

1966 FISHER BODY SERVICE MANUAL

FOR ALL
BODY STYLES

This publication contains the essential removal, installation, adjustment and maintenance procedures for servicing all 1966 Fisher Body Styles. All information, illustrations, and specifications contained in this publication are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

Arrangement of the material is shown by the table of contents on the right-hand side of this page. Black tabs on the first page of each section can be seen on the edge of the book below the section title. A more detailed table of contents precedes each section, and an alphabetical index is included in the back of the manual.

FISHER BODY DIVISION
PART NO. 4226635

LITHO IN U.S.A.
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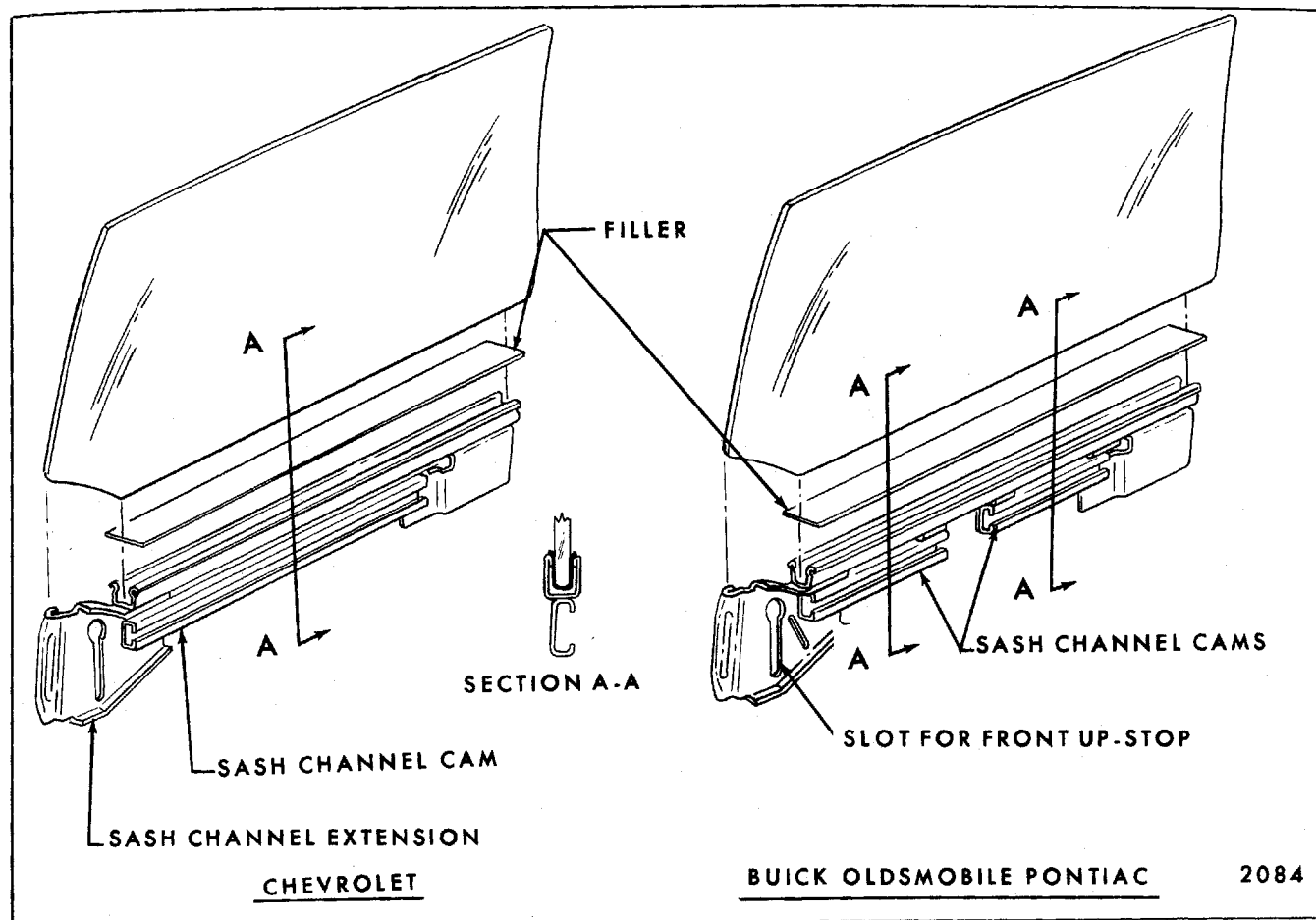


Fig. 7-84—Front Door Window Assembly - "A-17 and 67" Style

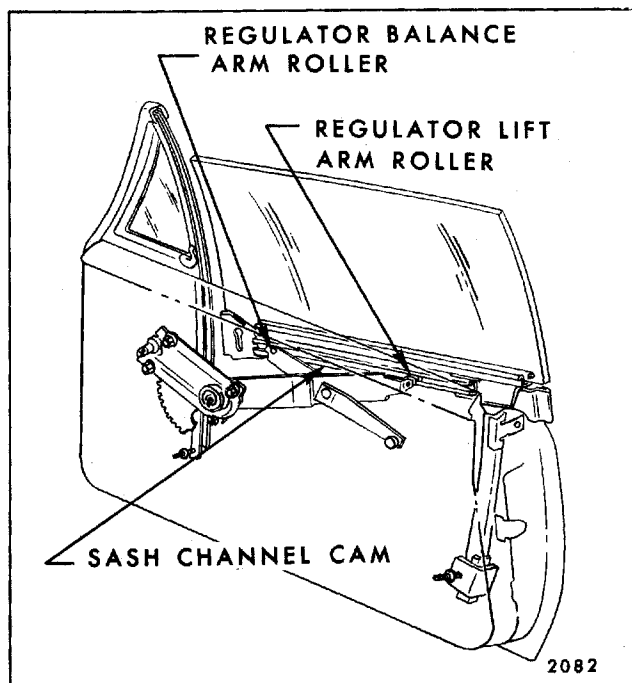


Fig. 7-85—Front Door Window Installation - Chevrolet "A-17 and 67" Styles

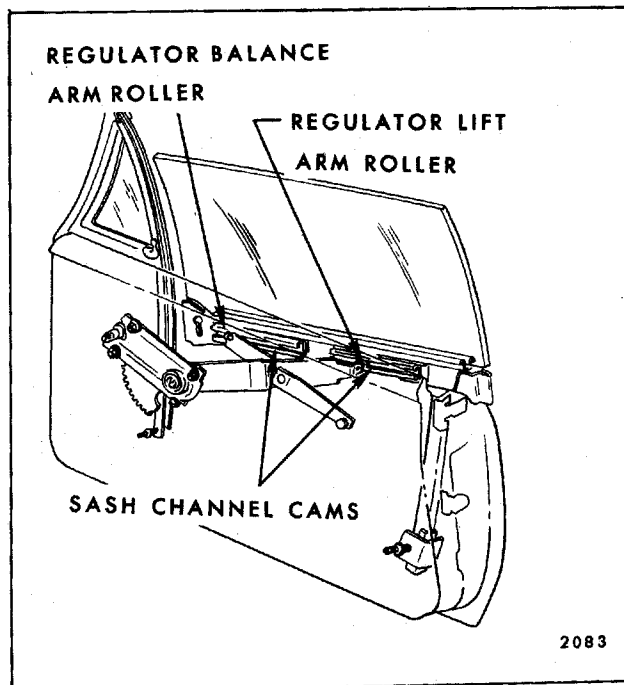


Fig. 7-86—Front Door Window Installation - Buick, Oldsmobile, Pontiac "A-17 and 67" Styles

