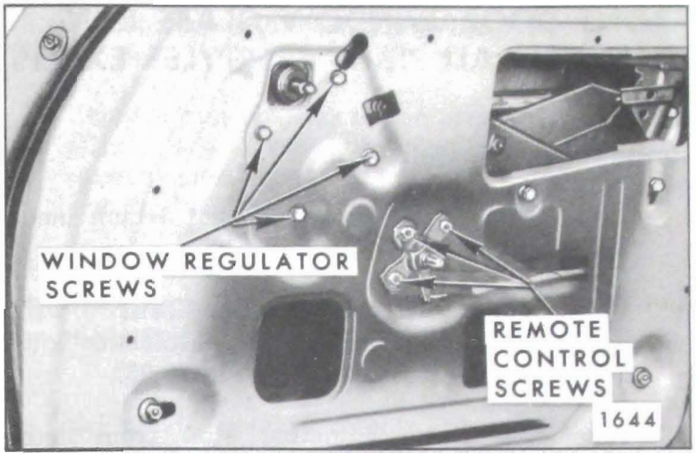

Fig. 7-95—Front Door Hardware - "Z" Styles

4. Remove regulator motor attaching bolts and remove motor from regulator assembly. (Fig. 7-96).

NOTE: Clean off any steel chips from regulator sector gear and motor pinion gear.

5. To install, reverse removal procedure. If difficulty is encountered in lining up motor attaching holes with regulator assembly, the regulator lift arm may be moved into position manually so that motor pinion gear will mesh with teeth on regulator sector gear. After installation of front door window assembly, cycle electric regulator several times before installing inner panel water deflector and door trim pad.

NOTE: Be sure to remove temporary nut and bolt securing regulator back plate to regulator sector gear before installing assembly into door.

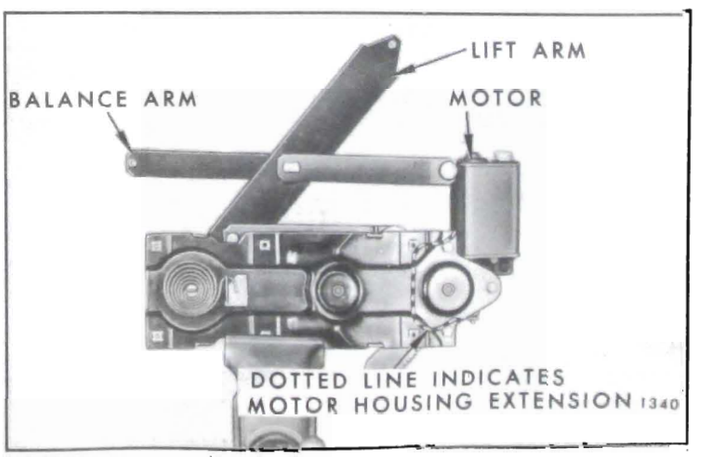

Fig. 7-96—Door Window Regulator and Electric Motor Assembly

FRONT DOOR WINDOW GLASS RUN CHANNEL—ALL "B & C" STYLES EXCEPT CLOSED

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.
2. With window in full-up position, remove window glass run channel upper attaching bolts and lower adjusting stud nut (Fig. 7-93).
3. Disengage lower adjusting stud from inner panel slot and remove run channel through access hole.
4. To install, reverse removal procedure.

FRONT DOOR WINDOW GLASS RUN CHANNEL—"B-11-35-45 AND 69" STYLES

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.

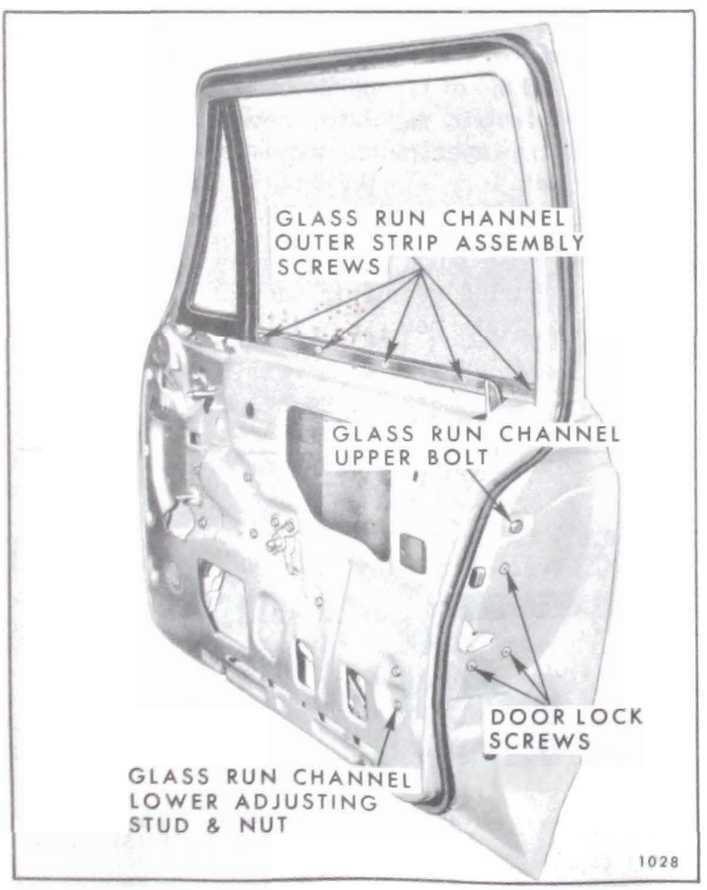

Fig. 7-97—Door Hardware Attachments - "B" Closed Styles

2. Lower window to approximately half-down position and tie or tape window so that front edge of window remains engaged in ventilator division channel.
3. Remove glass run channel upper attaching bolt (at belt) and lower adjusting stud nut (Fig. 7-97).
4. From outside door, insert a sharp pointed right angle tool (reveal) molding clip disengaging tool J-21549 or equivalent) between outer edge of glass run channel and door upper frame as shown in Figure 7-98.
5. Beginning at front end of run channel, slide tool rearward until a clip is contacted, then engage point of tool under clip and carefully pry inboard to release clip tangs from door frame.
6. Repeat step 5 at each clip location until run channel is completely disengaged from door frame.
7. Remove glass run channel from door by carefully lowering upper end of channel down into door (rearward of glass) while simultaneously directing lower end (adjusting stud end) of channel out through the rectangular (4" x 6") access hole in lower center of door inner panel.
8. To install, reverse removal procedure. Begin installation above belt at door upper frame upper rear corner.

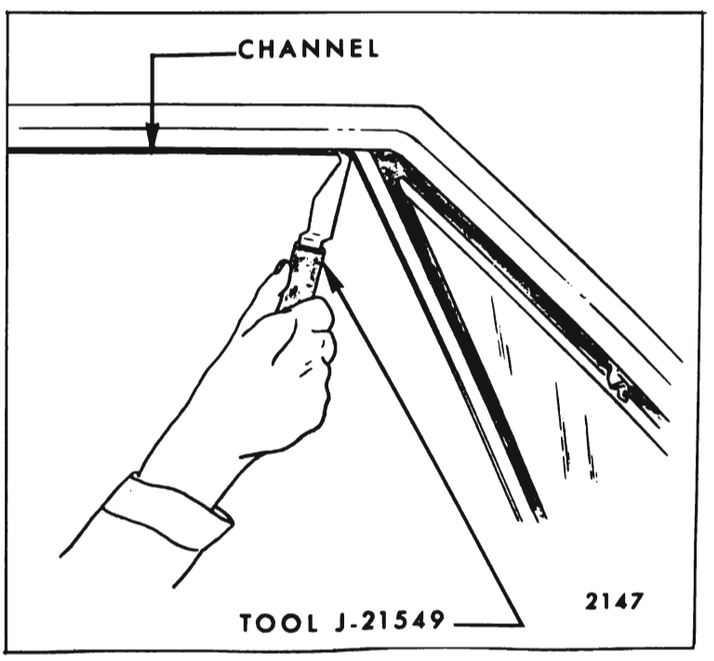

Fig. 7-98—Door Window Glass Run Channel Removal

NOTE: Prior to installation, inspect run channel clips and saturated polyurethane foam sealing strips in door upper frame (Fig. 7-65). Reform distorted clips to insure adequate retention.

Replace damaged sealing strips with Service Part which is available in five foot lengths (Part #4480378 or equivalent).

FRONT DOOR WINDOW REAR GLASS RUN CHANNEL—"A-17-39 AND 67" STYLES

Removal and Installation

1. Raise door window. Remove trim pad and detach inner panel water deflector.
2. Remove front door window guide plate.
3. Remove run channel upper attaching bolt (lock pillar) and lower adjusting stud nut (inner panel - see Fig. 7-82 for "17 and 67" Styles and Fig. 7-87 for "39" Styles).
4. Swing run channel down and forward and remove from door.
5. To install, reverse removal procedure.

NOTE: For adjustments of rear run channel, see "Front Door Window Assembly - "17 and 67" Styles - Adjustments".

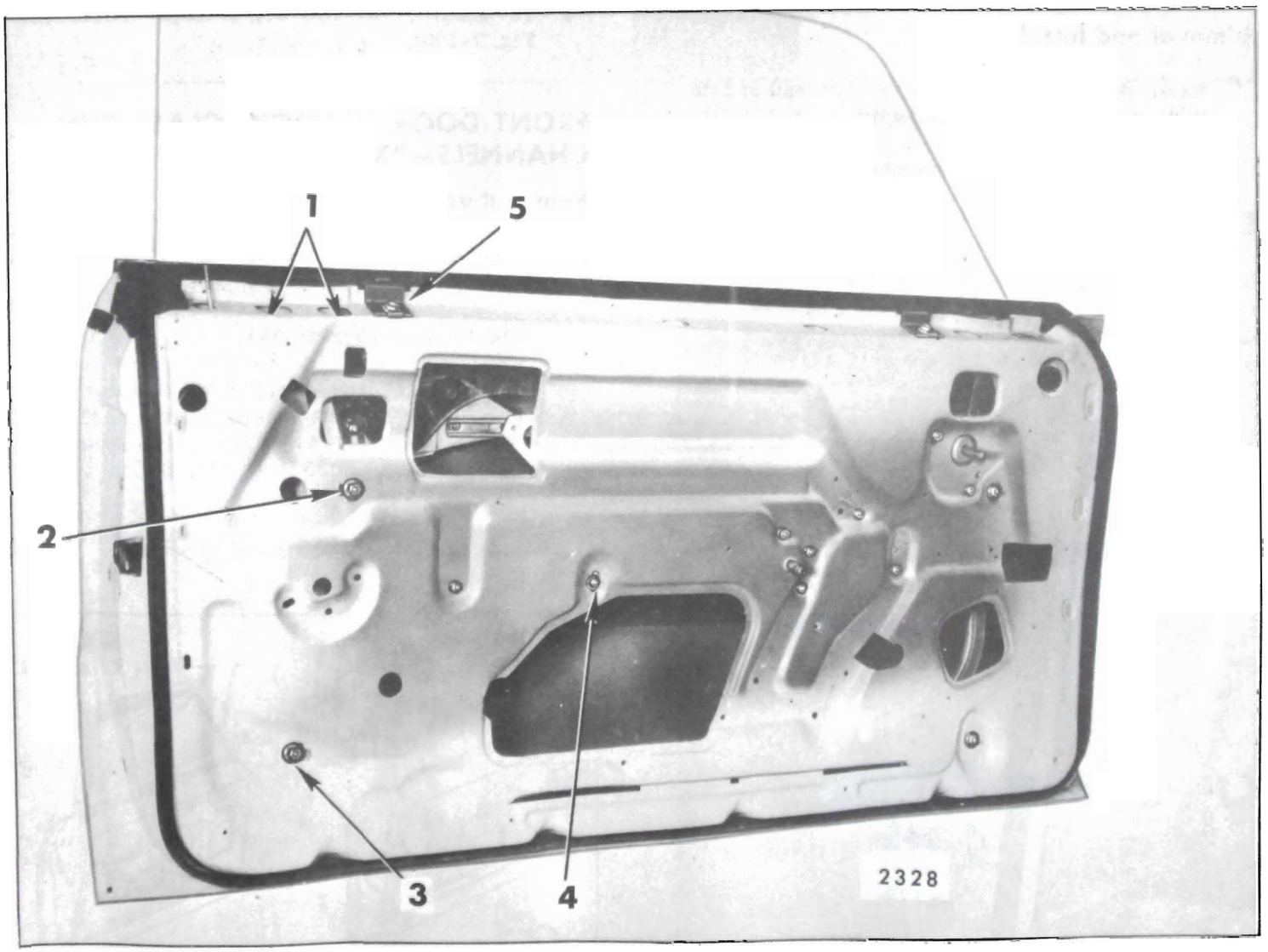

Fig. 7-99—Front Door Hardware - 49487 Style

1. Window Rear Guide Upper Bolts
2. Window Rear Guide Center Adjusting Stud and Nut
3. Window Rear Guide Lower Adjusting Stud and Nut
4. Inner Panel Cam
5. Rear Trim Pad Adjusting Plate

FRONT DOOR WINDOW FRONT GUIDE CHANNEL—49487 STYLES

Removal and Installation

1. Raise door window. Remove trim pad and detach inner panel water deflector.
2. Remove front door window assembly.
3. Remove center and lower adjusting stud nuts and upper two attaching bolts and remove guide assembly (see Fig. 7-94).
4. To install, reverse removal procedure.

Adjustments - see door window adjustments.

FRONT DOOR WINDOW REAR GUIDE CHANNEL—49487 STYLES

Removal and Installation

1. Raise door window. Remove trim pad and detach inner panel water deflector.
2. Remove front door window assembly.

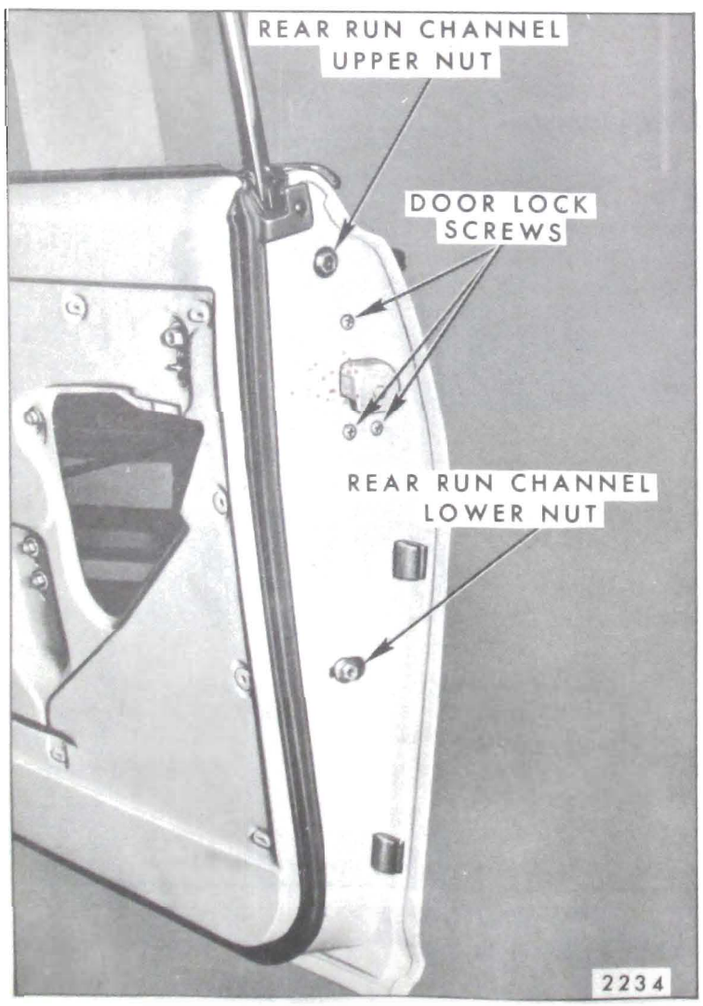

Fig. 7-100—Door Lock Pillar - "X-37" Style

3. Remove center and lower adjusting stud nuts and upper two attaching bolts and remove guide assembly (see Fig. 7-99).
4. To install, reverse removal procedure.

Adjustments - see door window adjustments.

FRONT DOOR WINDOW GLASS RUN CHANNELS—"X-37" STYLES

Removal and Installation

1. Remove door trim assembly and detach inner panel water deflector.
2. Remove door ventilator and window assembly.
3. Remove bolts securing run channel to lock pillar panel and remove from door.
4. To install, reverse removal procedure (see Fig. 7-100).

FRONT DOOR WINDOW GLASS RUN CHANNELS—"X-11-35 AND 69" STYLES

Removal and Installation

1. Remove door trim pad and detach inner panel water deflector.
2. Remove front door window.
3. Press (finger pressure) sides of run channel together and remove assembly from door upper frame (see View "A" for "11" Styles and View "B" for "35 and 69" Styles in Fig. 7-101).
4. To install, reverse removal procedure.

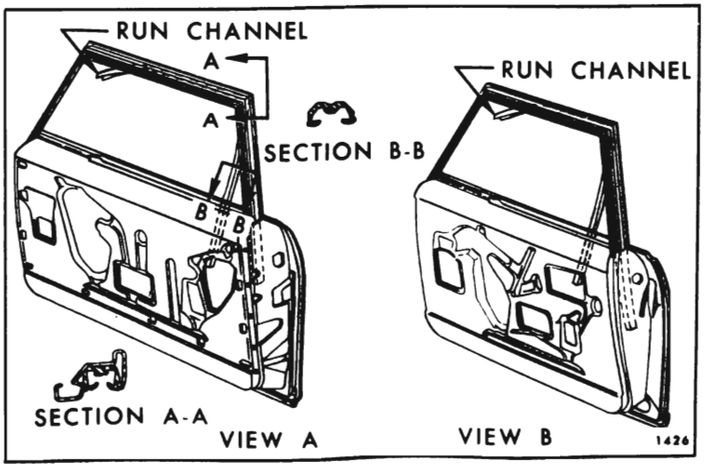

Fig. 7-101—Front Door Glass Run Channel Assembly - "X" Closed Styles

FRONT DOOR WINDOW REAR GLASS RUN CHANNEL—"Z" BODY STYLES

1. Lower door window and remove door trim pad and inner panel water deflector.
2. Remove glass run channel upper attaching screw and lower adjusting stud nut.
3. Disengage run channel from rear edge of glass and remove run channel through large access hole.
4. To install, reverse removal procedure.

DOOR WEDGE PLATES—"67" STYLES

Door wedge plates are used on convertible styles to give additional support to the door when it is in the closed position. One plate is installed to the body lock pillar and the other to the door lock pillar (Fig. 7-102). The plates should contact each other to the extent of a 1/32" interference when the door is closed. Body side wedge plate shims are available as a service part so that this interference can be obtained.

FRONT DOOR LOCK SELECTOR VALVES—ALL CADILLAC STYLES AND BUICK, OLDSMOBILE "B-C & E" STYLES

The vacuum door lock system is operated by selector valves located in the front door trim assemblies. When either valve is actuated upward, all door locks simultaneously unlock. When either valve is actuated downward, all door locks lock. Vacuum is supplied to the selector valve in the red color-coded hose and is present at all times at both valves. Only when the selector valve is actuated is vacuum supplied to the balance of the system (Fig. 7-103).

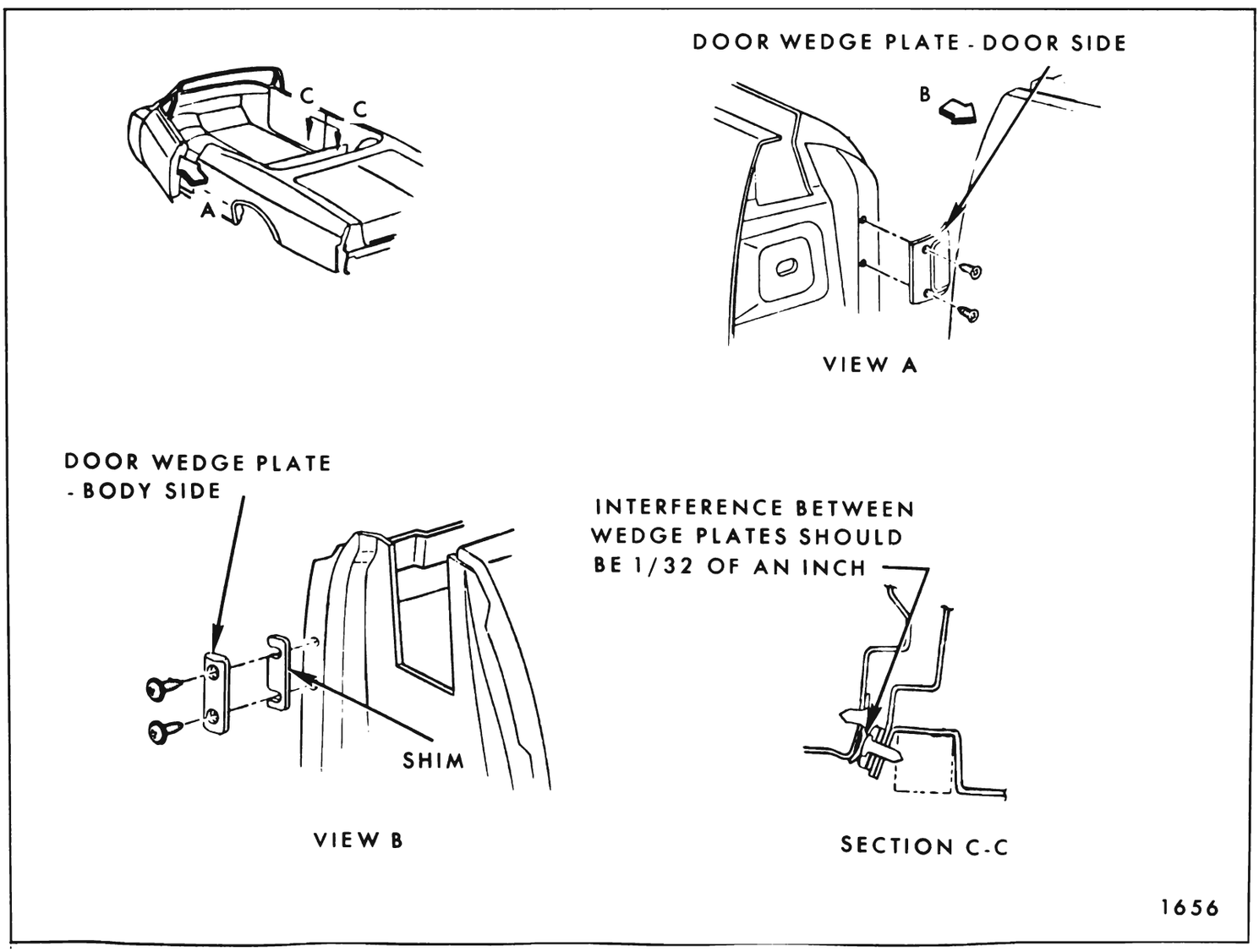

Fig. 7-102—Door Wedge Plates - "67" Styles

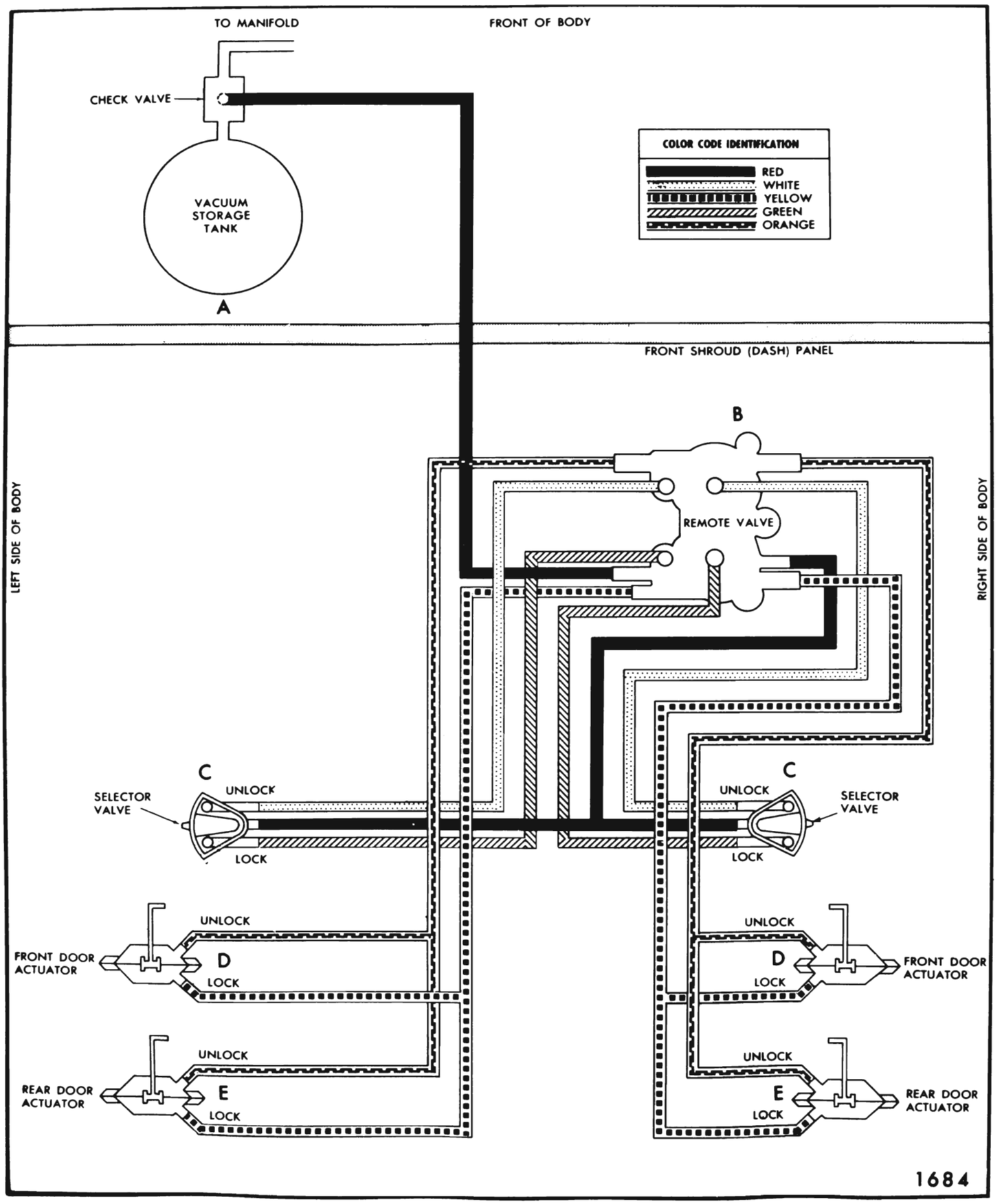

Fig. 7-103—Vacuum Door Lock System - Buick, Oldsmobile, Cadillac

Removal and Installation

1. Remove door trim pad and carefully disconnect vacuum hose from selector valve.

2. Carefully disengage valve assembly from door trim assembly.

3. To install, reverse removal procedure. When installing vacuum hoses to selector valve, hose color codes must be installed to the proper connection on the selector valve for proper valve operation. Check all operations of door lock vacuum system prior to installing door trim and inside hardware.

VACUUM DOOR LOCK SYSTEM OPERATION—PONTIAC "A & B" STYLES

The vacuum system is operated from the left front door inside locking rod. The rod is directly linked to a sliding control valve attached to the left front door lock (Fig. 7-104). By manually raising or depressing the inside locking rod, as would be required to lock or unlock any door, the vacuum system simultaneously locks or unlocks all doors.

Since operation of the system must be done manually at the left front door, the control valve is only required at that location. For the same reason, only vacuum lock actuators are provided at the remaining door locks.

VACUUM DOOR LOCK ACTUATOR—ALL STYLES WITH VACUUM LOCKS

The actuators that operate the locks are double acting vacuum diaphragms. Vacuum is supplied to either side of the diaphragm to lock or unlock the door lock assemblies. The diaphragm moves a rod that operates the locking lever of the lock to the desired position. All vacuum hoses and their corresponding actuator ports are color-coded to assure correct hose-to-actuator installation. The orange coded vacuum hose provides the unlocking cycle of the door assembly and the yellow coded vacuum hose provides the locking cycle of the door lock assembly.

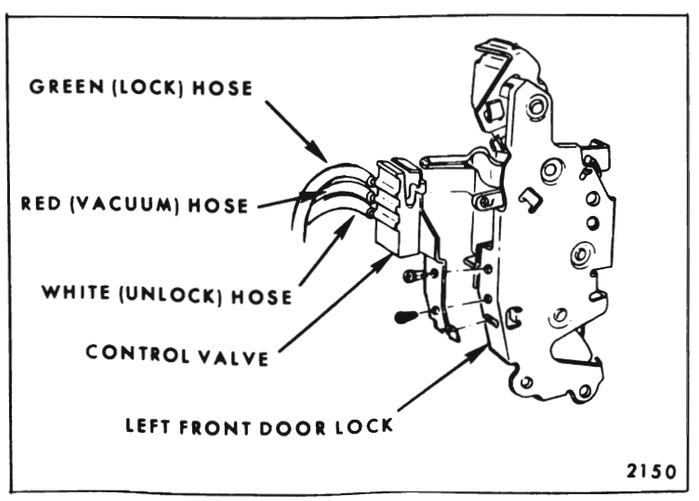

Fig. 7-104—Vacuum Door Lock Control Valve - Pontiac Style

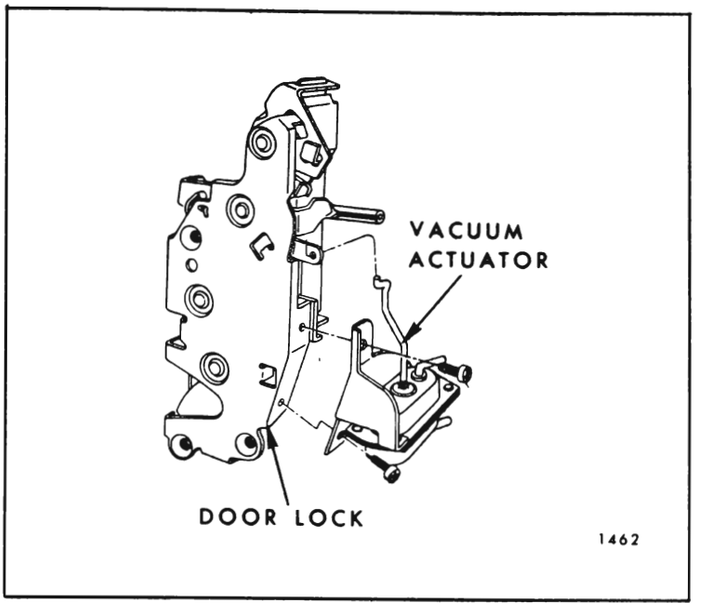

Fig. 7-105—Front Door Vacuum Actuator

As the actuator is attached to the door lock with screws which are inaccessible with the lock installed, it is necessary to remove the door lock in order to remove the actuator. Once the door lock is removed, the actuator can be removed in a bench operation (Fig. 7-105 for front doors, Fig. 7-106 for rear doors.

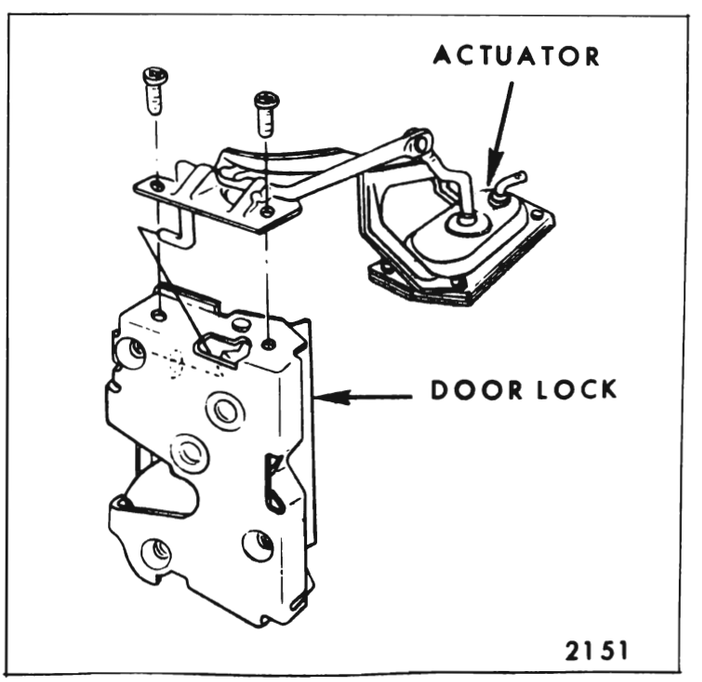

Fig. 7-106—Rear Door Vacuum Lock Actuator

LEFT FRONT DOOR LOCK VACUUM CONTROL VALVE—PONTIAC "A & B" STYLES

The vacuum control valve is attached to the left front door lock with screws which are inaccessible with the lock installed in the door (Fig. 7-104). To remove the valve it is necessary to disconnect the vacuum hoses and remove the lock and control valve from the door as an assembly. The valve can then be removed in a bench operation.

To install the valve, reverse the removal procedure. Connect color-coded hoses to matching color-coded ports on the valve.

For operation of the valve, refer to the preceding "operation" description.

VACUUM DOOR LOCK TRANSFER VALVE—PONTIAC "A & B" STYLES

The transfer valve is a dual diaphragm valve that receives the main lock or unlock vacuum signal from the door lock control valve and then creates its own vacuum signal to momentarily open the proper ports in the remote control.

As there is no neutral position to the door lock control valve, vacuum is constantly surging through the valve, through either the white or green hoses (Fig. 7-107). If it were not interrupted, this vacuum would be constant throughout the entire system and would have to be over-ridden to operate the system from either the lock to unlock, or from the unlock to the lock cycle. This interruption is accomplished by the transfer valve. The valve itself has a dual diaphragm, one side of which is actuated by a transfer of vacuum from one side of the valve to the other (white to green or green to white). This action (depressing one of the diaphragms) creates a secondary vacuum which is relayed to the remote control valve through one of the connecting hoses, either the green or white depending on whether the action is to lock or unlock. This secondary vacuum from the transfer valve momentarily opens the proper ports in the remote control assembly and permits the main vacuum in the red hose to momentarily surge through the remote control and operate the remainder of the locks.

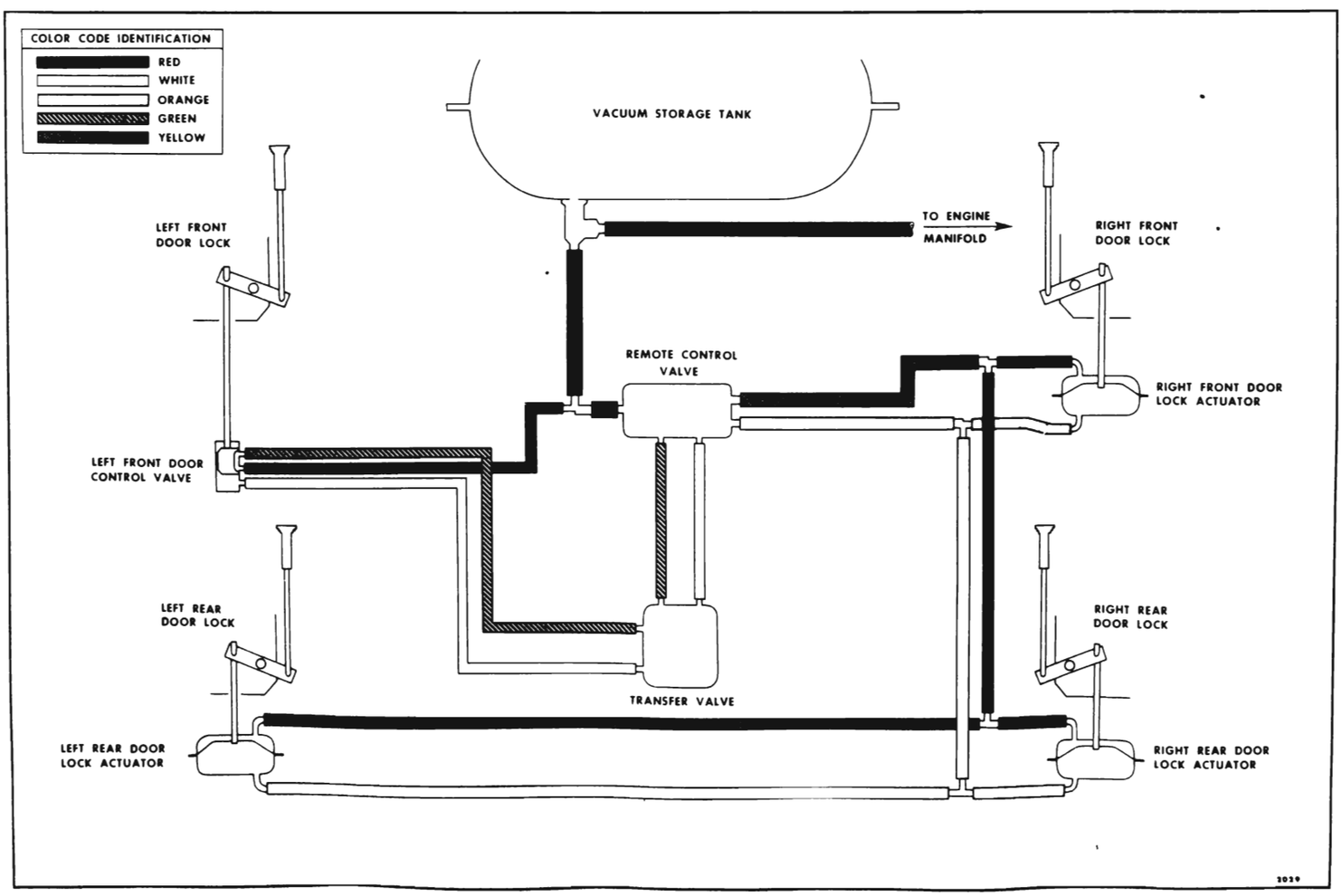

Fig. 7-107—Vacuum Door Lock System - Pontiac Styles

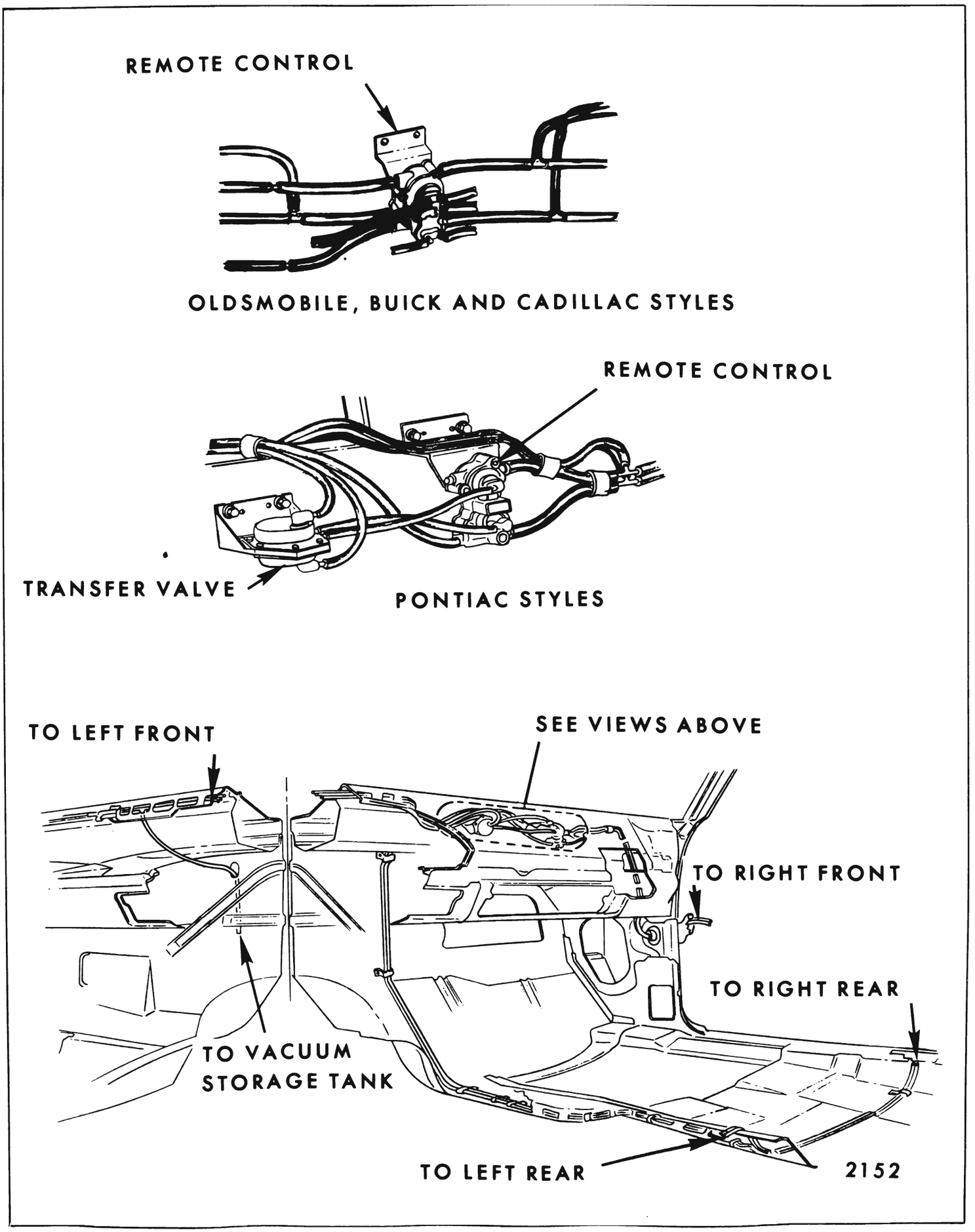

Fig. 7-108—Vacuum Door Lock Hose Routing

As shown in Fig. 7-108 the transfer valve is located next to the remote control assembly under the instrument panel on the right side of the body. The upper and lower hoses (white and green) shown in the insert in Fig. 7-108 connect the valve to the door lock control valve. The middle pair carry the secondary signal to the remote control

VACUUM DOOR LOCK REMOTE CONTROL ASSEMBLY—ALL STYLES WITH VACUUM DOOR LOCKS

The function of the remote control assembly is to momentarily release the interrupted main vacuum in the red hose into the entire system upon receipt of the secondary vacuum signal from the transfer valve or selector valve. A lock signal received from the transfer valve or selector valve through the green hose will open the ports to momentarily introduce vacuum into the yellow (lock) hoses. Conversely, an unlock signal received through the white hose will introduce vacuum into the orange (unlock) hoses.

The remote control valve is located under the instrument panel on the right side (Fig. 7-108). All ports and hoses are color-coded for ease of hose installation (Fig. 7-109).

DOOR LOCK VACUUM STORAGE TANK

The door lock vacuum storage tank is mounted in the engine compartment and is connected to the engine manifold by a hose (Fig. 7-104). A check valve at the tank connector maintains the vacuum in the tank. The storage tank supplies vacuum at all times to the remote valve and door lock control valve. The tank should provide a minimum of three complete cycles of operation (lock and unlock) immediately after the engine has been shut off.

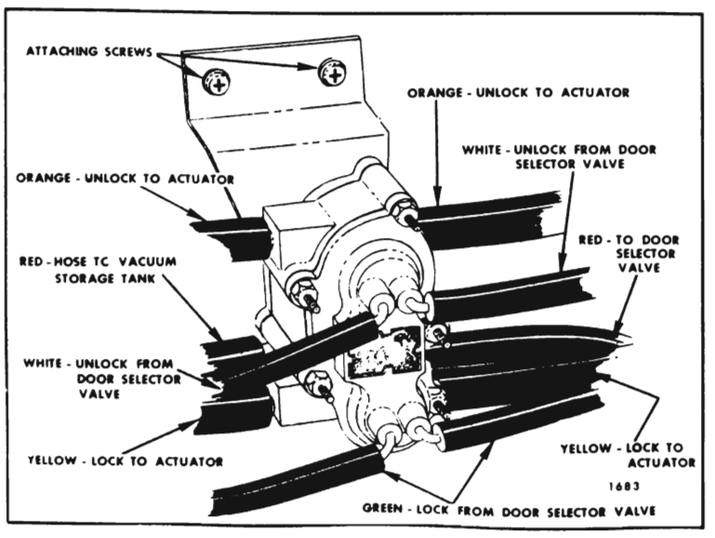

Fig. 7-109—Vacuum Lock Remote Control Valve

VACUUM DOOR LOCK TROUBLE DIAGNOSIS PROCEDURE

When an external air leak in the vacuum locking system is not severe enough to be heard, the leak-down testing device shown in Figure 7-110 will aid in determing which part is leaking. This device can be easily constructed from common items that are normally available. The following chart lists the necessary components. The item numbers are referenced to Figure 7-110.

Although several transparent glass containers may be satisfactory for use as a testing device, a quart jar with a metal cap that can be sealed is recommended.

Item	Description	ID	OD	Length	Quan.
1	Quart Glass Container	-	-	-	1
2	Metal Cap	-	-	-	1
3	Cap Sealing Ring	-	-	-	1
4	Cap Ports	3/16"	1/4"	2 1/2"	2
5	Hose Port	3/16"	1/4"	2 1/2"	1
6	Hose	7/32"	3/8"	2"	2
7	Hose	5/32"	5/16"	1"	1
8	Glass Tube	1/8"	5/16" to 3/8"	4"	1

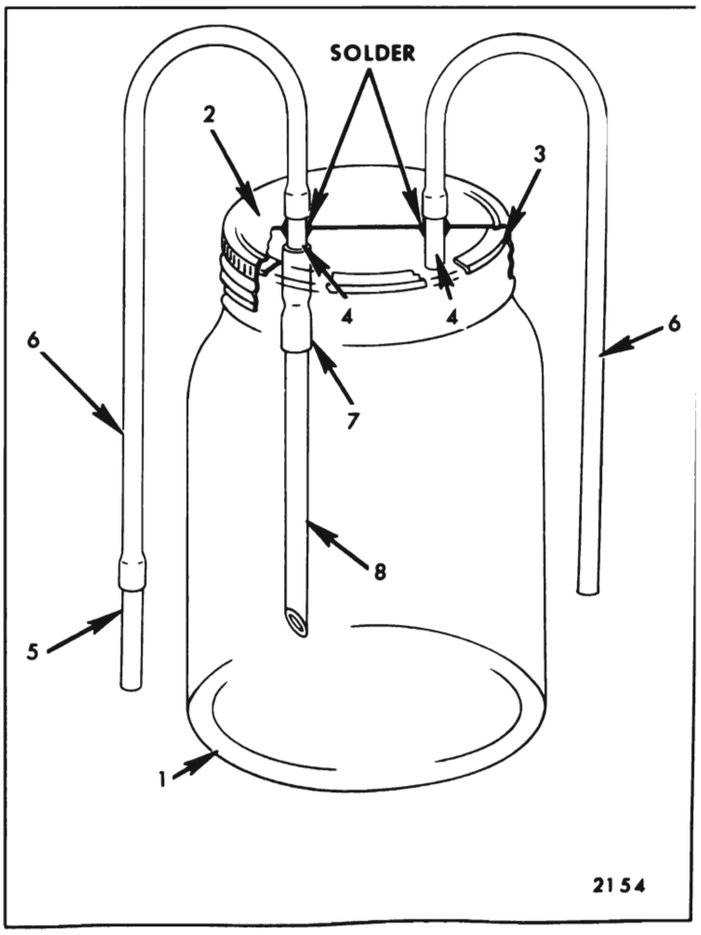

Fig. 7-110—Leak-Down Testing Device

Install ports in cap by drilling 2 holes and inserting ports half-way through cap. Solder ports to cap to make an air-tight seal.

NOTE: There cannot be any air leaks in leak-down testing device to check a vacuum system. The lower end of the glass tube in the jar should be cut on a 45° angle. If glass tubing is not available, plastic tubing may be substituted provided it has the specified inside diameter.

a. Installation of Testing Device Into Vacuum System:

The testing device is installed between the vacuum storage tank and the remote control valve. To install testing device, proceed as follows:

1. Add water to jar until level is approximately 1" above lower end of tube.
2. Raise hood and remove storage tank to remote control valve hose (red) from storage tank check valve.
3. Install hose from testing device (hose without port) to bottom of check valve on storage tank.
4. Install other hose (with attached port) on testing device to hose leading to remote control valve.
5. Set testing device in an upright position.

b. Recharging Vacuum Storage Tank

Vacuum will usually have been depleted after four or five cycles of lock operation, or after testing device has been installed. To recharge storage tank to normal vacuum (22-24 inches of mercury), proceed as follows:

1. Turn testing device on its side until glass tube is out of water.
2. Start engine and run for approximately 1 minute.
3. Turn engine off and return testing device to a normal upright position.

   NOTE: If water rises in glass tube, quickly pinch-off hose leading from testing device to remote control valve. If hose is not pinched, and then disconnected, water rising up tube will enter vacuum lock system components. Condition is the result of a defective storage tank which must be replaced, provided hose connections check out satisfactory.
4. Allow 15 to 30 seconds for water in testing device to stop bubbling. The waiting period is necessary due to different pressures in the system on both sides of testing device. The bubbling is the result of these pressures trying to equalize themselves. The storage tank may be recharged as often as required when checking vacuum system for an external air leak.

   CAUTION: Be certain to turn testing device on its side each time system is recharged. If this is not done, water in jar may be drawn up into vacuum system components.

c. Determining Size of Air Leak from Bubbles in Testing Device:

If bubbles appear in water at a rate of approximately one every fifteen seconds or faster, an air leak is present at either the remote control valve, transfer valve, or door control or selector valve. This assumes, of course, that the hoses are properly connected and free of defects. The faster bubbles appear in the water, the more severe is the air leak. In most cases, where the air leak rate is slower than one bubble every fifteen seconds, the vacuum loss is usually insufficient to affect the operation of the vacuum locking system.

d. Isolating a Leaking Vacuum Part (External Leak) Using the Leak-Down Testing Device:

After a specific part has been isolated as a leaking component, first check the hose color-coded red that attaches to that part. Make sure hose is properly installed to the port and that hose is not split.

When the testing device has been properly installed and storage tank recharged, watch glass tube in testing device and proceed as follows:

Pontiac Styles:

1. If water rises in glass tube, storage tank is leaking. Replace vacuum storage tank.
2. If bubbles appear in water, an air leak is present at the remote control valve, transfer valve, or door control valve.
3. If bubbles appear, remove left front door hinge pillar conduit and pinch red color-coded hose leading to left front door control valve. This will eliminate door control valve and transfer valve from system.
4. Check testing device. If bubbles continue, remote control valve is leaking and should be replaced. If bubbles stop, leak is in door control valve or transfer valve.

5. If bubbles stopped in step 4, release red hose and pinch green hose leading from door control valve to transfer valve. (Prior to pinching hose, depress left front door inside locking rod knob to lock position). If bubbling continues in testing device, leak is in door control valve. If bubbling stops, leak is in transfer valve.

Buick-Oldsmobile-Cadillac Styles:

1. If water rises in glass tube, storage tank is leaking. Replace vacuum storage tank.

2. If bubbles appear in water, an air leak is present in either the remote control valve or in one of the door lock selector valves.

3. Remove right and left front door hinge pillar conduits.

4. Pinch right and left vacuum hose color coded red.

   NOTE: This has eliminated the right and left door lock selector valves from vacuum system.

5. Check testing device. If bubbles continue to appear in water, the remote control valve is leaking. (If bubbles stop, see step 6).

6. If bubbles stop forming in testing device, air leak is at either door valve. Discontinue pinching left valve hose at hinge pillar.

7. Check testing device. If bubbles appear in water, left door valve is leaking. (If no bubbles appear, see step 8).

   NOTE: Before replacing a door lock selector valve, tighten screws on back of valve, then recheck valve. If valve continues to leak, replace left door lock selector valve assembly.

8. If no bubbles appear in testing device after discontinuing pinching of left valve hose, then air leak is at right door valve. This may be shown by discontinuing pinching of right valve hose at hinge pillar. Bubbles will appear immediately in water of testing device.

e. Isolating a Vacuum Part with an Internal Leak—(Pontiac Styles Only)

(Vacuum in lock actuators preventing operation of system)

An internal leak in either the transfer valve or remote control valve will allow vacuum to surge through the entire system and will prevent actuation of the system to a new lock or unlock position. If vacuum is present in the door lock actuators at all times, proceed as follows:

1. If system cannot be operated from lock to unlock, disconnect the white hose leading from the transfer valve to the remote control valve (hose can be disconnected at either end). If system cannot be operated from unlock to lock, disconnect green hose.

2. Actuate left front door inside locking rod knob up and down. If vacuum does not resist operation, the transfer valve is defective and should be replaced. If vacuum is still present in the lock actuators, however, and resists rod movement, the remote control valve is defective and should be replaced.

VACUUM DOOR LOCK DIAGNOSIS CHART (Ref. Fig. 7-107) PONTIAC STYLES

CONDITION	PROBABLE CAUSES	REPAIR
A. System Inoperative	1. Hoses crossed at vacuum supply tank	Reverse hoses
	2. Main vacuum hose (red) or both white and green hoses pinched between door control valve or remote control valve	Trace hoses and relieve pinching where found
	3. Leaking component	Isolate defective part with leak-down testing device as previously described

CONDITION	PROBABLE CAUSES	REPAIR
B. All doors can be locked but not unlocked, or unlocked but not locked. (Vacuum constant in door lock actuators.)	1. Defective door control valve, transfer valve, or remote control valve	Isolate defective part by using leak-down tester or "internal leak" check for transfer valve and remote control in step "E" above
C. Moving door valve to lock or unlock produces opposite action in remaining doors	1. White and green hoses reversed at door control valve or transfer valve	Match color-coded hoses with corresponding color-coded port
	2. Orange and yellow hoses (unlock and lock) reversed at remote control valve	
D. Moving door valve to lock or unlock produces opposite action in one door lock	1. Orange and yellow hoses (unlock and lock) reversed at door lock actuator	Match color-coded hoses with corresponding color-coded ports at affected door lock actuator
E. One door lock lags behind others	Lock or linkage binding	Check linkage for freedom of movement and lubricate lock
F. System will not hold vacuum for 48 hours	Excessive leakage in system	Isolate leaking component with leak-down testing device as described previously in this procedure.
G. System inoperative with door closed, but operative with door open	Hoses being pinched at front body hinge pillar	Reposition hose to eliminate kink

VACUUM DOOR LOCK DIAGNOSIS CHART (Ref. Fig. 7-103) BUICK, OLDSMOBILE & CADILLAC STYLES

CONDITION	APPARENT CAUSE	REPAIR
A. System inoperative	1. Hoses crossed at vacuum supply tank.	Reverse hoses at vacuum supply tank.
	2. Vacuum supply hose pinched at remote valve.	Straighten hose at "B" (Red).
	3. Door valve supply hose pinched at remote valve.	Straighten hose at "B" (Red).
	4. Vacuum supply hose disconnected at tank, remote valve, or engine.	Install hose at "A" or "B" (Red).
	5. Remote valve diaphragm leaking.	Replace remote valve at "B".