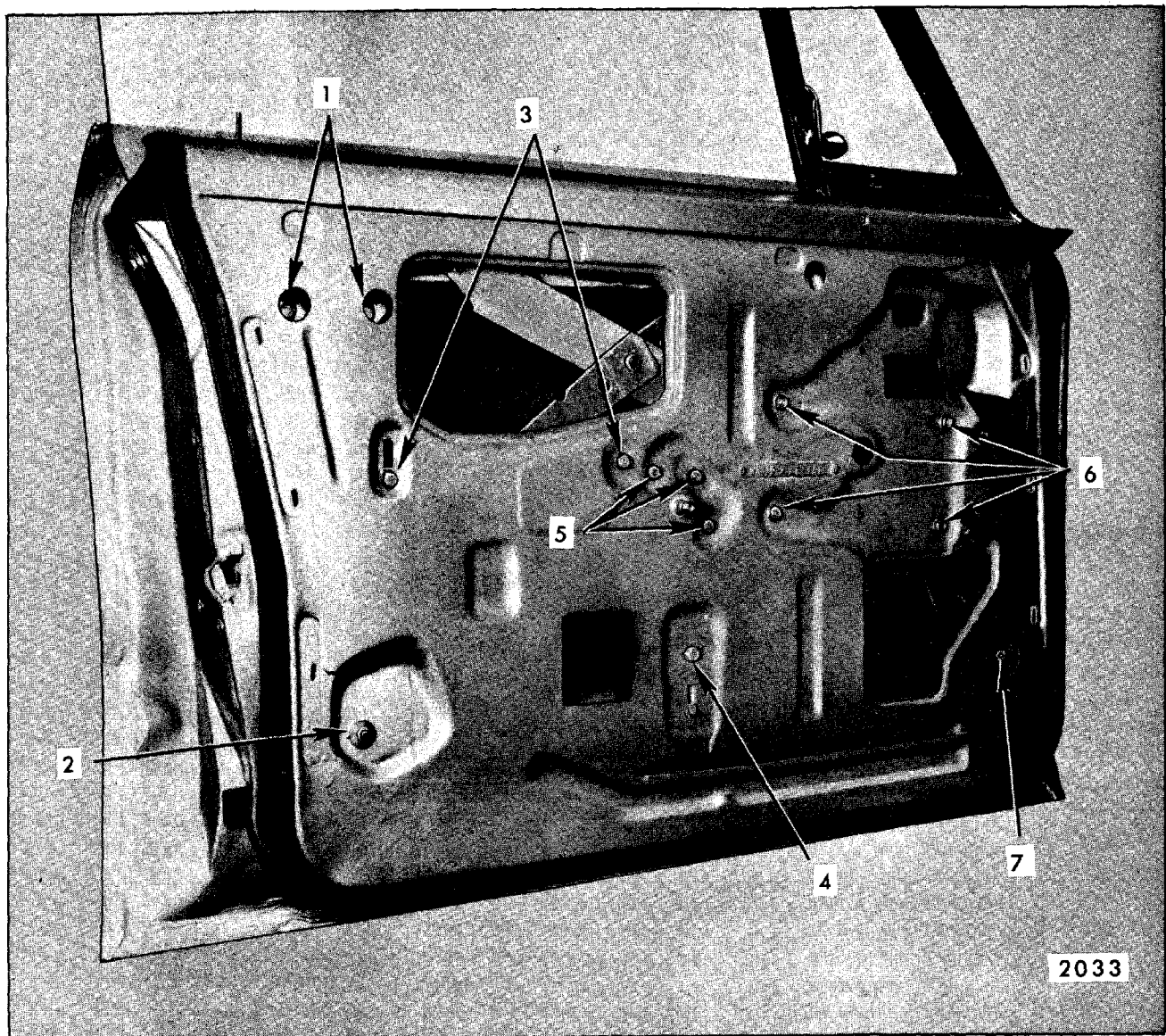


Fig. 7-87—Front Door Hardware - "A-39" Style

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

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.

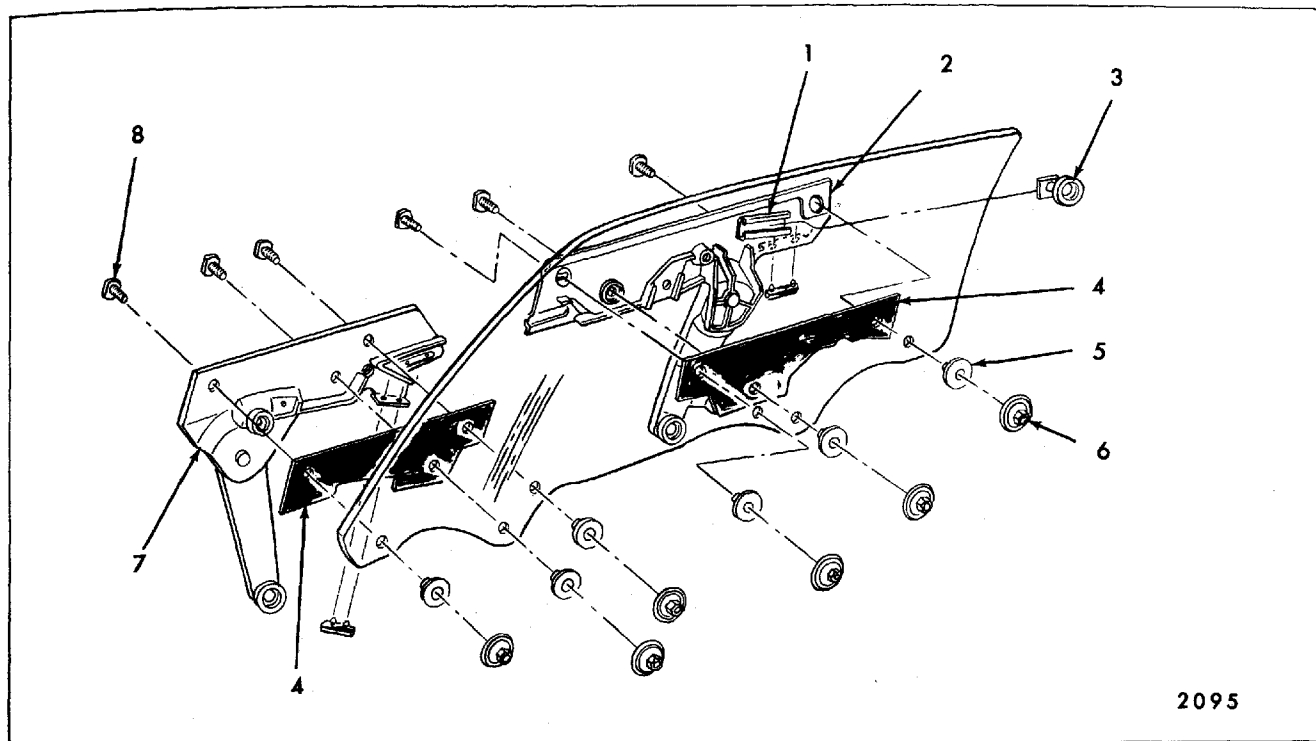


Fig. 7-88—Front Door Window Assembly

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

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

- 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

- Raise door window, remove trim pad and detach inner panel water deflector.
- Remove front and rear up-stops and lower sash channel cam.
- Remove glass run channel outer strip and molding assembly (see exterior molding section of manual).
- Raise glass straight up and remove assembly from body.

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

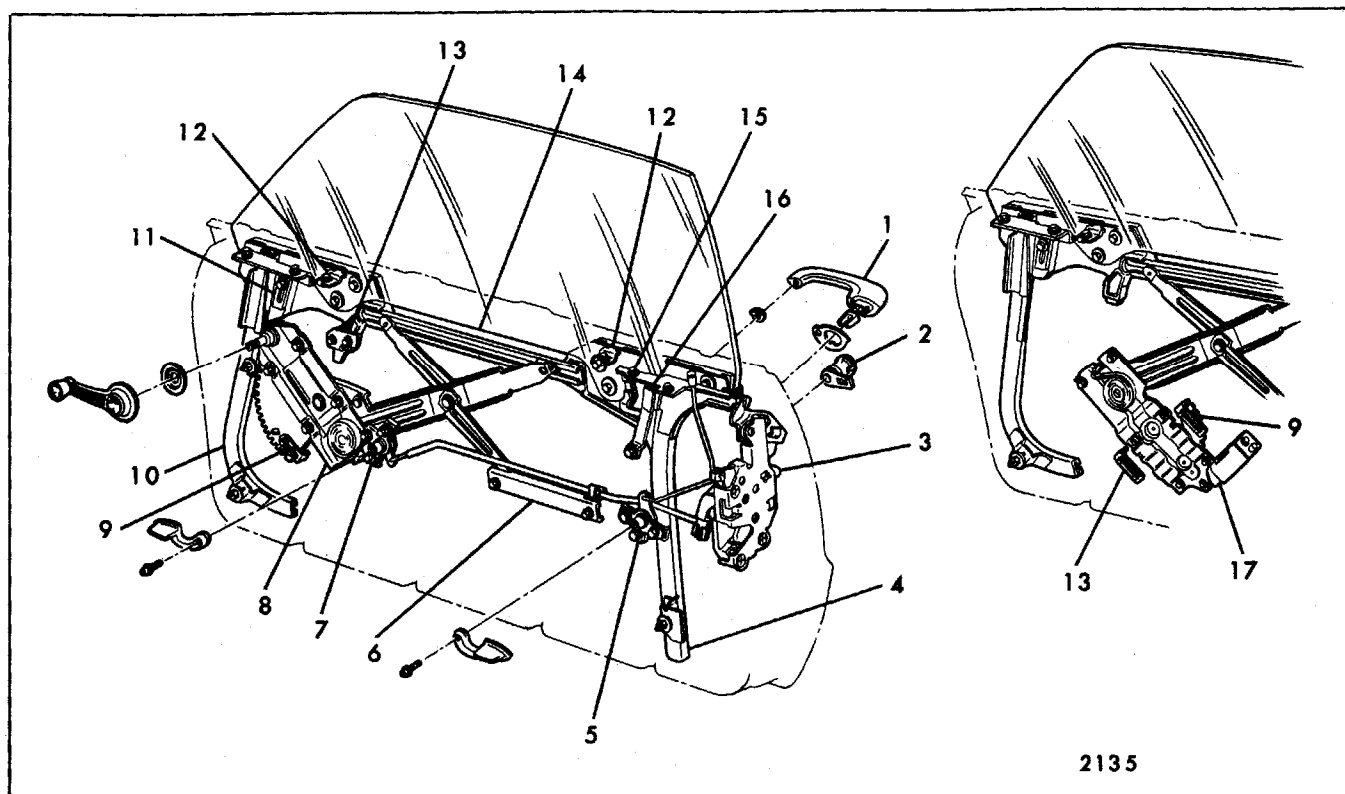


Fig. 7-89—Front Door Hardware - "E" Styles

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

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.

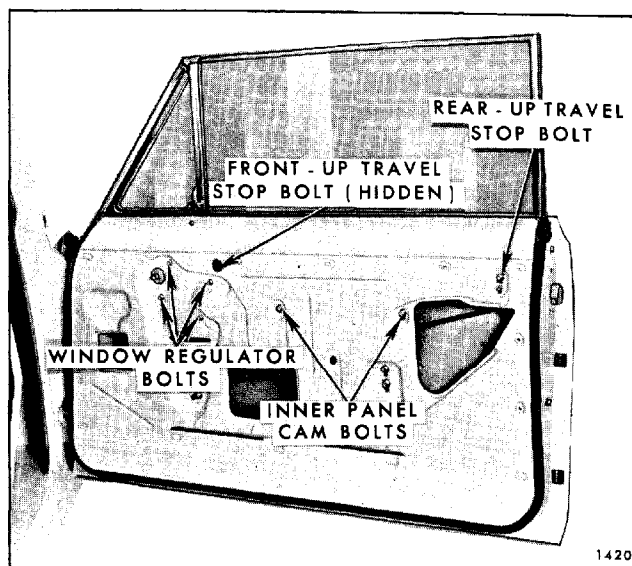


Fig. 7-90—Front Door Window Hardware Attachments -
"X-37" Style

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.

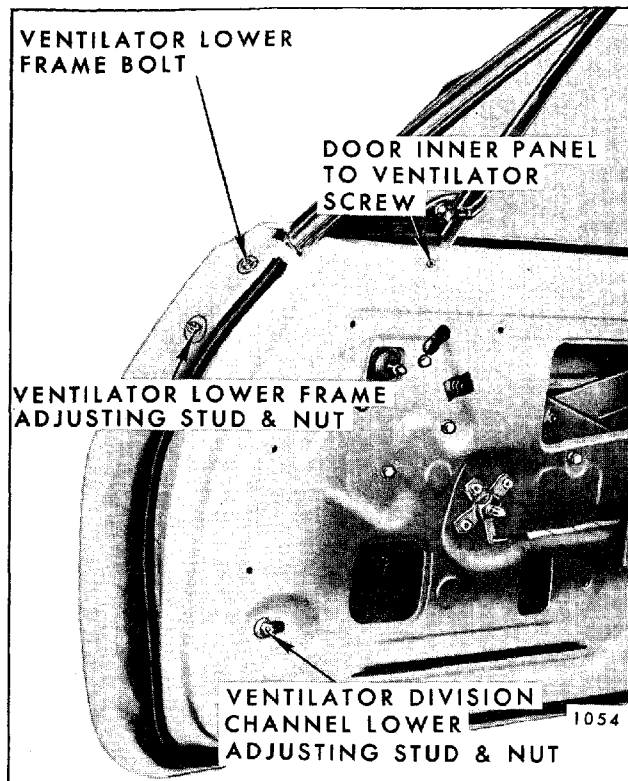


Fig. 7-91—Front Door Ventilator Attachments - "Z" Styles

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

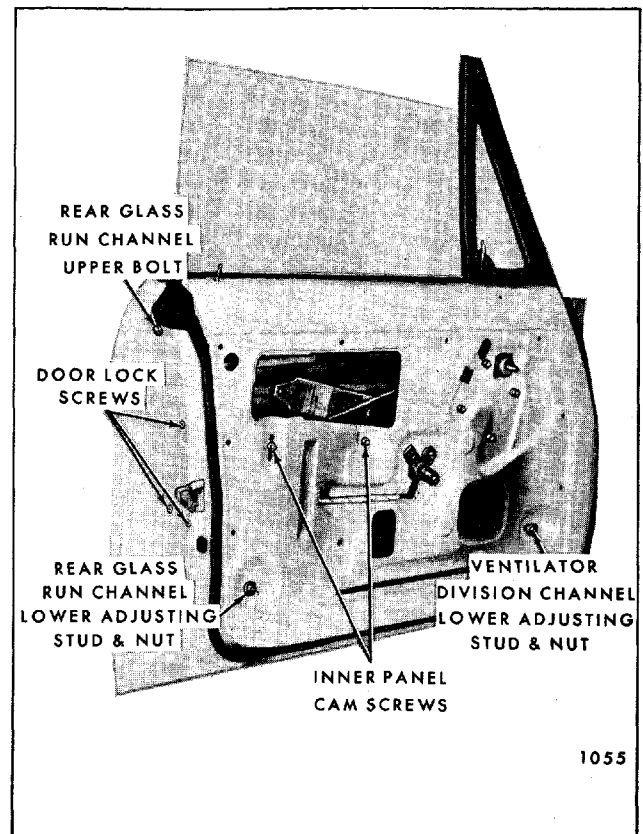


Fig. 7-92—Front Door Hardware - "Z" Styles

as described under "Front Door Ventilator Adjustments."

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.