CONDITION	APPARENT CAUSE	REPAIR
B. All doors can be locked but not unlocked.	1. Main supply hose crossed lock supply hose at remote valve.	Reverse hoses at remote "B" (Red and Green).
	2. Unlock selector hose or supply hose disconnected at remote valve.	Hook up hose at remote "B" (White).
C. All doors can be unlocked but not locked.	1. Main supply hose crossed with unlock supply hose on remote valve.	Reverse hoses at remote "B" (Red and White).
	2. Lock selector hose or supply hose disconnected at remote.	Hook up hose at remote "B" (Green).
D. Moving either door valve to lock or unlock produces the opposite action of all locks.	1. Door lock selector valve hoses (small) crossed at remote valve.	Reverse selector hoses at remote valve "B" (White and Green), or reverse selector hoses at each door lock selector valve "C" (White and Green).
	2. Actuator supply hoses (large) crossed at remote valve.	Reverse hoses at remote "B" (Orange and yellow).
E. Moving one of the door valves to lock or unlock produces the opposite action of the lock.	1. Valve selector hoses crossed at one door valve.	Reverse small hoses at affected door valve "C" (White and Green).
	2. Door selector valve reversed in trim assembly.	Reverse affected door selector valve in trim assembly "C".
F. System inoperative from one door valve.	Vacuum supply hose pinched or disconnected at affected door valve.	Connect hose or check for pinching at: 1. Affected door valve "C". 2. Front door conduit on side affected "E".
G. System will not lock from one door valve, or system will not unlock from one door valve.	Lock or unlock selector valve hose pinched or disconnected from affected door valve.	Connect hose or check for pinching at: 1. Affected door valve "C" (White or green). 2. Front door conduit on that side "E".
H. Lock movement on any one door not synchronized with other door(s).	Hoses crossed at affected door lock actuator.	At Front Door Reverse hoses at lock actuator "D" (Orange and Yellow). At Rear Door Reverse hoses at lock actuator in door "F" (Orange and Yellow). Or reverse hoses at tubing center pillar "G".

CONDITION	APPARENT CAUSE	REPAIR
I. One door lock lags behind others when locked or unlocked.	Lock or linkage binding.	Front Door 1. Lubricate lock and check inside locking control rod for freedom of movement. 2. Check drive link for freedom of movement in lock trip lever. Rear Door 1. Lubricate lock and check inside locking control rod and linkage for freedom of movement. 2. Check clearance of lock and actuator to door hardware. Coupe 1. Lubricate lock and check inside locking control rod for freedom of movement. 2. Check freedom of movement of actuator and lock.
J. One door lock will not lock or unlock.	Actuator hoses pinched or disconnected.	Front Door 1. Check for pinched hoses at front door, conduit on side affected. 2. Check for hose disconnected at affected actuator. (Orange or Yellow). Rear Door 1. Check for pinched hose at rear door conduit and at center pillar. 2. Check for kinked or flattened hoses under front door carpet support plate. 3. Check for disconnected hose at metal tubing or at actuator (Orange or Yellow).
K. System will not hold vacuum for 48 hours.	1. Excessive leakage in any one of the following units can be the cause: a. Remote valve b. Door valves (2) c. Storage tank and check valve. d. That part of the harness assembly that contacts these components.	1. Actuate system through several lock and unlock cycles, and recheck leakage. 2. Isolate leaking component and replace. **IMPORTANT:** If a door valve is found to be leaking, tighten screws on back of valve, then recheck valve. If valve continues to leak, replace valve.

CONDITION	APPARENT CAUSE	REPAIR
L. Lock(s) inoperative with front door closed but operates with door open.	Door valve vacuum supply hose pinched at front body hinge pillar on side affected.	Check for pinched hose of affected door at conduit.
M. Door selector valve leaks.	Pinch vacuum supply hose (Red) at affected valve. If air leak stops, valve is defective.	Replace affected selector valve. **IMPORTANT:** If selector valve leaks, first tighten screws on back of valve, then recheck valve. If valve continues to leak, replace valve assembly.
N. Storage tank leaks.	Turn engine off and disconnect manifold to storage tank supply hose at tank check valve; then pinch storage tank to remote valve supply hose. Actuate either door lock selector to equalize pressure in balance of system. If air continues to leak, tank is defective.	Replace vacuum storage tank.
O. Actuator assembly inoperative.	Connect hose or check for pinched hose at front door hinge pillar conduit "E", at rear door hinge pillar conduit "H" or at remote control valve "B", then actuate door lock selector valve. If actuator does not operate, actuator is defective.	Replace actuator assembly.
P. Remote valve leaks.	Check remote valve for pinched or disconnected hose(s). If balance of system is checked and found to be in satisfactory condition, replace remote valve with new part. If system then operates properly, original remote valve was defective.	Replace remote control valve assembly.

REAR DOORS

DESCRIPTION

The procedures included in this section concern operations applicable to rear doors only. Procedures for the removal of trim, inside and outside door handles, and door weatherstrips, which are similar for both front and rear doors, are found in the "Front and Rear Door" section.

Illustrations 7-111, 7-112, 7-113, 7-114, 7-115, 7-116, 7-117 identify the individual hardware components and their relation to each other on the various style rear doors.

REAR DOOR HINGES—ALL STYLES

As the rear door hinges are secured with screws to both the door and center pillar, the door can be removed by either removing the door from the hinges or by removing the door and hinges as an assembly from the center pillar.

Removal

1. With a pencil, mark location of hinges on door or center pillar depending on removal method being used.

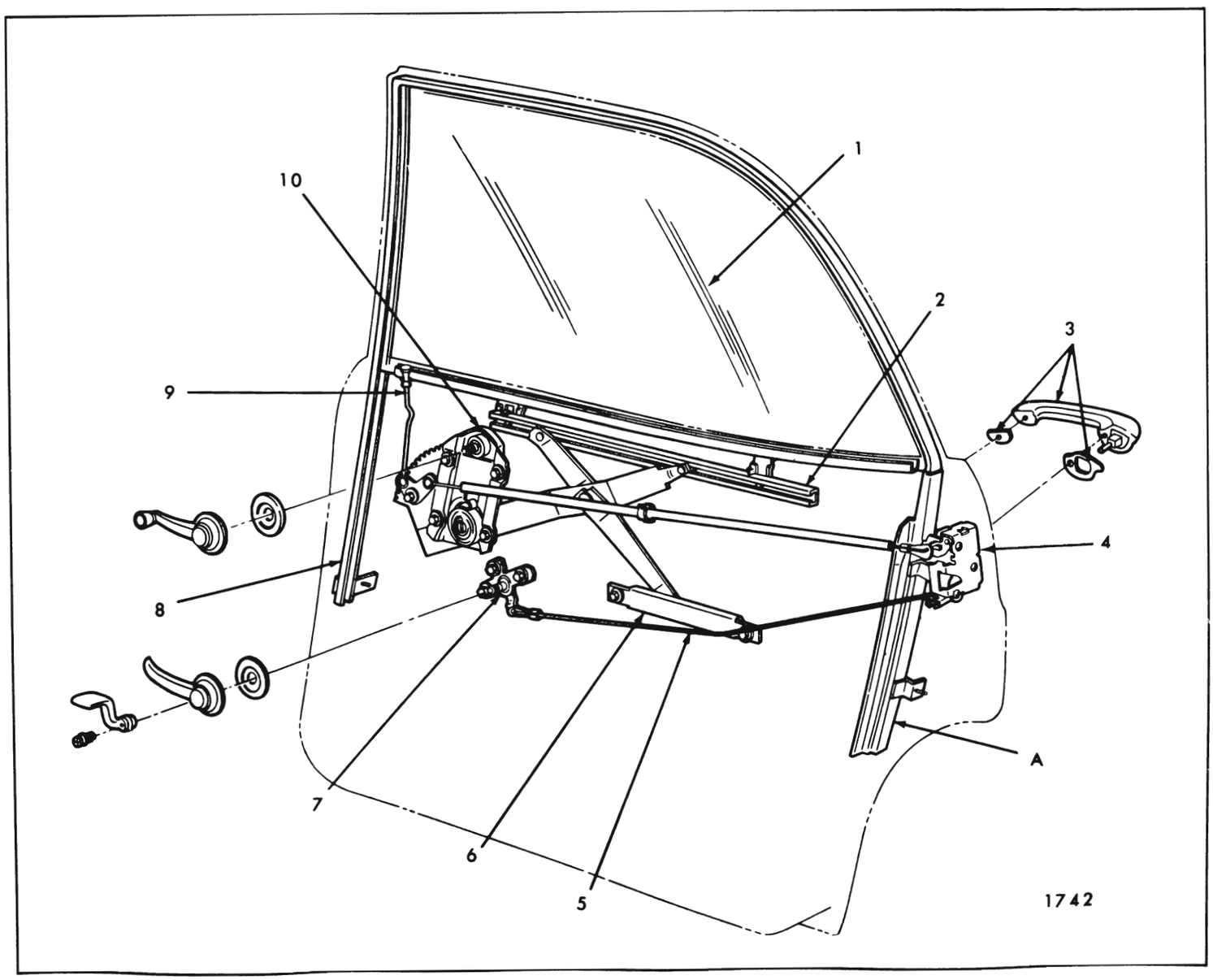

Fig. 7-111—Rear Door Hardware - "B" Closed Styles

1. Window Assembly
2. Lower Sash Channel Cam
3. Outside Handle and Sealing Gaskets
4. Door Lock
5. Remote Control Connecting Rod
6. Inner Panel Cam
7. Remote Control
8. Glass Run Channel (Extends Completely Around Window to Point "A")
9. Inside Locking Rod
10. Window Regulator

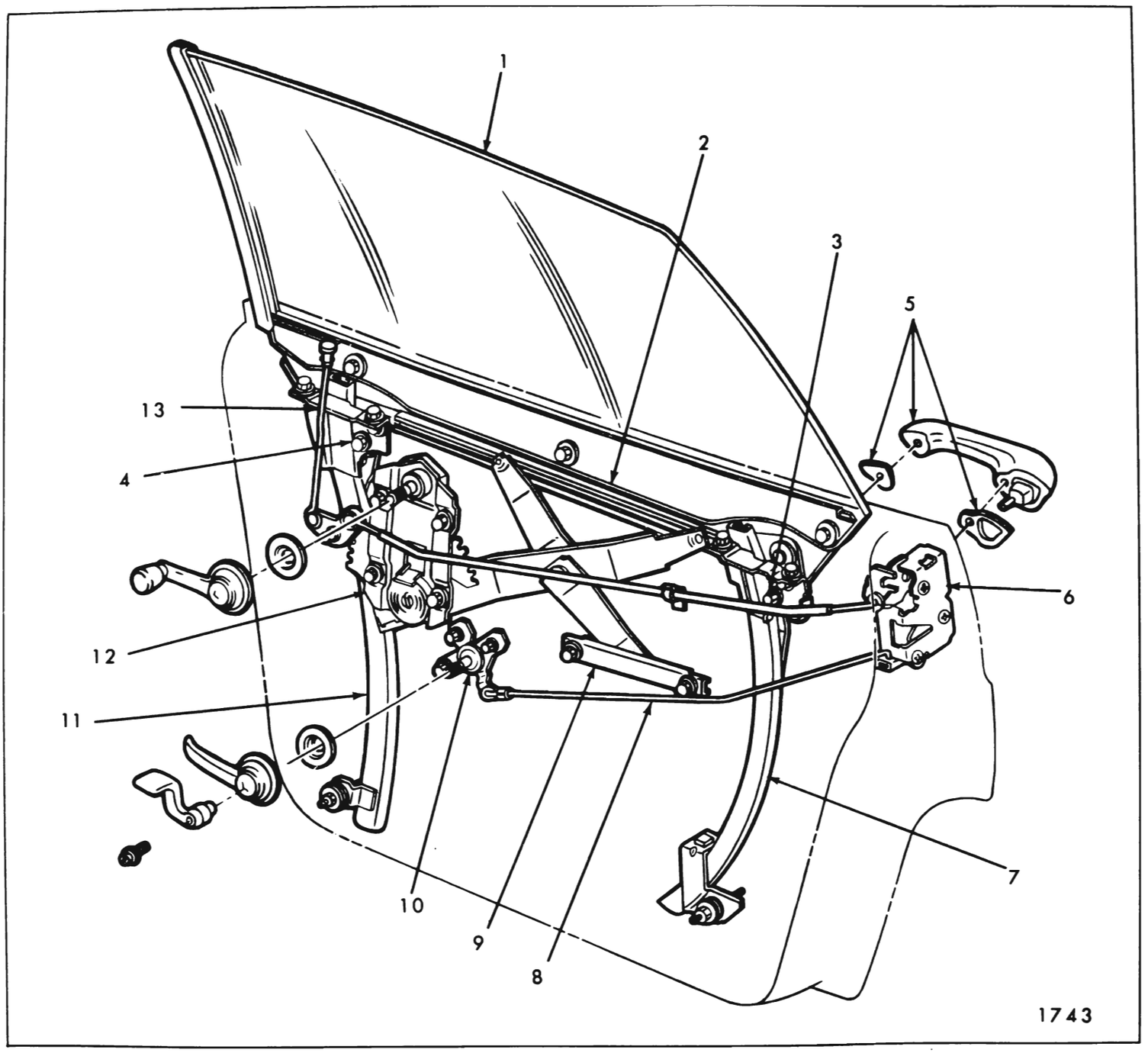

Fig. 7-112—Rear Door Hardware - "B-C 39" and "C-69" Except 68069 and 68169 Styles

1. Window Assembly
2. Lower Sash Channel Cam
3. Window Rear Upper Stop
4. Window Front Upper Stop
5. Outside Handle and Sealing Gaskets
6. Door Lock
7. Window Rear Guide
8. Remote Control Connecting Rod
9. Inner Panel Cam
10. Remote Control
11. Window Front Guide
12. Window Regulator
13. Inside Locking Rod

2. On styles equipped with electric window regulators or vacuum operated locks, proceed as follows:

   a. Remove door trim assembly and inner panel water deflector.

   b. Disconnect wire harness connector from regulator motor and/or vacuum hoses from lock actuator.

   c. Remove electrical conduit from door, then remove wire harness and/or vacuum hoses from door through conduit access hole.

3. With door properly supported, remove upper and lower hinge attaching screws from door or center pillar (Fig. 7-118 or 7-119) depending on removal method being used. Then, remove door from body.

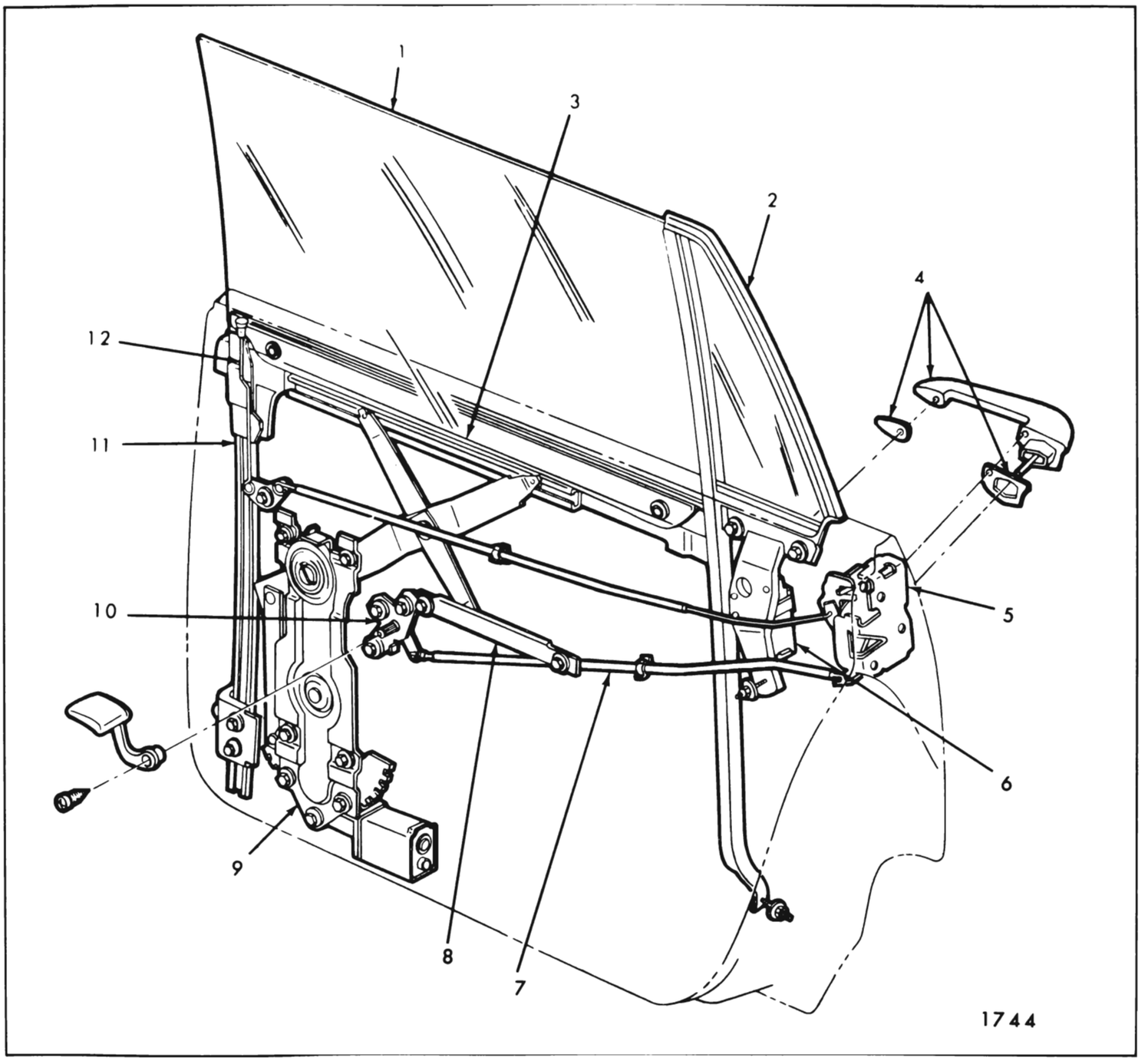

Fig. 7-113—Rear Door Hardware - 68069-68169 Styles

1. Window Assembly
2. Ventilator Assembly
3. Lower Sash Channel Cam
4. Outside Handle and Sealing Gaskets
5. Door Lock
6. Ventilator Regulator (Power Operated)
7. Remote Control Connecting Rod
8. Inner Panel Cam
9. Window Regulator (Power Operated)
10. Remote Control
11. Window Front Guide
12. Inside Locking Rod

Installation

1. Clean off old sealer at hinge attaching areas.
2. Apply a coat of heavy-bodied sealer to surface of hinge that mates with door or center pillar.
3. With aid of a helper, lift door into position and loosely install hinge screws. Align hinges within pencil marks previously made and tighten hinge screws.
4. Install all previously removed parts and check door for proper alignment.

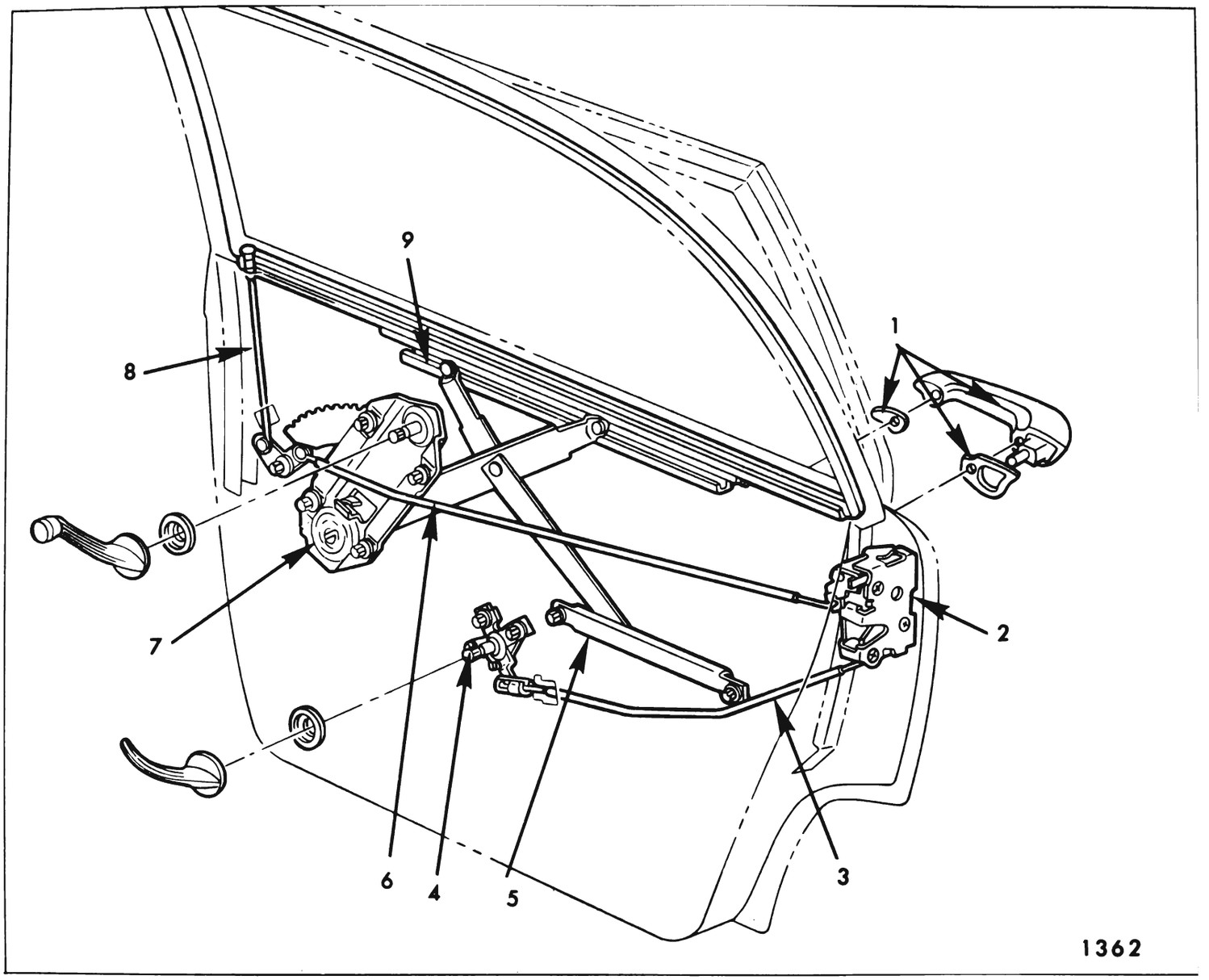

Fig. 7-114—Rear Door Hardware - "A" Closed Styles

1. Outside Handle and Sealing Gaskets
2. Lock Assembly
3. Remote Control Connecting Rod
4. Remote Control
5. Inner Panel Cam
6. Lock to Locking Lever Rod
7. Window Regulator
8. Inside Locking Rod
9. Window Lower Sash Channel Cam

Adjustments

In-or-out and up-or-down adjustment is available at the door side hinge attaching screws. Fore-or-aft and a slight up-or-down adjustment is available at the body side (center pillar) hinge attaching screws except on "X" Styles.

CAUTION: On "B-C & Z" Styles, part or all of the upper hinge is made of die-cast aluminum. Therefore, when making adjustments do not subject hinge to excessive strain that could cause hinge to fail.

REAR DOOR LOCK REMOTE CONTROL

The remote control is secured to the door inner panel by three attaching bolts. On some styles it is mounted on the inboard surface of the door inner panel, and, on others, on the outboard surface. Figure 7-120 identifies "B" style installation, other styles are similar.

Removal and Installation:

1. Remove rear door trim assembly and inner panel water deflector.

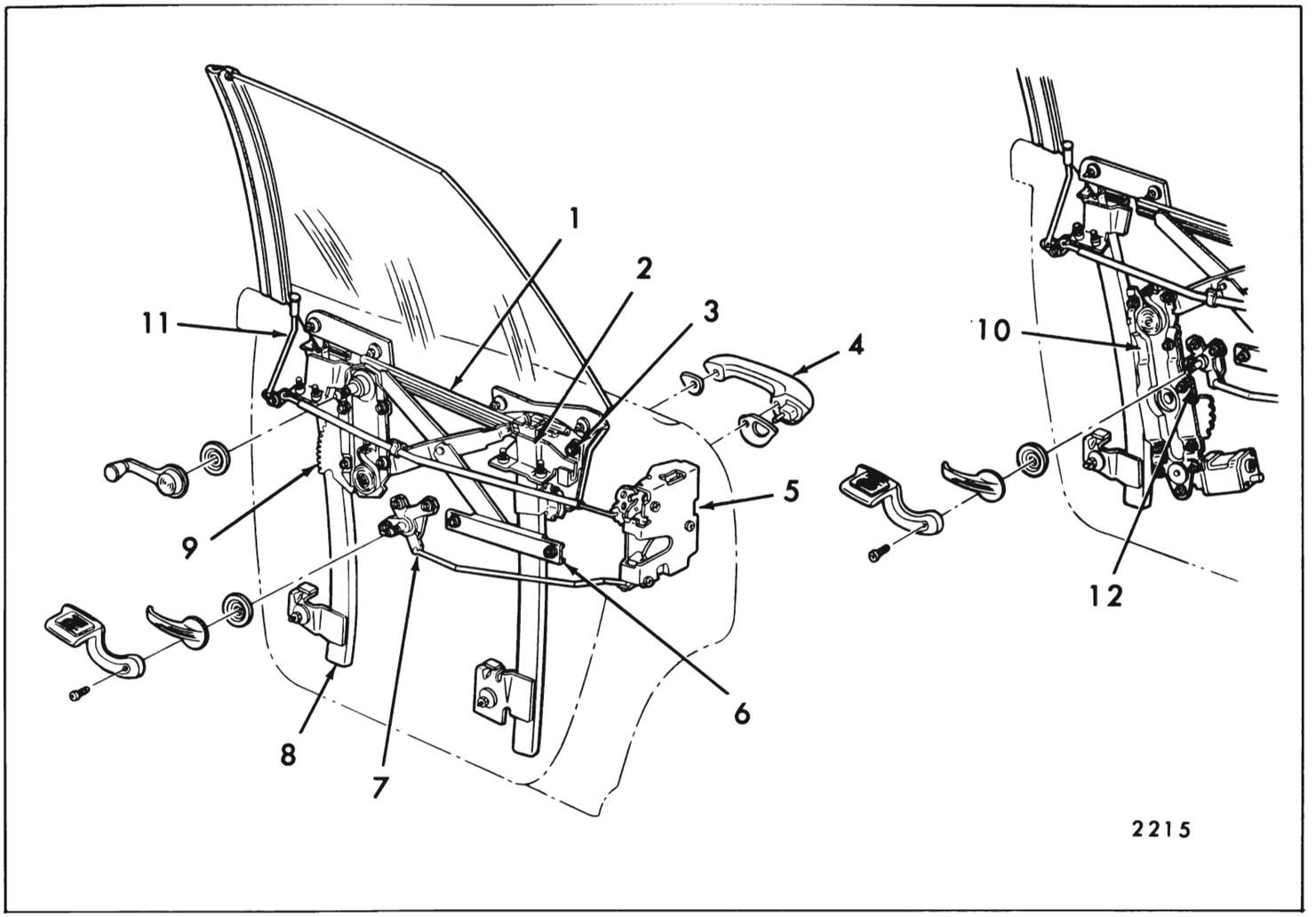

Fig. 7-115—Rear Door Hardware - "A-39" Styles

1. Sash Channel Cam
2. Rear Guide
3. Rear Up-Stop
4. Outside Handle and Sealing Gaskets
5. Lock
6. Inner Panel Cam
7. Remote Control
8. Front Guide
9. Regulator (Manual)
10. Regulator (Electric)
11. Inside Locking Rod
12. Sector Gear Stop

2. Remove remote control attaching bolts (Fig. 7-120).

3. Pivot remote to disengage it from remote control to lock connecting rod and remove remote control from door.

4. To install, reverse removal procedure. Make certain anti-rattle clip on lock connecting rod is properly positioned.

REAR DOOR LOCK ASSEMBLY— "B-35-45 AND 69" STYLES

Removal and Installation:

1. Remove rear door trim assembly and inner panel water deflector.

2. Remove door lock remote control.

3. Remove inside locking rod to lock connecting rod link attaching bolt (Fig. 7-120).

4. Remove lock attaching screws (Fig. 7-121 hardtop style shown, closed styles similar).

5. Disengage connecting rods from clips on door lock (for clip disengagement refer to "Door Lock Spring Clips" in Front and Rear door section) and remove lock from door.