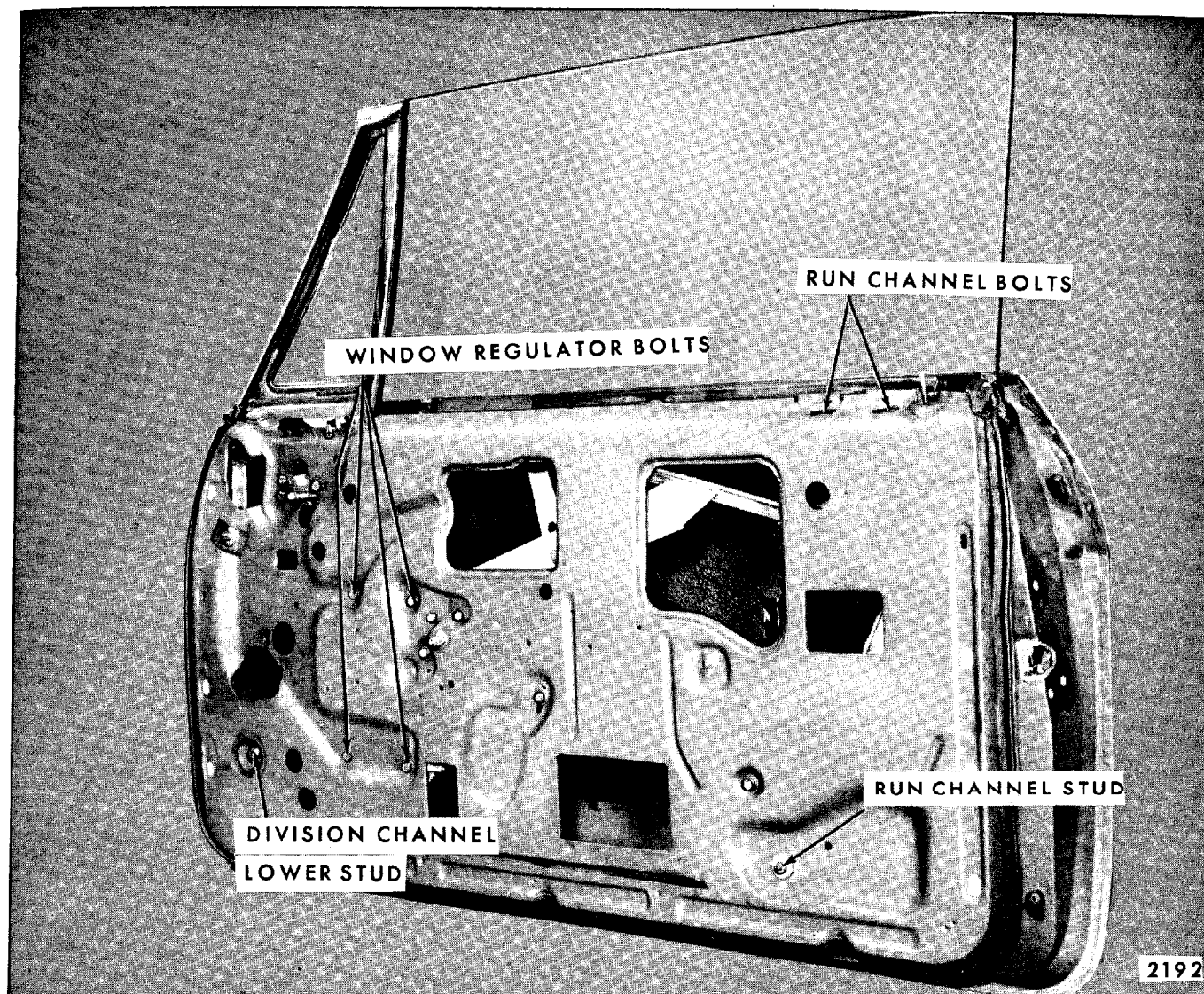


Fig. 7-93—Window Regulator Removal - "B & C" Hardtop Styles

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).

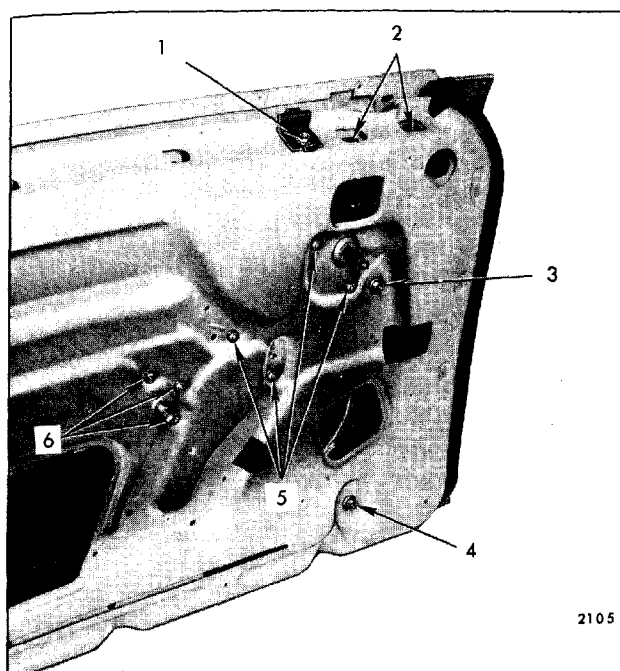


Fig. 7-94—Front Door Hardware—"E" Styles

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

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

- 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.

- 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.

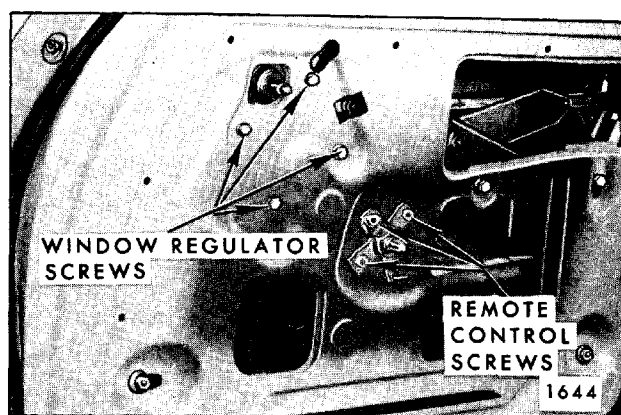


Fig. 7-95—Front Door Hardware - "Z" Styles

- 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.

- 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.

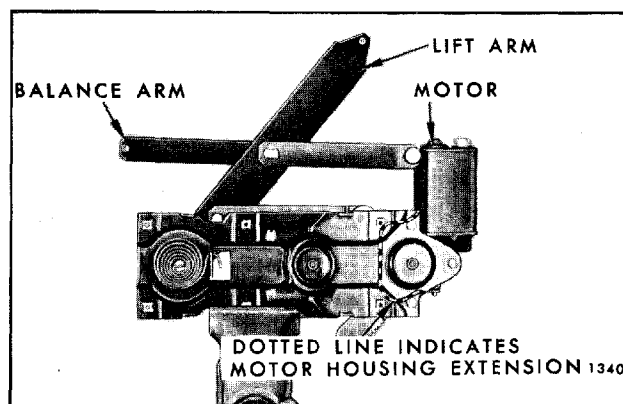


Fig. 7-96—Door Window Regulator and Electric Motor Assembly

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.

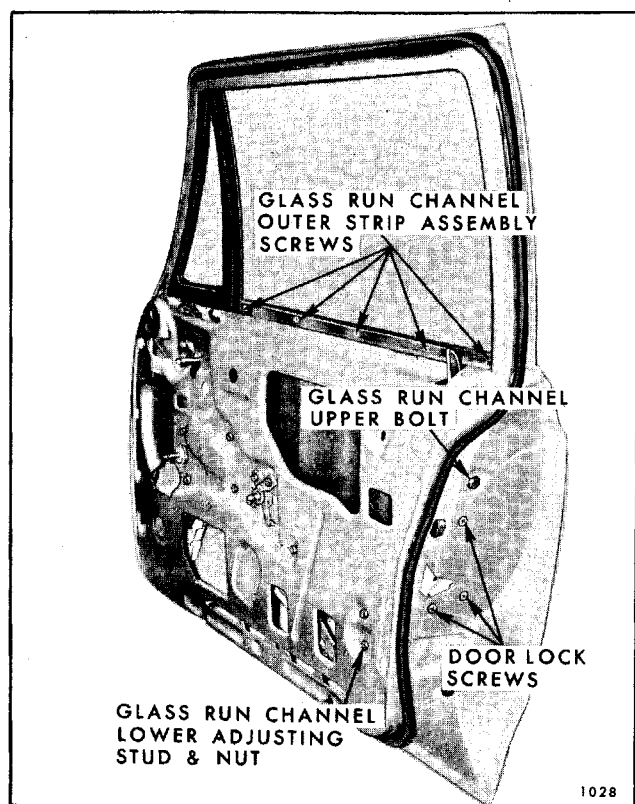


Fig. 7-97—Door Hardware Attachments - "B" Closed Styles

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.

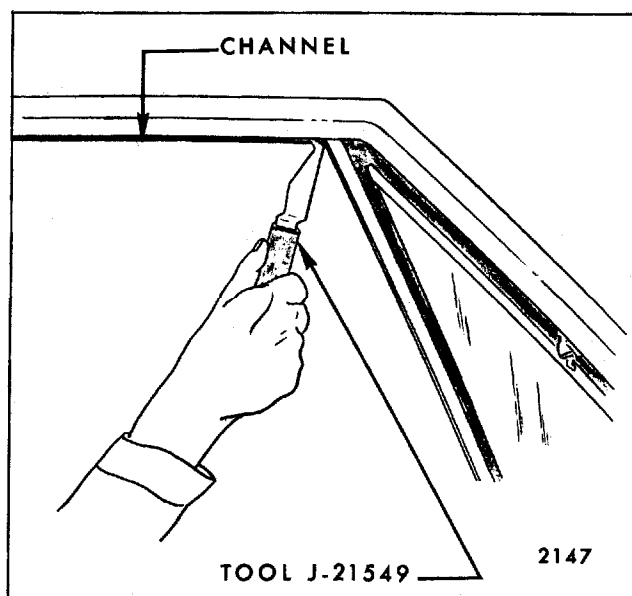


Fig. 7-98—Door Window Glass Run Channel Removal

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".

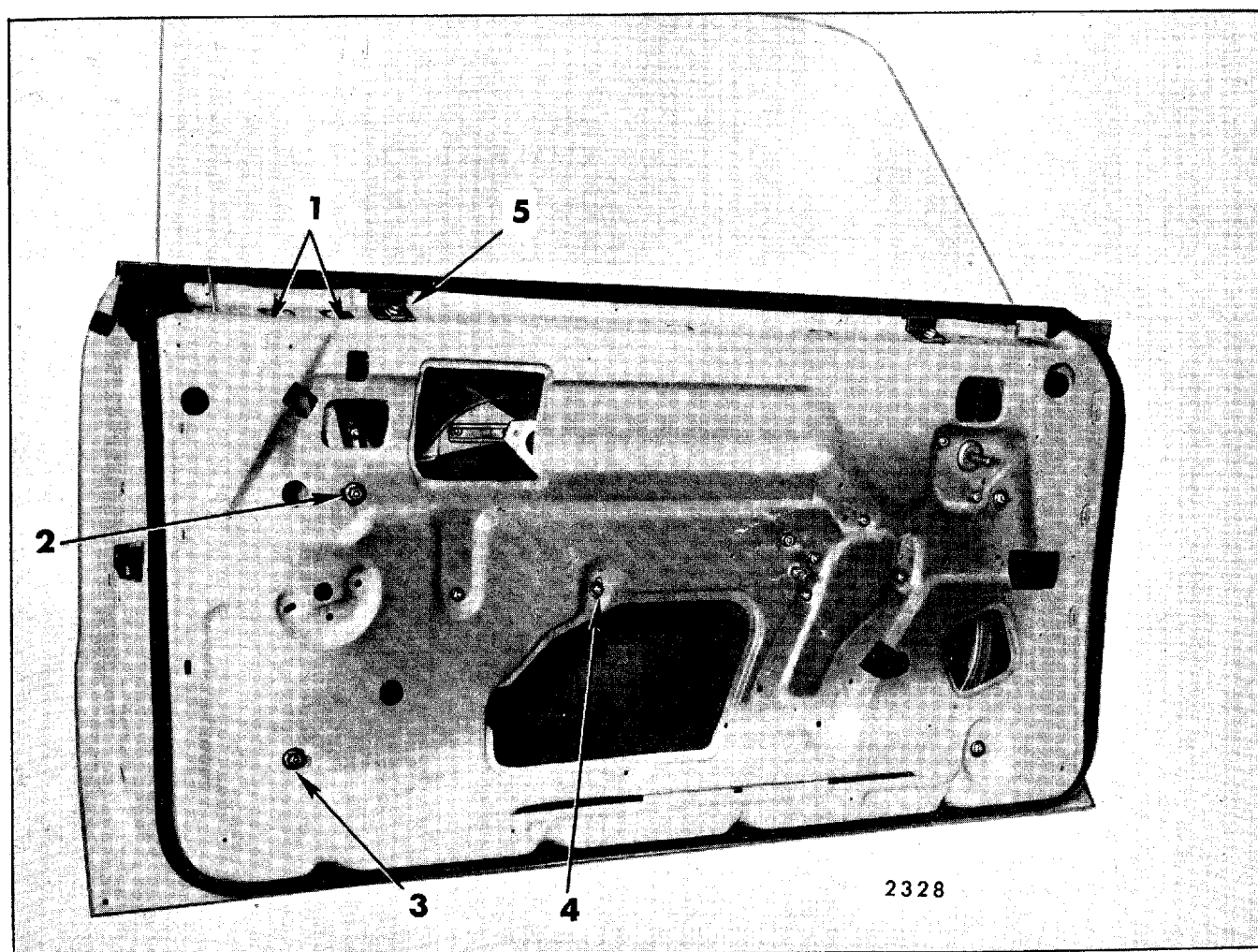


Fig. 7-99—Front Door Hardware - 49487 Style

- | | | | |
|----------------------------------|--|---|----------------------------------|
| 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.

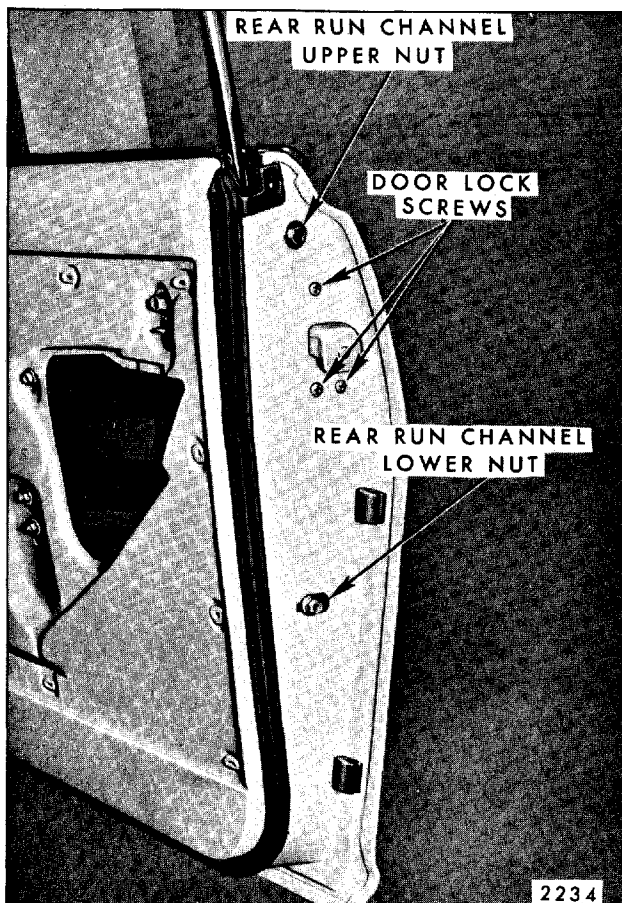


Fig. 7-100—Door Lock Pillar - "X-37" Style

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.

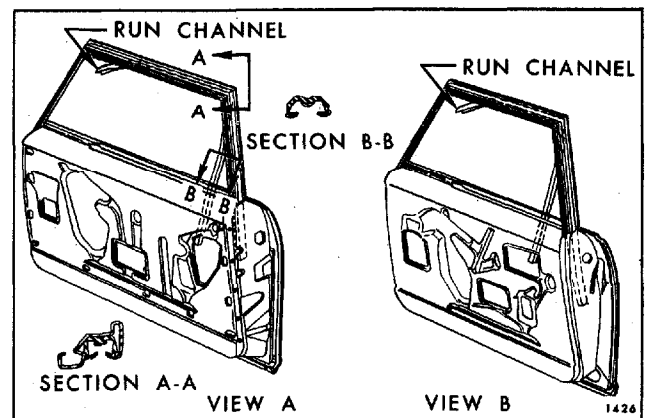


Fig. 7-101—Front Door Glass Run Channel Assembly - "X" Closed Styles

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).