6. To install, reverse removal procedure. Check lock for proper operation prior to installing water deflector.

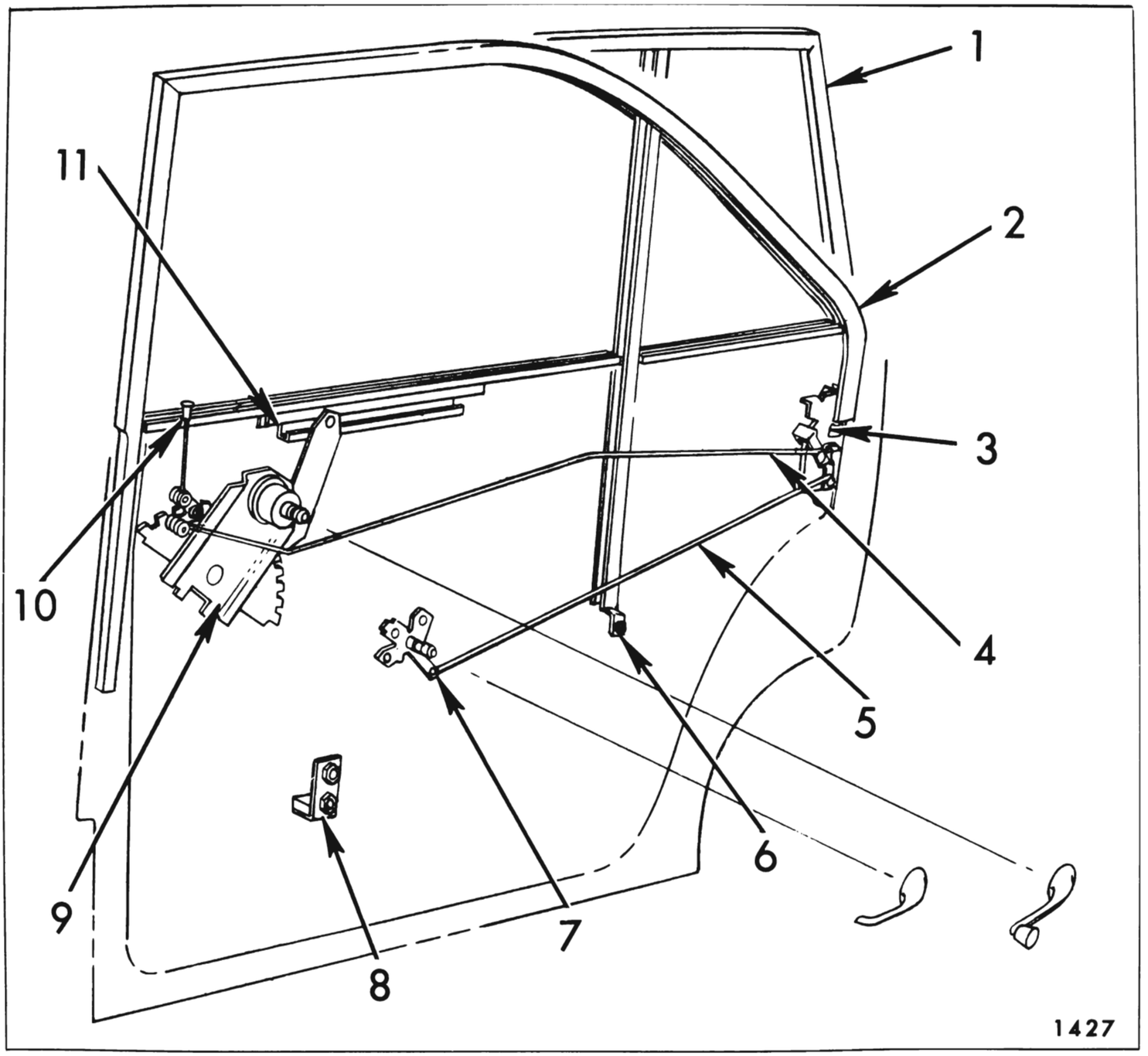

Fig. 7-116—Door Hardware - "X-35 and 69" Styles

1. Upper Frame - "35" Styles
2. Upper Frame - "69" Styles
3. Lock Assembly
4. Lock to Locking Lever Rod
5. Remote Control Connecting Rod
6. Ventilator Division Channel
7. Remote Control Assembly
8. Window Lower Stop
9. Window Regulator Assembly
10. Inside Locking Rod
11. Window Lower Sash Channel Cam

REAR DOOR LOCK ASSEMBLY AND VACUUM ACTUATOR—ALL EXCEPT "B-35-45 AND 69" STYLES

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector.
2. Operate glass to full-up position.
3. Working through access hole, disengage lock connecting rods from spring clips on door lock (for clip disengagement refer to "Door Lock Spring Clips" in Front and Rear Door Section).
4. Remove door lock attaching screws (Fig. 7-121) and remove lock from door.

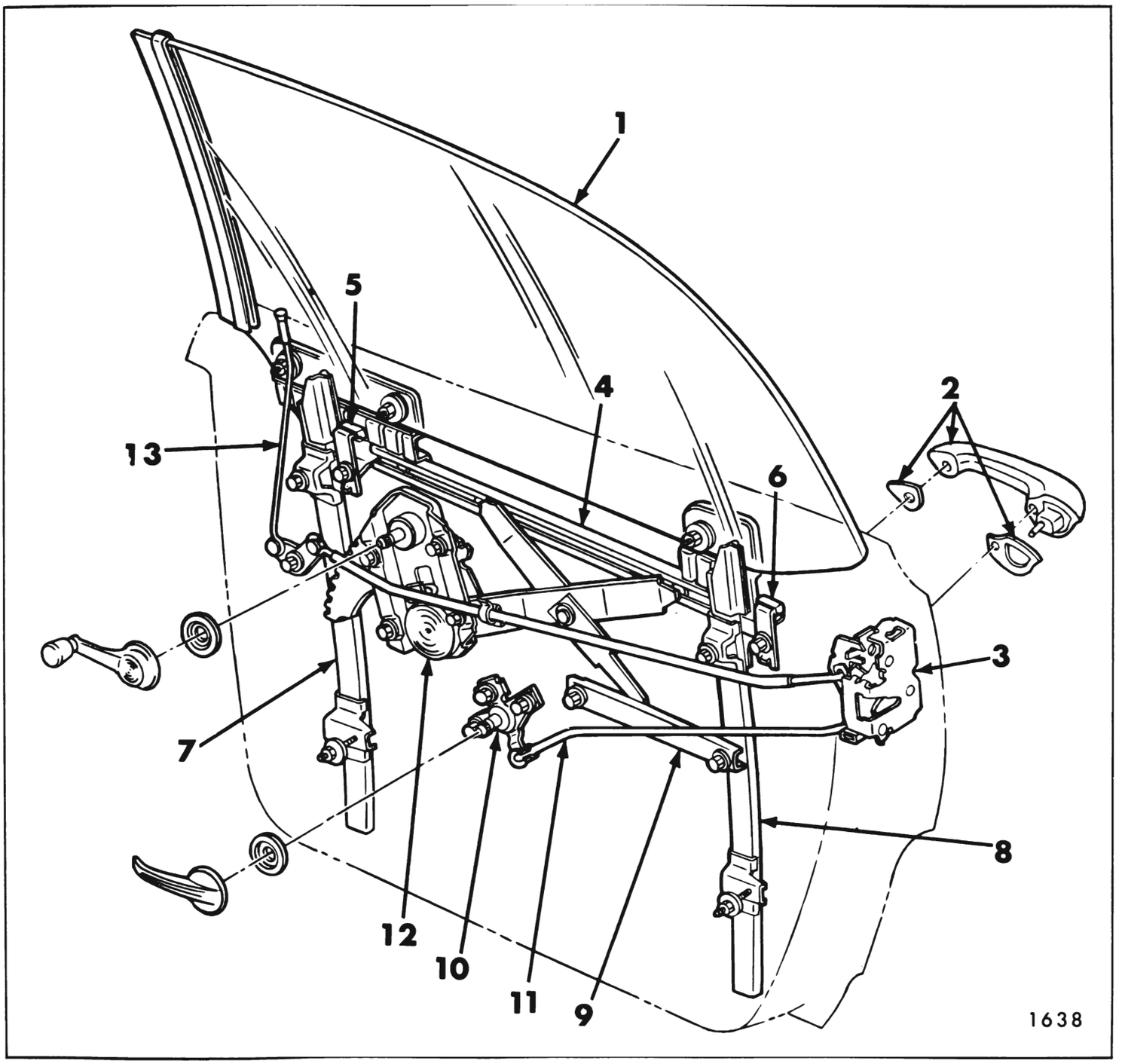

Fig. 7-117—Rear Door Hardware - "Z-39" Styles

1. Window Assembly
2. Outside Handle and Sealing Gaskets
3. Door Lock
4. Lower Sash Channel Cam
5. Front Up-Travel Stop
6. Rear Up-Travel Stop
7. Window Front Guide
8. Window Rear Guide
9. Inner Panel Cam
10. Remote Control
11. Remote Control Connecting Rod
12. Window Regulator
13. Inside Locking Rod

5. To install, reverse removal procedure.

NOTE: On styles equipped with vacuum lock actuators (except 68069-169 Styles), disconnect vacuum hoses from actuator and remove lock and actuator as an assembly. Vacuum actuator is attached to lock with screws which can be removed only in a bench operation (Fig. 7-122).

On 68069-169 Styles, remove vacuum actuator and link assembly screws (Fig. 7-123 and 7-124) and allow vacuum actuator to hang loose during lock removal

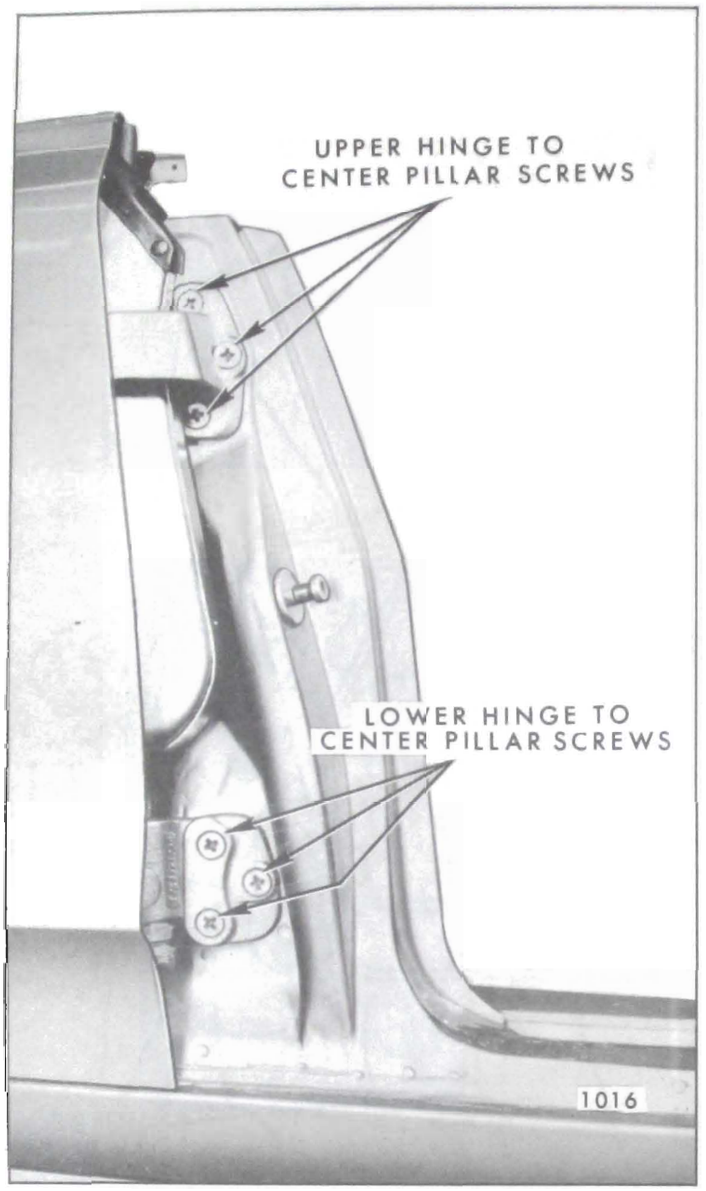

Fig. 118—Rear Door Hinge Attachment - "B" Style Shown - Others Similar

REAR DOOR LOCK VACUUM ACTUATOR—68069 AND 68169 STYLES

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector.
2. Disconnect inside locking rod from door lock spring clip (Refer to Front and Rear Door section under "Door Lock Spring Clips" for disengagement).
3. Remove inside locking to lock connecting rod link bolt (Fig. 7-123).
4. Disconnect vacuum hoses from vacuum actuator.

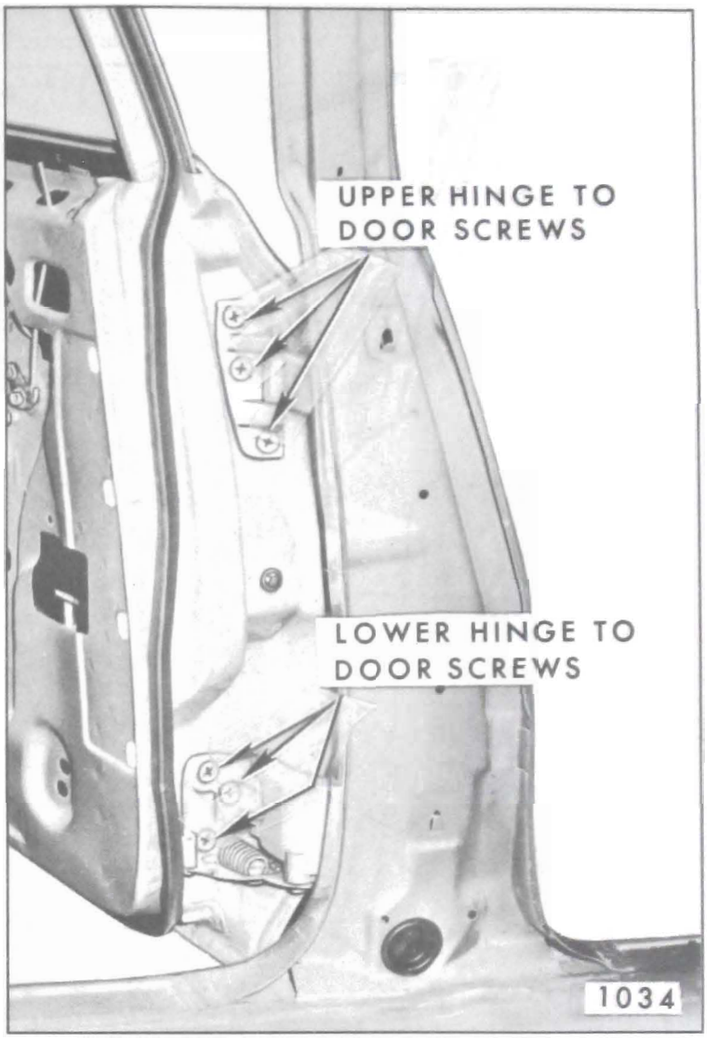

Fig. 7-119—Rear Door Hinge Attachment

5. Remove vacuum actuator and link assembly attaching screws (Fig. 7-123 and 7-124).
6. Pivot (rotate) actuator and linkage assembly, then, pull connecting rod forward through linkage. Remove actuator assembly from door.
7. To install, reverse removal procedure. Check lock operation prior to installing water deflector.

REAR DOOR INNER PANEL CAM—ALL EXCEPT "X" STYLES

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector.
2. Remove inner panel cam attaching bolts (Fig. 7-125). Disengage cam from regulator balance arm roller and remove cam from door.

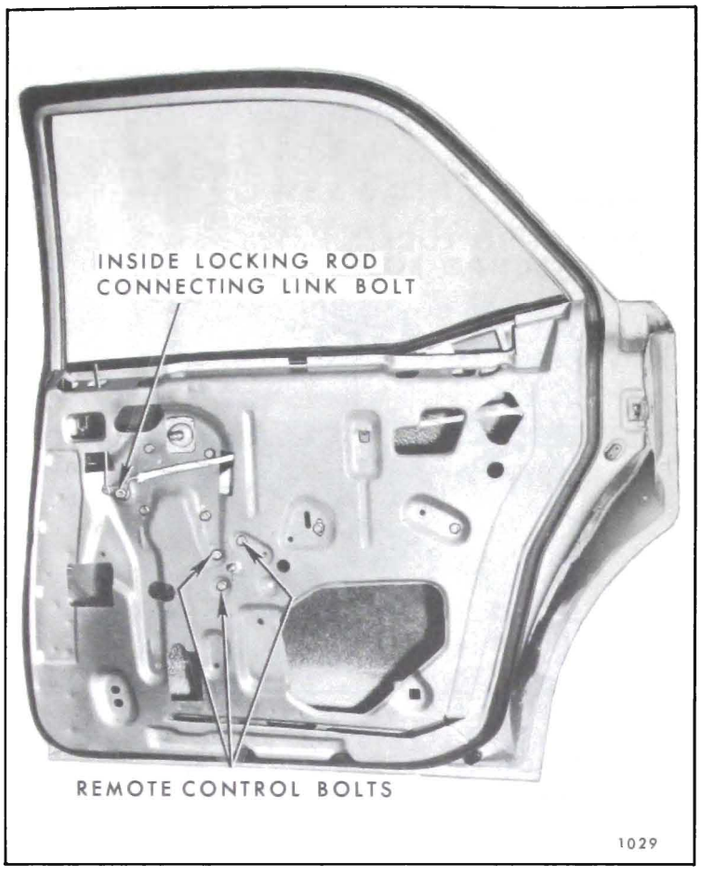

Fig. 7-120—Door Lock Remote Control - "B" Style Shown - Other Similar

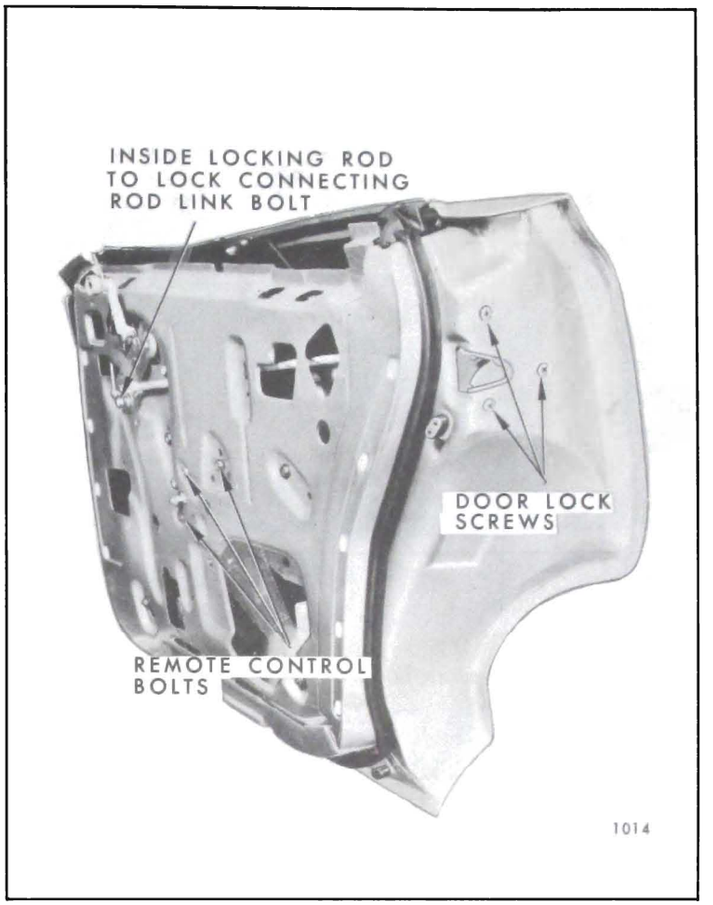

Fig. 7-121—Rear Door Lock Removal - Hardtop Style Shown, Closed Style Similar

3. To install, reverse removal procedure. Adjust front end of cam for proper window operation. Correct adjustment of cam will prevent a rotated (cocked) door window.

WINDOW LOWER SASH CHANNEL CAM—ALL EXCEPT "X" STYLES

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector.

2. Depending on body style and power options, operate window to position specified in Figure 7-125 for "A-B & C" Styles and Figures 7-126 and 7-127 for "Z" Styles.

3. On "Z" Styles, remove sash channel cam front screw first, then, raise window and remove rear screw. Support window and remove cam.

4. On "A-B & C" Styles, remove cam front and rear screws through access holes indicated and remove cam.

5. To install, reverse removal procedure.

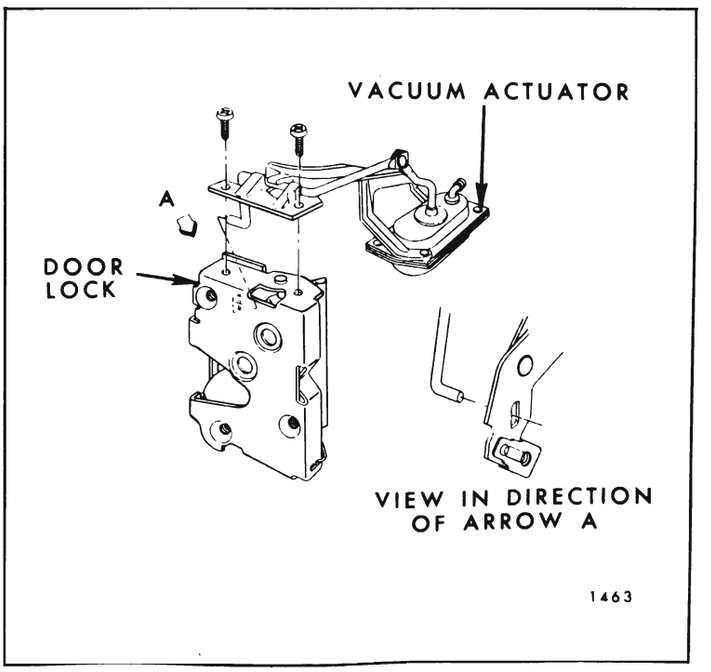

Fig. 7-122—Rear Door Vacuum Lock Actuator

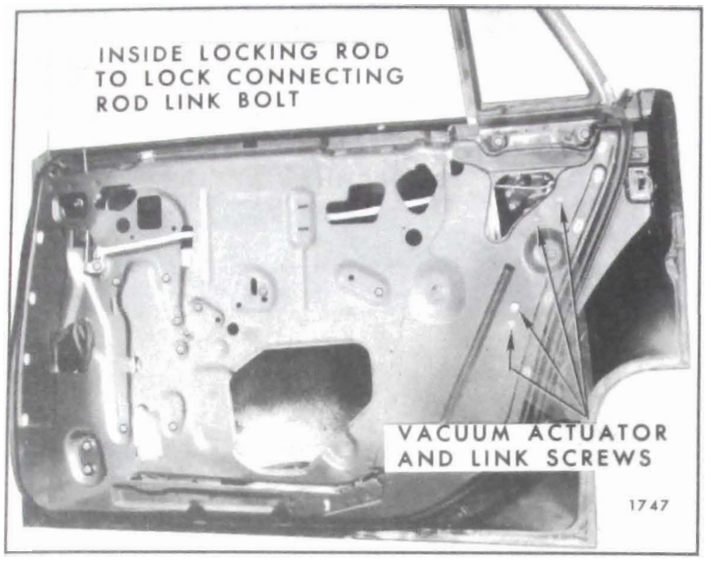

Fig. 7-123—Vacuum Lock Actuator Removal - 68069-68169 Styles

REAR DOOR WINDOW STATIONARY VENTILATOR DIVISION CHANNEL—"X-35 AND 69" STYLES

The stationary ventilator division channel is held into place by one division channel to door upper frame attaching screw and one lower adjusting stud and nut. This assembly acts as a rear door window rear glass run channel and also holds the stationary ventilator window in proper position.

Removal and Installation:

1. Remove door trim assembly and detach inner panel water deflector sufficiently to gain access to the lower adjusting stud and nut (see Fig. 7-128).
2. Remove door window lower stop.
3. Remove ventilator division channel lower adjusting stud and nut.
4. Carefully lower door window and remove division channel to door upper frame attaching screw (see Fig. 7-129).
5. Rotate upper section of division channel forward and inboard and remove assembly from door.
6. To install, reverse removal procedure. In or out and fore or aft adjustment of this part is available at the lower adjusting stud and nut only.

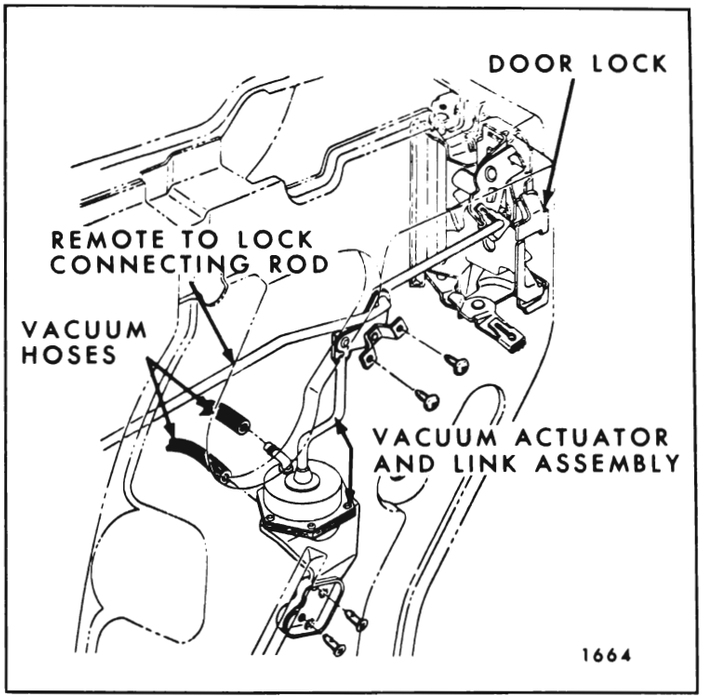

Fig. 7-124—Rear Door Vacuum Lock Actuator and Link Assembly - 68069-68169 Styles

REAR DOOR WINDOW STATIONARY VENTILATOR ASSEMBLY—"X-35 AND 69" STYLES

The rear door stationary ventilator assembly is set within a rubber channel and held into place by pressure of the ventilator division channel.

Removal and Installation:

1. Remove door trim assembly and detach inner panel water deflector.
2. Remove lower stop and carefully lower door window to extreme bottom of door.
3. Remove stationary ventilator division channel (see Fig. 7-128).
4. Pull stationary ventilator window forward and remove from door.
5. To install, reverse removal procedure.

GLASS RUN CHANNEL INNER AND OUTER STRIP ASSEMBLIES—"A-X & Z" STYLES

In order to remove the inner or outer strip assembly it is necessary to lower the window below its normal flush position with the belt line. The removal procedure varies according to body style.