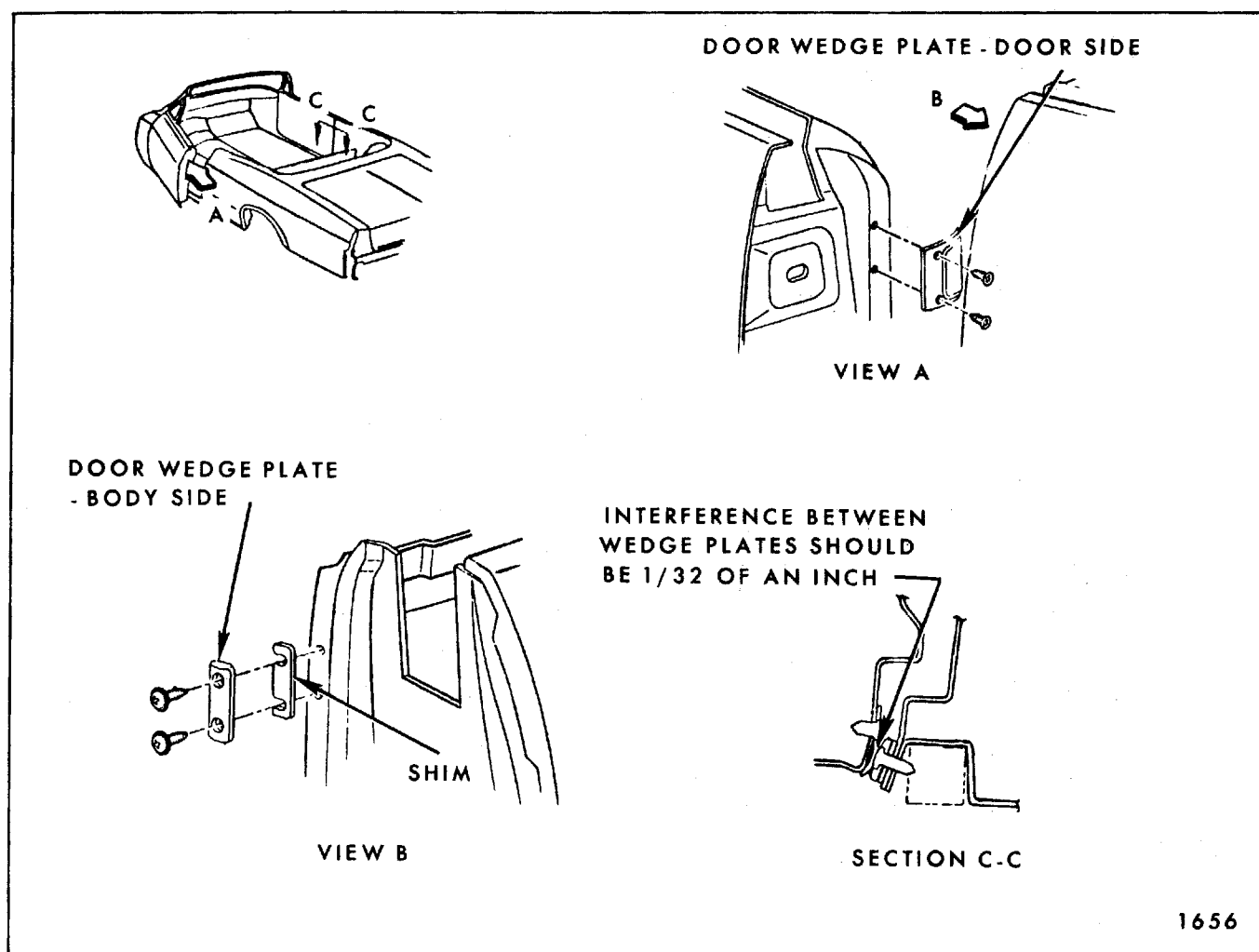


Fig. 7-102—Door Wedge Plates - "67" Styles

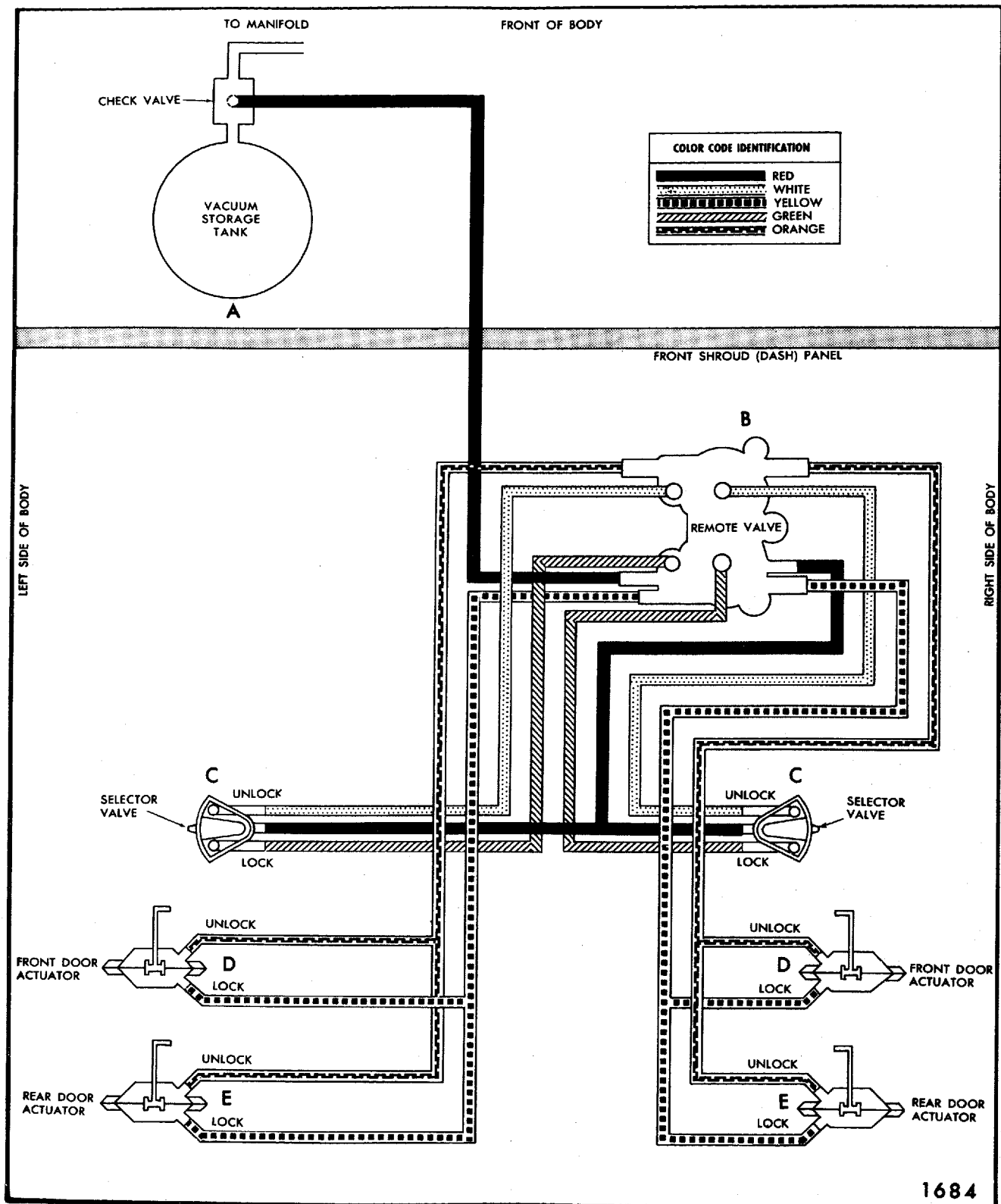


Fig. 7-103—Vacuum Door Lock System - Buick, Oldsmobile, Cadillac

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

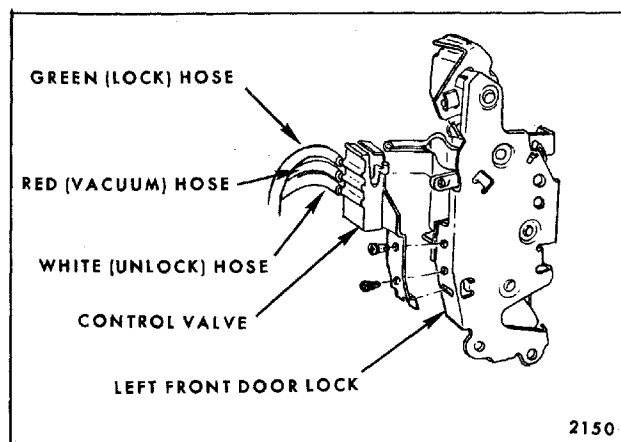


Fig. 7-104—Vacuum Door Lock Control Valve - Pontiac Style

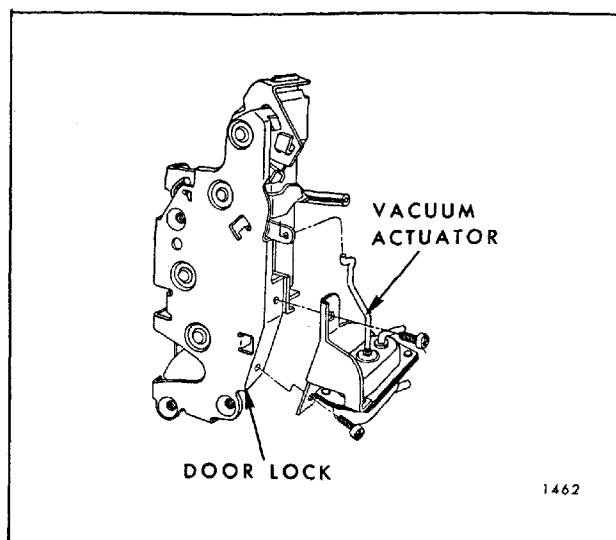


Fig. 7-105—Front Door Vacuum Actuator

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.

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).

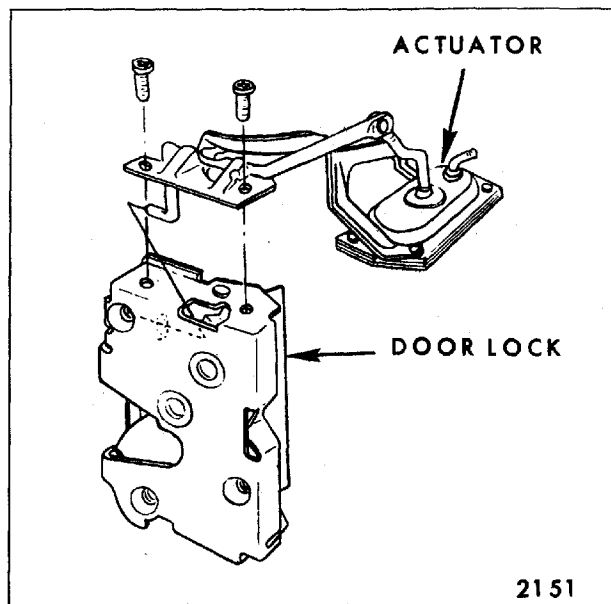


Fig. 7-106—Rear Door Vacuum Lock Actuator

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.

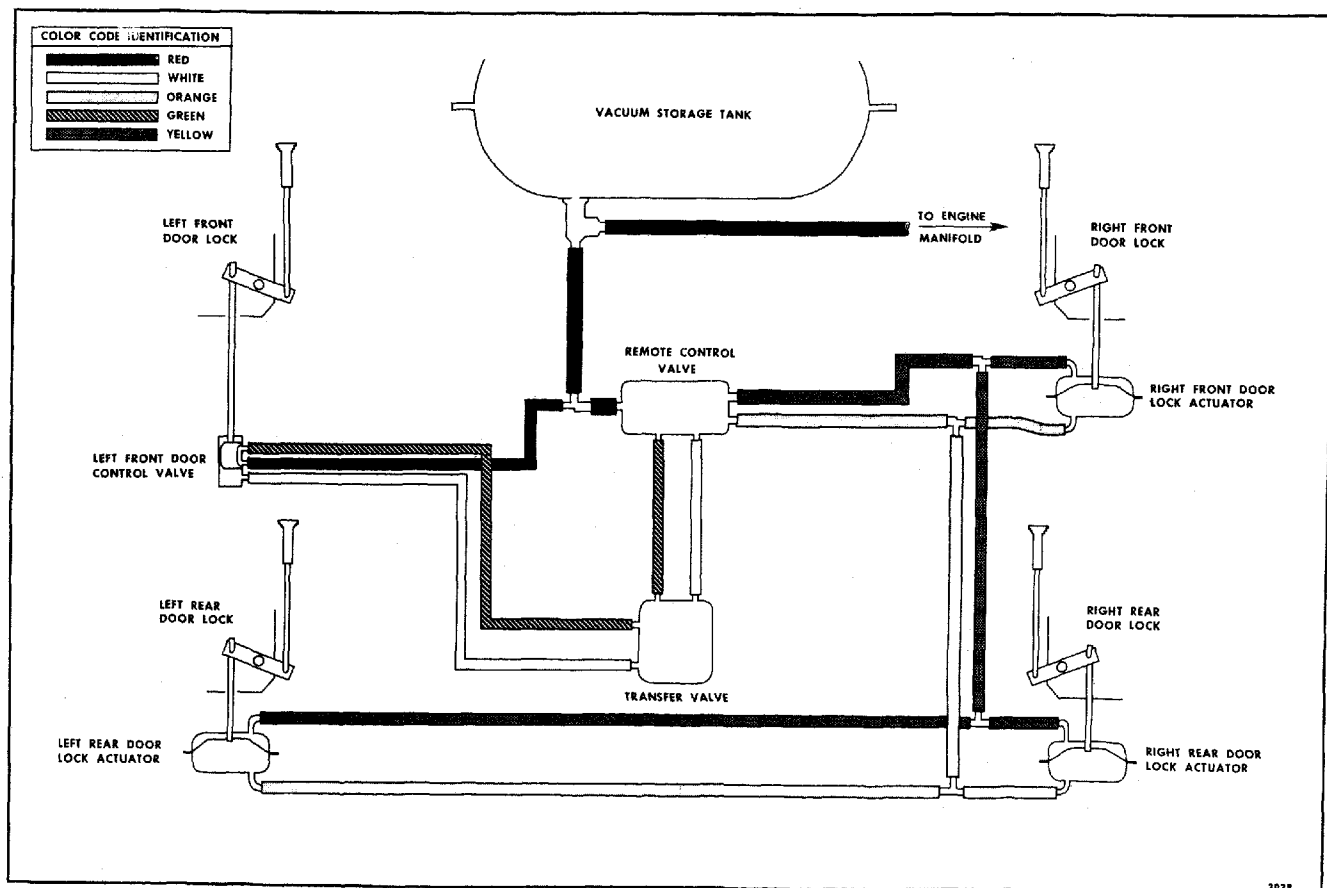
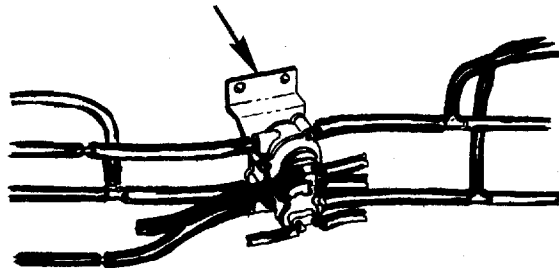


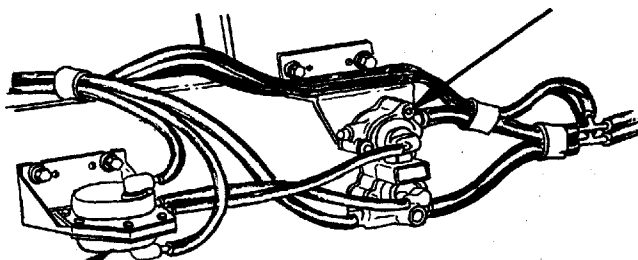
Fig. 7-107—Vacuum Door Lock System - Pontiac Styles