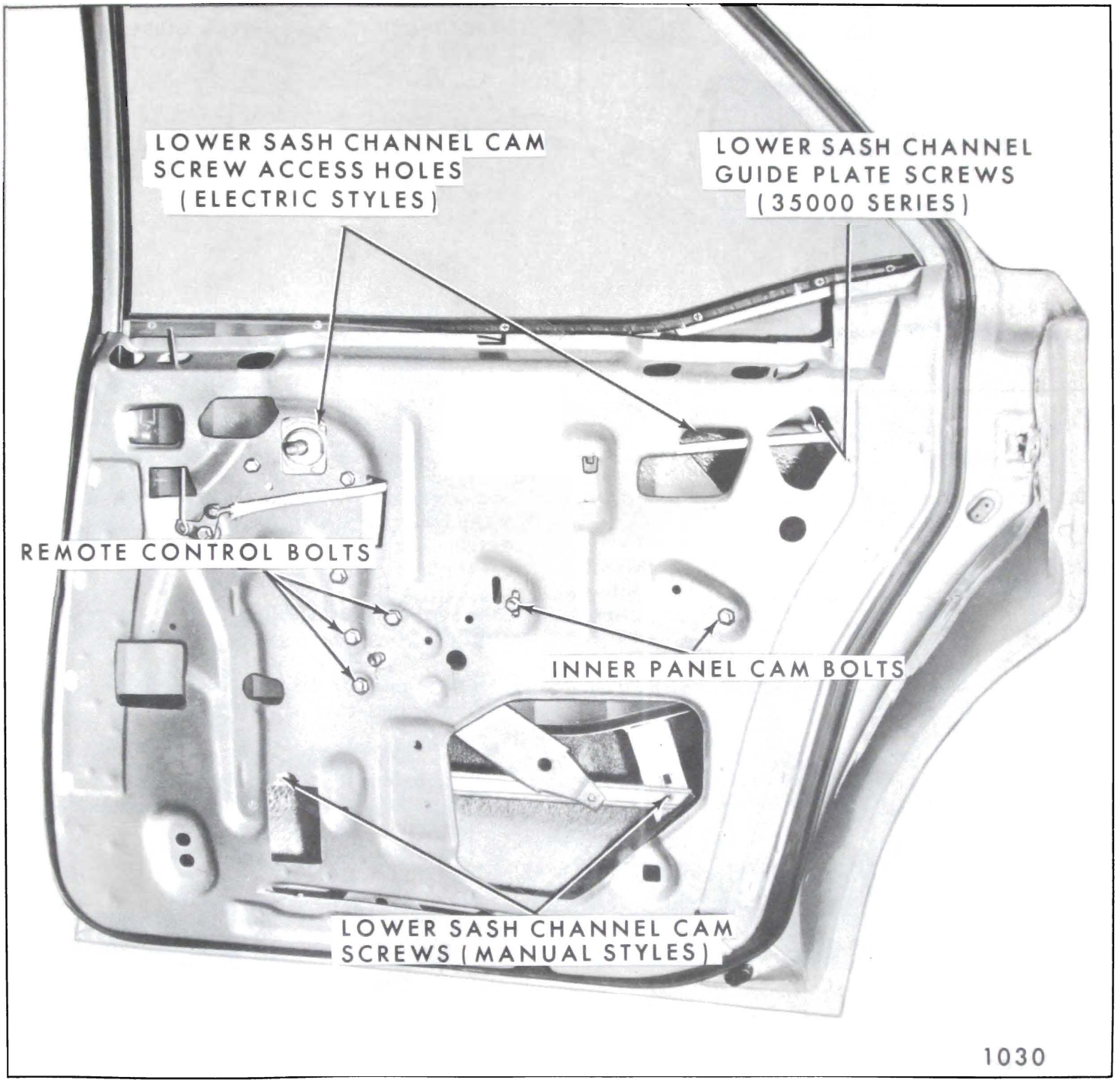

Fig. 7-125—Rear Door Hardware Attachment - "B" Styles Shown - "A" Styles Similar

1. On "Z" Body Styles, remove lower sash channel cam as previously described and lower window below its normal full-down position.

2. On "A" Closed Styles, remove rubber bumper from down-stop. On hardtop styles, loosen sector gear down-stop as specified in "Rear Door Window Adjustments".

3. On "X" Styles, remove bolt-on window lower stop.

When window has been lowered, proceed as follows:

1. Apply cloth-backed tape as protective cover to painted surfaces adjacent to strip assembly(ies) to be removed.

2. Insert a flat-blade tool that is slotted to fit over tang of clip between door panel return flange and strip assembly at clip locations (Fig. 7-130).

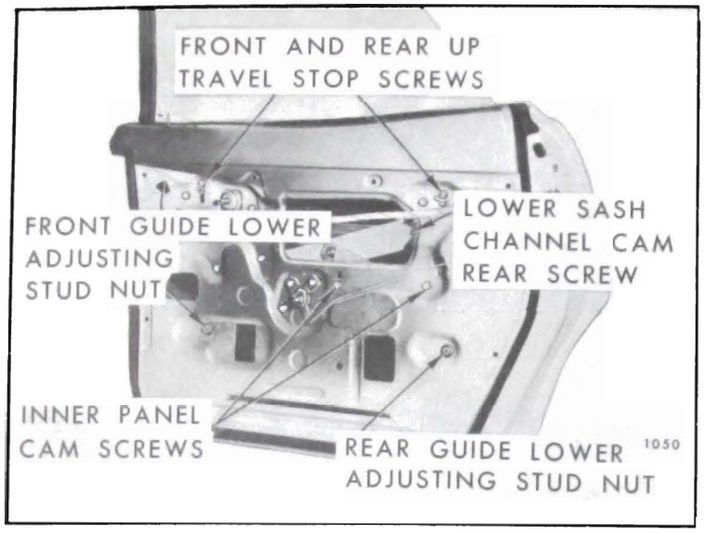

Fig. 7-126—Rear Door Hardware - "Z-39" Styles

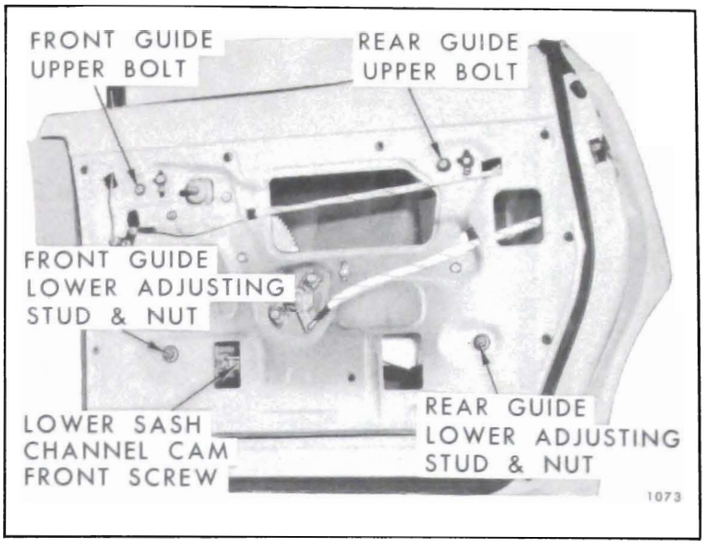

Fig. 7-127—Rear Door Hardware - "Z-39" Styles

3. Carefully pry clips from slots in panel and remove strip assembly.

4. To install, position strip assembly so that all clip tangs start into slots in door panel, then press at each clip location and engage clips.

   Prior to installing strip assembly, reform clip tangs to assure positive retention when installed.

   NOTE: To make strip assembly removal tool, make a 1/4" wide by 3/8" deep slot in a J-2272 headlining inserting tool or equivalent.

GLASS RUN CHANNEL OUTER STRIP ASSEMBLY—"B & C" STYLES

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector.

2. Remove rubber bumper from door window lower stop and operate window to full-down position.

3. Remove screws securing glass run channel outer strip assembly to door outer panel return flange (Fig. 7-125) and remove strip assembly.

4. To install, reverse removal procedure.

REAR DOOR WINDOW ASSEMBLY—ALL CLOSED STYLES

The rear door window assembly consists of a frameless solid tempered safety plate glass window and a pressed-on lower sash channel assembly. When handling window, make certain glass does not develop edge chips or deep scratches which could cause glass to shatter.

Removal and Installation ("B-35-45 and 69" Styles)

1. Remove door trim assembly and inner panel water deflector.

2. On 35000 Series "69" Styles, lower window approximately 3" down from full-up position. Remove lower sash channel rear guide plate attaching screws through upper rear access hole and remove guide plate (Fig. 7-125).

3. Operate window to position shown in Figure 7-125 and remove lower sash channel cam attaching screws (window slightly down on electric styles and full down on manual).

4. Remove glass run channel front and rear attaching bolts (Fig. 7-131 and 7-132).

5. Pivot window in opening (raise front edge) to disengage front and rear edges of glass from glass run channel, then remove window inboard of door upper frame.

6. To install, reverse removal procedure.

Removal and Installation ("X-35 and 69" Styles)

1. Raise door window; remove door trim assembly and detach inner panel water deflector.

2. Remove rear door window stationary ventilator assembly-division channel and glass.

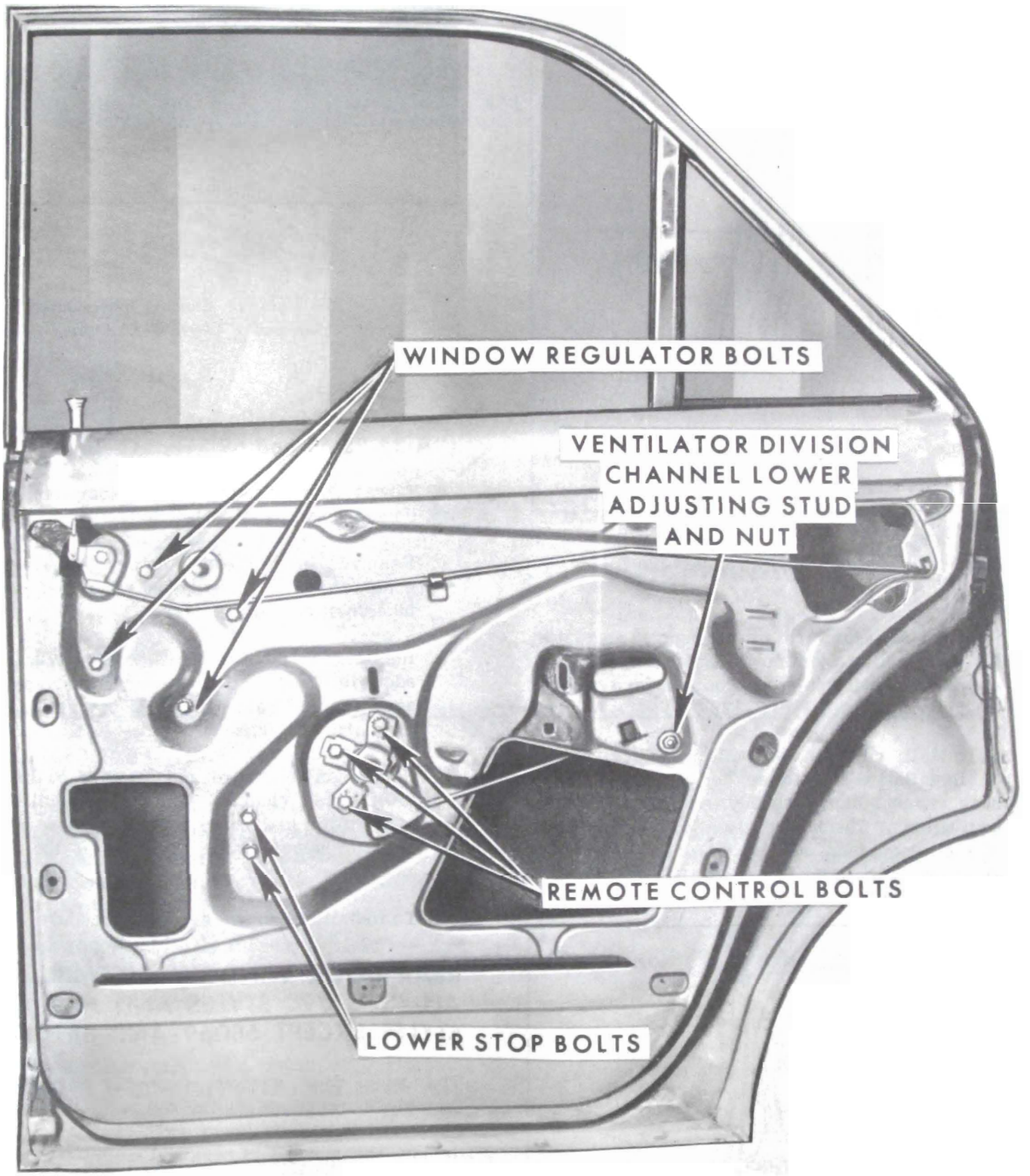

Fig. 7-128—Rear Door Hardware - "X-35 and 69" Styles

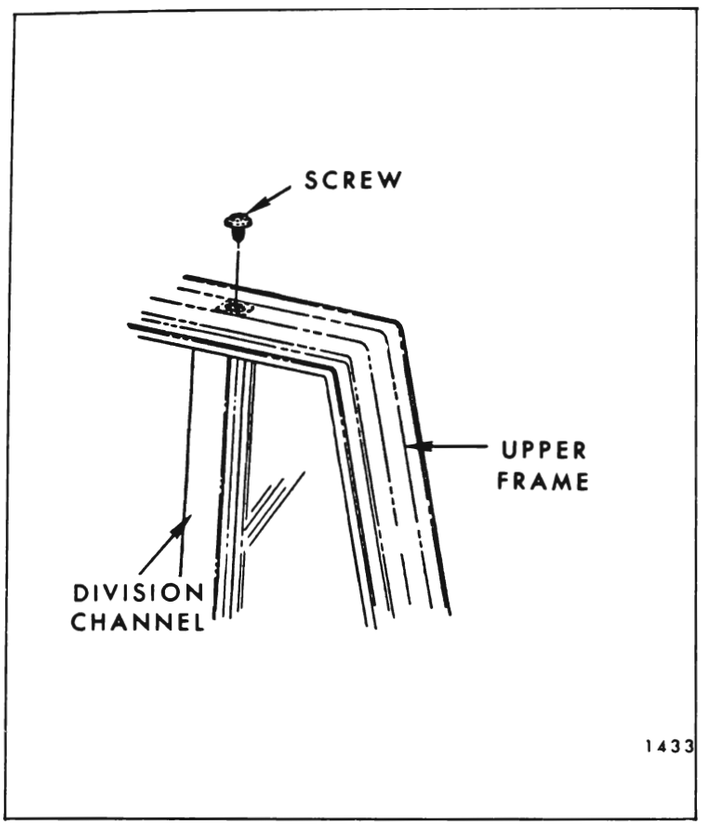

Fig. 7-129—Rear Door Ventilator Attachment - "X" Styles

3. Slide glass rearward to disengage regulator lift arm roller from lower sash channel cam and remove window from door inboard of door window frame (see Fig. 7-128).

4. To install, reverse removal procedure. Prior to installation of water deflector, lubricate sash channel cam with 630AAW Lubriplate or equivalent. Check operation of window and, where required, adjust window assembly as described under "Rear Door Window Adjustments".

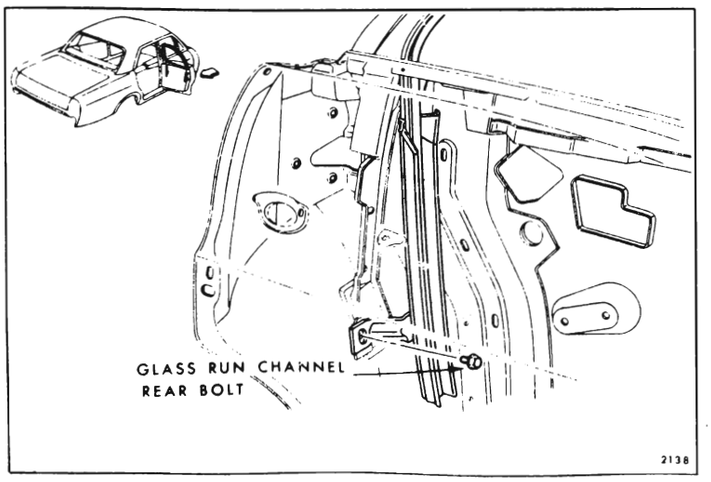

Fig. 7-131—Glass Run Channel Retention - "B" Closed Styles Except 45-46000 Series

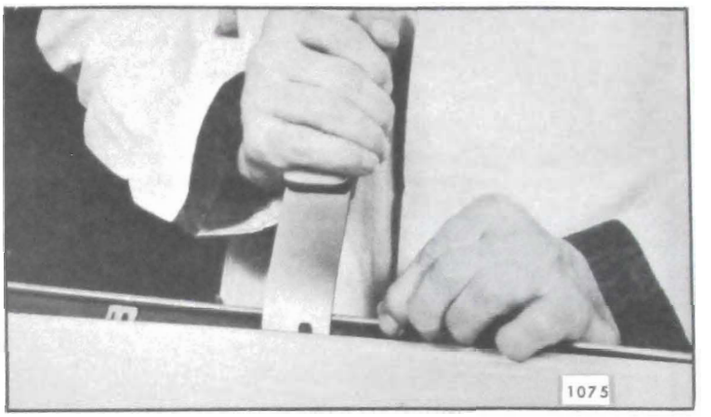

Fig. 7-130—Glass Run Channel Inner-Outer Strip Removal - "A-X & Z" Styles

Removal and Installation ("A-35-55-65 and 69" Styles)

1. Lower door window, remove door trim pad and detach inner panel water deflector.

2. Remove inner panel cam. On styles not equipped with a hang-on trim pad, remove inner belt seal (draft strip).

3. Rotate rear edge of glass downward until front edge is free of door upper frame and lower sash channel cam slides off of regulator balance arm roller.

4. Rotate glass upward and forward to disengage lower sash channel cam from regulator lift arm roller and remove door window outboard of door upper frame (See Fig. 7-133 View A and B).

5. To install, reverse removal procedure.

REAR DOOR WINDOW ASSEMBLY— ALL "B-C 39" STYLES AND ALL "C-69" STYLES EXCEPT 68069 AND 68169

The rear door window assembly consists of a frameless piece of solid tempered safety plate glass and a bolt-on lower sash channel. With this design, the window is removed from the door as an assembly and door glass replacement made in a bench operation.

Figures 7-134 and 7-135 are exploded views of the "39 and 69" Style (except 68069 and 68169 Styles) rear door window assemblies and identify the specific components and their assembly sequence.

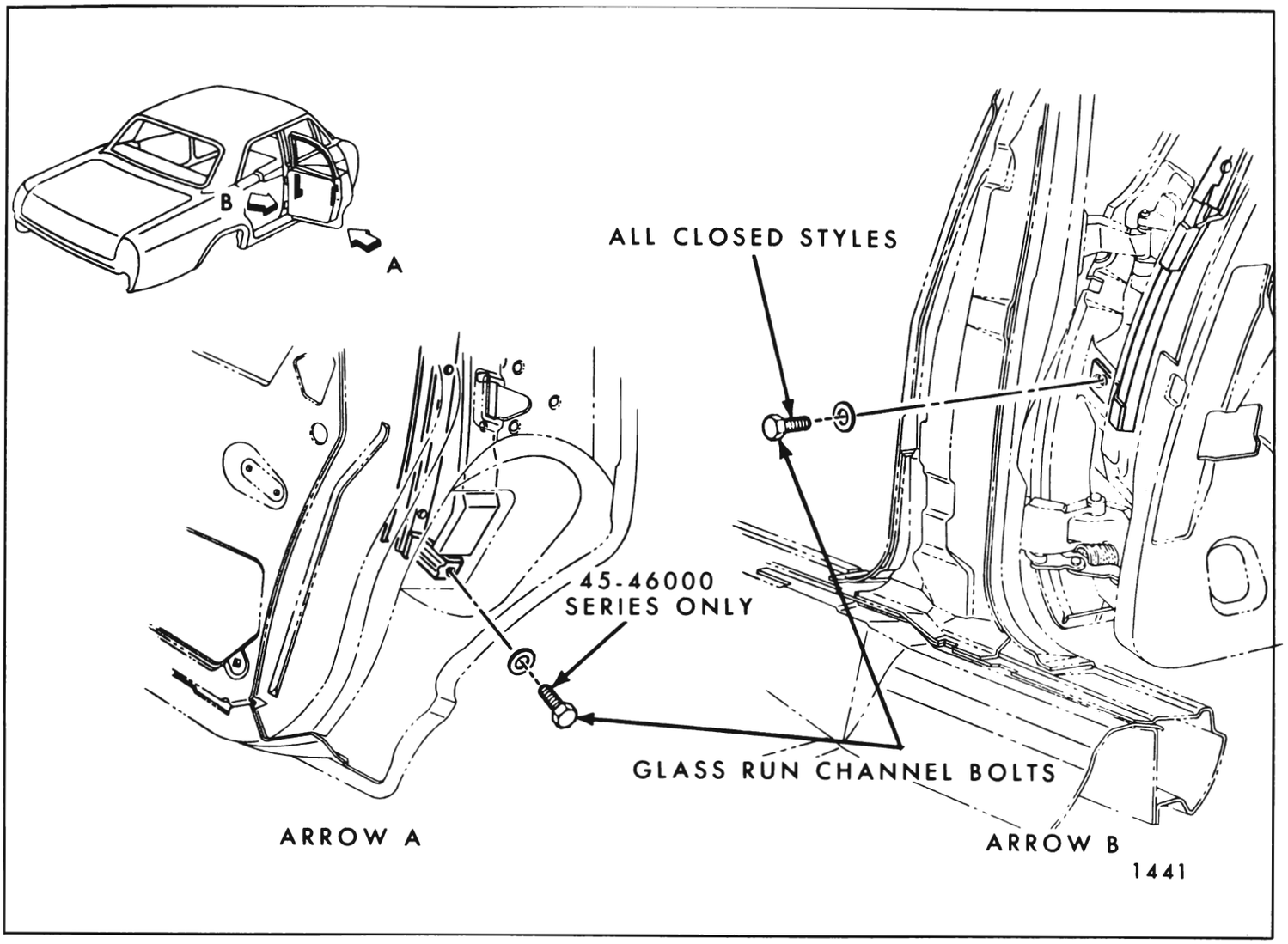

Fig. 7-132—Glass Run Channel Retention - "B" Closed Styles

NOTE: When replacing door glass, replace glass to sash channel spacers. When installing glass to sash channel nuts, torque to 60 inch lbs. (5 foot lbs.).

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector.

2. Loosen front and rear upper stop attaching bolts "D & E" (Fig. 7-136) and rotate stops into vertical position (Fig. 7-137).

3. Loosen front and rear guide upper attaching bolts "A & C" and lower adjusting stud nuts "F & H" (Fig. 7-136).

4. Operate window to required position as shown in Figure 7-136 and remove rear lower sash channel cam attaching screws at "B" or "G". (Window almost full-down for manual styles, and almost full-up for electric styles).

NOTE: On electric styles it is necessary to remove electric switch plastic cover from inner panel to gain access to sash channel cam front attaching screw.

5. Lift window and remove it from door at belt line.

6. To install, reverse removal procedure. Adjust guides and wedge plates for proper window operation as described below.

Adjustments

1. To adjust the top of the door glass in-or-out in relation to the side roof rail weatherstrip, loosen the front and rear guide lower adjusting stud nuts "F & H" (Fig. 7-136). Adjust studs in-or-out as required and tighten stud nuts.

2. To adjust window assembly fore-or-aft, or in-or-out, loosen front and rear guide upper at-attaching bolts "A & C" and lower adjusting

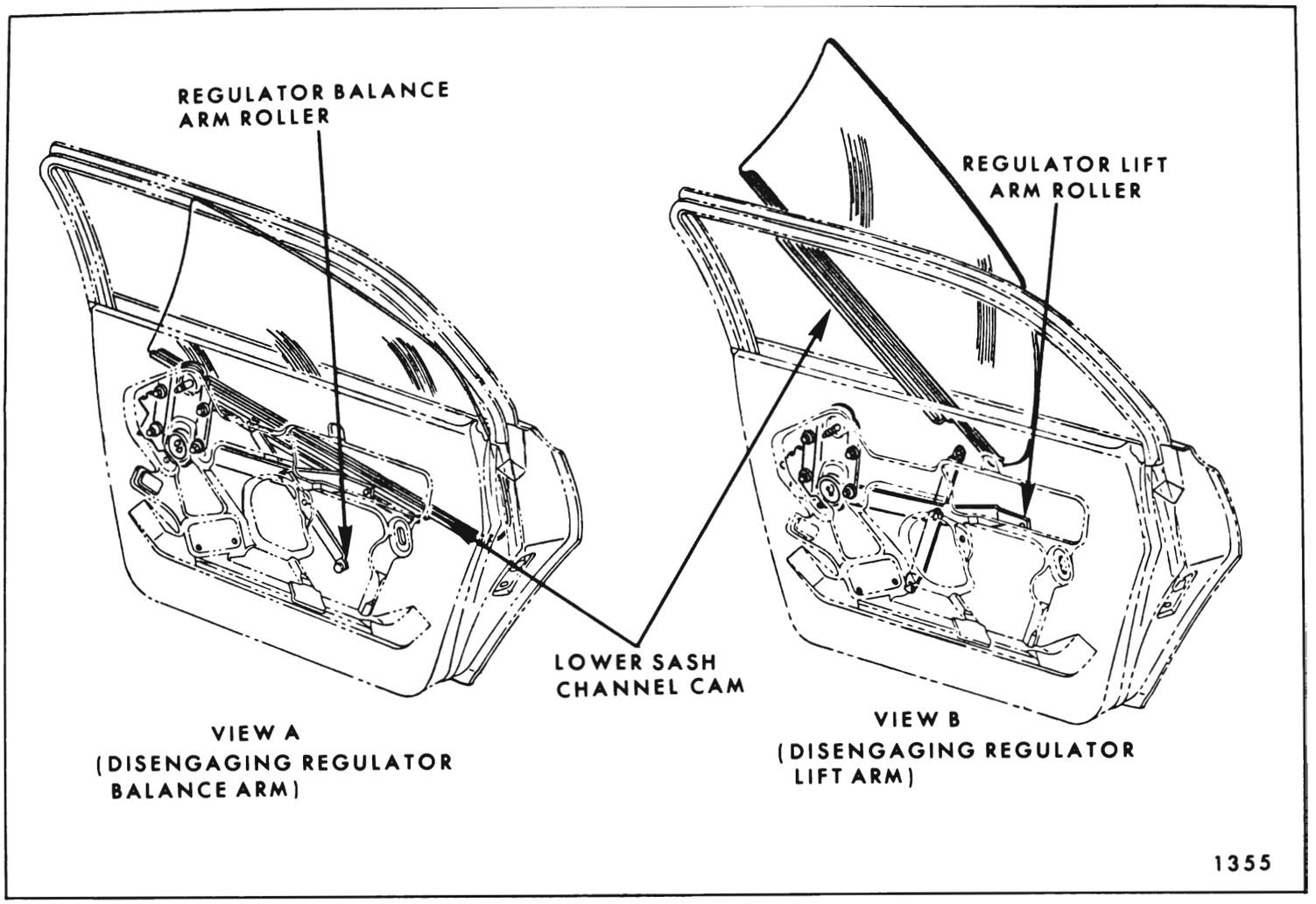

Fig. 7-133—Rear Door Window Removal - "A" Closed Styles

stud nuts "F & H" (Fig. 7-136). Position window as desired and tighten guide attachments.

3. To correct a window that is rotated (cocked) in the opening, loosen inner panel cam attaching bolts "I" (Fig. 7-136). Adjust front of cam up-or-down as required and tighten bolts.

4. To adjust front or rear edge of glass in-or-out, loosen front or rear guide upper attaching bolts "A & C" (Fig. 7-136). Adjust guide in-or-out as required and tighten bolts.

5. To obtain proper up-travel of window for good contact with side roof rail weatherstrip, loosen front and rear upper stop attaching bolts "D & E" (Fig. 7-136). Operate window to desired up position. Then, tighten stop bolts while exerting slight downward force on stops.

NOTE: Upper stop adjustment can correct a slightly rotated (cocked) window, however, for major adjustment of this type, use inner panel cam adjustment.

REAR DOOR WINDOW ASSEMBLY—68069 AND 68169 STYLES

The rear door window assembly consists of a frameless piece of solid tempered safety plate glass and a bolt-on lower sash channel assembly. With this design, the window is removed as an assembly and door glass replacement made in a bench operation.

Figure 7-138 is an exploded view of the rear door window and identifies the various components and their assembly sequence.

NOTE: When replacing door glass, replace glass to sash channel spacers. When installing nuts on glass to sash channel attaching bolts, torque to 60 inch lbs. (5 foot lbs.).

Removal and Installation:

1. Remove rear door trim assembly and inner panel water deflector.

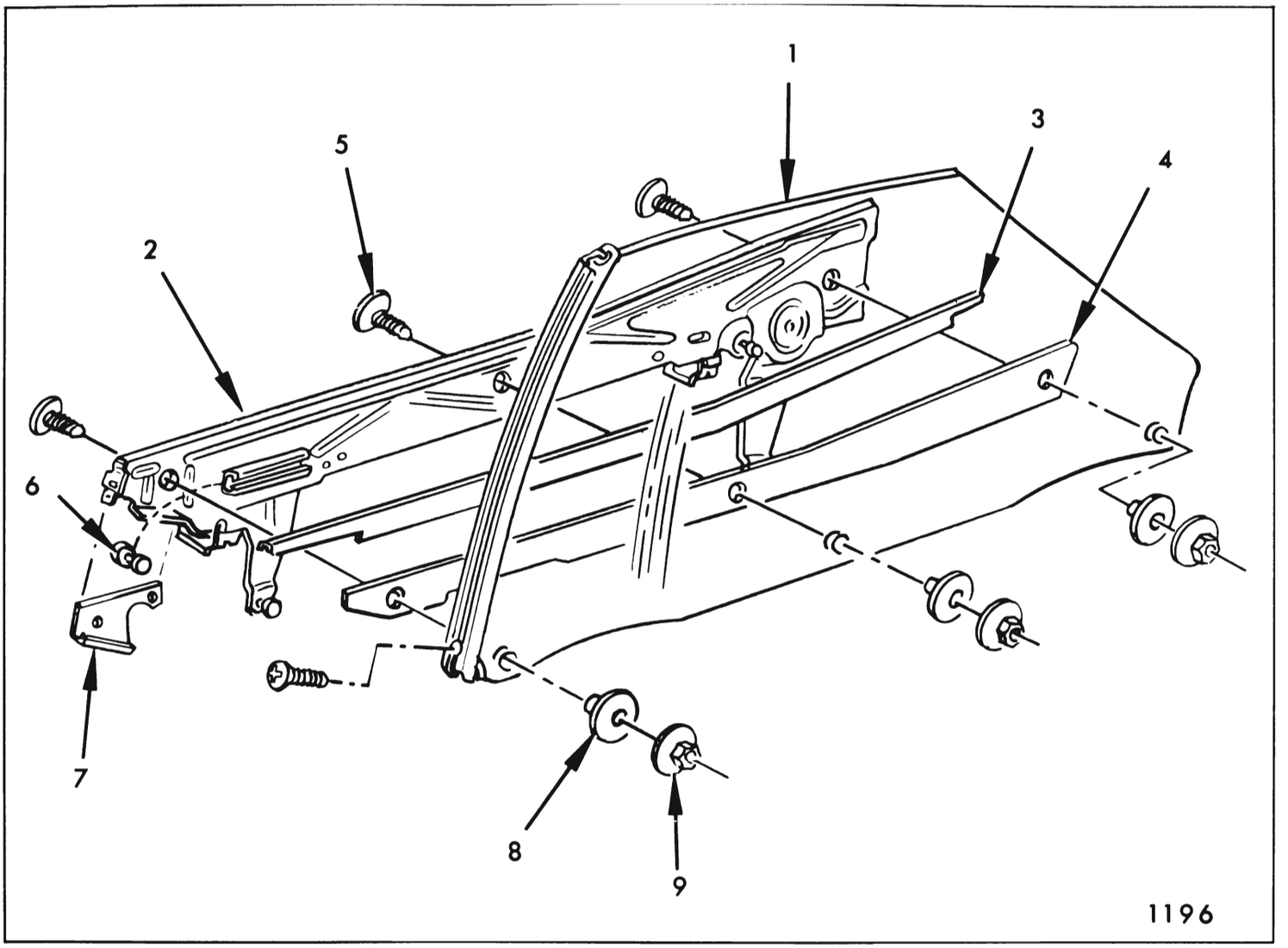

Fig. 7-134-Rear Door Window Assembly - "B & C-39" Styles Shown - "A" Similar

1. Rear Door Window Assembly
2. Lower Sash Channel Assembly
3. Lower Sash Channel Upper Filler
4. Lower Sash Channel Lower Filler
5. Glass to Lower Sash Channel Bolts
6. Lower Sash Channel Front Cam Roller
7. Lower Sash Channel Front Filler Plate
8. Glass to Lower Sash Channel Spacer
9. Glass to Lower Sash Channel Nuts

2. With glass in full-up position, remove front and rear up-travel stop attaching bolts, two bolts on front stop, one on rear (Figs. 7-139 and 7-140).

3. Lower glass approximately 2" and remove lower sash channel cam attaching screws (Fig. 7-141).

4. While supporting glass by pressing it rearward into ventilator division channel, remove lower sash channel to guide plate attaching nuts (Fig. 7-140).

5. Disengage lower sash channel from weld-on studs on sash channel guide plate and remove window assembly from door.

6. To install, reverse removal procedure. Adjust window for proper operation and alignment as described under "Rear Door Window and/or Ventilator Adjustments".

REAR DOOR VENTILATOR REGULATOR—68069 AND 68169 STYLES

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector. Operate door glass to full-up position.

2. Disconnect ventilator regulator wire harness connector at regulator motor.

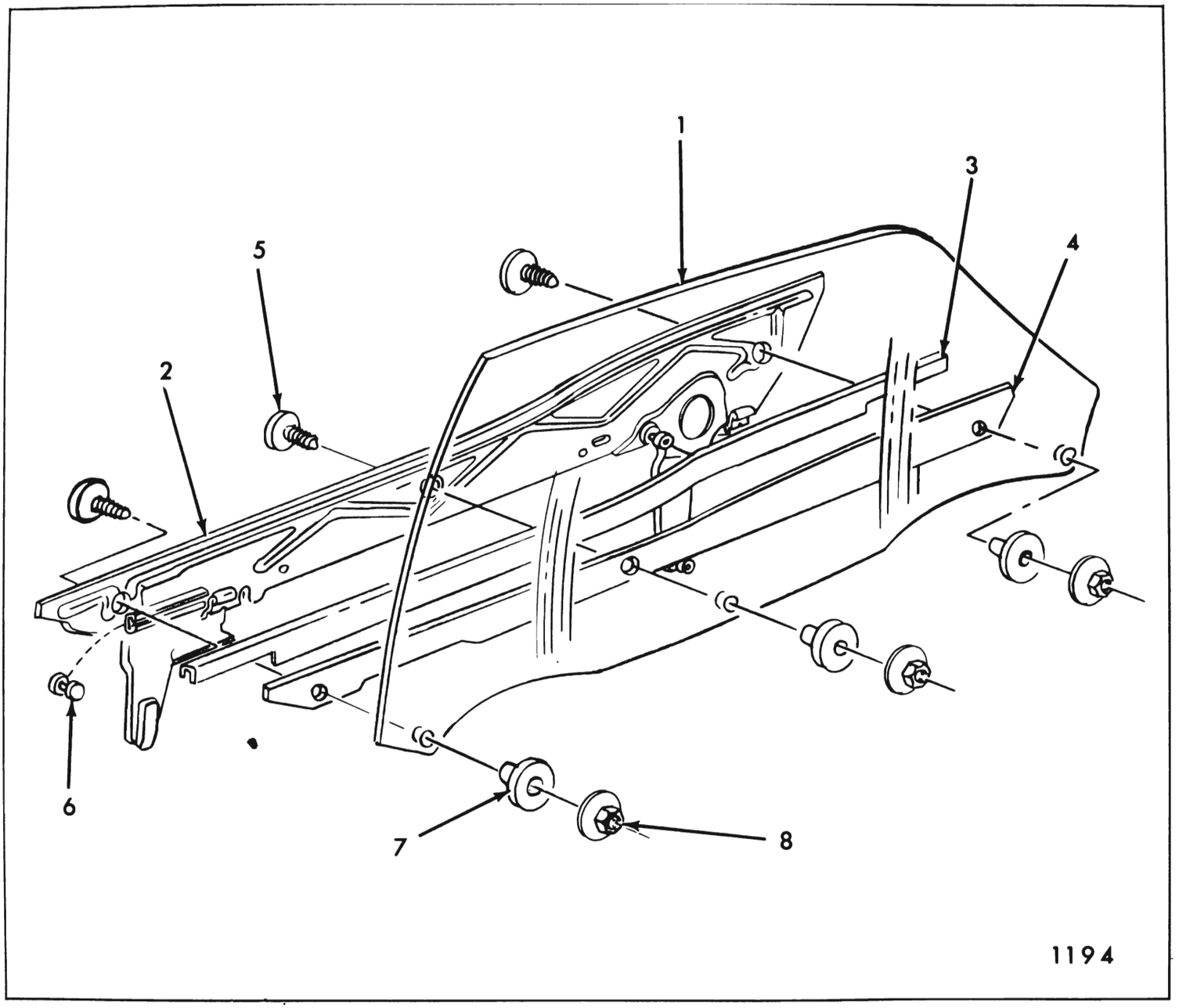

Fig. 7-135—Rear Door Window Assembly "C-69" Styles Except 68069-68169 Styles

1. Rear Door Window Assembly
2. Lower Sash Channel Assembly
3. Lower Sash Channel Upper Outer Filler
4. Lower Sash Channel Lower Outer Filler
5. Glass to Lower Sash Channel Bolts
6. Lower Sash Channel Front Cam Roller
7. Glass to Lower Sash Channel Spacers
8. Glass to Lower Sash Channel Nuts

3. Remove ventilator "T-shaft" to regulator attaching bolt (Fig. 7-142).

4. Remove ventilator regulator to ventilator frame attaching bolts (Fig. 7-142).

5. Disengage ventilator regulator from ventilator "T-shaft" and remove regulator through access hole.

6. To install, reverse removal procedure.

REAR DOOR VENTILATOR ASSEMBLY—68069 AND 68169 STYLES

Removal and Installation:

1. Remove rear door ventilator regulator as previously described.

2. Remove ventilator lower frame and ventilator division channel lower adjusting stud nuts (Fig. 7-142).

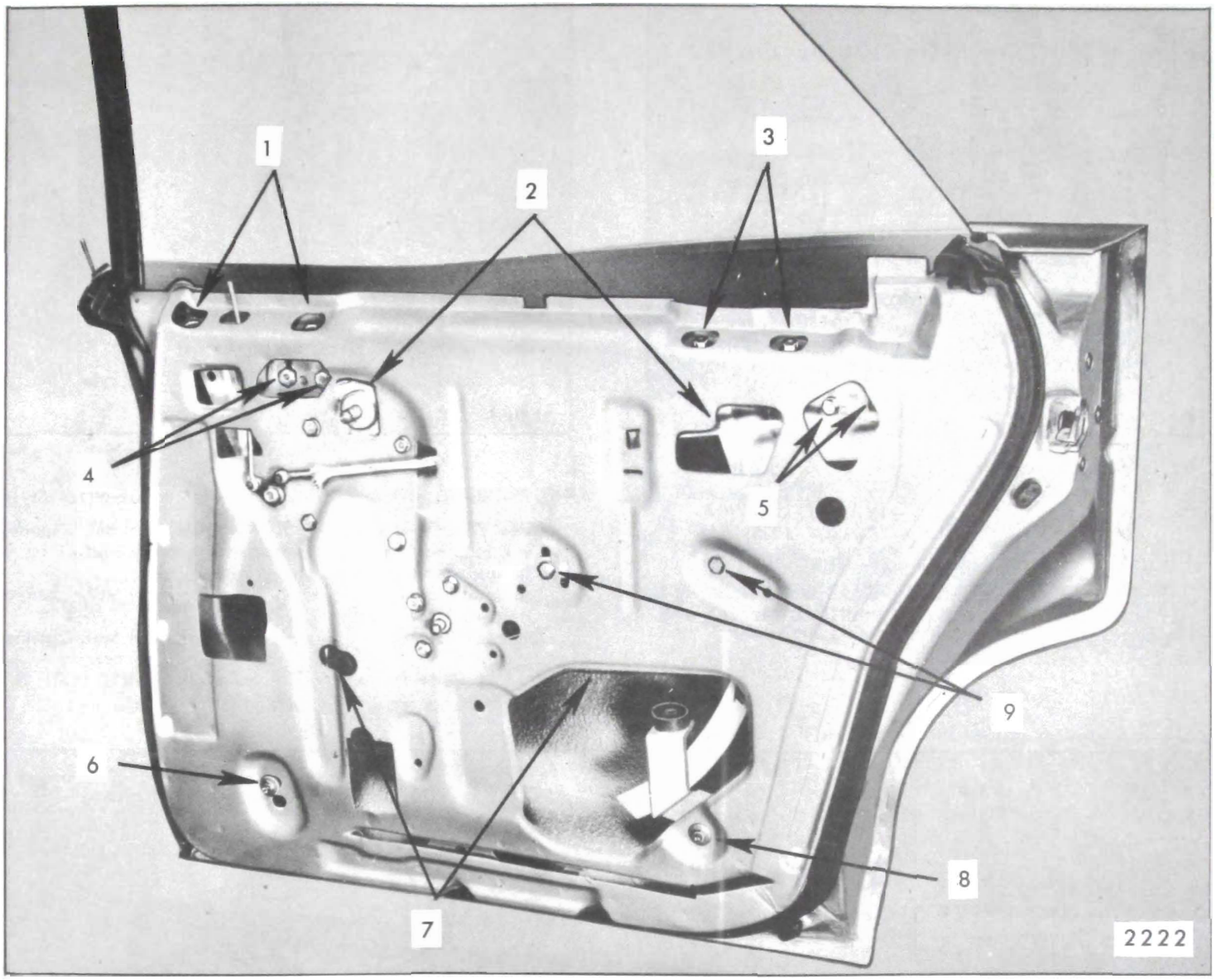

Fig. 7-136—Rear Door Hardware Attachment "B-C 39 and C-69" Except 68069-68169 Styles

1. Front Guide Upper Bolts
2. Lower Sash Channel Cam Screw Access Holes (Electric)
3. Rear Guide Upper Bolts
4. Front Upper Stop Bolts
5. Rear Upper Stop Bolts
6. Front Guide Lower Adjusting Stud Nut
7. Lower Sash Channel Cam Screw Access Holes (Manual)
8. Rear Guide Lower Adjusting Stud Nut
9. Inner Panel Cam Bolts

3. Remove ventilator lower frame attaching bolts (Fig. 7-142).

4. Lift ventilator assembly up approximately 3" and remove ventilator lower frame adjusting stud through access hole.

5. Lift ventilator upward and remove from door. Twist ventilator 90° to remove division channel lower adjusting stud at belt.

6. To install, reverse removal procedures. Adjust ventilator for proper operation and alignment as described under "Rear Door Window and/or Ventilator Adjustments".

Ventilator Disassembly

1. Remove ventilator assembly from door as previously described.
2. Remove ventilator division pillar glass run channel strip assembly by disengaging lower end and pulling strip upward (Fig. 7-143).
3. Remove division pillar to ventilator stationary frame attaching screws (Fig. 7-143).

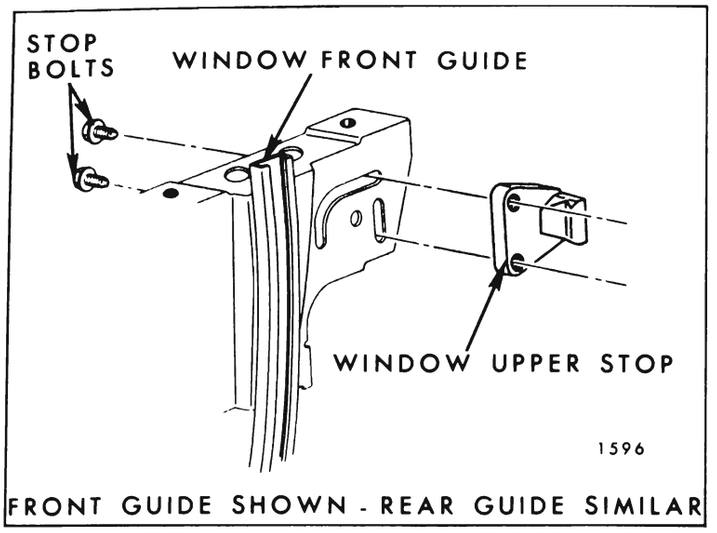

Fig. 7-137—Window Upper Stop Attachment

4. Remove division pillar to ventilator upper frame (and rubber bumper) attaching screw (Fig. 7-143) and separate ventilator frame and divison channel.

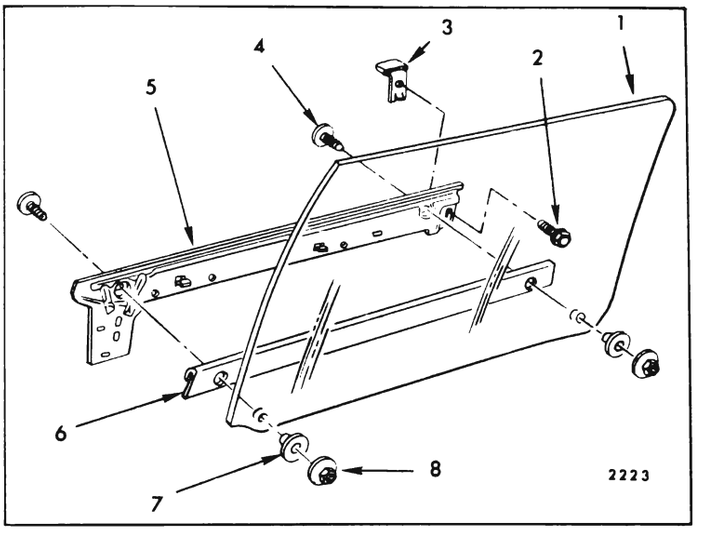

Fig. 7-138—Rear Door Window Assembly - 68069-68169 Style

1. Door Window Glass
2. Rear Stop to Sash Channel Screw
3. Window Rear Stop
4. Glass to Lower Sash Channel Bolt
5. Window Lower Sash Channel
6. Window Lower Sash Outer Filler
7. Glass to Lower Sash Channel Spacer
8. Glass to Lower Sash Channel Nut

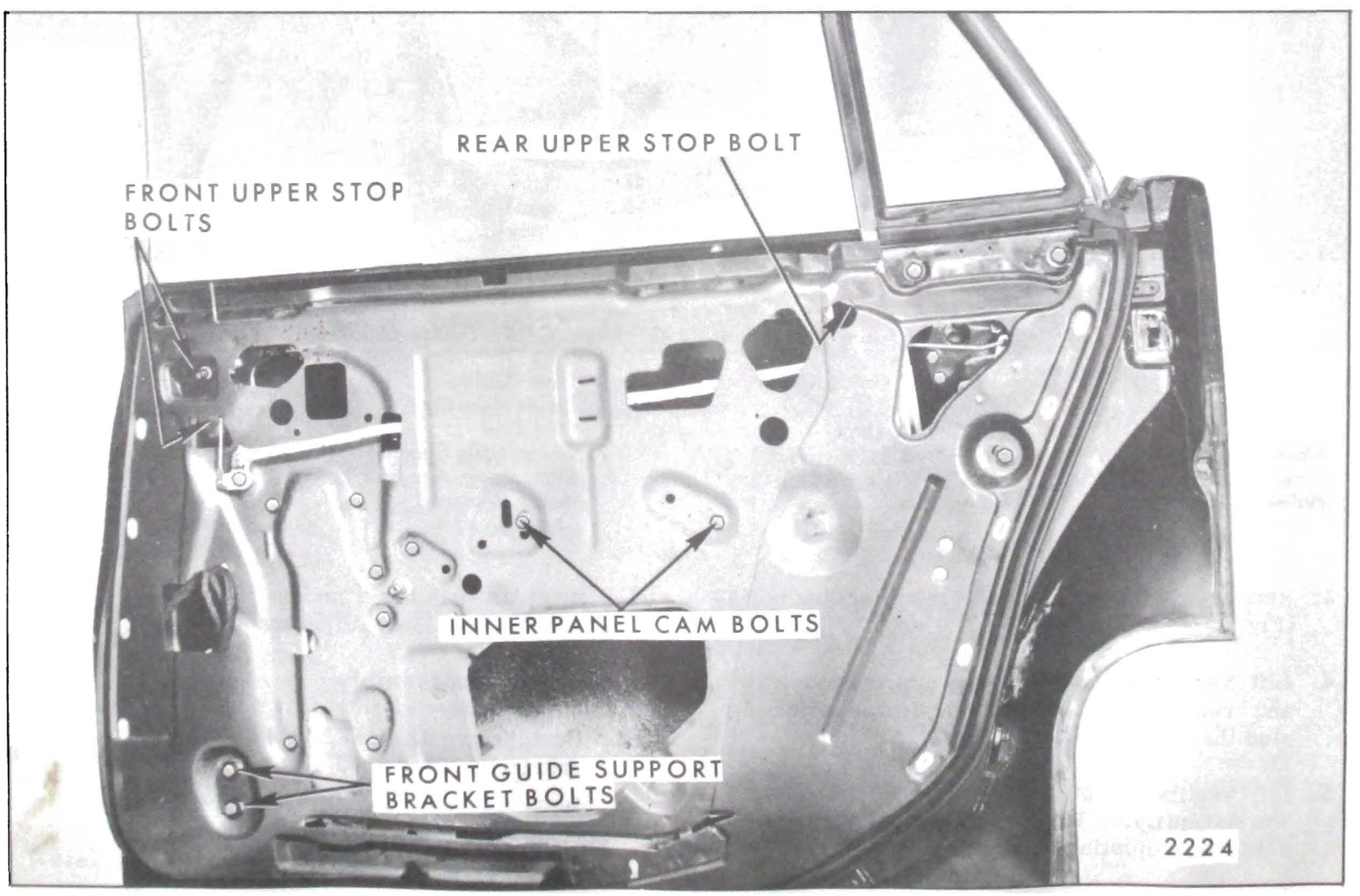

Fig. 7-139—Rear Door Window Removal - 68069-68169 Styles

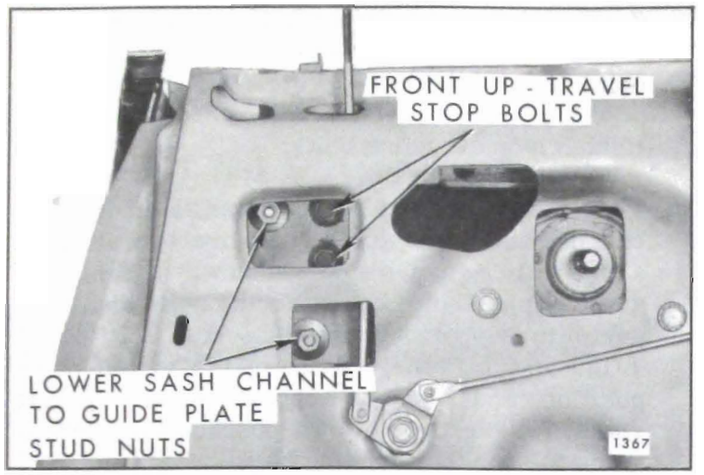

Fig. 7-140—Rear Door Window Removal - 68069-68169 Styles

5. Put ventilator window 90° to ventilator frame. Using hand pressure only, force ventilator downward to disengage ventilator upper pivot from ventilator frame.

6. Straighten division pillar weatherstrip bend-over tabs (Fig. 7-143) and remove weatherstrip.

7. Pull ventilator weatherstrip from front frame. Three clips retain it down front edge and it may be necessary to pry between weather-strip and frame at these locations.

8. To assemble, reverse removal procedure.

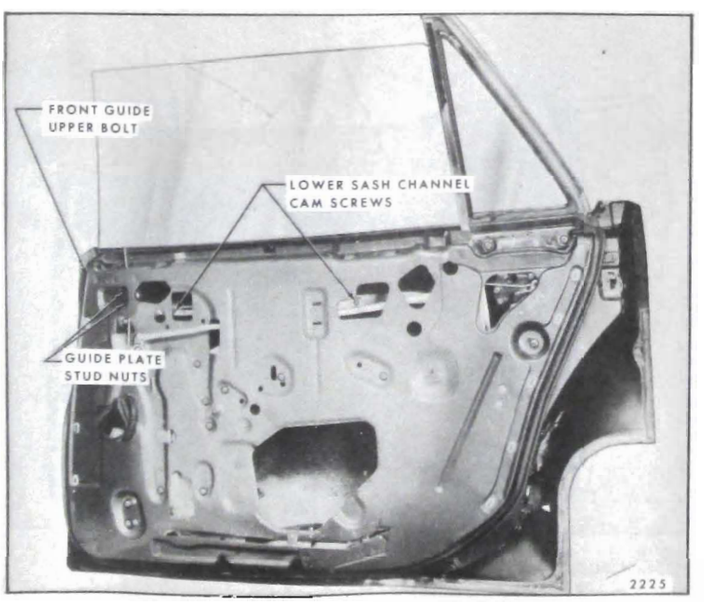

Fig. 7-141—Rear Door Window Removal - 68069-68169 Styles

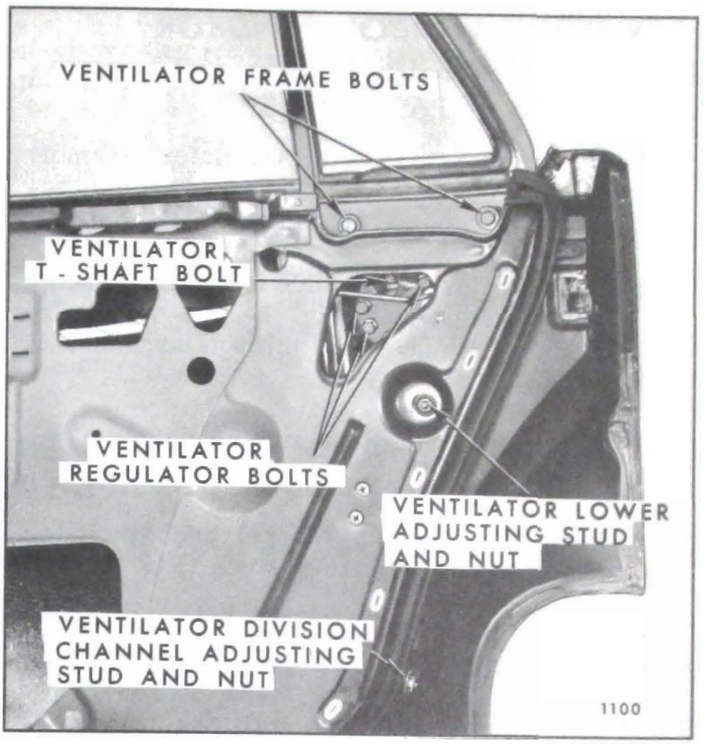

Fig. 7-142—Rear Door Ventilator Attachments - 68069-68169 Styles

NOTE: The above procedure covers complete disassembly of the ventilator, which in most cases, will not be required. When servicing a ventilator assembly, select only those steps necessary.