REMOTE CONTROL



OLDSMOBILE, BUICK AND CADILLAC STYLES

REMOTE CONTROL



TRANSFER VALVE

PONTIAC STYLES

TO LEFT FRONT

SEE VIEWS ABOVE

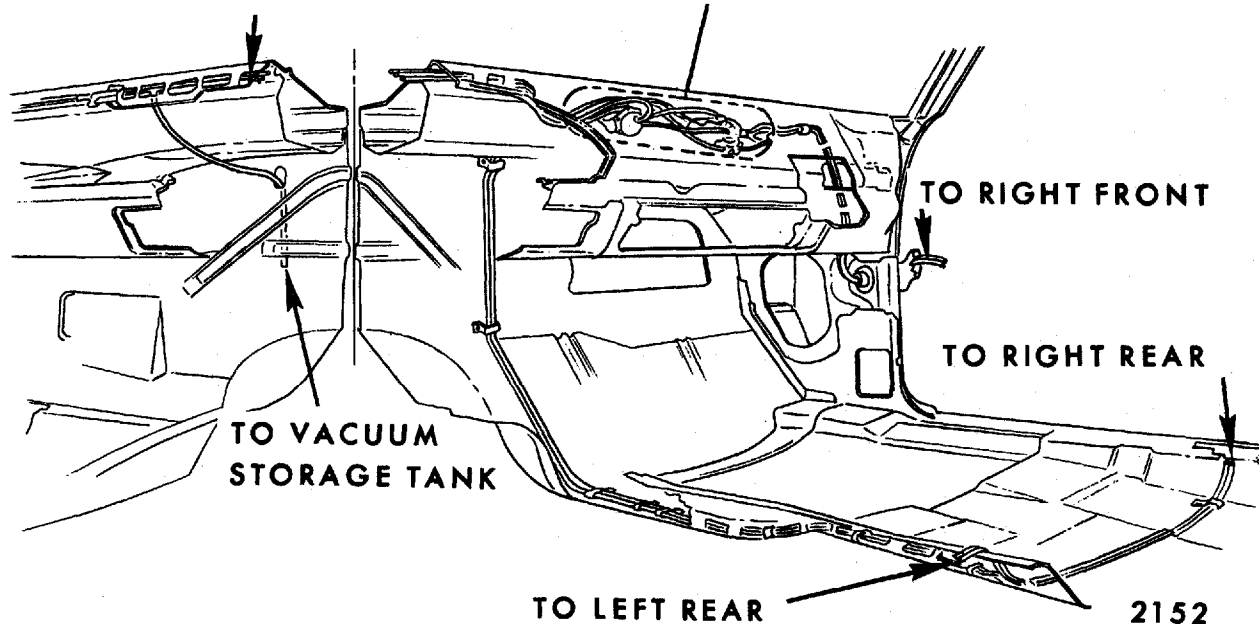


Fig. 7-108—Vacuum Door Lock Hose Routing

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.

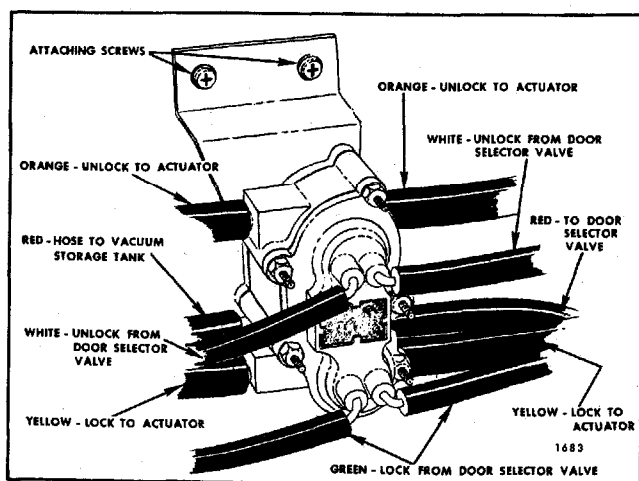


Fig. 7-109—Vacuum Lock Remote Control Valve

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 determining 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

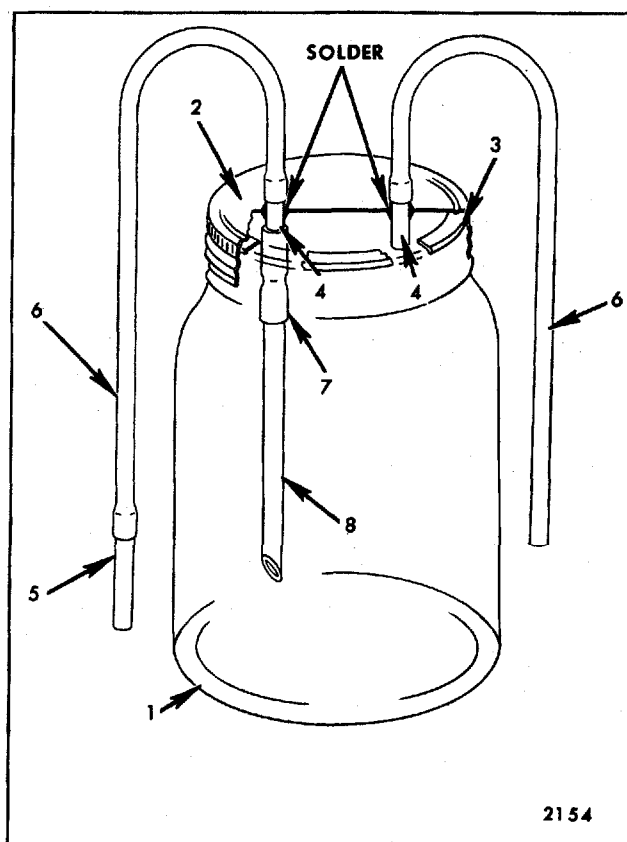


Fig. 7-110—Leak-Down Testing Device

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 2. Orange and yellow hoses (unlock and lock) reversed at remote control valve	Match color-coded hoses with corresponding color-coded port
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. 2. Vacuum supply hose pinched at remote valve. 3. Door valve supply hose pinched at remote valve. 4. Vacuum supply hose disconnected at tank, remote valve, or engine. 5. Remote valve diaphragm leaking.	Reverse hoses at vacuum supply tank. Straighten hose at "B" (Red). Straighten hose at "B" (Red). Install hose at "A" or "B" (Red). Replace remote valve at "B".

CONDITION	APPARENT CAUSE	REPAIR
B. All doors can be locked but not unlocked.	<ol style="list-style-type: none"> 1. Main supply hose crossed lock supply hose at remote valve. 2. Unlock selector hose or supply hose disconnected at remote valve. 	<p>Reverse hoses at remote "B" (Red and Green).</p> <p>Hook up hose at remote "B" (White).</p>
C. All doors can be unlocked but not locked.	<ol style="list-style-type: none"> 1. Main supply hose crossed with unlock supply hose on remote valve. 2. Lock selector hose or supply hose disconnected at remote. 	<p>Reverse hoses at remote "B" (Red and White).</p> <p>Hook up hose at remote "B" (Green).</p>
D. Moving either door valve to lock or unlock produces the opposite action of all locks.	<ol style="list-style-type: none"> 1. Door lock selector valve hoses (small) crossed at remote valve. 2. Actuator supply hoses (large) crossed at remote valve. 	<p>Reverse selector hoses at remote valve "B" (White and Green), or reverse selector hoses at each door lock selector valve "C" (White and Green).</p> <p>Reverse hoses at remote "B" (Orange and yellow).</p>
E. Moving one of the door valves to lock or unlock produces the opposite action of the lock.	<ol style="list-style-type: none"> 1. Valve selector hoses crossed at one door valve. 2. Door selector valve reversed in trim assembly. 	<p>Reverse small hoses at affected door valve "C" (White and Green).</p> <p>Reverse affected door selector valve in trim assembly "C".</p>
F. System inoperative from one door valve.	Vacuum supply hose pinched or disconnected at affected door valve.	<p>Connect hose or check for pinching at:</p> <ol style="list-style-type: none"> 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.	<p>Connect hose or check for pinching at:</p> <ol style="list-style-type: none"> 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.	<p>At Front Door</p> <p>Reverse hoses at lock actuator "D" (Orange and Yellow).</p> <p>At Rear Door</p> <p>Reverse hoses at lock actuator in door "F" (Orange and Yellow). Or reverse hoses at tubing center pillar "G".</p>

CONDITION	APPARENT CAUSE	REPAIR
I. One door lock lags behind others when locked or unlocked.	Lock or linkage binding.	<p>Front Door</p> <ol style="list-style-type: none"> 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. <p>Rear Door</p> <ol style="list-style-type: none"> 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. <p>Coupe</p> <ol style="list-style-type: none"> 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.	<p>Front Door</p> <ol style="list-style-type: none"> 1. Check for pinched hoses at front door, conduit on side affected. 2. Check for hose disconnected at affected actuator. (Orange or Yellow). <p>Rear Door</p> <ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 1. Excessive leakage in any one of the following units can be the cause: <ol style="list-style-type: none"> a. Remote valve b. Door valves (2) c. Storage tank and check valve. d. That part of the harness assembly that contacts these components. 	<ol style="list-style-type: none"> 1. Actuate system through several lock and unlock cycles, and recheck leakage. 2. Isolate leaking component and replace. <p>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.</p>

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.

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