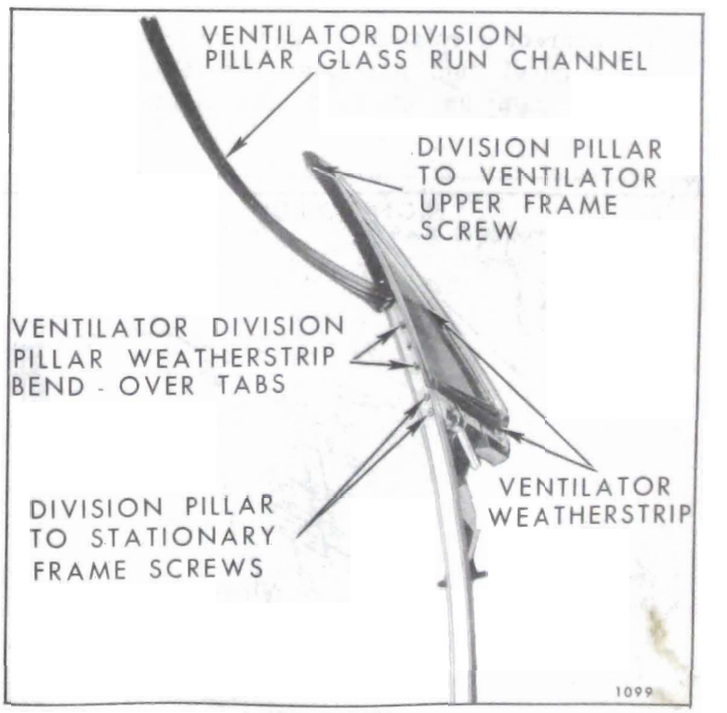

Fig. 7-143—Rear Door Ventilator Assembly - 68069-68169 Styles

REAR DOOR WINDOW AND/OR VENTILATOR ADJUSTMENTS— 68069 AND 68169 STYLES

1. To adjust door window or ventilator assembly in-or-out in relation to side roof rail, adjustment is provided at the following attachments:

   a. Door window front guide to support assembly attaching bolt (Fig. 7-144). Access to this bolt can be gained through large access hole.

   b. Front guide upper attaching bolt (Fig. 7-141).

   c. Ventilator division channel and ventilator frame lower adjusting studs (Fig. 7-142).

These attachments can be adjusted in combination or individually to achieve desired adjustment. When adjusting ventilator adjusting studs, loosen ventilator lower frame attaching bolts prior to adjustment, then, retighten after adjustment.

2. To adjust door window fore-or-aft, loosen guide plate to lower sash channel attaching nuts (Fig. 7-140). Adjust window fore-or-aft as required and tighten nuts.

3. To adjust ventilator fore-or-aft, or to rotate it in opening, loosen ventilator attaching bolts, adjusting stud nuts, and "T-shaft" attaching bolt (Fig. 7-142). Position ventilator as required and tighten loosened attachments.

4. To correct a rotated (cocked) window, loosen inner panel cam attaching bolts (Fig. 7-139). Adjust cam as required and tighten bolts.

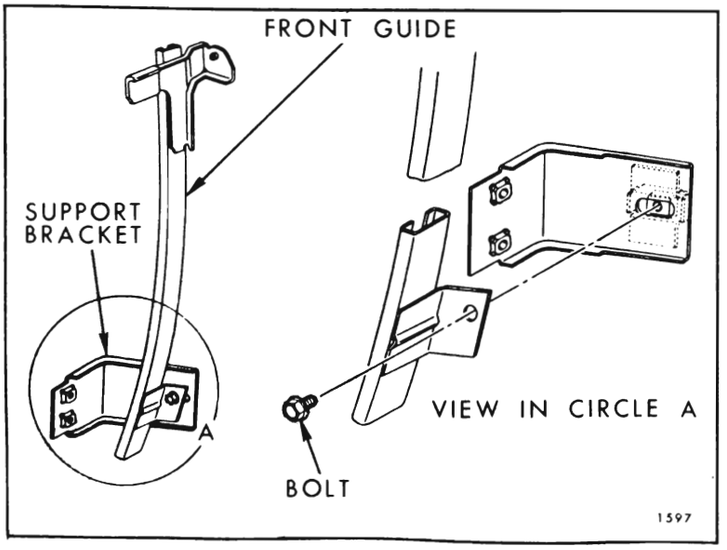

Fig. 7-144—Front Guide to Support Bracket Attachment - 68069-68169 Styles

5. To obtain proper up-travel of door window, loosen front and rear up-travel stop attaching bolts (Fig. 7-139). Operate window to desired position. While exerting upeard force on stops, tighten stop attaching bolts.

6. To eliminate a bind between ventilator division channel and front guide (improve operation of a properly adjusted door window), loosen front guide support bracket attaching bolts and front guide to support bracket attaching bolt (Figs. 7-139 and 7-144). Operate glass to full-down position and tighten support bolts. Operate glass 1/3 up from down position and tighten guide to support attaching bolt.

REAR DOOR WINDOW ASSEMBLY— "A-39" STYLES

Removal and Installation:

1. Raise door window, remove trim pad and detach inner panel water deflector.

2. On styles not equipped with a hang-on door trim pad, remove inner and outer belt seal (draft strip).

3. Remove front and rear glass up-stops and window lower sash channel cam.

4. Pull rear door glass straight up and remove assembly from door (see Fig. 7-145).

   NOTE: The window regulator lift and balance arms are designed with a slight outboard spring. When removing glass, pull regulator

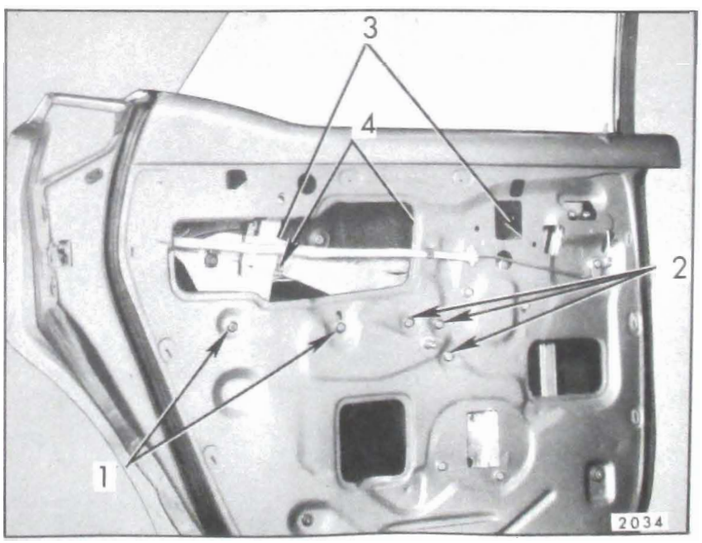

Fig. 7-145—Rear Door Hardware - "A-39" Style

1. Inner Panel Cam Bolts
2. Remote Control Bolts
3. Front and Rear Up-Stop Bolts (Hidden)
4. Sash Channel Cam Screws

arms toward inner panel to ease removal procedure. If necessary, the front and rear guides can be loosened at upper attaching points (see Fig. 7-145).

5. To install, reverse removal procedures.

Adjustments

The up-travel and sector gear stops can be adjusted to control height of door glass; the inner panel cam is adjustable at the rear attaching bolt to correct a rotated window; the upper attaching bolts of front and rear guides provide fore or aft and in or out movement of glass. The lower adjusting studs can be positioned to tip the window inboard or outboard at top edge of glass to maintain proper seal and to ease window operation. (see Fig. 7-145).

The rear door is equipped with five separate window stops, consisting of: two up-travel stops (front and rear), two down travel stops (front and rear) and one regulator sector gear stop (used to additionally restrict up-travel of glass). The sector gear stop attaching point varies with the type of window operation. On manually operated windows, the sector gear stop is attached to the front guide. On electrically operated windows, this stop is attached to the regulator back plate. In either case, regulator sector gear stops are secured by a single attaching bolt and are adjustable.

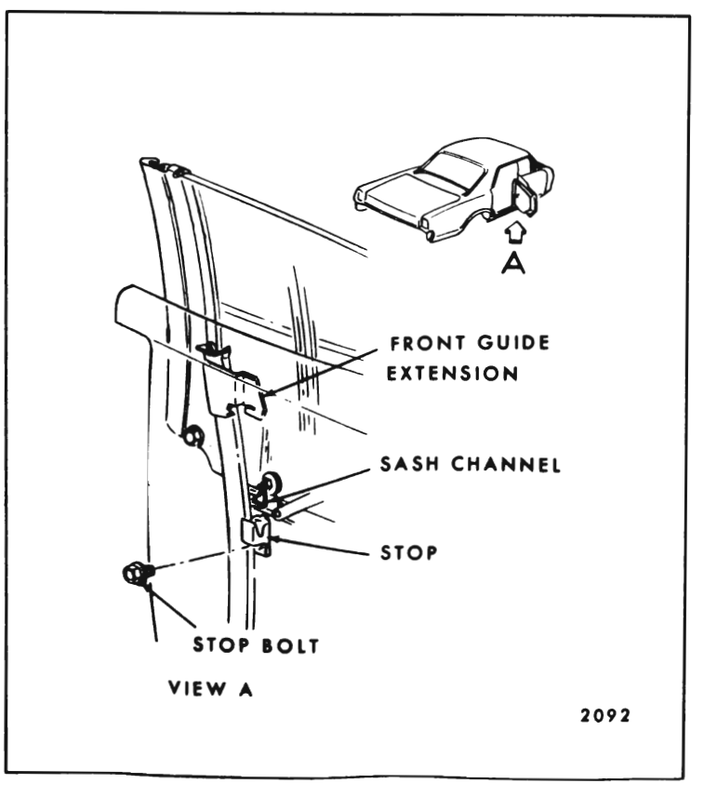

Fig. 7-146—Window Front Up-Stop - "A-39" Style

The two down-travel stops are integral components of either the front or rear window guides and are not separately adjustable.

The two up-travel stops (front and rear) are attached to the window lower sash channel. When glass is raised, the stop comes in contact with a designed extension of either the front or rear guide. Stops are secured by a single bolt and are adjustable up or down. See Figure 7-146 for front up-stop attachment and Figure 7-147 for rear up-stop attachment.

REAR DOOR WINDOW ASSEMBLY— "Z-39"

The rear door window assembly consists of a solid tempered safety plate glass window and a bolted-on lower sash channel. With this design, the door glass and sash channel are removed from the door as a unit and glass replacements made in bench operations. Figure 7-148 is an exploded view of the rear door window assembly and identifies the various components and their assembly sequence. When assembling window, torque sash channel nuts to 60 inch pounds (5 foot pounds). Also, replace glass to sash channel spacers.

CAUTION: Use care to make certain that glass does not strike hard objects. Edge chips or deep scratches can cause solid tempered safety plate glass to shatter. Do not attempt to drill or grind glass.

Removal and Installation:

1. Remove window lower sash channel cam and both inner and outer glass run channel strip assemblies as previously described.

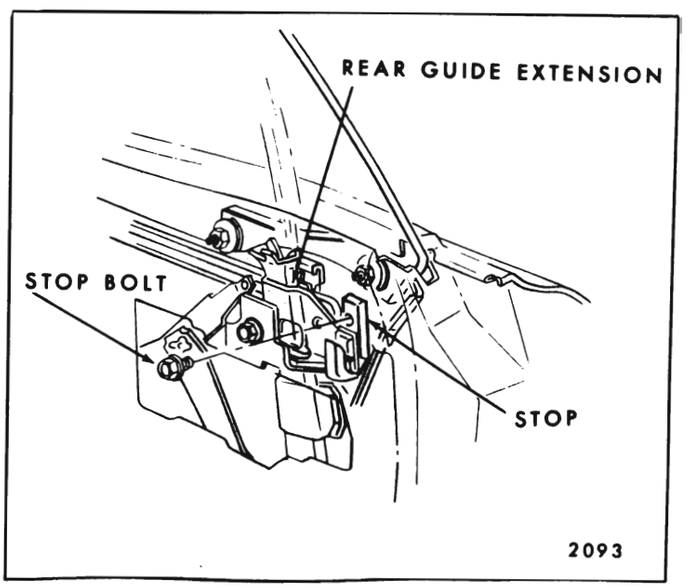

Fig. 7-147—Window Rear Up-Stop - "A-39" Style

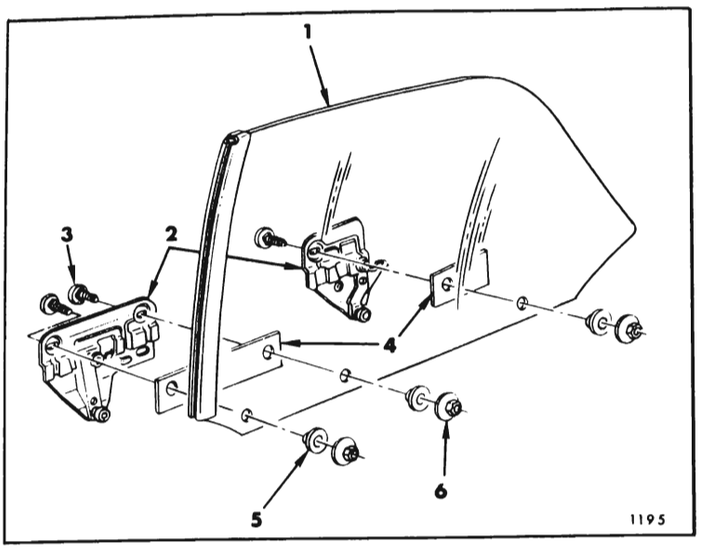

Fig. 7-148—Rear Door Window Assembly - "Z-39" Style

1. Rear Door Window Glass
2. Window Lower Sash Channel Support Assemblies, Front and Rear
3. Glass to Lower Sash Channel Support Attaching Bolts
4. Glass to Lower Sash Channel Support Filler, Front and Rear
5. Glass to Lower Sash Channel Support Spacers
6. Glass to Lower Sash Channel Support Nuts

2. Loosen attaching screws for both front and rear up-travel stops and turn stops 45° into slots provided in inner panel.

3. Raise window and remove it from door at belt line.

4. To install, reverse removal procedure. Adjust window for proper alignment as described in "Rear Door Window Adjustments".

REAR DOOR WINDOW ADJUSTMENTS

To make any rear door window adjustments, it is first necessary to remove the trim pad and water deflector.

1. To adjust the top of the window in or out in relation to the side roof rail, loosen the front and rear guide lower adjusting stud nuts (Fig. 7-149). Adjust studs in or out as required, then tighten stud nuts.

2. To adjust up-travel of window, loosen front and rear up-travel stop attaching screws (Fig. 7-149). Adjust window to desired position; then, while exerting a slight downward force on stops, tighten attaching screws.

3. To rotate glass in the opening (raise or lower upper front corner of glass), loosen inner panel cam attaching screws (Fig. 7-149). Adjust front of cam up or down as required, then tighten attaching screws.

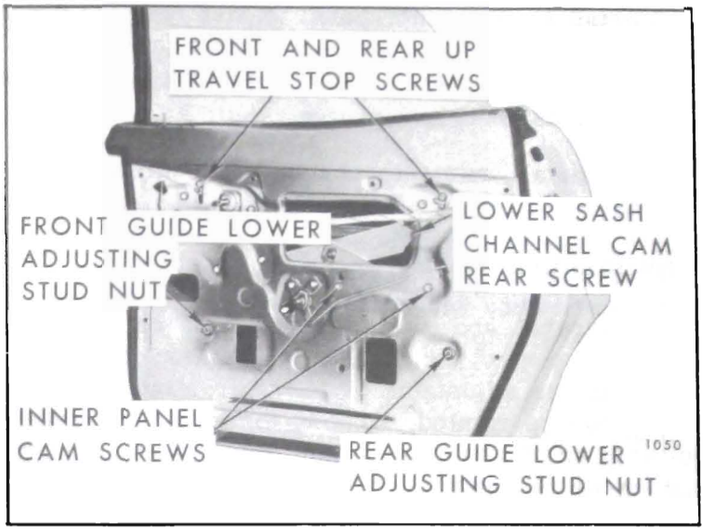

Fig. 7-149—Rear Door Hardware - "Z-39" Styles

4. To relieve a bind within the guides or to adjust window assembly fore or aft, loosen front and rear guide upper attaching screws and lower adjusting stud nuts. With window in full up position and properly aligned with front door window, tighten upper attaching screws. Lower window to full down position and tighten adjusting stud nuts.

REAR DOOR WINDOW GLASS RUN CHANNEL ALL "B-35-45 AND 69" STYLES

Removal and Installation:

1. Remove rear door window assembly as previously described.

2. Remove glass run channel front attaching bolt located on door hinge pillar (arrow "B", Fig. 7-150).

3. On 45-46000 Series, remove glass run channel rear lower attaching bolt located on door lock pillar (arrow "A", Fig. 7-150).

4. On all "B & C" Closed Styles except 45-46000 Series, remove glass run channel rear attaching bolt (Fig. 7-151).

5. Pull run channel into window opening to disengage run channel clips from door upper frame and remove run channel from door.

6. To install, reverse removal procedure. Prior to installation, apply a continuous bead of caulking compound to door upper frame from belt line to belt line to effect a weathertight

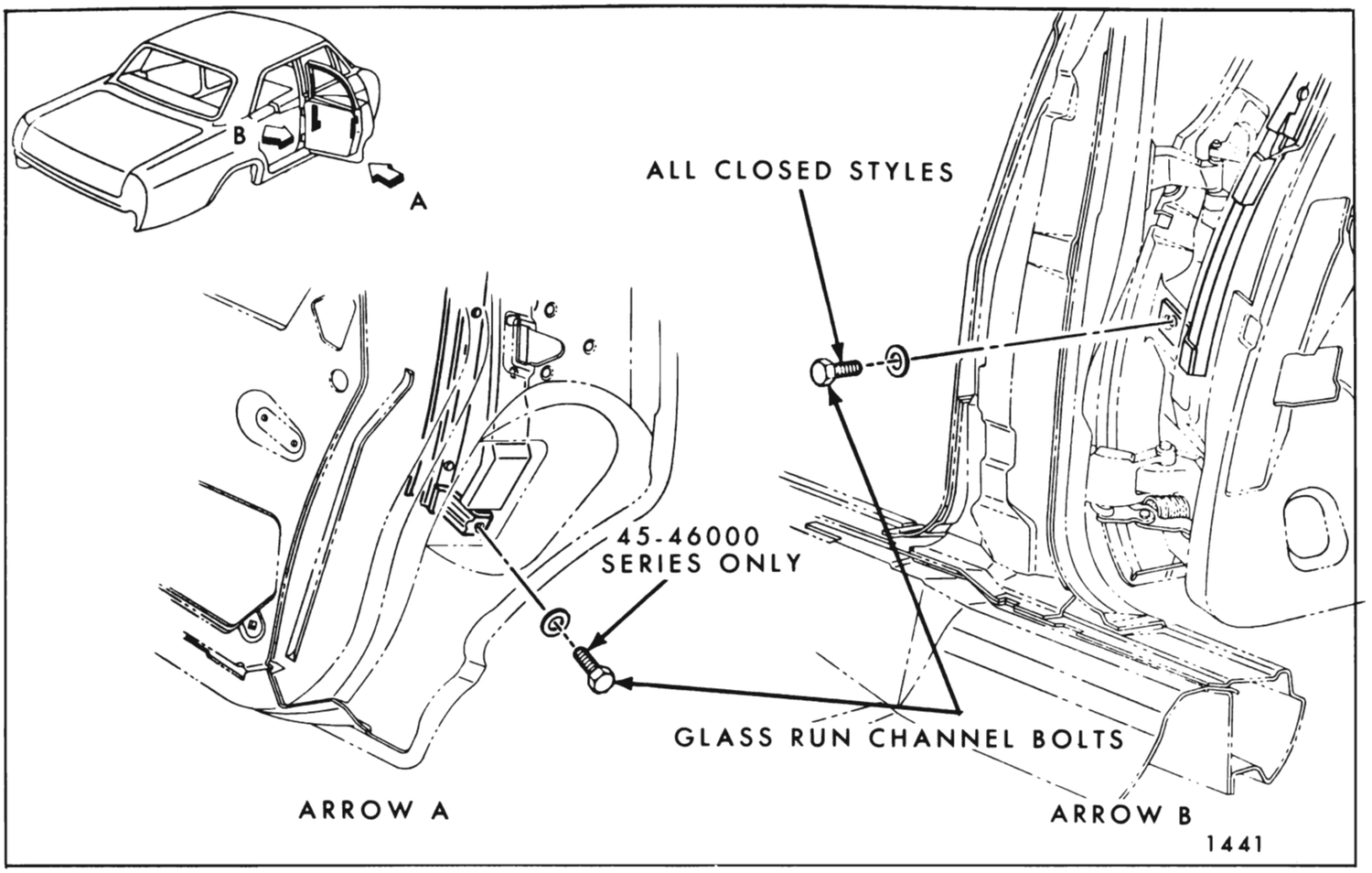

Fig. 7-150—Glass Run Channel Retention "B" Closed Styles

seal between door frame and run channel. If preferred, sealer can be applied to run channel rather than door upper frame.

REAR DOOR WINDOW GLASS RUN CHANNEL—"A-35-55-65 AND 69" STYLES

A soft "flocked" run channel is used for all rear door windows.

Removal and Installation:

1. Remove rear door trim pad and detach inner panel water deflector.

2. Remove rear door window.

3. With finger pressure, squeeze run channel together and gently pull run channel out of rear door upper frame and remove from door. (See Fig. 7-152).

4. To install, reverse removal procedure.

IMPORTANT: The glass run channel must be properly seated and conform to shape of door upper frame to achieve proper glass operation.

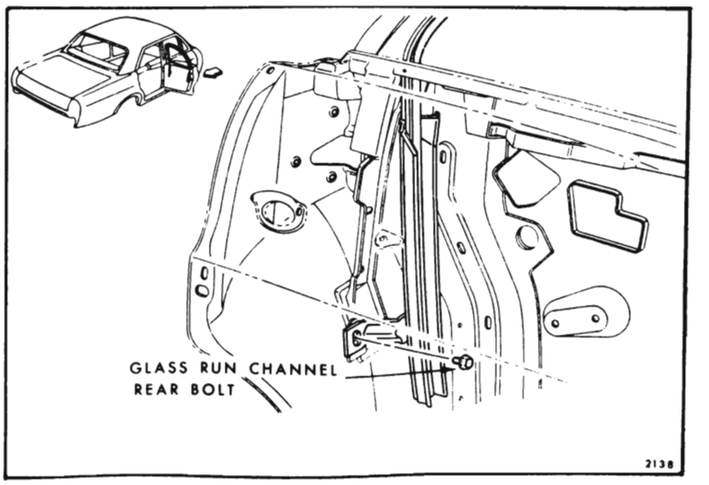

Fig. 7-151—Glass Run Channel Retention - "B" Closed Styles Except 45-46000 Series

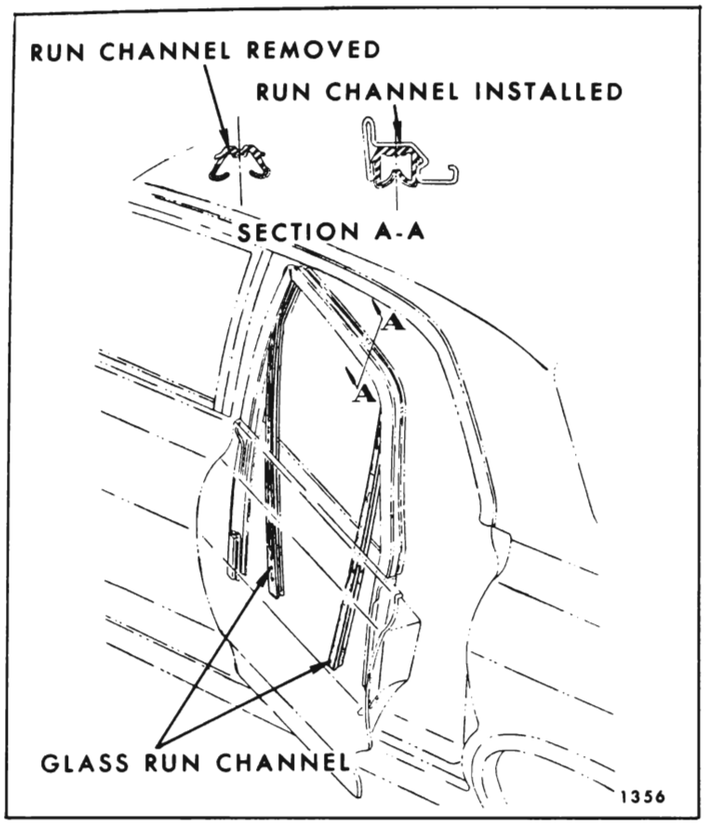

Fig. 7-152—Glass Run Channel - "A" Closed Styles

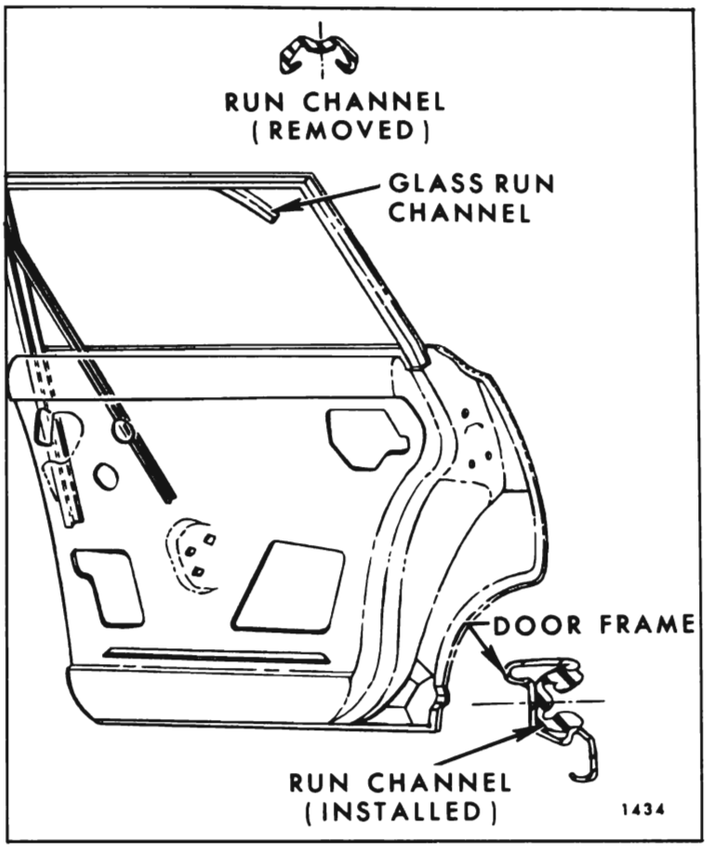

Fig. 7-153—Window Run Channel Installation - "X" Closed Styles

REAR DOOR WINDOW GLASS RUN CHANNEL—"X-35 AND 69" STYLES

Removal and Installation:

1. Remove rear door trim pad and detach inner panel water deflector.
2. Remove rear door window.
3. With finger pressure, squeeze run channel together at rear end and gently pull run channel out of rear door upper frame (See Fig. 7-153).
4. To install, reverse removal procedure.

IMPORTANT: The glass run channel must be properly seated and conform to shape of door upper frame to achieve proper glass operation.

REAR DOOR WINDOW FRONT GUIDE—ALL "B-C 39" STYLES AND ALL "C-69" STYLES EXCEPT 68069 AND 68169

Removal and Installation:

1. Remove rear door window assembly as previously described.
2. Remove front guide attaching bolts at belt line and lower adjusting stud nut (Fig. 7-154).
3. Remove inside locking rod connecting link attaching bolts (Fig. 7-154). Disengage guide from inside locking rod and remove guide through access hole.
4. To install, reverse removal procedure. Adjust guide for proper window operation as described in the window adjustment procedure.

REAR DOOR WINDOW REAR GUIDE—ALL "B-C 39" STYLES AND ALL "C-69" STYLES EXCEPT 68069 AND 68169

Removal and Installation:

1. Remove door trim assembly and inner panel water deflector.
2. Operate window to full-up position.
3. Remove rear guide upper attaching bolts (Fig. 7-154 - Locations "A" for 38-48-68000 Series, Locations "B" for remaining styles). Remove rear guide lower adjusting stud nut.

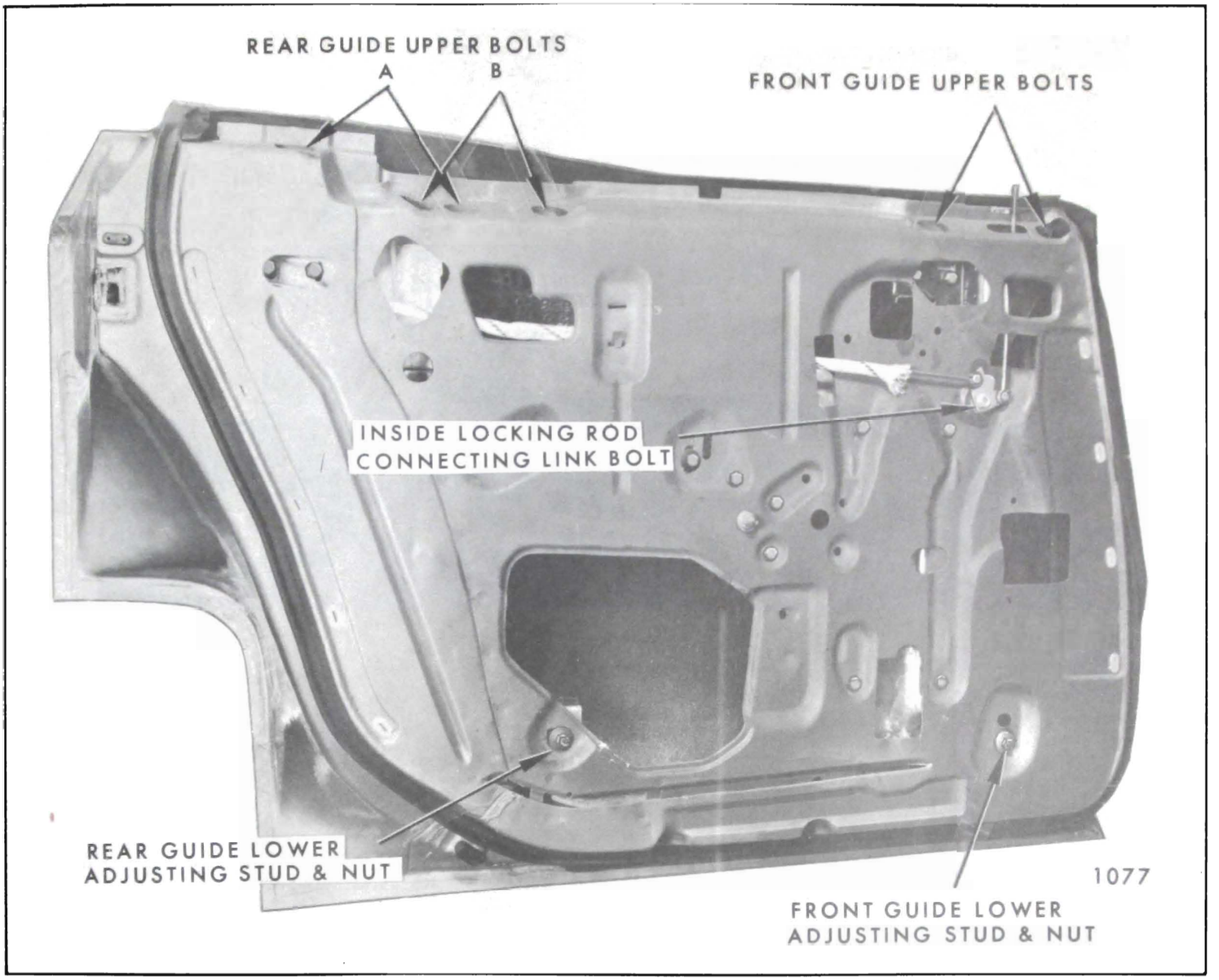

Fig. 7-154—Rear Door Window Guides - "B & C-39 and C-69" Except 68069-68169 Styles

4. Lower guide and swing bottom end forward to disengage guide from roller on lower sash channel and lower sash channel balance arm.

5. Remove guide, upper end first, through large access hole.

6. To install, reverse removal procedure. Adjust guide for proper window operation as described in the door window adjustment procedure.

REAR DOOR FRONT GUIDE AND GUIDE PLATE—68069 AND 68169 STYLES

Removal and Installation:

1. Remove rear door trim assembly and inner panel water deflector.

2. Operate window to full-up position.

3. Remove front upper stop attaching bolts and remove stop (Fig. 7-155).

4. Remove front guide support bracket attaching bolt (Fig. 7-155).

5. Remove front guide upper attaching bolt (Fig. 7-156).

6. Remove guide plate to lower sash channel attaching stud nuts (Figs. 7-156 and 7-157).

7. Remove front guide and guide plate as an assembly through access hole (Fig. 7-158).

8. To install, reverse removal procedure. Adjust front guide for proper window operation

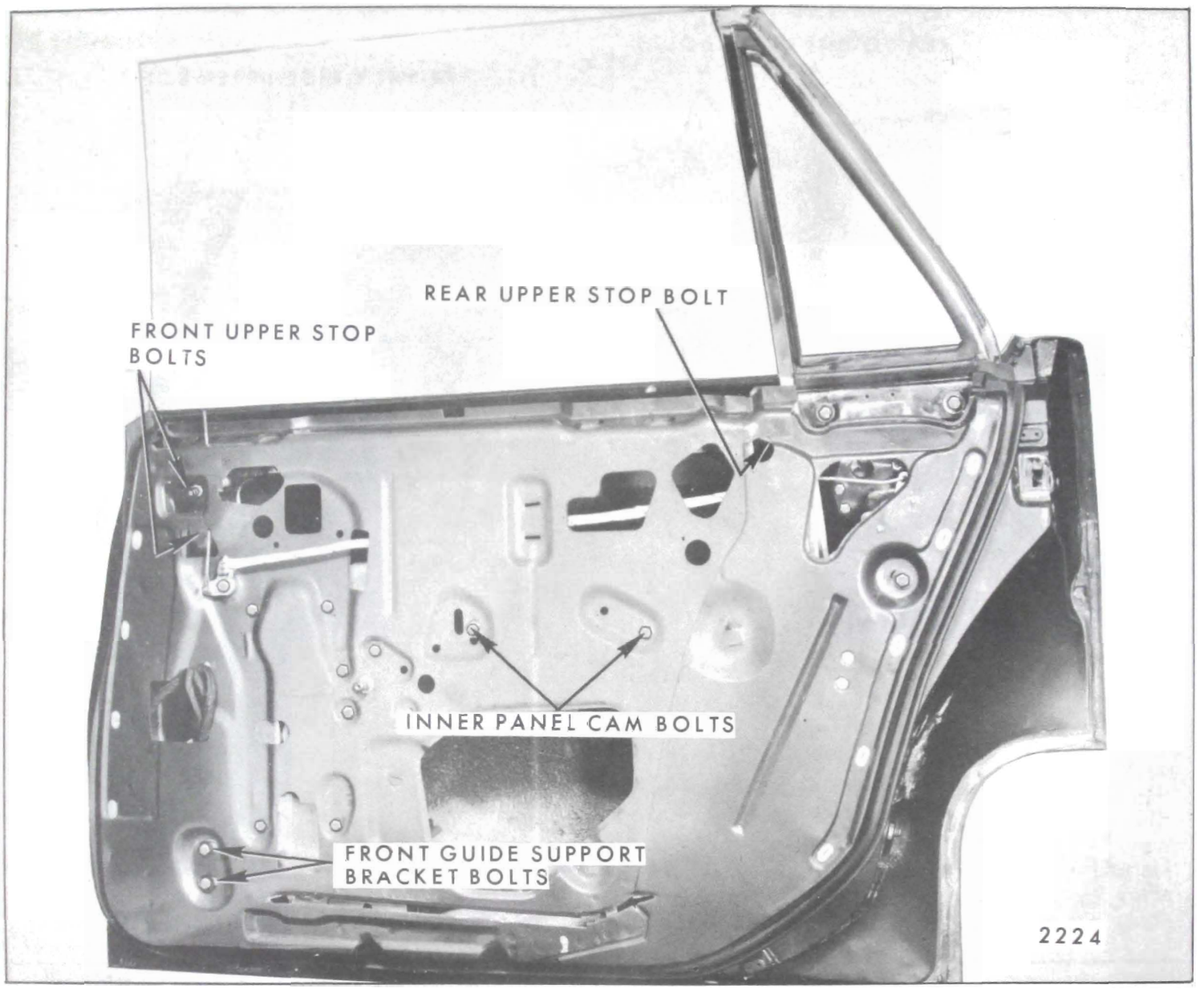

Fig. 7-155—Front Guide and Upper Stop Removal

as described in door window adjustment procedure.

REAR DOOR WINDOW GUIDE CHANNELS—"A-39" STYLES

Removal and Installation:

1. Remove door trim pad and detach inner panel water deflector.
2. Remove rear door window assembly.
3. On guide to be removed, remove upper attaching bolts and lower adjusting stud nut and remove guide (see Fig. 7-159).
4. To install, reverse removal procedure.

REAR DOOR WINDOW FRONT OR REAR GUIDE—"Z-39" STYLES

Removal and Installation:

1. Remove door trim pad and inner panel water deflector.
2. Loosen front and rear up-travel stop attaching screws (Fig. 7-125). Rotate stops so that stop tabs enter angled slots. Raise window as far as possible.
3. Remove upper attaching screw and lower adjusting stud nut from guide being removed. Lower guide to disengage it from sash channel roller, then remove guide through large access hole.
4. To install, reverse removal procedure.

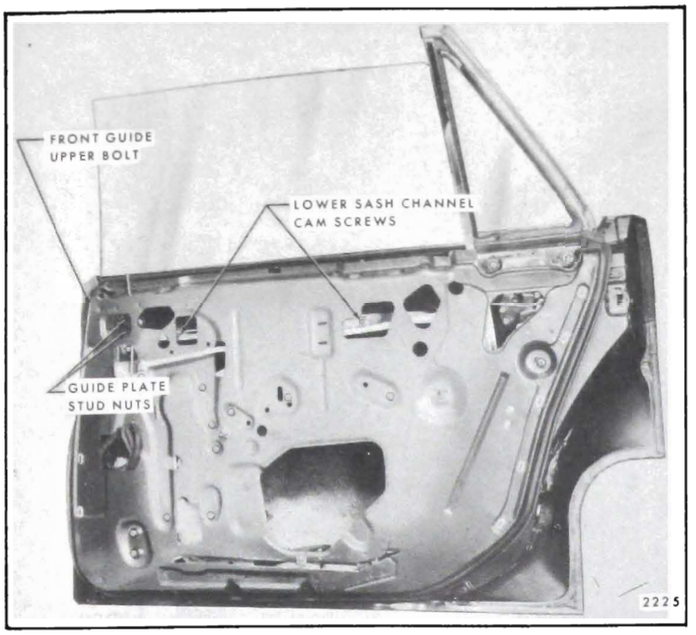

Fig. 7-156—Front Guide and Guide Plate Removal

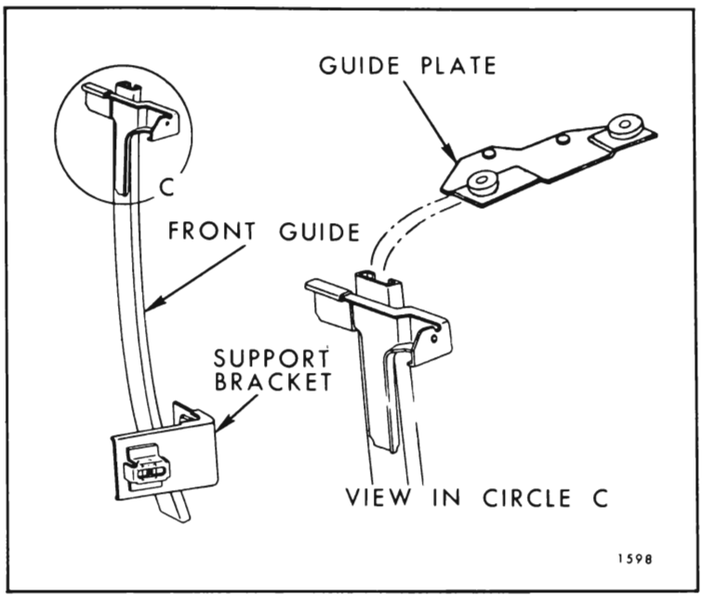

Fig. 7-158—Front Guide and Guide Plate - 68069-68169 Styles

REAR DOOR WINDOW REGULATOR—MANUAL AND ELECTRIC—ALL "B & C" STYLES

Removal and Installation:

1. Remove rear door trim assembly and inner panel water deflector.

2. Remove lower sash channel cam attaching screws (Fig. 7-160 for "closed" styles, 7-161 for "hardtop" styles).

   While supporting glass, disengage cam from rollers on regulator lift and balance arms and remove cam.

3. Raise window and prop it in full-up position.

4. Remove inner panel cam attaching bolts (Fig. 7-160 for "closed" styles, Fig. 7-161 for "hardtop" styles).

5. On styles equipped with electric window regulators, disconnect body wire harness from window regulator at window regulator motor.

6. Remove window regulator attaching bolts and remove regulator through large access hole. (Figs. 7-161 and 7-160).

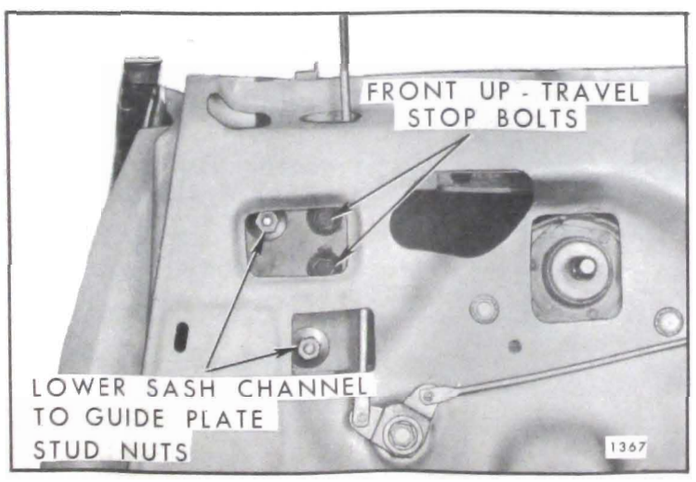

Fig. 7-157—Window Guide Plate Removal

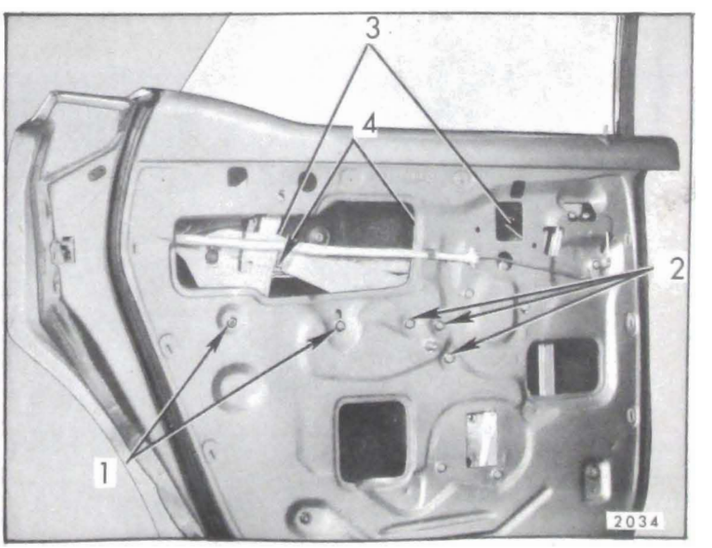

Fig. 7-159—Rear Door Hardware "A-39" Style

1. Inner Panel Cam Bolts
2. Remote Control Bolts
3. Front and Rear Up-Stop Bolts (Hidden)
4. Sash Channel Cam Screws

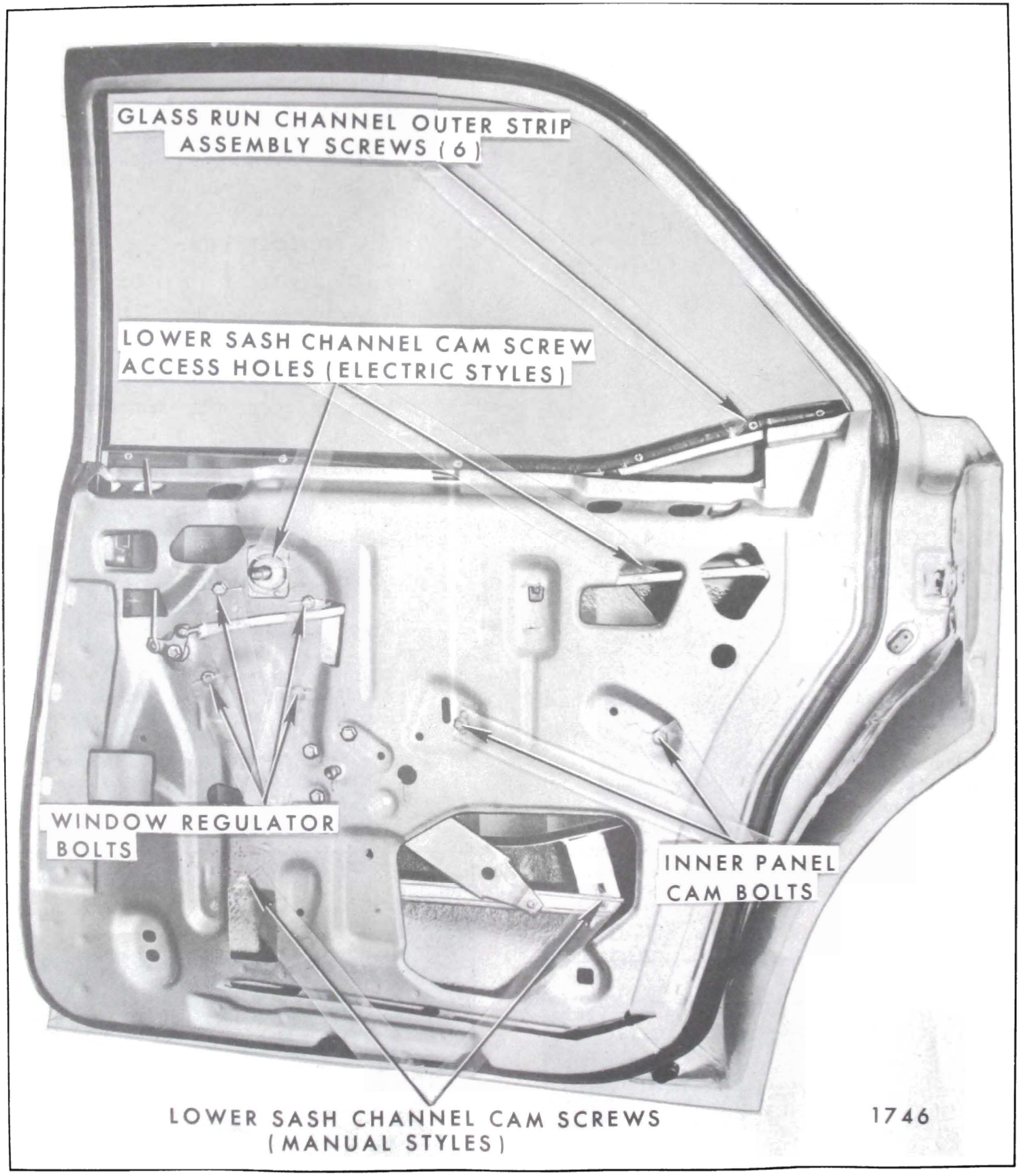

Fig. 7-160—Window Regulator Removal - "B" Closed Styles

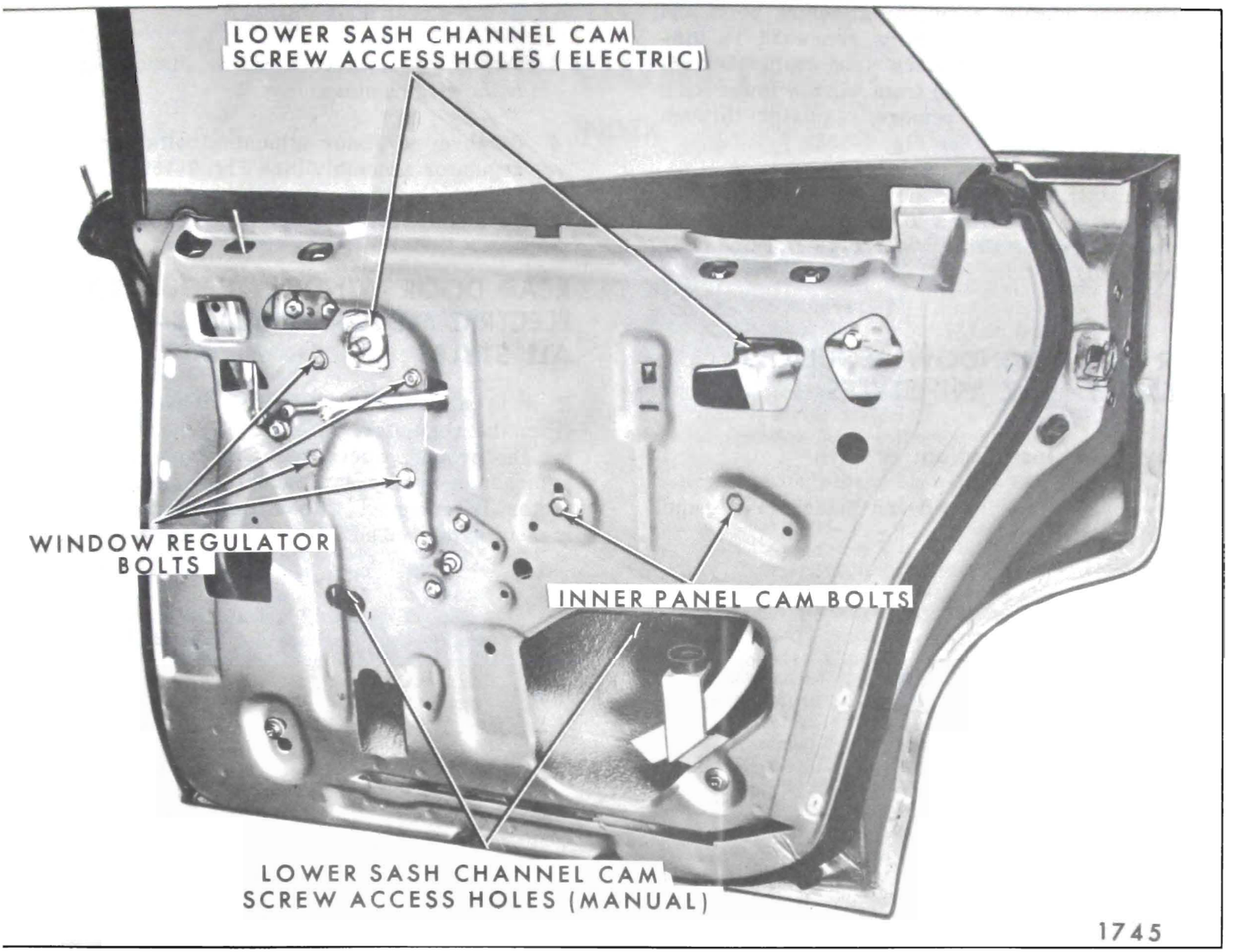

Fig. 7-161—Window Regulator Removal - "Hardtop" Styles

REAR DOOR WINDOW REGULATOR ASSEMBLY—"A-35-55-65 AND 69" STYLES AND "X-35 AND 69" STYLES

Removal and Installation:

1. Raise door window, remove door trim pad and detach inner panel water deflector.

2. Secure window in the full up position by installing a twelve to fifteen inch piece of body tape (2" or 2-1/2" in width) over window frame and firmly pressing tape to both sides of glass. This is necessary to positively hold glass in the up position during removal of window regulator.

3. Remove inner panel cam on "A" Body Styles.

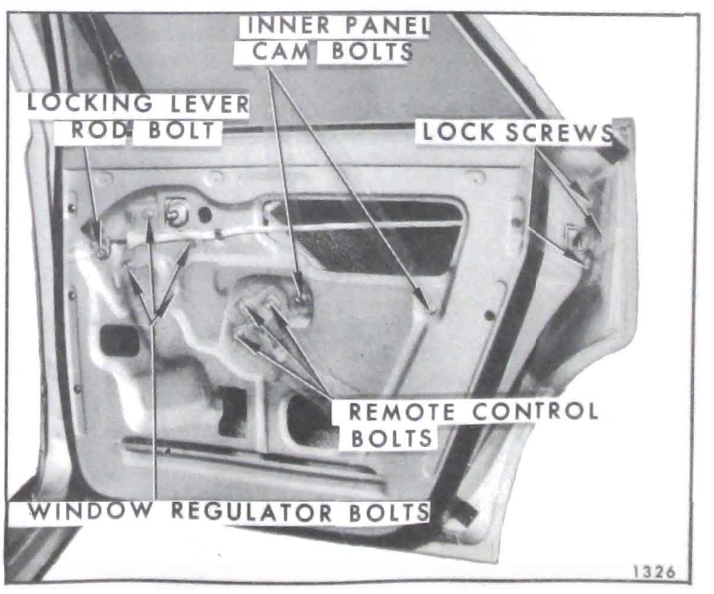

Fig. 7-162—Rear Door Hardware - "A" Styles Shown

4. Remove window regulator attaching bolts and move regulator assembly rearward to disengage lift arm rollers (and balance arm rollers on "A" Styles) from window lower sash channel cam and remove regulator through large access hole (See Fig. 7-162).

5. To install, reverse removal procedure. Cycle window several times to insure proper operation before installing water deflector and door trim pad.

REAR DOOR WINDOW REGULATOR ASSEMBLY "A-Z 39" STYLES

Removal and Installation:

1. Remove door trim pad and detach inner panel water deflector.

2. Remove rear door window.

3. On "A" Body Electric Styles, disconnect motor from wire harness.

4. Remove regulator attaching bolts and remove regulator assembly (See Fig. 7-159).

5. To install, reverse removal procedure.

REAR DOOR WINDOW REGULATOR ELECTRIC MOTOR REMOVAL— ALL STYLES

If it is necessary to remove the electric motor from the regulator, refer to "Front Door" section for the proper procedure. The tension on the lift arm assist spring can cause serious injury if the motor is removed without use of the cautionary measures described in the procedure.